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ABSTRACT

Tax haven countries offer foreign investors low tax rates and other tax features designed to attract investment and thereby stimulate economic activity. Major tax havens have less than one percent of the world's population (outside the United States), and 2.3 percent of world GDP, but host 5.7 percent of the foreign employment and 8.4 percent of foreign property, plant and equipment of American firms. Per capita real GDP in tax haven countries grew at an average annual rate of 3.3 percent between 1982 and 1999, which compares favorably to the world average of 1.4 percent. Tax haven governments appear to be adequately funded, with an average 25 percent ratio of government to GDP that exceeds the 20 percent ratio for the world as a whole, though the small populations and relative affluence of these countries would normally be associated with even larger governments. Whether the economic prosperity of tax haven countries comes at the expense of higher tax countries is unclear, though recent research suggests that tax haven activity stimulates investment in nearby high-tax countries.

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1. Introduction.

Countries design their tax systems to fit circumstances and opportunities, and as a consequence, tax regimes exhibit considerable diversity. Countries known as "tax havens" offer very low tax rates and other tax features that make them particularly attractive to foreign investors. Rising volumes of international investment contribute to the growing importance of tax havens, which in turn has exposed tax haven activities to greater attention, and has prompted a number of policy responses in higher-tax countries.

The purpose of this paper is to review the use of tax havens by international businesses, and to evaluate the effect of their tax systems on economic outcomes in tax haven countries and elsewhere. Countries offer low tax rates in the belief that, by doing so, they attract greater investment and economic activity than would otherwise have been forthcoming. The extent to which this expectation is fulfilled certainly varies, though there are spectacular examples of tax haven countries, such as Ireland, that have enjoyed very rapid economic growth rates that coincide with dramatic inflows of foreign investment. The empirical evidence presented in section 4 confirms that Ireland's experience, while extreme, is not anomalous, in that tax haven countries as a group exhibited 3.3 percent annual per capita GDP growth from 1982-1999, whereas the world averaged just 1.4 percent annual GDP growth over the same period. While national economic statistics, particularly those describing the performance of small tax havens, must always be treated with some caution, the available indicators consistently show that tax haven economies outperform the economies of other countries. Controlling for country size, initial wealth, and other observable variables, does not change the conclusion that the period of globalization has been favorable for the economies of countries with very low tax rates.

The policy of offering investors very low tax rates is potentially costly to tax haven governments, if doing so reduces tax collections that might otherwise have been used to fund worthwhile government expenditures. It is far from clear, however, that tax haven countries face significant tradeoffs of this nature. Governments have at their disposal many tax instruments, including personal income taxes, property taxes, consumption or sales taxes, excise taxes, and others, that can be used to finance desired expenditures. Furthermore, even very low rates of direct taxation of business investment may yield significant tax revenues if economic activity expands in response, producing wealth and expenditure that augment tax bases. As an empirical matter, the public sectors of tax haven countries are of comparable sizes to those of other countries, though there is evidence that they may be somewhat smaller than would otherwise have been predicted on the basis of their populations and affluence.

Tax havens are viewed with alarm in parts of the high-tax world. The concern is often expressed that the availability of foreign tax haven locations may have the effect of diverting economic activity away from countries with higher tax rates, and eroding tax bases that might otherwise be used to raise government revenue. These considerations are commonly thought to be most acute in the case of nearby tax havens, those that might divert activity from other countries within the same region or economic federation. The evidence, however, suggests a different conclusion. Foreign tax haven activity and nearby investment in higher-tax countries appear to be complementary, one percent greater likelihood of establishing a tax haven affiliate being associated with two thirds of a percent greater investment and sales in nearby non-haven countries. This pattern implies that the availability of nearby tax havens stimulates, rather than diverts, economic activity within a region or federation.

The empirical regularity that economic activity in high-tax countries benefits from the availability of nearby tax havens does not resolve the impact of tax havens on the welfare of high-tax countries. Tax haven operations may stimulate activity in nearby countries by facilitating the avoidance of taxes in that country, the avoidance of taxes elsewhere, or by reducing the cost of goods and services that are inputs to production or sales in high-tax countries. Tax avoidance activity carries mixed implications for governments of nearby countries, since it may erode tax bases and therefore tax collections, implying that the greater economic activity associated with nearby tax havens might come at a high cost in terms of foregone government revenues. Any evaluation of this effect relies, however, on careful consideration of the type of tax avoidance uses to which tax haven affiliates are put. In particular, it is possible that the use of tax haven operations by multinational firms permits governments of high-tax countries to refine their tax systems by subjecting multinational firms to different effective tax rates than domestic firms.

Section two of the paper reviews international taxation in practice, and its implications for international investment and the tax policies in capital-importing countries. Section three considers American evidence of the extent to which investors concentrate their foreign investment and tax-avoidance activity in tax havens. Section four evaluates the economic experience of tax havens over the period since 1982. Section five considers the effect of foreign tax havens on the welfare of high-tax countries. Section six is the conclusion.

2. Tax havens and international taxation.

The investor appeal of tax haven operations is easy to understand. Countries that tax business activity at very low rates permit investors to retain all, or most all, of locally-earned

pretax income. Investment projects of modest anticipated value, with expected pretax returns too low to justify undertaking if the returns would be subject to taxation at normal rates, might be deemed worthwhile if located in tax havens and therefore taxed lightly (if at all). Other considerations equal, therefore, countries with lower tax rates should be expected to offer a broader range of attractive investment opportunities, and therefore draw larger volumes of foreign investment, than do otherwise-similar countries with higher tax rates.

Foreign investment is attracted to tax havens for reasons beyond the after-tax return to local activities, since multinational businesses can use tax haven operations to facilitate avoidance of taxes that would otherwise be owed to governments of other countries. Foreign affiliates of multinational firms typically have multiple business transactions with each other and with their parent companies, providing opportunities for reallocating taxable income. Tax avoidance can take many forms, including the use of financial arrangements, such as intrafirm lending, that locate taxable income in low-tax jurisdictions and tax deductions in high-tax jurisdictions. In addition to the tax-motivated use of intercompany loans, firms are often able to adjust the prices at which affiliates located in different countries sell goods and services to each other. Most governments require that firms use arm's length prices, those that would be used by unrelated parties transacting at arm's length, for transactions between related parties, in principle thereby limiting the scope of tax-motivated transfer price adjustments. In practice, however, the indeterminacy of appropriate arm's length prices for many goods and services, particularly those that are intangible, or for which comparable unrelated transactions are difficult to find, leaves room for considerable discretion. As a result, firms often find that transactions with tax haven affiliates can be used to reallocate income from high-tax locations to the tax haven affiliates

themselves or else to other low-tax foreign locations. This, in turn, increases the appeal of locating investment in foreign tax havens.

There are two circumstances in which foreign investors will not benefit from the opportunity to locate economic activity in very low-tax areas. The first, and most obvious, is that firms may be unable to earn reasonable profits on their tax haven activities. It is necessary to earn taxable income in order to benefit from low tax rates, and there are countries with extremely low tax rates that nonetheless feature poor economic conditions that make them unable to support anything other than tiny foreign investment levels. The second circumstance arises when home country tax systems effectively remove much of the incentive to earn income in low-tax areas by taxing foreign income earned in tax havens at higher rates than income earned elsewhere. Since the U.S. system of taxing foreign income has some of this character, it is useful to review its main features.

2.1 The taxation of foreign income.[1]

Almost all countries tax income generated by economic activity that takes place within their borders. In addition, some countries – including the United States – tax the foreign incomes of their residents. In order to prevent double taxation of the foreign income of Americans, U.S. law permits taxpayers to claim foreign tax credits for income taxes (and related taxes) paid to foreign governments. These foreign tax credits are used to offset U.S. tax liabilities that would otherwise be due on foreign-source income. The U.S. corporate tax rate is currently 35 percent, so an American corporation that earns $100 in a foreign country with a 10 percent tax rate pays taxes of $10 to the foreign government and $25 to the U.S. government, since its U.S. corporate tax liability of $35 (35 percent of $100) is reduced to $25 by the foreign tax credit of $10.

