INTERNATIONAL TAX POLICY FORUM /
AMERICAN ENTERPRISE INSTITUTE SEMINAR

TAX HAVENS AND FOREIGN DIRECT INVESTMENT

December 11, 2006

Wohlstetter Conference Center, Twelfth Floor, AEI
1150 Seventeenth Street, N.W., Washington, D.C. 20036

International Tax Policy Forum

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Monday, December 11, 2006

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American Enterprise Institute for Public Policy Research

International Tax Policy Forum

International Tax Policy Forum-AEI Seminar

TAX HAVENS AND FOREIGN DIRECT INVESTMENT

with a Keynote Address by Hon. Bill Thomas,
Chairman of the House Committee on Ways and Means

Date: Monday, December 11, 2006, 8:30 a.m. – 1:30 p.m.
Location: Wohlstetter Conference Center, Twelfth Floor, AEI
1150 Seventeenth Street, N.W., Washington, D.C. 20006

This conference considers the distinguishing characteristics of "tax haven" countries, the use of tax havens by U.S. and foreign investors, and the economic impacts of tax havens on high-tax countries. Unilateral and multilateral policy responses will be discussed, including presentations by the Chairman of the U.S. Committee on Ways and Means, the Director of the OECD's Center for Tax Policy and Administration, and the European Commission's Director for Tax Policy.

8:30 a.m. REGISTRATION

8:50 a.m. OPENING REMARKS
John Samuels, General Electric, and **Kevin Hassett**, AEI

9:00 a.m. TAX HAVENS OLD AND NEW
Moderator: **Michael Graetz** (Yale University Law School)
James Hines (University of Michigan): *Which Countries Become Tax Havens?*
Paul Oosterhuis (Skadden Arps): *Hybrid Entities and the New Tax Havens*

9:50 a.m. ECONOMIC EFFECTS OF TAX HAVENS
Moderator: **Alan Auerbach** (University of California—Berkeley)
Mihir Desai (Harvard Business School): *Do Tax Havens Divert Economic Activity?*
Mark Spiegel (Federal Reserve Bank of San Francisco): *Offshore Financial Centers: Parasites or Symbionts?*
Martin Sullivan (Tax Analysts): *Tax Havens and Tax Avoidance*

10:50 a.m. COFFEE BREAK

11:10 a.m. POLICY RESPONSES TO TAX HAVENS
Moderator: **R. Glenn Hubbard** (AEI and Columbia University)
Jeffrey Owens (OECD): *OECD Harmful Tax Practices Project*
Michel Aujean (European Commission): *Tax Havens and the EU Code of Conduct*
Will Morris (General Electric): *Thin Capitalization Rules as Efforts to Restrict Tax Havens*
Rosanne Altshuler (Rutgers University): *Would Territoriality Require a Special Tax Haven Regime?*

12:30 p.m. LUNCHEON
Introduction: **Glenn Hubbard** (AEI and Columbia University)
Keynote Speaker: **Hon. Bill Thomas** (Chairman, Committee on Ways and Means)

1:30 p.m. ADJOURNMENT

American Enterprise Institute for Public Policy Research

International Tax Policy Forum

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About the International Tax Policy Forum

Founded in 1992, the International Tax Policy Forum is an independent group of 35 major U.S. multinationals with a diverse industry representation. The Forum's mission is to promote research and education on the taxation of multinational companies. Although the Forum is not a lobbying organization, it has testified before the Congressional tax-writing committees on the effects of various tax proposals on U.S. competitiveness. The ITPF also briefs Congressional staff periodically and sponsors public seminars on major international tax policy issues. Most recently, in December 2005, the ITPF co-sponsored a conference on "Tax Reform in an Open Economy" with The Brookings Institution.

On the research front, the Forum has commissioned over 20 papers on international tax policy topics such as the effects of the interest allocation rules on the competitiveness of U.S. firms, the compliance costs of taxing foreign source income, and differences in effective tax rates faced by U.S. domestics and U.S. multinationals (*see* www.ITPF.org).

Members of the Forum meet three times a year in Washington, DC to discuss key international tax policy issues with leading experts in government, academia, and private practice.

PricewaterhouseCoopers LLP serves as staff to the Forum. **John Samuels**, Vice President and Senior Counsel for Tax Policy and Planning with General Electric Company, chairs the Forum. The ITPF's *Board of Academic Advisors* is chaired by Prof. **Glenn Hubbard** (Columbia University) and includes Prof. **James Hines** (University of Michigan) who also directs the ITPF research program, Prof. **Michael Graetz** (Yale), Prof. **Alan Auerbach** (University of California, Berkeley), and Prof. **Mihir Desai** (Harvard).

ITPF Mission Statement

The primary purpose of the Forum is to promote research and education on U.S. taxation of income from cross-border investment. To this end, the Forum sponsors research and conferences on international tax issues and meets periodically with academic and government experts. The Forum does not take positions on specific legislative proposals.

International Tax Policy Forum

ITPF Conference
Tax Havens and Foreign Direct Investment
December 11, 2006

Research Summary

Presenter: James R. Hines, Jr., Ph.D.
Richard R. Musgrave Collegiate Professor of Economics, Department of Economics, University of Michigan
Professor of Law, University of Michigan Law School
Research Director, Office of Tax Policy Research
Research Associate, National Bureau of Economic Research
Professor Hines studies international taxation, particularly the taxation of multinational corporations. His work focuses on issues in transfer pricing, the financing of foreign direct investment, the influence of tax regimes on the location of R&D and physical investment, the design of tax treaty policy, and the use of tax policy to control the actions of multinational firms. He received a B.A. and M.A. from Yale University and a Ph.D. from Harvard University.

Dhammika Dharmapala, Ph.D.
Visiting Assistant Professor of Business Economics and Public Policy, University of Michigan
Assistant Professor, Department of Economics, University of Connecticut
Professor Dharmapala's research interests include public finance, economics and the law and taxation and corporate finance. His articles have appeared in both economic and law journals, including the Journal of Financial Economics, *and the* Journal of Legal Studies. *He holds an undergraduate degree from the University of Western Australia and a Ph.D. in Economics from the University of California at Berkeley.*

Paper: Which Countries Become Tax Havens?

Summary: Professors Hines and Dharmapala discuss the factors that influence why the 15 percent of countries that become tax havens do so. They conclude that:

- As other studies have suggested, tax haven countries tend to be small and generally affluent.
- In addition, better-governed countries are much more likely to become tax havens than other countries.
- Low tax rates are a more powerful inducement to foreign direct investment when coupled with effective governance.

Which Countries Become Tax Havens?

Dhammika Dharmapala
University of Connecticut and University of Michigan

James R. Hines Jr.
University of Michigan and NBER

November 2006

We thank Alan Auerbach, Charles Brown, Daniel Feenberg, Ray Fisman, Fritz Foley, James Sallee, Joel Slemrod, and Jeff Smith for helpful comments on an earlier draft, Mary Ceccanese for expert data assistance, and Sebastien Bradley and Owen Kearney for excellent research assistance.

ABSTRACT

This paper analyzes the factors influencing whether countries become tax havens. Roughly 15 percent of countries are tax havens; as has been widely observed, these countries tend to be small and generally affluent. This paper documents another robust empirical regularity: better-governed countries are much more likely than others to become tax havens. Using a variety of empirical approaches, and controlling for other relevant factors, governance quality has a statistically significant and quantitatively large impact on the probability of being a tax haven. For a typical country with a population under one million, the likelihood of a becoming a tax haven rises from 22 percent to 64 percent as its governance quality improves from the level of a country like Brazil to that of a country like Portugal. The effect of governance on tax haven status persists when the origin of a country's legal system is used as an instrument for the current quality of its governance. Low tax rates are a much more powerful inducement to foreign investment in well-governed countries than elsewhere, which may explain why poorly governed countries do not generally attempt to become tax havens, and suggests that tax policy choices are constrained by the quality of governance.

JEL Classifications: H87, H25, K10.

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1. Introduction

Countries eager to attract foreign capital face considerable international pressure to minimize their taxation of income earned by foreign investors. Since reducing the taxation of investment income earned by foreigners may entail unappetizing economic or political compromises, not all countries seek to attract foreign investment in this way. The "tax havens" are locations with very low tax rates and other tax attributes designed to appeal to foreign investors. Tax haven countries receive extensive foreign investment, and, largely as a result, have enjoyed very rapid economic growth over the past 25 years (Hines, 2005). There are roughly 40 major tax havens in the world today, but the sizable apparent economic returns to becoming a tax haven raise the question of why there are not more.

This paper considers the determinants of who becomes a tax haven and who does not. Some of the apparent characteristics of tax havens are well-documented in the literature: tax havens are small countries, commonly below one million in population, and are generally more affluent than other countries. What has not been previously noted in the literature, but is established in this paper, is that tax havens score very well on cross-country measures of governance quality that include measures of voice and accountability, political stability, government effectiveness, rule of law, and control of corruption. Indeed, there are almost no poorly governed tax havens. In a regression framework that controls for other observable variables, the impact of good governance on the likelihood of becoming a tax haven is both statistically significant and quantitatively very large: improving the quality of governance from the level of Brazil to that of Portugal raises the likelihood of a small country being a tax haven from 22 percent to roughly 64 percent.

The basic finding that tax havens are well-governed is robust to the use of a number of different statistical approaches (including a nonparametric matching procedure). However, it can be difficult to interpret cross-country evidence of this type, since the decision to become a tax haven may ultimately affect the quality of local governance, and the quality of governance may itself be influenced by economic or political conditions that also determine whether or not a country becomes a tax haven. In either case, the data reflect a non-random assignment of local governance quality, and raise the possibility that the apparent effect of governance on tax haven

status may represent a biased estimate of any true effects. In order to address this concern, the nature of a country's legal origin is used as an instrument for governance quality in estimating the impact of governance on the likelihood of becoming a tax haven. The results indicate that governance quality exerts at least as powerful an effect on tax haven status when instrumented by legal origin as it does in the basic regression analysis. This suggests strongly that the direction of causality runs from governance quality to tax haven status. The instrumental variables analysis, together with a series of additional robustness checks, tends not to support alternative explanations based on various omitted variables (such as natural resource abundance, unobserved tastes for government spending, or communications infrastructure).

Why are better-governed countries more likely than others to become tax havens? One possibility is that the returns to becoming a tax haven are greater for well-governed countries: that higher foreign investment flows, and the economic benefits that accompany them, are more likely to accompany tax reductions in well-governed countries than they are tax reductions in poorly-governed countries. In this interpretation, poorly governed countries do not forego potential economic benefits in not becoming tax havens, since few if any of the benefits would flow to them if they did. Evidence from the behavior of American firms is consistent with this explanation, in that tax rate differences among well-governed countries are associated with much larger effects on U.S. investment levels than are tax rate differences among poorly governed countries.

There is a substantial theoretical literature on the factors that influence the desirability of becoming a tax haven (e.g. Kanbur and Keen, 1993; Hansen and Kessler, 2001; Slemrod and Wilson, 2006); this paper provides formal empirical evidence on these determinants. It also adds to the growing literature on the effects of country-level governance institutions on economic outcomes and policy choices. In particular, the results suggest that governments' tax policy choices are constrained by the quality of governance. The supplementary analysis in Section 4.4 identifies a large negative effect of governance quality on corporate tax rates, thereby contributing to a growing literature on the determinants of these rates (e.g. Slemrod, 2004; Kenny and Winer, 2006; Hines, 2007). The analysis of investment by American firms in Section 5 suggests that governance quality is an important, and hitherto largely neglected, determinant of the tax elasticity of foreign investment.

Section two of the paper reviews the factors that influence the desirability of becoming a tax haven. Section three describes the data used in the empirical analysis that follows, noting the robust pattern that tax haven countries are well governed. Section four presents the basic regression analysis of the determinants of tax haven status, along with instrumental variables specifications in which legal origins are used as instruments for current governance quality. It also presents results from a number of alternative approaches (including a nonparametric matching procedure), and reports the results of a series of robustness checks. Section five compares the tax sensitivity of American investment in well governed and poorly governed countries, in order to test whether the association of good governance and tax haven status reflects sensible choices by potential tax haven countries. Section six concludes.

2. Tax Havens in Theory and Practice

Tax havens are well positioned to benefit from the considerable international mobility of business investment and the associated tax base.[1] There is ample reason to expect their low tax rates to influence both the investment and the tax avoidance activities of foreign investors, and an extensive literature documents the magnitudes of the effects of low tax rates.[2] With respect to investment, tax policies are obviously capable of affecting the volume and location of FDI since, all other considerations equal, higher tax rates reduce after-tax returns, thereby reducing incentives to commit investment funds. The first generation of empirical studies, reviewed in Hines (1997, 1999), reports tax elasticities of investment in the neighborhood of –0.6. What this means is that a ten percent tax reduction (for example, reducing the corporate tax rate from 35 percent to 31.5 percent) is typically associated with six percent greater inbound foreign investment. More recent evidence suggests that FDI is even more tax sensitive than this.[3]

[1] Tax havens may serve different purposes for business investors than they do for individual and trust investors. The analysis that follows concerns only the business uses of tax havens, which in any case greatly exceed their use by individual investors. The sum of incomes earned in Panama, Bermuda, all Caribbean and West Indian countries, Ireland, Luxembourg, Switzerland, Hong Kong and Singapore by American individuals filing forms 1116 and 2555 (which entails some double counting, as the same individual may file both) in 2001, and trust income earned in 2002, was $7.4 billion. By contrast, the controlled foreign corporations of American corporations reported $57.3 billion of after-tax earnings and profits in these countries in 2002. See Curry and Kahr (2004), Holik (2005), and Masters and Oh (2006). Any unreported income is of course not captured in these figures.

[2] See Gordon and Hines (2002) and Devereux (2006) for recent surveys. For a fuller discussion of the tax rules facing U.S. multinational firms and the evidence on behavioral responses to international taxation of U.S. multinationals, see Hines (1997, 1999) and Desai, Foley and Hines (2003).

[3] For example, Altshuler and Grubert (2004) offer evidence of a -3.5 tax elasticity of investment in a sample of 58 countries in 2000.

Tax havens attract foreign investment not only because income earned locally is taxed at favorable rates, but also because tax haven activities facilitate the avoidance of taxes that might otherwise have to be paid on activities in other countries. One way that tax havens facilitate tax avoidance is by permitting taxpayers to reallocate taxable income from high-tax to low-tax jurisdictions. For instance, investments in high-tax countries may be financed with loans from affiliates in tax havens; the resulting interest payments reduce taxable incomes in high-tax locations while producing taxable income in the havens. Another method of reallocating taxable income is to adjust transfer prices used for within-firm transactions. Multinational firms typically can benefit by reducing prices charged by affiliates in high-tax countries for items and services provided to affiliates in low-tax countries. OECD governments require firms to use transfer prices that would be paid by unrelated parties, but enforcement is difficult, particularly when pricing issues concern unique or proprietary items such as patent rights. Given the looseness of the resulting legal restrictions, it is entirely possible for firms to adjust transfer prices in a tax-sensitive fashion without violating any laws. Multinational firms can structure a variety of transactions – intrafirm debt, royalty payments, dividend repatriations, and intrafirm trade – in a manner that is conducive to tax avoidance.[4] Finally, tax haven operations can be used to avoid triggering home-country taxes that would otherwise be due on repatriated income. Placing a tax haven company at the top of the ownership chain of a firm's foreign operations creates opportunities to redeploy income between foreign jurisdictions without receiving the income in the firm's home country and thereby producing a home country tax obligation. The resulting tax savings can be substantial,[5] contributing to the value of tax haven operations.

Taken together, this evidence implies that countries contemplating adopting very low tax rates can reasonably expect to receive significant foreign investment as a consequence. Active tax avoidance on the part of international investors implies that taxable income conditional on investment levels is also very sensitive to tax rates. As a result, the budgetary cost to a country that unilaterally reduces its tax rate need not be very great, since a lower tax rate is accompanied

[4] Studies of the responsiveness of firms to taxes on these margins examine reported profitabilities, tax liabilities, and specific measures of financial and merchandise trade in order to identify the effects of taxes; Hines (1999) and Devereux (2006) survey this evidence.

[5] See, e.g., Altshuler and Grubert (2003) and Desai, Foley and Hines (2003).

by a larger tax base due both to greater investment and to greater taxable income associated with local investment.

Any budgetary cost in the form of reduced government revenue that accompanies becoming a tax haven can, in principle, be recouped by increasing other taxes, such as personal income taxes, value-added taxes, property taxes, or sales taxes. Indeed, the classic argument of Diamond and Mirrlees (1971) that governments unnecessarily distort production when they tax intermediate production implies (Gordon, 1986) that governments with a sufficient number of available tax instruments can make all domestic residents better off by not taxing internationally mobile capital.[6] The reason is that small open economies are inevitably price-takers in world markets, from which it follows that they are unable to shift any of their tax burdens onto foreign investors. As a result, they have no incentive to tax foreign investors, since doing so simply distorts their economies without extracting resources from foreigners. Since the costs of taxing foreigners are borne by domestic factors in the form of lower wages and land prices, and these costs include deadweight losses due to inefficient taxation, domestic residents would be made better off by removing any taxes on foreign investors and instead directly taxing the returns to local factors of production.

The Diamond and Mirrlees argument offers countries a very powerful rationale in favor of becoming tax havens, so it is worth identifying some of the key assumptions on which the argument is based. The first assumption is that countries are relatively small, that they are price takers in the world economy, and in particular cannot substantially affect the world return to capital. While this is certainly a fair description of many countries, it may not characterize them all, so the Diamond and Mirrlees logic is thought to have strongest purchase on smaller countries. The second assumption is that foreign investors do not earn economic rents, in the form of supranormal rates of return, from their local investments – or that, if they do, then the local government is able to extract the rents with special charges, and need not use ordinary business taxes for this purpose. This assumption rules out the possibility that governments might want to maintain high rates of corporate income taxation in order to recoup some of the value obtained by local mining firms, for example.[7] The third assumption is that governments have at

[6] See Gordon and Hines (2002) for a further elaboration of this argument, and Keen and Wildasin (2004) for an important caveat concerning the abilities of governments to transfer resources among themselves.

[7] Thus, countries that enjoy locational rents (e.g. through the presence of natural resources) may optimally choose to impose high corporate taxes, if they are unable to impose a pure profits tax of the type envisaged by Diamond and

their disposal a sufficient number of tax instruments that they can effectively replicate the set of tax burdens that would be created by taxing foreign investment income, only do so in a more efficient manner. Finally, the fourth assumption is that foreigner investors actually bear a burden from paying local taxes. While this seems a rather obvious assumption, there can be situations (analyzed, for example, by Gordon (1992)) in which greater home country taxes exactly offset the benefits of foreign tax reductions, leaving host governments with little or no incentive to offer investors low tax rates.

The experience of tax haven economies in the period since 1980 is consistent with the theory predicting significant associated economic benefits. Hines (2005) reports that tax haven economies grew at an average annual real per capita rate of 3.3 percent between 1982 and 1999, which compares favorably to the 1.4 percent growth rate of the world as a whole. Furthermore, the public finances of tax havens remain robust despite their low tax rates on foreign investment: by some measures, tax haven governments are actually larger (as a fraction of GDP) than governments elsewhere in the world, and by other measures there is no discernable difference between government sizes in the two groups of countries. It appears, therefore, that tax haven governments are able to tap revenue sources other than business taxes to finance significant levels of government spending, either through the greater economic activity that accompanies becoming a tax haven, or by imposing higher rates of other taxes.

Concern over the possible implications of international tax competition has prompted many governments to consider international cooperative efforts designed to preserve their abilities to tax mobile business income.[8] Despite enthusiasm expressed by some participants, differences of viewpoint and interest make international tax agreements involving more than two countries notoriously difficult to conclude. The most ambitious and effective multilateral tax agreement to date is an effort of the Organisation for Economic Cooperation and Development (OECD).[9] The OECD in 1998 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

Mirrlees (1971). A locational advantage may also stem from agglomeration externalities that raise the returns to capital in the presence of a large preexisting capital stock (see Kind *et al*. (2000) and Borck and Pfluger (2006) for theoretical analyses).

[8] It is far from clear, however, that tax havens reduce incentives to conduct business in high-tax countries, and recent evidence (Desai, Foley and Hines, 2006a, b) suggests that the presence of nearby tax havens stimulates activity in high-tax locations.

[9] The following discussion of the OECD initiative is drawn from Hines (2006).

of the initiative was to discourage OECD member countries and certain tax havens outside the OECD 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 of these regimes 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 members, 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 committed to improve the transparency of their tax systems and to facilitate information exchange. As of 2004 there remained five tax havens not making such commitments,[10] 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 that local transactions will not be reported.

3. Evidence

Most tax havens are small countries. Thus, the data used in this study pay particular attention to including smaller countries and territories. GDP and population data are available from the various sources detailed in the Data Appendix for 227 countries and territories in 2004. The governance measure described below is available for 209 of these countries and territories. Although a basic criterion for inclusion is some degree of fiscal autonomy, a number of the

[10] 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 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. The OECD (2006) reports considerable progress in commitments to information exchange, though there remain many gaps, particularly among tax havens.

jurisdictions in the dataset (including many of the tax havens) are not independent sovereign states, as that term is generally understood. To take account of this, the models below include a control for membership in the United Nations (UN) organization, a status closely associated with state sovereignty. In addition, consistent results are obtained when samples are restricted to UN members.

While there are many alternative definitions of what constitutes a tax haven, the analysis in this paper uses as its basic definition the list of 41 countries and territories provided in Appendix 2 of Hines and Rice (1994, p. 178), which is based on the coexistence of low business tax rates in a jurisdiction in 1982 and its identification as a tax haven by multiple authoritative sources. All 41 of these countries reappear in the subsequent Diamond and Diamond (2002) listing of the world's tax havens for 2002, and there have been no significant additions to this list. Of these 41 countries, 39 can be linked to currently existing entities for which GDP and population data for 2004 exist;[11] governance data are available for 33 of these jurisdictions. Thus, the dependent variable in the basic analysis below is an indicator variable for whether a country is classified as a tax haven both in Hines and Rice (1994) and in Diamond and Diamond (2002). A list of countries and territories classified as tax havens under this definition, and under the OECD's criteria, is presented in Table 1.[12] As tax haven status is highly stable over time, there is no meaningful longitudinal variation in this measure, and the analysis is necessarily restricted to cross-sectional methods.

The primary explanatory variable of interest is a measure of countries' governance institutions. Among the many indices that have been proposed as indicators of country-level institutional quality, Kaufmann, Kraay and Mastruzzi (2005) use a principal components analysis to construct 6 measures of different elements of country-level governance. These are labeled "voice and accountability" (VA), "political stability" (PS), "government effectiveness" (GE), "regulatory quality" (RQ), "rule of law" (RL), and "control of corruption" (CC). Each of these measures takes on values from approximately -2.5 to 2.5 (with higher values indicating better governance), and is normalized so that the mean across all countries is 0 and the standard deviation is 1. These data are available at 2-year intervals for the period 1996-2004, and have

[11] See the Data Appendix for further discussion.

[12] There are 40 countries and territories in the dataset that satisfy the criteria for tax haven status established in OECD (2000); more details are provided in the Data Appendix. The basic results below are robust to using the OECD definition rather than that of Hines and Rice (1994), and to combining the two definitions.

been used widely in recent research (e.g. Fisman and Miguel, 2006; Rose and Spiegel, 2006). The 2004 data are used in the basic analysis below,[13] as this includes significantly expanded coverage, relative to previous years, of smaller countries and territories (both tax havens and nonhavens). One or more of these governance measures for 2004 is available for 209 countries (of which 33 are tax havens by the Hines-Rice definition).

For the purposes of this paper, the individual measures described above are aggregated into a composite governance index for each country, using the (unweighted) mean of the available measures in 2004.[14] Note, however, that this calculation only includes VA, PS, GE, RL and CC; the regulatory quality (RQ) measure is excluded from the composite index. A few of the underlying surveys and measures used by Kaufmann *et al.* (2005) to calculate RQ are directly related to countries' tax systems, and so may be mechanically correlated with tax rates and tax haven status.[15] However, a detailed examination of the surveys and measures underlying the other 5 subindices (as described in Kaufmann *et al.* (2005, Appendix B)) does not suggest that any of these are related in any direct way to the tax system.

Control variables[16] used in the analysis below include GDP per capita (in purchasing-power-parity-adjusted US$) and population (both for 2004, obtained from the World Bank's World Development Indicators (WDI) database), and an indicator variable for membership in the United Nations organization. Another set of variables captures exogenous elements of each country's degree of international openness, constructed by Gallup, Sachs and Mellinger (1999). These include the physical distance (by air) from the country's capital city to the closest major capital exporting region (more specifically, the closest of Rotterdam, New York or Tokyo), an indicator variable for whether the country is landlocked, and the fraction of the country's

[13] However, the analysis of investment elasticities in Section 5 uses governance data from 2000 for consistency with the investment data, which cover 1999.

[14] Note that a country's governance index is missing only if all of the individual measures (VA, PS, GE, RL, and CC) are missing in 2004. However, the results are robust if the sample is restricted to countries for which all 5 individual measures are available.

[15] For example, RQ includes country investment profiles in which taxation is a component, and surveys that (among other things) ask respondents how distortionary they perceive the tax system to be (Kaufmann *et al*., 2005, Appendix B, pp. 106-7).

[16] All these variables and their sources are described in more detail in the Data Appendix. Some country characteristics (notably GDP per capita; see Hines (2005)) may be endogenous to tax haven status, but the vast majority of the (very wide) cross-country variation in GDP per capita, and other variables, captures differences in underlying wealth and other characteristics, rather than reflecting differences in tax policy.

population that lives within 100km of the coast. Other geographical variables are the country's land area and an indicator variable for whether the country is an island.[17]

The instrumental variables analysis described in Section 4 below uses a set of (arguably) exogenous determinants of institutional quality, obtained from La Porta *et al*. (1999; hereafter LLSV). Of central importance are a set of indicator variables for each of five origins – British, French, German, Scandinavian and Socialist – of countries' systems of commercial law. In addition, the analysis uses countries' latitude (in absolute value, scaled to lie between 0 and 1), and their degree of ethnolinguistic fractionalization.

The paper's robustness checks use a number of additional variables. These include World Bank data on government expenditures as a percentage of GDP, the number of telephone mainlines in a country (as a proxy for the level of development of communications infrastructure) and the value (in US$ per capita) of the deposits of oil, gas, coal, and ten metals known to exist in each country in 2000 (as a proxy for the country's exogenous natural resource endowment). In addition, the nature of the political system in each country is captured by an indicator variable for countries with parliamentary systems in 2004, using the World Bank's Database of Political Institutions (Beck *et al.*, 2001), while another dummy variable indicates whether each country uses English as one of its official languages. Summary statistics for all of the variables described above are presented in Table 2, compiled separately for tax havens and nonhavens (using the Hines-Rice definition).

The summary statistics in Table 2 confirm some well-known facts about tax havens – they are smaller in population and area, and more affluent, than nonhavens. Most striking, however, is the difference in the quality of governance institutions (as measured by G_i). Tax havens have a mean governance index of about 0.73; this is almost one standard deviation higher than that for nonhavens (-0.13), and is substantially higher than the global mean of the measure (normalized to 0). Moreover, this difference is not entirely attributable to the greater affluence of tax havens. Figure 1a plots the governance index against the log of GDP per capita for all countries in the dataset. While havens tend to have relatively high GDP, they are also clustered predominantly above the fitted line (Figure 1b shows the havens only, with the same fitted line

[17] These variables are supplemented in some cases, as described in the Data Appendix, using the CEPII dataset and other sources.

as in Figure 1a). Thus, havens appear to be even better-governed than would be expected on the basis of their relative affluence.

There are also some other notable patterns in the data. Tax havens tend to have open economies (in that they are physically closer to major capital exporters, less likely to be landlocked, more likely to be islands, and have a larger proportion of their populations living close to the coast). They are also more likely to have British legal origins, parliamentary systems, and to use English as an official language, than are nonhavens. Conversely, they are less likely to have French, Scandinavian or socialist legal origins than are nonhavens. Tax havens have more homogenous populations than nonhavens, and their governments' levels of spending relative to GDP are similar to those of nonhavens (consistent with Hines (2005)). Finally, tax havens have substantially smaller natural resource endowments than nonhavens, consistent with the discussion of locational rents in Section 2.

The remarks above are based on comparing tax havens to all nonhavens. Clearly, however, this is not the most appropriate comparison group. For example, tax havens tend to have small populations (with only 8 of the 39 havens having populations of more than one million). Thus, Table 3a reports the means of selected variables separately for small havens and small nonhavens (where "small" is defined as having a population of less than one million), along with t-tests for the differences in these means. The difference in the mean governance index for havens and nonhavens is somewhat smaller than in Table 2; however, it is strongly statistically significant. The same pattern as in Figure 1a – with havens being clustered above the fitted line – also holds when looking only at small countries (see Figures 2a and 2b). In addition, many of the general patterns noted above continue to hold in Table 3a. Small tax havens are significantly more affluent and less distant from major capital exporters than small nonhavens, and are more likely to use English as an official language. The greater linguistic homogeneity and greater propensity for parliamentary government of small havens are both of borderline statistical significance. However, small havens are *more* likely to be landlocked and to be sovereign states (although neither difference is statistically significant).

Tables 2 and 3a summarize all of the variables used in the modeling of tax haven status *per se*. In addition, supplementary analyses use a number of additional country-level variables, such as statutory corporate tax rates, average tax rates on US-based multinational firms, and the

value of assets owned by US firms. These variables are summarized in Table 3b, and a detailed description is provided in Sections 4.5 and 5 below.

4. Characteristics of Tax Haven Countries

The basic empirical specification used to model the determinants of tax haven status includes the governance index along with the following controls: GDP per capita, population, indicators for UN membership and landlocked status, distance by air from major capital exporters, and regional dummies (based on World Bank regional classifications). The sample includes all countries for which the required data exist.[18]

Probit, logit and linear probability models lead to highly consistent results. The logit results, using robust standard errors, are presented in Column 1 of Table 4. The estimated 1.542 coefficient implies that the governance index has a positive and highly significant effect on the probability of being a tax haven. Moreover, this effect is robust to removing dependent territories from the sample by restricting observations to UN members, as the estimated 1.710 coefficient in Column 2 of Table 4 indicates. Restricting the sample to small countries and territories (with populations of less than one million) also leads to consistent findings (Table 4, Column 3), with the magnitude of the effect being somewhat larger, though its statistical significance is reduced by the small sample size. The estimated governance effects are substantial: for a country with the average characteristics of jurisdictions with populations below one million, a one standard deviation increase in governance quality from 0 to 1 (corresponding

[18] The sole exception is Liberia, a tax haven which is not included in the data set used for the regressions. Liberia was a tax haven long prior to its recent social unrest and civil war, which triggered a dramatic reduction in the quality of its governance. As a result, it is difficult to know whether the current or prior level of governance quality is more appropriately used in the regressions. Including Liberia in the data at its current (very low) level of governance quality reveals it to be an outlier on the basis of different tests for influential observations. For instance, using a linear probability model that includes Liberia, it turns out that Liberia has by far the largest raw, standardized and studentized residuals (e.g. Belsley, Kuh and Welsch, 1980). The DFBETA measure also identifies Liberia as the most influential observation, in terms of its effect on the coefficient on the governance index. Using an iterative robust estimation procedure that downweights influential observations (Li, 1985) leads to Liberia having the lowest weight of any country. Note, however, that including Liberia in the sample makes no difference to the significance of the estimated effect of governance in the linear probability model; the logit and probit results are also in the same direction, although weaker. Omitting other countries that are also relatively influential (albeit less so than Liberia) leads to results that are highly consistent with those reported in Table 4. And the selection criteria would, in any case, omit Liberia from the sample of countries used in the regression reported in column 2 of Table 4.

to the difference between Brazil and Portugal) increases the probability of being a tax haven from 0.22 to approximately 0.64.[19]

The control variables generally have the expected effects. Population size has a negative and highly significant effect,[20] except when the sample is restricted to small countries. Distance has a negative effect that is significant in some specifications. However, the effects of GDP and landlocked status are insignificant. Interestingly, UN membership has a positive (albeit insignificant) effect, suggesting that the potential constraints on expropriation of foreign investors that are presumably associated with dependent political status are not an important factor in determining tax haven status. In other words, sovereign states appear to be at no particular disadvantage in making credible commitments of nonexpropriation, as long as their governance quality is sufficiently high.

The positive association between the governance index and the probability of being a tax haven is robust to a variety of additional (unreported) checks. The result is unchanged when additional geographical variables (land area or population density, and an indicator variable for island countries) are included; none of these additional variables are themselves significant. It is also unaffected by the addition of indicator variables for parliamentary systems and for the use of English as an official language (the coefficients on these variables are positive but insignificant). Adding ethnolinguistic fractionalization reduces the sample size considerably, but the coefficient on the governance index remains positive and significant (while the fractionalization index is negative but insignificant). The results are also highly consistent when African countries, or countries with especially low GDP per capita (below $1000) are dropped from the sample.

The results in Table 4 are also robust to using alternative definitions of tax havens. In particular, using the OECD (2000) list of tax havens as the dependent variable (instead of the Hines and Rice (1994) list) leads to highly consistent results. Combining the Hines-Rice and OECD criteria (by defining as a tax haven any country or territory that appears on at least one of

[19] Rose and Spiegel (2006, Table 2a) model the determinants of whether a country is an offshore financial center (OFC; a status highly correlated with being a tax haven) and find an insignificant effect of governance measures. However, they use tax haven status as an explanatory variable in this regression. Thus, the absence of a governance effect (which can be replicated using this sample) appears attributable to the correlation between OFC and tax haven status (which absorbs much of the variation in their dependent variable).

[20] This is consistent with the theoretical predictions of Kanbur and Keen (1993), Hansen and Kessler (2001), and Slemrod and Wilson (2006).

those lists) also does not affect the results. The results are also robust to reclassifying Estonia as a tax haven.[21]

The basic results also hold under a number of alternative specifications. As noted earlier, using a probit model leads to consistent results, as does OLS estimation of a linear probability model. Including higher-order (squared and cubed) terms for GDP and population, or using the logs of those variables, does not affect the results. Treating the governance index as a purely ordinal variable also does not affect the results; for instance, replacing the numerical governance index with an indicator variable that equals one for a country whose governance lies in the top 25% of countries (and zero otherwise) leads to consistent findings. Replacing the governance index by each of the component measures (sequentially rather than simultaneously, in view of the collinearity among the subindices) leads to generally consistent results – i.e. each component of the governance index is strongly positively related to tax haven status, apart from VA (voice and accountability), which has an insignificant (positive) effect.

Thus, the regression analysis in Table 4 strongly supports the initial impression from Tables 2 and 3a that tax havens are better-governed than nonhavens. Moreover, it suggests that this finding is robust to controlling for a variety of observable country characteristics, and to various alternative specifications. However, a central concern that remains is that because havens and nonhavens differ along a number of other dimensions, the results may be attributable to omitted correlated variables. The remainder of the analysis largely focuses on using a variety of empirical approaches to address this and other concerns.

4.1 Matching Estimation

The potential concern about the comparability of havens and nonhavens is partially addressed by restricting attention solely to countries with small populations (as in Table 3a and Table 4, Column 3). However, this exercise uses only one dimension of variation, and leaves only a rather small sample. A more systematic strategy for finding the optimal comparison group of nonhavens is to use a matching estimation approach (e.g. Dehejia and Wahba, 2002). However, an important caveat is that the number of possible matches, and their closeness, is necessarily constrained by the number of countries in the world, and are thus severely limited relative to those in a typical application of this methodology.

[21] In 2000, Estonia reformed its income tax system to eliminate corporate taxes on corporate income that is not distributed – see Funke (2002) for details.

The first step in this procedure is to generate propensity scores (i.e. estimated probabilities of being a tax haven) using a logit model of the indicator variable for tax haven status, with the following independent variables: GDP per capita, population, UN membership, landlocked status, distance, and the regional dummies (note that this includes all the independent variables in the specification in Table 4, except for the governance index).[22] Given these propensity scores, stratifying the observations into 3 blocks is sufficient to ensure that there is no significant difference between the mean propensity scores of havens and nonhavens within each block (this is shown by the t-tests in Column 5 of Table 5). Moreover, the balancing property – i.e. that there is no significant difference between the means of each of the covariates within each block – is satisfied for these blocks.

This procedure enables the identification of those nonhavens that have estimated propensity scores that are within the same range as the estimated propensity scores for the 38 havens used in the analysis.[23] In total, there are 76 nonhavens that fall into this category (i.e. have estimated propensity scores that exceed approximately 0.05), and these constitute the most appropriate comparison group for the tax havens on the basis of the multi-dimensional vector of observed country characteristics. Column 4 of Table 4 reports the results of the logit regression model, with the sample being restricted to the "common support" – the havens, plus those nonhavens within this comparison group (missing data for the governance index reduces the sample size to 99). Clearly, the coefficient of the governance index is highly significant, and its magnitude is virtually identical to that in Table 4, Column 1 (using the full sample of countries).

Column 7 of Table 5 reports the difference between the mean governance index values for havens and nonhavens for countries in this common support, using the stratification method (based on the 3 blocks identified in Table 5). This difference (approximately 0.3) is somewhat

[22] Formally, this approach involves viewing tax haven status as the "treatment" and the governance index as the "outcome" measure, and so appears to reverse the assumption about causality that is implicit in the regression reported in Table 4. However, recall that the primary aim of that regression is to document the positive association between the two variables; issues of causality are addressed more fully in the instrumental-variables analysis below. Similarly, the aim of the matching estimation is simply to measure whether there is a difference in the mean governance quality of havens and of the subset of nonhavens that are most closely matched in terms of observables. Because tax haven status is dichotomous while the governance index is continuous, and because the Table 4 regression already suggests a reasonable specification of the covariates of tax haven status, it proves more convenient to view governance as the "outcome."

[23] Recall that (as discussed above) Liberia is omitted from the analysis. Intuitively, the matching procedure seeks to identify nonhavens that are closely matched on observable variables with havens. The inclusion in the analysis of a haven with exceptionally low GDP makes low-GDP nonhavens appear better-matched than is perhaps truly the case

smaller than the raw difference in Tables 2 and 3a. However, it is positive, and is of borderline statistical significance, using a standard error that is generated by bootstrapping with 500 replications. Thus, it appears that, notwithstanding the caveats above regarding the small number of observations, tax havens have a substantially higher governance quality than do comparable nonhavens.

4.2 Instrumental Variables Estimation

The regression and matching approaches used above establish a strong positive association between tax haven status and governance quality, controlling in different ways for observable country characteristics. This in itself is a finding of considerable interest, especially given the generally negative tone of much popular and academic discussion of tax havens.[24] However, the methods used above do not completely eliminate the possibility that this apparent relationship is driven by unobserved correlated omitted variables. Moreover, even accepting the existence of the relationship does not settle the issue of the direction of causality: in particular, do better-governed countries choose to become tax havens, or does becoming a tax haven lead to an improvement in the quality of governance?

An instrumental-variables approach is used to address these issues. LLSV (1999) identify legal origin as a determinant of various measures of countries' governance quality (and this also holds true in our sample of countries, using the governance index to measure governance quality). The basic idea underlying this instrument is the following. As tax haven status is highly persistent, most countries that are havens today have been havens since at least the 1970's. Governance quality is a country characteristic that tends to change slowly if at all, so the governance index is also likely to be stable over decades. However, legal origins are typically determined by historical events that occurred centuries ago, long before the introduction of modern tax systems. Thus, legal origins can reasonably be argued to be exogenous with respect to current tax haven status. As legal systems and governance institutions are intrinsically closely linked, the exclusion restriction (that a country's legal origin does not affect its tax policy other than through governance) is also likely to be satisfied.

(at least with respect to havens other than Liberia), creating a bias towards finding differences in governance between havens and nonhavens.

[24] Kudrle and Eden (2005) describe tax havens as "renegade states," and Hampton and Christensen (2002) refer to tax havens as "offshore pariahs;" see also Hishikawa (2002).

The results reported in Table 6 use an instrumental-variable probit model with a continuous endogenous regressor (e.g. Wooldridge, 2002, pp. 472-77), in this case G_i. In Column 1, the indicator variables for legal origins are used as instruments (they are jointly significant in the (unreported) first-stage regression). Clearly, the use of these instruments strengthens the basic result. The results are highly consistent when a linear specification is used instead of the IV probit model (in effect, this involves running two-stage least squares on the linear probability model, with legal origins as the instruments). Moreover, the results are also unchanged when latitude is included as an additional instrument (Column 2).[25]

4.3 Alternative Explanations

The results in Table 6 suggest a causal interpretation of the effect of governance on tax haven status – in particular, it appears that better governance leads countries to become tax havens. There remain, however, a number of concerns about omitted correlated variables, and especially about the validity of the exclusion restriction implicit in the IV approach. For instance, unobserved tastes for government expenditures may differ across countries. A taste for government spending may be correlated with good governance (e.g. citizens may demand more government activity when the government is more effective and less corrupt) and also cause tax rates to be high (thereby reducing a country's willingness to become a tax haven). Another possibility is that a more sophisticated communications infrastructure (which may be positively correlated with governance quality) may increase the willingness of foreign investors to invest, and hence raise the returns to becoming a tax haven.

To a large extent, the IV strategy in Section 4.2 addresses concerns about omitted correlated variables. However, it is possible that these omitted variables may be correlated with the instruments (i.e. legal origins) as well. For example, suppose that Socialist legal origins are associated with stronger tastes for government spending, and are also (as is apparent from Table 2) negatively correlated with being a tax haven. Then, the apparent causal effect of governance may be driven by the omitted taste variable. To address these concerns, the specification in Column 3 of Table 6 adds two controls to the basic IV probit model. The first is a proxy for countries' tastes for government spending: government expenditures as a percentage of GDP.

[25] LLSV argue that governance quality also depends on ethnolinguistic fractionalization and religious composition. However, unlike legal origins and latitude, these variables are not significant in the first-stage regression with this sample, and are hence not used as instruments.

The second is a proxy for countries' communications infrastructure: the number of telephone lines, scaled by area (both variables use World Bank data). Because of limited coverage for these variables, the sample size falls substantially. Even so, while both the additional controls are significant and in the expected direction, the governance index remains positive and highly significant.

The exclusion restriction may also be invalid if legal origins are correlated with cultural or linguistic links that facilitate cross-border investment and thus raise the returns to being a tax haven. For instance, suppose (as argued by LLSV) that British legal origins lead to higher governance quality. If British legal origins are also correlated with the use of the English language, then the apparent causal effect of governance on tax haven status found in Table 6 may instead be due to the effects on investment of using English as an official language. However, adding an indicator variable for the use of English as an official language in the regression reported in Column 3 actually strengthens the effect of governance. Thus, it does not seem that any of the omitted variables discussed so far are driving the basic results.

Among the other possible explanations for the observed correlation between governance quality and tax haven status, two warrant further discussion and analysis. The first relates to the effects of corruption on tax structure. It may be argued that countries that have high levels of corruption will tend to impose higher statutory tax rates on firms (whether foreign or domestic) in order to increase the bargaining power of corrupt government officials in negotiating bribes from these firms. This would make more corrupt countries less likely to become tax havens, while also having intrinsically worse governance scores. It is not possible to test this story simply by finding a proxy for the omitted variable, as the crucial issue is how the empirical link between governance and tax structure is interpreted.

Another important alternative explanation relates to the role of natural resources. There is a substantial literature on the effects of natural resource abundance on economic performance (e.g. Sachs and Warner, 1995). An argument that has been made in this literature is that the availability of natural resources may raise the returns to rent-seeking activity, and lower the quality of institutions. On the other hand, natural resource abundance is also a source of locational rents, which imply that optimal corporate taxes are relatively high; thus, natural resource abundant countries will be less likely to become tax havens. Because of the limited sample of countries for which data on natural resources (specifically, the value of subsoil assets

per capita) are available, testing this explanation by adding subsoil assets to the model leads to inconclusive results.

Although neither of the last two alternative explanations can be readily tested within the confines of the model of tax haven status, both stories carry implications for the distribution of corporate tax rates across countries. In particular, they are premised on corporate tax rates being higher in more corrupt and more resource-abundant countries, respectively. Thus, the next section develops a model of the cross-country determinants of corporate tax rates in order to more adequately address these alternative explanations.

4.4 The Determinants of Corporate Tax Rates

The factors that determine cross-country and longitudinal variation in corporate tax rates are the subject of a growing empirical literature (e.g. Slemrod, 2004; Kenny and Winer, 2006; Hines, 2007). The analysis in this section uses data from the World Tax Database maintained by the Office of Tax Policy Research at the University of Michigan on the top statutory corporate tax rate for 2002 (the latest year for which there are data with extensive coverage). As reported in the first row of Table 3b, these data are available for 148 countries (although the number of countries for which all independent variables are available is somewhat smaller); the mean tax rate is approximately 29%. Figure 3 plots this tax rate against the governance index. There is a definite, albeit weak, negative relationship: i.e. better-governed countries tend to have lower top statutory corporate tax rates. Particularly noteworthy is what might be characterized as the empty southwest quadrant – i.e. the virtual absence of countries that have both low governance scores and low tax rates.

The determinants of these tax rates are reported in Table 7. A Tobit specification is used, as tax rates are potentially left-censored at zero. The sample is restricted throughout to UN members, to ensure that the tax rates are chosen by sovereign governments that enjoy fiscal autonomy. Column 1 of Table 7 reports results using the same set of independent variables as in Table 4, Column 1 (the basic logit model of tax haven status). The negative coefficient on the governance index (-2.998) is consistent with the estimated positive effect of governance on tax haven status. The controls are generally insignificant (although landlocked status is negative and of borderline significance). In Column 2, a number of additional controls are introduced.[26] In

[26] The fraction of the population that lives within 100 km of the coast (a measure of openness constructed by Gallup, Sachs and Mellinger (1999) that was not used in the basic model in Table 4 because of its limited coverage) has a

particular, the value of subsoil assets appears unrelated to the corporate tax rate (with the point estimate being very small and negative). Although missing data for these additional variables reduces the sample size to just 60, the effect of governance is stronger than in Column 1.

In order to test the alternative explanation relating to corruption, the specification in Column 3 replaces G_i with its various components. Generally, these have negative effects on corporate tax rates, with government effectiveness being significant despite the strong multicollinearity among the subindices. However, VA (voice and accountability) and CC (control of corruption) both have positive point estimates (though neither is significant). The latter implies that more corrupt countries tend to have (weakly) *lower* tax rates. More precisely, the evidence clearly does not suggest that (controlling for other relevant factors) countries with higher levels of corruption have higher statutory corporate tax rates, as would be required for the alternative explanation outlined in Section 4.3 to hold.

In order to shed more light on the nature of the causal relationship between governance and tax rates, Column 4 of Table 7 reports the results of an instrumental-variable Tobit model (using legal origins as instruments for the governance index). The effect of governance remains significant, and indeed is of dramatically larger magnitude. The point estimate of -23.130 suggests that (for uncensored observations) a one standard deviation increase in the governance index from its mean of zero would lead to a fall in the corporate tax rate from the maximum observed in the sample (55% in Kuwait) to below the US rate of 35%. A linear 2SLS specification leads to consistent results, with a smaller but nonetheless comparable point estimate (of approximately -16).[27] The effects of the control variables in the IV Tobit specification are generally similar to those in the previous columns.[28] Most importantly (given the discussion in Section 4.3), the effect of subsoil assets remains insignificant, with a negative coefficient (as in Column 2).

negative and significant effect. This reinforces the broader finding that openness tends to be associated with lower tax rates (as suggested by the negative coefficients on distance and landlocked status). Unobserved tastes for government spending are proxied by government expenditure as a percentage of GDP (which has a strongly positive effect, as expected). The indicator variable for parliamentary systems has a positive, albeit insignificant, effect.

[27] The large causal effect of governance on tax rates (relative to the estimated effect in Column 1) suggests an explanation along the following lines. Improvements in governance may lead to a substantial positive effect on the unobserved taste for government activity; in turn, this leads to higher tax rates, thus dampening the fall in tax rates caused by better governance *per se*. Moreover, the effect on tastes for government activity are apparently not fully captured by the government expenditures variable, possibly because this variable combines both beneficial government activities and government overspending.

This analysis thus provides no evidence to suggest that (controlling for other relevant factors) countries with larger natural resource endowments have higher corporate rates. This casts doubt on the natural resource hypothesis discussed in Section 4.3 above. Another piece of evidence in the same direction is reported in the final row of Table 3a. This examines the difference in the mean governance index for small tax havens and small nonhavens, restricting the sample to only those countries that have zero subsoil assets (i.e. no discernible natural resource wealth); "small" countries are defined as those with populations below one million. The number of countries is very small (7 havens and 4 nonhavens). Nonetheless, the mean governance index for the havens is substantially higher than that for the nonhavens, and (despite the small sample) the difference is of borderline statistical significance. As none of the countries involved in this comparison have valuable subsoil assets, it appears unlikely that the wider differences in governance characteristics between havens and nonhavens documented in this paper can be explained by the effects of natural resource abundance.

5. Interpretation

The empirical results suggest strongly that tax havens are better-governed than comparable nonhavens; moreover, the direction of causality appears to run from governance characteristics to tax haven status. These results *per se*, however, do not settle the question of the mechanism through which governance affects the propensity to become a tax haven. In particular, there are two possible alternative channels through which this relationship might operate.

