



Which countries become tax havens? ☆

Dharmika Dharmapala ^{a,1}, James R. Hines Jr. ^{b,*}

^a Department of Economics, University of Connecticut, 341 Mansfield Rd., U-1063, Storrs, CT 06269-1063, United States

^b Department of Economics, University of Michigan, 343 Lorch Hall, 611 Tappan Street, Ann Arbor, MI 48109-1220, United States

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ABSTRACT

This paper analyzes the factors influencing whether countries become tax havens. Roughly 15% of countries are tax havens; as has been widely observed, these countries tend to be small and affluent. This paper documents another robust empirical regularity: better-governed countries are much more likely than others to become tax havens. Controlling for other relevant factors, governance quality has a statistically significant and quantitatively large association with 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 26% to 61% as governance quality improves from the level of Brazil to that of Portugal. Evidence from US firms suggests that low tax rates offer much more powerful inducements to foreign investment in well-governed countries than do low tax rates elsewhere. This may explain why poorly-governed countries do not generally attempt to become tax havens, and suggests that the range of sensible tax policy options is constrained by the quality of governance.

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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 budgetary 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 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 apparent in the data, is that tax havens score very well on cross-country indices of governance quality that include measures of voice and accountability, political stability, government effectiveness, rule of law, and the control of corruption. Indeed, there are almost no poorly-governed tax havens. In a regression framework that controls for other observable variables including income, population, and geography, the association of good governance with the likelihood of being 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 26% to roughly 61%.

Cross-country evidence of this type can be difficult to interpret, since the data reflect a non-random assignment of local governance quality, which may be correlated with other economic and political conditions that influence whether or not a country becomes a tax haven. The association of governance quality and tax haven status persists in regressions that include additional variables such as measures of economic openness, British legal origins, use of the English language, use of a parliamentary system, communications infrastructure, and natural resource abundance. In addition, measures of past governance quality are associated with being a tax haven in 2004, suggesting that the relevant components of governance institutions are those that are stable over long periods of time.

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

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* Corresponding author.
E-mail addresses: dharmap@illinois.edu (D. Dharmapala), jrhines@umich.edu (J.R. Hines).

¹ Present address: University of Illinois College of Law, 504 E. Pennsylvania Avenue, Champaign, IL 61820, United States.

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. American evidence is consistent with this explanation, in that tax rate differences among well-governed countries are associated with much larger differences in 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). The empirical evidence presented in this paper suggests that tax policy choices are implicitly constrained by the quality of governance. The analysis of investment by American firms in Section 5 suggests that governance quality is an important, and hitherto largely neglected, factor affecting the tax elasticity of foreign investment. Hence tax policies might be added to the list of economic policies likely to be influenced by governance institutions.²

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. Section four analyzes the determinants of tax haven status. Section five compares the tax sensitivity of American investment in well-governed and poorly-governed 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.³ 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.⁴ 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% to 31.5%) is typically associated with six percent greater inbound foreign investment. More recent evidence suggests that FDI is even more tax sensitive than this.⁵

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 to other countries.⁶ Taken together, the evidence implies that countries contemplating adopting very low tax rates can reasonably expect to receive significantly greater foreign investment and tax base

as a consequence. Hence the budgetary cost to a country that unilaterally reduces its tax rate need not be very great.

Any reduction in government revenue that accompanies becoming a tax haven can, in principle, be recouped by increasing other taxes, such as personal income taxes or value-added 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.⁷ 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 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% between 1982 and 1999, which compares favorably to the 1.4% 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. Tax haven governments have proven 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 The most ambitious and effective multilateral tax agreement to date is the Harmful Tax Practices initiative of the Organization for Economic Cooperation and Development (OECD).⁹ The purpose 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. Many of these policies have been subsequently abolished or changed to remove the features to which the OECD objected. As part of this 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. 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 only five tax havens not making such commitments.¹⁰

3. Data

While there are many alternative notions of what constitutes a tax haven, the analysis in this paper uses as its definition the list of 41 countries and territories provided in Appendix 2 of Hines and Rice (1994, p. 178), which reflects the coexistence of a low business tax rate and identification as a tax haven by multiple authoritative sources. All

² For instance, Nunn and Trefler (2006) analyze the impact of governance institutions on tariff policy.

³ 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 appear to greatly exceed their use by individual investors — see Dharmapala and Hines (2006) for further discussion.

⁴ See Gordon and Hines (2002) and Devereux (2007) 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 et al. (2003).

⁵ For example, Altshuler et al. (2001) compare the tax sensitivity of aggregate capital 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. Using data drawn from a much larger sample of countries, and covering the years 1982, 1989, 1994 and 1997, Desai et al. (2003) offer evidence of an average -1.5 tax elasticity of asset ownership. Altshuler and Grubert (2004) offer evidence of a -3.5 tax elasticity of investment in a sample of 58 countries in 2000.