The United States is not alone in taxing the worldwide income of its residents while permitting them to claim foreign tax credits; other countries with such systems include Greece, Japan, Norway, and the United Kingdom. Many other capital exporting countries in the world effectively exempt from taxation most or all of the foreign income earned by their resident multinational corporations, a list that includes Australia, Belgium, Canada, France, Germany, Italy, and the Netherlands. Countries that largely exempt foreign income from taxation typically tax a portion of foreign income, and some of these countries, such as France and Italy, do not afford favorable tax treatment to income earned in foreign tax havens and other low-tax foreign locations.

American corporations are permitted to defer any U.S. tax liabilities on certain unrepatriated foreign profits until they receive such profits in the form of dividends. This deferral is available only on the active business profits of American-owned foreign affiliates that are separately incorporated as subsidiaries in foreign countries. The profits of unincorporated foreign businesses, such as those of American-owned branch banks in other countries, are taxed immediately by the United States.

U.S. tax law contains provisions designed to prevent American firms from delaying the repatriation of lightly-taxed foreign earnings. These tax provisions apply to controlled foreign corporations, which are foreign corporations owned at least 50 percent by American individuals or corporations who hold stakes of at least 10 percent each. Under the Subpart F provisions of U.S. law, some foreign income of controlled foreign corporations is "deemed distributed," and

[1] Some parts of this section and the one that follows are excerpted from Desai, Foley and Hines (2003).

therefore immediately taxable by the United States, even if not repatriated as dividend payments to American parent firms.[2]

Since the foreign tax credit is intended to alleviate international double taxation, and not to reduce U.S. tax liabilities on profits earned *within* the United States, the foreign tax credit is limited to U.S. tax liability on foreign-source income. For example, an American firm with $200 of foreign income that faces a U.S. tax rate of 35 percent has a foreign tax credit limit of $70 (35 percent of $200). If the firm pays foreign income taxes of less than $70, then the firm would be entitled to claim foreign tax credits for all of its foreign taxes paid. If, however, the firm pays $90 of foreign taxes, then it would be permitted to claim no more than $70 of foreign tax credits.

Taxpayers whose foreign tax payments exceed the foreign tax credit limit are said to have "excess foreign tax credits;" the excess foreign tax credits represent the portion of their foreign tax payments that exceed the U.S. tax liabilities generated by their foreign incomes. American law permits taxpayers to use excess foreign tax credits in one year to reduce their U.S. tax obligations on foreign source income in either of the two previous years or in any of the following five years. In practice, the calculation of the foreign tax credit limit entails certain additional complications, notable among which is that total worldwide foreign income is used to calculate the foreign tax credit limit. This method of calculating the foreign tax credit limit is known as "worldwide averaging." A taxpayer has excess foreign tax credits if the sum of worldwide foreign income tax payments exceeds this limit.

[2] Subpart F income consists of income from passive investments (such as interest and dividends received from investments in securities), foreign base company income (that arises from using a foreign affiliate as a conduit for certain types of international transactions), income that is invested in United States property, money used offshore to insure risks in the United States, and money used to pay bribes to foreign government officials. American firms with foreign subsidiaries that earn profits through most types of active business operations, and that subsequently reinvest those profits in active lines of business, are not subject to the Subpart F rules, and are therefore able to defer U.S. tax liability on their foreign profits until they choose to remit dividends at a later date.

By taxing foreign income while permitting taxpayers to claim credits for foreign income taxes, the U.S. tax system reduces the incentives that American firms would otherwise face to earn income in low-tax foreign locations, since reduced foreign tax liabilities may be offset by higher U.S. tax liabilities. There are, however, two circumstances in which an American firm benefits from locating income in low-tax locations abroad. The first arises whenever an American firm can profitably defer repatriation of foreign profits, thereby reducing the present value of any associated home country tax liability.[3] The second circumstance is one in which a taxpayer has excess foreign tax credits that can be used to offset U.S. taxes due on lightly-taxed foreign income. Together, these two cases encompass a sufficient range of the investing population to make American investors in aggregate highly sensitive to foreign tax rate differences.

2.2 Evidence of the impact of international taxation.

International tax rules and the tax laws of other countries have the potential to influence a wide range of corporate and individual behavior, including, most directly, the location and scope of international business activity. A sizable literature is devoted to measuring behavioral responses to international tax rules.[4] This literature focuses on the impact of corporate tax rates on investment behavior as well as various financial and organizational practices used to avoid taxes.

The available evidence of the effect of taxation on FDI comes in two forms. The first is time-series estimation of the responsiveness of FDI to annual variation in after-tax rates of

[3] Hines (1994) and Hines and Rice (1994) analyze the benefits of such deferral, and Altshuler, Newlon and Randolph (1995) and Desai, Foley and Hines (2001) estimate the effects of home country taxes on dividend repatriation rates.
[4] See Hines (1997, 1999) for further elaboration and critical analysis of many of the studies surveyed in this section.

return. Implicit in this estimation is a *q*-style investment model in which contemporaneous average after-tax rates of return serve as proxies for returns to marginal FDI. Studies of this type consistently report a positive correlation between levels of FDI and after-tax rates of return at industry and country levels.[5] The implied elasticity of FDI with respect to after-tax returns is generally close to unity, which translates into a tax elasticity of investment of roughly -0.6. The estimated elasticity is similar whether the investment in question is American direct investment abroad or FDI by foreigners in the United States.

The primary limitation of aggregate time-series studies is that they are largely identified by yearly variation in taxes or profitability that may be correlated with important omitted variables. As a result, it becomes very difficult to identify the effects of taxation separately from the effects of other variables that are correlated with tax rates. Exceptions include Slemrod (1990), who distinguishes FDI in the United States by the tax regime in the country of origin, and Swenson (1994), who distinguishes investment by industry.

Other studies of investment location are exclusively cross-sectional in nature, exploiting the very large differences in corporate tax rates around the world to identify the effects of taxes on FDI. Grubert and Mutti (1991) and Hines and Rice (1994) estimate the effect of national tax rates on the cross-sectional distribution of aggregate American-owned property, plant and equipment (PPE) in 1982. Grubert and Mutti analyze the distribution of PPE in manufacturing affiliates in 33 countries, reporting a –0.1 elasticity with respect to local tax rates. Hines and Rice consider the distribution of PPE in all affiliates in 73 countries, reporting a much larger –1 elasticity of PPE ownership with respect to tax rates. Altshuler, Grubert and Newlon (2001) compare the tax sensitivity of aggregate PPE ownership in 58 countries in 1984 to that in 1992, reporting estimated tax elasticities that rise (in absolute value) from –1.5 in 1984 to –2.8 in 1992.

[5] See, for example, Hartman (1984), Boskin and Gale (1987), and Young (1988).

Altshuler and Grubert (2004) offer evidence of a -3.5 tax elasticity of investment in a sample of 58 countries in 2000, suggesting a continued, and possibly increasing, responsiveness to foreign tax differences.[6]

One of the important issues in considering the impact of taxation on international investment patterns is the ability of multinational firms to adjust the location of their taxable profits. It is often attractive to use debt to finance foreign affiliates in high-tax countries and to use equity to finance affiliates in low-tax countries, thereby accumulating income where tax rates are low and deductions where tax rates are high.[7] The evidence is broadly consistent with these incentives. Hines and Hubbard (1990) find that the average foreign tax rate paid by subsidiaries remitting nonzero interest to their American parent firms in 1984 exceeds the average foreign tax rate paid by subsidiaries with no interest payments, while the reverse pattern holds for dividend payments. Grubert (1998) estimates separate equations for dividend, interest, and royalty payments by 3467 foreign subsidiaries to their parent American companies (and other members of controlled groups) in 1990, finding that high corporate tax rates in countries in which American subsidiaries are located are correlated with higher interest payments and lower dividend payout rates. Desai, Foley and Hines (2004b) report that, within groups of affiliates controlled by the same American parents, debt levels are significantly higher among affiliates located in countries with higher tax rates.

[6] Other cross sectional evidence is consistent with these findings. Hines (2001) compares the distribution of Japanese and American FDI around the world, finding Japanese investment to be concentrated in countries with which Japan has "tax sparing" agreements that reduce home country taxation of foreign income; the estimated FDI impact of "tax sparing" is consistent with estimated large tax elasticities of foreign investment. Hines (1996) compares the distributions of FDI within the United States of investors whose home governments grant foreign tax credits for federal and state income taxes with those whose home governments do not tax income earned in the United States. One percent state tax rate differences in 1987 are associated with ten percent differences in amounts of manufacturing PPE owned by investors from countries with differing home-country taxation of foreign-source income, and three percent differences in numbers of affiliates owned, implying a tax elasticity of investment equal to –0.6.

