

The effect of corporate taxes on investment and entrepreneurship¹.

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I. Introduction.

The effect of corporate taxation on investment is one of the most thoroughly investigated and significant questions in public finance. A small selection of the important studies includes Summers (1981), Feldstein, Dicks-Mireaux and Poterba (1983), Slemrod (1990), Auerbach and Hassett (1992), Hines and Rice (1994), Cummins, Hassett, and Hubbard (1996), Devereux, Griffith, and Klemm (2002), and Desai, Foley, and Hines (2004). Auerbach (2002), Gordon and Hines (2002), Hasset and Hubbard (2002), and Hines (2005) survey aspects of this literature. Generally speaking, this research finds large adverse effects of corporate taxation on investment.

In this paper, we present new cross-country evidence on the effects of corporate taxes on investment and entrepreneurship using a sample of 85 countries. The evidence comes from a newly-constructed data base of effective corporate tax rates for 85 countries in 2004. We seek to contribute to the literature in three distinct ways.

First, we use new data for a large cross-section of countries. Most cross-country studies generally focus on the OECD countries, and hence do not provide nearly as much information about the developing world.

Second, we construct a new database of *effective* corporate (and other) tax rates that are *comparable* across countries. Our data, assembled jointly by the World Bank, PriceWaterhouseCoopers, and Harvard University, come from a computation of all relevant taxes applicable to *the same* hypothetical domestic enterprise operating in each country. In many instances, these rates differ sharply from statutory tax rates. At the same time, our data are limited in that we do not collect information on taxes paid by individuals rather than corporations.

Third, in addition to relatively standard data on aggregate and foreign direct investment (FDI), we put together new data on entrepreneurship. We use new data on business density and a new 62 country data set on firm entry. These data enable us to assess the effects of corporate activity on entrepreneurship and not just investment.

Our data reveal a consistent and large adverse effect of corporate taxation on both investment and entrepreneurship. A 10 percentage point increase in the effective corporate tax rate reduces the investment to GDP ratio by about 2 percentage points (mean is 21%), and the official entry rate by 1.3 percentage points (mean is 8 %).

Our data allow us to look at a number of additional issues. First, we consider the robustness of our results to several other potential deterrents of investment and entrepreneurship. Previous work has developed cross-country measures of entry (Djankov et al 2002) and labor (Botero et al 2004) regulation for large samples of countries. Indeed, we selected our 85 country sample to match those studies. In recent years, researchers have examined the effects of these measures of regulation on unemployment, labor reallocation, investment, and firm entry, although the samples tend to be small (e.g., Alesina et al. 2005, Haltiwanger et al. 2006, Micco and Pages 2006, Klapper et al. 2006, Ciccone and Papaioannou 2006). We revisit the effects of these regulations on investment and entrepreneurship in our data. Although these regulations matter for some measures of investment and entrepreneurship, they do not eliminate the large adverse effect of corporate taxation on these variables.

Second, we examine the effect of other taxes paid by the firm, as well as of tax administration variables such as the number of payments per year and the time spent to comply with the tax code, on investment and entrepreneurship. For these results, our data

are more limited, since some important taxes, such as those on labor, are sometimes paid by the firm, and sometimes by individuals. Even setting aside the crucial issues of incidence, we do not have data on personal taxes. Keeping these reservations in mind, other tax costs do not have nearly as large an influence on investment.

Third, there are at least two interpretations of the adverse effect of corporate taxation on investment and entrepreneurship. The most direct is an incentive effect, since corporate taxation reduces the return on capital, and thus discourages investment. In addition, corporate taxation reduces the cash flow of the firm, and therefore, in a model where external finance is expensive and investment is sensitive to internal cash flow, may further discourage investment. We attempt to distinguish these two channels by separately considering the effects of corporate taxation on investment and entrepreneurship in countries with good and bad external finance, as measured by legal protection of creditors as well as the size of debt markets (see La Porta et al. 1997, 1998, Djankov, McLiesh and Shleifer 2007, and Djankov et al. 2006). The results suggest that the principal reason for our findings is incentives, not internal finance.