The first possibility is that better-governed countries may make better policy choices. As discussed in Section 2, the theoretically optimal (source-based) corporate tax rate for a small economy facing a perfectly elastic supply of capital is zero (Diamond and Mirrlees, 1971; Gordon, 1986). Better-governed countries may choose policies that are closer to this optimum for a variety of reasons (such as greater weight being attached to social welfare in formulating government policy). The second possibility is that all small countries ideally would like to be tax havens, independent of their governance characteristics, but that only better-governed countries can provide the credible commitment (of not expropriating either directly or through higher future taxes) necessary for low taxes to induce high levels of foreign investment. Thus, the

[28] The variables capturing openness (notably landlocked status) have a negative effect on tax rates, and GDP per capita has a positive effect. The positive impact of having a parliamentary system is now of borderline significance.

returns to being a tax haven (in terms of higher investment inflows) would be sufficiently high only for better-governed countries.

It is possible to shed some light on these explanations by analyzing how the effect of tax rates on FDI varies with governance.[29] This analysis uses data from the Bureau of Economic Analysis (BEA) on FDI by US firms in 60 countries in 1999. For each of these countries, it is possible to observe the total assets owned by US firms in 1999, and to compute the tax rate faced by these firms. Following Hines and Rice (1994), the tax rate for a country is defined as the minimum of 1) the average effective tax rate for US firms observed in the sample, and 2) the country's statutory corporate tax rate. These data are matched with the governance index, GDP per capita and population for each country.[30] The summary statistics are reported in Table 3b. Note that the mean tax rate for these 60 countries is approximately 21%; the average governance score (about 0.7) is considerably higher for countries that attract significant amounts of US FDI than the zero mean for all countries.

In Table 8, the countries in this sample are divided at the median governance index to form two subsamples of better-governed and less well-governed countries (each consisting of 30 countries). Column 1 reports results for the former subsample: controlling for GDP and population, there is a substantial and highly significant negative effect of the tax rate on US FDI in better-governed countries. The -0.0712 coefficient in column one implies that one percent lower tax rates are associated with seven percent greater investment in these countries. Column 2 reports the results for less well-governed countries, for which the estimated tax effect is again negative (-0.0162), but considerably smaller in magnitude and statistically indistinguishable from zero. Thus, it appears that the elasticity of FDI with respect to taxes is greater in better-governed countries.

Figure 4 illustrates this pattern. The bars depict mean ratios of US FDI (i.e. assets owned by US firms in 1999) to GDP for four groups of countries: those with below-median governance indices and below-median tax rates, those with below-median governance indices and above-median tax rates, those with above-median governance indices and below-median tax rates, and

[29] Goodspeed *et al*. (2006) find that higher levels of corruption reduce FDI inflows; the focus here, however, is on the *interaction* of governance and tax rates.

[30] The governance index is for 2000 or the closest available year, rather than for 2004 as in the earlier analysis, in order to match the 1999 FDI data more closely. GDP and population are obtained from the Penn World Tables.

those with above-median governance indices and above-median tax rates. The barchart suggests that for a well-governed country, moving from a high to a low tax rate has a substantial effect on FDI. However, for a less well-governed country, the gains in terms of additional FDI from reducing tax rates appear to be small. This provides some evidence consistent with the second hypothesis advanced above. It appears that the returns to being a tax haven are greater for better-governed countries, as they can provide the credible commitment to future policies necessary to induce FDI inflows to respond to lower announced tax rates.

6. Conclusion

Tax havens are small countries, they are affluent countries, and they have high-quality governments. While all of these characteristics are to some extent associated with each other, it is noteworthy that poorly governed countries, of which the world has many, virtually never appear as tax havens. Their absence cannot easily be attributed to the desire on the part of poorly governed countries to conform to international tax norms, since these countries are not otherwise known for their conformity, and international tax norms are in any case not very well established. Instead, the most likely explanation is that tax havens are unsuccessful in the absence of high quality governance, and anticipating that, poorly run governments do not even attempt to become tax havens. Whether the absence of more tax havens is a good or a bad thing for the world as a whole is a fascinating question that lies beyond the scope of this paper, but from the standpoint of individual countries, the inability effectively to tailor tax policies to maximum advantage simply adds to the many woeful costs of poor governance.

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Data Appendix

Tax haven status:
Source: based on Hines and Rice (1994, Appendix 2, p. 178)
Indicator variable (=1 if the country appears on the list of tax havens in Hines and Rice (1994). 39 of the 41 countries and territories on their list (i.e. all apart from "UK Caribbean islands" and St. Martin), can be matched with current jurisdictions for which data on the other variables is available.[31]
The alternative (OECD) measure of tax haven status is based on the list of 35 countries and territories in OECD (2000, p. 17). However, this list does not include 6 countries and territories that were deemed by the OECD to satisfy its criteria for tax haven status, but which made "advance commitments" to eliminate allegedly harmful tax practices. The dataset in this paper adds these 6 jurisdictions (as listed in various sources, such as Hishikawa (2002, fn. 72, p. 397)) to the 35 in OECD (2000, p. 17) to form a combined list of 41 jurisdictions that are tax havens according to the OECD definition.[32]

Governance Index:
Source: Kaufmann, Kraay and Mastruzzi (2005)
This index is obtained by taking the (unweighted) mean of 5 of the 6 governance measures constructed by Kaufmann *et al.* (2005) for the year 2004, as specified in Equation (1). It is a continuous variable over the approximate interval (-2.5, 2.5), normalized to have mean 0 and standard deviation 1 (across all countries and territories), with higher values indicating better governance. The analysis of investment elasticities in Table 8, however, uses governance measures for the year 2000, in the interests of consistency with the investment data (which is for 1999).

GDP per capita:
Source: the World Bank's *World Development Indicators* (WDI), available at http://econ.worldbank.org
GDP per capita is expressed in thousands of US$, in PPP terms, for 2004. For countries and territories for which GDP data is missing in WDI, estimates of GDP per capita (also in thousands of US$, in PPP terms, for 2004 or the nearest available year) provided in the CIA's World Factbook (available at https://www.cia.gov/cia/publications/factbook/) are used.[33]

Population:
Source: the World Bank's *World Development Indicators* (WDI), available at http://econ.worldbank.org
Population is expressed in thousands, for 2004. For countries and territories for which population data is missing in WDI, estimates of population (also in thousands, for 2004 or the nearest available year) provided in the CIA's World Factbook are used.[34]

UN Member:

[31] The omission of "UK Caribbean islands" and St. Martin, for which no matching data could be found, does not appear to be a serious problem. "UK Caribbean islands" is a general term used by the Bureau of Economic Analysis (BEA) for British dependencies in the Caribbean, most of which (Anguilla, Montserrat, Cayman Islands, and Turks and Caicos Islands) are included separately in the dataset. St. Martin is a Caribbean island that is divided between the Netherlands Antilles and Guadeloupe (both of which are included in the dataset).
[32] However, the OECD lists the Channel islands of Jersey and Guernsey as separate entities, while in this paper they are combined together (as the Channel Islands) for consistency with the classification of Hines and Rice (1994). Thus, the OECD criteria actually define a list of 40 tax havens.
[33] Note, however, that the analysis in Table 8 uses GDP per capita for 2000, obtained from the Penn World Tables, for greater consistency with the investment data (which covers 1999).
[34] Note, however, that the analysis in Table 8 uses population for 2000, obtained from the Penn World Tables, for greater consistency with the investment data (which covers 1999).

Source: obtained from the list of member states provided on the UN's website, at http://www.un.org/Overview/unmember.html
An indicator variable (= 1 if the country was a member of the United Nations Organization in 2004).[35]

Distance by Air:
Source: Gallup, Sachs and Mellinger (1999)
Measured in km, this variable represents the "the smallest distance of the country's capital city to one of the following three cities: New York, Rotterdam, or Tokyo." (Gallup *et al*., 1999, fn. 13, pp. 4-5). For countries with missing values of this variable, but with nonmissing values for a close neighboring country, the latter is used as a proxy.

Landlocked:
Source: Gallup, Sachs and Mellinger (1999)
Indicator variable (=1 if the country is landlocked). For countries with missing values of this variable in Gallup, Sachs and Mellinger (1999), the data is supplemented using the similar variable in the Centre d'Etudes Prospectives et D'Informations Internationale (CEPII) dataset (available on Thierry Mayer's website at: http://team.univ-paris1.fr/teamperso/mayer/data/data.htm), and using information in the CIA's World Factbook.

Area:
Source: the CEPII dataset (available on Thierry Mayer's website); measured in square km.

Island:
Source: Coded using information in the CIA's World Factbook; indicator variable (=1 if the country is an island).

Fraction of Population within 100km of Coast:
Source: Gallup, Sachs and Mellinger (1999); defined as: "The proportion of a country's total land area within 100 km. of the ocean coastline, excluding coastline in the arctic and sub-arctic region above the winter extent of sea ice" (Gallup, Sachs and Mellinger, 1999, p. 35).

Parliamentary System:
Source: The World Bank's Database of Political Institutions (Beck *et al*., 2001)

Use of English as an Official Language:
Source: based on information in the CEPII dataset (available on Thierry Mayer's website)
Indicator variable (=1) if English is listed as one of the country's official languages (note that the CEPII dataset lists up to 3 official languages for each country).

Ethnolinguistic Fractionalization:
Source: LLSV (1999); defined as the average value of 5 different indices of ethnic and linguistic fractionalization; the values range from 0 to 1, with higher values indicating greater heterogeneity. See LLSV (p. 238) for more details.

Latitude:
Source: LLSV (1999); the absolute value of the country's latitude, scaled to lie in the interval [0, 1].

Legal Origins:

[35] Note that Montenegro, which was admitted to the UN in 2006, is not included (and is considered as part of Serbia and Montenegro in the dataset).

Source: LLSV (1999); indicator variables for each of 5 origins of the country's commercial law: British, French, German, Scandinavian, and Socialist. For missing values, the data is extended by coding current UK and French dependent territories as having British and French legal origins, respectively (based on information in the CIA's World Factbook).

Government Expenditures:
Source: the World Bank's *World Development Indicators* (WDI), available at http://econ.worldbank.org; expressed as a % of GDP, for 2004 (for missing 2004 data, 2002 data is used instead, when available).

Telephone Lines:
Source: the World Bank's *World Development Indicators* (WDI), available at http://econ.worldbank.org; the number of telephone mainline connections in the country (for missing 2004 data, 2002 data is used instead, when available). WDI reports the number of telephone lines per 1000 population, but in Table 6, the telephone lines variable is scaled by area (as this is arguably a better measure of the ability of a foreign investor to communicate with the outside world).

Subsoil Assets:
Source: World Bank (2006, Appendix 2); the value of the stocks of subsoil mineral assets (oil, gas and coal, together with 10 metals and minerals - bauxite, copper, gold, iron ore, lead, nickel, phosphate rock, silver, tin, and zinc) per capita in US$ for the year 2000 (see World Bank (2006, p. 147) for more details).

Corporate Tax Rates:
Source: the World Tax Database maintained by the Office of Tax Policy Research at the University of Michigan, available at: http://www.bus.umich.edu/OTPR/

Assets Owned by US Firms:
Source: Bureau of Economic Analysis (BEA); available at http://www.bea.gov

Tax Rate Faced by US Firms:
Source: based on data available through the Bureau of Economic Analysis (BEA) at http://www.bea.gov

Offshore Financial Centers (OFC's)
Source: Rose and Spiegel (2006)

Countries Alleged by the OECD to Facilitate Money Laundering
Source: Rose and Spiegel (2006)

"Special 301" Countries (with Allegedly Weak Intellectual Property Protections)
Source: The US Trade Representative's 2006 Annual Report, available at: http://www.ustr.gov/Document_Library/Reports_Publications/2006/2006_Special_301_Review/Section_Index.html

Regional Dummies:
Source: World Bank classifications; regions are Europe and Central Asia, Asia/Pacific, Americas, Middle East and North Africa (MENA), and Africa.[36]

[36] Note that in Tables 4-6, MENA and Africa are combined into one region to avoid perfect collinearity between the Africa dummy and nonhaven status (given the exclusion of Liberia).

Table 1: List of Tax Havens

Country or Territory	World Bank Code	Tax Haven (Hines-Rice)	Tax Haven (OECD)
Andorra	ADO	1	1
Anguilla	AIA	1	1
Antigua and Barbuda	ATG	1	1
Aruba	ABW	0	1
Bahamas	BHS	1	1
Bahrain	BHR	1	1
Barbados	BRB	1	1
Belize	BLZ	1	1
Bermuda	BMU	1	1
British Virgin Islands		1	1
Cayman Islands	CYM	1	1
Channel Islands		1	1
Cook Islands	COK	1	1
Cyprus	CYP	1	1
Dominica	DMA	1	1
Gibraltar		1	1
Grenada	GRD	1	1
Hong Kong	HKG	1	0
Ireland	IRL	1	0
Isle of Man		1	1
Jordan	JOR	1	0
Lebanon	LBN	1	0
Liberia	LBR	1	1
Liechtenstein	LIE	1	1
Luxembourg	LUX	1	0
Macao	MAC	1	0
Maldives	MDV	1	1
Malta	MLT	1	1
Marshall Islands	MHL	1	1
Mauritius	MUS	0	1
Monaco	MCO	1	1
Montserrat		1	1
Nauru	NRU	0	1
Netherlands Antilles	ANT	1	1
Niue	NIU	0	1
Panama	PAN	1	1
Saint Kitts and Nevis	KNA	1	1
Saint Lucia	LCA	1	1
Saint Vincent and the Grenadines	VCT	1	1
Samoa	SAM	0	1
San Marino	SMR	0	1
Seychelles	SYC	0	1
Singapore	SGP	1	0
Switzerland	CHE	1	0
Tonga	TON	0	1
Turks and Caicos Islands		1	1
Vanuatu	VUT	1	1
Virgin Islands (U.S.)	VIR	0	1

Note: 1 = tax haven and 0 = nonhaven. The third column uses the definitions in Hines and Rice (1994) and Diamond and Diamond (2002). The fourth column uses the definition in OECD (2000), as described in the Data Appendix.

Table 2: Summary Statistics (All Countries and Territories)

	Tax Havens			Nonhavens		
	Mean	St. dev.	N	Mean	St. dev.	N
Governance Index	0.7284	0.7152	33	-0.1338	0.8984	176
GDP per capita (PPP; in thousands of US$)	18.51	14.68	39	9.55	10.22	188
Population (thousands)	1145.69	2043.9	39	33354.08	126475.9	189
UN Member (=1)	0.6667	0.4776	39	0.8730	0.3338	189
Distance by air (km)	2965.00	1899.1	39	4424.00	2652.59	189
Landlocked (=1)	0.1026	0.3074	39	0.1958	0.3978	189
Area (sq. km)	83395	365478	35	721188	1955140	185
Island (=1)	0.6667	0.4776	39	0.2751	0.4478	189
Fraction of population within 100km of coast	0.7204	0.4031	8	0.4159	0.3584	142
Parliamentary System (=1)	0.6111	0.5016	18	0.3052	0.4620	154
English as an Official Language (=1)	0.6857	0.4710	35	0.2663	0.4432	184
Ethnolinguistic Fractionalization	0.2082	0.2231	24	0.3562	0.3110	131
Latitude (abs. value)	0.2765	0.1732	31	0.2809	0.1919	176
British legal origin	0.7179	0.4559	39	0.3011	0.4600	186
French legal origin	0.2308	0.4268	39	0.4624	0.4999	186
German legal origin	0.0513	0.2235	39	0.0269	0.1622	186
Scand. legal origin	0.0000	0.0000	39	0.0269	0.1622	186
Socialist legal origin	0.0000	0.0000	39	0.1828	0.3875	186
Govt. Expenditures (% of GDP)	26.77	8.28	9	27.80	11.08	83
Telephone Lines (millions)	0.6163	1.2497	27	6.99	29.02	166
Subsoil Assets (US$ per capita)	100.14	275.19	14	2737.22	6976.83	105

Note: Tax havens are defined as in Table 1, Column 3 (i.e. the Hines-Rice definition). The variables in the table are defined as in the text and the Data Appendix. "N" is the number of observations.

Table 3a: Summary Statistics (Small Countries and Territories; population < 1 million)

	Mean: Havens (N)	Mean: Nonhavens (N)	Diff. in Means (s.e.)
Governance Index	0.7974 (25)	0.2097 (31)	0.5876 (0.1519)***
GDP per capita (PPP; in thousands of US$)	18.46 (31)	11.34 (43)	7.12 (3.1474)**
Population (thousands)	181.62 (31)	271.34 (44)	-89.72 (56.20)
UN Member (=1)	0.6129 (31)	0.5227 (44)	0.0902 (0.1171)
Distance by air (km)	2921.77 (31)	5486.30 (44)	-2564.52 (570.84)***
Landlocked (=1)	0.0968 (31)	0.0455 (44)	0.0513 (0.0626)
Parliamentary System (=1)	0.7273 (11)	0.3571 (14)	0.3701 (0.1936)*
English as an Official Language (=1)	0.7407 (27)	0.4000 (40)	0.3407 (0.1164)***
Ethnolinguistic Fractionalization	0.1814 (16)	0.3673 (18)	-0.1859 (0.0956)*
Governance Index if Subsoil Assets=0	0.6417 (7)	-0.0620 (4)	0.7037 (0.2541)*

Note: This table reports the results of t-tests of the equality of means of selected variables for tax havens and nonhavens (allowing for unequal variances). Tax havens are defined as in Table 1, Column 3 (i.e. the Hines-Rice definition). The variables in the table are defined as in the text and the Data Appendix. In the first two columns, the number of observations is in parantheses; in the final column, the standard error is in parantheses.

Table 3b: Additional Summary Statistics

	Mean	St. dev.	N
Statutory Corporate Tax Rate in 2002 (%)	28.93	9.32	148
Tax Rate faced by US Firms in 1999 (%)	21.34	11.57	60
Log of Assets Owned by US Firms in 1999 (US$)	9.79	1.56	60
Governance Index in 2000 (for countries with FDI by US Firms)	0.7050	0.8779	60
Log of GDP per capita in 1999 (US$; for countries with FDI by US Firms)	4.69	1.69	60
Log of Population in 1999 (for countries with FDI by US Firms)	16.52	1.90	60

Note: This table reports summary statistics for the variables used in the regressions reported in Table 8, and for the corporate tax rate variable used in Table 7. The statutory corporate tax rate data is from the Worldwide Tax Database maintained by the Office of Tax Policy Research at the University of Michigan. The data on assets of US firms is from the Bureau of Economic Analysis (BEA). GDP and population data are from the Penn World Tables, as described in the Data Appendix.

Table 4: Determinants of Tax Haven Status – Logit Estimates

	(1) All Countries and Territories	(2) UN Members	(3) Small Countries and Territories	(4) Common Support
	Dependent Variable: Indicator for Tax Haven Status (= 1 for Tax Havens)			
Governance Index	1.542 (0.592)***	1.710 (0.686)**	1.851 (1.032)*	1.586 (0.593)***
GDP per capita	0.013 (0.028)	0.016 (0.033)	-0.004 (0.029)	0.004 (0.029)
Population	-0.0003 (0.00009)***	-0.0004 (0.0001)***	-0.001 (0.001)	-0.0003 (0.0001)**
UN Member (=1)	0.846 (0.938)		1.244 (0.920)	0.647 (0.959)
Landlocked (=1)	0.330 (0.699)	0.581 (0.781)	0.031 (1.478)	0.608 (0.790)
Distance by Air	-0.0004 (0.0002)*	-0.001 (0.0003)**	-0.0001 (0.0002)	-0.0003 (0.0003)
Regional Dummies?	Y	Y	Y	Y
Observations	208	190	56	99
Maximized Log Pseudo Likelihood	-48.952	-36.062	-28.702	-47.811
Pseudo R^2	0.4518	0.5125	0.2544	0.2326

Note: This table reports the results of a series of logit models, with an indicator for tax haven status (as defined in the third column of Table 1) as the dependent variable. The variables and sample restrictions are as described in the text. All regressions include a constant, but its coefficient is not reported. Robust standard errors are in parentheses; * significant at 10%; ** significant at 5%; *** significant at 1%

Table 5: Governance Characteristics of Tax Havens and Nonhavens: Matching Estimation

(1) Propensity Score Block	(2) Minimum Propensity Score	(3) Mean Propensity Score: Havens (N)	(4) Mean Propensity Score: Nonhavens (N)	(5) Difference in Mean Propensity Scores (s.e.)	(6) Balancing Property Satisfied for All Covariates?	(7) Difference in Governance Index (s.e.)
1	0.0486	0.1188 (6)	0.1118 (46)	0.0070 (0.0287)	Y	
2	0.25	0.3827 (13)	0.3678 (19)	0.0149 (.0257)	Y	
3	0.5	0.6469 (19)	0.6293 (11)	0.0176 (0.0411)	Y	
Overall						0.2982 (0.1800)*

Note: This table reports the results of a propensity-score matching procedure, as described in the text. In Columns 3 and 4, the number of countries in each block, by tax haven status, is reported in parantheses. Column 5 reports the results of t-tests of the equality of mean propensity scores for havens and nonhavens within each block, with standard errors in parantheses. Column 7 reports the matching estimate of the difference in the governance index between havens and nonhavens. The standard error in Column 7 is bootstrapped, using 500 replications; * significant at 10%; ** significant at 5%; *** significant at 1%

Table 6: Determinants of Tax Haven Status – Instrumental Variable Probit Estimates

	(1) Using Legal Origins as Instruments	(2) Using Legal Origins and Latitude as Instruments	(3) Using Legal Origins as Instruments
	Dependent Variable: Indicator for Tax Haven Status (= 1 for Tax Havens)		
Governance Index	1.956 (0.285)***	1.998 (0.329)***	1.926 (0.437)***
GDP per capita	-0.078 (0.042)	0.041 (0.047)	0.054 (0.069)
Population	-0.00007 (0.0001)	-0.0001 (0.0001)	-0.0003 (0.0001)***
UN Member (=1)	0.473 (0.305)	-0.382 (0.192)**	
Landlocked (=1)	0.327 (0.294)	-0.257 (0.386)	-0.106 (0.649)
Distance by Air	-0.0001 (0.0001)	-0.0002 (0.0002)	-0.0006 (0.0002)***
Govt. Expenditure (% of GDP)			-0.153 (0.042)**
Telephone Lines (scaled by area)			0.001 (0.0002)**
Regional Dummies?	Y	Y	Y
Observations	205	197	90
Maximized Log Pseudo Likelihood	-206.914	-187.254	-53.871

Note: This table reports the results of a series of instrumental variable probit models, with an indicator for tax haven status (as defined in the third column of Table 1) as the dependent variable. The instruments in Columns 1 and 3 are legal origins (as described in the text). The instruments in Column 2 include both legal origins and latitude. Note that all countries in Column 3 are UN members, so the UN member variable is dropped. All regressions include a constant, but its coefficient is not reported. Robust standard errors are in parentheses; * significant at 10%; ** significant at 5%; *** significant at 1%.

Table 7: Determinants of Statutory Corporate Tax Rates – Tobit and Instrumental Variable Tobit Estimates

	(1) Tobit Model	(2) Tobit Model	(3) Tobit Model	(4) IV Tobit Model
	Dependent Variable: Top Statutory Corporate Tax Rate (as %)			
Governance Index	-2.998 (1.428)**	-5.889 (2.519)**		-23.130 (9.778)**
Voice and Accountability			2.768 (1.744)	
Political Stability			-0.349 (1.722)	
Government Effectiveness			-6.642 (2.752)**	
Rule of Law			-1.039 (5.062)	
Control of Corruption			2.111 (2.941)	
GDP per capita	0.147 (0.128)	0.432 (0.198)**	0.217 (0.122)*	1.650 (0.676)**
Population	0.000002 (0.000003)	-0.00000003 (0.000003)	0.000004 (0.000002)	0.000003 (0.000003)
Landlocked (=1)	-3.184 (1.656)*	-7.686 (2.886)***	-2.036 (1.674)	-8.947 (3.380)***
Distance by Air	-0.0003 (0.0004)	-0.00004 (0.0004)	-0.0003 (0.0004)	0.001 (0.001)
Fraction of Pop. within 100km of Coast		-5.658 (2.420)**		-0.738 (4.386)
Government Expenditure (%)		0.387 (0.128)***		0.446 (0.147)***
Parliamentary System (=1)		3.073 (2.180)		10.851 (5.903)*
Subsoil Assets		-0.0000008 (0.00007)		-0.00021 (0.00014)
Regional Dummies?	Y	Y	Y	Y
Observations	135	60	134	60
Maximized Log Pseudo Likelihood	-470.977	-183.252	-464.613	-193.856

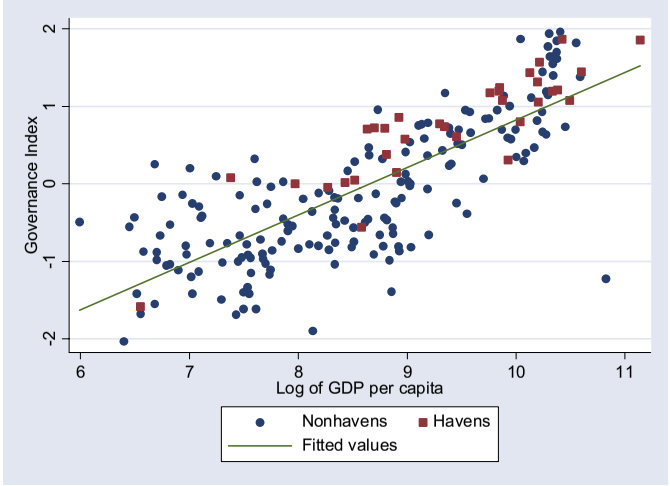
Note: Columns 1-3 report the results of a series of Tobit models with the top statutory corporate tax rate as the dependent variable. Column 4 uses an IV Tobit specification, with legal origins as the instruments. All regressions include a constant, but its coefficient is not reported. The sample in all columns includes UN members only. Robust standard errors are in parentheses; * significant at 10%; ** significant at 5%; *** significant at 1%.

Table 8: Governance and the Tax Elasticity of Investment by US Firms

	(1)	(2)
	Well-Governed Countries	Less Well-Governed Countries
	Dependent Variable: Log of Assets Owned by US Firms in 1999	
Constant	16.4437 (4.9307)***	9.5360 (2.3080)***
Tax Rate faced by US Firms in 1999	-0.0712 (0.0214)***	-0.0162 (0.0163)
Log of GDP in 1999	1.4014 (0.2735)***	0.6014 (0.2110)***
Log of Population in 1999	-0.7224 (0.3900)*	-0.1608 (0.1626)
R-squared	0.6221	0.3463
Number of Observations	30	30

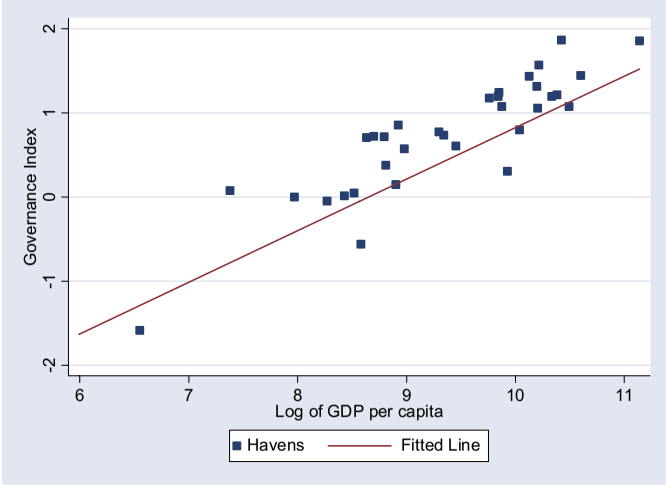
Note: This table reports regressions explaining the log of assets owned by US firms in the countries in the sample. These countries are divided into two subsamples. "Well-governed" countries are defined as those with a governance index greater than the median in this sample (which is 0.705); "less well-governed" countries are those with a governance index less than the median in this sample. The data on assets owned by US firms (in 1999) is from the Bureau of Economic Analysis. The tax rate faced by US firms (following Hines and Rice (1994)) is defined as the minimum of 1) the average effective tax rate for US firms observed in the sample, and 2) the country's statutory corporate tax rate. The governance index (from Kaufmann, Kraay and Mastruzzi (2005)) is for the year 2000 or the closest available year. GDP and population data are from the Penn World Tables. Robust standard errors are in parantheses. *, ** and *** denote significance at the 10%, 5% and 1% levels, respectively.

Fig. 1a: Governance and GDP: All Countries



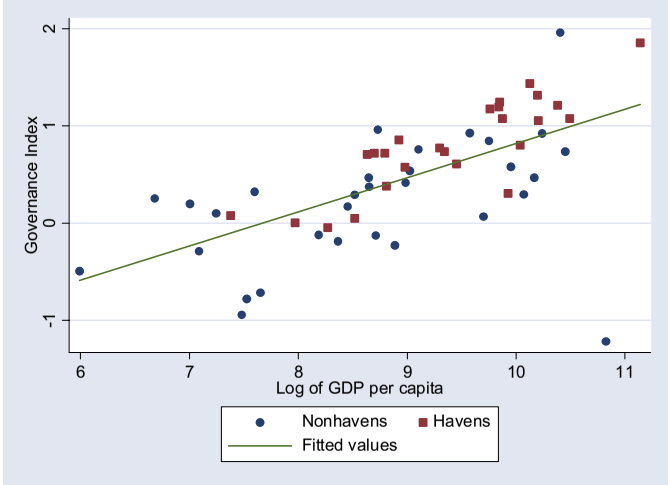
Note: This figure plots the governance index for 2004 against the log of GDP per capita in 2004 (in PPP terms, expressed in US$) for all countries in the dataset.

Fig. 1b: Governance and GDP: All Tax Havens



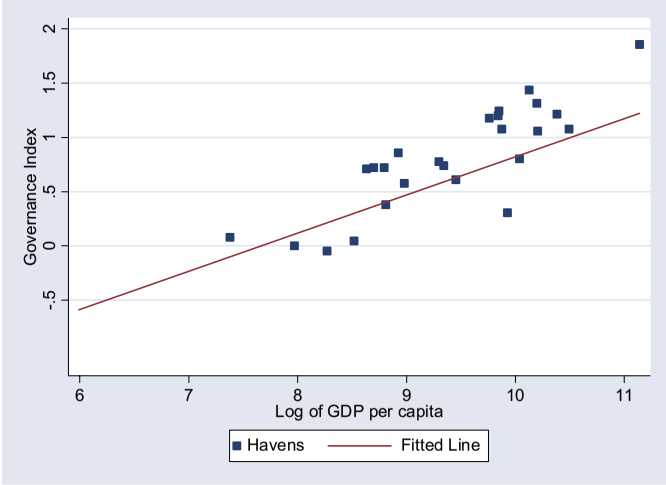
Note: This figure plots the governance index for 2004 against the log of GDP per capita in 2004 (in PPP terms, expressed in US$) for the tax haven countries (as defined in Column 3 of Table 1) in the dataset. The fitted line is calculated using all countries in the dataset, and is identical to that in Figure 1a.

Fig. 2a: Governance and GDP: Small Countries (Population < 1 million)



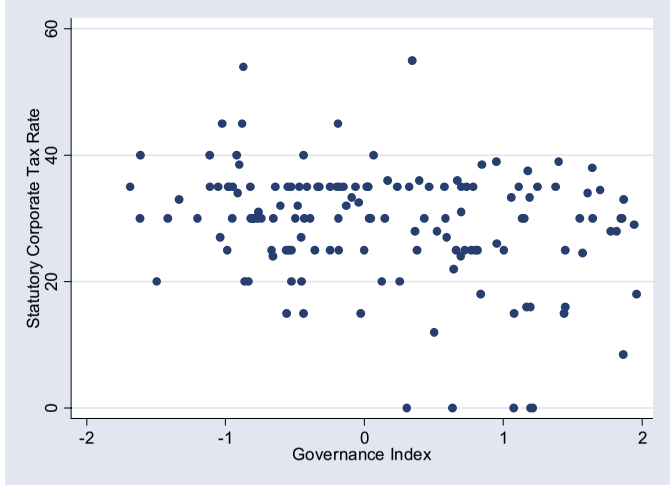
Note: This figure plots the governance index for 2004 against the log of GDP per capita in 2004 (in PPP terms, expressed in US$) for small countries (defined as those with populations less than 1 million).

Fig. 2b: Governance and GDP: Small Tax Havens (Population < 1 million)



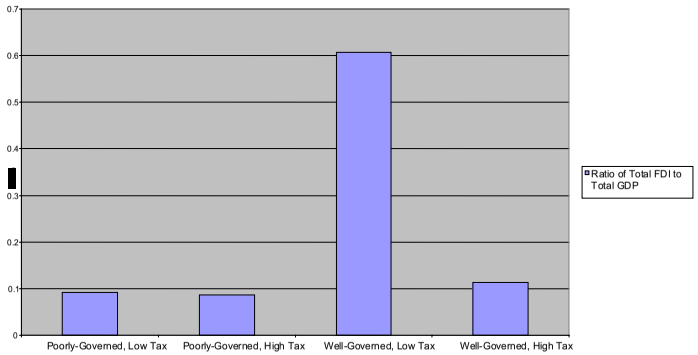
Note: This figure plots the governance index for 2004 against the log of GDP per capita in 2004 (in PPP terms, expressed in US$) for the small tax haven countries (as defined in Column 3 of Table 1, with "small" being defined as having a population less than 1 million) in the dataset. The fitted line is calculated using all small countries in the dataset, and is identical to that in Figure 2a.

Fig. 3: Governance and Statutory Corporate Tax Rates



Note: This figure plots the top statutory corporate tax rate for each country (from the Worldwide Tax Database maintained by the Office of Tax Policy Research at the University of Michigan) against the governance index.

Fig. 4: Ratio of Total US FDI to GDP for Four Groups of Countries



Note: The bars depict mean ratios of assets owned by US firms in 1999 to GDP for four groups of countries: those with below-median governance indices and below-median tax rates, those with below-median governance indices and above-median tax rates, those with above-median governance indices and below-median tax rates, and those with above-median governance indices and above-median tax rates. These medians are calculated for the 60 countries for which data on FDI by US firms exists (through the Bureau of Economic Analysis).

International Tax Policy Forum

ITPF Conference
Tax Havens and Foreign Direct Investment
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Research Summary

Presenter: James R. Hines, Jr., Ph.D.
Richard R. Musgrave Collegiate Professor of Economics, Department of Economics, University of Michigan
Professor of Law, University of Michigan Law School
Research Director, Office of Tax Policy Research
Research Associate, National Bureau of Economic Research
Professor Hines studies international taxation, particularly the taxation of multinational corporations. His work focuses on issues in transfer pricing, the financing of foreign direct investment, the influence of tax regimes on the location of R&D and physical investment, the design of tax treaty policy, and the use of tax policy to control the actions of multinational firms. He received a B.A. and M.A. from Yale University and his Ph.D. from Harvard University.

Paper: Do Tax Havens Flourish?

Summary: Professor Hines' paper discusses the use of tax havens by international business and the economic effects on tax haven countries and their neighbors. He concludes that:

- Since 1982, the economies of tax haven countries have grown faster than those of countries with higher tax rates.
- The favorable tax treatment of foreign investors in haven countries has not impaired government spending, as tax haven countries have relatively small public sectors.
- Tax haven countries spur regional investment – investment in a tax haven country brings with it some investment in nearby non-haven countries as well.
- The strong historical performance of tax haven economies suggests that these countries will continue to offer lower tax rates to foreign investors.

Do Tax Havens Flourish?

James R. Hines Jr., *University of Michigan and NBER*

Executive Summary

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 1 percent of the world's population (outside the United States) and 2.3 percent of world gross domestic product (GDP), but they 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: their average 25 percent ratio of government to GDP 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. Recent research suggests that tax haven activity stimulates investment in nearby high-tax countries.

1. Introduction

Countries design their tax systems to fit circumstances and opportunities; 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 scrutiny and has prompted a number of policy responses in higher-tax countries.

The purposes of this paper are 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 coinciding with dramatic inflows of foreign investment. The empirical evidence presented in section 4 confirms that Ireland's experience, while extreme, is not anomalous because tax haven countries as a group exhibited 3.3 percent annual per capita gross domestic product (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 size to that 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. Concern is often expressed about foreign tax haven locations possibly diverting economic activity away from countries with higher tax rates and eroding tax bases that might otherwise be used to raise govern-

ment revenue. These considerations are commonly thought to be most acute in the case of nearby tax havens, i.e., 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: a 1 percent greater likelihood of establishing a tax haven affiliate is associated with $\frac{2}{3}$ 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, by facilitating 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 because 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 2 of the paper reviews international taxation in practice and its implications for international investment and the tax policies in capital-importing countries. Section 3 considers American evidence of the extent to which investors concentrate their foreign investment and tax-avoidance activity in tax havens. Section 4 evaluates the economic experience of tax havens over the period since 1982. Section 5 considers the effect of foreign tax havens on the welfare of high-tax countries. Section 6 concludes.

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 being 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 because 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 (prices that would be charged 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 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. Because 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. 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 because 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, a list that includes Australia, Belgium, Canada, France, Germany, Italy, and the Netherlands, effectively exempt from taxation most or all of the foreign income earned by their resident multinational corporations. 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 therefore immediately taxable by the United States, even if not repatriated as dividend payments to American parent firms.[2]

Because 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 the firm pays $90 of foreign taxes, however, 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.

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 because reduced foreign tax liabilities may be offset by higher U.S. tax liabilities. There are two circumstances, however, 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 portion of the literature is devoted to measuring behavioral responses to international tax rules.[4] This part of the 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 foreign direct investment (FDI) comes in two forms. The first is time-series estimation of the responsiveness of FDI to annual variation in after-tax rates of 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. 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 3,467 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.

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 1 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. multinationals over 1984–1992 and find 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. In earlier work (Hines, 1995), I find 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

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unaffiliated foreigners, Clausing finds that 10 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 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. Because 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 because 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), which 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 resi-

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dents were denied. The OECD identified 47 such preferential regimes, in different industries and lines of business, among OECD countries, many 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, five tax havens 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 2 reviewed the extensive evidence that foreign direct investment is influenced by local tax rates, specifically that high-tax countries attract less investment and low-tax countries attract more investment, than they would in the absence of tax differences. Because 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.

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 because reporting would then threaten to undermine the confidentiality promised survey

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%	N/A	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 and 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%	N/A	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%**

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 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.

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 1 million in 1982, and these are referred to as the Big 7; other tax haven countries are known as Dots. In 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 consistent, however, 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. Because 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. Because 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

The enormous expansion of global business activity since the 1980s had the potential to contribute significantly to the economies of tax havens because the worldwide rise in foreign direct investment increased demand for tax haven operations that facilitate tax avoidance. Figure 1 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. Almost 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 its

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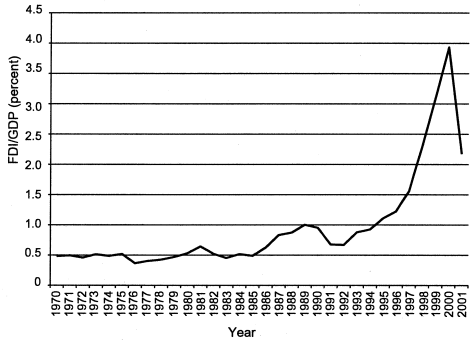

Figure 1
World Foreign Direct Investment as a Percentage of World Product, 1970–2001
The figure depicts annual ratios (as percentages) of total world foreign direct investment to the sum of GDP for all countries.
Source: World Bank, *World Development Indicators*.

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 because 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 and thus to see whether 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

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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	N/A	N/A	N/A
Liberia	N/A	N/A	N/A
Panama	0.1%	0.5%	0.1%
Singapore	5.2%	4.4%	6.0%
Switzerland	1.0%	0.6%	1.0%
Dots			
Andorra	N/A	N/A	N/A
Antigua and Barbuda	3.7%	4.7%	3.5%
Bahamas	N/A	0.5%	N/A
Bahrain	N/A	1.4%	N/A
Barbados	3.0%	1.6%	2.8%
Belize	1.8%	2.5%	1.6%
Bermuda	N/A	N/A	N/A
Cayman Islands	N/A	N/A	N/A
Cote d'Ivoire	N/A	−1.6%	N/A
Cyprus	4.8%	4.1%	4.7%
Dominica	2.9%	3.9%	2.3%
Gibraltar	N/A	N/A	N/A
Grenada	4.0%	N/A	3.5%
Jordan	−0.4%	−0.8%	−0.7%
Kiribati	N/A	N/A	N/A
Liechtenstein	N/A	N/A	N/A
Luxembourg	5.1%	6.0%	3.3%
Macao	2.3%	2.0%	2.3%
Malta	N/A	4.6%	N/A
Mauritania	N/A	−0.1%	N/A
Nauru	N/A	N/A	N/A
Netherland Antilles	N/A	N/A	N/A
St. Kitts and Nevis	6.1%	6.4%	5.4%
St. Lucia	4.5%	4.8%	4.2%
St. Vincent	3.2%	3.8%	3.0%
Vanuatu	N/A	−1.1%	N/A

Table 2
(continued)

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. N/A indicates that data are not available.

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

There is a possible difficulty in 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, 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 1 if a country is a tax haven, and 0 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

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)		−0.104		0.112
		(0.245)		(0.254)
Ln(population 1982)		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)		5.975		
		(4.102)		
Ln(per capita GDP 1982)		−0.243		
		(0.167)		
Ln(per capita GNP 1982)			0.057	9.74
			(0.065)	(4.058)
Ln(per capita GNP 1982)				−0.974
				(0.395)
Ln(per capita GNP 1982)				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

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 1 if a country is a tax haven (listed in Table 2), and 0 otherwise. Robust standard errors are in parentheses.

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. Because 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

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Table 4
American Multinationals and Tax Haven Economies

	Year	
	1982	1999
American multinational employment/total employment		
Tax havens	1.36%	2.35%
World	0.80%	1.12%
American employee compensation/GDP		
Tax havens	0.8%	1.0%
World	0.64%	0.75%
Income tax/GDP		
Tax havens	1.00%	3.00%
World	0.4%	0.6%

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.

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 percentage 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 because American firms provided just 1.36 percent of the jobs in tax haven countries in 1982. Employee compensation

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is rather less concentrated in tax havens, averaging 1 percent of tax haven GDP in 1999, possibly reflecting employment that targets lower-wage workers.

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 3 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. Because 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. To evaluate the potential tradeoffs involved, it is necessary to determine the level of foreign investment and the 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 product to GDP being 25 percent, compared to 20 percent for the

Table 5
Government Sizes in Tax Haven Countries

	Government product/GDP Penn World Table (1999)	Government spending/GDP IMF (1995)	Tax revenue/GDP 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	N/A	N/A
Ireland	4.39	38.06	32.43
Lebanon	30.81	35.18	11.65
Liberia	N/A	N/A	N/A
Panama	17.02	24.71	17.19
Singapore	8.28	15.93	16.26
Switzerland	10.04	26.63	21.57
Dots			
Andorra	N/A	N/A	N/A
Antigua and Barbuda	59.13	N/A	N/A
Bahamas	17.46	19.03	17.18
Bahrain	20.57	28.80	8.16
Barbados	9.06	N/A	N/A
Belize	28.73	N/A	N/A
Bermuda	16.13	N/A	N/A
Cayman Island	N/A	N/A	N/A
Cyprus	22.35	34.28	26.83
Dominica	52.91	N/A	N/A
Gibraltar	N/A	N/A	N/A
Grenada	23.20	N/A	N/A
Jordan	48.63	N/A	N/A
Kiribati	N/A	N/A	N/A
Liechtenstein	N/A	N/A	N/A
Luxembourg	4.04	41.50	41.71
Macao	19.73	N/A	N/A
Malta	24.35	39.07	28.81
Nauru	N/A	N/A	N/A
Netherland Antilles	N/A	N/A	N/A
St. Kitts and Nevis	60.12	29.31	23.41
St. Lucia	19.67	24.05	23.62
St. Vincent	55.25	N/A	N/A
Vanuatu	N/A	37.84	22.29

Table 5
(continued)

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. N/A indicates that data are not available.

world as a whole. The governments of Big 7 tax havens, listed in the top panel 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 International Monetary Fund (IMF) *Government Finance Statistics*. These 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-tax-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.

Because 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 the 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 product 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 5 percent larger, as a fraction of GDP, than other countries of similar size and affluence, though this coefficient is not statistically significant.

Column two 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 three and four 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 indi-

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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)		1.483	−0.033			0.432
		(1.59)	(1.659)			(1.334)
Ln(population 1999)			−0.008			−0.021
			(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)		7.766	−7.132			−16.883
		(15.337)	(23.965)			(22.807)
Ln(per capita GDP 1999)		−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

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 one and two 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 three and four is the ratio of total government spending to GDP, as reported by the IMF *Government Finance Statistics*. The dependent variable in columns five and six 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 1 if a country is a tax haven (listed in Table 2), and 0 otherwise. Robust standard errors are in parentheses.

cates 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 four, changes these results very little, and the regressions reported in columns five and six 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 five 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 the 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 because they were 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

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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 because 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 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, 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 tax havens are the most likely to demand tax haven operations: a 1 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-tax-haven affiliates. Because complementarity is a symmetric relationship, it

follows that the availability of opportunities to establish tax haven operations contributes to economic activity outside 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 because 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 they 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 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 because the public sectors of tax haven countries are not noticeably smaller than are the public sectors of other countries, though they are 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 because, while tax havens may erode the tax bases of high-tax countries, they also appear to stimulate greater investment activity and to 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.

Notes

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

2. Subpart F income consists of income from passive investments (such as interest and dividends received from investments in securities), foreign base company income (which 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.

3. In earlier work, (Hines, 1994; Hines and Rice, 1994), Rice and I analyze the benefits of such deferral. 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.

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

6. Other cross-sectional evidence is consistent with these findings. In Hines, 2001, I compare the distribution of Japanese and American FDI around the world and find Japanese investment to be concentrated in countries with which Japan has so-called 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. In Hines, 1996, I compare 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 10 percent differences in amounts of manufacturing PPE owned by investors from countries with differing

home-country taxation of foreign-source income, and 3 percent differences in numbers of affiliates owned, implying a tax elasticity of investment equal to −0.6.

7. In Hines, 1994, I identify 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 periods.

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

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 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 because 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 because 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.

11. There is considerable industry variation between countries, as reflected in capital/labor ratios that are close to 1 for most countries listed in Table 1 but are closer to 10 in the cases of the Bahamas and Bermuda, where finance and insurance activities dominate.

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.

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 stipulate 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.

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 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.

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.

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

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

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International Tax Policy Forum

ITPF Conference
Tax Havens and Foreign Direct Investment
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Research Summary

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Paper: The demand for tax haven operations

International Tax Policy Forum

Summary: The authors consider what types of firms establish tax haven operations and what purposes those operations serve. Their findings show that:

- Large firms with extensive international operations, extensive intrafirm trade, and high research and development intensity are the most likely to use tax havens.
- Tax haven operations facilitate tax avoidance by allowing firms to allocate taxable income away from high-tax jurisdictions and by reducing home-country tax burdens.
- Affiliates in larger tax haven countries are primarily used to reallocate taxable income, while affiliates in smaller tax haven countries are used to defer U.S. taxation of foreign income.
- Firms with sizeable foreign operations benefit the most from their tax haven operations.

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The demand for tax haven operations☆

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Abstract

What types of firms establish tax haven operations, and what purposes do these operations serve? Analysis of affiliate-level data for American firms indicates that larger, more international firms, and those with extensive intrafirm trade and high R and D intensities, are the most likely to use tax havens. Tax haven operations facilitate tax avoidance both by permitting firms to allocate taxable income away from high-tax jurisdictions and by reducing the burden of home country taxation of foreign income. The evidence suggests that the primary use of affiliates in larger tax haven countries is to reallocate taxable income, whereas the primary use of affiliates in smaller tax haven countries is to facilitate deferral of U.S. taxation of foreign income. Firms with sizeable foreign operations benefit the most from using tax havens, an effect that can be evaluated by using foreign economic growth rates as instruments for firm-level growth of foreign investment outside of tax havens. One percent greater sales and investment growth in nearby non-haven countries is associated with a 1.5 to 2% greater likelihood of establishing a tax haven operation.

JEL Classifications: H87; F23; F21
Keywords: Tax avoidance; Multinational firms; Tax havens

☆ The statistical analysis of firm-level data on U.S. multinational companies was conducted at the International Investment Division, Bureau of Economic Analysis, U.S. Department of Commerce under arrangements that maintain legal confidentiality requirements. The views expressed are those of the authors and do not reflect official positions of the U.S. Department of Commerce. The authors thank Roger Gordon, Frederico Ravelli, two anonymous referees, and several seminar participants for helpful comments on an earlier draft, and the Division of Research at Harvard Business School for financial support.

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1. Introduction

Tax havens are low-tax jurisdictions that provide investors opportunities for tax avoidance. Examples of such tax havens include Ireland and Luxembourg in Europe, Hong Kong and Singapore in Asia, and various Caribbean Island nations in the Americas. Low-tax jurisdictions are also common within countries, taking the form of special economic zones in China, low-tax states and enterprise zones in the United States, and tax-favored subnational regions including eastern Germany, southern Italy, eastern Canada, and others. American multinational firms make extensive use of tax havens: in 1999, 59% of U.S. firms with significant foreign operations had affiliates in tax haven countries.

This paper analyzes the activities of a panel of American multinational firms from 1982 to 1999 to identify the types of firms using tax havens and the purposes that tax haven operations serve. The analysis begins by considering the characteristics of multinational parent companies with tax haven operations. Large multinationals, and those that are most active abroad, are the most likely to operate in tax havens, suggesting that there are economies of scale in using havens to avoid taxes. Additionally, multinational parents in industries in which firms typically face low foreign tax rates, those that are technology-intensive, and those in industries characterized by extensive intrafirm trade are more likely than others to operate in tax havens. While this evidence is consistent with the intuition that multinationals employ haven affiliates to reallocate taxable income from high-tax to low-tax jurisdictions through intrafirm trade and transfers of intangible property, the fact that multinationals in industries with low foreign tax rates are more likely to operate in tax havens indicates that haven affiliates do not merely serve to relocate profits away from high-tax locations. Instead, this piece of evidence suggests that American firms with low foreign tax rates benefit from using tax havens to defer, or otherwise avoid, U.S. taxation of their foreign incomes.