Contractual arrangements between related parties located in countries with different tax rates offer numerous possibilities for sophisticated tax avoidance. Evidence of tax-motivated income reallocation comes in several forms. Grubert and Mutti (1991) and Hines and Rice (1994) analyze the aggregate reported profitabilities of U.S affiliates in different foreign locations in 1982. Grubert and Mutti examine profit/equity and profit/sales ratios of U.S.-owned manufacturing affiliates in 29 countries, while Hines and Rice regress the profitability of all U.S.-owned affiliates in 59 countries against capital and labor inputs and local productivities. Grubert and Mutti report that high taxes reduce the reported after-tax profitability of local operations; Hines and Rice come to a similar conclusion, their data indicating that one percent tax rate differences are associated with 2.3 percent differences in pretax profitability. Desai, Foley and Hines (2004a) find that foreign affiliates whose parent companies have nearby tax haven operations pay lower taxes as a fraction of sales than do other affiliates. While it is possible that high tax rates are correlated with other locational and firm-specific attributes that depress the profitability of foreign investment, competitive conditions typically imply that after-tax rates of return should be equal in the absence of tax-motivated income reallocation. The negative correlation of pretax profitability and local tax rates, together with the negative correlation of tax payments and ownership of foreign tax haven affiliates, is suggestive of active tax avoidance.

Harris et al. (1993) report that the U.S. tax liabilities of American firms with tax haven affiliates are significantly lower than those of otherwise-similar American firms over the 1984-1988 period, which may be indirect evidence of aggressive income reallocation by firms with tax haven affiliates. Collins, Kemsley and Lang (1998) analyze a pooled sample of U.S.

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[7] Hines (1994) identifies exceptions to this rule that stem from the benefits of limiting equity finance in affiliates located in countries with very low tax rates in anticipation of reinvesting all of their after-tax profits over long

multinationals over 1984-1992, finding a similar pattern of greater reported foreign profitability (normalized by foreign sales) among firms facing foreign tax rates below the U.S. rate. And Klassen, Lang and Wolfson (1993) find that American multinationals report returns on equity in the United States that rose by 10 percent relative to reported equity returns in their foreign operations following the U.S. tax rate reduction in 1986.

Patterns of reported profitability are consistent with other indicators of aggressive tax-avoidance behavior, such as the use of royalties to remit profits from abroad and to generate tax deductions in host countries. Hines (1995) finds that royalty payments from foreign affiliates of American companies in 1989 exhibit a –0.4 elasticity with respect to the tax cost of paying royalties, and Grubert (1998) likewise reports significant effects of tax rates on royalty payments by American affiliates in 1990. Clausing (2001) finds that reported trade patterns between American parent companies and their foreign affiliates, and those between foreign affiliates located in different countries, are consistent with incentives to reallocate taxable income. Controlling for various affiliate characteristics, including their trade balances with unaffiliated foreigners, Clausing finds that ten percent higher local tax rates are associated with 4.4 percent higher parent company trade surpluses with their local affiliates, which is suggestive of pricing practices that move taxable profits out of high-tax jurisdictions. Swenson (2001) finds a similar pattern in the reported prices of goods imported into the United States, in which high unit tariff rates appear to be associated with unusually low prices.

2.3 Implications for tax havens.

The evidence indicates that the level and location of foreign direct investment are highly sensitive to local tax conditions. This sensitivity makes tax haven locations very attractive to

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periods.

foreign investors, not only because after-tax profits earned in tax havens are taxed lightly, but also because tax haven operations can facilitate the avoidance of taxes on income earned elsewhere in the world. Since foreign investors can choose among tax haven locations, competitive pressures encourage countries with small indigenous corporate tax bases, facing highly elastic potential inflows of foreign direct investment, to reduce – often to zero – their tax rates on mobile international businesses. Diamond and Mirrlees (1971) demonstrate that efficient taxation in a small open economy entails zero taxation of income earned by foreign investors, since any positive taxation distorts the economy more than would other tax alternatives, without shifting any of the tax burden to foreign investors.[8] If international capital flows are increasingly sensitive to tax rate differences, then incentives to reduce tax rates are presumably rising as well. The analysis also implies that countries that nevertheless persist in taxing income earned by foreign investors will have lower incomes than those that do not.

2.4 Developments in the OECD.

In 1998, the Organization for Economic Cooperation and Development (OECD) introduced what was then known as its Harmful Tax Competition initiative (OECD, 1998), and is now known as its Harmful Tax Practices initiative. The purpose of the initiative was to discourage OECD member countries and certain tax havens from pursuing policies that were thought to harm other countries by unfairly eroding tax bases. In particular, the OECD criticized the use of preferential tax regimes that included very low tax rates, the absence of effective information exchange with other countries, and ring-fencing that meant that foreign investors were entitled to tax benefits that domestic residents were denied. The OECD identified 47 such preferential regimes, in different industries and lines of business, among OECD countries, many

[8] See Gordon (1986) for an elaboration of this argument, and Gordon and Hines (2002) for a further exposition.

of which have been subsequently abolished or changed to remove the features to which the OECD objected.

As part of its Harmful Tax Practices initiative, the OECD also produced a List of Un-Cooperative Tax Havens, identifying countries that have not committed to sufficient exchange of information with tax authorities in other countries. The concern was that the absence of information exchange might impede the ability of OECD and other countries to tax their resident individuals and corporations on income or assets hidden in foreign tax havens. As a result of the OECD initiative, along with diplomatic and other actions of individual nations, 33 countries and jurisdictions outside the OECD have committed to improve the transparency of their tax systems and to facilitate information exchange. As of 2004, there remain five tax havens that have not made such commitments,[9] but the vast majority of the world's tax havens rely on low tax rates and other favorable tax provisions to attract investment, rather than using the prospect of local transactions that will not be reported.

3. Tax havens and American multinational activity.

Section two reviewed the extensive evidence that foreign direct investment is influenced by local tax rates, in that high-tax countries attract less investment, and low-tax countries more investment, than they would in the absence of tax differences. Since tax havens feature extremely low tax rates and other characteristics that make them particularly desirable from the standpoint of foreign investors, it follows that they should attract considerably more investment than their small populations and small economies would otherwise warrant.

[9] These tax havens are Andorra, Liberia, Liechtenstein, the Marshall Islands, and Monaco (OECD, 2004). It is noteworthy that the commitments of other tax haven countries to exchange information and improve the transparency of their tax systems is often contingent on OECD member countries doing the same. Given the variety

Table 1 presents selected information on the foreign investment activity of American multinational firms in 1999. This information is drawn from data collected by the U.S. Bureau of Economic Analysis (BEA) on the basis of comprehensive surveys of American multinational firms. Companies owning foreign affiliates with significant sales, assets, or net income are required to provide extensive information concerning their operations, which is then aggregated by country and reported by BEA. Information is unavailable for countries in which very few American firms have foreign operations, since reporting would then threaten to undermine the confidentiality promised survey respondents. In spite of these minor omissions, the BEA data are unique in their coverage and accuracy, and therefore form the basis of the current analysis and much of what is known anywhere about the operations of multinational firms. National economic information is provided by the Penn World Tables, which compile national income account data on an internationally comparable basis for a large number of countries.[10]

Tax havens are low-tax foreign countries that offer advanced communication facilities, promote themselves as offshore financial centers, and have histories of featuring legislation promoting business or bank secrecy. Hines and Rice (1994, Appendix 1) describe the identification of tax haven countries for the purpose of U.S. business investment in 1982, and the intersection of this list and the tax haven countries listed in Diamond and Diamond (2002) is used to identify tax havens. The populations of seven of these countries exceeded one million in 1982, and these are referred to as the "Big-7;" other tax haven countries are known as "Dots." In

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of experience within the OECD, and the remaining differences between what countries do and what they have committed to do, the ultimate impact of the OECD initiative is still uncertain.

[10] The BEA data are available at http://bea.gov; the Penn World Tables are available at http://pwt.econ.upenn.edu. It is possible that data omissions bias the interpretation of foreign investment and economic growth patterns, since countries whose economies fare poorly are less likely than others to be included in either the BEA or Penn World Table samples. The primary determinant of inclusion, however, is population, since larger countries are almost certain to be included, and inclusion bias is apt to represent a major problem only in the unlikely event that tax haven populations respond sharply to changes in local rates of foreign investment or GDP growth.