⁶ Multinational firms can structure a variety of transactions — intrafirm borrowing, 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 profitability, tax liabilities, and specific measures of financial and merchandise trade in order to identify the effects of taxes; Hines (1999) and Devereux (2007) survey this evidence.

⁷ 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.

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

⁹ For further discussion of the OECD initiative, see Hines (2006).

¹⁰ These tax havens are Andorra, Liberia, Liechtenstein, the Marshall Islands, and Monaco (OECD, 2004).

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; governance data are available for 33 of these jurisdictions.¹¹ Thus, the dependent variable in the 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 the [Appendix A](#).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 sections.

The primary explanatory variable of interest is a measure of countries' governance institutions. [Kaufmann et al. \(2005\)](#) compile 352 different underlying governance-related variables reported in 37 different data sets collected by international organizations, private firms, nonprofits and universities. The authors assign the variables to different aspects of governance and use an unobserved components weighting procedure to construct aggregate country scores for six different elements of country-level governance: voice and accountability, political stability, government effectiveness, regulatory quality, rule of law, and control of corruption. Each of these measures takes 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 been used widely in recent research (e.g., [Fisman and Miguel, 2007](#); [Rose and Spiegel, 2007](#)). The 2004 data are used in the basic analysis below,¹³ as they include 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).

In the statistical work that follows, five of the six measures reported by [Kaufmann et al. \(2005\)](#) are aggregated into a composite governance index for each country, using the (unweighted) mean of the available measures in 2004.¹⁴ The regulatory quality measure is excluded in performing this aggregation, since a few of the underlying surveys and measures used by [Kaufmann et al. \(2005\)](#) to calculate regulatory quality are directly related to countries' tax systems, and so may be mechanically correlated with tax rates and tax haven status.¹⁵ A detailed examination of the surveys and variables underlying the other five measures (as described in [Kaufmann et al., 2005, Appendix B](#)) does not suggest that any of these are directly affected by taxation.

Control variables¹⁶ used in the analysis below include logs of GDP per capita (in purchasing-power-parity-adjusted US\$) and popula-

¹¹ Although a basic criterion for inclusion is some degree of fiscal autonomy, a number of the 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.

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 [Appendix A](#). 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.

¹³ However, the results are generally robust to the use of the governance measure for the other available years, as discussed below.

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, regulatory quality 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 [Appendix A](#). 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.

tion (both for 2004, obtained from the World Bank's World Development Indicators database), and an indicator variable for membership in the United Nations. Another set of variables captures exogenous elements of each country's degree of international openness, constructed by [Gallup et al. \(1999\)](#). These include the physical distance (by air) from the country's capital city to the closest major capital exporting region (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 population that lives within 100 km of the coast. Other geographical variables are the country's land area and an indicator variable for whether the country is an island.

The robustness checks use a number of additional variables. These include an indicator for whether a country's system of commercial law has a British origin, obtained from [La Porta et al. \(1999\)](#), the number of telephone mainlines per capita (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 the variables described above are presented in [Table 1](#), compiled separately for tax havens and nonhavens (using the Hines–Rice definition).

The summary statistics in [Table 1](#) 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. Tax havens have a mean governance index of about 0.73, almost one standard deviation higher than that for nonhavens (-0.13), and 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. [Fig. 1](#) plots the governance index against the log of GDP per capita for all countries in the dataset, with tax havens represented by squares, and all other countries represented by dots. While havens tend to have relatively high GDP, they are also clustered predominantly above the fitted line, reflecting their generally higher governance quality at any given level of per capita GDP. Thus, havens appear to be better governed than would be expected on the basis of their relative affluence.

The summary statistics indicate that tax havens have open economies, in that they are physically close to major capital exporters, are unlikely to be landlocked, are likely to be islands, and large proportions of their populations live close to coasts. They are also likely to have British legal origins and parliamentary systems, and to use English as an official language. Finally, tax havens have substantially smaller natural resource endowments than nonhavens.¹⁷

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: the log of GDP per capita, the log of 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

¹⁷ See [Dharmapala and Hines \(2006\)](#) and [Dharmapala \(2008\)](#) for further discussion of these patterns. Many of these patterns continue to hold when comparing only small havens and nonhavens (defined as countries and territories with populations below 1 million).

Table 1
Summary statistics.