Some of this evidence is open to multiple interpretations. It is possible that aggressive tax-sensitive firms are the most likely to establish tax haven affiliates and also the most likely to concentrate their other foreign operations in low-tax jurisdictions, not due to any operational connection between these activities, but simply because these taxpayers, when given a choice, always select the lowest-tax locations. More generally, tax havens need not provide the same function for all multinational parents. In order to identify how a multinational's overall foreign tax rate influences its use of tax havens, the analysis distinguishes larger, more populous, tax haven countries from smaller tax haven countries, where little employment and capital are located. Taxpayers have greater opportunity to locate taxable profits in larger havens, given the sizes of local economies. The evidence indicates that these larger tax havens serve a distinctive function, facilitating the reallocation of income from high-tax to low-tax locations, as parents in industries with high average foreign tax rates make greater use of such larger havens, conditional on using havens at all, and ownership of an affiliate in a large tax haven country is associated with reduced tax payments elsewhere in the same region.

The size of a firm's foreign operations and its use of tax havens are jointly determined, complicating the analysis of the extent to which the scale of activity in non-haven countries affects the demand for tax haven operations. Fortunately, it is possible to use rates of economic growth in foreign countries to predict differences between the subsequent foreign investment levels of American firms whose initial investments were located in different countries. Evidence from this instrumental variables analysis indicates that

American firms are more likely to establish new tax haven operations if their non-haven investments are growing rapidly, which is consistent with the cross-sectional evidence and the intuition that greater foreign investment increases the potential return to using tax havens.

Section 2 of the paper reviews the taxation of foreign income and discusses evidence of the impact of taxation. Section 3 describes the available data on American direct investment abroad and characterizes tax haven activity of American multinational firms. Section 4 presents empirical evidence of the determinants of demand for tax haven operations, and in particular, the impact of high levels of foreign investment. Section 5 is the conclusion.

2. International taxation and the role of tax havens

A substantial body of research considers the impact of taxation on investment and tax avoidance by multinational firms.[1] Tax policies are obviously capable of affecting the volume and location of foreign direct investment (FDI) since, all other considerations equal, higher tax rates reduce after-tax returns, thereby reducing incentives to commit investment funds. Previous studies identify the effects of taxes through time-series estimation of the responsiveness of FDI to annual variation in after-tax rates of return, and cross-sectional estimation that exploits the large differences in corporate tax rates around the world. A common finding of these studies, reviewed in Hines (1997, 1999), is that the estimated tax elasticity of investment is in the neighborhood of -0.6.

Contractual arrangements between related parties located in countries with different tax rates offer numerous possibilities for sophisticated tax avoidance. It is widely suspected that firms select transfer prices used for within-firm transactions with the goal of reducing their total tax obligations. Multinational firms typically can benefit by reducing prices charged by affiliates in high-tax countries for items and services provided to affiliates in low-tax countries. OECD governments require firms to use transfer prices that would be paid by unrelated parties, but enforcement is difficult, particularly when pricing issues concern differentiated or proprietary items such as patent rights. Given the looseness of the resulting legal restrictions, it is entirely possible for firms to adjust transfer prices in a tax-sensitive fashion without violating any laws. Multinational firms can structure a variety of transactions – intrafirm debt, royalty payments, dividend repatriations, and intrafirm trade – in a manner that is conducive to tax avoidance. Studies of the responsiveness of firms to taxes on these margins examine reported profitabilities, tax liabilities, and specific measures of financial and merchandise trade in order to identify the effects of taxes.[2]

This study's emphasis on the role of haven activities is closest in spirit to Harris et al. (1993) and Hines and Rice (1994). Harris et al. (1993) report that the U.S. tax liabilities of

[1] See Gordon and Hines (2002) for a survey. For a fuller discussion of the tax rules facing U.S. multinational firms and the evidence on behavioral responses to international taxation of U.S. multinationals, see Hines (1997, 1999) and Desai et al. (2003).

[2] For evidence on intrafirm trade, see Clausing (2001, 2003) and Swenson (2001). For evidence on intrafirm debt, see Desai et al. (2004a) and Grubert (1998). For evidence on royalties, see Grubert (1998) and Hines (1995). For evidence on dividend repatriations, see Desai et al. (2001) and Hines and Hubbard (1990). See Grubert and Mutti (1991) and Hines and Rice (1994) for evidence on differences in reported profitability in response to tax rates. While these studies exclusively use data on U.S. multinationals, Bartelsman and Beetsma (2003) use country level data within the OECD to measure the prevalence of profit-shifting activities in a broader sample of countries.

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 tax-motivated income reallocation by firms with tax haven affiliates. Hines and Rice (1994) regress the profitability of all U.S.-owned affiliates in 59 countries against productive inputs and local tax rates and also identify tax havens specifically, dividing havens into the seven large countries with populations exceeding one million in 1982, the "Big 7," and all other tax havens, the so-called "Dots." This classification of tax havens is employed in the analysis that follows.

In contrast to other studies that rely on country-level or firm-level data, the tests described below employ detailed affiliate-level panel data in order to investigate several aspects of demand for tax haven operations on the part of multinational firms. These aspects include correlations of firm attributes and use of tax haven operations, the characteristics of firms whose tax haven operations are concentrated in Big 7 as opposed to Dot locations, links between reported profit rates of non-haven affiliates and parent ownership of tax haven affiliates, and any effect of increased scale of non-haven activity on haven use by the same firm. The detailed data also allow for controls for a variety of factors and fixed effects that might otherwise conflate such an analysis.

While the literature on multinationals and taxation emphasizes the use of tax haven operations to relocate profits away from high-tax jurisdictions, it is also possible that tax havens can be particularly useful to U.S. multinational firms that face repatriation taxes from activities in *low*-tax countries. The United States taxes the worldwide incomes of multinationals, provides partial credits to mitigate double taxation, and provides for relief through deferral until these profits are repatriated. As a consequence, profits earned in low-tax countries may generate U.S. tax liabilities when repatriated. Analyses in Altshuler and Grubert (2003) and Desai et al. (2003) illustrate the uses of tax havens to facilitate deferral of repatriation taxes through a variety of ownership arrangements. These arrangements must be carefully structured in order to avoid immediate home country taxation of certain passive types of income, but they can nonetheless offer benefits to investors with significant potential exposure to home country taxation of lightly taxed foreign income. Consequently, tax havens can benefit multinationals with profits in high-tax locations that can be reallocated to low-tax locations, and can also benefit multinationals with profits in low-tax locations on which repatriation taxes can be deferred.

3. Data and descriptive statistics[3]

The empirical work presented in Section 4 is based on the most comprehensive available data on the activities of American multinational firms. The Bureau of Economic Analysis (BEA) annual survey of U.S. Direct Investment Abroad from 1982 through 1999 provides a panel of data on the financial and operating characteristics of U.S. firms operating abroad. These surveys ask reporters to file detailed financial and operating items for each affiliate and information on the value of transactions between U.S. parents and their foreign affiliates. The International Investment and Trade in Services Survey Act governs the collection of the data, and the Act ensures that "use of an individual company's data for tax, investigative, or regulatory purposes is prohibited." Willful noncompliance with the Act can

[3] This description of the data is drawn from Desai et al. (2001).

Table 1
Summary of haven activity

	Number of reporting affiliates				Number of holding companies				Country tax rate (%)				Share of affiliate sales to related parties abroad (%)			
	1982	1989	1994	1999	1982	1989	1994	1999	1982	1989	1994	1999	1982	1989	1994	1999
All havens	2759	2650	2599	3053	276	219	194	369	20.2	12.4	12.3	10.3	28.6	30.2	36.6	37.5
All non-havens	15,819	16,018	18,299	19,867	446	586	689	1156	42.5	35.5	31.4	30.6	16.0	17.8	19.8	18.5
Big 7 havens	1592	1722	1877	2042	165	111	105	148	21.3	15.6	14.5	13.2	20.4	30.0	35.2	36.8
Information for selected havens																
Hong Kong	323	452	525	555												
Singapore	240	333	436	484												
Switzerland	532	521	504	467												
Ireland	216	250	282	403												
UK Islands, Caribbean	157	159	118	330												
Bermuda	356	302	299	316												
Panama	198	135	111	98												
Luxembourg	63	53	50	91												
Bahamas	180	129	48	81												
Barbados	15	33	45	67												
Netherlands Antilles	315	179	91	40												
Liberia	58	26	13	27												

Summary statistics are provided for the years when benchmark surveys were performed: 1982, 1989, 1994, and 1999. "Number of reporting affiliates" is the total number of affiliates that operate in a particular country and year and file survey forms with BEA. Reporting exemption levels vary through time. All affiliates with an absolute value of sales, assets, or net income in excess of $1 million in 1982, $3 million in 1989, $3 million in 1994, and $7 million in 1999 are required to report. "Number of holding companies" is the number of those affiliates that are classified as enterprises engaged primarily in holding or owning securities for the purposes of exercising control. "Country tax rate" is defined as the median tax rate faced by affiliates within a country in a given year; these medians are averaged to obtain measures for the groupings of countries. "Share of sales to related parties abroad" is the ratio of sales to related parties abroad to total sales, aggregated within those country groupings. "Haven" countries and "Big 7 havens" are those identified as such in Hines and Rice (1994); the "Big 7 Havens" are Hong Kong, Ireland, Lebanon, Liberia, Panama, Singapore, and Switzerland.

result in penalties of up to $10,000 or a prison term of one year. As a result of these assurances and penalties, BEA believes that coverage is close to complete and levels of accuracy are high.

U.S. direct investment abroad is defined as the direct or indirect ownership or control by a single U.S. legal entity of at least 10% of the voting securities of an incorporated foreign business enterprise or the equivalent interest in an unincorporated foreign business enterprise. A U.S. multinational entity is the combination of a single U.S. legal entity that has made the direct investment, called the U.S. parent, and at least one foreign business enterprise, called the foreign affiliate. In order to be considered as a legitimate foreign affiliate, the foreign business enterprise should be paying foreign income taxes, have a substantial physical presence abroad, have separate financial records, and should take title to the goods it sells and receive revenue from the sale.

The foreign affiliate survey forms that U.S. multinational enterprises are required to complete vary depending on the year and the size of the affiliate. The most extensive data for the period examined in this study are available for 1982, 1989, 1994, and 1999, when BEA conducted its Benchmark Surveys. In these years, all affiliates with sales, assets, or net income in excess of certain size cutoffs no more than $7 million in absolute value and their parents were required to file extensive reports. In non-benchmark years between 1982 and 1999, exemption levels were

Table 2
Descriptive statistics

	Mean	Median	Std. dev.
Dependent variables			
Have haven dummy	0.3778	0.0000	0.4849
Share of affiliates in havens	0.0789	0.0000	0.1476
Share of affiliate sales in havens	0.0618	0.0000	0.1576
Share of haven affiliates in the Big 7	0.6441	0.8750	0.4171
Share of haven affiliate sales in the Big 7	0.6952	1.0000	0.4276
Ratio of foreign taxes to sales	0.0364	0.0122	0.0861
Affiliate sales growth in non-havens	0.0715	0.0662	0.2754
Affiliate net PPE growth in non-havens	0.0694	0.0596	0.2717
Haven use dummy	0.6011	1.0000	0.4899
Independent variables			
Log of non-haven sales	10.8954	10.6801	2.1573
Log of parent sales	12.5827	12.5594	2.0114
Average non-haven tax rate	0.3631	0.3687	0.0752
Industry average non-haven tax rate	0.3641	0.3528	0.0520
Industry share of sales to related parties abroad	0.1249	0.1103	0.0835
Parent industry R&D to sales ratio	0.0260	0.0046	0.0581
Own affiliate in haven	0.8847	1.0000	0.3194
Parent owns haven affiliates only in Dot havens	0.0406	0.0000	0.1973
Own affiliate in haven in region	0.7485	1.0000	0.4339
Parent owns regional haven affiliates only in Dot havens	0.1190	0.0000	0.3238
Country tax rate	0.3568	0.3512	0.0964
Leverage	0.6326	0.5945	0.2306
Leverage interacted with country tax rate	0.2274	0.2013	0.1049
Beginning of period sales in non-havens	10.7907	10.6322	2.0359
Beginning of period Net PPE in non-havens	8.7989	8.7265	2.4831
GDP growth rate	0.0421	0.0414	0.0189

higher and less information was collected.[4] BEA collects identifiers linking affiliates through time, thereby permitting the creation of a panel.

Table 1 displays summary statistics for American operations in tax havens and in non-haven countries. Tax havens are low-tax foreign countries that offer advanced communication facilities, promote themselves as offshore financial centers, and frequently feature 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. businesses in 1982, and the current study uses the intersection of this list of tax haven countries and the tax haven countries listed in Diamond and Diamond (2002). Seven of these countries had populations exceeding one million in 1982, and they are referred to as the Big 7.

Notes to Table 2:
"Have haven dummy" is a dummy variable set equal to one if a parent owns an affiliate in a haven. "Share of affiliates in havens" is the ratio of affiliates in havens to all affiliates, by parent, and "Share of affiliate sales in havens" is the ratio of affiliate sales in havens to sales from all affiliates, by parent. "Share of haven affiliates in the Big 7" is the ratio of affiliates in Big 7 Havens to affiliates in all havens, by parent, and "Share of haven affiliate sales in the Big 7" is the ratio of affiliate sales in Big 7 havens to sales from affiliates in all havens, by parent. "Ratio of foreign taxes to sales" is the ratio of foreign taxes to sales for affiliates in non-havens by year. "Affiliate sales growth in non-havens" and "Affiliate net PPE growth in non-havens" are annual growth rates for multinational parents in non-havens, by region, for the periods between benchmark survey years. "Haven use dummy" is a dummy variable set equal to one if the parent begins using havens during a period (1982–1989, 1989–1994, 1994–1999) within a region and set equal to zero if the parent stops using a haven during a period within a region. "Log of non-haven sales" is the log value of sales by affiliates in non-havens for a parent. "Log of parent sales" is the log value of worldwide sales for a parent. "Average non-haven tax rate" is the weighted average country tax rates for a parent in non-havens where country tax rates are the median tax rate for affiliates in that country and year and the weights are affiliate sales. "Industry average non-haven tax rate" is the average non-haven tax rate faced by a firm's competitors where rates are aggregated across competitors using weights of non-haven sales. "Industry share of sales to related parties abroad" is the weighted average industry ratio of sales to related parties abroad to total sales where industry ratios are determined with data aggregated at the three-digit level for all affiliates in that industry worldwide and weights are affiliate sales. "Parent R&D to sales ratio" is the ratio of parent R&D to sales. "Own affiliate in haven" is a dummy variable set equal to one if the parent of the affiliate owns an affiliate in a haven anywhere in the world in that year and is set equal to zero otherwise. "Parent owns haven affiliates only in Dots" is a dummy variable set equal to one in a particular year if the affiliate's parent owns at least one affiliate in a Dot haven but no affiliates in big seven havens; it is set equal to zero otherwise. "Own affiliate in haven in region" is a dummy variable set equal to one if the parent of an affiliate owns an affiliate in a haven in the same region as the affiliate in that year and is set equal to zero otherwise. "Parent owns regional haven affiliates only in Dots" is a dummy variable set equal to one in a particular year if the affiliate's parent owns at least one affiliate in a Dot haven within the affiliate's region but no affiliates in Big 7 havens in that region; it is set equal to zero otherwise. "Country tax rate" is the median tax rate faced by affiliates within a country in a given year. "Leverage" is the ratio of total liabilities to total assets for the affiliate in that year. "Leverage interacted with country tax rate" is the product of "Leverage" and "Country tax rate." "Beginning of period sales in non-havens" is the value of sales in the first year of the period for parents in non-havens in the region. "Beginning of period Net PPE in non-havens" is the value of Net PPE in the first year of the period for parents in non-havens in the region. "GDP growth rate" is the weighted average growth rate of the non-haven economies where the weights are the share of parent Net PPE in a country within that region.

[4] From 1983–1988, all affiliates with an absolute value of sales, assets, or net income less than $10 million were exempt from reporting requirements, and this cutoff increased to $15 million from 1990–1993 and $20 million for 1995–1999. BEA uses reported data to estimate universe totals when surveys cover only larger affiliates or when only certain affiliates provide information on particular survey forms. Estimated data is unlikely to have a significant impact on the BEA's published data at the industry or country level as data based on actual reports exceeds 90% of the estimated totals of assets and sales in each of the years between 1982 and 1999. To avoid working with estimated data, only affiliates required to provide all the information associated with a particular analysis are considered.

Table 1 indicates that, while more than 12% of affiliates in havens were holding companies in 1999, less than 6% of affiliates in non-havens were holding companies. Since holding companies can be used to deploy funds from one foreign operation to other foreign investments without returning money to the United States in the process, the concentration of holding companies in tax havens is consistent with their use to avoid taxes, including U.S. repatriation taxes. Not surprisingly, tax rates in havens are much lower than tax rates in non-havens. The average magnitude of these differences persists despite the declining trend in tax rates over the period. Finally, the summary statistics also indicate that affiliates in havens sell higher fractions of their output to related parties abroad than do affiliates located outside of tax havens. These sale patterns offer opportunities to relocate profits to avoid U.S. or local taxes. Table 1 includes additional information on the extent of multinational activity in the Big 7 tax haven countries and in selected individual havens. Table 2 presents means and standard deviations of variables used in the estimation that follows.

4. Tax havens and firm behavior

The analysis begins by identifying characteristics of multinational firms that are associated with the use of tax havens. This analysis is followed by distinguishing the uses of tax haven affiliates located in large countries from the uses of tax haven affiliates located in small countries, and by considering the impact of tax havens within regions. The analysis concludes by employing an instrumental variables analysis to measure the extent to which changes in non-haven activity affect the demand for tax haven operations.

4.1. Demand for tax haven operations

Table 3 presents coefficients from regressions estimating the determinants of demand for tax haven operations as a function of company attributes. The dependent variable in the logit regressions reported in the first two columns is a dummy variable that takes the value one if a consolidated parent group includes a tax haven affiliate, and is zero otherwise. Some of the independent variables are collected only in benchmark years, so the sample includes observations for parent groups in 1982, 1989, 1994, and 1999. Column one presents a minimalist specification in which only size variables are included as independent variables, the variable "log of non-haven sales" corresponding to the log of total foreign sales in countries other than tax havens, and the "log of parent sales" is the log of total sales by parent companies. Both sales coefficients are positive, indicating that larger firms are more likely than others to have tax haven affiliates. Additionally, the difference between the 0.5918 coefficient on non-haven sales and the 0.1575 coefficient on parent sales implies that, after controlling for total (domestic plus foreign) sales, firms with higher fractions of their sales in foreign markets are the most likely to have tax haven affiliates.

The regression reported in column 2 adds squared size terms as well as additional independent variables. The estimated coefficient on the square of the log of non-haven sales is positive, whereas the estimated coefficient on the square of the log of parent sales is negative, implying that greater foreign operations contribute increasingly to the likelihood of having a tax haven affiliate, whereas the opposite is true of greater domestic operations.

Firms in different industries tend to invest in different foreign countries, and are thereby subject to differing average foreign tax rates. The independent variable "average industry

Table 3
Determinants of the demand for havens

	Dependent variable					
	Have haven dummy		Share of affiliates in havens		Share of affiliate sales in havens	
	(1)	(2)	(3)	(4)	(5)	(6)
Constant	−9.0327	−5.7235	−1.0884	−1.2623	−1.1289	−1.3607
	(0.3063)	(1.8985)	(0.0411)	(0.2686)	(0.0486)	(0.2899)
Log of non-haven sales	0.5918	−0.5959	0.0421	−0.0160	0.0355	−0.0363
	(0.0323)	(0.0848)	(0.0042)	(0.0185)	(0.0048)	(0.0213)
Square of log of non−haven sales		0.0543		0.0026		0.0033
		(0.0044)		(0.0008)		(0.0009)
Log of parent sales	0.1575	0.7408	0.0395	0.1446	0.0434	0.1804
	(0.0291)	(0.2896)	(0.0049)	(0.0408)	(0.0058)	(0.0427)
Square of log of parent sales		−0.0236		−0.0042		−0.0054
		(0.0113)		(0.0015)		(0.0016)
Average industry non-haven tax rate		−2.4676		−0.5453		−0.7072
		(1.2546)		(0.2108)		(0.2309)
Industry share of sales to related parties abroad		1.0141		0.2303		0.2690
		(0.4662)		(0.0775)		(0.0881)
Parent R&D to sales ratio		3.0290		0.3758		0.5249
		(0.6247)		(0.0828)		(0.0984)
No. of obs.	8435	7720	8435	7720	8435	7720
Log likelihood	−4062	−3608	−3255	−2874	−3298	−2912

The dependent variable in columns 1 and 2 is a dummy variable set equal to one if a parent owns an affiliate in a haven. The dependent variable in columns 3 and 4 is the ratio of affiliates in havens to all affiliates, by parent. The dependent variable in columns 5 and 6 is the ratio of affiliate sales in havens to sales from all affiliates, by parent. All of the specifications use parent level data drawn from 1982, 1989, 1994, and 1999. The specifications in columns 1 and 2 are logit specifications, and the specifications in columns 3 through 6 are Tobit specifications. "Log of non-haven sales" is the log value of sales by affiliates in non-havens for a parent. "Log of parent sales" is the log value of worldwide sales for a parent. "Average industry non-haven tax rate" is the weighted average non-haven tax rate of firms in the same three-digit industry, where the weights correspond to affiliate sales, and the tax rates by country are measured as the median tax rate of affiliates operating in a particular country and year. "Industry share of sales to related parties abroad" is the weighted average industry ratios are determined with data aggregated at the three-digit SIC level for all affiliates in that industry worldwide and weights are affiliate sales. "Parent R&D to sales ratio" is the ratio of parent R&D to sales. All specifications include year fixed effects, and standard errors are clustered at the parent level.

non-haven tax rate" measures the weighted average non-haven tax rate of firms by three-digit industry, where the weights correspond to affiliate sales, and the tax rates by country are measured as the median tax rate of all affiliates operating in a particular country and year.[5] This use of an industry-specific, rather than firm-specific, measure of non-haven tax rates is motivated by the problem that tax haven and non-haven investments are jointly

[5] Tax rates are calculated from BEA data by taking the ratio of foreign income taxes paid to foreign pretax income for each affiliate, and using the medians of these rates as country-level observations for each country and year. Affiliates with negative net income are excluded for the purposes of calculating country tax rates. For a more comprehensive description of the calculation of affiliate tax rates, see Desai et al. (2001). In particular, these income tax rates do not include withholding taxes on cross-border interest payments to related parties, since such taxes are endogenous to interest payments and in any case immediately creditable against home-country tax liabilities. Desai and Hines (1999) report that adjusting country tax rates for withholding taxes does not affect the estimated impact of taxation on affiliate borrowing, due to the combination of creditability and low withholding tax rates on related-party interest payments. For purposes of calculating industry averages, industries are defined using the BEA three-digit ISI codes, which are similar to three-digit SIC codes, and tax rates are weighted by the distribution of sales of all affiliates of parents in the same industry.

determined; and while this procedure does not remove all of the confounding effects of correlated omitted variables, it limits such effects to those that are industry-specific. The estimates imply that higher average tax rates in non-haven foreign operations reduce the likelihood of establishing tax haven affiliates, as indicated by the −2.4676 coefficient in column two.[6] Parent firms in industries for which high fractions of total sales go to related parties abroad are more likely than others to have tax haven affiliates, as reflected in the 1.0141 coefficient in column two. Finally, the estimated 3.0290 coefficient in column two indicates that companies with high R&D/sales ratios are more likely than others to have tax haven affiliates.

Columns 3 and 4 repeat these regressions using Tobit specifications in which the dependent variable is the fraction of a firm's foreign affiliates located in tax havens. The independent variables have effects that are very similar to those reported in columns 1 and 2. The −0.5453 coefficient in column 4 implies that a 10% higher average foreign tax rate outside of tax havens is associated with a 5% reduction in the fraction of foreign affiliates located in tax havens. The 0.2303 coefficient in the same regression implies that 10% greater industry sales to related parties abroad is associated with 2% higher fractions of affiliates located in tax havens, and the 0.3758 coefficient indicates that a 10% greater R&D/sales ratio increases the share of affiliates in tax havens by 4%. Finally, it is useful to check whether regressions in which the dependent variable is based on a measure of activity, rather than counts of affiliates, produce similar patterns of coefficients. Columns 5 and 6 report estimated coefficients from Tobit regressions in which the dependent variable is the fraction of foreign sales accounted for by tax haven affiliates, with results very similar to those appearing in columns 1–4.

The results presented in Table 3 offer useful evidence of characteristics that stimulate demand for tax haven operations. Firms with extensive foreign investments appear to be the most likely to establish tax haven affiliates. Firms whose non-haven affiliates are disproportionately located in low-tax countries are more likely than others to have tax haven affiliates, suggesting that the use of tax havens to facilitate deferral of home-country taxation is a more powerful inducement to establish tax haven operations than is the potential transfer pricing use of tax havens.[7] Parent companies in industries with greater intensities of sales to related parties abroad are more likely to have tax haven affiliates, which is consistent both with efforts to relocate taxable income from home countries to tax havens and with the use of tax haven affiliates to defer home country taxation of income reported to have been earned by other foreign affiliates. R&D-intensive firms are the most likely to have tax haven affiliates,

[6] Similar results to those presented on taxes in this table are obtained if tax rates by country are measured using statutory corporate tax rates. Desai et al. (2004b) also report results using firm-specific non-haven tax rates in place of the industry averages, which closely resemble those reported in columns 2, 4, and 6 of Table 3.

[7] The ability of American firms to defer home-country taxation is limited by Subpart F provisions that subject certain forms of passive income to immediate U.S. taxation, so the results presented here suggest that firms have mechanisms for circumventing these provisions. Some mechanisms by which such deferral is accomplished are detailed in IRS Notice 98-11. Specifically, this notice indicates that the "check-the-box" regulations of 1996 that facilitated the use of so-called hybrid entities (that can be used to avoid the Subpart F provisions) would be reconsidered as these regulations were employed widely to facilitate deferral in a spirit contrary to Subpart F. While the check-the-box regulations would help account for the use of havens to facilitate deferral in the latter part of the sample period, IRS Notice 98-11 makes clear that "the issues under Subpart F raised by hybrid branch arrangements may also be raised by certain partnership and trust arrangements" indicating that a variety of technologies exist for facilitating deferral of home-country taxation, and the use of these tax-avoidance methods long predates the 1996 adoption of "check-the-box" regulations.

which may reflect the benefits and relative ease of relocating income produced by intangible technology assets or intangible property itself.[8]

In order to examine further how a multinational's overall foreign tax rate influences its use of tax havens, the analysis distinguishes larger, more populous, tax haven countries from smaller tax haven countries, where little employment and capital are located. Firms are likely to be better able to relocate profits to larger tax haven countries since they have more substantial operations in these environments and therefore high profit rates are less likely to attract the suspicions of tax authorities. The regressions reported in Table 4 are run using observations only from parent companies with tax haven affiliates; the dependent variables in these regressions are the shares of tax haven activities located in the Big 7 countries. Columns 1 and 2 of Table 4 report estimated coefficients from Tobit regressions in which the dependent variable is the fraction of tax haven affiliates located in the Big 7 countries. The sample consists of observations of parent companies with haven affiliates and covers the benchmark survey years of 1982, 1989, 1994 and 1999. Column 1 reports a 0.1065 estimated coefficient on the log of non-haven sales, and a −0.2546 coefficient on the log of parent sales, which together imply that larger parent firms, and those whose foreign affiliates contribute smaller fractions of total sales, concentrate less of their tax haven activity in Big 7 countries.

The regression reported in column 2 adds the same explanatory variables as those used in the regressions presented in Table 3. The 3.6454 coefficient in column two indicates that 10% higher foreign tax rates are associated with 36% higher desired fractions of tax haven affiliates located in Big 7 countries. The 0.9718 coefficient in the same regression implies that 10% greater industry sales to related parties abroad is associated with 10% higher fractions of tax haven affiliates located in Big 7 countries, and the 1.5325 coefficient indicates that 10% greater R&D/sales ratios have somewhat larger effects. Very similar results appear in the regressions reported in columns 3 and 4, in which the dependent variable is the fraction of tax haven sales accounted for by affiliates in Big 7 countries.

The results presented in Table 4 afford a more nuanced interpretation of the tax haven demand specifications presented in Table 3. High foreign tax rates among affiliates outside of tax havens are associated with significantly greater tax haven concentration in Big 7 countries, which is consistent with the use of these larger tax haven countries to relocate taxable incomes through transfer pricing. Sales to related parties abroad and high R&D/sales ratios may present opportunities to use transfer prices to relocate taxable income, so the positive association of these variables with the fraction of tax haven activity in Big 7 countries is again suggestive of transfer pricing motives at work.

4.2. Tax havens and tax payments

Table 5 presents regressions that further explore the use of tax haven affiliates to relocate taxable income with particular attention to the role of regional tax havens. The dependent variable in the regressions reported in Table 5 is the ratio of tax payments to sales for affiliates located outside of tax haven countries. The regressions in Table 5 investigate if this ratio is distinctive for affiliates of firms that make use of tax havens. If certain firms can relocate income

[8] These results on the demand for tax havens cohere with the results in Graham and Tucker (2005) that indicate that larger firms with more foreign activity and greater R&D activity are those that engage in tax avoidance through corporate tax shelters.

Table 4
Determinants of the demand for havens, by haven type

	Dependent variable			
	Share of haven affiliates in the Big 7		Share of haven affiliate sales in the Big 7	
	(1)	(2)	(3)	(4)
Constant	3.2394	−1.3480	3.3275	−1.0809
	(0.2487)	(1.4217)	(0.2729)	(1.5138)
Log of non-haven sales	0.1065	0.2666	0.1352	0.2285
	(0.0199)	(0.0672)	(0.0234)	(0.0844)
Square of log of non-haven sales		−0.0076		−0.0049
		(0.0028)		(0.0035)
Log of parent sales	−0.2546	−0.0104	−0.3050	−0.0172
	(0.0274)	(0.2135)	(0.0319)	(0.2258)
Square of log of parent sales		−0.0079		−0.0094
		(0.0078)		(0.0082)
Average industry non-haven tax rate		3.6454		4.1932
		(0.9700)		(1.0513)
Industry share of sales to related parties abroad		0.9718		0.9967
		(0.3444)		(0.3699)
Parent R&D to sales ratio		1.5325		1.6430
		(0.5612)		(0.6690)
No. of obs.	2774	2578	2680	2499
Log likelihood	−2567	−2302	−2377	−2134

The dependent variable in columns 1 and 2 is the ratio of affiliates in Big 7 Havens to affiliates in all havens, by parent, in 1982, 1989, 1994 and 1999. The dependent variable in columns 3 and 4 is the ratio of affiliate sales in Big 7 Havens to sales from affiliates in all havens, by parent, in 1982, 1989, 1994 and 1999. All specifications are Tobit specifications. "Log of non-haven sales" is the log value of sales by affiliates in non-havens for a parent. "Log of parent sales" is the log value of worldwide sales for a parent. "Average industry non-haven tax rate" is the weighted average non-haven tax rate of firms in the same three-digit industry, where the weights correspond to affiliate sales, and the tax rates by country are measured as the median tax rate of affiliates operating in a particular country and year. "Industry share of sales to related parties abroad" is the weighted average industry ratio of sales to related parties abroad to total sales where industry ratios are determined with data aggregated at the three-digit SIC level for all affiliates in that industry worldwide and weights are affiliate sales. "Parent R&D to sales ratio" is the ration of parent R&D to sales. All specifications include year fixed effects, and standard errors are clustered at the parent level.

to low or zero tax locations, then this ability will reduce observed returns and observed tax payments in high tax locations.[9]

The regressions reported in Table 5 include measures of affiliate leverage, defined as the ratio of total liabilities to total assets, since the tax deductibility of interest payments is likely to induce a negative correlation between tax payments and greater leverage in a mechanistic way. The regressions also include dummy variables for parent companies, affiliate industries, and years, and the standard errors are clustered at the affiliate level. Country tax rates are positively associated with tax payments, as was expected, though parent ownership of any tax haven affiliate has only small and insignificant negative effects on tax payments in the regressions reported in columns one and two. Ownership of regional tax haven affiliates, however, is associated with significantly reduced tax payments. The −0.0207 coefficient in column three

[9] There is no single dependent variable that is ideal from the standpoint of measuring tax-motivated income reallocation, though the use of alternative dependent variables, such as the ratio of after-tax income to equity, or the ratio of tax payments to equity, produces results very similar to those reported in Table 5.

Table 5
Havens and tax payments of U.S. multinational affiliates

	Dependent variable					
	Ratio of foreign taxes to sales					
	(1)	(2)	(3)	(4)	(5)	(6)
Constant	0.0037	0.0034	0.0133	0.0141	−0.0022	−0.0066
	(0.0197)	(0.0194)	(0.0206)	(0.0208)	(0.0275)	(0.0275)
Own affiliate in haven	−0.0014	−0.0009				
	(0.0027)	(0.0026)				
Parent owns haven affiliates only in Dot havens		−0.0015				
		(0.0040)				
Own affiliate in haven in region			−0.0207	−0.0225	−0.0227	−0.0244
			(0.0064)	(0.0066)	(0.0070)	(0.0072)
Parent owns regional haven affiliates only in Dot havens				0.0073		0.0073
				(0.0029)		(0.0029)
Country tax rate	0.0973	0.0974	0.0996	0.0985	0.0961	0.0949
	(0.0440)	(0.0440)	(0.0422)	(0.0422)	(0.0432)	(0.0432)
Leverage	−0.0145	−0.0145	−0.0116	−0.0117	−0.0129	−0.0130
	(0.0214)	(0.0214)	(0.0204)	(0.0204)	(0.0209)	(0.0209)
Leverage interacted with country tax rate	−0.0401	−0.0401	−0.0461	−0.0437	−0.0414	−0.0388
	(0.0569)	(0.0569)	(0.0543)	(0.0542)	(0.0555)	(0.0554)
Parent, industry, and year fixed effects?	Y	Y	Y	Y	Y	Y
Restrict sample to affiliates of parents with a haven affiliate?	N	N	N	N	Y	Y
No. of obs.	137,895	137,895	137,895	137,895	103,431	103,431
R-squared	0.5936	0.5936	0.5989	0.5995	0.6007	0.6013

The dependent variable is the ratio of foreign taxes paid to sales for affiliates in non-havens by year, from 1982 to 1999. The sample in the specifications presented in columns 5 and 6 is restricted to those parents with an affiliate in a haven. The analysis uses analytic weights equal to sales to transform the specifications in a way that is equivalent to multiplying through by sales. "Own affiliate in haven" is a dummy variable set equal to one if the parent of the affiliate owns an affiliate in a haven anywhere in the world in that year and is set equal to zero otherwise. "Parent owns haven affiliates only in Dots" is a dummy variable set equal to one in a particular year if the affiliate's parent owns at least one affiliate in a Dot haven but no affiliates in Big 7 havens; it is set equal to zero otherwise. "Own affiliate in haven in region" is a dummy variable set equal to one if the parent of the affiliate owns an affiliate in a haven in the same region as the affiliate in that year and is set equal to zero otherwise. "Parent owns regional havens only in Dots" is a dummy variable set equal to one in a particular year if the affiliate's parent owns at least one affiliate in a Dot haven within the affiliate's region, but no affiliates in Big 7 havens in that region; it is set equal to zero otherwise. "Country tax rate" is the median tax rate faced by affiliates within a country in a given year. "Leverage" is the ratio of total liabilities to total assets for the affiliate in that year. "Leverage interacted with country tax rate" is the product of "Leverage" and "Country tax rate." All specifications include parent, industry and year fixed effects, and standard errors are clustered at the affiliate level.

indicates that affiliates whose parent companies have tax haven affiliates in the same region pay 2.1% lower taxes as a fraction of sales.[10]

The regression reported in column four of Table 5 distinguishes the effects of tax haven affiliates in large and small countries by adding a dummy variable for firms with regional tax havens located in Dots but not Big 7 countries. The positive and significant 0.0073 coefficient

[10] Desai et al. (2004b) compare the effects of having a haven affiliate with tax rate differences in an effort to quantify the tax-reducing effects of avoidance available using haven affiliates. This comparison is suspect, given that any measurement error in calculating tax rates may create a downward bias in the estimated tax rate effect. This downward bias in estimated tax rate effects in turn inflates the implied effect of owning a haven.

on this dummy variable indicates that ownership of regional affiliates in Dots but not Big 7 countries is associated with a smaller tax reduction than is broader ownership of tax haven affiliates.[11] This pattern is consistent with the evidence in Table 4 pointing to the income reallocation role of tax haven affiliates located in larger countries. The regressions reported in columns 5 and 6 repeat the regressions reported in 3 and 4, using a sample including affiliates whose parents own at least one tax haven affiliate somewhere; these regressions are identified because not all parents with tax haven affiliates have them in every region. The results are very similar to those reported in columns 3 and 4, suggesting that the patterns are not simple artifacts of comparing the characteristics of firms with and without tax haven affiliates.

The evidence presented in Table 5 points to the use of tax haven affiliates to facilitate reallocating taxable income from high-tax to low-tax jurisdictions, with a particularly pronounced effect within regions. This evidence is consistent with the tax haven demand regressions presented in Tables 3 and 4. Taken together, the regressions reported in Tables 3–5 suggest that American firms use tax haven operations to avoid foreign and domestic tax liabilities.

4.3. Tax haven operations and non-haven activity

If the value of potential tax savings associated with using tax havens increases more rapidly with firm size than does the cost of establishing haven operations, firms with extensive non-haven investments should have the greatest demand for tax haven operations. The evidence presented in Table 3 is consistent with this pattern, but it is not conclusive. Haven and non-haven activity are jointly determined and might both be functions of important correlated omitted variables.

The regressions presented in Tables 6 and 7 consider the effect of foreign (non-haven) investment levels on the demand for tax haven operations by using an instrumental variables estimation strategy that takes a firm's initial distribution of activity among non-haven countries to be exogenous from the standpoint of subsequent changes in tax haven affiliate ownership. Foreign economies grow at different rates, and with them grow levels of economic activity by U.S.-owned affiliates. The first stage regressions use the fact that firms differ in their initial distributions of foreign economic activity to predict different growth rates of subsequent activity, based on differences in the average GDP growth rates of the countries in which their activities were initially concentrated. These predicted activity growth rates then become the independent variables in second stage equations explaining the establishment or discontinuance of tax haven operations.

Table 6 presents the results of the first stage regressions employed to generate predicted values then used in the regressions in Table 7. Observations represent changes between benchmark years in regional characteristics of foreign operations distinguished by American parent company. The dependent variable in the regressions reported in columns 1 and 2 of Table 6 is the annual growth rate (between benchmark surveys) of aggregate regional sales in countries other than tax havens. The dependent variable in columns 3 and 4 is the annual growth rate of regional net property, plant, and equipment (Net PPE) held by affiliates outside tax havens. The critical independent variable in these regressions is the weighted average of foreign GDP growth rates, in which the weights are fractions of non-haven foreign Net PPE in base periods. As the regressions indicate, weighted GDP growth rates

[11] It is nonetheless the case that ownership of haven affiliates located in Dots is associated with reduced tax changes; the sum of the −0.0225 and 0.0073 coefficients in column four equaling −0.0152, which differs significantly from zero. The use of Dots to facilitate deferral of home country taxes is consistent with such a pattern, since deferral increases a firm's incentive to use other means to reallocate taxable income away from high-tax jurisdictions.

Table 6
First stage regressions: non-haven activity and local economic growth

	Dependent variable			
	Affiliate sales growth in non-havens		Affiliate Net PPE growth in non-havens	
	(1)	(2)	(3)	(4)
Constant	0.3582	0.0070	0.2015	0.0034
	(0.0161)	(0.0073)	(0.0129)	(0.0081)
Beginning of period sales in non-havens	−0.0322			
	(0.0013)			
Beginning of period Net PPE in non-havens			−0.0224	
			(0.0012)	
GDP growth rate	1.2134	1.2318	1.4204	1.4502
	(0.1643)	(0.1712)	(0.1839)	(0.1890)
Period fixed effects?	Y	Y	Y	Y
No. of obs.	6873	6873	6785	6785
R-squared	0.0918	0.0135	0.0632	0.0113

The dependent variable is the growth rate of sales (columns 1 and 2) and Net PPE (columns 3 and 4) for multinational parents in non-havens, by region, for the periods between benchmark survey years (1982–1989, 1989–1994, 1994–1999). The five regions are Europe, Latin America and other western hemisphere, Asia/Pacific, Africa, and the Middle East. "Beginning of period sales in non-havens" is the value of sales in the first year of the period for parents in non-havens in the region. "Beginning of period Net PPE in non-havens" is the value of Net PPE in the first year of the period for parents in non-havens in the region. "GDP growth rate" is the weighted average growth rate of the non-haven economies where the weights are the share of parent Net PPE in a country within that region. All specifications include period fixed effects.

correlate positively with growth of sales and growth of capital stocks in the same regions, implying that firms whose initial investments were concentrated in countries whose economies subsequently grew very rapidly tend to expand their foreign investments more rapidly than do firms whose initial investments were concentrated in countries whose economies subsequently stagnated. Hence average foreign GDP growth rates, calculated using firm-specific weights, can serve as reasonable instruments for changes in activity outside of tax havens.[12]

Columns 1 through 10 of Table 7 present estimated coefficients from second stage fixed effect logit equations in which predicted values of changes in sales and capital stocks of non-haven affiliates are used as independent variables.[13] Observations again represent changes between benchmark years in the regionally aggregated activities of parent companies. The dependent variable takes the value one if a firm has no tax haven affiliates in the region in the base period but has one or more tax haven affiliates in the region by the time of the following benchmark survey. The dependent variable is zero if a firm has one or more tax haven affiliates but loses them by the following benchmark survey. Observations of firms that never have tax haven affiliates, and those that always have tax haven affiliates, are

[12] Numerous studies of firm growth, including Evans (1987) and Hall (1987), indicate that small firms grow faster than large firms. Therefore, specifications 1 and 3 control for measures of initial firm size. To ensure that the instrumental variable results that follow are not identified solely by differences in initial size, the analysis also uses predicted values from specifications 2 and 4 that do not include proxies for initial size. The F-statistics of the first stage regressions reported in Table 6 exceed 19 in all specifications.

[13] Murphy and Topel (1985) discuss the problems associated with obtaining a valid estimate of variance in a two-stage maximum likelihood estimation setting such as this. The standard errors presented in Table 7 are based on Murphy–Topel estimates of variance.

Table 7
The relationship between haven and non-haven activity, within regions

	Dependent variable									
	Haven use dummy				Haven use dummy					
					Asia/Pacific		Europe		Latin America and other western hemisphere	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Constant	0.0173	−0.1358	−0.0154	−0.1011	0.8334	0.9550	−0.0303	−0.1157	−0.2526	−0.2910
	(0.1388)	(0.2336)	(0.1434)	(0.2200)	(0.3607)	(0.3628)	(0.2285)	(0.2515)	(0.2248)	(0.2318)
Affiliate sales growth in non-havens	6.5934	8.4789			2.9064		7.9395		4.1771	
	(1.3346)	(3.7516)			(3.0858)		(2.6879)		(1.9855)	
Affiliate Net PPE growth in non-havens			6.2493	7.2020		1.1997		7.5724		5.3181
			(1.3145)	(3.1900)		(2.7748)		(2.8271)		(2.1901)
Period fixed effects?	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
IV with GDP growth and initial levels?	Y	N	Y	N	Y	Y	Y	Y	Y	Y
IV with GDP growth?	N	Y	N	Y	N	N	N	N	N	N
No. of obs.	816	817	817	817	231	231	320	321	245	245
Log likelihood	−531	−543	−534	−543	−130	−130	−208	−210	−167	−167

The dependent variable is a dummy variable set equal to one if the parent begins using havens during a period (1982–1989, 1989–1994, 1994–1999) within a region and set equal to zero if the parent stops using a haven during a period within a region. The five regions employed in the regressions in columns 1 through 4 are Europe, Latin America and other western hemisphere, Asia/Pacific, Africa, and the Middle East. In columns 5 through 10, observations are not pooled across regions and results are presented separately for Asia/Pacific (columns 5 and 6), Europe (columns 7 and 8) and Latin America and other western hemisphere (columns 9 and 10). "Affiliate sales growth in non-havens" is the predicted value of sales growth in non-havens from the first stage regressions presented in Table 6. "Affiliate Net PPE growth in non-havens" is the predicted value of Net PPE growth in non-havens from the first stage regressions presented in Table 6. In columns 1, 3, 5, 7 and 9, the predicted values are from first-stage regressions that employ GDP growth rates and initial levels of either sales of Net PPE. In the other columns predicted values are from first stage regressions that employ GDP growth rates. All specifications include period fixed effects, and standard errors are corrected as indicated in Murphy and Topel (1985).

excluded from the sample. This seemingly odd procedure, developed by Chamberlain (1980), corresponds to a logit model with unchanging firm fixed effects and permits straightforward estimation of the determinants of tax haven demand. It has the virtue of effectively controlling for firm fixed effects through first differences, thereby removing the effects of considerations – including firm size, average industry foreign tax rate, and R&D intensity – that are roughly time-invariant when estimating the determinants of demand for haven affiliates.[14]

The results indicate that greater activity outside of tax havens is associated with greater demand for tax haven affiliates. The estimated 6.5934 coefficient on affiliate sales growth in column 1, and corresponding 8.4789 coefficient in column 2, indicate that higher sales growth rates outside of tax havens are associated with greater likelihood of establishing tax haven affiliates. This result does not merely reflect a process in which goods are produced by non-haven affiliates and then sold by regional tax haven affiliates. In columns 3 and 4, non-haven Net PPE growth is used in place of non-haven sales growth, the results similarly indicating that firms accumulating capital at faster rates outside of tax havens are the ones that are most likely to acquire new operations in tax havens.

The results indicate that firms whose initial investments were concentrated in economies that subsequently grew rapidly are the most likely to establish new tax haven affiliates. The regressions reported in columns 1 through 4 imply that, when evaluated at sample means, 1% more rapid sales and investment growth is associated with an 1.5 to 2% greater likelihood of establishing a new tax haven affiliate in the same region. Columns 5 through 10 of Table 7 repeat with regional subsamples the specifications run on the whole sample and reported in columns 1 and 3. While the results within the Asia/Pacific region are not statistically significant (columns 5 and 6), the European (columns 7 and 8), and American (columns 9 and 10) subsamples both exhibit coefficient magnitudes, signs, and significance levels that are similar to those of the whole sample. Given the much greater economic significance of Europe and the Americas for U.S. multinationals during the sample period, it is reassuring that their patterns so closely resemble those of the sample as a whole.

5. Conclusion

The evidence indicates that American multinational firms establish operations in tax haven countries as part of their international tax avoidance strategies. Large firms with high shares of international activity are the most likely to have haven affiliates, and firms in industries characterized by high R&D intensities and significant volumes of intrafirm trade similarly exhibit the greatest demand for tax haven operations. Tax haven affiliates appear both to facilitate the relocation of taxable income from high tax locations and to reduce the cost of deferring home country taxation of income earned in low tax foreign locations. Affiliates in larger tax haven countries appear to be particularly well suited for reallocating income, presumably reflecting the effects of government enforcement of transfer pricing

[14] The fact that the Chamberlain procedure removes time-invariant firm characteristics from the estimating equation for haven demand explains why largely invariant firm characteristics, such as R&D intensity, that appear as independent variables in the regressions presented in Tables 3 and 4 are not included as independent variables in the regressions presented in Table 7.

rules. Firms investing in economies that subsequently grow very rapidly expand their own foreign investments at faster rates than other firms and are more likely to establish new tax haven operations confirming the role of scale in dictating the demand for tax haven operations.

Ever-increasing levels of foreign direct investment, the rising R&D intensity of multinational firms, and the growing volume of world trade between related parties together imply that the demand for tax haven operations is likely to increase over time, as are the concerns of non-haven policymakers. Firms clearly benefit from using tax haven operations to avoid taxes; what is less clear is the impact of this avoidance on the economies of countries with high tax rates.

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Research Summary

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Professor Desai's research centers on international corporate and public finance. His articles have appeared in numerous journals, including the Review of Financial Studies, National Tax Journal *and the* Journal of Financial Economics. *He received his bachelor's degree from Brown University, as well as an MBA and a Ph.D. in political economy from Harvard University. In 1994, he was a Fulbright Scholar to India.*

Paper: Do tax havens divert economic activity?

Summary: Professor Desai's paper explores expanding corporate operations in tax havens and their influence on investment decisions in non-havens. He concludes that:

- The tax burden on corporate income in OECD counties has fallen little, if at all, in the past 25 years.
- The widespread use of tax havens may actually slow otherwise aggressive competition between countries to reduce taxes.
- Evidence suggests that tax haven investment activity enhances, rather than diminishes, activity in nearby non-havens.

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Do tax havens divert economic activity? ☆

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Abstract

When multinational firms expand their operations in tax havens, do they divert activity from non-havens? Much of the debate on tax competition presumes that the answer to this question is yes. This paper offers a model for examining the relationship between activity in havens and non-havens, and discusses the implications of recent evidence in light of that model. Properly interpreted, the evidence suggests that tax haven activity enhances activity in nearby non-havens.