Finally, we consider the effects of corporate taxation on other important outcome variables. Authors such as Barro (1991), DeLong and Summers (1991), and Baumol, Litan, and Schramm (2007) argue that investment and entrepreneurship are crucial determinants of economic growth. Since we only have a cross-section of tax rates, our data are not ideally suited to study growth. Nonetheless, we find a negative correlation between our measures of effective taxation and recent growth in cross-country data.

Recognizing that we have data on many developing countries, we also consider the effect of corporate taxes on the unofficial economy. We find that higher corporate

taxes are associated with a larger unofficial economy, consistent with our findings on entry by *official* firms. This suggests that an important margin on which corporate taxation might influence macroeconomic outcomes is by keeping firms unofficial.

Last, our data enable us to ask, in a cross-country context, whether corporate taxation encourages debt as opposed to equity finance (Modigliani and Miller 1958), a question that has attracted a great deal of research in both public finance and financial economics (Auerbach 1979, Miller 1977, Graham 1996, forthcoming, Mackie-Mason 1990, Desai, Foley, and Hines 2004). We find a large and significant positive association between the effective corporate tax rate and the aggregate debt equity ratio.

The next section of the paper describes our data. Section 3 presents some sample computations and summary statistics. Section 4 presents the basic results on corporate taxation, investment, and entrepreneurship. Section 5 concludes.

II. Data

We collect our data through a survey of PricewaterhouseCoopers accountants and tax lawyers on the taxes paid by a standardized business. Two rounds of the survey were conducted, in January 2005 and 2006. This paper uses data covering the tax system effective in fiscal year 2004². In-depth conference calls were held with all respondents to confirm the data. Responses were also verified with tax laws and tax information published by the International Bureau of Fiscal Documentation.

The sample consists of 85 countries covered by Djankov et al (2002). It includes 27 high income, 19 upper-middle income, 21 lower-middle income, and 18 low income

² The survey presents respondents with financial statements for calendar year 2004. Where the calendar year is different to the fiscal year we asked respondents to provide data for the fiscal year 2004.

countries. In addition to 22 rich OECD countries, 10 are in East Asia, 17 are in Eastern Europe, 13 in Latin America, 6 in the Middle East, 14 in Africa, and 3 in South Asia.

The data are constructed using a standardized case study of a business called “TaxpayerCo.” TaxpayerCo is a taxable corporation operating in the most populous city in the country. It is liable for taxes charged at the local, state/provincial, and national levels. It is 100% domestically and privately owned and has 5 owners, none of whom is a legal entity. TaxpayerCo performs general industrial/commercial activities: it produces ceramic flower pots and sells them at retail. It does not engage in foreign trade or handle products subject to a special tax regime.

TaxpayerCo employs 60 people: 4 managers, 8 assistants and 48 workers. All are nationals and were hired on January 1st. One of the managers is also an owner. Employees of the same hierarchical status earn the same wage. All employees are younger than 40 years and all workers are younger than 26 years. All employees worked and earned the same salary the year before and none of the employees is disabled. Managers became subject to social security taxes prior to 1993 while assistants and workers only became subject to social security taxes after 1993.

The company started operations on January 1st 2004. On the same date, it bought all the assets. It owns one plot of land, a building, machinery, one truck, 10 computers and other office equipment. The building is used for production, storage and offices. It has 10,000 square feet of floor space on a 6,000 square foot land plot. The machinery is classified as light machinery for tax purposes. The value of computer assets is equally divided into hardware and software. Other office equipment is composed of standard office tables, chairs, one copier, one fax machine, one scanner and 10 phones.

Respondents were presented with TaxpayerCo's financial statements and a list of transactions as if TaxpayerCo was operating in a tax free world. All variables in the financial statements provided to respondents are a simple multiple of the country's income per capita in the local currency unit. This is computed by multiplying the 2003 GNI per capita (atlas method) in current US dollars with the 2003 DEC conversion factor. Both of these data series are published by the World Bank.

The multiples used for the pre-tax financial statements variables are described in Table 1. Panel A describes the balance sheet, and Panel B the profit and loss statement. We told the respondents that TaxpayerCo keeps 50% of after-tax profits as retained earnings and distributes the other 50% as dividends. In a tax-free world, retained earnings are then half of pre-tax earnings (equal to 79 times GNI per capita per Table 1), or 39.5 times GNI per capita. However, the actual amount of retained earnings is a function of the tax system and, therefore, it is not included in the pre-tax table above.