1982, the average tax rate among Big-7 countries was 15.3 percent, while the average tax rate in the 21 Dots for which Hines and Rice report data was 5.7 percent.

As the information in Table 1 indicates, American firms exhibit unusual activity levels and income production in foreign tax havens. In 1999, the primary tax havens held 0.8 percent of world population (not counting the United States), and their economies contributed 2.3 percent of total world product (again excluding that of the United States). The difference between the 2.3 percent and 0.8 percent figures reflects the affluence of tax haven countries compared to the non-U.S. world average. Of the property, plant and equipment held abroad by American firms, 8.4 percent is located in these tax havens, considerably more than would be predicted strictly on the basis of the sizes of their economies. The relative concentration of American-owned physical capital in tax havens is, however, consistent with estimates of the effect of tax rate differences on investment location.

Employment abroad by American firms is likewise concentrated in foreign tax havens, though not quite to the same extent as is ownership of physical capital. Two measures of foreign employment are available from the BEA survey. The first is employee compensation, of which affiliates located in major tax havens account for 6.1 percent of the total. Since wage rates differ between foreign locations, and have the potential to influence this figure, it is useful to supplement compensation information with estimates of the concentration of numbers of employees. Table 1 indicates that 5.7 percent of foreign employment by American multinational firms is located in major tax havens, which is comparable to the 6.1 percent figure for employee compensation. Consequently, it appears that American firms employ greater numbers of workers in tax havens than local economic conditions would otherwise suggest. Tax havens draw a somewhat smaller share of foreign employment than they do of foreign capital, which is not

surprising given the effect of low tax rates in encouraging firms to locate capital, and, in some cases, to substitute capital for labor.

The financial variables presented in Table 1 also reveal an impressive concentration of financial activity in tax havens. American firms locate 15.7 percent of their gross foreign assets in the major tax havens, a number that differs from the figure for property, plant and equipment by including financial as well as physical assets. The major foreign tax havens account for 13.4 percent of total foreign sales, and a staggering 30 percent of total foreign income in 1999. Much of reported tax haven income consists of financial flows from other foreign affiliates that parents own indirectly through their tax haven affiliates. Clearly, American firms locate considerable financial assets in foreign tax havens, and their reported profitability in tax havens greatly exceeds any measure of their physical presence there. This pattern is consistent with the use of tax haven operations to organize their foreign operations in a way that reduces tax obligations, itself perhaps not surprising, though its magnitude revealing. It is worth emphasizing that the high concentration of reported profits in tax havens need not indicate any failure on the part of American firms to comply with international tax laws. Indeed, Table 1 reflects information that is self-reported by American multinational firms and not used to calculate tax liabilities, so it is less likely than are other types of reports to contain information that is misreported for tax purposes.

Table 1 provides country details for major tax havens, from which it is clear that tax haven employment by American multinational firms is concentrated in Hong Kong, Ireland, Panama, Singapore, and Switzerland. It is noteworthy that the aggregate figure is relatively modest: American firms in these five locations together employ 401,900 workers. Property,

plant and equipment is concentrated in these countries plus Bermuda, and firms report significant net income in the same countries plus Bermuda and Luxembourg.[11]

The bottom row of Table 1 presents corresponding aggregate information for American tax haven operations in 1982. In some respects, little has changed: American firms in 1982 reported earning 27.1 percent of their foreign income in major tax havens. Physical operations were somewhat less concentrated in tax havens in 1982, which then accounted for 4.8 percent of offshore property, plant and equipment, 3.4 percent of employment compensation, and 3.7 percent of total employment. Tax haven affiliates held a higher fraction of financial assets in 1982, with 22.1 percent of the total. Most strikingly, however, the data indicate that the tax haven operations of American firms exhibited patterns in 1982 that were similar to those in 1999.

It would be valuable to have information on the tax haven activities of firms not owned by Americans, but unfortunately, information comparable to that presented in Table 1 is unavailable for multinationals from countries other than the United States. Since the United States taxes the foreign incomes of American companies, permitting them to claim credits for foreign income taxes, it follows that American firms should be less sensitive to foreign tax rate differences than are multinational firms from countries, such as Germany and the Netherlands, that largely exempt foreign income from taxation. Consequently, non-U.S. firms as a group are likely to locate even greater fractions of their foreign investment and income production in tax havens than are American firms.

4. Economic developments in tax havens.

[11] There is considerable industry variation between countries, as reflected in capital/labor ratios that are close to one for most countries listed in Table 1, but ten in the cases of the Bahamas and Bermuda, where finance and insurance activities dominate.

The enormous expansion of global business activity since the 1980s had the potential to contribute significantly to the economies of tax havens, as the worldwide rise in foreign direct investment increased demand for tax haven operations that facilitate tax avoidance. Figure one plots annual ratios of total world outbound foreign direct investment to total world income, as reported by the World Bank's *World Development Indicators*. As the figure indicates, the economic significance of foreign direct investment increased rapidly in the 1980s and 1990s. The tax haven countries were well positioned to benefit from this development, attracting, as they do, disproportionate shares of aggregate FDI. Virtually all of the major tax havens in 2001 were also tax havens in 1980, so their economies are likely to exhibit rapid growth during this period as FDI grows in importance.[12]

The Republic of Ireland offers one of the most prominent examples of the performance of tax haven economies. Ireland was for many years a low-income country by Western European standards, but her economy expanded very rapidly at the same time that worldwide FDI grew, and Ireland now features one of Europe's highest living standards. Ireland features a very low corporate tax rate (currently 12.5 percent) designed to attract foreign investment, and one that appears to be successful, since close to half of Ireland's manufacturing employment is in foreign-owned firms. Honohan and Walsh (2002) argue that the outstanding recent performance of Ireland's economy reflects a combination of factors, including education and macroeconomic policy reforms, demographic and labor market changes, and tax policies. While the economic fortunes of individual countries are almost certainly attributable to combinations of factors, it is nevertheless instructive to consider the experience of tax havens as a group, to see whether

[12] To the extent that multinational firms have become more aggressive tax planners over time, this development would also contribute to the use of tax haven affiliates, and thereby to the economies of tax haven countries.

Ireland is typical of low-tax locations in exhibiting very rapid economic growth as FDI increased around the world.

4.1 Economic growth in foreign tax havens.

Table 2 presents economic growth rates for tax haven countries for which data are available. The first column of Table 2 provides annual real per capita economic growth rates over the 1982-1999 period, as calculated from the Penn World Tables, for 17 tax haven countries. Some of these countries, including Ireland, Singapore, Luxembourg, and St. Kitts and Nevis, sustained annual per capita real growth rates exceeding five percent a year, and the average of the 17 countries was 3.3 percent. By contrast, the world as a whole had an average annual per capita real growth rate of 1.4 percent.[13]

The Penn World Tables devote considerable effort to compiling data that are internationally comparable, the goal being to produce GDP statistics that accurately reflect living standard differences between countries. This is an enormous undertaking, one that is fraught with difficulties for any country, and infeasible for some smaller countries for which data are too difficult to obtain. As a result, the country coverage of the Penn World Tables omits a number of smaller tax havens. The second column of Table 2 presents comparable annual per capita real economic growth rates calculated from GDP figures compiled by the World Bank, as reported in its *World Development Indicators*. The World Bank GDP statistics are presented at international prices, as measured by official exchange rates, but unfortunately not at purchasing power

[13] Average growth rates are unweighted averages. Weighted averages of tax haven growth rates would, by necessity, reflect the performance of the three tax havens – Hong Kong, Ireland, and Switzerland – whose GDPs greatly exceed those of the others. Penn World Table data limitations impose that some of the entries in the first and third columns of Table 2 correspond to annual growth rates over periods other than 1982-1999. For the Bahamas, Bahrain, Bermuda, Cyprus, and Singapore, growth rates are calculated over 1982-1996; for Macao, 1986-1999; for Malta, 1982-1998; and for Dominica, 1982-2000.

equivalents as the Penn World Table information is. The pattern of economic growth rates for the 22 tax haven countries in the second column of Table 2 resembles that in the first, though the difference between tax haven and non-haven growth rates is less stark, tax havens averaging annual per capita GDP growth of 2.6 percent, and the world averaging 1.7 percent.