JEL classification: H87; F23; F21

1. Introduction

Economic federations typically struggle with the impact and desirability of tax policy diversity among member states. In particular, there is a widespread concern that low-tax areas within a federation impose a fiscal externality on other countries in attracting investment that would otherwise locate in high-tax areas within the same regions. There are no reliable estimates of the magnitude of such diversion. Moreover, there has been little consideration of the possibility that reducing the costs of using low-tax jurisdictions *facilitates* foreign investment and economic activity in high-tax jurisdictions within the

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same regions. The latter possibility arises if the ability to relocate taxable profits into low-tax jurisdictions increases the return to investing in high-tax areas, if low-tax jurisdictions facilitate deferral of home-country taxation of income earned elsewhere, or if affiliates in low-tax areas offer valuable intermediate goods and services to affiliate in high-tax areas.

Tax havens also figure prominently in current debates over the scope and consequences of tax competition. Countries competing for mobile foreign investment may have incentives to reduce taxes to levels below what they would be in the absence of foreign competition; indeed, there are circumstances in which international tax competition drives optimizing governments to reduce all capital tax rates to zero.[1] Tax havens are widely believed to accelerate the process of tax competition between governments. However, it is conceivable that the tax avoidance opportunities presented by tax havens allow other countries to maintain high capital tax rates without suffering dramatic reductions in foreign direct investment. Hence the proliferation and widespread use of tax havens may retard what would otherwise be an aggressive competition between other countries to reduce taxes in order to attract and maintain investment. Indeed, despite the incentives in place to compete over tax rates, the tax burden on corporate income in OECD countries has fallen little, if at all, over the past 25 years (see Griffith and Klemm (2004)).

This paper presents a model that can be used to analyze the implications of evidence that firms with growing activity in high-tax countries are also the firms most likely to initiate tax haven operations. The complementarity between haven and non-haven activity, evident in this empirical pattern, implies that reduced costs of using tax havens are likely to stimulate investment in nearby high-tax countries. These results stand in contrast to the assumptions in much of the tax competition literature and the beliefs of many concerned policymakers.

2. A model of haven and non-haven activity

Consider the incentives facing a firm with the option of making a discrete investment in a tax haven location. Part of the return to investing in the tax haven comes in the form of reducing the effective tax rate on the firm's other foreign investments. Let τ_1 denote the tax rate on the firm's foreign investments outside of tax havens, and let τ_2 denote the effective tax rate on these profits if the firm also has a tax haven operation. To the extent that the firm is able to use tax haven investments to reduce effective foreign tax rates on income earned outside of havens, it follows that $\tau_2 \leq \tau_1$.

The firm produces output in countries other than tax havens with a production function $Q(K_1, K_2)$, in which K_1 is the level of capital investment in non-havens, and K_2 is the level of investment in tax

[1] The literature on tax competition since Oates (1972), as reviewed in Wilson (1999) and Gordon and Hines (2002), has largely been theoretical, and focused on the possibility that tax competition may result in an inefficient underprovision of public goods. An alternative stream of this literature emphasizes the virtues of tax competition in restraining an expansive state, as argued in Brennan and Buchanan (1980) and modeled in Edwards and Keen (1996). Further extensions of these models incorporate the political economy of fiscal policy and explore the associated consequences for the efficiency of tax competition, as in Gordon and Wilson (2003) and Janeba and Schjelderup (2002). Empirical efforts to consider the salience or consequences of tax competition include Devereux et al. (2002), who estimate parameters of reaction functions within the OECD to measure the extent to which tax competition has operated between 1982 and 1999, and Mendoza and Tesar (2003), who simulate the dynamics of tax competition within Europe. Buettner (2003) analyzes fiscal competition within Germany by considering the investment effects of tax policies in adjacent jurisdictions.

havens. Firms are assumed to invest equity capital for which there is a shadow cost represented by λ. The tax haven investment is taken to be discrete: the firm either invests zero, or else invests a fixed amount of capital given by K_2^*. The return to the tax haven investment is earned in the tax haven itself (where it is denoted $\tilde{Q}(K_2^*)$) and possibly by augmenting profits earned in other foreign countries. Finally, there is a firm-specific cost of c_1 per unit of capital invested in foreign countries outside the tax haven, and a cost of c_2 per unit of capital invested in the tax haven.

If the firm elects not to invest in the tax haven, its after-tax returns are given by:

$$\pi_1 \equiv (1-\tau_1)Q\left(K_1', 0\right) - \lambda c_1 K_1', \tag{1}$$

in which K_1' is the profit-maximizing level of foreign investment, characterized by the first-order condition:

$$(1-\tau_1)\frac{\partial Q\left(K_1', 0\right)}{\partial K_1} = \lambda c_1. \tag{2}$$

If the firm instead chooses to invest in the tax haven, its returns are given by:

$$\pi_2 \equiv (1-\tau_2)Q(K_1^*, K_2^*) + \tilde{Q}(K_2^*) - \lambda(c_1 K_1^* + c_2 K_2^*), \tag{3}$$

in which K_1^* satisfies:

$$(1-\tau_2)\frac{\partial Q(K_1^*, K_2^*)}{\partial K_1} = \lambda c_1. \tag{4}$$

The first-order Conditions (2) and (4) together imply that K_1' and K_1* satisfy:

$$\frac{\partial Q(K_1^*, K_2^*)}{\partial K_1} = \frac{(1-\tau_1)}{(1-\tau_2)}\frac{\partial Q(K_1', 0)}{\partial K_1}. \tag{5}$$

Eq. (5) identifies two channels by which the tax haven investment affects desired levels of investment in other countries. The first comes from the tax rate reduction: since $\tau_2 \leq \tau_1$, it follows that the ratio in the first term on the right side of Eq. (5) is less than or equal to one, which implies that the favorable tax treatment afforded by tax havens may reduce the required pretax marginal product of capital for non-haven operations of firms that simultaneously invest in havens. The second effect of tax haven investment appears through the impact of such investment on the marginal product of capital outside of havens.

Two extreme cases illustrate potential impacts of these two effects. If the marginal product of capital in non-havens is not a function of the level of tax haven investment, or, more formally, if $\frac{\partial Q\left(\hat{K}_1, K_2^*\right)}{\partial K_1} = \frac{\partial Q\left(\hat{K}_1, 0\right)}{\partial K_1}$, $\forall \hat{K}_1, K_2^*$; and if $\tau_2 \leq \tau_1$ and the firm's production function exhibits the usual concavity in K_1, then the use of tax havens reduces the required marginal product of capital elsewhere, so, from Eq. (5), $K_1^* > K_1'$. Alternatively, it is possible that tax havens do not appreciably reduce effective foreign tax rates, so $\tau_2 \cong \tau_1$; and if the marginal product of capital in non-havens falls as more capital is invested in havens (specifically, if $\frac{\partial^2 Q(K_1, K_2)}{\partial K_1 \partial K_2} < 0$), then it follows that $K_1^* < K_1'$. As these extreme cases make clear, the net effect of tax haven investment on non-haven investment is ambiguous theoretically and must be resolved empirically.

The firm's optimization problem also suggests a method of evaluating the relationship between haven and non-haven investment, since if having a tax haven operation increases the desired level of non-haven

investment (i.e., if $K_1^* > K_1'$), then it is also the case that greater non-haven investment increases the desirability of establishing a tax haven operation. What is the impact on non-haven countries when an economic federation admits a tax haven as a new member country, thereby reducing the cost that taxpayers incur in obtaining tax benefits from tax haven operations? In the context of the model, such a move is represented as a reduction in c_2, the cost of operating in the tax haven. A change in tax regulations that reduces the cost of tax avoidance through haven operations is another example of a policy that reduces c_2. Any reduction in c_2 increases the benefit $(\pi_2 - \pi_1)$ associated with owning tax haven affiliates, thereby encouraging firms to establish new haven affiliates. These new haven operations affect investment elsewhere insofar as K_1^* differs from K_1'. While it should be possible to estimate the effect of changes in c_2 on foreign investment in high-tax locations, the practical difficulty of identifying and measuring sufficient changes in the costs of using tax havens makes alternatives considerably more appealing. One such alternative is to consider the effect of a change in c_1, the cost of investing in non-havens, on the likelihood of establishing a tax haven affiliate, which is an increasing function of $(\pi_2 - \pi_1)$.

Taking other features of the economic environment to be fixed, it is possible to write (maximized) firm profits with and without tax haven operations as functions of investment costs, thus $\pi_2(c_1, c_2)$ and $\pi_1(c_1)$. From the envelope condition characterizing profit maximization, $\frac{\partial \pi_2(c_1,c_2)}{\partial c_1} = -\lambda K_1^*$ and $\frac{\partial \pi_1(c_1)}{\partial c_1} = -\lambda K_1'$. Hence the change in $(\pi_2 - \pi_1)$ as c_1 changes is given by:

$$\frac{\partial \pi_2(c_1, c_2)}{\partial c_1} - \frac{\partial \pi_1(c_1)}{\partial c_1} = -\lambda\left(K_1^* - K_1'\right). \tag{6}$$

Eq. (6) indicates that, if $K_1^* > K_1'$, a reduced cost of investing in non-haven countries increases the likelihood of establishing tax haven operations. Alternatively, if $K_1^* < K_1'$, a reduced cost of investing in non-haven countries decreases the likelihood of establishing tax haven operations. Eq. (6) suggests that by observing changes in demand for tax haven operations as c_1 changes, it is possible to infer the effect of tax haven operations themselves on investment elsewhere.

3. Empirical evidence

In order to implement the empirical method suggested by Eq. (6) it is necessary to obtain a measure of c_1. A natural candidate is Tobin's q, the ratio of the market value of capital to its replacement cost, effectively a transformation of the user cost of capital. While Tobin's q is notoriously difficult to measure, it is, in theory, directly related to investment and other measures of economic activity related to investment. Taking the q model of investment to imply that $I = \beta q$, in which I is a firm's investment level and β a scalar, it follows that $q = \beta^{-1} I$. Consequently, a firm's level of foreign direct investment serves as a proxy for q, and therefore c_1. Of course, the endogeneity of investment to tax haven demand makes it necessary to use an instrument for investment in order to estimate the impact of costs in non-havens on the likelihood of establishing a tax haven affiliate.

A natural instrument for the change in firm i's level of foreign direct investment in non-tax haven countries is the economic growth rate of the countries in which it invests, weighted by the levels of its initial investments. This instrument reflects country differences in q: economies experiencing declining real costs of production, rising factor productivity, deregulatory episodes, or other changes that increase

the rate of local economic growth are also ones in which foreign investors face lower net costs and are likely to expand their operations. Consequently, American firms that invested heavily in economies that subsequently grew quickly tend to exhibit more dramatic increases in foreign direct investment than do firms that instead invested heavily in economies that subsequently grew slowly. Using this instrument, it is possible to evaluate the effect of predicted changes in foreign investment in non-havens on the likelihood of establishing a tax haven affiliate, thereby measuring the relationship expressed in Eq. (6).

Desai et al. (in press) present results that implement this approach. While Desai, Foley and Hines interpret these results as confirming the effects of size of non-haven activity on the demand for tax haven activities, it is possible to reinterpret their evidence in light of the model presented in Section 2. In their first-stage regressions, weighted GDP growth rates correlate positively with growth of sales and growth of capital stocks in the same regions, suggesting that GDP growth rates serve as reasonable instruments for changes in activity outside of tax havens. The second stage regressions are fixed effect logit equations in which predicted values of changes in sales and capital stocks of non-haven affiliates are used as independent variables. The dependent variable takes the value one if a firm has no tax haven affiliates in the region in the base period but has one or more tax haven affiliates in the region by the next period in the analysis. The dependent variable is zero if a firm starts with one or more tax haven affiliates only to lose them subsequently. Observations of firms that never have tax haven affiliates, and those that always have tax haven affiliates, are excluded from the sample. This procedure, developed by Chamberlain (1980), corresponds to a logit model with firm fixed effects and permits straightforward estimation of how changes in non-haven demand, induced by reduced costs of investing in such environments, affects the demand for tax haven operations.

The results indicate that greater activity outside of tax havens is associated with greater demand for tax haven affiliates. Firms whose initial investments were concentrated in economies that subsequently grew rapidly are the most likely to establish new tax haven affiliates. The theory outlined in Section 2 notes that this pattern implies that policies that reduce the cost of using tax haven operations should stimulate greater economic activity among foreign affiliates outside of tax havens. The regressions imply that, when evaluated at sample means, a one percent greater likelihood of establishing a tax haven affiliate is associated with 0.5% to 0.7% greater sales and investment growth outside of tax havens within the same region.

4. Conclusion

Contrary to many policy concerns and the assumptions of much of the tax competition literature, reduced costs of using tax havens do not appear to divert activity from non-havens. The empirical evidence indicates that firms facing reduced costs of establishing tax haven operations respond in part by expanding their foreign activities in nearby high-tax countries. Hence it appears that careful use of tax haven affiliates permits foreign investors to avoid some of the tax burdens imposed by domestic and foreign authorities, thereby maintaining foreign investment at levels exceeding those that would persist if tax havens were more costly.

The available macroeconomic evidence indicates that countries have not reduced their taxation of foreign investment, or of capital income, to anything approximating the degree implied by many models of capital tax competition. The use of tax havens by foreign investors may help to explain this empirical pattern, as high-tax countries are able to maintain high-tax rates while continuing to draw significant

levels of foreign investment. It is not even necessary that high-tax countries are aware of the importance of tax havens in preserving their ability to attract foreign investment. One further implication of this analysis is that tax harmonization within federations may actually foster, rather than restrict, tax competition. Some initiatives to harmonize tax rates would effectively raise the costs that investors face in order to obtain the benefits of using tax havens, thereby reducing foreign investment in the region. Downward pressure on national tax rates might well follow in an effort to attract investment, a process that could have been made less likely with the diversity afforded by allowing havens within a region.

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Research Summary

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Paper: Offshore Financial Centers: Parasites or Symbionts?

Summary: Professor Rose and Dr. Spiegel discuss both the determinants and consequences of offshore financial centers (OFCs). They conclude that:

- OFCs encourage "bad behavior" in source countries by encouraging tax evasion and money laundering.
- Even the occasional bad actor can have unintended positive consequences; some OFCs increase the competitiveness of local banking behavior.
- Based on their findings, offshore financial centers are better characterized as "symbionts" rather than "parasites."

Offshore Financial Centers: Parasites or Symbionts?

Andrew K. Rose and Mark M. Spiegel*

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Abstract

This paper analyzes the causes and consequences of offshore financial centers (OFCs). Since OFCs are likely to be tax havens and money launderers, they encourage bad behavior in source countries. Nevertheless, OFCs may also have unintended positive consequences for their neighbors, since they act as a competitive fringe for the domestic banking sector. We derive and simulate a model of a home country monopoly bank facing a representative competitive OFC which offers tax advantages attained by moving assets offshore at a cost that is increasing in distance between the OFC and the source. Our model predicts that proximity to an OFC is likely to have pro-competitive implications for the domestic banking sector, although the overall effect on welfare is ambiguous. We test and confirm the predictions empirically. OFC proximity is associated with a more competitive domestic banking system and greater overall financial depth.

Keywords: theory, empirical, data, cross-section, asset, tax, haven, money, competitive.

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1. Introduction

Offshore financial centers (OFCs) are jurisdictions that oversee a disproportionate level of financial activity by non-residents. Financial activity in OFCs is usually dominated by the provision of intermediation services for larger neighboring countries. In this paper, we ask two distinct questions concerning the causes and consequences of OFCs. First, why do some countries become OFCs? Second, what are the consequences of OFCs for their neighbors?[1]

What makes a country likely to become an offshore financial center? We approach this question with both bilateral and multilateral data sets. Using bilateral data from over 200 countries in the *Coordinated Portfolio Investment Survey* (CPIS), we examine the determinants of cross-border asset holdings for 2001 and 2002 using a gravity model. We confirm these results using a probit model applied to a multilateral cross-section of over 200 countries for the same time period. Unsurprisingly, tax havens and money launderers host more assets and are more likely to be OFCs. These results are intuitive; one attraction of moving assets offshore is the ability to pursue activities that are prohibited in source countries.

Do OFCs make bad neighbors? One might expect proximity to an OFC to be bad for the neighborhood, since OFCs encourage tax evasion and other illegal activities. However, the presence of nearby offshore financial centers may also have beneficial effects. Most importantly, the presence of an OFC with an efficient financial sector may increase the competitiveness of a source country's banking sector, though this benefit is tempered by transactions costs. The tradeoff between the positive and negative externalities of OFCs lies at the heart of our paper.

To analyze this tradeoff, we develop a model where OFCs have this benign effect, even though shifting assets offshore is costly. In our model a home country monopoly bank faces a

competitive fringe of OFCs that survive by offering tax advantages, subject to a fixed cost of moving assets offshore. We use the model to examine the impact of OFC proximity on the distribution of assets between the home country bank and the OFC. In general, proximity to an OFC has ambiguous effects on welfare and asset distribution. When we simulate our model, we find that OFCs have strong pro-competitive effects on the domestic banking sector. We then take the predictions of the model to the data, and examine the impact of OFC proximity on banking-sector competitiveness and financial depth. We robustly confirm the prediction that OFCs have a pro-competitive impact on their neighbors. Proximity to an OFC also has a positive effect on financial depth.

To summarize, we find that countries identified as tax havens and money launderers are likely to be OFCs, encouraging tax evasion and nefarious activity in neighboring source countries. Nevertheless, OFCs still provide substantial offsetting benefits in the form of competitive stimulus for their neighbors' financial sectors. This benign impact on local banking conditions tends to mitigate the adverse effects of OFCs on tax evasion and illegal activity.

The next section analyzes OFC determination, using both bilateral and multilateral data sets. Section 3 develops a theoretical model of OFCs that compete with a domestic monopolist bank by providing tax benefits. Simulations of the model allow us to gauge the offsetting effects on assets and welfare; these predictions are tested in section 4. The paper concludes with a brief summary.

2. Determinants of Offshore Financial Centers

The costs of shifting assets offshore have fallen over time; but they remain non-trivial. Why do assets get shifted offshore? More generally, why do offshore financial centers exist?

We begin our study by showing that OFCs are created to facilitate bad behavior in source countries such as tax evasion and money laundering.

The small literature of relevance leaves little doubt that offshore financial centers encourage tax evasion. Indeed, in their survey of OFC activity Hampton and Christensen (2002) use the terms tax haven and OFC interchangeably; see also Coates and Rafferty (2006) and Masciandaro (forthcoming). Recently, steps have been taken to mitigate the opportunities for tax evasion afforded by OFCs. In 2000, the OECD identified over thirty countries as engaging in harmful tax evasion practices, including countries such as Andorra, Bahrain, Cook Islands, and Dominica. Countries on the list were given deadlines to change their policies and avoid sanctions.[2] Most nations complied with the OECD.[3] The G7 has also pursued initiatives against money laundering practices, including the creation of a Financial Action Task Force.[4] Hampton and Christensen (2002) predict that such initiatives will eventually erode OFCs' advantages and push capital back "onshore." Still, the facilitation of tax evasion remains one of the most obvious determinants of OFC status.

2a. A Bilateral Approach to Cross-Border Asset Holdings

We begin by taking advantage of the *Coordinated Portfolio Investment Survey* (CPIS) data set. This data set is useful for studying the generic behavior of cross-border asset holdings.[5] While there is no *special* place for offshore financial centers in the data set, all the conventional OFCs are included in the data set (more on this below). This data set has its flaws; for instance, certain areas (e.g., Aruba) have a large number of missing entries. There may also be under-reporting, especially of derivatives, and identifying the nationality of the true asset holder is not easy. Still, investigating these bilateral asset stocks seems a good place to begin identifying why

assets are held overseas, the essential feature of offshore financial centers. This data set has been used by a number of other scholars, including most prominently Lane and Milesi-Ferretti.[6]

The CPIS data are freely available at the IMFs website at year-ends for 2001 and 2002.[7] In particular, we use Table 8, which provides a geographic breakdown of total portfolio investment assets. These data form a bilateral matrix; they show stocks of cross-border holdings of assets, measured at market prices. Thus, one can determine that e.g., at the end of 2001, Argentine residents were reported to hold $29 million in total portfolio investment assets in Austria.

Since the CPIS data set is bilateral, it is natural to use the well-known "gravity model" of trade as a baseline. The gravity model explains activity between two countries as being a positive function of the economic masses of the countries, and a negative function of the distance between them. Variants of gravity models have been widely used in the literature by e.g., Alworth and Andresen (1992), Lane and Milesi-Ferretti (2004), and Portes and Rey (2005). In practice we use population and real GDP per capita to proxy economic mass, and great-circle distance and a few other measures to proxy economic distance. After controlling for these influences, we then investigate whether there is any additional role for institutional measures.

We use CPIS data for both 2001 and 2002. We drop a few insignificant areas because of data difficulties.[8] We are left with a bilateral data set with data from 69 source and 222 host countries.[9] (A list of the countries is provided in appendix table A1.) We then merge in a host of bilateral variables taken from the gravity literature in international trade. These include: source and host country population and real GDP per capita (both taken essentially from the World Bank's *World Development Indicators*). We also include colonial history, geographic features,

and measures of bilateral distance, common language, and common currency. The latter data are mostly taken from Glick and Rose (2002). Further details and the datasets are available online.

To all these conventional variables, we add three sets of additional variables. First, we add dummy variables for source/host countries that are tax havens and/or money launderers.[10] For the former, we combine three indicators on tax havens, provided by the OECD, CIA, and Hines and Rice (1994).[11] For the latter, we use the June 2000 OECD Report from the Financial Action Task Force on Money Laundering.[12] Second, we add variables (again, for both source and host countries) that measure the rule of law, political stability, and regulatory quality. These are continuous variables (where higher values better governance), and are taken from "Governance Matters III" by Kaufmann, Kraay, and Mastruzzi (2003).[13] Third, we add variables for the legal origins (of both source and host countries), focusing on countries with legal origins in common, civil, and French law.[14]

We estimate the following equation:

$$\begin{aligned}\ln\left(X_{ijt}\right) &= \beta_0 + \beta_1 \ln\left(D_{ij}\right) + \beta_2 \ln\left(Y_{it}\right) + \beta_3 \ln\left(Y_{ij}\right) + \beta_4 \ln\left(Pop_{it}\right) + \beta_5 \ln\left(Pop_{jt}\right) \\ &+ \beta_6 Cont_{ij} + \beta_7 Lang_{ij} + \beta_8 CU_{ijt} + \beta_9 ComCol_{ij} + \beta_{10} Col_{ijt} + \beta_{11} Island_i \\ &+ \beta_{12} Island_j + \beta_{13} Landl_i + \beta_{14} Landl_j + \beta_{15} \ln\left(Area_{ij}\right) + \beta_{16} \ln\left(Area_{it}\right) \\ &+ \gamma_1 Taxh_i + \gamma_2 Taxh_j + \gamma_3 Moneyl_i + \gamma_4 Moneyl_j + \gamma_5 Rule_i + \gamma_6 Rule_j + \gamma_7 Pol_i \\ &+ \gamma_8 Pol_j + \gamma_9 Reg_i + \gamma_{10} Reg_j + \gamma_{11} Common_i + \gamma_{12} Common_j + \gamma_{13} Civil_i \\ &+ \gamma_{14} Civil_j + \gamma_{15} French_i + \gamma_{16} French_j + \varepsilon_{ijt}\end{aligned} \tag{1}$$

where i denotes the source country, j denotes the host, t denotes time, ln(.) denotes the natural logarithm operator, and the variables are defined as:

- X_{ij} denotes cross-holdings from i held in j, measured in millions of dollars,
- D is the distance between i and j,
- Y is annual real GDP per capita in dollars,

- Pop is population,
- Cont is a binary variable which is unity if i and j share a land border,
- Lang is a binary "dummy" variable which is unity if i and j have a common language and zero otherwise,
- CU is a binary variable which is unity if i and j use the same currency at time t,
- ComCol is a binary variable which is unity if i and j were both colonized by the same country,
- Col is a binary variable which is unity if i and j are colonies at time t,
- Island is the number of island nations in the pair (0, 1, or 2),
- Landl is the number of landlocked countries in the country-pair (0, 1, or 2),
- Area is the area of the country (in square kilometers),
- Taxh is a binary variable which is unity for tax havens,
- Moneyl is a binary variable which is unity for money-launderers,
- Rule is a measure of the rule of law,
- Pol is a measure of political stability,
- Reg is a measure of regulatory quality,
- Common is a binary variable which is unity for common-law countries,
- Civil is a binary variable which is unity for civil-law countries,
- French is a binary variable which is unity for French-law countries,
- β is a vector of nuisance coefficients, and
- ε_{ij} represents the omitted other influences on bilateral exports, assumed to be well behaved.

We estimate this equation with conventional OLS, using a robust covariance estimator to handle heteroskedasticity, adding year-specific fixed effects. Rather than drop the many observations for which the stock of cross-holdings is zero, we substitute a very small number for zero (and the occasional negative) values.[15] The coefficients of interest to us are $\{\gamma\}$.

Our baseline results, excluding the institutional variables, are tabulated in the extreme left column of Table 1. The model delivers sensible estimates. For instance, higher population and GDP per capita in either the source or host countries encourage greater cross-holdings. Second,

geography matters, in the sense that more distance between the two countries lowers cross-holdings, while a shared land border, language, or money raises them. All these effects are sensible, economically large, and statistically significant at conventional significance levels. Further, the model fits the data well, accounting for over half the variation in an essentially cross-sectional data set. The results also seem robust to splitting the data into individual years, and to dropping the zero values of the regressand (these sensitivity checks are tabulated in successive columns).

We then add institutional details in the fifth column. The coefficients are collectively significant and have sensible interpretations. Host countries that are tax havens and/or money launderers are more likely to attract cross-holding; comparable source country effects are present but smaller. Neither the rule of law nor the political stability of host countries seems to be relevant. But politically unstable countries and those with a strong rule of law are both more likely to send funds overseas. While regulatory quality in the source country has little effect on cross-holdings, host countries with higher regulatory quality are much more likely to attract assets. All this make sense.

Finally, in the last column (on the extreme right) of Table 1 we add dummy variables for the legal origins of both source and host countries. These are of only minor relevance. Common- and civil-law countries are more likely to be the source of cross-holdings; countries with French law are less likely to be hosts.

We take two primary results from the bilateral sample: First, geography plays a significant role in the determination of cross-border flows, even after conditioning for other factors that may be correlated with distance that could affect cross-border flows. While a role for geography would be obvious in the case of flows of goods, the role of distance in asset flows

is less obvious, but appears to be important in the data. Second, identification as a tax haven or money launderer is associated with an increase in cross-border flows, suggesting that the desire to circumvent local taxes or other local laws plays a role in the decision to move assets offshore. Both of these considerations are addressed in the model introduced below.

2b. Multilateral Evidence on Offshore Financial Center Determination

We now corroborate our key findings from the bilateral CPIS data set with a multilateral approach. In particular, we test for the importance of e.g., being a tax haven, using the common law, or having political stability on the likelihood of being an offshore financial center.

Our multilateral approach is cross-sectional in nature. Since we are interested in determining which countries have chosen to become OFCs, it is important first to identify the OFCs themselves. Rather than develop our own methodology to identify OFCs, we gather these data from three basic sources (which have considerable overlap). We use the dummy variables indicating either "Financial Centre with Significant Offshore Activities" or "Major Financial Centre with onshore and offshore activity" from *Report of the Working Group on Offshore Centres* of the Financial Stability Forum.[16] We also include "Countries and Territories with Offshore Financial Centers" from Errico and Musalem (1999). Finally, we include "International and Offshore Financial Centers" from IMF (2004), whether "Contacted – Module 2 Assessment" or "Contacted under the FSAP".[17] We further impose the requirement that the OFC host at least $10 million in total assets, and that it not be an OECD country.[18] This delivers our default set of forty OFCs, which are listed in appendix Table A2. As can be seen from the table, OFCs are clustered regionally; notable groupings are in the Caribbean and Europe.

Consistent with our results, they tend to be clustered around places with high taxes and a high demand for nefarious financial activity.[19]

Our default set of OFCs is a 0/1 binary variable; a country either is or is not an offshore financial center. To check the robustness of our results, we also construct a continuous variable. This is derived by combining the three dummy variables above with two others. The first is a dummy that is one if and only if the CIA mentions that the country is an "offshore financial center" in its discussion of illicit drugs in the *World Factbook*.[20] The second is derived by aggregating (across source countries) the residuals from the default pooled model of Table 1.[21] We then combine the variables by using the first principal factor from the five underlying variables.[22] This gives us a continuous version of our default binary variable. The two variables are highly correlated (the correlation coefficient is .84).[23]

We gathered data on 223 countries (listed in appendix Table A3), including our default set of forty OFCs. We use data averaged from 2001 and 2002, both to smooth the data and to stick as close to our bilateral data set as closely as possible. We condition on the natural logarithms of both population and real GDP per capita throughout (again, taken mostly from the World Bank's *World Development Indicators*). We then sequentially add: a) dummy variables for tax havens and money launderers, b) the three institutional measures (rule of law, political stability, and regulatory quality), and c) the three legal regimes. In panel A of Table 2 we use our default dummy variable measure of OFCs, estimated using probit. Panel B is the analogue that uses OLS (with robust standard errors) on our continuous measure of OFC activity.

The most striking results in Table 2 are in column (2), where we consider the first two institutional features: tax haven and money laundering status. Being either a tax haven or a money launderer has an economically and statistically strong effect in raising the probability of

being an OFC.[24] This confirms our findings from the bilateral results that sinful countries are strongly associated with offshore financial centers. On the other hand, our other measures of institutional quality and the legal regime have no strong consistent effect on OFC determination. Conditioning on population and GDP per capita seems to have little consistent strong effect.

We have engaged in extensive sensitivity analysis with respect to the determination of OFCs; part of it is reflected in Table C. This shows the results of adding ten different variables to the specification of column (2), which includes tax haven and money laundering status. Two estimates are supplied: the middle column is the result of adding the variable to the probit estimation for the default binary measure of OFCs, while the right column tabulates the OLS coefficient from adding the variable to the continuous OFC specification.

We have successively added: a) a dummy variable that is unity if the country is English-speaking; b) the official supervisory power aggregate from Barth, Caprio and Levine (2001)[25]; c) a dummy variable for the presence of capital controls taken from the IMFs *Annual Report on Exchange Arrangements and Exchange Restrictions*; d) the corporate tax rate, essentially taken from Ernst & Young[26]; e) the country's average Polity IV score[27]; f) average openness, the ratio of exports plus imports to GDP, taken from the *WDI*; g) the UNDPs human development index[28]; and lastly h) measures of political rights, civil rights, and freedom, all provided by Freedom House.[29] None of these variables are consistently strongly tied to our measures of OFCs despite our best attempts. We also tabulate the p-values for the joint significance of two sets of dummy variables: a) a set of regional variables; and b) a set of variables for colonial history (so that the British variable is unity for all ex-British colonies, and so forth). We have also experimented with a large number of other variables with a similar lack of success.[30]

Our most robust results from our probit estimation mirror those of the bilateral sample above. The main characteristics of those countries identified as offshore financial centers are identification as either tax havens or money launderers. This corroborates the bilateral results from section 2a; a primary motivation for investors in moving assets offshore is circumvention of domestic tax laws or other illegal activities. None of this seems terribly surprising to us; OFCs seem to facilitate bad behavior. The more interesting question is whether they also provide positive externalities as well; we now turn to that issue.

3. Consequences of Offshore Financial Centers

The evidence presented in section 2 indicates that tax havens and money launderers are likely to be offshore financial centers. OFCs offer the advantage of e.g., lower taxes to domestic investors that can bear the costs of shifting assets. That is, they compete with the domestic banking sector. While OFCs lower the costs of unsavory practices such as tax evasion, they also provide a benefit in the form of competition for the domestic financial sector. We now develop a model that focus on the tradeoffs that OFCs present for source countries.[31]

3a. A Simple Theoretical Model of OFC Activity

We assume that the domestic (source) country is populated by a continuum of depositors, indexed by i=1…m. Depositors are endowed with initial wealth, $w(i)$. We number the depositors such that the initial wealth of depositor i is less than or equal to the initial wealth of depositor i+1. Depositors allocate their wealth to maximize their after-tax income. They can hold three assets: onshore deposits; offshore deposits; and an outside alternative. All the assets we consider below are risk-free.

We assume that the alternative asset (perhaps a government bond) yields an exogenous rate of interest; r^* is defined as one plus the interest rate on this asset. We define r_H as one plus the contractual rate of interest paid by the domestic bank on deposits and r_O as one plus the offshore contractual rate of interest on deposits. Since depositors allocate their savings to maximize disposable wealth, each faces two arbitrage conditions, one for offshore deposits and one for home deposits.

We assume that there is a fixed cost, denoted *ax*, of making an offshore deposit, where *a* is a constant and *x* represents the "distance" from the home country to the offshore country. This is modeled as an "iceberg" cost that melts away with offshore financial activity. This cost can be offset by the tax advantage of offshore deposits, since we assume that offshore deposits are taxed at a lower rate than the true tax rate. Onshore deposits, by way of contrast, are less costly but are taxed at a higher rate.

If a representative depositor *i* places his deposits in the offshore bank, his final after-tax wealth satisfies $(1-\tau)\left[\theta r_O w(i) - ax\right]$, where τ represents the nominal domestic tax rate and θ is a parameter representing the tax advantage of the offshore nation, $1 \le \theta \le 1/(1-\tau)$. It follows that depositor i will prefer to place his funds in the offshore bank relative to the risk free asset if and only if

$$r_O \ge \frac{r^* w(i^*) + ax}{\theta w(i^*)} \qquad (2)$$

The smaller are *a*, *x*, and r^*, the more likely that depositor *i* is to take his assets offshore rather than place them in the risk-free asset; ditto the larger are θ, r_O, and *w(i)*. We define i^* as the depositor that satisfies (2) with equality, i.e. as the depositor who is indifferent between taking

assets offshore and placing them in the risk-free asset. Since *w(i)* is positively monotonic in *i,* (2) shows that all depositors $i > i^*$ will also take their assets offshore.

Alternatively, suppose that depositor i places his deposits in the *domestic* bank. We model this as a monopoly; an extreme assumption to be sure, but one that allows us to focus on the competitive effects easily (an alternative derivation using the assumption of a monopolistically competitive domestic banking sector is provided in the appendix). The depositor's final wealth earns a return of $(1-\tau)r_H$. Thus depositors prefer the home bank if $r_H \ge r^*$. We demonstrate below that the profit-maximizing deposit rate for the home monopolist bank is when this condition just binds, i.e. $r_H = r^*$. It follows that when condition (2) holds with equality, depositor i is indifferent between taking his assets offshore and holding them in the home country bank. The offshore bank then lends out all its deposits, L_O, which equal

$$L_O = \int_{i^*}^{m} w(i)\,di \qquad (3)$$

Borrowers in the model are assumed to obtain funds from banks under standard debt contracts, taking the home-country demand for loans as given. Borrowers are indifferent between bank sources, so a single lending rate will prevail in the home country. Let *R* represent one plus the contractual interest rate on lending. We assume that *R* is decreasing in aggregate lending, *L*, which is the sum of home bank lending, L_H and offshore bank lending, L_O, where $R' < 0$, and $R'' < 0$.

The offshore bank acts as a competitor and a Stackelberg follower. The offshore bank faces diseconomies of scale in lending because of the fixed cost of moving assets offshore. The minimum interest rate consistent with any value of i^* is that which induces all depositors i^* and greater to take their assets offshore. Having exhausted this segment of the population, however,

the offshore bank can only further increase its deposits by attracting depositors that are less wealthy. The fixed cost of moving assets offshore bites these poorer depositors more intensely, as the fixed cost is spread over a smaller deposit. As a result, the offshore bank must offer a greater premium over the domestic risk free rate to increase its deposits. This effectively results in an upward-sloping supply of funds facing the offshore bank.

Taking domestic lending as given, the offshore bank raises deposits at rates where (2) is binding and issues loans until it satisfies its zero profit condition

$$\theta w\left(i^*\right)R = r^* w\left(i^*\right) + \alpha x . \tag{4}$$

Totally differentiating (4), the comparative static relationship between L_O and L_H satisfies

$$\frac{\partial L_O}{\partial L_H} = \frac{\theta w\left(i^*\right)^2 R'}{\left(\theta R - r^*\right)w' - \theta w\left(i^*\right)^2 R'} < 0 \tag{5}$$

Equation (4) demonstrates that lending by the domestic bank crowds out lending by the OFC. However, note that $\left|dL_O / dL_H\right| < 1$, which implies that crowding out is less than one for one, so that an increase in L_H increases overall lending levels.

We next turn to the lending decision of the home country bank. The domestic bank acts as a profit-maximizing Stackelberg leader. It takes in deposits equal to L_H , which results in an end-of-period liability of $r_H L_H$. Domestic profits are equal to

$$\pi = \left[R - r_H\right]L_H \tag{6}$$

As profits are decreasing in r_H , it follows that the profit-maximizing decision of the home country bank entails setting $r_H = r^*$ and maximizing with respect to the choice of L_H . By the envelope theorem, the first-order condition of the home country bank satisfies

$$R - r^* + R' L_H = 0 \tag{7}$$

Equations (4) and (7) form a system of equations in two unknowns, L_H and i^* . In the appendix, we conduct some comparative static exercises to evaluate the properties of the model. We demonstrate that an increase in the OFC tax advantage, θ , increases offshore lending, L_O , and reduces home country bank lending, L_H , but less than one for one, resulting in an increase in overall lending. We also demonstrate that OFC lending is decreasing in distance to the home country, x . We again find a crowding out effect, as decreased OFC distance reduces home country lending, but again by less than the primary effect of increasing lending by the OFC. Effectively, proximity to the OFC increases the competitiveness of the domestic banking market. We take the latter result to the data below.

An alternative strategy for the home country bank to the interior solution above is to "limit-price" by issuing sufficient loans that the OFC can not compete in the home market. By (4), the home bank can limit-price by issuing an amount of loans that satisfies

$$R\left(L_H\right) \le \frac{r^* w\left(i^*\right) + \alpha x}{\theta w\left(i^*\right)} \tag{8}$$

Satisfaction of equation (8) with inequality implies that the OFC would lose money upon entry. Note that as x (the distance between the OFC and the home country) grows, (8) implies that the domestic loans necessary to achieve limit-pricing becomes arbitrarily small. Indeed, it may fall below the pure monopoly solution for the home country bank in the absence of the OFC, which is the solution to (7) given $L_O = 0$.

It follows that as x increases from 0, the solution for the home country bank passes through three distinct ranges: First, it follows the interior solution to (7), competing head-to-head with the OFC. As distance between the OFC and the home country grows further, the home bank switches to the limit pricing strategy in (8). Finally, when the OFC is sufficiently distant, the limit pricing solution falls below the monopoly optimum, which is the level of L_H that satisfies (7) conditional on $L_O = 0$, and the domestic bank switches to the pure monopoly solution. These transitions are illustrated in our simulations below.

Finally, we turn to the question of the impact of the OFC on home country welfare. We assume that taxes are redistributed lump sum, so that home-country welfare is invariant to the level of government revenues.[32] Home country welfare can therefore be measured in terms of the net gains from intermediation relative to placing all deposits in the alternative asset. This is the sum of borrower consumer surplus, home bank profitability and depositor revenues, net of taxes and the cost of moving funds offshore. Adding these together and simplifying yields:

$$W = \int_0^L \left(R - r^*\right) dl - \left(m - i^*\right) ax \qquad (9)$$

Equation (9) demonstrates the welfare tradeoff associated with proximity to an OFC. On one hand, the OFC induces the home country bank to behave more competitively, increasing lending and overall welfare. On the other hand, depositors are partially motivated to take their funds offshore for purely redistributive reasons, in particular to lower their taxes. While the redistribution does not affect welfare, the resource cost of moving those assets offshore is a deadweight loss. As a result, the overall impact on domestic welfare of OFC-proximity is ambiguous.

3b. Simulations

To gauge the impact of the OFCs' proximity and tax advantage on overall activity in the home country, we now simulate the model. For simplicity, we model *w(i)* as a linear function, setting w to an exogenous constant. We also assume that the domestic interest rate is a (negative) linear function of domestic lending, L that satisfies

$$R = \overline{R} + R'L \qquad (10)$$

where $\overline{R}$ and R' are constants $\overline{R} > 0$, $R' < 0$.

Given these assumptions, we derive the expressions for (4) and (7) in the appendix. This yields a system of two equations in two unknowns, L_H and i^*. The solution allows us to determine both the equilibrium loan rate and aggregate welfare.

We parameterize the model by setting the return on the alternative asset r^* equal to 1.2. We set the tax advantage of the OFC, θ, to 1.2 (though we have also examined alternative values without any large change in results). We set the cost of moving assets offshore, a, to 1.[33] We set w equal to 2 and m equal to 1. This normalization implies that the equilibrium value of i^* represents the share of depositors who do not take their assets offshore, as depositors 0 through

i^* leave their assets in the home country. Finally, we normalize local interest rates by setting $\overline{R}$ equal to 2 and R' equal to -0.85, although we entertain other values of R' below.

While numerical values are a necessary part of our simulations, we concentrate on their qualitative results. Figure 1 plots home-bank lending (L_H), total lending (L), interest rates (R), and welfare as a function of distance to the OFC (x), for different values of R'. It can be seen that proximity to the OFC has the pro-competitive impact that we anticipated. It can also be seen that there are three distinct ranges, with discrete jumps in all values when the home bank switches from competing head-to-head to a limit pricing strategy.

It is useful to consider the impacts on all of the endogenous variables as x increases. Beginning at $x=0$, we are first in the range where the monopoly bank competes with the OFC head to head. As distance to the OFC increases, the home country bank expands its lending, taking advantage of the deterioration in competitiveness of the OFC. Nevertheless, the increase in L_H is more than offset by a decline in L_O, so that overall lending is declining. It can be seen that over this range R increases with distance, so that increased proximity to the OFC has the expected impact of increasing the competitiveness of the domestic banking sector.

Note that welfare falls dramatically with increased distance within this range, even relative to the pure monopoly solution. Welfare losses with increased distance come from two sources: the decreased competitiveness of the banking sector , and the increased cost of moving assets offshore. Of course, the latter eventually reduces the amount of offshore activity taking place.

As x increases beyond x_{LP}, the home country bank switches to a limit-pricing strategy, lending the amount necessary to keep the OFC out of its market. It can be seen that there is a discrete increase in both home and overall lending at this point, resulting in a discrete decline in

R, as well as a discrete increase in overall welfare. As x increases within the limit pricing range, overall lending and welfare decline, as the amount of home bank lending necessary to preclude entry by the OFC decreases.

Finally, when x reaches x_M the minimum level of lending to achieve limit pricing matches the pure monopoly solution. At this point, home country lending, as well as the other variables, are invariant to further increases in x.

4. Evidence on the Impact of OFCs on their Neighbors

We now take the theoretical predictions of the previous section to the data. Our model suggests that home country bank profits are declining in proximity to the OFC, while overall local lending is increasing in OFC proximity.[34] Accordingly, we use our multilateral data set to address two questions. First, is OFC proximity actually associated with increased domestic banking competitiveness? Second, is OFC proximity also associated with greater financial intermediation? We use different measures of both banking competitiveness and financial intermediation that are common in the literature, and control for a number of auxiliary explanatory variables.

We use the multilateral data set that we developed and employed in section 2b above. This is a cross-section from 2001-02 that includes 40 OFCs (tabulated in Table A2) among the 223 countries in our sample (tabulated in Table A3). Our measure of OFC proximity is (the natural logarithm of the) distance to the nearest OFC.[35] This serves as the regressor for our coefficient of interest.

Our base specification conditions on the natural logarithms of both population and real GDP per capita, as well as a dummy variable for countries that are OFCs themselves. In

subsequent specifications, we add a number of additional conditioning variables to check the sensitivity of our results. These controls include dummy variables for legal regimes based on Civil or French Law, hours of latitude, a landlocked nation dummy variable, and the percentage of population that is Christian or Muslim. Remoteness for country i is defined traditionally, as the average (log) distance between i and (log) GDP in the rest of the world; this variable is intended to serve as an indicator of overall remoteness, rather than the remoteness associated with distance from an OFC.[36] We also add a variable for openness, measured as total trade as a percentage of GDP. We also tabulate simple bivarate regression results, without any controls at all (except a constant). Finally, we provide instrumental variable results, motivated by the results of Table 2. As instrumental variables for distance to the closest OFC, we use: 1) OFC remoteness; 2) distance to the closest tax haven; and 3) distance to the closest money launderer.

Our estimating equation takes the form:

$$y_i = \beta \ln(\min DistOFC)_i + \gamma_0 + \gamma_1 OFC_i + \gamma_2 \ln(Pop)_i + \gamma_3 \ln(Y/Pop)_i + Controls + \varepsilon_i \quad (11)$$

where the notation follows that of equation (1), and the coefficient of interest is β.

We first test the effect of OFC proximity on domestic banking competitiveness. Thus for the regressand, *y*, we use three measures of the degree of competitiveness of the local banking sector: a) the interest rate spread (loan-deposit) charged by commercial banks, b) the concentration ratio of the domestic banking industry, measured as the industry share accounted for by the top five commercial banks, and c) the number of commercial banks in a country divided by the log of domestic GDP.[37] The coefficient of interest to us is β_1, the effect of OFC

proximity on domestic banking competitiveness; we expect this to be positive for the first two regressands (interest spread and concentration ratio) and negative for the last (banks/GDP). We estimate our models with OLS/IV, employing standard errors robust to heteroskedasticity.

Our results are shown in Panel A of Table 3. All of our estimates suggest that OFC remoteness is associated with an increase in monopoly power at statistically and economically significant levels. The standard deviation of the *minimum distance from OFC* variable is 1.07, so our point estimates suggest that a one standard deviation increase in distance to an OFC is associated with, e.g., between an increase of 1.41 and a 2.21 percent in the interest rate spread and an increase of 1.77 to 8.22 percent in the share of the banking industry controlled by the five largest commercial banks. The results for interest rate spreads and bank concentration are statistically significant at standard significance levels when controls are included (only the second is clearly significant with IV). The effect of OFC proximity on the number of banks (scaled by log GDP) is more marginally significant, but improves with the number of controls. It seems that OFC proximity is in fact associated with more competitive domestic banking.

We next turn to the impact of distance from an OFC on the depth of domestic financial intermediation. We use three measures of intermediation commonly used in the literature: a) credit to the private sector, b) quasi-liquid liabilities, and c) M2, all three measures normalized by GDP.[38] We now expect the coefficient of interest, β, to be consistently negative, since OFC proximity should increase domestic financial intermediation.

Our results are shown in Panel B of Table 3. The effect of distance to the closest OFC on financial intermediation is consistently negative. Moreover, it is significantly different from zero at conventional statistical levels for two of our three proxies, the ratios of quasi-liquid liabilities to GDP and M2 to GDP. Distance from OFC has a negative but insignificant effect on credit to

the private sector as a percentage of GDP, except for the (less interesting) bivariate regression.[39] Again, these results are robust to a number of alternative specifications. The point estimates also indicate that proximity to an OFC is consistently of economic significance.[40]

In summary, we find evidence that distance from an OFC is associated with a lack of competitiveness in the local banking sector as indicated by our theory. Moreover, financial depth is positively associated with OFC proximity. While the results are not always of strong statistical significance, we interpret them as broadly confirming the prediction of the model.[41]

5. Conclusion

This paper examines both the determinants of offshore financial centers and the consequences of OFCs for their neighbors. Using both bilateral and multilateral samples, we find empirically that successful offshore financial centers encourage bad behavior in source countries, since they facilitate tax evasion and money laundering. At first blush, it thus appears that OFCs are best characterized as "parasites," since their attraction stems in part from allowing their source-country clients to engage in activities detrimental to the well-being of their homes.

Nevertheless, offshore financial centers created to facilitate undesirable activities can still have unintended positive consequences. In particular, the presence of OFCs enhances the competitiveness of the local banking sector. Using a model of a domestic monopoly bank facing a competitive fringe of OFCs, we demonstrate that OFC proximity enhances the competitive behavior of the monopoly bank and may increase overall welfare. This is true despite the fact that deadweight losses are borne when funds are transferred offshore to an OFC. We test these predictions using a multilateral data set, and show that proximity to an OFC is indeed associated

with a more competitive domestic banking sector, and greater financial intermediation. We tentatively conclude that OFCs are better characterized as "symbionts."