With this case, PWC respondents in each country calculate the taxes that TaxpayerCo must pay in its first year of operation. Respondents provide the full tax schedules for corporate income taxes³, labor taxes⁴ for which the statutory incidence is on the employer, property tax, asset and capital tax, turnover tax, business license tax, and financial transactions tax. Taxes at all levels of government are considered. We do not consider taxes that do not enter the profit and loss statement or where the statutory

³ All taxes levied on corporate income are considered corporate income taxes for the purposes of this analysis, regardless of the name given to them.

⁴ All charges levied on labor for which the statutory incidence is on the employer are considered labor taxes for the purposes of this analysis., whether they are called labor taxes, social security contributions, or something else, whether they are required or unrequired, and whether they are paid to a public or private agency. We try to unbundle the mandatory accident insurance contribution from the labor taxes. Wherever we can obtain information on the contribution rate for the mandatory accident insurance contribution, we do not include it in the labor taxes to be consistent across countries. Many countries only mandate that employers have an accident-at-work insurance in place for their employees, but we could not find rates applicable to TaxpayerCo.

incidence is not on the business. That is, we do not consider value added or sales tax, personal income tax on employees, or dividend tax. We also ignore minor taxes that may apply to TaxpayerCo, such as vehicle and waste collection taxes.

Respondents describe all applicable deductions and exemptions. They inform us of the full depreciation schedule for all assets, so we can compute depreciation for TaxpayerCo. Respondents also record the deductibility of advertising expenses, machinery repair expenses, interest expenses, and of each applicable tax.

For each tax, PWC respondents further describe the frequency and the process for payment, e.g., whether the tax can be paid electronically or whether it requires payment in person. The time to prepare, file and pay TaxpayerCo's taxes is also recorded.

Main variables

Table 2 describes the main variables. We compute four tax rate variables: the first being the traditional marginal corporate income tax rate, and the remaining three based on the actual taxes paid by TaxpayerCo from survey responses. The denominator for the latter three rates is pre-tax earnings (79 times GNI per capita per Table 1).

1. Statutory corporate tax rate. This variable measures the highest total marginal corporate income tax rate, taking into account federal, state, and local rates. We take into account the deductibility of some taxes for the purposes of calculating others. For example, in Switzerland and the U.S. state income taxes are deducted from the federal income tax base.

2. Effective corporate tax rate. This is the actual corporate income tax liability of TaxpayerCo relative to pre-tax earnings, taking account of actual deductions.

PWC has previously published statutory rates for multiple countries, which have been used by researchers. The data presented here instead describe what businesses must actually have to pay. Morocco's statutory rate of 35% is higher than Mexico's 33%, but TaxpayerCo pays 22.2% of its earnings in Mexico but 17.7% in Morocco. The reason for these differences are variations in depreciation rates and allowable deductions.

3. Labor tax. This is the sum of all labor-related taxes payable by TaxpayerCo, including payroll taxes, mandatory social security contributions, mandatory health insurance, mandatory unemployment insurance, worker's compensation insurance contributions, and any local contributions that are proportional to payroll or number of employees. Only taxes where the statutory incidence is on the employer are included.

4. Other taxes. This is the sum of all taxes payable by TaxpayerCo that enter the profit and loss statement where the statutory incidence is on the firm, other than corporate income and labor tax. It is the sum of all property tax, business license tax, financial transactions tax, turnover tax and asset and capital tax payable by TaxpayerCo.

In addition, we use two measures of the burden of tax administration. The first is the number of tax payments made by TaxpayerCo in a fiscal year. The tax payments indicator reflects the actual number of taxes paid, the method of payment, the frequency of payment, and the number of agencies involved for TaxpayerCo during the second year of operation. It covers payments made by the company on consumption taxes, such as sales tax or value added tax (which are traditionally withheld on behalf of the consumer), as well as profit, labor, property and other tax payments. Where full electronic filing is allowed, the tax is counted as paid once a year even if the payment is more frequent. In Hong Kong, TaxpayerCo pays 4 times per year; in Mali, it pays 60 times per year.