There is a possible difficulty of interpreting official GDP statistics in countries that attract significant foreign investment, and where reported company incomes may not correspond exactly to earnings attributable to local productive factors. In principle, GDP represents economic output produced by factors located within a country's borders, but in practice, this may be distorted by tax-motivated reallocation of reported incomes of the affiliates of foreign-owned multinational corporations. An alternative is to evaluate economic performance by Gross National Product (GNP), which is income earned by residents, and which, in principle, does not include the reported profits of foreign-owned firms. Column three of Table 2 presents per capita real annual GNP growth figures from the Penn World Tables, which again indicate that the tax haven economies grew much more rapidly (3.0 percent a year) than the world as a whole (1.4 percent a year).

The economies of tax haven countries differ in size, character, and affluence from those of other countries. As a consequence, it is useful to estimate the determinants of economic growth rates, including size and affluence as independent variables, in order to see if tax haven growth rates remain anomalous after controlling for simple observables. Table 3 presents estimated coefficients from regressions in which the dependent variable is the annual per capita real GDP growth rate from 1982-1999 as calculated from the Penn World Tables. The independent variables in the regression reported in the first column include the natural log of population in 1982, the natural log of 1982 per capita GDP, and a dummy variable that takes the

value one if a country is a tax haven, and zero otherwise. The Penn World Tables provide sufficient data for this regression to be run on 119 countries.

The regression results indicate that the economies of larger, and more affluent, countries grew more rapidly than those of other countries during the 1982-1999 period. The 0.194 coefficient on the log of 1982 population indicates that doubling a country's population is associated with 0.194 percent a year faster per capita GDP growth, though this effect is not statistically significant. The 0.470 coefficient on the log of per capita GDP indicates that doubling a country's affluence in 1982 increases its subsequent economic growth rate by 0.47 percent per year. And the 2.312 coefficient on the tax haven dummy variable implies that tax haven economies grew 2.3 percent per year faster than would be predicted on the basis of their size and wealth. This large tax haven effect is consistent with the differences reported in Table 2, and implies strongly that tax havens had unusual economic experiences in the 1980s and 1990s.

Countries are not randomly selected to be tax havens; tax policies are choices that governments make on the basis of economic and other considerations. As a result, any estimated effect of being a tax haven reflects not only the impact of associated tax policies but also the growth effects of any other economic, political, or social considerations that are correlated with choosing to be a tax haven. Furthermore, countries that lower their tax rates to attract foreign investment may well enact other policies that are difficult to measure, but nevertheless contribute to foreign investment and therefore to economic growth, the omission of which in an estimating equation could lead to overstating the growth effects of low tax rates. Since it is impossible to control for these considerations directly, the most sensible procedure instead is to use available independent variables to control for as much variation as these variables permit. Column two of

Table 3 adds second and third powers of 1982 population and per capita income as independent variables, in the hope of controlling at least for nonlinear effects of income and population differences, and any political and social effects that are correlated with these nonlinearities. The addition of these higher powers reduces the estimated effects of tax haven status on annual economic growth to roughly 1.5 percent per year, though it remains statistically significant. This does not rule out the possibility that correlated omitted variables account for much of the estimated tax haven effects, though it is noteworthy that all of the tax haven countries in the sample were already tax havens by 1982, so the estimated growth effects are those that coincide not with major tax changes, but instead with changes in the international economic environment.

Columns three and four of Table 3 report estimated coefficients from regressions that are similar to those reported in columns one and two, except that annual per capital real GNP growth is the dependent variable, and GNP replaces GDP as an independent variable. Population has a larger effect on GNP in these regressions than it does in the GDP regressions reported in the first two columns, and per capita income has a smaller effect on GNP than it does on GDP. The estimated coefficients on the tax haven dummy variable are of similar magnitudes to those reported in the first two columns: being a tax haven is associated with 2.75 percent a year faster real per capita GNP growth in the regression reported in column three, and 1.93 percent a year faster real per capita GNP growth in the regression reported in column four. Hence it appears that the economic performance of tax havens between 1982 and 1999 cannot be attributed merely to their sizes or initial levels of income.

4.2 Economic significance of foreign investors in tax havens.

The remarkable tax haven growth rates immediately raise the question of whether foreign investment, even at significantly elevated levels, might plausibly account for all or much of the differences between tax havens and other countries. Given the state of understanding of the determinants of national economic growth this is an extremely difficult question to answer, but as a first step it is helpful to consider evidence of the economic penetration of American multinational firms in tax haven economies.

Table 4 offers information on employment and income tax payments by American firms in tax havens and other countries. The first panel of Table 4 presents ratios of employment by American multinational firms to total employment by all employers, in tax haven countries, in 1982 and 1999. BEA reports employment by American firms, whereas total employment in other countries can be inferred from the Penn World Tables. Ratios of employment by American firms to total national employment are calculated separately by country, and Table 4 presents simple group means of these ratios.[14] As indicated in the first row of the table, American firms in 1999 employed 2.35 percent of the labor force in tax haven countries, a significant fraction, and one that exceeds their employment of 1.12 percent of the labor forces of countries other than tax havens. Tax haven employment has grown significantly over time, since American firms provided just 1.36 percent of the jobs in tax haven countries in 1982. Employee compensation is rather less concentrated in tax havens, averaging one percent of tax haven GDP in 1999, possibly reflecting employment that targets lower-wage workers.

[14] Table 4 includes information on all tax haven countries for which sufficient data are available: Barbados, Bermuda, Hong Kong, Ireland, Luxembourg, Panama, Singapore, and Switzerland. It is noteworthy that Bermuda is something of an outlier in this group, in the sense of significantly influencing average employment and income tax ratios (though, interestingly, not the employee compensation/GDP ratio). If Bermuda were omitted from the sample, then the average employment figure for tax havens in 1999 would have been 1.25 percent, and income taxes/GDP for tax havens would have been 0.4 percent in 1982 and 0.8 percent in 1999. Inspection indicates that Bermuda is the only country to exert such a strong effect on the group averages reported in Table 4.

Multinational firms contribute to local economies in ways beyond just employing local workers. Firms pay significant income taxes, as reflected in Table 4, which reports that income taxes paid by American firms to tax haven governments averaged three percent of local GDP in 1999. This contrasts with an average 0.6 percent ratio of income tax payments to GDP in countries other than tax havens. Since the United States is responsible for only between one fifth and one quarter of the world's outbound foreign direct investment, and the U.S. tax system discourages the use of tax havens more than do the tax systems of many other major capital-exporting countries, it is likely that foreign investors as a group contribute significantly to employment, investment, tax payments, and other activities that contribute to the economic vitality of tax havens.

4.3 Government finance.

An obvious potential cost of offering tax benefits to foreign and domestic investors is that total tax collections might thereby be reduced to unacceptable levels. For countries that might otherwise attract very little business activity, however, it is not clear whether, or to what extent, lower tax rates are associated with reduced aggregate tax collections. In order to evaluate the potential tradeoffs involved, it is necessary to determine the level of foreign investment, and associated tax collections, that would have accompanied higher tax rates. This exercise is complicated not only by the difficulty of estimating the effect of tax reductions on FDI and taxable business income in tax havens, but also by the need to determine the effects of FDI activities on multiple sources of tax revenue, including excise taxes, personal income taxes, property taxes, value added and sales taxes, and others. In lieu of attempting such a calculation,

this section instead considers the experience of tax haven governments to infer the extent to which their public finances reflect limitations on tax revenue.

The first column of Table 5 presents ratios of government product to GDP in tax haven countries, as reported in the Penn World Tables for 1999.[15] From the first two lines of the table it is apparent that average tax haven governments contribute somewhat more to GDP than do the governments of other countries, the average tax haven ratio of government to GDP being 25 percent, compared to 20 percent for the world as a whole. The governments of Big-7 tax havens, listed at the top of the table, constitute relatively small fractions of their economies, whereas governments represent much larger fractions of gross domestic product in the Dot tax havens listed in the bottom panel of the table.