Table 1: Bilateral Determinants of Cross-Border Asset Holdings

	Pooled	2001	2002	Pooled, without 0 values	Pooled, with institutions	Pooled, with institutions, legal regime
Log Distance	-1.14	-1.24	-1.04	-.49	-1.23	-1.13
	(.08)	(.09)	(.09)	(.05)	(.08)	(.08)
Log Host Population	1.22	1.23	1.21	.49	1.26	1.25
	(.04)	(.05)	(.05)	(.04)	(.04)	(.04)
Log Source Population	.57	.50	.67	.68	.61	.55
	(.05)	(.05)	(.05)	(.04)	(.05)	(.05)
Log Host Real GDP p/c	3.44	3.35	3.53	1.92	2.01	1.92
	(.05)	(.05)	(.05)	(.05)	(.09)	(.09)
Log Source Real GDP p/c	2.84	2.88	2.80	3.13	1.84	1.82
	(.10)	(.11)	(.11)	(.07)	(.17)	(.17)
Common Border	1.10	1.06	1.14	.94	1.31	1.32
	(.37)	(.40)	(.39)	(.19)	(.38)	(.37)
Common Language	1.67	1.49	1.87	1.13	.95	.96
	(.16)	(.18)	(.17)	(.11)	(.16)	(.16)
Currency Union	2.86	3.03	2.68	2.22	2.58	2.63
	(.28)	(.29)	(.30)	(.14)	(.27)	(.28)
Common Colonizer	.78	.40	1.23	1.09	.39	.56
	(.36)	(.39)	(.40)	(.27)	(.35)	(.36)
Currently Colony	.65	1.69	-.59	3.89	.35	.64
	(3.53)	(3.46)	(3.74)	(.85)	(2.98)	(3.15)
Island Host	.66	.75	.56	.52	-.00	.00
	(.19)	(.20)	(.20)	(.14)	(.18)	(.19)
Island Source	.88	.83	.88	1.07	.43	.65
	(.16)	(.18)	(.18)	(.11)	(.17)	(.18)
Tax Haven Host					1.19	1.33
					(.24)	(.25)
Tax Haven Source					.70	1.23
					(.20)	(.22)
Money Laundering Host					2.06	2.06
					(.24)	(.24)
Money Laundering Source					.55	.29
					(.23)	(.23)
Rule Law, Host					-.27	-.24
					(.17)	(.17)
Rule Law, Source					2.32	2.33
					(.24)	(.24)
Political Stability, Host					-.14	-.19
					(.10)	(.10)
Political Stability, Source					-1.65	-2.03
					(.18)	(.18)
Regulatory Quality, Host					2.19	2.21
					(.15)	(.15)
Regulatory Quality, Source					-.50	-.06
					(.23)	(.24)
Common Law Host						.13
						(.18)
Common Law Source						2.48
						(.34)
Civil Law Host						.64
						(.20)
Civil Law Source						2.95
						(.36)
French law Host						-.48
						(.13)
French law Source						.42
						(.14)
Observations	12,220	6,364	5,856	6,063	12,220	12,220
R^2	.56	.54	.57	.54	.60	.60
Root MSE	4.572	4.646	4.486	2.442	4.362	4.337

Regressand is log of asset stocks, with 0 replaced by .0001 (except in fourth column, where 0 values dropped).
OLS. Fixed year intercepts included but not recorded. Also included but not recorded: log area source, log area host, landlocked source dummy, landlocked host dummy.
Robust standard errors (clustered by country-pairs) in parentheses.

Table 2: Multilateral Determinants of Cross-Border Asset Holdings

Table 2a: Dummy Variable for OFC

	(1)	(2)	(3)	(4)
Population	-.11	.11	.01	.01
	(.04)	(.06)	(.09)	(.10)
GDP p/c	.44	.39	.35	.49
	(.11)	(.13)	(.30)	(.31)
Tax Haven		1.34	1.05	.87
		(.36)	(.43)	(.45)
Money Launderer		1.51	1.87	1.87
		(.35)	(.48)	(.48)
Rule of Law			-.24	-.39
			(.50)	(.52)
Political Stability			-.13	-.07
			(.29)	(.31)
Regulatory Quality			.32	.32
			(.46)	(.46)
Common Law				-.05
				(.50)
Civil Law				-.94
				(.60)
French Law				.60
				(.44)
Observations	223	223	184	184
Pseudo-R^2	.16	.42	.41	.44

Regressand is dummy variable for offshore financial center.
Constants included but not recorded. Probit estimation; standard errors recorded in parentheses

Table 2b: Continuous Variable for OFC activity

	(1)	(2)	(3)	(4)
Population	-.12	.01	-.01	-.01
	(.03)	(.02)	(.02)	(.02)
GDP p/c	.23	.11	.01	.04
	(.04)	(.03)	(.04)	(.05)
Tax Haven		1.12	1.08	1.02
		(.25)	(.31)	(.30)
Money Launderer		.91	100	.96
		(.29)	(.36)	(.36)
Rule of Law			-.11	-.15
			(.14)	(.14)
Political Stability			.04	.06
			(.06)	(.06)
Regulatory Quality			.18	.18
			(.12)	(.13)
Common Law				.11
				(.14)
Civil Law				-.11
				(.13)
French Law				.10
				(.08)
Observations	221	221	184	184
R^2	.23	.58	.59	.59

Regressand is continuous measure of offshore financial center activity.
Constants included but not recorded. OLS estimation; standard errors recorded in parentheses.

Table 2c: Potential Additional Determinants of OFC

	Binary OFC Measure	Continuous OFC Measure
English Language	.09 (.29)	-.04 (.09)
Official Supervisory Power from Barth, Caprio and Levine	.05 (.04)	.02 (.01)
Capital Controls	.23 (.34)	.14 (.15)
Corporate Tax Rate	-.01 (.01)	-.00 (.01)
Polity	-.06 (.03)	-.00 (.01)
Openness	.001 (.003)	.002 (.002)
Human Development Index	-1.66 (2.72)	-.47 (.37)
Political Rights	.12 (.08)	-.01 (.02)
Civil Rights	.21 (.10)	.00 (.03)
Freedom	.24 (.21)	-.02 (.05)
Regional Dummies (p-value)	.54	.08
Colonial Dummies (p-value)	1.00	.00

Regressors included but not recorded: log(population); log(real GDP per capita); tax haven dummy; money laundering dummy; intercept.
Binary OFC measure regressand: probit estimation. Continuous OFC measure regressand: OLS estimation with robust standard errors.

Table 3a: OFC Proximity and Domestic Banking Competitiveness

Measure	Bivariate	Controls #1	Controls #2	Controls #3	IV
Loan-Deposit Interest rate Spread	2.21 (.62)	1.45 (.69)	1.41 (.70)	1.63 (.79)	1.44 (.92)
5-Bank Concentration Ratio	1.77 (1.75)	4.66 (1.38)	7.53 (1.79)	6.91 (1.98)	8.22 (2.86)
# Commercial Banks (ratio to Log GDP)	-.67 (.68)	-.99 (.78)	-1.16 (.65)	-1.52 (.81)	-1.49 (.89)

Table 3b: OFC Proximity and Financial Depth

Measure (% GDP)	Bivariate	Controls #1	Controls #2	Controls #3	IV
Domestic Private Sector Credit	-13.7 (3.6)	-1.9 (3.0)	-3.1 (2.9)	-4.1 (3.1)	-3.4 (3.4)
Quasi-Liquid Liability	-16.3 (4.2)	-8.9 (3.3)	-11.4 (3.6)	-11.6 (3.4)	-7.8 (3.2)
M2	-17.1 (4.1)	-9.7 (3.4)	-11.1 (4.0)	-11.5 (3.8)	-5.3 (3.7)

Coefficients recorded are for log distance to closest OFC.
Controls #1: OFC dummy; log (2001-02 average) population; log (2001-02 average) real GDP per capita; intercept.
Controls #2: controls #1 plus trade remoteness; civil law dummy; French law dummy; landlocked dummy; latitude in hours; % Christian; % Muslim.
Controls #3: controls #2 plus (2001-02 average) trade as a percentage of GDP.
IV: controls #3. IVs for log minimum distance to OFC include: 1) log minimum distance to tax haven; 2) log minimum distance to money launderer; 3) remoteness from OFCs.
OLS estimation unless labeled; robust standard errors recorded in parentheses.

Table A1: Host Countries in CPIS

Afghanistan	Albania	Algeria	American Samoa	Andorra
Angola	Anguilla	Antigua and Barbuda	Argentina*	Armenia
Aruba*	Australia*	Austria*	Azerbaijan	Bahamas*
Bahrain*	Bangladesh	Barbados	Belarus	Belgium*
Belize	Benin	Bermuda*	Bhutan	Bolivia
Bosnia and Herzegovina	Botswana	Brazil*	British Virgin Islands	Brunei Darussalam
Bulgaria*	Burkina Faso	Burundi	Cambodia	Cameroon
Canada*	Cape Verde	Cayman Islands*	Central African Rep.	Chad
Chile*	China	Colombia*	Comoros	Congo (Zaire/Kinshasa)
Congo (Brazzaville)	Cook Islands	Costa Rica*	Côte d'Ivoire	Croatia
Cuba	Cyprus*	Czech Republic*	Denmark*	Djibouti
Dominica	Dominican Republic	Ecuador	Egypt*	El Salvador
Equatorial Guinea	Eritrea	Estonia*	Ethiopia	Falkland Islands
Faeroe Islands	Fiji	Finland*	France*	French Guiana
French Polynesia	Gabon	Gambia	Georgia	Germany*
Ghana	Gibraltar	Greece*	Greenland	Grenada
Guadeloupe	Guam	Guatemala	Guernsey*	Guinea
Guinea-Bissau	Guyana	Haiti	Honduras	Hong Kong*
Hungary*	Iceland*	India	Indonesia*	Iran
Iraq	Ireland*	Isle of Man*	Israel*	Italy*
Jamaica	Japan*	Jersey*	Jordan	Kazakhstan*
Kenya	Kiribati	Korea*	Kuwait	Kyrgyz Republic
Laos	Latvia	Lebanon*	Lesotho	Liberia
Libya	Liechtenstein	Lithuania	Luxembourg*	Macau*
Macedonia	Madagascar	Malawi	Malaysia*	Maldives
Mali	Malta*	Marshall Islands	Martinique	Mauritania
Mauritius*	Mexico	Micronesia	Moldova	Monaco
Mongolia	Montserrat	Morocco	Mozambique	Myanmar
Namibia	Nauru	Nepal	Netherlands*	Netherlands Antilles*
New Caledonia	New Zealand*	Nicaragua	Niger	Nigeria
North Korea	Norway*	Oman	Pakistan*	Palau
Panama*	Papua New Guinea	Paraguay	Peru	Philippines*
Poland*	Portugal*	Puerto Rico	Qatar	Réunion
Romania*`	Russian Federation*	Rwanda	St. Helena	St. Kitts and Nevis
St. Lucia	St. Pierre & Miquelon	St. Vincent & Gren.	Samoa	San Marino
São Tomé and Príncipe	Saudi Arabia	Senegal	Serbia and Montenegro	Seychelles
Sierra Leone	Singapore*	Slovak Republic*	Slovenia	Solomon Islands
Somalia	South Africa*	Spain*	Sri Lanka	Sudan
Suriname	Swaziland	Sweden*	Switzerland*	Syrian Arab Republic
Taiwan	Tajikistan	Tanzania	Thailand*	Togo
Tonga	Trinidad and Tobago	Tunisia	Turkey*	Turks & Caicos Islands
Turkmenistan	Tuvalu	Uganda	Ukraine*	United Arab Emirates
United Kingdom*	United States*	Uruguay*	Uzbekistan	Vanuatu*
Venezuela*	Vietnam	Virgin Islands	Yemen	Zambia
Zimbabwe				

Note: Source countries also marked with an asterisk.

Table A2: Offshore Financial Centers: Default Definition

Caribbean

Aruba	Bahamas	Barbados	Belize
Bermuda	Brit. Virgin Islands	Cayman Islands	Costa Rica
Dominica	Neth. Antilles	St. Kitts & Nevis	Turks and Caicos Is.

Europe

Andorra	Cyprus	Gibraltar	Guernsey
Isle of Man	Jersey	Liechtenstein	Malta
Monaco			

East Asia

Hong Kong	Macau	Malaysia	Marshall Islands
Philippines	Singapore	Thailand	

Middle East

Bahrain	Israel	Kuwait	Lebanon
Oman	United Arab Emir.		

Other

Liberia	Mauritius	Morocco	Panama
Russia	Uruguay		

Table A3: Countries in Multilateral Data Sample

Afghanistan	Albania	Algeria	American Samoa	Andorra
Angola	Anguilla	Antigua & Barbuda	Argentina	Armenia
Aruba	Australia	Austria	Azerbaijan	Bahamas
Bahrain	Bangladesh	Barbados	Belarus	Belgium
Belize	Benin	Bermuda	Bhutan	Bolivia
Bosnia & Herzegovina	Botswana	Brazil	British Virgin Islands	Brunei Darussalam
Bulgaria	Burkina Faso	Burundi	Cambodia	Cameroon
Canada	Cape Verde	Cayman Islands	Central African Rep.	Chad
Chile	China	Colombia	Comoros	Congo
Cook Islands	Costa Rica	Cote d'Ivoire	Croatia	Cuba
Cyprus	Czech Rep	Denmark	Djibouti	Dominica
Dominican Rep	Ecuador	Egypt	El Salvador	Eq. Guinea
Eritrea	Estonia	Ethiopia	Falkland Islands	Faeroe Islands
Fiji	Finland	France	French Guiana	French Polynesia
Gabon	Gambia	Georgia	Germany, West	Ghana
Gibraltar	Greece	Greenland	Grenada	Guadeloupe
Guam	Guatemala	Guernsey	Guinea	Guinea-Bissau
Guyana	Haiti	Honduras	Hong Kong	Hungary
Iceland	India	Indonesia	Iran	Iraq
Ireland	Isle of Man	Israel	Italy	Jamaica
Japan	Jersey	Jordan	Kazakhstan	Kenya
Kiribati	Korea	Kuwait	Kyrgyz Republic	Laos
Latvia	Lebanon	Lesotho	Liberia	Libya
Liechtenstein	Lithuania	Luxembourg	Macau	Macedonia (FYR)
Madagascar	Malawi	Malaysia	Maldives	Mali
Malta	Marshall Islands	Martinique	Mauritania	Mauritius
Mexico	Micronesia	Moldova	Monaco	Mongolia
Montserrat	Morocco	Mozambique	Myanmar (Burma)	Namibia
Nauru	Nepal	Netherlands	Netherlands Antilles	New Caledonia
New Zealand	Nicaragua	Niger	Nigeria	Niue
North Korea	Northern Mariana Islands	Norway	Oman	Pakistan
Palau	Panama	Papua New Guinea	Paraguay	Peru
Philippines	Poland	Portugal	Puerto Rico	Qatar
Reunion	Romania	Russia	Rwanda	San Marino
Sao Tome and Principe	Saudi Arabia	Senegal	Serbia/Ex-Yugoslavia	Seychelles
Sierra Leone	Singapore	Slovakia	Slovenia	Solomon Islands
Somalia	South Africa	Spain	Sri Lanka	St. Helena
St. Kitts & Nevis	St. Pierre & Miquelon	St. Lucia	St. Vincent & Grens.	Sudan
Suriname	Swaziland	Sweden	Switzerland	Syria
Taiwan	Tajikistan	Tanzania	Thailand	Togo
Tonga	Trinidad & Tobago	Tunisia	Turkey	Turkmenistan
Turks and Caicos Islands	Tuvalu	UK	US Virgin Islands	Uganda
Ukraine	United Arab Emirates	United States	Uruguay	Uzbekistan
Vanuatu	Venezuela	Vietnam	Western Samoa	Yemen
Zaire	Zambia	Zimbabwe		

Appendix 1: A Monopolistically-Competitive Model

In this appendix, we examine a monopolistically-competitive domestic banking sector. We make the same assumptions concerning domestic depositors and the offshore bank, so that equation (4) still represents the zero-profit condition for the offshore bank.

To introduce monopolistic competition, we assume that there are a large number n of homogeneous monopolistically-competitive banks who paid a fixed entry cost, c. The representative domestic bank takes n, l_k $(k \neq j)$, and L_O as given and faces an individual downward-sloping demand curve $\tilde{R}$, which is assumed to be more elastic than the overall demand curve faced by the offshore bank, i.e. $|R'| > |\tilde{R}'|$. Moreover, the elasticity of demand faced by the representative domestic bank is assumed to be an increasing function of n; the greater is n, the greater is the capacity to improve market share from local rivals. Representative bank profits satisfy

$$\pi_j = \left[\tilde{R}\left(n, l_j + (n-1)l_j + L_O\right) - r^*\right] l_j$$

The representative bank maximizes its profits with respect to its choice of l_j. The first-order condition of the representative domestic bank satisfies

$$\left[\tilde{R}\left(l_j + (n-1)l_k + L_O\right) - r^*\right] + \tilde{R}' l_j = 0$$

In equilibrium, all domestic banks are assumed to be identical, and the overall demand curve is assumed to be the same as that faced by the offshore bank, so that the first order condition becomes

$$R\left(\int_i^m w(i)\,di + nl\right) - r^* + \tilde{R}' l = 0$$

It is convenient to rewrite the zero profit condition for the offshore bank in terms of individual domestic bank lending levels and n:

$$\theta w(i^*) R\left(\int_{i^*}^{m} w(i)\,di + nl\right) - r^* w(i^*) - ax = 0$$

Finally, banks will enter until their zero profit condition is satisfied:

$$\left[R\left(\int_{i^*}^{m} w(i)\,di + nl\right) - r^*\right] l = c$$

The last three equations form a system in three unknowns, i^*, n, and l:

$$\begin{bmatrix} w'(\theta R - r^*) - \theta w(i^*)^2 R' & \theta w(i^*) R' n & \theta w(i^*) R' l \\ -w(i^*) R' & R' n + \bar{R}' & R' l + \partial \bar{R}'/\partial n \\ -w(i^*) R' l & R - r^* + R' nl & R' l^2 \end{bmatrix} \begin{bmatrix} di^* \\ dl \\ dn \end{bmatrix} = \begin{bmatrix} w(i^*) R & -a \\ 0 & 0 \\ 0 & 0 \end{bmatrix} \begin{bmatrix} d\theta \\ dx \end{bmatrix}$$

The determinant of the system satisfies:

$$D = w'(\theta R - r^*)(R' l)\left[\bar{R}' l - (R - r^*)\right]$$
$$-\partial \bar{R}'/\partial n\left[w'(\theta R - r^*)\left[(R - r^*) + R' nl\right] - \theta w(i^*)^2 R'(R - r^*)\right]$$

Since $|R'| > |\bar{R}'|$ by assumption, $(R - r^*) + R' nl < 0$ by the domestic bank's first order condition. A sufficient (but not necessary) condition for signing the determinant is then that $\partial \bar{R}'/\partial n$ is not too large.

The comparative statics for a change in x then satisfy:

$$\frac{di^*}{dx} = \frac{1}{D} a\left[\left[\bar{R}' l - (R - r^*)\right](R' l) - (R - r^* + R' nl)\partial \bar{R}'/\partial n\right] > 0$$

$$\frac{dl}{dx} = \frac{1}{D} a\left[(w(i^*) R' l)(\partial \bar{R}'/\partial n)\right] < 0$$

$$\frac{dn}{dx} = \frac{1}{D} a w(i^*) R'\left[\bar{R}' l - (R - r^*)\right] > 0$$

Note that l and n move in opposite directions with a change in x. For example, with closer proximity to an OFC, n declines as there is exit from the domestic banking sector in the face of heightened competition from the OFC. However, the declines in domestic lending is partially offset by the increase in l, lending per bank. The change in overall lending satisfies:

$$\frac{dL}{dx} = -\frac{1}{D} a w(i^*) \frac{\partial \bar{R}'}{\partial n}(R - r^*) < 0.$$

Since overall lending increases as x declines, it is easy to show that domestic interest rates fall as well.

Appendix 2: Comparative Statics and Simulation Details for the Monopolistic Model

1. Comparative static exercises

We first examine the impact of changes in the tax advantage enjoyed by the OFC, which is proxied by changes in θ. By equations (4) and (7), the system of equations satisfies:

$$\begin{bmatrix} w'\left(\theta R - r^*\right) - \theta w\left(i^*\right)^2 R' & \theta w\left(i^*\right) R' \\ -w\left(i^*\right)\left(R' + R'' L_H\right) & 2R' + R'' L_H \end{bmatrix} \begin{bmatrix} di^* \\ dL_H \end{bmatrix} = \begin{bmatrix} w\left(i^*\right) R & -a \\ 0 & 0 \end{bmatrix} \begin{bmatrix} d\theta \\ dx \end{bmatrix}$$

The determinant of the matrix of the system satisfies:

$$D = w'\left(\theta R - r^*\right)\left(2R' + R'' L_H\right) - \theta w\left(i^*\right)^2 \left(R'\right)^2 < 0$$

The comparative statics for a change in θ satisfy:

$$\frac{di^*}{d\theta} = -\frac{1}{D}\left(w\left(i^*\right) R\right)\left(2R' + R'' L_H\right) < 0$$

$$\frac{dL_H}{d\theta} = -\frac{1}{D} w\left(i^*\right)^2 R\left(R' + R'' L_H\right) < 0$$

which implies that

$$\frac{dL}{d\theta} = \frac{1}{D} R w\left(i^*\right)^2 R' > 0$$

The comparative statics for a change in x satisfy

$$\frac{di^*}{dx} = \frac{1}{D} a\left(2R' + R'' L_H\right) > 0$$

$$\frac{dL_H}{dx} = \frac{1}{D} a w\left(i^*\right)\left(R' + R'' L_H\right) > 0$$

which implies that

$$\frac{dL}{dx} = -\frac{1}{D} a w\left(i^*\right) R' < 0 .$$

2. Simulation solution

Given the assumption that $w(i) = wi$, the deposit rate paid by the OFC satisfies

$$r_O = \frac{r^* wi + ax}{\theta wi}$$

and by (3) OFC lending given i^* satisfies

$$L_O = \frac{w}{2}\left(m^2 - i^{*2}\right)$$

so that overall lending satisfies

$$L = L_H + \frac{w}{2}\left(m^2 - i^{*2}\right)$$

Given the functional form for R in (10), the equilibrium condition for OFC lending given L_H in (4) satisfies:

$$\theta wi^*\left(\overline{R} + R'L\right) - r^* wi^* - ax = 0$$

By (8) the first-order condition of the home country monopoly bank satisfies

$$\left(\overline{R} + R'L\right) - r^* + R' L_H = 0$$

The above two equations form a system of two equations in two unknowns, L_H and i^*.

Finally, our welfare measure satisfies

$$W = \left(\overline{R} - r^*\right) L + \frac{1}{2} R' L^2 - \left(m - i^*\right) ax$$

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Figure 1
Simulation results over distance

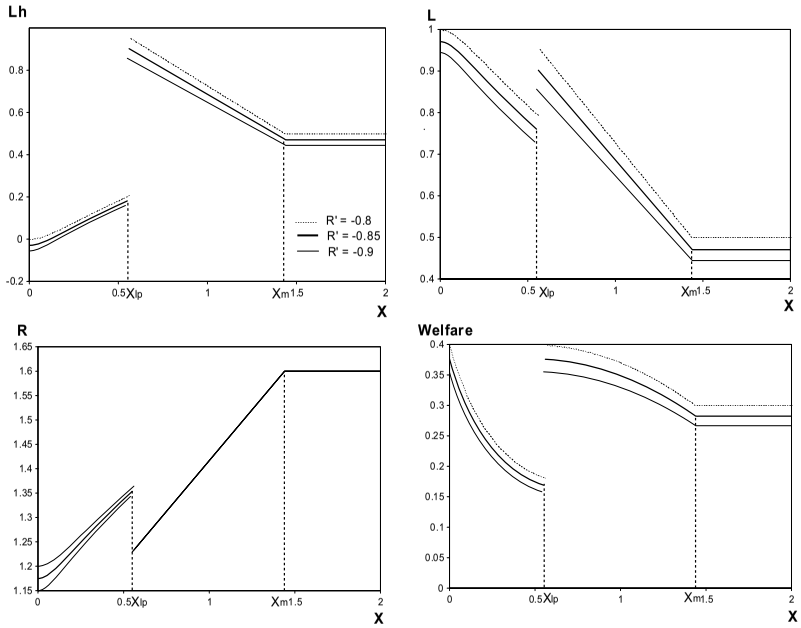

Figure 1 plots home bank lending, L_H, overall lending, L, interest rate levels, R, and welfare as function of distance to the OFC, x. x_{lp} represents the minimum value of x for which the home country bank chooses to limit price rather than pursue the Stackelberg leader solution. x_m represents the minimum value of x consistent with the pure monopoly solution.

Endnotes

[1] We use "country" below to refer to nations, territories, colonies, and so forth.
[2] http://www.oecd.org/dataoecd/9/61/2090192.pdf
[3] There were some notable holdouts; as of 2004, Andorra, Liberia, Liechtenstein, the Marshall Islands, and Monaco were still listed by the OECD as pursuing harmful tax practices (OECD, 2004).
[4] More details on the FATF are available at: http://www.fatf-gafi.org/; see also Masciandaro (forthcoming) and references therein.
[5] Alworth and Andresen (1992) is an antecedent of our work that estimates the determinants of cross-country bank deposits using BIS data between 17 source and 23 host countries for 1983, 1986, and 1990. They find a significant role for bank secrecy in attracting deposits, presumably to facilitate tax evasion and/or money-laundering. Portes and Rey (2005) focus instead on equity using a bilateral panel of data between 14 rich countries (including Hong Kong and Singapore) from 1989 through 1996; they find a strong role for information in explaining asset flows.
[6] For instance, Lane and Milesi-Ferretti (2004) conduct an analysis that is complementary to ours. While we both use gravity models, our analysis includes all assets for 2001-02 and focuses on the role of OFCs. In contrast, they analyze portfolio equity for 2001 using the CPIS data set and exclude OFCs.
[7] http://www.imf.org/external/np/sta/pi/geo.htm. Further details are available at http://www.imf.org/external/np/sta/pi/cpis.htm.
[8] In particular, the CPIS data show no cross-border holdings for e.g., the British Indian Ocean Territory (Diego Garcia), Christmas Island, and others; we drop them from our sample. We also drop areas with small holdings but other data problems, such as the French Southern Territories (Iles Crozet, Iles Kerguelen, Ile Amsterdam, and Ile Saint-Paul), and Niue.
[9] We use the word "country" to denote any territory or area for which we have data (of relevance); these need not be e.g., diplomatically recognized sovereign states with UN seats. Thus we include: territories (e.g., American Samoa); physical disparate parts of countries (e.g., Aruba); self-governing areas (e.g., Cook Islands); special administrative areas (e.g., Hong Kong); dependencies (e.g., Guernsey); commonwealths in political unions (e.g., Northern Mariana Islands); disputed areas (e.g., Taiwan) and so forth.
[10] Huizinga and Nielsen (2002) provide a related theoretical analysis of the differences between information provision and withholding taxes in the context of taxing interest across national boundaries. See also OECD (2000). In future work it would be interesting to treat tax havens and money launderers endogenously.
[11] Further details and the underlying data themselves are available at the sources. The OECD identifies tax havens on the basis of underlying policies. For instance, pp 9-10 of the OECDs's 2000 Report to the Ministerial Council Meeting *Towards Global Tax Co-operation* lists the four main factors that are used to 47 tax havens identified by the OECD: 1) low or no nominal taxes on the relevant income; 2) a regime that is ring-fenced from the domestic economy; 3) low transparency about the regime's disclosure, regulatory supervision, tax details and/or application, and 4) no effective exchange of information. More details are available at www.oecd.org/dataoecd/9/61/2090192.pdf. The CIA also provides (a little) more information on its data, at http://www.cia.gov/cia/publications/factbook/fields/2116.html.
[12] We use the 2000 data since it was the first review by the FATF, and use jurisdictions either reviewed or reviewed and deemed non-cooperative countries or territories. More details are available at http://www1.oecd.org/fatf/pdf/AR2000_en.pdf. For an analysis that treats money laundering as a choice variable determined by the national authorities, see Masciandaro (forthcoming).
[13] http://www.worldbank.org/wbi/governance/pubs/govmatters3.html
[14] For legal origins, we start with the well-known LaPorta, López-de-Silanes, Shliefer and Vishny data set available at http://mba.tuck.dartmouth.edu/pages/faculty/rafael.laporta/publications/LaPorta%20PDF%20Papers-ALL/Law%20and%20Finance-All/Law_fin.xls and fill in gaps with data from the CIA, available at: http://www.cia.gov/cia/publications/factbook/fields/2100.html.
[15] We use $100 in place of 0 or negative values. Alternative estimation strategies might be: a) averaging the data across years; b) using Tobit or c) weighting countries in some way and using GLS; we leave such issues to future research.
[16] Available at http://www.fsforum.org/publications/publication_23_31.html.
[17] Available at http://www.imf.org/external/np/mfd/2004/eng/031204.pdf
[18] The "offshore financial centers" that are caught by the latter requirement since they are OECD countries are: USA; UK; Austria; Luxembourg; Netherlands; Switzerland; Japan; Ireland; Australia; and Hungary. In our analysis,

we label these as non-OFCs, but retain them in the sample. Of the potential OECD OFCs, we consider only Luxembourg to be a potentially serious issue.
[19] OFCs also tend to be largely absent from places with poor banking systems (such as Africa and Central Asia), consistent with the results we present below.
[20] Available at http://www.cia.gov/cia/publications/factbook/fields/2086.html.
[21] The aggregated residual has at the top: Cayman Islands; British Virgin Islands; Netherlands Antilles; Liberia; and Tuvalu. While this – and the set of countries ranked slightly lower down – makes sense, the countries at the other end are more suspicious. They include: Faroe Islands; French Polynesia; Greenland; Puerto Rico; and Isle of Man. The last entry and a few others towards the bottom (e.g., Macau, Malta, UAE, and Aruba) make us take this measure with a grain of salt.
[22] Each of the five has positive factor loadings and scoring coefficients; the first factor explains essentially all of the variance of the five variables.
[23] The continuous variable has at the top: Cayman Islands; British Virgin Islands; Panama; Bahamas; and Singapore. The countries at the other end include: Faroe Islands; French Polynesia; Greenland; Martinique; and Syria.
[24] This result is consistent with the approach of Huizinga and Nielsen (2002) who treat policies like withholding taxes and information provision as substitute policies.
[25] The data set is available at http://www.worldbank.org/research/interest/2003_bank_survey/wb_banking_survey_032904.xls
[26] Available at http://www.ey.com/global/download.nsf/Argentina/WorldwCorporateTaxGuide/$file/WHOLE_FILE.pdf
[27] Available at http://www.cidcm.umd.edu/inscr/polity/.
[28] Available at http://hdr.undp.org/docs/statistics/indices/index_tables.pdf
[29] Available at http://www.freedomhouse.org/research/freeworld/2004/tables.htm
[30] We have also a) redefined our OFC dummy to include the ten OECD countries sometimes as identified as OFCs; and b) dropped these same ten countries from our analysis. Nothing of substance changes when we do this sensitivity analysis.
[31] The logic of our approach is similar to that of Claessens and Laeven (2004).
[32] One could easily imagine an extension of the model where taxes had a distortionary impact and the loss of revenues to the home country government resulted in higher tax rates and therefore welfare-reducing increases in domestic distortions.
[33] Note that the value of a effectively only determines the normalization for x (the distance parameter) as x only enters into the cost function in conjunction with a.
[34] Our model predicts this behavior within the range where the home country bank was not engaged in limit-pricing, which we perceive to be the norm.
[35] Our concentration on the nearest individual OFC is in the spirit of constant returns to scale in the banking technology of the OFC in our theoretical model. We also examined the sum of distances in miles to all of the OFCs as a robustness check. These results were very similar to those reported below.
[36] Thus the most remote countries are the Cook Islands, New Zealand, Niue, and French Polynesia, while the least remote countries are Croatia, Slovenia, Italy, and Austria.
[37] Data for local bank concentration and the number of commercial banks come from Demirguc-Kunt and Levine (2001).
[38] The first measure is obtained from Levine, Loayza, and Beck (2000) and is the average over 1980-1995. The latter are obtained from Barth, Caprio, and Levine (2001).
[39] The *distance from OFC* variable does robustly enter significantly as a determinant of credit to the private sector when the GDP per capita variable is omitted from the specification. However, this yields a rather uninteresting specification because it is well-documented that GDP per capita is highly correlated with measures of financial depth, e.g. Demirgüç-Kunt and Levine (2001).
[40] We have searched for a scale effect by interacting our measure of OFC proximity with the natural logarithms of either real GDP or the population. However, the coefficients on these terms are consistently economically and statistically small and insignificant. We have also attempt to link the Claessens and Laeven (2004) measure of bank competitiveness to our determinants without success. This is almost surely a result of the much smaller sample size; while their Table 3 provides estimates of H-statistics for fifty countries, that is still less than a third the size of the sample in our Tables 3 and 4.

[41] It is possible that channels other than the pro-competitive impact stressed in our model are also at work generating this result. In particular, it is possible that proximity to OFCs changes government policies towards its financial system, which may alter the cost of conducting intermediation for domestic banks.

International Tax Policy Forum

ITPF Conference
Tax Havens and Foreign Direct Investment
December 11, 2006

Research Summary

Presenter: Jeffrey Owens
Director of the Centre for Tax Policy and Administration, Organisation for Economic Co-operation and Development
In his role at OECD, Mr. Owens directs the organization's focal point for its work on tax policy and tax administration. He has made numerous contributions to professional journals, has published a number of books and has been the author of many OECD publications on taxation. Jeffrey's position at the OECD and his frequent participation in international conferences, have provided him with a unique international perspective on tax policy.

Paper: OECD's Work in Counteracting the Use of Tax Havens to Evade Taxes

Summary: Mr. Owens' brief describes the steps taken by the OECD to reduce harmful tax practices. His presentation of the work being conducted by the Harmful Tax Practices Project includes the following next steps:

- While both OECD and non-OECD countries have made progress in curtailing harmful tax practices, the report by the Global Forum on Taxation finds that more still needs to be done.
- The OECD list of uncooperative tax havens has been reduced from seven in 2002 to only five today.
- All countries that are able to exchange information for regulatory and investigative purposes reported having safeguards in place to protect the confidentiality of exchanged information.
- The most crucial issue to confront over the next year is continuing progress with non-OECD Participating Partners – over 40 negotiations are currently underway.

OECD'S WORK IN COUNTERACTING THE USE OF TAX HAVENS TO EVADE TAXES

by Jeffrey Owens*

Director

Centre for Tax Policy and Administration

at

Tax Havens and Foreign Direct Investment Seminar

American Enterprise Institute

Washington, 11 December 2006

* The views expressed herein are those of the author and not the OECD or its Member Countries

I. General Background on the OECD's Harmful Tax Practices Project

1. One of the significant challenges for governments is the increased scope for illicit use of the financial system, including tax evasion, which has been brought about by an increasingly borderless financial system. The role of offshore financial centres in the international financial system has changed dramatically. Today, 5-7 trillion USD are held offshore. The Cayman Islands is the fifth largest banking centre in the world. The British Virgin Islands has now 360,000 shell companies; Mauritius is a major conduit into India. While there may be legitimate reasons to use offshore financial centres, including tax reasons, they are often used by residents of OECD and non-OECD economies to evade their tax obligations. Ireland, for example, recently recovered almost 1 billion euros in an investigation into accounts held in offshore banks in the Channel Islands. An Italian tax amnesty netted 84 billion euros in repatriated capital. The United Kingdom recently estimated that it can save 1.9 billion GBP by targeting compliance efforts on evasion through offshore financial centres.

2. In response to this challenge, the OECD member countries launched in 1996 the harmful tax practices initiative. The harmful tax practices work has in the past primarily been carried out through the Forum on Harmful Tax Practices, a subsidiary body of the Committee on Fiscal Affairs. The work has proceeded on three fronts: 1) identifying and eliminating harmful tax practices of preferential tax regimes in OECD countries, 2) identifying "tax havens" and seeking their commitments to the principles of transparency and effective exchange of information, and 3) encouraging other non-OECD economies to associate themselves with the harmful tax practices work. Much of the harmful tax practices work is now progressed by the Global Forum on Taxation,[1] which consists of OECD and non-OECD countries[2] working together to achieve high standards of transparency and exchange of information in tax matters.

3. This work has received considerable political support. The G7/8 Finance Ministers have consistently provided political support for the project and the G-8 Heads of Government confirmed their support at the Gleneagles Summit in July 2005[3]. Also, at the November 2004 meeting of the G-20 Finance Ministers a strong statement in support of this work was issued and further endorsement of this work was provided in the most recent G-20 Communiqué issued in October 2005 and in a Communiqué from the Caribbean-UK Forum on 28 April 2006.

[1] The OECD carries out its dialogue on tax issues with non-OECD economies under the multilateral framework known as the "Global Forum on Taxation". The composition of the Global Forum generally varies depending on the topics covered by the meeting.

[2] References in this note and its annexes to "countries" should be taken to apply equally to "territories", "dependencies" or "jurisdictions".

[3] See paragraph 14(i) of The Gleneagles Communiqué on Africa, July 14: "In response to this African commitment, we will: … (i) Take concrete steps to protect financial markets from criminal abuse, including bribery and corruption, by pressing all financial centres to obtain and implement the highest international standards of transparency and exchange of information. We will continue to support Financial Stability Forums ongoing work to promote and review progress on the implementation of international standards, particularly the new process concerning offshore financial centres that was agreed in March 2005, and the OECD's high standards in favour of transparency and exchange of information in all tax matters."

a) The Work of the Forum on Harmful Tax Practices

4. In 1998, the OECD established 4 key criteria for identifying harmful tax practices:

- No or nominal taxes, in the case of tax havens, and no or low taxation, in the case of member country preferential tax regimes;
- Lack of transparency;
- Lack of effective exchange of information; and
- No substantial activities, in the case of tax havens, and ring-fencing, in the case of member country preferential regimes.

5. The no/nominal/low taxes criterion is **merely** used as a gateway criterion to determine those situations in which an analysis of the other criteria is necessary. **The adoption of low or zero tax rates is *never* by itself sufficient to identify a jurisdiction as a tax haven or a preferential tax regime as harmful.** The OECD does not prescribe appropriate levels of taxation or dictate the design of any country's tax system.

6. In 2000, the OECD identified 35 jurisdictions that were found to meet the tax haven criteria[4] and 47 *potentially* harmful preferential tax regimes in OECD countries.[5] A process was also established whereby the identified tax havens could commit to improve transparency and establish effective exchange of information for tax purposes. Those jurisdictions that were not willing to make such commitments would be included in a list of unco-operative tax havens. Thus, the key distinction for OECD countries became whether a tax haven was co-operative or unco-operative.

7. *The 2001 Progress Report* made certain modifications to the tax haven work and updated the progress made in the harmful tax practices work. There were two principal modifications. First, a tax haven that committed to eliminating lack of transparency and lack of effective exchange of information would be considered co-operative and therefore would not be included on the OECD's list of unco-operative tax havens. A second modification was that a potential framework of co-ordinated defensive measures would not apply to unco-operative tax havens any earlier than it would apply to OECD countries with harmful preferential tax regimes.

8. In April 2002, the OECD issued the list of uncooperative tax havens called for in 2000 by Ministers. The list initially had 7 jurisdictions, but two jurisdictions – Nauru and Vanuatu – made commitments in 2003 and the list now contains only 5 jurisdictions: Andorra, Liberia, Liechtenstein, the Marshall Islands and Monaco.

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[4] Andorra; Anguilla; Antigua and Barbuda; Aruba; The Bahamas; Bahrain; Barbados; Belize; British Virgin Islands; Cook Islands; Dominica; Gibraltar; Grenada; Guernsey; Isle of man; Jersey; Liberia; Liechtenstein; the Maldives; Marshall Islands; Monaco; Montserrat; Nauru; Netherlands Antilles; Niue; Panama; Samoa; Seychelles; St. Lucia; St. Kitts and Nevis; St. Vincent and the Grenadines; Tonga; Turks and Caicos; US Virgin Islands; Vanuatu. Six other jurisdictions – Bermuda, Cayman Islands, Cyprus, Malta, Mauritius and San Marino – were not included in the 2000 Report because they committed to eliminate their harmful tax practices prior to the release of that report.

[5] The potentially harmful preferential regimes were classified by category (e.g. insurance, financing and leasing, fund managers, etc.) with some regimes falling within more than one category. Thus, while there are 61 entries in the table of potentially harmful preferential regimes in the 2000 Report, there were only 47 potentially harmful preferential regimes.

9. In 2004, 18 regimes had been abolished or were in the process of being abolished and 14 had been amended to remove their potentially harmful features. Another 13 were found not to be harmful on further analysis.

10. The only outstanding regime was the Luxembourg 1929 holding company regime. In 2006, the Committee found it to be harmful because of a lack of exchange of information. The European Commission also recently decided that the 1929 holding company regime contravenes the EC Treaty State Aid rules and the regime has been closed to new entrants.

b) The Work of the Global Forum on Taxation

11. The 33 jurisdictions that made commitments to transparency and effective exchange of information are referred to as Participating Partners (see Annex I). The OECD and non-OECD Participating Partners have worked together in the Global Forum on Taxation to develop the international standards for transparency and effective exchange of information in tax matters. A specially created working group developed the 2002 Model Agreement on Exchange of Information on Tax Matters (available on the OECD website at http://www.oecd.org/ctp).

12. The Global Forum has been working towards a level playing field with respect to transparency and effective exchange of information in the tax area. At a meeting in June 2004 in Berlin, the participants agreed to pursue the following individual, bilateral and collective actions:

- Individual actions: Some countries and jurisdictions may need to modify existing laws and practices to meet the high transparency and information exchange standards that the Global Forum participants wish to see achieved. In addition, participants will explore what their governments can do to promote the adoption of transparency and exchange of information by those not yet in the process.

- Bilateral actions**:** Participants were encouraged to continue to strive to achieve effective exchange of information and transparency by 2006. Nevertheless, it was recognised that flexibility is required since many participants have not yet initiated negotiations of the bilateral agreements required. Further, it may be in the countries' mutual interest to depart from the 2006 date.

- Collective Actions. The participants agreed to carry out a review of the transparency and information exchange practices currently applied by financial centres (including all OECD countries, the 33 non-OECD Participating Partners and other significant financial centres) which would be summarised in a factual report. The results of this review are reflected in the report, "*Tax Co-operation: Towards a Level Playing Field - 2006 Assessment by the Global Forum on Taxation"* (the Report) issued in May 2006.

II. The Report by the Global Forum on Taxation

a) Introduction

13. The Report set out the major achievement of the Global Forum on Taxation. All the OECD and non-OECD Participating Partners in the Global Forum on Taxation have endorsed the principles of transparency and exchange of information for tax purposes that are reflected in the Report. They have also agreed to their legal and administrative frameworks being reviewed in the light of these principles. For the first time, other significant non-OECD economies such as Hong Kong, China and Singapore have

participated in the work of the Global Forum in these areas. Six of these non-OECD economies have even endorsed the principles of transparency and exchange of information and agreed to work with the Global Forum towards a level playing field: Argentina; China; Hong Kong, China; Macao, China; the Russian Federation and South Africa. On 3rd November 2006, the UAE also endorsed this project.

b) Key Principles of Transparency and Exchange of Information

14. The principles of transparency and effective exchange of information for tax purposes have been articulated and refined through the work of the Global Forum. They are reflected in the 2002 Model Agreement on Exchange of Information on Tax Matters and may be summarised as follows:

- Existence of mechanisms for exchange of information upon request.

- Exchange of information for purposes of domestic tax law in both criminal and civil matters.

- No restrictions of information exchange caused by application of dual criminality principle or domestic tax interest requirement.

- Respect for safeguards and limitations.

- Strict confidentiality rules for information exchanged.

- Availability of reliable information (in particular bank, ownership, identity and accounting information) and powers to obtain and provide such information in response to a specific request from a treaty partner.

c) Factual Assessment

a) Exchanging Information

- All but 12 countries have exchange of information arrangements that permit them to exchange information for both civil and criminal tax purposes in the form of double tax conventions or TIEAs. The exceptions are Andorra, Anguilla, Cook Islands, Gibraltar, Guatemala, Liechtenstein, Nauru, Niue, Panama, Samoa, Turks and Caicos Islands and Vanuatu.

- Only Cyprus; Hong Kong, China; Malaysia; Philippines and Singapore reported being unable to respond to a request for information where they have no interest in obtaining the information for their own tax purposes (domestic tax interest).

- Only Andorra, Cook Islands, Samoa and Switzerland apply the principle of dual incrimination to all their information exchange relationships concerning the administration or enforcement of domestic tax law. A further group of countries apply this principle in connection with exchange of bank information (see Section b below).

- About 90 % of all double tax conventions have “broad” exchange of information clauses that allow for information to be provided in cases where the request relates to the enforcement or application of domestic law rather than being limited to cases where the correct application of the provisions of the particular double tax convention is at issue.

- All countries except Guatemala and Nauru reported having legal mechanisms in place to permit the exchange of information in criminal tax matters in certain circumstances. In a number of

countries the exchange mechanisms based on mutual legal assistance treaties and/or domestic law are very restrictive and permit information exchange in criminal tax matters only in a very narrow set of circumstances. Thus, as a practical matter, there are a number of countries (e.g. Panama), that are rarely, if ever able to exchange information in criminal tax matters.

- All countries that are able to exchange information reported having safeguards in place to protect the confidentiality of any information exchanged.

b) Access to Bank Information

- In 77 countries, governmental authorities have access to bank information and/or information from other financial institutions for at least some tax information exchange purposes. Only Guatemala, Nauru and Panama have indicated an inability to access information for any exchange of information purposes.
- Another 17 countries grant access to bank information only for the purpose of responding to a request for exchange of information in criminal tax matters. Of these Andorra, Austria, Cook Islands, Luxembourg, Samoa, San Marino, Saint Lucia, Saint Vincent and the Grenadines and Switzerland apply the principle of dual criminality in connection with access to bank information for exchange of information purposes. Further, the Cook Islands, Niue and Vanuatu leave the question of whether to provide information to the discretion of a particular official (e.g. the attorney general).

c) Access to Ownership, Identity and Accounting Information

- Of the 82 countries reviewed, 78 – including all the OECD countries - generally have powers to obtain information that is kept by a person subject to record keeping obligations which may be invoked to respond to a request for exchange of information in tax matters.

- In addition, 71 countries reported that they also generally have powers to obtain information from persons not required to keep such information which may be invoked to respond to a request for information.

- Anguilla, Montserrat, Panama and Turks and Caicos Islands have very limited powers to obtain information for criminal tax matters.

d) Availability of Ownership, Identity and Accounting Information

Companies

- 77 of the countries reviewed require companies to report legal ownership information to governmental authorities or to hold such information at the company level. More stringent ownership reporting requirements exist in the financial sector in certain countries.

- Bearer shares may be issued in 48 countries. Of these, 39 have adopted mechanisms to identify the legal owners of bearer shares in some or all cases. 10 countries also require bearer shares to be immobilised or held by an approved custodian. The remaining 29 rely mainly on anti-money laundering rules, investigative mechanisms or a requirement for the holders of shares to notify the company of their interest in the shares.

- Bearer debt instruments may be issued in 52 countries and 40 of these have adopted mechanisms to identify the owners of such instruments. In general, these mechanisms rely on anti-money laundering rules, on investigative powers or, in the case of EU Member States and their associated or dependent territories, on procedures set out in the EU Savings Tax Directive and savings tax agreements.

- All but 5 countries (Aruba; Guatemala; Hong Kong, China; Macao, China and Singapore) indicated that applicable anti-money laundering legislation would normally require corporate service providers or other service providers to identify the beneficial owners of their client companies.

- In 75 countries, all domestic companies are required to keep accounting records. No such requirements exist for international business companies in Belize, Brunei and Samoa or for limited liability companies in Anguilla, Montserrat and Saint Kitts and Nevis. In the Bahamas, only public companies are required to keep accounting records. Mandatory accounting records retention periods of 5 years or more exist in 63 countries.

Trusts

- 54 countries have trust law. Of these, Macao, China and the Seychelles have no trust law applicable to residents, but have trust law applicable to non-residents. Information on the settlors and beneficiaries of domestic trusts is required to be held under the laws of 47 countries. In 36 of the countries with trust law, a domestic trustee of a foreign trust would also be required to have information on the identity of settlors and beneficiaries, in some or all cases. Of the 28 countries that do not have trust law, 18 indicated that their residents may act as trustees of a foreign trust. In all of these, except for Luxembourg, there is a requirement on resident trustees to identify settlors and beneficiaries of foreign trusts.

- Of the 54 countries which have trust law, 45 countries reported requiring all trusts formed under their law to keep accounting records.

III. Next Steps

15. The Report shows that both OECD and non-OECD countries have implemented or made considerable progress towards implementing the transparency and effective exchange of information standards that the Global Forum wishes to see achieved. However, it is also recognised that more progress needs to be made in some areas.

16. The participants at the Melbourne Global Forum meeting agreed that the Report will be updated periodically. The Report and its updates will play an important role as an ongoing reference tool and as a basis on which to assess further progress made transparency and the effective exchange of information in tax matters. At the next meeting of the Global Forum it will review the following issues:

- Further progress is required in some countries to address the constraints placed on international co-operation to counter criminal tax abuses.

- Further progress is required to address those instances where countries require a domestic tax interest to obtain and provide information in response to a specific request for information related to a tax matter.

- The countries that have strict limits on access to bank information for tax purposes are encouraged to review their current policies on this issue and to report the outcome of their review at the next Global Forum meeting.

- Some countries need to ensure that the competent authorities have appropriate powers to obtain information for civil and criminal tax purposes.

- Many countries lack access to beneficial ownership information and a large number of countries still allow bearer shares. Countries are encouraged to review their current polices and to report the outcome of their review at the next Global Forum meeting.

- The countries that do not require the keeping of accounting records for international company regimes are encouraged to review their current policies and to report the outcome of their review at the next Global Forum meeting.

17. Over the next year, the most crucial issue will be whether further progress is made in the TIEA negotiations with non-OECD Participating Partners. Some progress has already been made. For example, since 2000, the United States has signed tax information exchange agreements (TIEAs) with Antigua and Barbuda, Aruba, The Bahamas, the British Virgin Islands, the Cayman Islands, Jersey, Guernsey, Isle of Man and Netherlands Antilles. Recently, 3 of these agreements entered into force (British Virgin Islands, Cayman Islands and Guernsey). The Netherlands signed a TIEA with the Isle of Man on 7 October 2005 and Australia signed a TIEA with Bermuda on 11 November 2005. Over forty negotiations are under way and we expect many of these to be completed before the end of the year. These agreements closely follow the Model Agreement.