	Tax havens			Nonhavens		
	Mean	St. Dev.	No. of Obs.	Mean	St. Dev.	No. of Obs.
Governance index	0.7284	0.7152	33	-0.1338	0.8984	176
GDP per capita (PPP; 1000s 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
Coastal population	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 lang.	0.6857	0.4710	35	0.2663	0.4432	184
British legal origin	0.7179	0.4559	39	0.3011	0.4600	186
Telephone lines (per 1000 pop.)	366.90	236.87	27	172.29	183.77	166
Subsoil assets (US\$ per capita)	100.14	275.19	14	2737.22	6976.83	105
Corporate tax rate (%)	19.95	12.15	24	30.67	7.58	124
Tax rate faced by US firms (%)	4.04	3.20	8	21.06	8.59	47
Governance index (for 2002)	0.6648	0.7624	31	-0.1222	0.8872	171
Bur. efficiency (early 1980s)	7.96	2.30	7	6.47	2.17	60
Political stability (early 1980s)	8.11	1.69	7	7.42	1.35	60
US FDI (billions of US\$)	48.88	32.47	8	27.63	56.10	47
Contiguous to US (= 1)	0	0	35	0.0108	0.1037	185
Distance from US	6988.05	3771.71	33	9749.28	3346.69	185

Note: Tax havens are defined as in Hines and Rice (1994), with the modifications noted in Appendix A. The variables in the table are defined as in the text and Appendix A.

which the required data exist.¹⁸ Table 2 reports probit results, using robust standard errors, but logit and linear probability models lead to highly consistent results.

The estimated 0.668 coefficient in Column 1 of Table 2 implies that the governance index has a positive and highly significant association with the probability of being a tax haven. Moreover, this is robust to removing dependent territories from the sample by restricting observations to UN members, as the estimated 0.667 coefficient in Column 2 of Table 2 indicates. Africa has virtually no tax havens, and has many countries with low governance scores; however, this does not appear to drive the results, as consistent findings appear when African countries are excluded from the sample (Table 2, Column 3). The results are similarly unaffected by excluding from the sample the poorest countries, those with GDP per capita below \$1000 (Table 2, Column 4), suggesting that nonlinear income effects in the range of very low incomes do not account for the apparent impact of governance on tax haven status.

Restricting the sample to small countries and territories (those with populations of less than one million) also leads to consistent findings (Table 2, Column 5), though the estimated relationship has only borderline statistical significance, reflecting the much smaller sample size. However, the magnitude of the estimated relationship is 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 to the difference between Brazil and Portugal) increases the probability of being a tax haven from 0.26 to approximately 0.61.

The results in Table 2 may appear inconsistent with the popular view that tax havens are outlaw countries that disregard international norms (Hampton and Christensen, 2002; Hishikawa, 2002; Kudrle and Eden, 2005). Slemrod (2008) reports that there is indeed some degree of overlap between the set of tax haven countries and those alleged by the OECD to facilitate money laundering activity, but finds

no association between the quality of governance institutions and the likelihood of being designated a money laundering country. Thus, despite the overlap, the nature of the relationship between governance and tax haven status appears to differ from the relationship between governance and money laundering status.¹⁹

The control variables in Table 2 generally have the expected effects. Consistent with the theoretical predictions of Kanbur and Keen (1993), Hansen and Kessler (2001), and Slemrod and Wilson (2006), population size has a negative and highly significant effect on the predicted likelihood of being a tax haven,²⁰ except when the sample is restricted to small countries. Distance has a negative effect that is significant in most specifications. Interestingly, UN membership has a positive (albeit insignificant) effect, from which it appears that, controlling for other variables, dependent territories (who are not UN members) are if anything less likely than other jurisdictions to become tax havens.

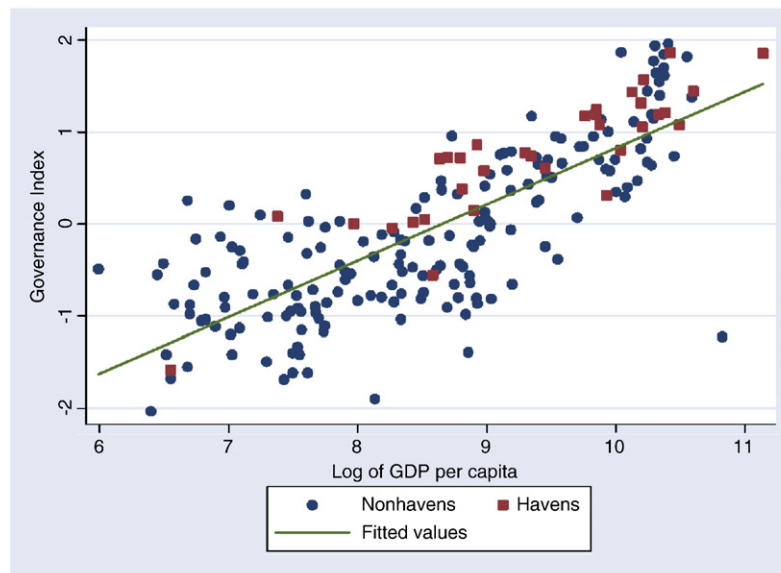
The positive association between the governance index and the probability of being a tax haven is robust to a variety of additional checks. The result is unchanged when additional geographical variables (land area or population density, and an indicator variable for island countries) are included; none of these additional variables is itself significant. The results 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–Rice 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 those lists) also does not affect the results. Reclassifying Estonia or the Netherlands as tax havens leads to results that are even stronger.²¹

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 (see Dharmapala and Hines (2006) for more details). Moreover, the selection criteria would, in any case, omit Liberia from the samples used in the regressions reported in Columns 3, 4 and 5 of Table 2.