The data presented in the first column of Table 5 are drawn from the Penn World Tables. They are based on national income accounting concepts, so the government variable captures central government contribution to GDP, which includes final purchases of goods and services, but excludes other types of government expenditures, such as interest payments, transfer payments, and the expenditures of subnational governments. As a result, this measure of government activity reflects the desire and ability of governments to finance direct purchases, but does not incorporate costs incurred in transfer-type activities. The benefit of using such a national income-based measure of government size is that it is carefully constructed for comparability across countries; furthermore, final purchases of goods and services should vary with the costs that governments face in raising tax revenue. Alternative measures of government tax collection and expenditure are available from the *IMF Government Finance Statistics*. These

[15] Data limitations prevent the entries in Table 5 from corresponding uniformly to the same years. In the first column, the figures for the Bahamas, Bahrain, Bermuda, and Cyprus are for 1996; for Malta, 1998; and for Dominica, 2000. In the second and third columns, the figures for Vanuatu are for 1990; for St. Lucia, 1991, and for St. Kitts and Nevis, 1994.

data include transfer payments as government expenditures, but reflect national differences in accounting conventions and procedures, and necessarily treat asymmetrically tax cuts and government transfers that might go to the same recipients. While it is notoriously difficult to compare government financial statistics across countries, it is nonetheless noteworthy that Slemrod (2004) finds that the ratio of government expenditures (as measured by the IMF) to GDP has no effect in cross-country regressions explaining statutory corporate tax rates.

The second and third columns of Table 5 present IMF figures for ratios of government spending to GDP, and tax revenue to GDP, in 1995, the last year for which the country coverage is sufficient to include many of the tax havens. The IMF data indicate that tax haven governments, as measured by fractions of GDP in 1995, are of comparable sizes to governments in non-haven countries. Tax haven government spending averaged 30.3 percent of GDP, which compares to 30.9 percent for the world as a whole; similarly, tax haven tax collections averaged 22.4 percent of GDP, as opposed to 22.3 percent for the world as a whole. Hence these simple comparisons suggest that the public sectors of tax haven countries are not systematically larger or smaller than those elsewhere.

Since tax haven countries are smaller and more affluent than the world average, the fact that their public sectors are of comparable sizes to the world average could itself be anomalous, particularly if country size is negatively associated with size of the public sector. To evaluate this possibility, Table 6 presents estimated coefficients from three sets of regressions, in which the dependent variables are the measures of government size presented in Table 5, and the independent variables are 1999 values of the same variables used in the regressions reported in the first two columns of Table 3. The estimated –2.218 coefficient on log population in the first column indicates that smaller countries indeed generally have larger government sectors, a

doubling of population being associated with 2.2 percent larger government as a fraction of GDP. The –4.489 coefficient on log per capita GDP in the same column implies that more affluent countries have smaller governments, a doubling of income being associated with roughly 4.5 percent smaller government sectors. The 4.745 estimated coefficient on the tax haven dummy variable indicates that tax havens have government sectors that are almost five percent larger, as a fraction of GDP, than other countries of similar size and affluence, though this coefficient is not statistically significant.

Column 2 of Table 6 reports estimated coefficients from a specification that adds additional powers of population and income, in which the coefficient on the tax haven dummy variable falls to 1.5 and remains insignificant. Columns 3 and 4 of Table 6 report estimated coefficients from regressions in which the dependent variable is the ratio of government spending to GDP as reported by the IMF. The -2.323 coefficient in column three implies that smaller countries have larger governments, and the 4.446 coefficient in the same column indicates that wealthier countries also have larger governments, both carrying the prediction that tax havens should feature large government sectors. The -10.727 coefficient on the tax haven dummy variable suggests that government spending in tax havens is 10.7 percent lower than otherwise would be predicted on the basis of their small sizes and their affluence. Adding additional powers of population and income, as in column 4, changes these results very little, and the regressions reported in columns 5 and 6 carry very similar implications for the determinants of tax revenue as a fraction of GDP, as reported by the IMF. The -8.986 coefficient reported in column 5 implies that tax haven governments collect roughly nine percent less tax revenue as a fraction of GDP than would be expected on the basis of their sizes and incomes.

The results reported in Table 6 offer differing interpretations of the sizes of the public sectors of tax haven countries. In all of the regressions, smaller countries are predicted to have larger government sectors, making the rough equality of the sizes of tax haven governments and the governments of all countries somewhat anomalous. In the first two regressions, explaining the contribution of central government to GDP, wealthier countries feature smaller government contributions, an effect that, for tax havens, mitigates the impact of small size, and leaves tax havens not significantly different from other countries. The regressions explaining government spending and tax collections likewise predict that smaller countries have larger governments, but additionally predict that wealthier countries have larger governments, a pattern that the tax havens do not fit. It is noteworthy that, in addition to differences in their dependent variables, the first two regressions reported in Table 6 differ from the final four in being run on a much larger (124 observations) cross section of countries than that (68 observations) available using the IMF data. These results suggest that there are dimensions of public sector activity in which tax havens have smaller governments than do other, similarly situated, countries, even though the mean level of government size in tax havens looks comparable to that for the world as a whole.

5. Tax havens and the economies of high-tax countries.

There is considerable controversy over the impact of tax havens on countries with higher tax rates. To some, it is a matter of faith that the economic successes of tax havens come at the expense of countries with high tax rates, while others believe that tax havens encourage economic activity with positive spillovers, and thereby contribute to economic prosperity elsewhere. These arguments are not customarily accompanied by appeal to reliable empirical evidence, and since economic theory does not clearly indicate whether tax diversity contributes

to economic welfare,[16] it can be difficult to evaluate the impact of tax havens on economic outcomes in other countries.

There are several channels through which tax haven countries might influence the economies of high-tax countries, including their effects on world prices and on tax policies elsewhere. Perhaps the most obvious possible channel of influence is that tax havens might divert investment that would otherwise have been located in high-tax jurisdictions.[17] Alternatively, the existence of tax havens could encourage investment in other countries, if the ability to relocate taxable income into tax havens improves the desirability of investing in high-tax locations, if tax haven operations facilitate deferral of home-country taxation of income earned elsewhere, or if tax haven affiliates provide valuable intermediate goods and services to affiliates in high-tax countries. Hence any assessment of the impact of tax havens on investment elsewhere requires an empirical evaluation.

Desai, Foley and Hines (2004a) offer evidence of the extent to which tax haven activity and economic activity outside of tax havens influence each other. American firms investing in foreign countries whose economies subsequently grow rapidly exhibit higher growth rates of foreign investment than do firms investing in foreign countries whose economies grow slowly. Consequently, GDP growth rates can be used to predict differences between subsequent non-tax-haven investment levels of firms whose original investments are located in different countries: firms whose foreign investments are concentrated in countries that subsequently exhibit rapid economic growth tend to show above-average rates of foreign asset accumulation. Desai, Foley,

[16] Wilson and Wildasin (2004) provide a recent review of theoretical analysis of the desirability of international tax competition.

[17] It is noteworthy that the small sizes of tax haven economies imply that tax havens are unlikely to have large effects on the economic performances of high-tax countries. Even if *all* of the 3.3 percent annual GDP growth of tax haven countries represents activity that would otherwise have taken place in other countries, it follows that such diversion reduces annual GDP growth rates elsewhere from 1.4 percent a year to 1.35 percent a year, less than a four

and Hines use the initial distribution of foreign investment to predict subsequent investment in non-haven countries, matching these predicted changes with proclivities to establish and keep tax haven affiliates. The results indicate that firms with growing opportunities outside of tax havens are the most likely to demand tax haven operations: a one percent greater likelihood of establishing a tax haven affiliate is associated with 0.5 to 0.7 percent greater sales and investment growth by non-haven affiliates. Since complementarity is a symmetric relationship, it follows that the availability of opportunities to establish tax haven operations contributes to economic activity outside of tax havens.

The estimated complementary relationship between investment in tax havens and investment in nearby high-tax countries does not necessarily carry with it the implication that high-tax countries benefit from tax havens. Tax avoidance associated with the use of tax haven affiliates has the potential to erode tax bases in high-tax countries, creating revenue shortfalls that must be remedied either by raising tax rates or by reducing government spending. The use of foreign tax havens by American firms has an ambiguous effect on U.S. tax collections, since reallocating foreign income from high-tax to low-tax foreign jurisdictions generally increases U.S. tax obligations by reducing foreign tax payments for which foreign tax credits can be claimed.[18] To the extent that American firms use tax haven operations to reduce levels of taxable income in the United States, however, U.S. tax collections will fall. One possibility is that countries would prefer to subject mobile international companies to lower tax rates than they do other firms, but are prevented from doing so by political considerations or the practical difficulty of distinguishing multinational from domestic firms. In such a setting, countries could benefit from permitting multinational firms to obtain tax reductions by using affiliates in tax

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percent decline. Furthermore, there is no presumption that tax havens divert economic activity to such a degree, or indeed, necessarily divert it at all.

havens, thereby implicitly subjecting these mobile firms to lower tax burdens than other taxpayers.