ANNEX I:

COUNTRIES COVERED BY FACTUAL ASSESSMENT

Global Forum Participating Partners

ANGUILLA*	DOMINICA	KOREA	SAN MARINO
ANTIGUA AND BARBUDA	FINLAND	MALTA	SEYCHELLES
ARUBA**	FRANCE	MAURITIUS	SLOVAK REPUBLIC
AUSTRALIA	GERMANY	MEXICO	SPAIN
THE BAHAMAS	GIBRALTAR*	MONTSERRAT*	SAINT KITTS AND NEVIS
BAHRAIN, Kingdom of	GREECE	NAURU	SAINT LUCIA
BELIZE	GRENADA	NETHERLANDS	SAINT VINCENT AND THE GRENADINES
BERMUDA*	GUERNSEY***	NETHERLANDS ANTILLES**	SWEDEN
BRITISH VIRGIN ISLANDS*	HUNGARY	NEW ZEALAND	TURKEY
CANADA	ICELAND	NIUE	TURKS AND CAICOS ISLANDS*
CAYMAN ISLANDS*	IRELAND	NORWAY	UNITED KINGDOM
COOK ISLANDS	ISLE OF MAN***	PANAMA	UNITED STATES
CYPRUS	ITALY	POLAND	U. S. VIRGIN ISLANDS****
CZECH REPUBLIC	JAPAN	PORTUGAL	VANUATU
DENMARK	JERSEY***	SAMOA	

All Global Forum Participating Partners except Antigua and Barbuda and Grenada responded to the questionnaire which forms the basis of the factual assessment. The information included in the factual assessment about Antigua and Barbuda and Grenada is based on publicly available information or information previously provided by Antigua and Barbuda and Grenada.

Invitees

In addition to the Participating Partners, set out above, the following countries were invited to contribute to the factual assessment and to attend the Global Forum meeting. All but two of the invitees –Brunei and Liberia –responded to the questionnaire used as the basis for the factual assessment. Liberia was unable to do so due to its current political situation.

ANDORRA	GUATEMALA	MONACO
ARGENTINA	HONG KONG, CHINA	PHILIPPINES
AUSTRIA	LIBERIA	RUSSIAN FEDERATION
BARBADOS	LIECHTENSTEIN	SINGAPORE
BELGIUM	LUXEMBOURG	SOUTH AFRICA
BRUNEI	MACAO, CHINA	SWITZERLAND
CHINA	MALAYSIA (LABUAN)	UNITED ARAB EMIRATES
COSTA RICA	MARSHALL ISLANDS	URUGUAY

The 82 countries covered by the factual assessment currently consist of all Participating Partners and all of the invitees except for Liberia.

International Tax Policy Forum

ITPF Conference
Tax Havens and Foreign Direct Investment
December 11, 2006

Research Summary

Presenter: Michel Aujean
Director of Tax Policies and Analysis, EU Commission
Mr. Aujean has published numerous articles on international economics and taxation, in addition to his teaching tax law as a visiting professor in the United States, France, Italy and Austria. In his current capacity, he directs the EU Commission's initiatives on tax policy direct tax legislation and related infringements. He holds a masters degree from the Faculty of Law and Economics in Paris.

Paper: Tax Havens and the EU Code of Conduct

Summary: Mr. Aujean discusses the changes in both statutory and effective tax rates in the EU and the wider OECD member countries over the past two decades. He also examines the EU Code of Conduct on business taxation and its application since its adoption on December 1, 1997. He finds that:

- Tax competition is more specifically affecting the EU area and the decline of statutory tax rates has been much more severe over the last 11 years in the 25 EU Member States than in non-EU OECD countries.
- Despite the decline in average statutory and effective tax rates, taxes paid by EU companies as a share of GDP remained fairly stable in the last decade.
- Beyond some base broadening reforms, three factors help explain the stability of tax receipts – the business cycle, profitability and incorporation of companies.
- The EU Code of Conduct, designed to confront the problem of harmful tax competition, has proved effective despite requiring unanimity among member states to change tax policy.
- The future of this approach encompasses possible extension of the scope of the examination of harmful tax measures and geographical extension of the discipline to EU trade partners.

Tax Havens and the EU Code of Conduct

Michel Aujean
Director of Tax Policies and Analyses
EU Commission[1]

Why is tax competition an issue?

The concept and the working of tax competition cannot be compared to the concept of free competition in goods and services markets. Taxation is one of the expressions of the sovereignty of public authorities in view of the financing of public goods. The exercise of such national sovereignty responds to constitutional principles ensuring the distribution in the context of democratically chosen social models. It is exactly because the "invisible hand" of the market is not able to ensure, alone, such objectives, that taxation exists and, as such, is a "core" prerogative of public authorities.

But, in a more and more integrated economic environment, there are important limits to the exercise of national sovereignty. And the defence of national interests can be in conflict with the attainment of general economic and social objectives of an integrated area, such as, for instance, the European Union. Even in an enlarged geographical and economic context, the 'invisible hand" cannot be able to ensure that global interest is not put in danger by individual behaviour.

In view of the attainment of the primary objective of fair economic competition, there are two important limits to tax competition. First, tax competition should not endanger the correct allocation of resources and, therefore, the economic integration. Second, tax competition should not be harmful (see below). In fact, the behaviour of competitive tax systems should not imply distortions of resources or revenues allocations. In such situations, tax competition will act as an obstacle to integration and to the financing of the social models.

The present situation raises a number of concerns for the current EU tax policy:

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[1] The author is very grateful to Carola Maggiulli and Jean Emmanuel Dulière for the help and advice given in the preparation of this article. The views expressed here, and any remaining errors, are the sole responsibility of the author and do not necessarily represent the view of the European Commission.

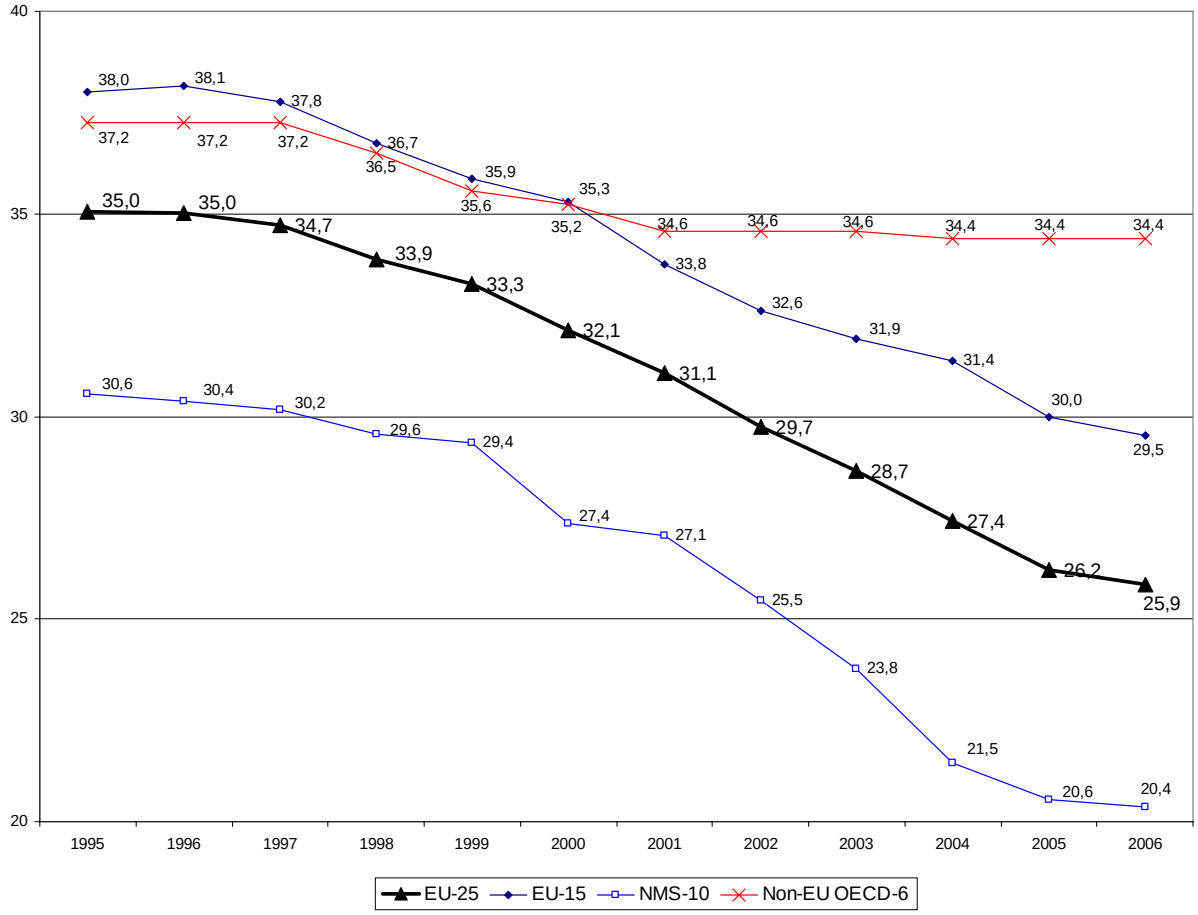
- If a process of tax competition results in less capital tax revenues (the so called "race to the bottom") this raises concerns about the sustainability of the European social model in the long term. Total tax revenues may become insufficient for the provision of public goods and particularly social expenditures;
- Alternatively, total tax revenues and public spending may be kept constant by shifting the tax burden to less mobile tax bases, such as labour, with negative consequences on employment;
- As a result, this process could lead to hampering the redistribution of income and it raises, overall, equity concerns.

Main trends in corporate taxation and corporate tax revenues in the EU

a) Statutory corporate tax rates

A clear phenomenon in the area of company taxation is the marked downward trend of statutory corporate tax rates. Graph 1 illustrates this evolution within the EU and for six non-EU OECD countries (Australia, Canada, Japan, Norway, Switzerland and the USA, referred to as the 'non-EU OECD-6' henceforth) during the last decade. The average rate for the EU-25 Member States fell from 35% to 25.9% between 1995 and 2006 and from 37.2% to 34.4% for the non-EU OECD-6. The phenomenon of falling rates accelerated from 2000 in both old (EU-15) and new Member States (NMS-10), with a sharper decrease for the latter group. Since 2001, the average rate for the EU-15 is lower than the non-EU OECD-6 level.

Graph 1: Evolution of average statutory corporate tax rates in the EU-25, EU-15, NMS-10 and non-EU OECD-6 (unweighted averages, 1995-2006)



[Source: TAXUD / ESTAT Structures, IFS, KPMG]

The reduction of corporate tax rates in the OECD area has been a long term trend. With the notable exception of Spain, all EU-13[2] and non-EU OECD-6 countries have experienced sharp reductions in statutory tax rates since the early 80s. During the 90s a remarkable downward common trend is observed between the EU-13 Member States and the other non-EU OECD-6 countries. It is worth nothing that, after 2000 this trend has largely accelerated in the EU area, whereas some stability is observed in the main non-EU OECD partners. In particular, the accelerating downward trend in EU rates contrasts with the long term stability of corporate tax rates in other main developed area such as the USA and Japan.

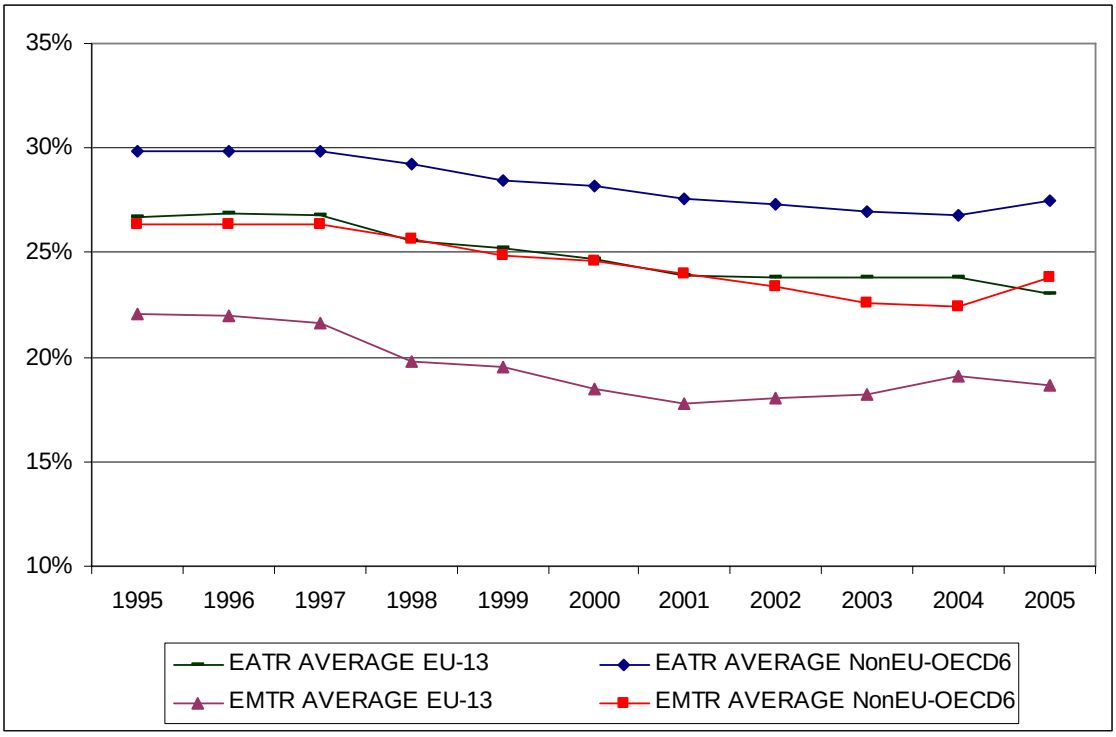
b) Effective tax rates

Graph 2 illustrates the evolution of effective tax rates in the last decade in the EU-13 (data on Denmark and Luxembourg is missing) and non-EU OECD-6 area (unfortunately comparable data for the new EU Member States is not available). Both effective average tax rates and effective marginal tax rates show a declining trend common to the EU and non-EU countries. This declining trend is less pronounced than the reduction in statutory corporate tax rates. While following the same trend, the effective tax rates for the non-EU OECD-6 countries have been on average constantly higher than the corresponding EU rates in the last decade.

[2]EU-15 excluding Luxembourg and Denmark.

From 1995 to 2005, the effective average tax rate decreased from 27% to 23% in the EU-13 and from 30% to 27% in the non-EU OECD-6. During the same period, the effective marginal tax rate declined from 22% to 19% in the EU-13 and from 26% to 23% in the non-EU OECD-6.

Graph 2: **Evolution of the effective average (EATR) and marginal (EMTR) corporate tax rates in the EU-13 and non-EU OECD-6 (unweighted averages, 1995-2005)**



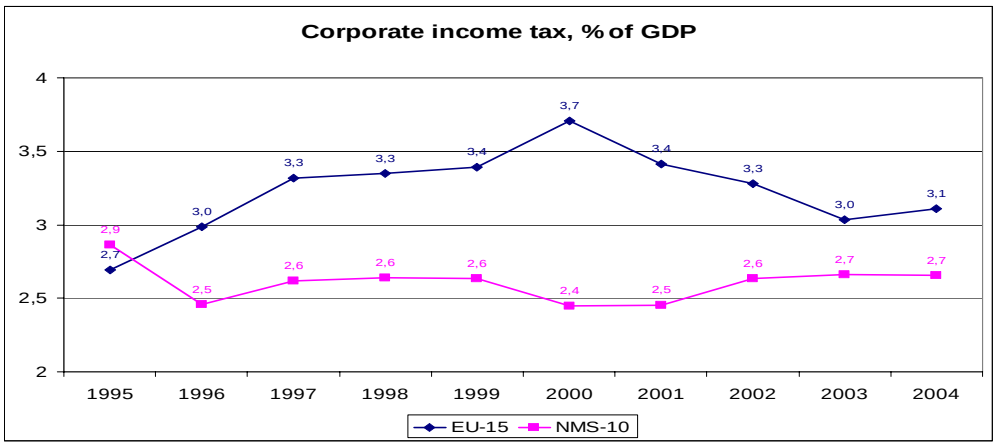
[Source: IFS]

The declining trend of effective tax rates in the non-EU OECD-6 area started at the beginning of the 80s. In the middle of the 80s, the EU countries' effective tax rates became lower than that of the non-EU OECD-6 countries, probably as a result of the more pronounced broadening of the taxable base in the latter.

c) Corporate tax revenues

Despite the decline in average statutory and effective tax rates, taxes paid by EU companies as a share of GDP remained fairly stable in the last decade, with a 1995-2004 average of 3.2% for the EU-15 and of 2.6% for the NMS-10 (see Graph 3). Corporate tax revenues in the EU-15 increased from 2.7% to 3.7% of GDP from 1995 to 2000 and decreased again to 3.1% in 2004. In the NMS-10, this ratio fell from 2.9% in 1995 to 2.4% in 2000 and increased to 2.7% in 2003 and 2004.

Graph 3: **Evolution of the corporate income tax revenues as % of GDP in the EU-15 and the NMS-10 (unweighted averages)**

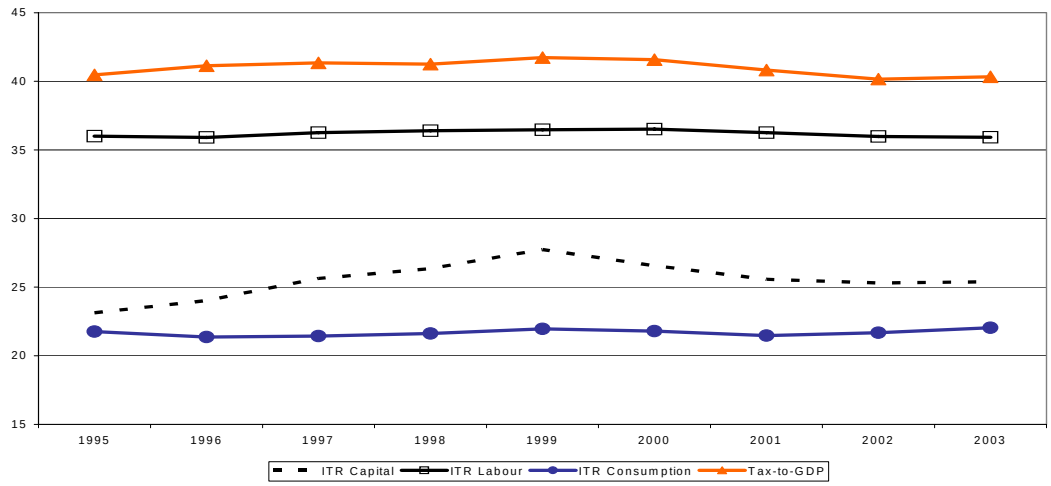


[Source: TAXUD / ESTAT Structures]

d) Implicit tax rates

Graph 4 shows that, in the last decade, general government total revenues (tax revenues and social contributions) in the EU-25 have been stable at around 41% of GDP, with the implicit tax burden on labour remaining the highest at around 36%, compared to the implicit tax rate on capital (25%) and on consumption (22%) in 2003. The evolution of these indicators does not seem to show a clear change of tax structures during the last decade. The relative stability of the ITR on labour in the EU during the past decade, in spite of efforts by the Member States to reduce labour taxation for boosting employment, may reflect the pressure to maintain a great share of the taxation burden on the less mobile factors.

Graph 4: **Evolution of implicit tax rates (ITR) on labour, capital and consumption in the EU-25**



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Interpreting the results

The stylized facts observed - the sharp fall of statutory corporate income tax rates in the EU area and the less pronounced fall of the EATRs and EMTRs - may be explained by the fact that governments are competing more for profits or "taxing rights" than for physical investment.

It is worth underlying that since the beginning of this century, the continued and sharp reduction of corporate statutory tax rates is mainly a "European" reality which contrasts with the rates' stability observed in other developed world area, mainly the USA and Japan. Several factors can explain this EU phenomenon: the "small countries factor" and, certainly, the enlargement of the EU to new Member States may have aggravated this phenomenon as well as the segmentation of the tax environment of the EU internal market into several different competing national tax systems. This "European" tax competition in general tax regimes is certainly source of specific political concern for public authorities in Europe, it is even more concerning when one looks at the number of "harmful tax regimes" put into place by the "small" Member States (see below).

Haufler and Schjelderup (2000) consider the situation in which a government has two tax instruments at its disposal, the rate and the base, and is facing a binding revenue constraint. In the absence of foreign direct investment the first-best policy choice would be a cash-flow tax, i.e. a tax on pure profits and not the normal return on investment, since such a tax would not distort investment decisions. This no longer holds in the presence of multinational firms capable of shifting profits abroad through transfer pricing, thin capitalization or other means. Instead it becomes optimal for the government to reduce the statutory rates, in order to reduce the incentives to shift profits abroad, and to lower the depreciation allowances (broaden the base) to meet the revenue constraint. This would be a plausible explanation to the rate-cutting, base-broadening tax reforms observed in many industrialised countries during the past two and a half decades. Governments do not compete in this framework for capital or foreign direct investment flows, but for profits or "taxing rights".

Concerning the relative stability of the corporate income tax (CIT) revenues/GDP or implicit tax rates (ITR) on capital/corporate income – in spite of falling statutory tax rates, there are several possible reasons for this phenomenon: the business cycle (explaining increased tax revenues around 2000, a high-growth period), the degree of profitability and incorporation of companies, which could explain a possibly higher share of gross profit in the economy, and some base-broadening reforms. The relative importance of all these factors is not known yet and should be further studied. In addition, it is not clear whether future trends will reflect past ones.

The recent literature based on empirical analysis points out that there is evidence of profit shifting among EU Member States and towards third countries. In contrast, tax competition seems to have a smaller impact on location of real investment.

Understanding what is the true purpose of tax competition, attracting real factors and/ or paper profits, is relevant for policy because the solutions to deal with each possible type of tax competition can be different. If tax competition were aimed especially at attracting real factors, probably the only solution would be approximation/ harmonisation of national tax systems. Whereas, if tax competition were aimed at attracting profits, approximation would

not be the only available solution (and the solution should perhaps depend on the specific mechanisms to shift profits mostly used by firms to avoid taxes).

The current Commission initiative for a Common Corporate Consolidated Tax Base (CCCTB) in the EU and formulary apportionment to calculate multinationals' EU-wide tax bases can be thought as a solution to address the profit shifting problem within participating countries. In fact, this system would impede the incentives of shifting profits via transfer pricing manipulations of intra-group transactions of non capital goods. If governments compete mainly for profits, the introduction of a CCCTB would constitute a deterrent for further rates decreases.

All in all, regarding general tax regimes, the interpretation of empirical data comforts the idea that the current position of the Commission in favour of a harmonised tax base and the prudent stance with regards to rates' harmonisation or minimum tax rates in the corporate tax area is justified.

But, in view of the rapid evolving situation in the EU countries, the Commission will continue to monitor the development in tax competition in view of the concerns mentioned above.

Harmful Tax Competition

Harmful tax competition is a widely used concept in international (OECD) and EU discussions on tax policy. It is clear that the concept of harmful tax competition in the EU context is first and foremost a political concept and not a scientific one. In principle, tax competition is acceptable as long as it does not produce some undesirable effects, such as distortions in the single market, losses of tax revenue or employment-unfriendly tax structures. In practice, the main focus of the European Council has been to avoid clear 'beggar-thy-neighbour' tax policies and facilitate the collection of legitimate taxes by the Member States for highly mobile tax bases. Special tax regimes aimed at attracting foreign tax bases through some form of ring-fencing have been prohibited and (automatic) exchange of information (as an ultimate objective) has been organised to facilitate savings income taxation.

Based on the work achieved as part of the tax package, harmful tax competition could be defined as:

> "tax competition undertaken through tax provisions set up or mismatches allowed by EU Member States primarily aimed at attracting internationally mobile tax bases or investment of other Member States or third countries and which are deemed to lead to either excessive distortions in the single market, or losses of tax revenue for the EU Member States or to tax structures unconducive to employment."

The Code of conduct on business taxation

Objectives

The Code of conduct on business taxation was adopted on 1st December 1997 as part of the "tax package" proposed by Commissioner Mario Monti, which comprises three pillars: a proposal for a directive on the taxation of the savings income of Community non-residents, a proposal for a directive on interest and royalty payments between associated companies and a Code of Conduct for business taxation to eliminate harmful tax measures. The Verona Council in 1996 marked the introduction of a European tax strategy based on a global tax policy approach combining measures in a single package.

The objective of this tax package, and more particularly of the Code of Conduct, is to restore Member States' tax bases and to re-establish conditions of competition which are compatible with the principles of the Single Market. At the time it was indicated that the tax bases of mobile assets were being gradually eroded to the detriment of the less mobile factors of production. The tax competition in which a number of Member States were engaged in respect of certain mobile assets (financial activities and intergroup services, multinational headquarters, etc.) was a no-win situation. Member States were losing substantial revenue without creating business or jobs in the Union as a whole. In terms of tax structures, the effect was clearly to shift the burden of taxation to labour. These practices had to be eliminated before any initiative could be taken to remove the tax obstacles to cross-border business. It should be noted that this objective of restoring tax bases, which is one of the concerns of Member States' tax authorities, is reflected today in the elimination of tax obstacles to cross-border business, the current focus of the Commission's tax policy, and a response to the concerns of European taxpayers.

Process

The Code of Conduct for business taxation was adopted on 1 December 1997 under the tax package.[3] Its objective is to eliminate harmful tax measures within a specific time frame, according to the political commitment made by Member States. To that effect, a Working Group has been set up in the Council.

(a) A political achievement

The unusual feature of the Code of Conduct is its political nature. It is no more than a political commitment formally recorded by Ministers of Finance and Heads of Government. Its strength lies in the unanimity with which it was adopted, although this is also a source of its weakness.

The political commitment made by each of the 15 Member States is two-fold:

– to dismantle harmful tax measures within five years on the understanding that this timetable could be slightly relaxed;

– to apply a standstill, i.e. to refrain from adopting any new harmful measures.

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[3] OJ C2 of 6 January 1998

From a political point of view, the Code was an innovative and challenging process at EU level: an intergovernmental instrument, politically but not legally binding, which dynamic is mainly based on peer-pressure. Although this could also have been the main recipe for a potential failure given the sensitivity of harmful tax competition issues between MS, it turned to be quite a significant success from a tax policy point of view. Quicker and more efficiently than through a legally binding instrument (which adoption would not have been conceivable at that time), MS achieved their aims more or less within the initial timeframe, and seem willing to stick to the main achievements. Indeed, the commitments from MS to remove harmful tax regimes ("rollback") and not to introduce new ones ("standstill") were quite significant efforts.

(b) Tackling a certain form of harmful tax measures, clearly defined

From a technical point of view, the Code aims at removing a specific form of harmful tax competition within the EU in the area of business taxation : those specific regimes designed to attract the tax bases of other MS while protecting your tax system, and which therefore were likely to significantly affect the location of business within the Community without any added value in terms of employment and investment. In the absence of any action at EU level, this would have resulted in a "race to the bottom" in terms of effective level of taxation, eroding national tax bases, and shifting the tax burden from capital to labour. The efficiency of tax systems was at stake.

Harmful tax measures are defined broadly as those “which affect, or may affect, in a significant way the location of business activity in the Community”.

Then the Code defines as "potentially harmful" those measures which “provide for a significantly lower effective level of taxation, including zero taxation, than the levels which generally apply in the Member States in question”. These may operate by virtue of the nominal tax rate, the tax base or any other relevant factor and derive from both laws and regulations and administrative practices commonly known in certain countries as “rulings”. This is a very specific criterion and excludes from the scope of the Code of Conduct the general application of low tax rates such as the 12.5% corporate tax which was adopted not long afterwards by Ireland or the zero rate applied by Estonia on retained earnings.

In a second step, the Code lists five (indicative) criteria which will be used to identify with some accuracy those tax measures that are considered as effectively harmful, i.e. the tax measures designed to attract taxpayers from neighbouring countries and that may affect in a significant way the location of business activity within the Community. The criteria are:

- (i) whether advantages are accorded only to non-residents or in respect of transactions carried out with non-residents;

- (ii) whether advantages are ring-fenced from the domestic market, so that they do not affect the national tax base;

- (iii) whether advantages are granted even without any real economic activity or substantial economic presence within the Member State offering such tax advantages;

- (iv) whether the rules for profit determination in respect of activities within a multinational group of companies depart from internationally accepted principles, notably the rules agreed upon within the OECD;

– (v) whether the tax measures lack transparency, i.e. where legal provisions are relaxed at administrative level in a non-transparent way.

The Code's geographical scope is not confined to the Member States themselves but also covers their dependent and associated territories.

(c) A Working Group which works in a specific way

A Group was set up in the Council to implement the Code of Conduct comprising high-level representatives from the Member States.[4] Its task is to assess the tax measures which might come under the scope of the Code. In contrast to other Council working groups which have a rotating chair, the Code of Conduct Group has been chaired from the outset by Dawn Primarolo, UK Paymaster General, and her mandate has been renewed several times.

The Group does not operate according to standard procedures. In principle its decisions are taken on the basis of unanimity, but if it fails to reach full agreement, the majority position and minority views expressed are recorded. Although the Group's secretariat is formally provided by the Council's General Secretariat, in practice it is the Commission which prepares virtually all its working documents offering its expertise in this field. From an institutional viewpoint, however, its perspective remains essentially intergovernmental.

Results

The Code of Conduct Group has made considerable headway despite some difficulties.

The most visible results of this work are the broad compliance with the standstill provision by all Member States and the completion or considerable headway made in the dismantling of the vast majority of harmful measures identified.

The Group has indeed achieved a very significant amount of work. Among the EU-15, a total of 271 tax measures were described, analysed and assessed in two years time. 66 measures were finally qualified as harmful within MS and their dependent or associated territories. Most of the harmful measures, concern tax measures in favour of financial activities and intra-group services (such as coordination and distribution centres, specific rulings by which a low effective level of taxation could be granted). They have now been rolled back, which means that they were either removed or amended to remove the harmful features.

Following the 2004 Enlargement of the EU to 25 MS, the same process was applied to the 10 new MS before the date of accession, in order to ensure a level playing field within the EU 25. In these 10 new MS, over 50 measures were scrutinised and 30 were found harmful. They have now been rolled back.

One challenge was also the situation of dependent or associated territories of MS. In 1997, MS had committed to ensuring that the principles of the Code would be applied in those territories. As a result, these territories or dependencies have introduced tax reforms either to remove their harmful tax regimes, or to ensure that they would no longer be caught by the Code criteria. This has been achieved for instance by introducing a very low, but general, tax rate but also by the complete abolition of corporation tax.

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[4] This Group was set up by the Ecofin Council on 9 March 1998 (OJ C 99 of 1 April 1998).

The work of the Code group has not been an easy task mainly because of the political nature of the strategy. Although in some respects the initial unanimity has helped to advance work, the requirement of unanimity in final decisions has lead to inevitable compromises. This can be seen, for example, in the granting of long transitional periods.

The Code of Conduct has proved very effective in combating harmful tax competition, even though certain administrative practices may have escaped the Group's attention. It has also made it possible, at both political and technical level, to promote a "culture" of combating harmful tax competition.

The Code of Conduct's effectiveness as a means of coordinating tax policies must also be underlined. This approach might be adopted to make headway at Community level in other tax areas where it is more desirable or more flexible than harmonisation. Transfer pricing is an example.

Work at European level to combat harmful tax competition has not been without success, but needs to be continued on a wider geographical scale. It could be extended to other areas or forms of tax competition.

What Future for the Code of Conduct?

Now that the Code of conduct has achieved its main results with regard to existing regimes, it is time to reflect on what possible future could be considered, although keeping in mind that the aspects mentioned could lead to complex and difficult exercises on a technical level as well as on a political level.

Monitoring of the rollback and standstill

The monitoring of rollback is fading out, but the element of standstill is an ongoing process which should be followed on a regular basis in future. It is worth to notice that the standstill commitment is one of a major achievement of the Code, even if there might be some exceptions. It is crucial to ensure a lasting and effective functioning of the standstill provision and the question for the Member States would be to determine a format and procedure for this work.

Building on positive achievements

Considerable work has been undertaken by assessing around 320 tax measures throughout the EU, and achievements have shown that best practices are possible. In order to build on the results achieved, Member States could consider confirming the principles on which they agreed by developing guidance notes or 'best practices', comparable to the OECD application note[5].

[5] Consolidated application note: guidance in applying the 1998 report to preferential tax regimes (OECD, 2003)

Another area where the Code Group already has done substantial work is information exchange in the area of transfer pricing. This work resulted in Member States agreeing in 2003 on an exchange of information in the area of transfer pricing on individual cases which should then be reviewed on a regular basis in the future. Unfortunately, no effort has been made so far to assess the practical functioning of this agreement. A review of the functioning of this exchange of information would be desirable.

New measures under the Code

On the basis of developments of tax systems within EU Member States one could consider the need for widening the scope of the measures covered by the work of the Code. One could argue that it would perhaps not be necessary to actually change the Code or the mandate to the Code Group in the following areas:

- special tax arrangements for employees ("expatriate regimes") , to the extent that they may affect in a significant way the location of business within the Community.

- measures providing the tax benefits of a preferential regime at the (corporate) shareholder level (by refunding corporation taxes). If it were argued that such a regime was not covered by the Code, it cannot be excluded that there will be further attempts to design tax measures that are harmful within the spirit of the Code while being arguably outside the literal scope of the Code. This could significantly weaken the effectiveness of the Code of Conduct.

- Abuse of differences of tax systems. There may be other measures which, because they were not identified as problematic at the time, were not subject to an evaluation by the Group but in fact may constitute harmful tax measures. One such area is the use of different forms of hybrids and the effect that can be achieved by abusing the differences in treatment that exists in different tax systems. This can be achieved by using hybrid entities, i.e. entities which are considered as a corporate body (opaque) by one Member State and as non-corporate (transparent) by another Member State; this difference in qualification by Member States creates possibilities for double exemptions or double deductions. It can also be achieved by the use of hybrid capital, e.g. the difference of qualification by Member States of debt / equity; one Member State considers a certain loan (without a market interest rate or repayment plan) as equity and therefore does not include the interest received by a group company as income whereas another Member State does consider the loan as debt and allows the (deemed) interest paid as a deduction for the group company paying the interest. This could result in a deduction in one Member State and an exemption in another Member State. Although it may just be the unfortunate result of dealing with different systems, in some cases a Member State actively promotes tax planning schemes based on those differences or even introduces legislation to create such a difference. This is no longer a case of unfortunate consequences and the Member State concerned should be requested to change the practice or legislation. It should be pointed out that looking into these regimes would require a fair

amount of preparatory work and it would possibly be necessary to commission an independent study.

- administrative practices may still be a concern. There may be new forms to look at (especially since new or amended administrative practices would be unlikely to be notified under the standstill procedure). There are indications that some Member States have reverted to issuing potentially harmful rulings (not in accordance to OECD transfer pricing guidelines) to certain taxpayers but work in this area is complicated and it is difficult to get the necessary information (usually that information is provided by a taxpayer who did not get such a ruling or has his business affected by someone who has).

Review of the Code criteria

Tax systems in the Member States have evolved since 1997 and Member States could perhaps investigate other criteria which should be taken on board to evaluate tax measures which have not been considered up to now (e.g. hybrid structures).

Secondly, some concerns have been expressed that zero rates, or abolition of the corporate income tax, which have been offered as rollback can hardly be seen as a satisfactory result for the Group, as such solutions may still affect significantly the location of businesses within the Community. This element could be discussed further. The same applies for the collective investment vehicles.

Geographical extension of the Code

In order to avoid that the successful work under the Code only leads to companies establishing themselves outside the EU (and the dependent and associated territories) the Commission and the Member States must make sure that the principles of the Code are promoted elsewhere as stipulated by paragraph M of the Code. This can be done as suggested below (good governance).

Good governance in the tax area: building on EU efforts to promote good tax practices towards third countries

The question is often raised whether the positive achievements against harmful tax competition should be continued or extended. Indeed, the EU cannot act on its own without harming its own competitiveness.

Many efforts are undertaken within the EU to improve the functioning of the Internal Market by removing harmful tax practices, increasing the transparency of tax and financial systems as well as cooperation between MS. However, the EU's work on harmful tax competition has sometimes been criticised for harming EU own international competitiveness. This is one of the reasons why work has been suspended in certain business areas which are highly sensitive to competition from non-EU countries (e.g. shipping regimes).

It is true that such efforts would be of little efficiency if they were limited to the EU only. This is the reason why the EU has recognised, from the beginning of the tax package, the need to promote its efforts on as wide a geographical basis as possible. This is for instance mentioned with regard to the principles of the Code of conduct for business taxation (see paragraph M), and is a guiding principle with regard to exchange of information under the savings directive.

It is also undoubtedly for this very reason that EU Member States have strongly backed comparable work within the OECD (Forum on Harmful Tax Practices), despite the reluctance expressed at one time by the United States.

This work is two fold. The OECD has undertaken to identify and dismantle the preferential tax regimes identified in its 30 member countries, among criteria that are rather close from those of the EU Code of conduct (although the OECD work is explicitly focused on internationally mobile activities such as intragroup and financial services, whereas the Code covers in principle all economic activities). It has also extended its work to non-OECD countries including a number of tax havens, as defined in the 1998 OECD report *Harmful tax competition: an emerging global issue*, obtaining a political commitment from 35 of these countries to establish genuine cooperation on transparency and exchange of information.

This part of the OECD work is worth a few comments. First, in 1998 it would have been rather unpredictable, and even unconceivable, that tax havens and OECD countries would sit round the same table to discuss issues such as cooperation. But they did it. Moreover, they sat together to elaborate the OECD model instrument for exchange of information on request for tax purposes, which has now been recognised as an international reference for some of its aspects. Furthermore, the OECD Global Forum on taxation released in 2006 a report reviewing the extent to which tax systems of more than 80 countries were compliant with the criteria of transparency and exchange of information.

These positive results have prompted the OECD to look at new financial centres in countries such as Hong Kong and Singapore. It is in the obvious interest of all countries involved in combating harmful tax competition for this good practice to be extended as far as possible geographically.

At the same time, on her side, the European Commission has been developing a policy stressing the need to promote good governance in the tax area. This good governance concept is based on the understanding that, in a globalised economy, governed by the general economic principle of competition, competition as such should not be distorted by malpractices in the financial and tax areas. To that effect, the implementation of internationally recognised principles, such as transparency of tax systems, exchange of information and fair tax competition, will allow tax systems of different countries to operate in a fair and cooperative way.

It is in 2001[6] that the Commission stated publicly for the first time the need for a consistent approach of EU policies towards third countries involved in tax competition towards EU Member States.

[6] See COM(2001)260 (23.05.2001) Tax policy in the EU – Priorities for the years ahead

On 27 September 2004, the Commission adopted a Communication to this effect “Preventing and combating corporate and financial malpractice” in which it recommends a global strategy for offshore financial centres covering taxation, company law, accounting, money laundering and other areas. It also recommends a more consistent approach in all Community policies vis-à-vis all EU partners to promote transparency and exchange of information.

Since 2004, the Commission has increasingly been developing the promotion of good governance in the tax area, through a range of possible instruments such as technical assistance, development aid, and economic arrangements (partnership agreements) with EU partners. The Commission has also indicated in Communications that it would promote towards third countries principles such as transparency of tax systems, exchange of information, and elimination of harmful tax practices. Such references can be found in communications announcing a strategy towards particular regions or countries such as the Caribbean (COM(2006)86 2.3.2006), the Pacific (COM(2006)248 29.05.2006), Hong-Kong and Macao (COM(2006)6418 26.10.2006)[7]. A more general statement of policy was made since last summer on horizontal issues such as development (Governance in the European consensus or development, COM(2006)421 31.08.2006), or on EU competitiveness (Global Europe – Competing in the world, COM(2006)567, 4.10.2006)[8].

This clear policy line has led to some concrete implementations. In this respect it can be mentioned that the Commission, as part of the European Neighbourhood Policy (ENP), negotiated the inclusion of a reference to the principles of the Code of Conduct in the Action Plans for Israel, Jordan, Morocco, Moldova, Tunisia and Ukraine, which have been adopted by the Council. The Action Plans are tools for economic and political co-operation between the EU and the partner countries, carrying to a further stage the commitments and objectives contained in the Partnership and Cooperation Agreements.

Active promotion of good tax practices both within and outside the EU is conditional on the commitment of the countries in question. This can be seen in the Code of Conduct which reflects a political commitment by the 15 and, subsequently 25, Member States of the EU. The high-level political commitments to transparency and exchange of information made by a large number of jurisdictions within the OECD are another example. These convergent efforts at international level will help to create a consensus which eventually may overcome any remaining tensions on issues such as banking secrecy.

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[7] • "Improved dialogue, cooperation and convergence on issues relating to good governance in tax matters, (…). In line with its stated tax policy of promoting internationally accepted good governance principles as widely as possible, the Commission proposes work with both SARs to improve transparency and the exchange of information, strengthening enforcement measures to prevent the avoidance or evasion of taxes, and in particular promoting application of measures equivalent to those applied within the EU on taxation of income from savings. In addition the Commission will encourage both SARs to adopt the principles of the Code of conduct on business taxation which aims to develop a fair, transparent and cooperative tax environment that favours business, growth and jobs on both sides."

[8] "We will seek to include provisions on good governance in financial , tax and judicial areas where appropriate" (in free trade agreements)

International Tax Policy Forum

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Tax Havens and Foreign Direct Investment
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Research Summary

Presenter: Rosanne Altshuler, Ph.D.
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Professor Altshuler's research focuses on the economics of taxation. She holds a B.A. from Tufts University and a Ph.D. in Economics from the University of Pennsylvania. Her articles have appeared in numerous journals, including Tax Notes *and* Tax Notes International. *Professor Altshuler recently served as Senior Economist to the President's Advisory Panel of Federal Tax Reform. Prior to joining the Tax Reform Panel, she was acting as a Special Advisor to the Joint Committee on Taxation.*

Paper: Where Will They Go if We Go Territorial? (Dividend Exemption and the Location Decisions of U.S. Multinational Corporations)

Summary: Professor Altshuler's study, joint with Harry Grubert of the U.S. Treasury Department, examines how moving the United States to a dividend exemption system would effect the location decisions of U.S. multinational corporations. Their study approaches the question from three different angles:

- A comparison of U.S. foreign direct investment in manufacturing across high-tax and low-tax jurisdictions to investment in two dividend exemption countries, Germany and Canada.
- An investigation of how the effective tax rate would change if the U.S. changed to a dividend exempt system.
- An analysis of data from tax returns of U.S. multinationals to gauge how location decisions could be effected.

Overall, the study finds no consistent or definitive evidence that the location decisions of U.S. multinationals would be significantly changed if dividends were to be exempt from U.S. corporate tax.

Where Will They Go if We Go Territorial? Dividend Exemption and the Location Decisions of U.S. Multinational Corporations

Abstract - *We approach the question of how moving to a dividend exemption system would affect the location incentives of U.S. corporations from three different angles. We start by comparing the U.S. allocation of foreign direct investment in manufacturing across low–tax versus high–tax jurisdictions with that of two major dividend exemption countries, Germany and Canada. The second section demonstrates how the effective tax rate on the typical investment in a low–tax affiliate would change under a dividend exemption system. The final approach uses data from the tax returns of U.S. multinationals to gauge how location decisions will be affected. Taken together, the analysis provides no consistent or definitive evidence that location decisions would be significantly changed if dividends were to be exempt from U.S. corporate tax.*

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INTRODUCTION

Under the current tax system both the domestic and foreign earnings of U.S. corporations are subject to U.S. taxation. Parent corporations pay U.S. taxes on active foreign earnings when they are remitted and receive a credit (limited to the U.S. tax liability on foreign earnings) for income taxes paid to foreign governments. This "residence" approach to the taxation of international income is not employed around the world. Many countries have "territorial" tax systems that exempt some (or all) of active earnings generated by foreign operations from home country taxation.

At first glance, one might predict that residence tax systems like the one employed by the United States would dampen the tax incentive to invest abroad in low–tax countries. This contrasts with the tax incentives of firms subject to territorial tax systems. These firms face the local tax rate when investing abroad and the home rate when investing at home. As a result, one might expect that switching from a residence to a territorial system would lead to a substantial reallocation of U.S. investment worldwide. This paper studies how the location decisions of U.S. multinational corporations (MNCs) may change if the U.S. were to adopt a system that exempts foreign dividends from home taxation. Before presenting our analysis, however, some background information on the current U.S. tax system is necessary.

If foreign operations are organized as subsidiaries (i.e., they are separately incorporated in the foreign country), then active business profits are not generally taxed at home until they are paid to the U.S. parent corporation. This delay in taxation until a subsidiary's profits are actually remitted to the U.S. is known as deferral.[1] Since firms are able to defer U.S. taxation on active business income, residence taxation does not create much of a barrier to investing in low–tax locations abroad. In fact, tax return data shows that the average repatriation rate from U.S. subsidiaries located in low–tax countries (those with average effective tax rates of less than 10 percent) was only about 7 percent of earnings in 1992 (see Grubert and Mutti, 2001). Even if one adds the excess burden associated with restricting dividend repatriations from low–tax countries to the U.S. tax actually paid on repatriations, the overall tax burden is very small.[2]

Once they have been remitted to the parent, foreign profits have been subject to both host country and home country income taxes. To alleviate the double taxation of foreign source income the U.S. allows firms to claim credits for income taxes paid to foreign governments. These tax credits can be used to offset U.S. tax liability on foreign source income.

A limitation on the credit prevents American firms from using foreign tax credits to reduce U.S. tax liabilities on income earned at home. The limit is the amount of tax that would be due if the foreign income were earned in the U.S. and is calculated on a "basket" or type of income basis. A consequence is that foreign tax credits generated from one type of income (highly taxed dividends, for example) cannot be used to offset the U.S. tax liability generated from another type of income (lightly taxed portfolio income, for example). However, foreign tax credits can be averaged across foreign income in the same income basket. This means that excess credits on royalty income, for instance, can be used to offset U.S. tax liabilities on dividends paid from low–tax subsidiaries since both types of income are in the active income basket.

If a firm's foreign tax payments exceed the limitation on the credit, the firm is said to be in "excess credit." A parent in this situation pays no residual U.S. taxes on income repatriations from low–tax countries. Further, no U.S. tax is due on any royalty payments from foreign subsidiaries (which are generally deductible abroad) since they are fully offset by the firm's excess credits. Under current law, excess credits can be carried back to offset any U.S. tax payments on foreign source income made in the previous two years. Credits may also be carried forward without interest and used to offset U.S. tax liability in the following five years.

Firms for which foreign tax payments are less than the limitation are said to be in "excess limitation." These firms pay the difference between the U.S. and the foreign tax on dividends from subsidiaries located in low–tax countries. In addition, firms in excess limitation pay the full U.S. tax on royalty payments.

We approach the question of how location incentives under the current system are likely to be altered under dividend exemption from three different angles. We start by comparing the U.S. allocation of foreign direct investment (FDI) in manufacturing across low–tax versus high–tax jurisdictions with that of two major divi-

[1] The tax code contains provisions that hamper the ability of firms to avoid U.S. taxes on foreign income by retaining it abroad in low–tax jurisdictions. In general, these "anti–tax avoidance" provisions, contained in Subpart F of the tax code, limit deferral to earnings from active business investments abroad. Earnings from financial assets (such as Eurobonds and other passive financial investments) are denied deferral and taxed immediately.

[2] We discuss empirical estimates of the excess burden associated with repatriation taxes in a subsequent section.

dend exemption countries, Canada and Germany. Both Canada and Germany exempt dividends paid by foreign affiliates from home country tax by treaty.[3] An interesting question is whether, relative to U.S. FDI, the distribution of Canadian and German FDI is more skewed toward low–tax countries.

The second part of the paper uses effective tax rate calculations to quantify the burden of U.S. taxes on the typical investment in a low–tax affiliate under the current system and under dividend exemption. The model is an extension of the one developed in Grubert and Mutti (2001), hereafter GM. Although the small effective repatriation burden on dividends would be eliminated under dividend exemption, royalties would be fully taxed at the U.S. rate since no excess credits would be available to offset home country taxes on these payments. Whether effective tax rates increase or decrease relative to the current system depends on how firms respond to the dividend exemption system enacted.

The main focus in our effective tax rate analysis is on the role played by expense allocation rules under dividend exemption. These rules govern whether expenses incurred in the U.S. in support of investment abroad, such as headquarter charges and interest payments, are deductible against U.S. or exempt foreign income. In the absence of any expense allocation rules, parents would minimize tax payments by deducting expenses associated with investments in low–tax countries at the higher U.S. tax rate. This behavior could result in negative effective tax rates on investment projects placed in low–tax jurisdictions.

We assume in our analysis that if the U.S. were to adopt a dividend exemption system it would impose rules that require the parent company's overhead expenses be allocated to exempt foreign income and disallowed as deductions from U.S. taxable income. This treatment of expenses is a natural extension of Section 265 of the Internal Revenue Code, which disallows deductions for expenses related to tax–exempt income. Dividend exemption may, however, be enacted with less stringent expense allocation rules. In our sensitivity analysis we calculate effective tax rates under different expense allocation rules.

Our final approach involves using data from the tax returns of multinationals to gauge how location decisions will be affected by a move towards dividend exemption. As explained above, not all parents pay tax at the U.S. rate when they receive active income from operations located in low–tax countries under the current system. The last section of the paper compares the actual behavior of firms that face no residual U.S. taxes on low–tax foreign earnings (those with excess foreign tax credits) with those that are taxed at the U.S. rate (those without excess foreign tax credits). The idea is to use the former group of firms as a control group to predict the extent to which low taxes will attract U.S. affiliate investment under dividend exemption.