¹⁹ The results reported in Table 2 are also consistent with the recent noteworthy findings of Rose and Spiegel (2007) on the determinants and economic effects of establishing offshore financial centers.

²⁰ Kind et al. (2000) and Borck and Pfluger (2006) analyze related models in which large countries with large preexisting capital stocks generate agglomeration externalities that produce sizeable location rents that governments are able to tax at high rates; Slemrod (2004), Kenny and Winer (2006), and Hines (2007) consider additional economic factors that influence corporate tax rates.

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 Netherlands is often described as a tax haven in policy discussions, although it does not appear in the Hines–Rice or OECD lists.



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. Tax haven countries are represented by squares, all other countries by dots.

Fig. 1. Governance and GDP for tax havens and nonhavens.

The basic results hold under a number of alternative specifications. As noted earlier, using a logit model leads to consistent results, as does a linear probability model. 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 any one of its component measures leads to generally consistent results – i.e. each component of the governance index is strongly positively related to tax haven status, apart from voice and accountability, which has an insignificant (positive) effect. Omitting log GDP per capita does not affect the result, as shown in Column 1 of Table 3. Including higher-order (squared and cubed) terms for log per capita GDP also does not affect the main result, as shown in Column 2 of Table 3.

Thus, the basic finding is robust to controlling for a variety of observable country characteristics, and to various alternative specifications.²² There remains the concern that since tax havens and nonhavens differ along a number of other dimensions, the patterns may be attributable to correlated omitted variables. For instance, openness or outward orientation could lead to both better governance and to tax haven status. A legal system or language matching those of capital exporting countries (such as the United States and the United Kingdom) may raise the returns from becoming a tax haven, and also be associated with better governance. Political institutions may be related to governance, and also influence the decision to become a haven. Another possibility is that a more sophisticated communications infrastructure (which may happen to 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.

These possibilities are addressed in the regression reported in Column 3 of Table 3 that adds a number of control variables. These include the fraction of the country's population that lives within 100 km of the coast (a predictor of openness), indicators for British

legal origins, for whether English is one of the country's official languages (from the CEPII dataset), and for parliamentary systems, and the log of the number of telephone lines per capita (from the World Bank). Because of limited coverage for these variables, the sample size falls substantially. Even so, the effect associated with the governance index is larger in magnitude and highly significant, implying that failure to include these variables does not drive the basic results.

It may be the case that well-governed countries have low tax rates (including corporate tax rates), and so are apt to be classified as havens, even though they do not set out to become tax havens in order to attract foreign investment. Since countries select their tax rates and whether to enact policies that make them tax havens, it can be difficult to identify the factors associated with tax haven status separately from the factors associated with tax rates, though the available evidence is suggestive. In a regression restricted to the 124 non-haven countries for which there are available data, governance has a small and statistically insignificant association with top statutory corporate tax rates (obtained from the University of Michigan's World Tax Database). The regression reported in Column 4 of Table 3 adds the top statutory corporate tax rate as an explanatory variable, as a result of which the estimated association of governance and tax haven status only increases in magnitude and significance. Hence it appears that governance is correlated with tax haven status in a way that goes beyond its correlation with low tax rates.

It is also possible that the apparent effect of governance may be driven by aspects of countries' tax institutions other than tax haven status *per se*. For instance, it may be the case that better-governed countries tend to have more extensive tax treaty networks, and that treaties enable countries to be more effective tax havens. However, the estimated governance effect is robust to adding the number of treaties in force for each country as a control variable, and to adding a dummy variable for having a treaty with the United States. Another possible explanation is that poorly-governed countries tend to have a more limited institutional capacity to raise tax revenue, and so are forced to rely on corporate taxes to a greater extent than better-governed countries. However, the association between governance and tax haven status is robust to adding an indicator variable for countries that

²² A propensity score matching approach produces similar results, as reported in Dharmapala and Hines (2006).

Table 2
Determinants of tax haven status – probit estimates.

	(1) All countries and territories	(2) UN members	(3) Non-African countries and territories	(4) Countries and territories with GDP per capita ≥ \$1000	(5) Small countries and territories
Dependent variable: indicator for tax haven status (= 1 for tax havens)					
Governance index	0.668 (0.275)**	0.667 (0.303)**	0.746 (0.325)**	0.716 (0.283)**	0.908 (0.513)*
Log of GDP per capita	0.186 (0.174)	0.178 (0.186)	0.105 (0.233)	0.119 (0.194)	0.156 (0.217)
Log of population	−0.354 (0.064)***	−0.389 (0.069)***	−0.358 (0.067)***	−0.353 (0.064)***	−0.114 (0.158)
UN member (= 1)	0.482 (0.455)		0.484 (0.445)	0.473 (0.458)	0.809 (0.506)
Landlocked (= 1)	0.159 (0.396)	0.182 (0.425)	0.306 (0.460)	0.147 (0.395)	−0.007 (0.777)
Distance by air	−0.190 (0.077)**	−0.215 (0.087)**	−0.146 (0.075)*	−0.194 (0.076)**	−0.050 (0.117)
Regional dummies?	Y	Y	Y	Y	Y
Observations	208	190	163	191	56
Maximized log pseudo likelihood	−50.92	−39.63	−48.54	−50.45	−28.70
Pseudo R ²	0.43	0.46	0.40	0.42	0.25