The second measure of tax administration is the time to comply, recorded in hours per year. The indicator measures the time to prepare, file and pay (or withhold) three major types of taxes: the corporate income tax, value added or sales tax, and labor taxes, including payroll taxes and social security contributions. Preparation time includes the time to collect all information necessary to compute the tax payable. If separate accounting books must be kept —or separate calculations must be made -- for tax purposes, the time associated with these activities is included. Filing time includes the time to complete all necessary tax forms and make all necessary calculations. Payment time is the hours needed to make the payment online or at the tax office. When taxes are paid in person, the time includes delays while waiting. In Armenia, TaxpayerCo takes 1120 hours per year to fulfill all tax requirements; in Ireland, it takes 76 hours per year.

We analyze the relationship between these measures of taxation and data on aggregate investment and entrepreneurship. Note a conceptual gap here: the effective rates we compute might be very different from the rates faced by firms accounting for the bulk of aggregate investment and entrepreneurship (which, e.g., might be larger). The defense of our strategy is that the effective tax rates we compute reflect better, if with error, than do statutory rates the country's taxation of corporate income.

We use two measures of investment: gross fixed capital formation and foreign direct investment, both as a percentage of GDP, both from the World Bank. We use the average of this ratio over 2003-05. Foreign Direct Investment (FDI) is the net inflows of investment to acquire a lasting management interest (10 percent or more of voting stock) in an enterprise operating in an economy other than that of the investor. We use the average of the FDI to GDP ratios over 2003-05.

We also examine two measures of entrepreneurship: the number of business establishments and the rate of new business registration. The data are collected from national statistical offices and company registrars. The data cover the period from 2000 to 2004. The business density measure is defined as the number of establishments per 100 active population as of 2004; business registration (“entry”) is defined as the average 2000-2004 ratio of business registrations over the number of business establishments.

The data on business establishments do not cover self-employment. For example, there are 7.2 million registered businesses in the United States that employ at least one worker. There are another 15.1 million businesses that do not employ a single worker other than the owner. The latter are not included in the business density measure. In many sample countries, such businesses are not required to register with the company registrar, which makes it impossible to collect comparable data.

Finally, we examine four macro variables: GDP growth (calculated over 1996-2005 and over 2001-2005), the size of the unofficial economy, and the average debt to equity ratio. Control variables in the growth regressions—education, inflation and initial income—are also sourced from the World Bank. The size of the unofficial economy is from Schneider (2005). The unofficial economy is defined to include all the activities that would be taxable if they were declared to the authorities. We use IMF data on the country level average debt to equity ratio weighted by firm size. The original data behind the IMF calculations come from Datastream and Worldscope.

III. A look at the data.

In this section, we first illustrate our tax calculations using the example of Argentina, and then present a brief summary of the variables we use.

Example of tax calculations: Argentina

The statutory corporate income tax rate in Argentina is a single rate of 35%. The Social Security Contributions paid by the employer are 23% total. The tax base for the Social Security Contributions is the employee's gross salary with a ceiling (which is not binding for TaxpayerCo.) The Social Security Contributions are deductible from the tax base for the corporate income tax. Depreciation rates are as follows: Land – not depreciable; Building – 2% straight-line; Machinery – 10% straight-line; Truck – 20% straight-line; Computers – 33.33% straight-line; Office Equipment – 20% straight-line. Advertising, interest, and machinery repair expenses are deductible in the tax base for the corporate income tax.

Tables 3 and 4 show the calculation of labor taxes and depreciation allowances. Using the information about the social security contributions, the depreciation schedules, the advertising expenses, the machinery repair expenses, and the interest expense, the corporate income tax is calculated in Table 5. Putting this together with TaxpayerCo's pre-tax earnings, the effective tax rate is 23.54% and the labor tax is 19.51%.

Summary of the Data

Table 6 presents the means of tax, tax administration, investment, and entrepreneurship variables by income group. Several interesting findings emerge from

these data. First, the world-wide average statutory corporate tax rate is about 29%, and does not vary much across income groups. Nonetheless, there is large variation among countries. The statutory rates are 12.5% for Ireland, 15% for Latvia, Lithuania, and Lebanon, and over 40% for Pakistan, Japan, and the United States.