6. Conclusion.

The available evidence indicates that tax haven countries have flourished in the years since 1982. Tax havens attract greater foreign investment than do other countries of similar sizes and income levels, and, partly as a result, their economies have grown much more rapidly than have the economies of countries with higher tax rates. The favorable tax treatment offered to foreign investors does not appear to have greatly impaired government finances, since the public sectors of tax haven countries are not noticeably smaller than the public sectors of other countries, though possibly smaller than those of similarly situated countries.

The economic successes of tax haven countries are reflected in the persistence of their policies: of the 41 tax havens identified by Hines and Rice (1994) for 1982, all remain on Diamond and Diamond's (2002) list of tax havens for 2002. The robust performance of tax haven economies suggests that they are likely to continue offering favorable tax terms to foreign investors. Such tax policies carry mixed implications for other governments, since while tax havens may erode the tax bases of high tax countries, they also appear to stimulate greater investment activity, and permit governments to tax more mobile international capital less heavily than purely domestic capital. Concerned governments of high tax countries may not even be able to evaluate the net effects of nearby tax havens, given the complexity of these considerations. As a result, the international community is unlikely to summon the collective will necessary to persuade or force tax havens to abandon their policies, and tax havens will continue to play important roles in world tax affairs.

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[18] See Hines and Rice (1994) for an analysis of this effect.

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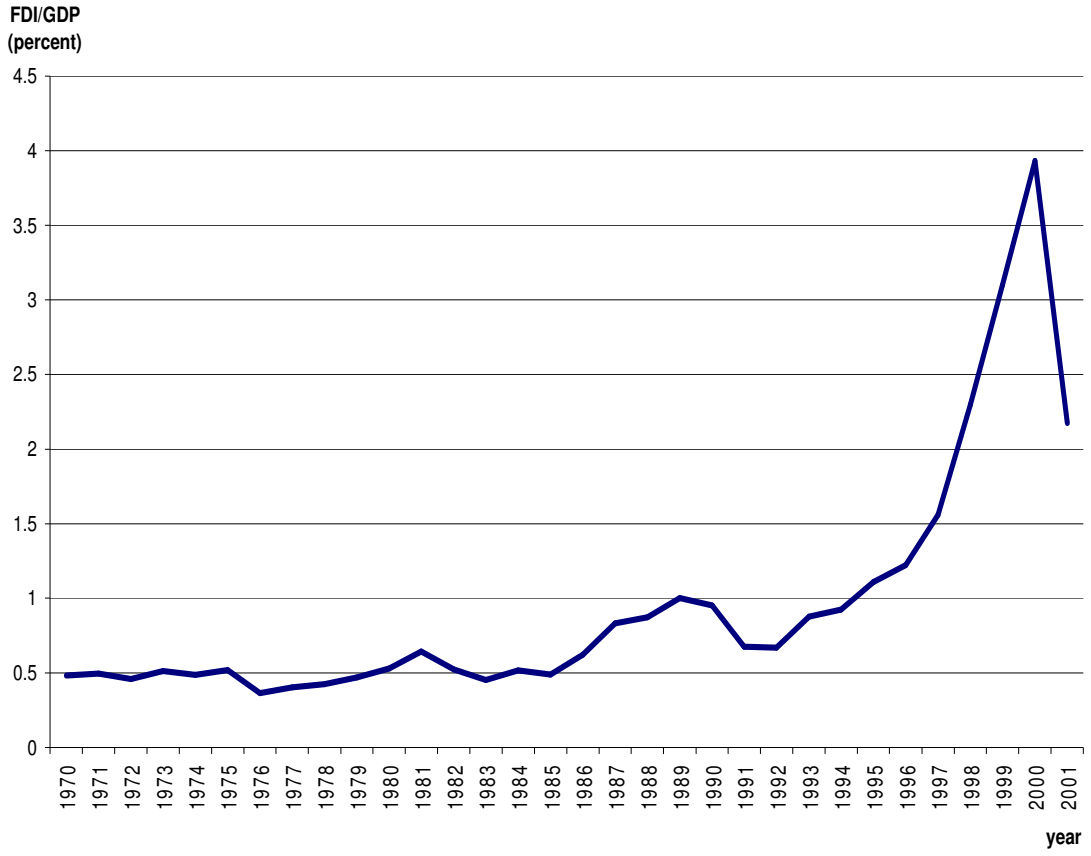
Figure 1
World Foreign Direct Investment as a Percent of World Product,
1970-2001



Note: the figure depicts annual ratios (measured in percent) of total world foreign direct investment to the sum of GDP for all countries.

Source: World Bank, *World Development Indicators*.

Table 1: Tax Havens in the World Economy (1999)

			U.S. Multinational Share of					
	Population	GDP	Total Assets	Net Property, plant and equipment	Sales	Net Income	Compensation of employees	Thousands of Employees
All Tax Havens	**0.8%**	**2.3%**	**15.7%**	**8.4%**	**13.4%**	**30.0%**	**6.1%**	**5.7%**
Selected Big-7:								
Hong-Kong	0.136%	0.575%	1.849%	1.610%	2.195%	2.714%	1.464%	1.257%
Ireland	0.076%	0.311%	2.253%	1.436%	2.661%	7.567%	1.134%	1.110%
Panama	0.057%	0.058%	1.029%	0.871%	0.224%	2.265%	NA	0.483%
Singapore	0.080%	0.342%	1.893%	1.845%	3.672%	2.549%	1.433%	1.550%
Switzerland	0.145%	0.638%	3.114%	0.919%	3.307%	6.774%	1.703%	0.775%
Selected Dots:								
Antigua & Barbuda	0.001%	0.004%	0.003%	0.003%	0.009%	0.002%	0.003%	0.003%
Bahamas	0.006%	0.016%	0.174%	0.327%	0.078%	0.489%	0.031%	0.032%
Bermuda	0.001%	0.004%	3.932%	0.976%	0.953%	5.197%	NA	0.097%
Luxembourg	0.009%	0.063%	1.340%	0.124%	0.206%	2.388%	0.192%	0.122%
All Havens, 1982	**0.7%**	**2.1%**	**22.1%**	**4.8%**	**11.9%**	**27.1%**	**3.4%**	**3.7%**

Note: Column one of the table presents 1999 ratios of population to total non-U.S. population, and column two presents 1999 ratios of Gross Domestic Product (GDP) to total non-U.S. GDP in 1999; both are drawn from the Penn World Tables. Columns 3-8 of the table present information on the 1999 foreign investment activity of American multinational firms as reported by the Bureau of Economic Analysis; the table entries are ratios of national totals to non-U.S. world totals. 1982 values are reported in the bottom row of the table. Total 1999 values for tax havens reported in the first row of the table, and 1982 values reported in the last row of the table, include information for Andorra, Anguilla, Antigua, the Bahamas, Bahrain, Barbados, Belize, Bermuda, Cyprus, Dominica, Gibraltar, Grenada, Hong Kong, Ireland, Jordan, Lebanon, Liberia, Liechtenstein, Luxembourg, Macau, Malta, the Netherlands Antilles, Panama, Singapore, St. Kitts, St. Lucia, St. Vincent, Switzerland, the U.K. Caribbean Islands, and Vanuatu.