We use Treasury tax return data from the 1996 files to estimate the sensitivity of investment location decisions of U.S. MNCs to host country taxes. Since firms may switch into and out of situations in which they have excess credits (and this may affect economic behavior), we use measures that indicate whether a parent is likely to be exempt from residual U.S. taxes on foreign income in any year. These measures, which include the parent's average tax rate on foreign source income and foreign tax credit carryforwards as a fraction of foreign source income, allow us to test if parents that are "deep in

[3] Foreign affiliates must be at least 10 percent owned by home country residents to qualify for dividend exemption under both Canadian and German tax law.

excess credit" are any more sensitive to differences in effective tax rates abroad.

Taken together, our analysis provides no consistent or definitive evidence that location decisions would be significantly changed if dividend remittances were to be exempt from U.S. corporate taxation. However, each of our three approaches suggest that there is some possibility that U.S. MNCs will make adjustments to the allocation of assets held in operations abroad. Although we find that U.S. investment in Asia is more skewed towards the low–tax countries with which Germany and Canada have exemption treaties, the picture that emerges for Europe is mixed. Compared to the U.S. (and Germany), Canadian investment in the European Union is heavily weighted towards Ireland. Whether U.S. firms will shift towards a similar regional distribution in Europe is an open question. However, the evidence from our cost of capital and empirical analysis does not seem to support any large outflow of U.S. investment to low–tax locations.

Our effective tax rate calculations show that expense allocation rules and the full taxation of royalties under dividend exemption play a fundamental role in determining how the relative attractiveness of low–tax countries will change. Under the current system, we estimate that the typical investment in a country with an effective local tax rate of 7 percent faces an overall (home plus host country) effective tax rate of only 5 percent. If the U.S. were to exempt dividends and, at the same time, eliminate required expense allocations (or impose allocations that are easily avoidable), overall effective tax rates on low–tax investments abroad would fall somewhat to 3 percent. In contrast, if firms were required to allocate overhead expenses to exempt income under the new system, the same investment would face an overall effective tax rate of about 9 percent. As a result, investment in low–tax countries would not be encouraged relative to the current system.

The results from our third approach raise the possibility that U.S. MNCs may be somewhat more responsive to differences in effective tax rates under dividend exemption. We find that the sensitivity of location choices to host country effective tax rates does not increase as the parent's average tax rate on foreign source income increases. Other alternative measures of the extent to which a firm is "deep in excess credit" also failed to distinguish an effect on tax sensitivity. However, when we use the size of foreign tax credit carryforwards as an indicator of the likelihood that dividend remittances will face residual U.S. taxation, we do uncover a differential effect. The influence of host country taxes on location choice increases as a parent's foreign tax credit carryforward grows. Although the size of the effect is not quantitatively very significant, the results indicate the possibility that there will be an increase in investment in low–tax countries under dividend exemption.

A CROSS–COUNTRY COMPARISON OF FOREIGN DIRECT INVESTMENT PATTERNS

We start by discussing recent information on the distribution of foreign direct investment for the United States, Germany, and Canada. Some information on how the German and Canadian tax systems treat international income is necessary at this point. Although both Germany and Canada run worldwide tax systems with deferral and credit features, both exempt dividends received from foreign affiliates resident in countries with which they have tax treaties from home country taxation. The two countries differ in the way they treat expenses that are related to exempt dividend income. Both, however, seem to allocate much less expense than would be indicated by current U.S. practice. Under German tax law, 5 percent of dividends received from affiliates in

treaty countries are deemed to be expenses that are directly linked to exempt income. These "expenses" are disallowed so that effectively 95 percent of the dividend is exempt from German taxation. At present, Canada does not impose expense allocation rules. Under the Canadian system, parent corporations may fully deduct interest expense associated with debt used to finance affiliate investment.

In addition to the "exemption by treaty" features of the Canadian and German tax systems, there are many other features of the U.S. tax system that may increase the relative cost of U.S. investment in low–tax jurisdictions. For instance, the U.S. tax code appears to contain more stringent rules regarding what types of income qualify for deferral. Taken together, the differences in home country tax systems may result in U.S. investors facing higher tax burdens than German and Canadian investors in low–tax countries.

Previous research on the impact of home country tax systems on foreign investment has focused on FDI in the United States (see Hines, 1997 and 1999 for reviews of the literature on taxes and FDI). The results of this literature is mixed. Slemrod (1990), for example, uses time–series data to compare the tax responsiveness of FDI from exemption and foreign tax credit countries. His finds no difference between the two groups of countries in the sensitivity of FDI to U.S. corporate tax rates. Hines (1996) tests whether the responsiveness of manufacturing FDI to state tax rates differs across exemption and foreign tax credit countries. He finds a significant difference between the two groups of countries in terms of tax effects with exemption countries, as expected, exhibiting more responsiveness than foreign tax credit countries to differences in state tax rates. Our focus, while related, is on the distribution of outward FDI across low and high tax jurisdictions worldwide.

Table 1 shows the stock of FDI in manufacturing operations in low–tax countries as a percentage of total manufacturing FDI in Asia and the European Union (excluding Germany) in 1998.[4] For this table, a low–tax country is one that had an exemption treaty with Canada and Germany as well as an average effective tax rate of less than 10 percent.[5] In Asia, there are two countries with exemption treaties and low effective tax rates: Singapore and Malaysia. In Europe, only Ireland falls into our low–tax category. Note that our comparisons of the ratio of FDI in low–tax locations to all locations in a region assume that the distribution of assets in a particular region is independent of home coun-

TABLE 1
U.S., GERMAN, AND CANADIAN FOREIGN DIRECT INVESTMENT IN MANUFACTURING IN 1998

	U.S.	Germany	Canada
Asia			
Singapore and Malaysia as a share of total Asia	0.269	0.153	0.066
Europe			
Ireland as a share of European Union (except Germany)	0.067	0.016	0.170
Ratio of Ireland to U.K.	0.181	0.095	0.278

Sources: Survey of Current Business (Sept. 2000), Deutsche Bundesbank: Kapitalverflechtung mit dem Ausland (May 2000), and data released by request from Statistics Canada, Balance of Payments Division.

[4] The stock of foreign direct investment does not correspond directly to a measure of real assets since it excludes third party debt and includes other financial assets. We use foreign direct investment since it is the only comparable measure available. The FDI data include branches (which, at least for the U.S., accounts for a very small percentage of investment in manufacturing) and both direct and indirect holdings. The ownership threshold for inclusion in the FDI data is 20 percent for Germany, and 10 percent for both the U.S. and Canada.

[5] We use the average effective tax rate of U.S. CFCs to identify "low–tax" countries. This assumes that German and Canadian affiliates face effective tax rates that are similar to the ones faced by U.S. affiliates.

try tax rates. This assumption would not seem to bias the results either for or against finding differences in the distribution of investment across locations for the three countries.

Our cross–country comparison gives a mixed picture of how location incentives may change under dividend exemption. In Asia, U.S. affiliates in manufacturing hold a larger share of investment in low–tax countries than Germany and Canada. Almost 27 percent of the total stock of manufacturing FDI of U.S. firms in Asia was located in Singapore and Malaysia in 1998. For Germany this percentage is only 15 percent and for Canada it is just under 7 percent. This suggests that exempting dividends from U.S. taxation may not induce a significant reallocation of investment across low–tax jurisdictions in Asia. The evidence from Europe, however, suggests a more guarded prediction.

German affiliates hold a substantially smaller share of manufacturing FDI in Ireland (as a share of the European Union) than U.S. affiliates: 1.6 percent versus 6.7 percent. In contrast, Canadian manufacturing assets are heavily skewed to Ireland. Canadian investment in Ireland makes up 17 percent of the stock of FDI in the European Union (excluding Germany).[6] Further, the ratio of the investment in Ireland relative to Great Britain is 28 percent. For the United States, this ratio is only 18 percent. Thus, the Canadian experience in Europe hints that dividend exemption may have some effect on the location decisions of U.S. MNCs. Taken as a whole, however, the evidence from the FDI data presents a mixed picture. In the next section we quantify how the incentive to invest in low–tax countries like Ireland will change if the United States were to move to a dividend exemption system.

EFFECTIVE TAX RATES UNDER EXEMPTION

Will exempting dividends paid out of active income earned abroad from U.S. taxation reduce the overall tax cost of investing in low–tax jurisdictions abroad? To answer this question, one must accurately capture the tax incentives for low–tax investment both under the current system and under a "model" dividend exemption system. Graetz and Oosterhuis (2001) stress the heightened importance of allocation rules in their analysis of the issues involved in adopting a dividend exemption system for the United States. We follow GM and assume that dividend exemption will be paired with rules that allocate parent overhead expenses, such as interest, to exempt income.

There is no international norm with respect to the deductibility of parent overhead expenses if the taxpayer earns exempt foreign income. Canada is an example of a country that provides for full interest deductibility. The Netherlands and Australia, on the other hand, deny interest deductibility on funds that are traceable to foreign direct investment if dividends from the investment are exempt from home country taxation. Some other European countries have limits on interest deductibility; however, it is not clear to us whether they are based on "tracing" methods, in which an attempt is made to identify exactly which funds are used for a specific investment. Due to the fungibility of funds, the impact of tracing rules can be easily avoided. We assume that to the extent that interest expense allocations are imposed they would require pro–rata allocations based on the ratio of exempt foreign to worldwide assets instead of tracing.

[6] The Canadian data reported in the table for the United Kingdom does not include assets held in Northern Ireland.

We start by deriving the user cost of capital for investment in a low–tax country abroad. The model assumes that firms select investment to maximize profits, which entails investing in assets abroad until the present value of net returns just equals the outlay. This equality can be used to solve for the user cost of capital —the real pre–tax return on the marginal investment that just allows the firm to cover economic depreciation and earn the required real after–tax return. The goal of our exercise is to calculate the effective tax burden under the two systems for a typical (marginal) investment in a low–tax affiliate. The (marginal) effective tax rate is the difference between the real pre–tax return, *C*, and the required after–tax return, *r*, as a percent of the real pre–tax return.

The investment abroad is comprised of both tangible and intangible assets. Tangible assets, which are financed with both equity and debt, generate a potential flow of dividend income from the affiliate to the parent. We assume that the host country allows for economic depreciation on the tangible capital and grants no investment tax credit. Therefore the host country statutory rate equals the average local effective tax rate on net equity income from tangible capital. Intangible assets generate a flow of royalty income from the affiliate to the parent. Since royalties are (usually) deductible abroad at the local rate, the local effective tax rate on intangible capital is zero.[7] Finally, we assume, realistically, that the investment requires "other" overhead expenses, besides interest and R&D (which is allocated to royalty income).

Differences in the Taxation of Low–Tax Affiliates under the Two Systems

There are four important components of the taxation of foreign investment to consider in our comparisons of the user cost of capital under the two systems: the taxation of dividend and royalty income and the allocation of interest and "other" overhead expenses. Table 2 compares the tax treatment of these four components under the two systems and summarizes the discussion in this section.

We start with the taxation of dividend income. Although firms with excess credits currently pay no U.S. taxes on dividends, firms in excess limitation owe residual taxes to the U.S. Treasury when dividends are remitted from low–tax operations. Do these repatriation taxes have any impact on the cost of capital, and hence, location decisions? We follow GM and assume that repatriation taxes impose an additional tax burden for investment in low–tax affiliates and therefore must be incorporated in the cost of capital.[8] The repatriation burden in their formulation (and ours) is made up of two components: the repatriation tax itself and the deadweight loss from restructuring dividend remittances to minimize U.S. tax liabilities.[9] The effective repatriation tax, t_r, on net local equity income is written as follows:

[7] A few developing countries do not permit a deduction for royalties or impose a withholding tax that is equivalent to the basic corporate tax rate.

[8] The "new" view of dividend repatriation taxes, which dates back to Hartman (1985), and recent work by Weichenrieder (1996) and Altshuler and Grubert (forthcoming) suggest that these taxes are irrelevant to the affiliate's long–run capital stock for investment funded at the margin with retained earnings. It will become apparent later in the analysis that our qualitative results on the difference between effective tax rates under the two systems do not depend on which view is incorporated into the model (or, put alternatively, on the marginal source of funds for foreign investment). We incorporate the excess burden to be conservative in our effective tax rate calculations.

[9] Even though firms may have many alternatives to dividend repatriation, using these strategies to avoid the tax will create an excess burden that should be included in the cost of capital. See Grubert (1998), Weichenrieder (1996), and Altshuler and Grubert (forthcoming) for analyses of alternatives to dividend repatriation.

TABLE 2
COMPARISON OF TAX FEATURES OF THE CURRENT SYSTEM AND A DIVIDEND EXEMPTION SYSTEM

	Current System		Dividend Exemption System
	Excess limitation firms	Excess credit firms	
U.S. tax on dividend remittances	Pay residual U.S. tax plus cost of avoiding dividend repatriation.	No residual U.S. tax.	No residual U.S. tax.
U.S. tax on royalty payments	Taxable at U.S. rate.	No U.S. tax paid since U.S. tax liability absorbed by excess credits.	Taxable at U.S. rate.
Allocation of interest expense	The interest allocation rules have no impact on the parent's foreign tax credit. Thus, the allocation of domestic interest against foreign income has no effect on domestic interest deductions.	The interest allocation rules are binding. The allocation of domestic interest expense against foreign source income reduces the foreign tax credit limitation and therefore decreases foreign tax credits. Similarly, interest deductions in high-tax countries reduce foreign source income.	Interest expense must be allocated against exempt income.
Allocation of "other" overhead expenses	Same impact as above for interest expense.	Same impact as above for interest expense.	"Other" overhead must be allocated against exempt income (as above for interest expense).

$$[1] \quad t_r = p(t_{US} - t_g)/(1 - t_g) + EB$$

where p equals the dividend payout ratio from foreign equity income, t_{US} is the statutory corporate tax rate in the U.S., t_g represents the gross–up rate on dividend repatriations, and EB is the excess burden due to restricting repatriations to avoid residual U.S. taxes. The gross–up rate reflects the effective foreign tax rate on the foreign equity income underlying the dividend. The total tax rate on net local equity income is the sum of the local tax rate, t_f, and the effective repatriation tax burden, t_r. For notational simplicity we denote this rate θ_f where $\theta_f = t_f + t_r$. Under dividend exemption the total tax rate on net local equity income is simply t_f since there are no residual U.S. taxes.

Like the taxation of dividend income, the taxation of royalties under the current system depends on the parent's foreign tax credit position. Firms in excess limitation pay full U.S. taxes on royalty remittances received from abroad. Firms in excess credit positions can shield U.S. taxes owed on royalty remittances with excess credits and therefore pay no U.S. tax on royalties. Under dividend exemption, royalties would be taxed at the U.S. tax rate since there would *never* be any excess foreign tax credits to offset the home country tax.

Next we turn to the allocation of interest expenses. For simplicity we assume in our analysis (and effective tax rate calculations) that the real interest rate equals the required after–tax return r.[10] The after–tax cost of debt finance is a function of where interest expense is deducted and may differ significantly under the two systems. In the absence of any interest allocation rules firms would maximize interest deductions by placing debt on the

[10] We abstract from any complications resulting from inflation or from differential interest rates around the world.

parent's (or any other high–tax affiliate's) books. Under the current system, however, interest allocation rules significantly reduce the benefit of placing debt on the parent's books if firms are in excess credit positions. According to these rules, a fraction of *domestic* interest expense (currently based on the ratio of foreign assets net of debt to worldwide assets net of foreign debt) is allocated against foreign source income. Since firms in excess credit positions are constrained by the foreign tax credit limitation, any decrease in foreign source income decreases the foreign tax credit that may be claimed in any year. As a result, any allocation of domestic interest expense to foreign source income is lost as a deduction.

We assume in our base case that under dividend exemption any domestic interest expense used to support the foreign project will be allocated against exempt income and therefore will not deductible at the U.S. rate. In response to the parallel treatment of interest expense, we assume that firms under dividend exemption and firms in excess credit under the current system restructure their borrowing and deduct all interest expense at the local rate (instead of at the U.S. rate). We incorporate these behavioral adjustments into our calculations to present a realistic picture of how investment incentives will differ under the two systems. An alternative assumption, which we reject, is to assume that parents will have no response to what could be a significant increase in after–tax borrowing costs.

Firms in excess limitation will find it attractive to carry the debt associated with marginal investments in low–tax jurisdictions on their own books (or on the books of affiliates in high statutory tax rate countries). Since the interest allocation rules currently in place are not binding for these firms, the value of the tax deduction is larger in the U.S. (or other high–tax affiliates) than in the low–tax affiliate by a factor equal to the difference in the after–tax interest rates, $r(t_{US} - \theta_f)$. Parents may, however, face constraints on the amount of debt that can be placed in high–tax jurisdictions. As a result, parents in excess limitation may place some debt in the low–tax affiliate. We conservatively assume that only one–half of the debt used to finance the project in the low–tax country is placed on the parent's books.

The final component of the cost of capital that may differ under the current system and exemption is the tax treatment of overhead deductions other than interest and R&D such as headquarter expenses. We assume that under the current system firms in excess limitation are able to deduct 75 percent of these "other" overhead expenses against U.S. taxable income (or taxable income in other high–tax affiliates). In contrast, firms currently in excess credit are unable to benefit from deducting "other" overhead at the higher U.S. rate (or against any other high–tax income in other foreign operations) since these deductions will reduce the (binding) foreign tax credit limitation. We assume that firms in excess credit deduct all of these expenses at the local rate to avoid losing foreign tax credits. Similarly we assume that under exemption "other" overhead expenses would be allocated to exempt income and therefore deducted at the local tax rate.

The Cost of Capital for Firms in Excess Limitation under the Current System

The cost of capital presented below, C_T, is the pre–tax required rate of return on tangible capital net of depreciation. Given the assumptions discussed above, the general formula for the cost of capital faced by excess limitation firms for a marginal investment in tangible capital can be written as follows:

$$[2] \quad C_T = \frac{r(1 - b\theta_f - .5b(t_{US} - \theta_f))}{1 - \theta_f + .75v(t_{US} - t_f)}$$

where b equals the fraction of marginal capital funded with debt and v equals overhead expenses on the marginal investment as a fraction of the pre–tax return. The last term in the numerator, $.5b(t_{US} - \theta_f)$, shows the benefit of deducting some portion of interest expense (50 percent under our assumptions) at the U.S. rate. The last term in the denominator, $.75v(t_{US} - t_f)$, shows the benefit of deducting 75 percent of overhead expenses at the U.S. rate.

The user cost of capital for investment in an intangible asset, C_I, is straightforward: $C_I = r/(1 - t_{US})$. Since the effective tax rate is simply the U.S. rate there is no tax advantage to exploiting the intangible in the low–tax affiliate. The user cost of capital for a marginal investment that is comprised of both tangible and intangible assets is a weighted average of the two user costs:

$$[3] \quad C = kC_T + (1-k)C_I = k\left[\frac{r(1 - b\theta_f - .5b(t_{US} - \theta_f))}{1 - \theta_f + .75v(t_{US} - t_f)}\right] + (1-k)\left[\frac{r}{1 - t_{US}}\right]$$

where k equals the percentage of the marginal investment that is made up of tangible assets.

The Cost of Capital for Firms in Excess Credit Positions under the Current System

Firms in excess credit positions receive both dividend and royalty remittances free of U.S. tax. However, as discussed above, these firms lose the ability to deduct interest and other overhead expenses against high–tax income and therefore are assumed to deduct all interest expense associated with the project at the local rate. As a result, the benefit of deducting expenses at the U.S. rate is completely lost and the last terms in the numerator and denominator of equation [2] vanish. On the other hand, however, there is no residual tax on dividends and thus the tax rate applied to net local equity income is t_f instead of θ_f. Therefore, the cost of capital for a marginal investment in tangible capital for the excess credit case is:

$$[4] \quad C_T = \frac{r(1 - bt_f)}{1 - t_f}.$$

Comparing [4] with [2] reveals that the firms in excess credit positions may actually face a higher cost of (marginal) tangible capital in the low–tax country than those in excess limitation.

The user cost for an investment in intangible capital, C_I, is simply r since royalties paid to the parent are shielded from any U.S. tax by excess credits. Thus, the cost of capital for a marginal investment made–up of both tangible and intangible capital is:

$$[5] \quad C = k\left(\frac{r(1 - bt_f)}{1 - t_f}\right) + (1-k)r.$$

The Cost of Capital under Exemption with Expense Allocations

It is easy to adjust the cost of capital formulas to capture the dividend exemption system we have described. Recall that we have assumed that under exemption all expenses are allocated against exempt income and, in response, firms will deduct all interest expense at the local rate. In addition, the benefit of deducting "other" overhead expenses at the high–tax rate vanishes. Therefore the user cost of capital for tangible investment is the same as in the excess credit case. Since there are no excess credits to shield U.S. taxes on royalties, the user cost of intangible capital equals $r/(1 - t)$ as in the excess limitation case. Therefore, the weighted average cost of capital under exemption for a marginal investment abroad is:

$$[6] \quad C = k\left(\frac{r(1 - bt_f)}{1 - t_f}\right) + (1-k)\left(\frac{r}{1 - t_{US}}\right).$$

Effective Tax Rates under the Two Systems

Table 3 presents effective tax rate calculations for investment in a low–tax country under the two systems. Our effective tax rate calculations assume that the low–tax affiliate is located in a country with a 7 percent effective tax rate, t_f, which is the average effective tax rate faced by U.S. subsidiaries in countries with average effective tax rates below 10 percent (see GM).[11] The U.S. statutory rate, t_{US}, is set at 35 percent. To calculate the average effective repatriation tax, t_r, we use parameter values for t_g, p, and EB that are based on GM's estimates from Treasury data. Repatriation rates from manufacturing affiliates in low–tax countries are quite low, about 7 percent or less for firms located in countries with effective tax rates below 10 percent in 1992.[12] Accordingly we set p equal to .07 in our effective tax rate calculations. Evidence from tax returns suggests that firms are able to time repatriations to occur when they face effective tax rates that are temporarily high thus resulting in higher dividend gross–up rates for the purpose of the foreign tax credit and lower repatriation taxes (see

TABLE 3
EFFECTIVE TAX RATES FOR INVESTMENT ABROAD IN A LOW–TAX COUNTRY

	Investment comprised of:		
	All tangible assets	All intangible assets	85% tangible and 15% intangible assets
Dividend exemption	**4.8%**	**35.0%**	**9.3%**
Current system			
(assuming 25% of firms in excess credit)	**1.7**	**26.3**	**5.4**
Excess limitation firms	0.7	35.0	5.8
Excess credit firms	4.8	0.0	4.1

Assumptions
Statutory and effective tax rates:
- the U.S. statutory tax rate is 35 percent
- the host country statutory tax rate and effective tax rate is 7 percent

Investment:
- tangible capital receives economic depreciation allowances and no investment tax credits
- intangible capital generates royalty income, which is deductible in the host country but taxable in the United States
- "other" overhead expenses (expenses besides interest and R&D) account for 10 percent of the pre–tax required rate of return (net of depreciation) on capital

Financing:
- marginal tangible investment is funded one–third with debt and two–thirds with equity
- the required after–tax rate of return on capital equals the real interest rate
- firms repatriate 7 percent of net of host tax earnings on marginal tangible capital and gross–up dividends for the purpose of the foreign tax credit at 15 percent
- the deadweight loss from restricting dividend repatriations for firms in excess limitation is 1.7 percent of net of host tax earnings on marginal tangible capital

Interest and "other" overhead deductions:
- Under the current system, firms in excess limitation deduct 50 percent of interest expense and 75 percent of "other" overhead expenses against U.S. or other high–tax income. Firms in excess credit deduct 100 percent of interest expense at the 7 percent rate and lose the advantage of deducting overhead at the 35 percent rate.
- Under exemption, allocation rules require that all expenses be allocated against exempt income. Firms deduct 100 percent of interest expense at the 7 percent rate and lose the advantage of deducting overhead at the 35 percent rate.

[11] Recall that since the low–tax country is assumed to offer no investment incentives the effective tax rate equals the statutory rate, t_f.

[12] The 1996 data shows even lower dividend repatriation rates. We continue to use the GM estimate of a 7 percent dividend payout rate to be conservative.

Grubert, Randolph, and Rousslang, 1996; and GM). We use a gross–up rate, t_g, of .15, which is conservative based on estimates from Treasury data. Finally, the excess burden parameter (*EB*) is .017, GM's estimate of the ratio of the efficiency loss associated with restricting repatriations to pre–tax earnings and profits of foreign affiliates with effective tax rates less than 10 percent. Using these parameter estimates from Treasury data, we calculate (using equation [1]) an overall effective repatriation tax burden for income earned in low–tax countries of just 3.3 percent of pre–tax earnings on equity income. This very small repatriation burden on dividend income substantially reduces the effective tax rate of investing abroad under the current residence–based system.

Table 3 shows effective tax rates for investments in tangible assets, intangible assets, and for a "typical" investment. The typical investment is made up of 15 percent intangible and 85 percent tangible assets.[13] We assume that tangible assets are financed two–thirds with equity and one–third with debt (b = 1/3). Data from tax returns indicates that overhead expenses are, on average, approximately 10 percent of the pre–tax return.[14] Accordingly, we set v equal to .10. Notice that the effective tax rate for the current system is a weighted average of the excess limit and excess credit rates based on the observation from the Treasury tax files that about 25 percent of the manufacturing income of U.S. affiliates abroad was associated with firms in excess credit positions in 1994.

The first column of Table 3 shows that effective tax rates are higher under exemption than under the current system for a marginal low–tax investment abroad in tangible assets. This is not at all surprising given the low estimated effective tax rate on dividend remittances combined with the ability of excess limit firms to deduct some portion of interest and overhead expenses at the 35 percent tax rate. In fact, effective tax rates for tangible investments in low–tax countries are lower for firms in excess limitation under the current system than for firms in excess credit which pay no residual U.S. taxes on dividend income!

Our calculations show that for the typical investment in a low–tax country abroad, dividend exemption with expense allocations is likely to increase effective tax rates relative to the current system. This result reflects that the majority of firms are in excess limitation and that the typical investment is weighted towards tangible assets. As the first column clearly shows, firms in excess limitation face very low effective tax rates on tangible capital placed in low–tax locations.

It is interesting to consider how sensitive our estimate of the current effective tax rate is to the repatriation burden parameter. As mentioned above, the 3.3 percent repatriation burden we use in our calculations is based on GM's estimates from tax return information. GM's prediction of how exemption would affect repatriations from low–tax countries is based on a dividend equation that includes a range of variables that may influence repatriation behavior. The independent variables include non–tax parent and subsidiary characteristics along with tax parameters that may influence dividend payments. Both the excess limit and ex-

[13] The importance of intangible assets is based on Commerce Department data. According to the 1994 Commerce Benchmark Survey of U.S. investment abroad, majority–owned manufacturing affiliates of non–bank parents paid $10.3 billion of royalties to their parents. This is 15.5 percent of the total pre–tax capital income base (net income + foreign income taxes + royalties+ interest paid). Using royalties based on tax returns, which are reported on the Form 1118, would yield a higher ratio.

[14] Other (non–R&D, non–interest) allocations in the general active non–financial basket were $14.04 billion in 1994. This is 12.7 percent of the total pre–tax capital income base reported in the 1994 Commerce benchmark for majority–owned non–financial affiliates of non–bank parents. Since some of the allocation is attributable to non–exempt income like sales source income, we assume 10 percent.

cess credit tax price of dividends are included since credit positions may be uncertain. While the excess limit tax price on dividends has a coefficient that is highly significant, the projected increase in dividends resulting from exemption (setting the repatriation tax to zero) is not enormous. Dividends (net of subpart F income) in the less than 10 percent effective tax rate group more than double but from a low base.

We could ignore all the other variables in GM's repatriation equation such as withholding taxes, which become more significant under exemption, and use the simple relationship between repatriation rates and local effective tax rates reported in GM to calculate the overall effective repatriation burden. To do this we assume that in the absence of any repatriation tax subsidiaries located in countries with effective tax rates below 10 percent repatriate the same percentage of after–tax earnings and profits as subsidiaries located in countries with effective tax rates between 20 and 30 percent. The latter group of subsidiaries had a repatriation rate of about 43 percent of (positive) earnings and profits in 1992 which is significantly larger than the (about) 7 percent repatriation rate of the former group (see Table 2 of GM).[15] This exercise gives an efficiency loss of about 5 percent. If we use an efficiency loss estimate of 5 percent rather than 1.7 percent, the effective tax rate under the current system increases to 7.3 percent, which is still below the exemption rate of 9.4 percent.

At the aggregate level, our deadweight loss and dividend change estimates appear to be similar to the ones estimated in Desai, Foley, and Hines (2001) using information from the Bureau of Economic Analysis Annual Survey of U.S. Direct Investment Abroad. These authors estimate that repatriation taxes reduce aggregate dividends by 12.8 percent. The repatriation equation we use projects about a 15 percent overall decrease. Desai, Foley, and Hines report an overall efficiency loss of 2.5 percent of dividends. However, when this is expressed in relation to total pre–tax income by adding back retained earnings and foreign taxes it appears to be about 1 percent, which is only slightly larger than the GM estimate of about .7 percent.

An important difference, besides expense allocations and dividend repatriation taxes, between the two systems is the taxation of the royalties generated from intangible assets. Table 3 shows that the advantage of placing intangible capital in low–tax locations will be significantly higher under exemption for firms in excess credit. For instance, the effective tax rate under exemption for an investment made up of 15 percent intangible capital is more than two times the effective tax rate currently faced by a parent in excess credit.

As Grubert stresses in his companion piece on dividend exemption and tax revenues, it is likely that firms facing increased tax burdens of investing abroad will make adjustments to their operations in an attempt to lower their effective tax rates (see Grubert, 2001). For instance, as we have already assumed, parents may shift the portion of debt currently on their books to the foreign affiliate where it can obtain a full interest deduction at the local tax rate. Parents also face strong incentives to reduce royalty payments (and substitute them with dividends, for example). Grubert (2001) suggests that there may be a significant decline in royalty payments that would have a substantial effect on the revenue cost of switching to a dividend exemption system. And Hines

[15] We do not consider the repatriation behavior of the group of subsidiaries with effective tax rates above 30 percent since this category includes those with 'excess' dividends because of negative tax prices. The dividend repatriation rate for this group of subsidiaries was 54 percent which is not much larger than the group facing effective tax rates between 20 and 30 percent (again, see Table 2 of GM).

(1995) and Grubert (1998 and 2001) have found that royalty payments received by U.S. MNCs from affiliates are responsive to tax prices. Using our formulas, we can calculate how effective tax rates would change if firms substituted dividends for royalty payments. For instance, if the royalty payout rate from intangible assets was decreased from 100 to 75 percent, the effective tax rate on the "typical" investment under exemption would fall by about 1.3 percentage points. This suggests that even a substantial switch from royalties to dividends may still leave firms with greater tax incentives to place capital in low–tax countries under the current system than under exemption *with expense allocations*.

What if exemption were passed without any expense allocation rules? Table 4 shows effective tax rates for the typical investment under exemption systems that do not require all overhead expenses to be allocated against exempt income. If allocation rules only for interest expense (and not "other" overhead expenses) are imposed the effective tax rate falls to 7.4 percent. This scenario, in which the parent deducts all interest at the local rate and 75 percent of "other" overhead at the U.S. rate, is shown in the second row of Table 4. Consider, on the other hand, a scenario in which firms are not required to allocate high–tax (or parent) *interest* expense used to finance investment in the low–tax affiliate against exempt income. Assume that under this system firms behave exactly as they did under the current system when the interest allocation rules do not bind and deduct one–half of interest expense at the U.S. rate. Assume further that no allocation rules for "other" overhead expenses are imposed and, as in the excess limitation scenario, firms deduct 75 percent of these expenses at the U.S. tax rate. In this case, shown in the third row of Table 4, the effective tax rate falls to 5.3 percent, which is almost identical to our estimate of the effective tax rate under the current system.[16] If exemption were passed with ***no*** expense allocations, the effective tax rate would fall even further. The last row of the table considers the case in which firms are able to make the same expense allocations as excess limit firms under the current system—50 percent of interest expense and 75 percent of "other" overhead is deducted at the U.S. rate.[17] In this case, the effective tax rate falls to 3.2 percent and investment in the low–tax affiliate becomes even more attractive.

TABLE 4
EFFECTIVE TAX RATES UNDER DIVIDEND EXEMPTION FOR VARIOUS EXPENSE ALLOCATION ASSUMPTIONS

	Effective tax rate for an investment made up of 15% intangible and 85% tangible assets
Base case[1]	9.3%
Exemption system with interest allocation rules[2]	7.4
Exemption system with no interest allocation rules[3]	5.3
Exemption system with no expense allocation rules[4]	3.2

Notes:
1. Allocation rules require all expenses (interest and "other" overhead) to be allocated against exempt income. Same assumptions as in Table 3.
2. Assumes that interest expense must be allocated against exempt income. Seventy–five percent of all "other" overhead expenses, however, are assumed to be deducted at the U.S. rate.
3. Assumes that one–half of interest expense is deducted at the local 7 percent rate and one–half is deducted at the U.S. rate. All "other" overhead expenses are allocated against exempt income.
4. Assumes that one–half of interest expense is deducted at the local 7 percent rate and one–half is deducted at the U.S. rate and that 75 percent of "other" overhead expenses are deducted at the U.S. rate.

[16] The cost of capital in this case is $kr[1 - bt_f - .5b(t_{US} - t_l)] / (1 - t_l) + (1 - k)r / (1 - t_{US})$.
[17] The cost of capital in this case is $kr[1 - bt_f - .5b(t_{US} - t_l)] / [1 - t_f + .75v(t_{US} - t_l)] + (1 - k)r / (1 - t_{US})$.

Our effective tax rate calculations make three noteworthy points. First, the treatment of allocations is a primary determinant of how investment incentives will change under dividend exemption. Second, the taxation of royalties has an important impact on the cost of capital abroad. Firms that locate relatively large fractions of intangible capital in low–tax countries will face relatively higher effective tax rates under exemption. These firms will have strong incentives to substitute dividends for royalties (which has revenue consequences for the U.S. Treasury). Finally, it is interesting to note that under the current system, firms that do pay residual taxes on dividend remittances—those in excess limitation—face effective tax rates on typical low–tax investments abroad that are substantially less than the U.S. rate (and, depending on the fraction of intangible assets, the host country rate). As stressed above, this is a result of the tax minimizing repatriation behavior of U.S. MNCs and their ability to deduct overhead expenses at the U.S. tax rate.

EXPLORING THE LOCATION DECISIONS OF U.S. MNCS UNDER DIVIDEND EXEMPTION

Economists have provided ample empirical evidence that the assets held in U.S. multinational corporations are responsive to variations in effective tax rates across foreign locations.[18] In fact, Altshuler, Grubert, and Newlon (2001), hereafter AGN, find that the investment location choices of U.S. manufacturing parents have become more responsive to taxes in recent years. To measure the sensitivity of location decisions to host country tax rates, AGN regress a measure of real capital held in each of the 58 countries in their sample on tax variables and measures of nontax characteristics of countries. These regressions yield an elasticity that measures the sensitivity of demand for capital in a country to changes in after–tax returns (for a given pre–tax return). Their elasticity estimates suggest that a 1 percent increase in after–tax returns led to a 1.5 percent increase in the real capital stock of manufacturing affiliates in 1984 and an almost 3 percent increase in 1992.

What does the recent empirical work say about moving to the type of dividend exemption system considered in this paper? The country–level analysis in the recent literature, and the effective tax rate calculations presented above, suggests that the current system provides similar tax incentives to the ones we would expect under a system in which dividends are exempt from home country taxation. However, one critique of this interpretation of the literature is that the empirical tests do not explicitly test the impact of residual home country taxes on location behavior. The empirical specification in AGN, for example, includes measures of host country effective tax rates only, not the combined effect of host and home country rates.[19]

The most recent work on this topic using country–level data appears in GM. They add measures of repatriation taxes to their asset location regressions and find that these taxes do not seem to affect the choice among investment locations abroad. GM also presents some interesting new evidence on the relevance of U.S. repatriation taxes to location decisions derived from firm–level data from the 1992 Treasury tax files. Their results, which are the starting point for our analysis, suggest that parents that pay no U.S.

[18] For recent evidence see, for example, Grubert and Mutti (1991, 2000, 2001), Hines and Rice (1994), and Altshuler, Grubert, and Newlon (2001).

[19] However, one could argue that since the repatriation tax for excess limit firms is highly correlated with host country tax rates, the regressions suggest that U.S. taxes on income repatriations are not significant determinants of investment location choices.

repatriation taxes on dividend remittances (those in excess credit positions in 1992) are not any more sensitive to differences in host country tax rates than parents that do pay residual U.S. taxes on foreign source income (those in excess limitation). In what follows, we extend this firm–level analysis to further explore the consequences of moving towards a dividend exemption system.

There are few important issues to address before using the Treasury data to make predictions of how firm location behavior will change under dividend exemption. The first concerns the extent to which firms that are currently in excess credit positions face the same incentives as firms that operate under territorial tax systems. Since our focus is on the consequences of moving to a tax system in which firms will *never* face residual U.S. taxes on dividends, it is important to distinguish firms that expect to persistently find themselves with excess credits from those who may temporarily transit into excess credit positions. It is possible that an important fraction of the firms in excess credit positions in any year are only temporarily exempt from residual taxes on dividends. These firms will behave as if they are in excess limitation if they expect that through carrybacks or carryforwards they will be able to claim their excess foreign tax credits.[20] In the analysis presented below we develop measures of excess credit positions that attempt to identify those firms that are "deep in excess credit."

Another difficulty in conducting the type of policy experiment we have in mind is a familiar one. Firms that are more sensitive to differences in host country tax rates are more likely to invest in low–tax countries and therefore are more likely to end up in excess limitation. This suggests that we control for factors that may be correlated with mobility. Further, it points out an econometric problem—credit positions are, to some extent, endogenous to location decisions. We have tried to correct for this potential endogeneity problem by using exogenous predictors of credit position in our regressions and through instrumental variable techniques.

We use a probit analysis to examine the determinants of location choice. This allows us to measure the impact of host country taxes and expected foreign tax credit positions on the probability that an affiliate is located in a particular country. By interacting our host country effective tax rate measure with our foreign tax credit measure we can test whether the location decisions of firms that expect to be in excess credit are more responsive to differences in host country tax rates. Before turning to a discussion of our tax variables, we describe the data and the non–tax independent variables. Summary statistics for all of the variables used in the regressions are included in an appendix table.

The data is formed from the 1996 Treasury tax files, which link information from parent tax forms and subsidiary information forms. The basic corporate tax form, Form 1120, provides information on the parent's income, expenses, and assets (as well as the parent's date of incorporation). Information on foreign source income, allocable and "not directly allocable" expenses, foreign tax credits, and the foreign tax credit limitation comes from the form filed to claim a foreign tax credit, Form 1118.[21] Since we are interested in how taxes affect the location of real business activity we have limited our analysis to the manufacturing affiliates of manufacturing

[20] In fact, in any given year, firms may view their foreign tax credit status as uncertain. For this reason, Grubert (1998), GM, and Altshuler and Grubert (forthcoming), for example, include both excess limit and excess credit repatriation taxes as independent variables in their regressions.

[21] We include only those parent firms that had a positive foreign tax credit limitation in our analysis. This eliminates about a third of parent firms from the analysis.

parents. Affiliate level information is provided on the Form 5471, which presents information on income and balance sheet items of controlled foreign corporations (CFCs) of U.S. parents.[22]

The parents in our sample, taken as a group, had affiliates in 60 different locations in 1996. Each observation in our analysis therefore consists of parent information linked to country information for each of the 60 potential locations. The dependent variable for each observation is set equal to one if the parent has at least one CFC in a country and zero otherwise. There are 365 parent firms in our dataset, which gives us 365*60 (=23,200) observations.[23]

The Non–Tax Control Variables

We control for both parent and country non–tax characteristics that may affect a firm's decision to locate an operation in a particular country using the same variables as GM. Starting with parent characteristics, we include information on both advertising and R&D expenditures (scaled by sales) to control for the possibility that these firms are more mobile internationally.[24] Firms with relatively large expenditures on these items are likely to possess a technology that can easily be exported and exploited outside the U.S. We also control for the labor and capital intensity of the parent under the presumption that labor–intensive firms are more mobile than capital–intensive firms. Labor intensity is measured by wage compensation as a fraction of sales; capital intensity is measured as expenditures on tangible capital (real plant and equipment) as a fraction of sales. We include the age of the parent to control for the effect of maturity on mobility—for any level of R&D and advertising expenditures, older firms may be more likely to be in a location if age is positively correlated with the presence of profitable intangible assets. Finally, we control for the size of parents under the assumption that larger firms, all else equal, may be more likely to find it profitable to set–up operations abroad. The log of operating assets measures the size of parents.

Country characteristics include GDP and GDP per capita as well as a trade variable that is constructed to measure the degree of openness of each country's economy. GDP and GDP per capita (obtained from World Bank, 1996) are included to control for differences in country demand and supply characteristics. The trade variable, obtained from the *World Development Report* (World Bank, 1987), runs from zero (most open) to three (most restrictive).[25] This openness indicator is interacted with our host country tax variable to control for the possibility that the benefit of locating in a country with low tax rates may be smaller in more restrictive trade regimes. We also include regional dummy variables to control for any region–specific effects that may impact location decisions.

The Tax Variables

The basic measure of the host country tax rate is the country average effective tax rate (hereafter, ETR) which is calcu-

[22] A controlled foreign corporation is a corporation that is at least 50 percent owned by a group of U.S. shareholders each of whom hold at least a 10 percent interest in the company.

[23] The probit analysis treats each parent–country observation as an independent observation. It is possible that there is a country effect that induces correlation of errors across different companies. We experimented with random effects estimation and found no substantial effect on our results.

[24] The R&D variable comes from the form firms file to claim the research and experimentation tax credit. In some cases it is supplemented with data from Compustat.

[25] This measure is based on observations from 1973 to 1985 of (i) the country's effective rate of protection, (ii) its use of direct controls such as quotas, (iii) its use of exports, and (iv) the extent of any overvaluation of its exchange rate.

lated by dividing total taxes paid by all CFCs in a particular country by their earnings and profits (using only those CFCs with positive earnings and profits to avoid a downward bias in the ETR). Both variables are available on the Form 5471. Following previous work we use the log of (1–ETR) as the local tax measure. In this way, the estimated coefficient gives the impact of variation in the after–tax rate of return in a country (for a given pre–tax return) on the probability of locating a CFC in that country.

Our focus is on the location decisions of firms that are unlikely to face any U.S. residual tax on active income earned abroad—firms that are "deep in excess credit." We experimented with several different methods of measuring a parent's likelihood of being in excess credit in 1996. These credit position measures are described in turn with our regression results. The key variable from our standpoint is the interaction between log of (1–ETR) and the foreign tax credit measure. The estimated coefficient on this variable will indicate whether firms that are effectively exempt from U.S. taxes on active income remittances are more sensitive to differences in host country tax rates.

Regression Results

Table 5 presents the results of our probit analysis. Our discussion of the results will focus on the foreign tax credit position and interaction terms since results from this type of location regression have been presented elsewhere in the literature using similar datasets (see GM and the working paper version of Grubert and Mutti, 2000). Before turning to our main discussion, we note that the estimated coefficients on the parent and country control variables have the expected signs and economic significance. Further, the results in Table 5 continue to confirm the results in the literature that host country tax rates are extremely significant determinants of firm location choice. In addition, the trade–tax interaction variable is always negative and highly significant. More restrictive trade regimes lessen the influence of low host country taxes on the probability of attracting U.S. affiliate location.

In column (1), we use the average tax rate on foreign source income, hereafter FSI, to gauge the extent to which a parent is in excess credit. The average tax rate on FSI, hereafter FATR, is measured using information from the foreign tax credit form.[26] To calculate the firm's FATR, we subtract any foreign tax credit carryovers from total foreign taxes paid (including withholding taxes and gross–up taxes on dividends) and divide by net FSI.[27] This gives us a measure of the average foreign tax rate paid on *current* FSI. As the FATR increases, parents become less likely to face U.S. residual taxes on FSI due to the presence of excess credits that soak up any residual U.S. tax liability. Interestingly, the estimated coefficient on the FATR is negative and statistically significant. Firms become *less sensitive* to host country tax rates as the average tax rate on foreign source income increases.

As mentioned above, the firm's FATR (and credit position) are endogenous to its location decisions. This endogeneity could lead to biased estimates of our credit position measure and interaction term. To find an exogenous indicator of expected credit positions, we regressed variables taken from the foreign tax credit form (Form 1118) on FATR. We found that the most significant determinants of FATR are "not directly allocable" expenses as a share of gross FSI, the share of dividends in total gross FSI, and the dividend gross–

[26] We calculate the FATR for the "active" income basket which includes remittances of earnings on active business investments abroad and contains the majority of foreign source income for manufacturing affiliates.

[27] This variable is truncated at one. Our results are not sensitive to this truncation.

TABLE 5
PROBIT ANALYSIS OF THE EFFECT OF FOREIGN TAX CREDITS ON AFFILIATE LOCATION
(SAMPLE CONSISTS OF MANUFACTURING CFCS OF U.S. MANUFACTURING PARENTS)[1]

	(1)		(2)		(3)		(4)		(5)	
	Coefficient	t–stat	Coefficient	t–stat	Coefficient	t–stat	Coefficient	t–stat	Coefficient	t–stat
Intercept	–5.80	(25.32)	–5.91	(25.85)	–5.88	(25.65)	–5.86	(25.77)	–5.88	(25.81)
Host country variables[2]										
Log of GDP	0.36	(34.42)	0.36	(34.41)	0.36	(34.39)	0.36	(34.41)	0.36	(34.44)
Log of GDP per capita	–0.00	(0.07)	–0.00	(0.12)	–0.00	(0.09)	–0.00	(0.09)	–0.00	(0.09)
Trade regime	–0.14	(4.88)	–0.15	(4.94)	–0.14	(4.91)	–0.14	(4.90)	–0.15	(4.90)
Parent variables										
R&D / sales	7.19	(11.14)	6.13	(9.42)	7.12	(11.01)	6.63	(10.34)	7.22	(11.14)
Advertising / sales	4.51	(11.31)	4.94	(12.35)	4.68	(11.75)	4.68	(11.73)	4.41	(11.00)
Labor costs / sales	0.42	(3.22)	0.47	(3.59)	0.47	(3.60)	0.45	(3.42)	0.38	(2.85)
Capital / sales	–0.50	(7.94)	–0.47	(7.66)	–0.50	(8.04)	–0.51	(8.22)	–0.50	(8.00)
Log of operating assets	0.21	(20.32)	0.21	(21.08)	0.21	(20.95)	0.21	(21.33)	0.21	(20.37)
Age	0.01	(21.63)	0.01	(22.04)	0.01	(21.73)	0.01	(22.16)	0.00	(21.59)
Host country tax variables										
Log (1–ETR)	1.51	(8.19)	1.18	(7.18)	1.32	(7.34)	1.19	(9.22)	1.22	(9.64)
Trade regime * log (1–ETR)	–0.24	(2.53)	–0.25	(2.61)	–0.25	(2.57)	–0.25	(2.56)	–0.25	(2.59)
Foreign tax credit position measures										
Average tax rate on FSI[3]	0.25	(1.79)			0.23	(2.10)			0.56	(8.47)
Average tax rate on FSI * log(1–ETR)	–0.94	(1.94)			–0.22	(0.58)				
"Not directly allocable" expenses / gross FSI			0.42	(3.12)						
"Not directly allocable" expenses / gross FSI * log(1–ETR)			0.28	(0.59)						
FTC carryforwards / net FSI										
FTC carryforwards / net FSI * log(1–ETR)							0.11	(1.07)	0.03	(0.41)
FTC carryforwards / net FSI * log(1–ETR) * average tax rate on FSI							0.83	(2.14)	1.30	(2.89)
Log–Likelihood	–7,939		–7,953		–7,953		–7,965		–7,931	

Notes: 1. Number of observations for all regressions equals 23,220 (= 365 parents * 60 potential locations).
2. All regressions include regional dummies (see appendix table for details).
3. Average tax rate on FSI equals total taxes paid abroad on foreign source income. In columns (1) and (5), this average tax rate is calculated net of foreign tax credit carryforwards. In column (3), the average tax rate calculation includes foreign tax credit carryforwards.

up rate (gross–up taxes on the foreign equity income underlying the dividend divided by total grossed–up dividends). The latter two measures are endogenous to firm location choice and repatriation behavior and, as a result, will not be appropriate instruments. The first measure, "not directly allocable" expenses, include overhead expenses such as interest, R&D, and headquarters charges. Although any economic variable like R&D spending or how leveraged a firm is may be endogenous to firm behavior, "not directly allocable" expenses seem to be an appropriate exogenous predictor of the extent to which a parent is "deep in excess credit." The higher are a parent's "not directly allocable" expenses the lower is the foreign tax credit limitation. Given a level of foreign taxes paid, this means that higher "not directly allocable" expenses are associated with an increase in the likelihood of being in excess credit.

Column (2) of Table 5 uses "not directly allocable" expenses (as a percent of gross foreign source income) as a measure of the extent to which firms expect to face repatriation taxes on dividend remittances. The estimated coefficient on the key interaction term, log (1–ETR) * "not directly allocable" expenses, is now positive but is not statistically different from zero.[28]

We also used "not directly allocable" expenses as an instrument for FATR. The results from the instrumental variables estimation (not reported) produced similar estimates to those in column (1) on our key interaction term. The coefficient on the fitted average tax rate interacted with the log of (1–ETR) was negative and not statistically different from zero.

The remaining columns in Table 5 use measures of credit positions that incorporate foreign tax credit carryovers. Since parents are allowed to carryback any excess foreign tax credits for two years, we can assume that any firm claiming a carryover in 1996 had been in an excess foreign tax credit position for at least three years.[29] Including foreign tax credit carryovers (which average 7 percent of net FSI) should produce a more accurate measure of the probability that a firm will pay U.S. taxes on dividend remittances. By netting carryovers from our FATR calculation in column (1), we have failed to distinguish between firms that may have the ability to absorb current excess credits through carrybacks and those that cannot. It is possible that this latter set of firms is more sensitive to differences in host country taxes.