Note: This table reports estimated coefficients from probit models, in which the dependent variable equals one for tax havens, and zero otherwise. The sample of countries used in the regression reported in column five consists of countries with populations below one million in 2004. The governance index is the mean of 5 governance measures constructed by Kaufmann et al. (2005), taking values roughly in the (−2.5, 2.5) interval, with a zero mean and unit variance in the whole sample, higher values corresponding to better governance. GDP per capita is measured in thousands of U.S. \$, in purchasing power parity terms, for 2004. Population is thousands of residents in 2004. UN member is a dummy variable equal to one for UN members and zero otherwise. Landlocked is a dummy variable taking the value one for landlocked countries and zero otherwise. Distance by air is the distance (in km) from a country's capital city to the nearest of New York, Rotterdam, or Tokyo. The regression includes regional dummy variables for Europe and Central Asia, Asia/Pacific, the Americas, and the Middle East and Africa. Robust standard errors are in parentheses; *significant at 10%; **significant at 5%; ***significant at 1%.

Table 3
Determinants of tax haven status – robustness checks.

	(1)	(2)	(3)	(4)	(5)	(6)
Dependent variable: indicator for tax haven status (= 1 for tax havens)						
Governance index	0.859 (0.230)***	1.003 (0.311)***	0.985 (0.492)**	2.365 (0.588)***		
Governance index for 2002					0.642 (0.294)**	
Bur. efficiency (early 1980s)						1.070 (0.404)***
Political stability (early 1980s)						−0.421 (0.672)
Log of GDP per capita		89.668 (40.594)**	−0.525 (0.771)	−1.387 (1.051)	0.284 (0.201)	−1.648 (0.810)**
Log of population	−0.344 (0.063)***	−0.367 (0.075)***	−0.794 (0.224)***	−1.590 (0.541)***	−0.405 (0.066)***	−2.729 (1.403)*
UN member (= 1)	0.388 (0.447)	0.422 (0.461)			0.124 (0.541)	−0.390 (1.335)
Landlocked (= 1)	0.137 (0.371)	0.185 (0.457)	0.783 (1.187)	0.881 (1.309)	0.131 (0.433)	2.068 (0.995)**
Distance by air	−0.194 (0.076)**	−0.242 (0.089)***	−0.0004 (0.0001)***	−1.097 (0.290)***	−0.229 (0.081)***	−1.007 (0.390)***
Coastal population			0.532 (1.174)	0.055 (1.309)		
British legal origins (= 1)			−0.171 (0.675)	−2.588 (1.229)**		
English as official language (= 1)			0.319 (0.970)	2.838 (1.404)**		
Parliamentary system (= 1)			−0.352 (0.635)	−0.751 (0.688)		
Log of telephone mainlines p. c.			0.690 (0.698)	0.396 (0.820)		
Corporate tax rate				−0.135 (0.048)***		
Regional dummies?	Y	Y	Y	Y	Y	Y
Higher-order log (GDPpc) terms?	N	Y	N	N	N	N
Observations	208	208	144	117	201	66
Maximized log pseudo likelihood	−51.25	−47.51	−15.65	−10.40	−45.71	−7.20
Pseudo R ²	0.43	0.47	0.37	0.56	0.46	0.64

Note: This table reports estimated coefficients from probit models, in which the dependent variable equals one for tax havens, and zero otherwise. The governance index is the mean of 5 governance measures constructed by Kaufmann et al. (2005), taking values roughly in the (−2.5, 2.5) interval, with a zero mean and unit variance in the whole sample, higher values corresponding to better governance. In columns 1–4, the index applies to the year 2004. In column 5, the variable of interest is the same index, constructed by Kaufmann et al. (2005), for the year 2002. In column 6, the variables of interest are indices of bureaucratic efficiency and political stability reported by Mauro (1995) for a sample of countries, averaged over the period 1980–83. Other variables are as described in the text. The UN membership variable is dropped in columns 3 and 4 due to collinearity. The regression includes regional dummy variables for Europe and Central Asia, Asia/Pacific, the Americas, and the Middle East and Africa. Robust standard errors are in parentheses; *significant at 10%; **significant at 5%; ***significant at 1%.

have value-added taxes (VATs), which are generally considered to be effective means of raising revenue.²³

Another possible interpretation of the observed correlation between governance quality and tax haven status is that countries with high levels of corruption have incentives 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 taxpayers. 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 interpretation 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. However, this explanation is premised on corporate tax rates being higher in more corrupt countries, which Dharmapala and Hines (2006) find not to be the case based on an analysis using the corruption component of the Kaufmann et al. (2005) data. Indeed, the opposite interpretation – that corruption is more costly in countries with low tax rates, since there are greater net profits available for extraction by corrupt officials, and that governments of countries with rampant corruption maintain higher tax rates in recognition of this – appears more plausible.