Table 2: Annual per capita real income growth rates, 1982-1999

	GDP		GNP
	Penn World Table	**World Development Indicators**	**Penn World Table**
World Total	1.4%	1.7%	1.4%
All Tax Havens	3.3%	2.6%	3.0%
Big-7			
Hong Kong	3.5%	3.4%	3.7%
Ireland	5.1%	5.6%	4.4%
Lebanon	na	na	na
Liberia	na	na	na
Panama	0.1%	0.5%	0.1%
Singapore	5.2%	4.4%	6.0%
Switzerland	1.0%	0.6%	1.0%
Dots			
Andorra	na	na	na
Antigua & Barbuda	3.7%	4.7%	3.5%
Bahamas	na	0.5%	na
Bahrain	na	1.4%	na
Barbados	3.0%	1.6%	2.8%
Belize	1.8%	2.5%	1.6%
Bermuda	na	na	na
Cayman Islands	na	na	na
Cote d'Ivoire	na	-1.6%	na
Cyprus	4.8%	4.1%	4.7%
Dominica	2.9%	3.9%	2.3%
Gibraltar	na	na	na
Grenada	4.0%	na	3.5%
Jordan	-0.4%	-0.8%	-0.7%
Kiribati	na	na	na
Liechtenstein	na	na	na
Luxembourg	5.1%	6.0%	3.3%
Macao	2.3%	2.0%	2.3%
Malta	na	4.6%	na
Mauritania	na	-0.1%	na
Nauru	na	na	na
Netherland Antilles	na	na	na
St. Kitts & Nevis	6.1%	6.4%	5.4%
St. Lucia	4.5%	4.8%	4.2%
St. Vincent	3.2%	3.8%	3.0%
Vanuatu	na	-1.1%	na

Note: Entries are annual per capita real national income growth rates from 1982-1999. The first two columns present growth rates of Gross Domestic Product, and the third column presents growth rates of Gross National Product. The first line presents unweighted averages for all countries, and the second line presents unweighted averages for tax havens. "na" indicates that data are not available.

Table 3: Determinants of GDP and GNP growth rates.

Dependent variable: Annual per capita real growth rate, 1982-1999

	GDP		GNP	
Constant	-4.482	128.525	-2.328	-25.766
	(1.209)	(88.795)	(1.059)	(14.603)
Ln(Population 1982)	0.194	-0.113	0.308	-1.537
	(0.113)	(2.069)	(0.105)	(2.113)
$Ln(Population\ 1982)^2$		-0.104		0.112
		(0.245)		(0.254)
$Ln(Population\ 1982)^3$		0.009		0
		(0.009)		(0.01)
Ln(Per capita GDP 1982)	0.47	-47.862		
	(0.133)	(33.251)		
$Ln(Per\ capita\ GDP\ 1982)^2$		5.975		
		(4.102)		
$Ln(Per\ capita\ GDP\ 1982)^3$		-0.243		
		(0.167)		
Ln(Per capita GNP 1982)			0.057	9.74
			(0.065)	(4.058)
$Ln(Per\ capita\ GNP\ 1982)^2$				-0.974
				(0.395)
$Ln(Per\ capita\ GNP\ 1982)^3$				0.032
				(0.012)
Tax Haven Dummy	2.312	1.507	2.756	1.929
	(0.642)	(0.587)	(0.645)	(0.608)
Number of Observations	119	119	114	114
R-squared	0.24	0.38	0.2	0.32

Note: The table presents regressions in which the dependent variable is average annual per capita real income growth rates from 1982-1999, and each country represents a single observation. Income is measured by Gross Domestic Product in the regressions reported in columns one and two, and is measured by Gross National Product in the regressions reported in columns three and four. "Ln(Population 1982)" is the natural log of a country's population in 1982; "Ln(Per capita GDP 1982)" is the natural log of per capita Gross Domestic Product in 1982, and "Ln(Per capita GNP 1982)" is the natural log of per capita Gross National Product in 1982. The "Tax Haven Dummy" takes the value one if a country is a tax haven (listed in Table 2), and zero otherwise. Robust standard errors are in parentheses.

Table 4: American multinationals and tax haven economies

American Multinational Employment / Total Employment

Year	1982	1999
Tax havens	1.36%	2.35%
World	0.80%	1.12%

American Employee Compensation/GDP

Year	1982	1999
Tax havens	0.8%	1.0%
World	0.64%	0.75%

Income Tax/GDP

Year	1982	1999
Tax havens	1.00%	3.00%
World	0.4%	0.6%

Note: The top panel presents ratios of employment by American multinational firms to total national employment in 1982 and 1999. The middle panel presents ratios of employee compensation in American firms to Gross Domestic Product (GDP), and the bottom panel presents ratios of income tax payments by American firms to GDP. The ratios are calculated separately for each country; the first line in each panel presents unweighted averages for tax havens, and the second line presents unweighted averages for all countries.

Table 5: Government sizes in tax haven countries

	Government Product/GDP	Government spending/GDP	Tax Revenue/GDP
	Penn World Table (1999)	**IMF (1995)**	**IMF (1995)**
World Total	19.74	30.94	22.28
All Tax Havens	25.35	30.34	22.39
Big-7			
Hong-Kong	5.80	na	na
Ireland	4.39	38.06	32.43
Lebanon	30.81	35.18	11.65
Liberia	na	na	na
Panama	17.02	24.71	17.19
Singapore	8.28	15.93	16.26
Switzerland	10.04	26.63	21.57
Dots			
Andorra	na	na	na
Antigua & Barbuda	59.13	na	na
Bahamas	17.46	19.03	17.18
Bahrain	20.57	28.80	8.16
Barbados	9.06	na	na
Belize	28.73	na	na
Bermuda	16.13	na	na
Cayman Island	na	na	na
Cyprus	22.35	34.28	26.83
Dominica	52.91	na	na
Gibraltar	na	na	na
Grenada	23.20	na	na
Jordan	48.63	na	na
Kiribati	na	na	na
Liechtenstein	na	na	na
Luxembourg	4.04	41.50	41.71
Macao	19.73	na	na
Malta	24.35	39.07	28.81
Nauru	na	na	na
Netherland Antilles	na	na	na
St. Kitts & Nevis	60.12	29.31	23.41
St. Lucia	19.67	24.05	23.62
St. Vincent	55.25	na	na
Vanuatu	na	37.84	22.29

Note: Entries are ratios of government activity to Gross Domestic Product (GDP). The first column presents ratios of the national income account concept of government final product to GDP, as reported by the Penn World Tables for 1999. The second column presents ratios of total government spending to GDP, as reported by the IMF *Government Finance Statistics* for 1995. The third column presents ratios of government tax revenue to GDP, as reported by the IMF *Government Finance Statistics* for 1995. The first line presents unweighted averages of these ratios for all countries, and the second line presents unweighted averages for tax havens. "na" indicates that data are not available.

Table 6: Determinants of government size

Dependent variable (Source)	G/GDP (PWT)		G/GDP (IMF)		Tax Revenue/GDP (IMF)	
Constant	76.854	227.805	13.522	-87.277	-6.758	-318.332
	(8.710)	(354.047)	(14.941)	(556.06)	(13.924)	(524.716)
Ln(Population 1999)	-2.218	-20.562	-2.323	0.096	-1.687	-4.154
	(0.696)	(14.457)	(0.780)	(13.782)	(0.608)	(10.7)
Ln(Population 1999)^2		1.483		-0.033		0.432
		(1.59)		(1.659)		(1.334)
Ln(Population 1999)^3		-0.031		-0.008		-0.021
		(0.056)		(0.063)		(0.051)
Ln(Per capita GDP 1999)	-4.489	-52.467	4.446	50.716	5.168	133.376
	(0.729)	(128.452)	(1.232)	(201.604)	(1.126)	(190.916)
Ln(Per capita GDP 1999)^2		7.766		-7.132		-16.883
		(15.337)		(23.965)		(22.807)
Ln(Per capita GDP 1999)^3		-0.385		0.339		0.722
		(0.604)		(0.938)		(0.897)
Tax Haven Dummy	4.745	1.515	-10.727	-10.045	-8.986	-8.677
	(3.631)	(3.514)	(3.815)	(4.534)	(2.930)	(3.223)
Number of Observations	124	124	68	68	68	68
R-squared	0.33	0.49	0.27	0.31	0.35	0.39

Note: The table presents regressions in which the dependent variable is the ratio of government activity to Gross Domestic Product (GDP) in 1999, and each country represents a single observation. The dependent variable in columns 1-2 is the ratio of the national income account concept of government final product to GDP, as reported by the Penn World Tables. The dependent variable in columns 3-4 is the ratio of total government spending to GDP, as reported by the IMF *Government Finance Statistics*. The dependent variable in columns 5-6 is the ratio of government tax revenue to GDP, as reported by the IMF *Government Finance Statistics*. "Ln(Population 1999)" is the natural log of a country's population in 1999; "Ln(Per capita GDP 1999)" is the natural log of per capita Gross Domestic Product in 1999. The "Tax Haven Dummy" takes the value one if a country is a tax haven (listed in Table 2), and zero otherwise. Robust standard errors are in parentheses.