In column (3), we include carryforwards in the foreign average tax rate calculation. Adding carryovers to the FATR increases the coefficient on the tax interaction term relative to the estimate in column (1), but makes it statistically no different from zero. The sensitivity of location choices to after–tax rates of return abroad does not change as the average tax rate *including carryovers* on FSI increases.

In column (4) we measure excess credit positions simply by the size of the foreign tax credit carryforward as a percentage of net FSI. It seems reasonable to assume that the higher is the carryforward, the less likely the parent is to transit out of an excess credit position in the future. This formulation results in a positive and statistically significant coefficient on the interaction term. Increases in the size of carryforward (relative to net foreign source income) do increase the sensitivity of location choice to host country taxes. This suggests that firms that do not expect to pay repatriation taxes are more attracted by low–tax rates abroad.

[28] The size and magnitude of this estimated coefficient is unaffected by the addition of interaction terms that allow tax sensitivity to differ according to the R&D or advertising intensity of the firm. These interaction terms test whether intangible asset intensive firms are more (or less) responsive to taxes. If there is a correlation between "not directly allocable" expenses and intangible capital, the interaction term could be biased. Our estimates, however, do not seem to be affected by this bias.

[29] About 7 percent of affiliates were associated with parents that claimed foreign tax credit carryforwards in 1996.

Column (5) breaks our measure of FATR into two components: current foreign taxes paid on FSI as a percent of net FSI and carryforwards (past taxes) as a percent of net FSI. This allows us to control for both the size of the parent's foreign tax credit carryforward and its foreign average tax rate on current income. The interaction term of interest is now between three variables, *carryforwards / net FSI* ∗ *FATR net carryforwards* ∗ *log* (1–*ETR*), and is positive and statistically different from zero. To gauge the economic significance of the coefficient consider the effect of an increase in the interaction term on the probability of investing in a low–tax relative to a high–tax location. At the means of the variables, with the interaction term set at zero, the ratio of the probability of a firm investing in a country with an effective tax rate of 5 percent, for example, relative to one with an effective tax rate of 40 percent is 1.80. Consider a CFC associated with a parent that has a FATR of 50 percent and carryforwards as a percentage of net FSI equal to 20 percent. This gives an interaction of .1 (=.5∗.2) and applies to about 6 percent of CFCs in our sample. Increasing the interaction term from zero to .1 increases the ratio of the probabilities of investing in the low–tax relative to a high–tax jurisdiction to 1.86. The effect is about a 3 percent increase in the likelihood of investing in the low–tax relative to the high–tax location. Although small, this suggests that low–tax rates are more attractive to firms that are effectively exempt from dividend taxation. If firms without foreign tax credit carryforwards (or small amounts) behave similarly under dividend exemption, there may be some reallocation of foreign direct investment to low–tax jurisdictions.

CONCLUSIONS

We have looked at the issue of dividend exemption on location incentives in several ways. The cost of capital analysis indicates that investment in low–tax countries is not likely to be encouraged as long as U.S. companies have to allocate overhead expenses to exempt income. The data on foreign direct investment in manufacturing by two major dividend exemption countries, Germany and Canada, revealed modest investment in low–tax countries in Asia. In Europe, Germany also has a relatively small share of its European investment in Ireland. But Canada has a substantially larger share than the United States. The analysis of the location choices by U.S. companies under current law also presents a somewhat inconsistent picture. Most of our attempts to identify the tax sensitivity of "deep in excess credit" companies failed to find any excess responsiveness to local tax rates. However, companies with large carryforwards of tax credits do seem to have a greater investment in low–tax countries, although the size of the effect was not very significant. Overall we cannot make any firm prediction of how location behavior would change if the U.S. were to adopt a dividend exemption system. However, the analysis provides no consistent or definitive evidence that dividend exemption would induce a large outflow of investment to low–tax locations.

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APPENDIX TABLE

SAMPLE STATISTICS

	Mean	Standard deviation
Host country variables		
Log of GDP	4.48	1.81
Log of GDP per capita	8.64	1.52
Trade regime (runs from 0 = most open to 3 = most restrictive)	2.11	1.14
North America dummy	0.03	0.18
Asia dummy	0.20	0.40
EEC dummy	0.20	0.40
Latin America dummy	0.28	0.45
Parent variables		
R&D / sales	0.01	0.02
Advertising / sales	0.02	0.03
Labor costs / sales	0.17	0.09
Capital / sales	0.27	0.23
Log of operating assets	13.52	1.21
Age	41.59	32.17
Host country tax variables		
Log (1–ETR)	–0.25	0.13
ETR	0.22	0.10
Trade regime * log (1–ETR)	–0.29	0.37
Foreign tax credit position measures		
Average tax on FSI	0.32	0.23
Average tax on FSI net carryforwards	0.26	0.18
Average tax on FSI net carryforwards * log(1–ETR)	–0.07	0.06
FTC carryforwards / net FSI	0.07	0.24
Percent with value greater than .50	0.04	0.19
FTC carryforwards / net FSI * average tax on FSI	0.03	0.17
Percent with value greater than .25	0.02	0.12
FTC carryforwards / net FSI * log(1–ETR) * average tax on FSI	–0.01	0.05
"Not directly allocable" expenses / gross FSI	0.22	0.19
"Not directly allocable" expenses / gross FSI * log(1–ETR)	–0.05	0.06

Which Countries Become Tax Havens?

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University of Connecticut and NBER

James R. Hines Jr.
University of Michigan and University of Michigan

What are Tax Havens?

- Tax havens are countries and territories that offer favorable tax regimes to foreign investors.
- Tax haven status is very stable: the same countries that were major tax havens in 1980 continue to be major tax havens today.
- Tax havens (of which there are roughly 40) are mostly small countries.
- Despite their small size, tax havens play an important role in the world economy and are

Who are the major tax havens?

Andorra	Grenada	Nauru !
Anguilla	Hong Kong *	Netherlands Antilles
Antigua and Barbuda	Ireland *	Niue !
Aruba !	Isle of Man	Panama
Bahamas	Jordan *	Saint Kitts and Nevis
Bahrain	Lebanon *	Saint Lucia
Barbados	Liberia	Saint Vincent and the Grenadines
Belize	Liechtenstein	Samoa !
Bermuda	Luxembourg *	San Marino !
British Virgin Islands	Macao *	Seychelles !
Cayman Islands	Maldives	Singapore *
Channel Islands	Malta	Switzerland *
Cook Islands	Marshall Islands	Tonga !
Cyprus	Mauritius !	Turks and Caicos Islands
Dominica	Monaco	Vanuatu
Gibraltar	Montserrat	Virgin Islands (U.S.) !

! Not included in Hines-Rice tax haven list.
* Not included in OECD tax haven list.

3

Why become a tax haven?

- There are actually two reasons to do so:
  - To attract foreign investment, and the economic goodies that come with it.
  - A recognition that any attempt to impose tax burdens on foreign investors is ultimately futile, since foreign investors demand world rates of return. As a result, taxes on foreign investors are paid by local labor in the form of reduced real wages.
- Why isn't everyone a tax haven?
  - It may not work for everybody.

4

Characteristics of Tax Havens

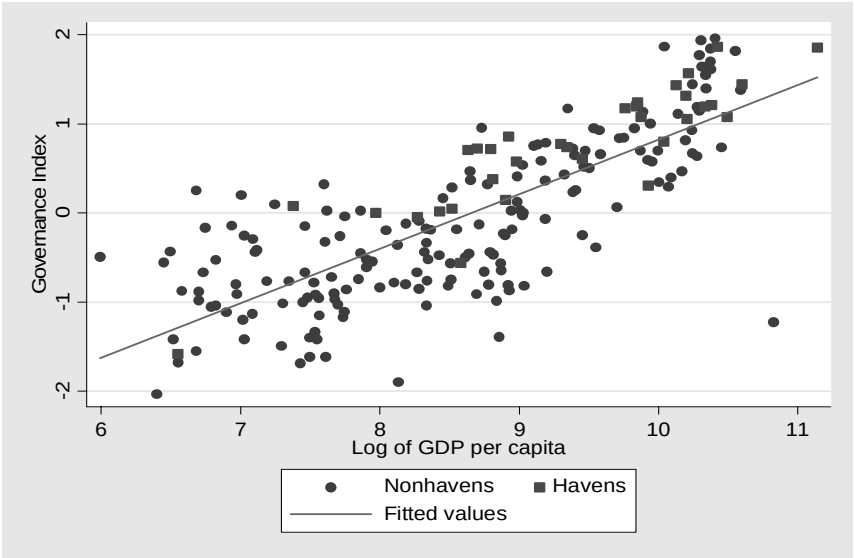
Compared to other countries, tax havens are:

- Smaller (most below one million in population).
- More affluent (higher GDP).
- Much better governed, as measured by:
  - Political Stability
  - Government Effectiveness
  - Rule of Law
  - Control of Corruption
  - Voice and accountability

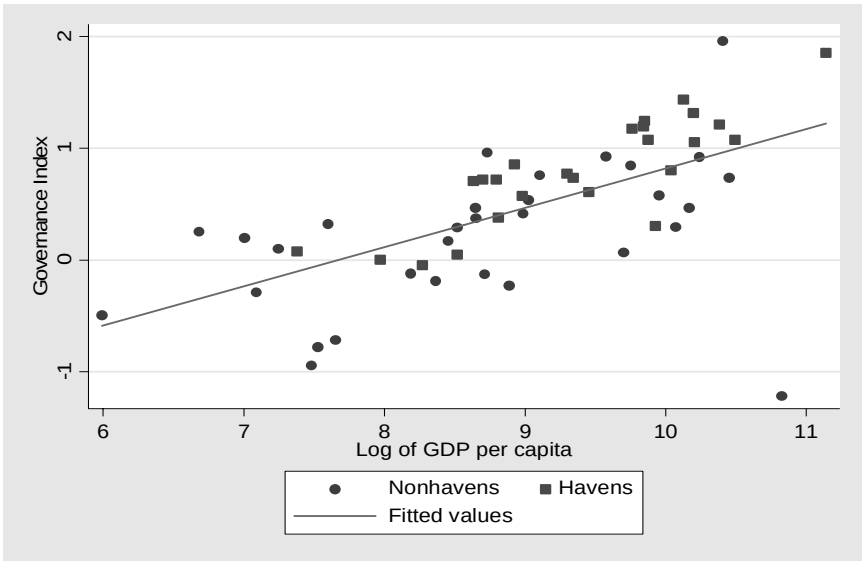
Moreover, the strength of tax havens' governance institutions goes beyond what would be expected on the basis of GDP.

5

Governance and GDP (All Countries)



Governance and GDP (Small Countries)



Summary Statistics: Small Countries (Pop < 1 million)

	Mean: Havens (N)	Mean: Nonhavens (N)	Diff. in Means (s.e.)
Governance Index	0.7974 (25)	0.2097 (31)	0.5876 (0.1519)***
GDP per capita (PPP; in thousands of US$)	18.46 (31)	11.34 (43)	7.12 (3.1474)**
Population (thousands)	181.62 (31)	271.34 (44)	-89.72 (56.20)
UN Member (=1)	0.6129 (31)	0.5227 (44)	0.0902 (0.1171)
Distance by air (km)	2921.77 (31)	5486.30 (44)	-2564.52 (570.84)***
Landlocked (=1)	0.0968 (31)	0.0455 (44)	0.0513 (0.0626)
Parliamentary System (=1)	0.7273 (11)	0.3571 (14)	0.3701 (0.1936)*
English as an Official Language (=1)	0.7407 (27)	0.4000 (40)	0.3407 (0.1164)***
Ethnolinguistic Fractionalization	0.1814 (16)	0.3673 (18)	-0.1859 (0.0956)*

Determinants of Tax Haven Status – Logit Estimates

	(1) All Countries and Territories	(2) UN Members	(3) Small Countries and Territories	(4) Common Support
	Dependent Variable: Indicator for Tax Haven Status (= 1 for Tax Havens)			
Governance Index	1.542 (0.592)***	1.710 (0.686)**	1.851 (1.032)*	1.586 (0.593)***
GDP per capita	0.013 (0.028)	0.016 (0.033)	-0.004 (0.029)	0.004 (0.029)
Population	-0.0003 (0.00009)***	-0.0004 (0.0001)***	-0.001 (0.001)	-0.0003 (0.0001)**
Distance by Air	-0.0004 (0.0002)*	-0.001 (0.0003)**	-0.0001 (0.0002)	-0.0003 (0.0003)
Other Controls, Regional Dummies?	Y	Y	Y	Y
Observations	208	190	56	99

Results

- Governance effect is positive and significant, even when
  - the sample is restricted to UN members.
  - the sample is restricted to smaller countries.
- The magnitude of the governance effect is substantial:
  - For a small country, holding all other variables at their means, raising the governance measure from 0 to 1 (approximately Brazil → Portugal) increases the probability of being a tax haven from 0.22 to 0.64.
- The effect of governance is statistically robust to:
  - Adding additional control variables.
  - Restricting the sample only to countries whose other characteristics might make them strong candidates to become tax havens

Interpretation

Why are tax havens well-governed? Two possibilities:

- Limited commitment: perhaps many small countries are potentially interested in becoming tax havens, but only those with stronger governance institutions can credibly commit to low future tax rates, market institutions, and protection of private property – and thereby attract investment.
- Decision making: more small countries would benefit from becoming tax havens, but only the better governed countries actually choose

Interpretation

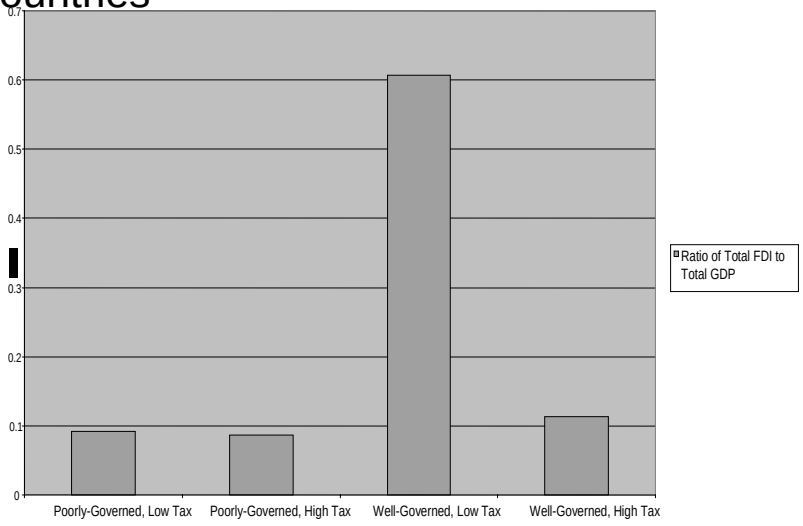
In order to test the first of these interpretations, we analyze the effect of foreign tax rates on U.S. investment in two groups of countries, those with high-quality governance and those with low-quality governance.

- Tax rate differences have a much greater effect on investment in well-governed countries.
- This evidence strongly favors the interpretation that poorly governed countries would have difficulty attracting large volumes of foreign investment even if they significantly reduced their

Governance and the Tax Elasticity of FDI

	(1) Well-Governed Countries	(2) Less Well-Governed Countries
	Dependent Variable: Log of Assets Owned by US Firms in 1999	
Constant	16.4437 (4.9307)***	9.5360 (2.3080)***
Tax Rate faced by US Firms in 1999	-0.0712 (0.0214)***	-0.0162 (0.0163)
Log of GDP per capita in 1999	1.4014 (0.2735)***	0.6014 (0.2110)***
Log of Population in 1999	-0.7224 (0.3900)*	-0.1608 (0.1626)
R-squared	0.6221	0.3463
Number of Observations	30	30

Ratio of US FDI to GDP for 4 Groups of Countries



Conclusions

- There is a sizeable, and statistically robust, association between tax haven status and the presence of high-quality governance institutions.
  - Controlling for other country characteristics, including size and affluence, better-governed countries are much more likely than others to become tax havens.
  - The effect of governance persists when legal origins are used as predictors of governance.
- There is evidence that lower tax rates are

Offshore Financial Centers: Parasites or Symbionts?

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The views expressed are those of the authors and not necessarily those of the Federal Reserve Board of Governors or the Federal Reserve Bank of San Francisco

Offshore financial centers (OFCs): Jurisdictions that oversee disproportionate non-resident financial activity.

We examine two questions:

1. Why do some countries become OFCs?

2. What are consequences of OFCs to their neighbors?

Why do countries become OFCs?

a. Literature: OFCS facilitate circumvention of source country regulations [e.g. Hampton and Christensen (2002)]

b. In 2000, OECD identified 30 countries as engaging in harmful tax practices, and gave deadlines for avoidance of sanctions

1. Most countries complied
2. Countries still in violation as of 2004 included Andorra, Liberia, Liechtenstein, the Marshall Islands, and Monaco

c. G7 has created task force against money laundering practices

d. Bilateral Approach

1. Use bi-lateral CPIS data for year-end 2001 and 2002, data includes 69 source and 222 host countries

2. Gravity model specification

   a. conventional gravity variables, including source and host country population, real GDP per capita, colonial history, geographic features, distance, common language, and common currency
   b. Combination of 3 indicators on tax havens [OECD, CIA, and Hines and Rice (1994)].
   c. Money laundering dummy from June 2000 OECD
   d. variables that measure the rule of law, political stability, and regulatory quality

Table 1: Bilateral Determinants of Cross-Border Asset Holdings (summary)

	Pooled	2001	2002	Pooled, without 0 values	Pooled, with institutions	Pooled, with institutions, legal regime
Log Distance	-1.14 (.08)	-1.24 (.09)	-1.04 (.09)	-.49 (.05)	-1.23 (.08)	-1.13 (.08)
Tax Haven Host					1.19 (.24)	1.33 (.25)
Tax Haven Source					.70 (.20)	1.23 (.22)
Money Launder Host					2.06 (.24)	2.06 (.24)
Money Launder Source					.55 (.23)	.29 (.23)
Regulatory Quality, Host					2.19 (.15)	2.21 (.15)
Regulatory Quality, Source					-.50 (.23)	-.06 (.24)
Observations	12,220	6,364	5,856	6,063	12,220	12,220
R^2	.56	.54	.57	.54	.60	.60

Bilateral Results

a. Host countries that are tax havens and/or money launderers are more likely to attract cross-holding

b. Host countries with higher regulatory quality attract more assets

c. Intuition is that loose regulatory restrictions facilitate activity not allowed in source countries, but need some enforcement of property rights to ensure that assets can be safely repatriated

e. Multilateral evidence on OFC Determination

1. Cross-sectional probit

2. Identification of OFCs

   a. Identified as financial center by either Financial Stability Forum, Errico and Musalem (1999), or IMF (2004)

   b. host at least $10 million in total assets

   c. Not in OECD

   d. Results in forty OFCs

Offshore Financial Centers: Default Definition

Andorra	Aruba	Bahamas	Bahrain
Barbados	Belize	Bermuda	Brit. Virgin Islands
Caymans	Costa Rica	Cyprus	Dominica
Gibraltar	Guernsey	Hong Kong	Isle of Man
Israel	Jersey	Kuwait	Lebanon
Liberia	Liechtenstein	Macau	Malaysia
Malta	Marshalls	Mauritius	Monaco
Morocco	Neth. Antilles	Oman	Panama
Philippines	Russia	Singapore	St. Kitts & Nevis
Thailand	Turks&Caicos	U.A.E.	Uruguay

Table 2: Multilateral Determinants of OFCs

	(1)	(2)	(3)	(4)
Population	-.11 (.04)	.11 (.06)	.01 (.09)	.01 (.10)
GDP p/c	.44 (.11)	.39 (.13)	.35 (.30)	.49 (.31)
Tax Haven		1.34 (.36)	1.05 (.43)	.87 (.45)
Money Launderer		1.51 (.35)	1.87 (.48)	1.87 (.48)
Rule of Law			-.24 (.50)	-.39 (.52)
Political Stability			-.13 (.29)	-.07 (.31)
Regulatory Quality			.32 (.46)	.32 (.46)
Common Law				-.05 (.50)
Civil Law				-.94 (.60)
French Law				.60 (.44)
Observations	223	223	184	184
Pseudo-R^2	.16	.42	.41	.44

3. Results

a. Being either a tax haven or a money launderer has an economically and statistically strong effect in raising the probability of being an OFC. (Confirms bilateral results)

b. measures of institutional quality and the legal regime have no strong consistent effect on OFC determination.

c. Results are robust to extensive sensitivity analysis

d. Suggests that primary motivation for investors in moving assets offshore is circumvention of domestic tax laws or other illegal activities.

Consequences of Offshore Financial Centers

Theoretical Model of OFC Activity

1. Monopoly domestic financial sector and competitive set of OFC banks

2. Geography matters: Cost of moving assets to OFCs decreasing in distance to OFC

3. Find that proximity to OFCs makes home country financial sectors more competitive and increases home country financial depth

Empirical evidence on impact of OFCs on their Neighbors

A. Examine theory predictions that home country profits are declining and that overall lending is increasing in OFC proximity

1. Use multilateral data from above

2. Proximity is measured as distance to nearest OFC

3. Add a number of conditioning variables

4. Estimate using OLS, with standard errors robust to heteroskedasticity.

C. Impact of OFC proximity on domestic banking competitiveness

1. 3 measures of the degree of competitiveness

   a. interest rate spread charged by commercial banks
   b. concentration of domestic banking, share of top 5 banks
   c. number of banks divided by the log of domestic GDP

2. Coefficient of interest to us is effect of OFC proximity on domestic banking competitiveness

Table 3a: OFC Proximity&Domestic Banking Competitiveness

Measure	Bivariate	Controls #1	Controls #2	Controls #3	IV
Loan-Deposit Interest Spread	2.21 (.62)	1.45 (.69)	1.41 (.70)	1.63 (.79)	1.44 (.92)
5-bank Concent. Ratio	1.77 (1.75)	4.66 (1.38)	7.53 (1.79)	6.91 (1.98)	8.22 (2.86)
# Comm. Banks /ln GDP	-.67 (.68)	-.99 (.78)	-1.16 (.65)	-1.52 (.81)	-1.49 (.89)

Coefficients recorded are for log distance to closest OFC.
Controls #1: OFC dummy; log (2001-02 average) population; log (2001-02 average) real GDP per capita; intercept.
Controls #2: controls #1 plus trade remoteness; civil law dummy; French law dummy; landlocked dummy; latitude in hours; % Christian; % Muslim.
Controls #3: controls #2 plus (2001-02 average) trade as a percentage of GDP.
IV: controls #3. IVs for log minimum distance to OFC include: 1) log minimum distance to tax haven; 2) log minimum distance to money launderer; 3) remoteness from OFCs.
OLS estimation unless labeled; robust standard errors recorded in parentheses.

C. Summary of results

1. OFC remoteness associated with an increase in monopoly power at statistically and economically significant levels.

   a. Point estimates suggest that a one standard deviation increase in distance to an OFC is associated with an increase of 1.41 to 2.21 percent in the interest rate spread and an increase of 1.77 to 8.22 percent in the share of the banking industry controlled by the five largest commercial banks.

   b. These results are statistically significant at standard significance levels for all three specifications.

4. Impact on depth of domestic financial intermediation

A. Use 3 measures of intermediation common in literature

1. ratio of credit to the private sector as a percentage of GDP
2. ratio of quasi-liquid liabilities to GDP
3. ratio of M2 to GDP

B. Coefficient of interest, β, expected to be consistently negative, since OFC proximity should increase domestic financial intermediation.

Table 3b: OFC Proximity and Financial Depth

Measure (% GDP)	Bivariate	Controls #1	Controls #2	Controls #3	IV
Dom. Private Sector Credit	-13.7 (3.6)	-1.9 (3.0)	-3.1 (2.9)	-4.1 (3.1)	-3.4 (3.4)
Quasi-Liquid Liability	-16.3 (4.2)	-8.9 (3.3)	-11.4 (3.6)	-11.6 (3.4)	-7.8 (3.2)
M2	-17.1 (4.1)	-9.7 (3.4)	-11.1 (4.0)	-11.5 (3.8)	-5.3 (3.7)

Coefficients recorded are for log distance to closest OFC.
Controls #1: OFC dummy; log (2001-02 average) population; log (2001-02 average) real GDP per capita; intercept.
Controls #2: controls #1 plus trade remoteness; civil law dummy; French law dummy; landlocked dummy; latitude in hours; % Christian; % Muslim.
Controls #3: controls #2 plus (2001-02 average) trade as a percentage of GDP.
IV: controls #3. IVs for log minimum distance to OFC include: 1) log minimum distance to tax haven; 2) log minimum distance to money launderer; 3) remoteness from OFCs.
OLS estimation unless labeled; robust standard errors recorded in parentheses.

C. Summary of results

1. Distance to the closest OFC affects financial intermediation with a consistently negative sign

2. Significant for two of our three proxies, the ratios of quasi-liquid liabilities to GDP and M2 to GDP, but insignificant effect on credit to the private sector as a percentage of GDP

3. Point estimates indicate that proximity to an OFC is consistently of economic significance

4. Conclusion

A. Examine determinants of OFC and consequences for neighbors

B. Successful OFCs appear to encourage bad behavior in source countries, since they facilitate tax evasion and money laundering, favoring “parasite” characterization

C. But OFCs may also have unintended positive consequences, such as enhancing local banking sector competitiveness

D. We find that OFC proximity is associated with a more competitive domestic banking sector, and greater financial intermediation.

E. Tentatively: OFCs are better characterized as “symbionts”

TAX HAVENS:
The response of the international community

International Tax Policy Forum/
American Enterprise Institute Conference

December 11, 2006

Presentation by
Jeffrey Owens
Director
Centre for Tax Policy and Administration
OECD

Integrated financial markets pose new global challenges

- New opportunities for illicit activities:
  - Money laundering
  - Misuse of corporate vehicles
  - Terrorist financing
  - Tax abuse
  - Threats to stability of financial system

All activities which thrive in climate of secrecy, non-transparency and non-cooperation

The response of governments

- Launching the FATF
- Creating the FSF
- Creating the OECD Forum on Harmful Tax Practices
- Parallel tracks but common goals:
  - To improve transparency
  - To raise governance standards in financial centers
  - To encourage cooperation to counter abuse

3

How big is the offshore issue?

- $5-7 trillion held offshore
- 360,000 Shell Companies in the BVI
- $9.4 billion from BVI to China
- Brazil reports a deficit of $4 billion trade with Caribbean Islands
- Singapore now 3rd biggest private wealth centre after Luxemburg and Switzerland
- Caymans 5th largest deposit banking center in the world

4

What does OECD mean by a tax haven

- Jurisdictions characterized by:
  - Lack of transparency
  - Lack of effective exchange of information
  - In a word: excessive secrecy
- So a low tax jurisdiction is not necessarily a tax haven
- OECD consistently advocates benefits of low rate/broad base tax regimes

5

Much money held offshore is there legally

OFCs may:

- Offer legitimate tax planning opportunities
- Provide a neutral regulatory environment for residents of other countries to do business e.g. collective investment funds; captive insurance
- Be used for non-commercial reasons

6

Yet revenue implications of the illegitimate use of tax havens can be serious

- Ireland collects almost €900 million from Irish residents with offshore Channel Island accounts
- Italian tax amnesty results in €84 billion being repatriated
- Senate Finance Committee quotes estimates of $40-70 billion lost to tax havens
- UK expects to recover £1.9 billion from its recent clampdown on offshore evasion

The reality is we don't know exactly, but sums are large.

7

The broader policy implications

- Undermines the fairness and integrity of our tax system
- Tax evasion by some restricts the ability of governments to lower tax rates for all
- Distorts financial and capital flows
- Undermines national sovereignty

8

OECD objectives

- What does the OECD seek?
  - improved transparency
  - improved exchange of information
  - a co-operative approach
- What is not sought?
  - harmonization or setting minimum tax rates
  - impinging on national fiscal sovereignty
  - an unfair competitive advantage for OECD financial centers

9

OECD approach

Recognizes:

- Interest of government in protecting integrity of tax system and confidentiality of taxpayer information
- Interest of business community in avoiding excessive burden
- Countries' right to tailor their own tax systems to their own needs
- The need to move towards a level playing field and mutual benefits

10

Transparency

- Standard developed with co-operative offshore financial centers
- Key elements
  - reliable books and records
  - beneficial ownership information
  - access to bank information
- Transparency unlikely to be a significant concern for bona fide business

11

Key principles in model agreement on exchange of information

- On request only
- Covers civil and criminal tax matters
- Requests cannot be rejected on grounds of dual criminality requirement or absence of domestic tax interest
- Parties must have power to obtain bank and ownership information
- Information must be 'foreseeably relevant'
- No fishing expeditions
- Protection of taxpayer confidentiality

Almost no compliance burden on business

12

State of play : tax haven work

Only 5 offshore jurisdictions now listed as un-cooperative tax havens:

- **Andorra**
- **Liechtenstein**
- **Liberia**
- **Monaco**
- **Marshall Islands**

13

State of play: offshore financial centers

33 offshore jurisdictions committed to transparency and effective exchange of information:

- Aruba
- Antigua
- Anguilla
- Bahamas
- Bahrain
- Belize
- Bermuda
- British V.I.
- Cayman Is.
- Cooks Is.
- Cyprus
- Dominica
- Guernsey
- Grenada
- Gibraltar
- Isle of Man
- Jersey
- Malta
- Mauritius
- Montserrat
- Neth. Antilles
- Niue
- Nauru
- Panama
- Samoa
- San Marino
- Seychelles
- St. Kitts & Nevis
- St. Vincent
- St. Lucia
- Turks & Caicos
- US Virgin Is.
- Vanuatu

14

State of play

Fourth Global Forum held in Melbourne:

Andorra; Argentina; Austria; Barbados; China; Hong Kong; Liberia; Macao; Malaysia; Monaco; Russia; Singapore; South Africa; Switzerland; & UAE enter the dialogue

With Argentina; China; Hong Kong; Macao; U.A.E.; Russia; South Africa endorsing the transparency and effective EOI principles

Global Forum process now held up as « model » for other inititatives

15

State of Play

- Survey of 82 financial centers on transparency and EOI practices issued in May:
  - vast majority have mechanisms for EOI on criminal and civil tax matters
  - only a very small minority require a domestic tax interest
  - the majority can get access to bank information for criminal and civil tax matters
  - vast majority have due diligence requirements

Survey confirms progress is being made but more action is required

16

From principles to implementation

- Bilateral agreements are key implementation tool
- Agreements which benefit both parties
- US has 13 TIEA's, the Netherlands and Australia have one each
- Over 40 negotiations underway

17

Is there a future for tax havens?

Not as concealment centers

Yes, as service centers

Rosanne Altshuler

Rosanne Altshuler is an Associate Professor in the Economics Department at Rutgers University. She holds a B.A. from Tufts University and a Ph.D. in Economics from the University of Pennsylvania. Rosanne has published numerous articles on the economics of taxation in scholarly journals and books. Her work has also appeared in *Tax Notes* and *Tax Notes International*. Rosanne recently served as Senior Economist to the President's Advisory Panel of Federal Tax Reform. Prior to joining the Tax Reform Panel, she was acting as a Special Advisor to the Joint Committee on Taxation. Rosanne has served on the Board of Directors of the National Tax Association and has edited the *National Tax Journal* since 2001. She has taught at many universities including Columbia University, Princeton University, and New York University's School of Law.

Alan J. Auerbach

Alan J. Auerbach is the Robert D. Burch Professor of Economics and Law, Director of the Burch Center for Tax Policy and Public Finance, and former Chair of the Economics Department at the University of California, Berkeley. He is also a Research Associate of the National Bureau of Economic Research and previously taught at Harvard and the University of Pennsylvania, where he also served as Economics Department Chair. Professor Auerbach was Deputy Chief of Staff of the U.S. Joint Committee on Taxation in 1992 and has been a consultant to several government agencies and institutions in the United States and abroad. A former Editor of the Journal of Economic Perspectives, he has been a member of the Executive Committee and Vice President of the American Economic Association, and is a Fellow of the Econometric Society and of the American Academy of Arts and Sciences.

Michel Aujean

Michel Aujean was born in Le Perreux (France) in 1946. He is married and has seven children.

Graduating with an Economics degree and Masters degree (DES) from the Faculty of Law and Economics, Paris, he worked for five years as a Lecturer in Economics at the University of Pau in France, before joining the Directorate-General for Economic and Financial Affairs in the European Commission in 1976. As Head of Unit for Medium-term economic analysis; internal market and European integration from 1986 to 1988 he was responsible for, and co-author of, "The Economics of 1992 : The E.C. Commission's Assessment of the Economic Effects of Completing the Internal Market" (The Cecchini Report).

Moving as Head of Unit for VAT to the Directorate General for Customs and Indirect Taxation in 1988, he became Director of Indirect Taxation (VAT; Excise duties and other indirect taxes-environment, energy, transport; administrative co-operation and mutual assistance) in 1994.
In 2004 the DG was reorganized in order to create two Directorates for tax matters. He took then responsibility for the "Analyses and tax policies" Directorate, which deals principally with general questions of tax policy, direct tax matters (company and personal income tax) and also includes application of EU law and infringements in this area.

He is a member of the Permanent Scientific Committee of the International Fiscal Association (IFA), has given tax law courses as visiting professor in the United States, France, Italy, Austria, has spoken at many international conferences on tax policy and chaired the EU Commission Company Taxation Study Group which met from 1999 to 2001.

He has published numerous articles on economics and taxation (VAT in the single market : the transitionnal arrangements explained. EC Tax Review 1992;Value Added Tax in the Internal Market, a first assessment - EC Tax Review 1995). He directed the large study “Company taxation in the Single Market” which was published as a European Commission Staff Working Paper, ref. SEC(2001) 1681 of 23 October 2001. He very recently directed the Commission's services contribution to the report addressed to the French Conseil d'analyse économique by Prof. Saint Etienne and Le Cacheux.

Mihir A. Desai

Mihir A. Desai is an Assistant Professor of Business Administration in the Finance and Entrepreneurial Management areas of Harvard Business School. Professor Desai's research focuses on international corporate and public finance. Within international corporate finance, he has investigated the determinants of ownership shares and capital structure choice for multinational affiliates, the advantages afforded by the internal capital markets of multinationals, the determinants of dividend remittance policy for multinationals, and the interaction between domestic and international investment decisions by firms. Within international public finance, his research has emphasized the effects of taxation on the export, financing, organizational form, and investment decisions of firms facing multiple tax regimes. Additionally, his work has also addressed the dynamics of international tax competition, the interactions of inflation and taxation in an open economy and the policy choices available to developing countries facing the loss of talent. He is a Faculty Research Fellow in the National Bureau of Economic Research's Public Economics Program, and his research has been cited in *The Economist*, *BusinessWeek*, and *The New York Times*.

Currently, Professor Desai teaches First-Year Finance and has participated in several executive education programs at HBS. Additionally, he co-teaches Public Economics (EC 1410) at Harvard College. He received the Student Association Award for teaching excellence from the HBS Class of 2001. He received his Ph.D. in political economy with a concentration in corporate finance and public finance from Harvard University; his MBA as a Baker Scholar from Harvard Business School; and a bachelors degree in history and economics with honors and distinction from Brown University. In 1994, he was a Fulbright Scholar to India. His professional experiences include working at CS First Boston, McKinsey & Co., and advising a number of startup firms.

Michael J. Graetz

Michael J. Graetz is the Justus S. Hotchkiss Professor of Law at Yale University. Before becoming a professor at Yale in 1983, he was a professor of law at the University of Virginia and the University of Southern California law schools and Professor of Law and Social Sciences at the California Institute of Technology. His publications on the subject of Federal taxation include a leading law school text and more than 50 articles on a wide range of tax, health policy, social insurance, and tax compliance issues in books and scholarly journals. His most recent books, *True Security: Rethinking Social Insurance* and *The U.S. Income Tax: What It Is, How It Got That Way and Where We Go From Here,* were published in 1999 by Yale University Press and W. W. Norton & Co, respectively. He is the author of *The "Original Intent" of U.S. International Taxation*, 46 Duke L.J. 1021 (1997) and *Taxing International Income: Inadequate Principles, Outdated Concepts and Unsatisfactory Policies* (forthcoming Tax L.Rev. 2001).

During January-June 1992, Michael Graetz served as Assistant to the Secretary and Special Counsel at the Treasury Department. In 1990 and 1991, he served as Treasury Deputy Assistant Secretary for Tax Policy. Professor Graetz has been a John Simon Guggenheim Memorial Fellow and he received an award from Esquire Magazine for courses and work in connection with provision of shelter for the homeless. He served on the Commissioner's Advisory Group of the Internal Revenue Service. He served previously in the Treasury Department in the Office of Tax Legislative Counsel during 1969-1972.

Professor Graetz is a graduate of Emory University (B.B.A. 1966) and the University of Virginia Law School (J.D. 1969). A native of Atlanta, Georgia, Michael Graetz is married to Brett Dignam and has five children.

Kevin A. Hassett

Kevin A. Hassett is the director of economic policy studies and a resident scholar at AEI. He is also a weekly columnist for Bloomberg. Before joining AEI, Mr. Hassett was a senior economist at the Board of Governors of the Federal Reserve System and an associate professor of economics and finance at the Graduate School of Business of Columbia University. He was an economic adviser to the George W. Bush campaign in the 2004 presidential election, and was the chief economic adviser to Senator John McCain (R-Ariz.) during the 2000 primaries. He has also served as a policy consultant to the U.S. Department of the Treasury during both the former Bush and Clinton administrations. Mr. Hassett is a member of the Joint Committee on Taxation's Dynamic Scoring Advisory Panel. He is the author, coauthor or editor of six books on economics and economic policy, including the AEI book on tax reform, *Toward Fundamental Tax Reform*. He has published scholarly articles in the *American Economic Review*, the *Economic Journal*, the *Quarterly Journal of Economics*, the *Review of Economics and Statistics*, the *Journal of Public Economics*, and many other professional journals. His popular writings have been published in the *Wall Street Journal*, the *Atlantic Monthly*, *USA Today*, the *Washington Post*, and numerous other outlets. His economic commentaries are regularly aired on radio and television, including recent appearances on the *Today Show*, CBS's *Morning Show*, *Newshour with Jim Lehrer*, *Hardball, Moneyline*, and *Power Lunch.*

James R. Hines Jr.

James Hines teaches at the University of Michigan, where he is Richard A. Musgrave Collegiate Professor of Economics in the department of economics and Professor of Law in the law school. He also serves as Research Director of the business school's Office of Tax Policy Research. His research concerns various aspects of taxation. He holds a B.A. and M.A. from Yale University and a Ph.D. from Harvard, all in economics. He taught at Princeton and Harvard prior to moving to Michigan in 1997, and has held visiting appointments at Columbia, the London School of Economics, and Harvard Law School. He is a research associate of the National Bureau of Economic Research, research director of the International Tax Policy Forum, co-editor of the American Economic Association's *Journal of Economic Perspectives*, and once, long ago, was an economist in the United States Department of Commerce.

R. Glenn Hubbard

Glenn Hubbard was named dean of Columbia Business School on July 1, 2004. A Columbia faculty member since 1988, he is also the Russell L. Carson Professor of Finance and Economics. Professor Hubbard received his BA and BS degrees *summa cum laude* from the University of Central Florida, where he received the National Society of Professional Engineers Award. He also holds AM and PhD degrees in economics from Harvard University. After graduating from Harvard, Professor Hubbard began his teaching career at Northwestern University, moving to Columbia in 1988. He has been a visiting professor at Harvard's Kennedy School of Government and Harvard Business School as well as the University of Chicago. Professor Hubbard also held the John M. Olin Fellowship at the National Bureau of Economic Research.

In addition to writing more than 90 scholarly articles in economics and finance, Professor Hubbard is the author of a leading textbook on money and financial markets. His commentaries have appeared in *Business Week*, the *Wall Street Journal,* the *New York Times,* the *Financial Times,* the *Washington Post, Nikkei* and the *Daily Yomiuri*, as well as on television (on PBS's *Nightly Business Report*) and radio (on NPR's *Marketplace*).

In government, Professor Hubbard served as deputy assistant secretary of the U.S. Treasury Department for Tax Policy from 1991 to –1993. From February 2001 until March 2003, he was chairman of the U.S. Council of Economic Advisers under President George W. Bush. While serving as CEA chairman, he also chaired the Economic Policy Committee of the OECD. In the corporate sector, he is currently a director of ADP, Dex Media, KKR Financial Corporation, and Ripplewood Holdings.

Professor Hubbard is married to Constance Pond Hubbard. They live in Manhattan with their two sons.

Will Morris

Will Morris is currently Senior International Tax Counsel & Director, European Tax Policy in General Electric's corporate tax department. Since August 2003 he has been based in London, England and before that in Fairfield, CT. At GE Will works on a wide range of international tax matters relating to GE's foreign operations.

Until March 2000, Will was the Associate International Tax Counsel in the Office of Tax Policy at the U.S. Treasury in Washington, D.C. He received both his undergraduate and legal education at Trinity College, Cambridge, England. He completed his two years of training ("articles") and qualified as a solicitor at the London firm of Slaughter and May in 1988. In 1989 he received an LL.M. from the University of Virginia and became a member of the New York Bar in 1990. After U.VA., he returned to a year of further practice in London, but in late 1990 moved to Washington. After five years of private practice, in 1995 he joined Associate Chief Counsel (International) at the IRS. Here he helped draft both the check-the-box regulations and the proposed software regulations. In January 1997 he joined the Treasury where his areas of responsibility included subpart F, foreign partnerships and other fiscally-transparent entities, and entity classification issues. At Treasury he was responsible, among other things, for Notice 98-11 (and the subsequent fallout) and the check-the-box "extraordinary transaction" regulations, as well as being one of the principal authors of the Treasury's Subpart F Study.

Paul W. Oosterhuis

Paul W. Oosterhuis, coordinator of Skadden, Arps's international tax practice, represents clients on a wide range of international and domestic tax matters.

He has extensive experience in international mergers and acquisitions, post-acquisition integration transactions, spin-off transactions, internal restructurings and joint venture transactions. Mr. Oosterhuis also represents U.S. and non-U.S. multinational companies in non-transactional international tax planning and IRS controversy matters.

In international acquisitions, Mr. Oosterhuis has represented:

- Alcatel S.A. in its pending acquisition of Lucent Technologies;
- Quicksilver in its acquisition of Rossignol SA;
- Yahoo! Inc. in the combination of its Chinese business with Alibaba.com Corporation;
- Royal Dutch NV and Shell Transport Ltd. in their restructuring to form Royal Dutch Shell plc;
- IBM Corporation in its acquisition of the PwC consulting firms around the world; and
- Daimler-Benz in its combination with Chrysler Corporation.

He has also represented numerous clients in internal restructuring and post-acquisition integration efforts, including: Hewlett-Packard Company; Pfizer Inc., GlaxoSmithKline; Exxon Mobil and Daimler Chrysler.

With respect to the international aspects of public spin-off transactions, he has represented various clients, including Hewlett-Packard, Baxter International, DuPont, 3M and Cooper Industries.

Apart from specific transactions, Mr. Oosterhuis regularly represents clients on international tax planning matters generally, including transfer pricing matters. He also represents clients in audits and appeals before the Internal Revenue Service and has negotiated on behalf of clients various advance pricing agreements, pre-filing agreements, and competent authority agreements. Representative clients on these matters include: The Bank of New York, Dell, Inc., GlaxoSmithKline, Hewlett-Packard Company, Intel Corporation, International Paper, NTL, Royal Dutch Shell, Schering-Plough Corporation and Transocean. He also serves as outside tax counsel for the Pharmaceutical Research Manufacturers Association.

He has regularly been selected for inclusion in *Chambers USA*, including in *America's Leading Lawyers for Business 2006*, and has been consistently rated one of the top tax lawyers in Washington, D.C. by the Chambers Global Survey, including in *The World's Leading Lawyers 2004-2005*.

JEFFREY P. OWENS

Jeffrey is a public finance expert with a doctorate in Economics from Cambridge University in the United Kingdom. He is also a qualified accountant.

He is the Director of the OECD's Centre for Tax Policy and Administration which is the focal point for the Organisation's work on taxation. Over the last ten years he has built up the OECD's work on taxation so that it is now the leading organisation in the international tax area.

He has taught at Cambridge University, the American University in Paris, Bocconi University in Italy and Queen Mary's College in London. He is a member of numerous scientific committees and frequently contributes to international conferences and journals.

John M. Samuels

John Samuels is GE's Vice President and Senior Counsel for Tax Policy and Planning. He is responsible for GE's worldwide Tax Organization and for the Company's global tax planning and tax compliance operations. He is a member of GE's Corporate Executive Council, the GE Capital Corporation Board of Directors and the GE Pension Board.

Prior to joining GE in 1988, he was a partner in the law firm of Dewey, Ballantine in Washington, D.C. and New York City. From 1976 to 1981 Mr. Samuels served as the Deputy Tax Legislative Counsel and Tax Legislative Counsel of the U.S. Department of Treasury in Washington, D.C.

Mr. Samuels is the Chairman of the International Tax Policy Forum, a Fellow of the American College of Tax Counsel, a Trustee of the American Tax Policy Institute and a member of The Business Roundtable Tax Coordinating Committee. He is a member of the University of Chicago Law School Visiting Committee, was an adjunct professor of taxation of NYU Law School (1975 to 1986), and a Visiting Lecturer at Yale Law School (1997-2006).

Mr. Samuels is a graduate of Vanderbilt University (1966) and the University of Chicago Law School (1969), and received an LLM in taxation (1976) from NYU Law School.

Mark M. Spiegel

Mark Spiegel is Vice President, International Research and Director of the Center for Pacific Basin Studies at the Federal Reserve Bank of San Francisco. Prior to joining the Federal Reserve, he served as an assistant professor in the Department of Economics at New York University. He has served as a visiting professor in the Economics Department of U.C. Berkeley, as well as a lecturer at the Haas School of Business at U.C. Berkeley. He has also served as a consultant at the World Bank, as a visiting scholar at the Bank of Japan, and as Chairman of the Federal Reserve System Committee on International Economic Analysis. He is currently Associate Editor of the journal *Japan and the World Economy.* Dr. Spiegel received his Ph.D. in economics from the University of California at Los Angeles. He has published numerous articles on issues in international finance.

Martin A. Sullivan

Martin A. Sullivan is a Contributing Editor and economist for *Tax Analysts*. His prior experience includes working on the staff of the Treasury Department and the Joint Committee on Taxation, and he has worked as an economic consultant in the private sector. In 1995 he authored two books on tax reform published by Wiley & Sons. Since then he has written hundreds of economic analyses for *Tax Notes* magazine and is frequently quoted in such publications as *The New York Times, The Washington Post,* and *Business Week*.

U.S. Representative Bill Thomas

Bill Thomas, Republican of Bakersfield, California, represents California's 22nd Congressional District which covers most of Kern and San Luis Obispo Counties and part of Los Angeles County, including the cities of Bakersfield, Taft, Tehachapi, Arroyo Grande, Paso Robles, Lancaster, and Ridgecrest.

The largest economic interests in the district are agriculture, energy and defense. Agriculture in Kern and San Luis Obispo Counties is a multi-billion dollar industry. As one of the nation's top agriculture regions, the counties produce over $2.5 billion in crops such as cotton, citrus, grapes, pistachios, almonds, carrots, and livestock. Kern County annually produces more oil than the state of Oklahoma. Eastern Kern County and northeastern Los Angeles County are home of Edwards Air Force Base and the Naval Air Warfare Center, Weapons Division, at China Lake.

In Congress, Thomas was elected Chairman of the Ways and Means Committee in January 2001. Created in 1789, Ways and Means is the oldest standing committee in Congress and because of its legislative authority involving economic policy, international trade, welfare, and health care policy, the Committee occupies a pivotal place in the House committee system. The Committee's jurisdiction includes measures relating to revenue – which under the Constitution originate in the House – trade agreements, Social Security, Medicare, and welfare. In addition to legislating, the Committee exercises broad oversight authority in all these areas.

In his first two years as Chairman, Thomas led the charge on several vital pieces of legislation to help improve the lives of all Americans. Thomas drafted the Economic Growth and Tax Relief Reconciliation Act, which delivered much-needed tax relief to hard-working American families. Thomas also worked to create jobs and open trade channels through the Trade Act of 2002, while leading the charge to deliver affordable prescription drugs to all seniors by authoring the Medicare Modernization and Prescription Drug Act.

Prior to his election as Chairman of the Ways and Means Committee, Thomas served as Chairman of the Ways and Means Health Subcommittee where he was instrumental in the passage of the "Health Insurance Portability and Accountability Act of 1996," as well as the author of the "Medicare Preservation Act." In 1998, Thomas was appointed Administrative Chairman of the National Bipartisan Commission on the Future of Medicare. Thomas also served on the Ways and Means Trade Subcommittee. He was Chairman of the House Administration Committee from 1995–2001.

Throughout his Congressional career, Thomas has been recognized for his fiscal conservatism. He is a multiple recipient of the Golden Bulldog Award for fiscal restraint and has been honored by the National Tax-Limitation Committee for his fight against waste in government spending. Thomas has been recognized by the National Federation of Independent Business as a "Guardian of Small Business," and has received the "Spirit of Enterprise" award from the U.S. Chamber of Commerce. The League of Private Property Voters has honored Thomas as a "Champion of Private Property."

He and his wife, Sharon, have two grown children, Christopher and Amelia. The Congressman graduated from Santa Ana Community College and obtained both his bachelor and master degrees from San Francisco State University.