A separate possibility is that the availability of abundant natural resources increases the returns to rent-seeking activity, thereby lowering the quality of governance institutions (e.g. Sachs and Warner, 1995). Since natural resources produce economic rents, resource-rich countries may have incentives to impose relatively high corporate tax rates and therefore not become tax havens. However, the implication

²³ The treaty variables are based on hand-collected data on international tax treaties in force as of 2003, while the VAT variable is based on data from the International Monetary Fund.

Table 4
Governance and the tax elasticity of FDI by US firms.

	(1)	(2)	(3)	(4)	(5)
	All countries and territories	Well-governed countries	Less well-governed countries	All countries and territories	All countries and territories
Dependent variable: log of US FDI					
Tax rate faced by US firms	−0.042 (0.018)**	−0.064 (0.017)***	0.007 (0.019)	0.022 (0.023)	0.002 (0.031)
Governance index	0.186 (0.412)	0.124 (0.534)	0.371 (0.543)	1.643 (0.429)***	1.616 (0.587)**
Tax rate*				−0.069 (0.016)***	−0.057 (0.022)**
Governance index				1.779 (0.351)***	2.052 (0.524)***
Log of GDP per capita	1.540 (0.418)***	4.321 (0.754)***	1.087 (0.408)**	0.665 (0.141)***	0.960 (0.151)***
Log of population	0.604 (0.153)***	0.914 (0.149)***	0.613 (0.167)***		0.449 (0.537)
Coastal population					0.544 (0.401)
British legal origins (= 1)					0.142 (0.372)
English as official language (= 1)					−0.546 (0.444)
Log of telephone mainlines p. c.					0.00002 (0.00001)*
Subsoil assets					0.764 (0.493)
Contiguous to US (= 1)					−0.00005 (0.00006)
Distance from US					
Regional dummies?	Y	Y	Y	Y	Y
Observations	55	28	27	55	46
R ²	0.62	0.81	0.70	0.72	0.85

Note: This table reports regressions in which the dependent variable is the log of assets owned locally by U.S. firms. In column 2, “well-governed” countries are defined as those with a governance index greater than the median in this sample (which is 0.698). In column 3, “less well-governed” countries are those with a governance index less than the median in this sample. The data on assets owned by U.S. firms (in 2005) is from the Bureau of Economic Analysis. The tax rate faced by U.S. firms (following Hines and Rice (1994)) is defined as the minimum of the average effective tax rate for U.S. firms observed in the sample, and the country’s statutory corporate tax rate. The governance index is from Kaufmann et al. (2005). Other variables are as defined in the text. Robust standard errors are in parentheses; *significant at 10%; **significant at 5%; ***significant at 1%.

that corporate tax rates are higher in more resource-abundant countries is not supported in the data (see Dharmapala and Hines, 2006). In addition, the estimated positive association between the governance index and the likelihood of being a tax haven persists when the per capita value of subsoil assets is included as a control variable (although it is of borderline statistical significance, reflecting the very limited sample of tax haven countries for which data on subsoil assets are available).

The observed relationship between governance and tax haven status does not identify the direction of causality: do better-governed countries choose to become tax havens, or does becoming a tax haven lead to an improvement in governance quality? A longitudinal analysis is impossible in this setting due to the stability of tax haven status; countries classified as tax havens today have been havens at least since the early 1980s. Moreover, while there are some quantitative governance measures that extend back a considerable distance in time, their coverage of havens (and small countries more generally) is very limited.²⁴ The Kaufmann et al. (2005) index is available at two-year intervals, but begins only in 1996. Over this period, the governance scores are highly stable for a given country (the correlation coefficients between the index for 2004 and the index for each of the other available years range from 0.95 to 0.99). The estimated relationship between governance and tax haven status persists when using the governance indices for earlier years (rather than for 2004), or when using an average of all available years, as illustrated in Column 5 of Table 3, where the estimated coefficient on the governance index for 2002 is very close to that reported in column 1 of Table 2.²⁵

²⁴ For instance, the POLITY dataset (<http://www.systemicpeace.org/polity/polity4.htm>) has very limited coverage of tax havens, although it extends back to 1800 for some countries.

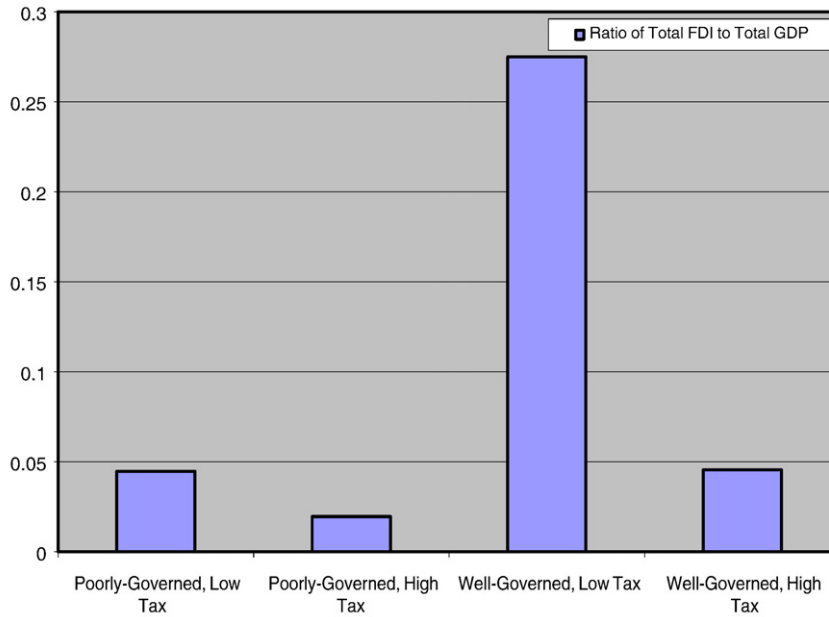
²⁵ The small country coverage of the governance data becomes more limited in earlier years, thereby reducing the number of tax haven observations and the power of any resulting estimates. For example, the Kauffman et al. data for 1996 omit Anguilla, Bermuda, the Cayman Islands, the Netherlands Antilles, and other tax havens included in the 2004 data, as a result of which the effect of the 1996 governance index is statistically insignificant in explaining 2004 tax haven status. It is possible to construct average country governance indices for the 1996–2004 period by taking unweighted mean values of the available measures reported by Kaufman et al. (2005), though again data coverage is limited in earlier years. The estimated effect of this multi-year average on the likelihood of tax haven status in 2004 is similar to that produced using 2004 governance levels, though the associated *t*-statistic on the governance coefficient falls to 1.91.

Mauro (1995) constructs indices of bureaucratic efficiency and political stability for a sample of countries from 1980–1983, using data reported by *Business International* based on assessment reports filed by its network of country analysts. Using these reports, *Business International* produced indices of 56 country risk factors during 1980–1983, for sale to multinational firms and other international investors. Mauro (1995) aggregates a subset of these indices into two measures: an index of bureaucratic efficiency (representing an average of measures of judicial efficiency, the absence of red tape, and the absence of corruption), and an index of political stability (which includes factors such as the likelihood of a change in government and the state of relations with neighboring countries). Each index takes on values from 0 to 10, with higher numbers indicating better governance. Use of these data limits the sample to just 66 countries, but as shown in Column 6 of Table 3, bureaucratic efficiency in the early 1980s strongly predicts tax haven status (however, political stability has no significant association with being a haven). This suggests that the governance institutions relevant for tax haven status relate to long-run characteristics of countries that tend to be stable over time.

5. Interpretation

The evidence that tax havens are better-governed than comparable nonhavens does not identify the mechanism through which governance might influence the propensity to become a tax haven. As discussed in Section 2, the welfare-maximizing (source-based) corporate tax rate for a small economy facing a perfectly elastic supply of capital is zero. Under this view, all small countries ideally would like to be tax havens, independent of their governance characteristics, but only better-governed countries can credibly commit not to expropriate foreign investors (including indirectly through regulations or higher future taxes), or not to mismanage the economy in a way that prevents foreign investors from earning profits. Since this commitment is necessary for low taxes to induce high levels of foreign investment, the returns to being a tax haven would be sufficiently high only for better-governed countries.²⁶

²⁶ 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.



Note: The bars depict mean ratios of assets owned by US firms in 2005 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 55 countries for which data on FDI by U.S. firms are available from the Bureau of Economic Analysis, but Bermuda (an outlier with an extremely large ratio of US FDI to GDP) is excluded.

Fig. 2. Ratio of US FDI to GDP for four groups of countries.

It is possible to analyze the implications of this interpretation by considering how the correlation of tax rates and foreign investment varies with governance. This analysis uses data from the Bureau of Economic Analysis (available at www.bea.gov) on foreign investment by U.S. firms. These data report total assets owned by U.S. firms in each country in 2005, along with information that can be used to compute average foreign tax rates faced by these firms. Following Hines and Rice (1994), the tax rate for a country is defined as the minimum of the average effective tax rate for U.S. firms and the country's statutory corporate tax rate (from the University of Michigan's World Tax Database).

Column 1 of Table 4 replicates the standard result in the literature (see e.g. Hines, 1999) that foreign investment varies inversely with the applicable tax rate (as indicated by the negative and significant coefficient of -0.042). Dividing the countries in this sample at the median governance index forms two subsamples of better-governed and less well-governed countries. The estimated correlation between taxes and foreign investment is considerably stronger among better-governed countries: the -0.064 coefficient in Column 2 implies that one percent lower tax rates are associated with six percent greater investment in these countries. Column 3 reports results for less well-governed countries, for which the estimated tax coefficient is actually positive (0.007), albeit very small and statistically indistinguishable from zero. This difference is not an artifact of dividing the sample at median governance quality, as indicated by the -0.069 coefficient on the interaction between the tax rate and the value of the governance index in the regression for the whole sample reported in Column 4. As reported in Column 5, this interaction effect is robust to adding control variables used in earlier regressions, along with a measure of natural resources (subsoil assets per capita), an indicator for contiguous countries (Canada and Mexico), and a measure of physical distance from the United States (from the CEPII dataset).

Fig. 2 illustrates this pattern. The bars depict mean ratios of assets owned by U.S. firms 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.²⁷ The bar chart suggests that for a well-governed country, moving from a high to a low tax rate is associated with significantly greater U.S. investment; whereas for a less well-governed country, the association between tax rates and U.S. investment is considerably weaker. If those who rule poorly-governed countries believe that the elasticity of foreign investment with respect to taxes is much smaller than elsewhere, then it may be understandable why so few of them attempt to become tax havens. This can be contrasted with well-governed countries such as Ireland, which chose its low tax rate with the explicit plan of attracting foreign investment (Honohan and Walsh, 2002).

6. Conclusion

Tax havens are small countries, they are affluent countries, and they have high-quality governance institutions. 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

²⁷ Data for Bermuda – an obvious outlier with an extremely large ratio of US-owned assets to GDP – are excluded in constructing this figure. However, as Bermuda is a well-governed low-tax country, its exclusion creates a bias against the pattern shown in Fig. 2.

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 to tailor tax policies to maximum national advantage simply adds to the many woeful costs of poor governance.

Appendix A

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.²⁸

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.²⁹

Governance index:

Source: Kaufmann et al. (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 Eq. (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.

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 are 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.

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 popula-

²⁸ 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).

²⁹ 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.

tion data are 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.

UN member:

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).³⁰

Distance by air:

Source: Gallup et al. (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 neighboring country, the latter is used as a proxy.

Landlocked:

Source: Gallup et al. (1999)

Indicator variable (=1 if the country is landlocked). For countries with missing values of this variable in Gallup et al. (1999), the data are 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 100 km of coast:

Source: Gallup et al. (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 et al., 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).

³⁰ 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).

British legal origins:

Source: La Porta et al. (1999); an indicator variable equal to 1 if the country's system of commercial law has a British origin. For missing values, the data is extended by coding current UK dependent territories as having British origins (based on information in the CIA's World Factbook).

Telephone lines per capita:

Source: the World Bank's *World Development Indicators* (WDI), available at <http://econ.worldbank.org>; the number of telephone mainline connections per 1000 population (for missing 2004 data, 2002 data are used instead, when available).

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/>

U.S. foreign direct investment (FDI):

Source: Bureau of Economic Analysis (BEA); available at <http://www.bea.gov>; the "direct investment position, on a historical cost basis" (in millions of US\$) of US firms in each country in 2005.

Tax rate faced by U.S. firms:

Source: based on data available through the Bureau of Economic Analysis (BEA) at <http://www.bea.gov>; the rate is defined as the minimum of the effective tax rate faced by US firms in 2005 and the country's statutory corporate tax rate (see above).

Regional dummies:

Source: World Bank classifications; regions are Europe and Central Asia, Asia/Pacific, Americas, Middle East and North Africa (MENA), and Africa.³¹

List of tax havens:

Andorra, Anguilla, Antigua and Barbuda, Aruba*, Bahamas, Bahrain, Barbados, Belize, Bermuda, British Virgin Islands, Cayman Islands, Channel Islands, Cook Islands, Cyprus, Dominica, Gibraltar, Grenada, Hong Kong*, Ireland*, Isle of Man, Jordan*, Lebanon*, Liberia, Liechtenstein, Luxembourg*, Macao*, Maldives, Malta, Marshall Islands, Mauritius*, Monaco, Montserrat, Nauru*, Netherlands Antilles, Niue*, Panama, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, Samoa*, San Marino*, Seychelles*, Singapore*, Switzerland*, Tonga*, Turks and Caicos Islands, Vanuatu, Virgin Islands (U.S.)*

*: Appears only in the Hines and Rice (1994) list

*: Appears only in the OECD (2000) list

Appendix B. Supplementary data

Supplementary data associated with this article can be found, in the online version, at doi:10.1016/j.jpubeco.2009.07.005.

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³¹ Note that in Tables 2 and 3, MENA and Africa are combined into one region to avoid perfect collinearity between the Africa dummy and nonhaven status (given the exclusion of Liberia).

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