Second, in our sample, effective corporate tax rates are sharply lower than the statutory ones, with the world average a full 11.5% lower at 17.5%. Upper middle income countries have lower effective rates, but otherwise variation across income groups is small. Again, there is significant variation among countries. TaxpayerCo faces zero effective corporate tax rate in Hong Kong and Mongolia, but 31% in Pakistan and nearly 40% in Bolivia.

Our data are probably least appropriate for measuring the labor tax, since we have data on taxes paid by firms but not by individuals. At the corporate level, the world-wide labor tax is around 15%, with low income countries having somewhat lower rates.

Data on “other taxes” on firms, which include the property, business license, financial transactions, turnover, and asset and capital taxes, show clearly that richer countries impose much lower rates than the others (perhaps because they can tax earnings and labor successfully). The main taxes on this “other” list are the property and turnover taxes, and they are the ones driving the higher rates for middle income countries especially. For example, “other taxes” are at zero in Hong Kong and Norway, but reach 17.5% in Bolivia and 54% in Argentina – adding a new perspective on Latin America.

Unlike tax rates, measures of tax administration vary enormously by income level. The average annual number of all corporate tax payments in our sample is 35, but it varies from 16 for high income countries to 48 for lower middle income countries, and

44 for poor countries. Norway has three tax payments a year, Hong Kong has 4, but Romania has 89 and the Ukraine 98. Some of the higher number of payments is related to the greater number of “other taxes” and absence of electronic payments.

When it comes to time our (relatively small) firm spends to comply with taxes, the world-wide average is 406 hours per year, but it varies from 229 hours for rich countries to 640 hours for lower middle income countries (and 425 hours for poor countries). TaxpayerCo in Singapore would spend 30 hours a year complying with taxes; TaxpayerCo in Switzerland would spend 63. The corresponding numbers are 2185 hours in the Ukraine and 2600 hours in Brazil. Part of the burden of taxation in poorer countries clearly comes from administration, and not just rates.

Over 2003-2005, the world-wide average investment to GDP ratio is about 21%, and is not substantially different across income groups. Of course, there is more variation among countries: investment to GDP ratio is above 30% in Jamaica, Mongolia, Vietnam, and of course China (40.8%). In contrast, investment to GDP ratio is the lowest, at below 15%, in Uruguay, Bolivia, Malawi, and the Kyrgyz Republic. Relatively little of that investment is FDI, although several authors consider FDI numbers to be more accurate than overall investment numbers. The World Bank ratio of Foreign Direct Investment to GDP averages to 3.36% between 2003 and 2005, and appears to be somewhat higher for middle income than for the rich and the poor countries. Ireland, Denmark, and Bolivia have the lowest FDI numbers, Lebanon, Singapore, and Hong Kong the highest.

Business density relative to active population is a somewhat unusual measure of entrepreneurship, but may be a relatively reliable one. The variable plausibly declines from 7.63 businesses per 100 workers for high income countries to 1.08 for low income

countries, which might reflect both fewer businesses at lower levels of development, and presumably fewer *official* businesses. The data point to .004 businesses per 100 workers in Burkina Faso, .04 in Senegal, but rising all the way to 15 in Malaysia and 16 in Sweden. The rise of business density with income is statistically significant. This measure of entrepreneurship is available for 80 countries.

Finally, we assemble data on the number of newly registered firms, as a percentage of the stock of such firms, for 62 countries (averaged over 2000-2004). The world-wide average entry rate is about 8.1%, and tends to be somewhat higher for the rich and upper middle income countries (8.8% and 8.9%, respectively) than for the lower middle income and poor countries (7.3% and 6.4%, respectively). The difference in entry rates between the high and the low income countries is statistically significant. The entry rates are as low as 2% in the Philippines, 3% in Peru, Sri Lanka, and Japan, and as high as 15% in Kazakhstan and 16% in New Zealand.

Table 7 presents the same variables as Table 6, except it organizes them by legal origin of national commercial laws rather than per capita income. In earlier work, legal origin has been found to be a strong predictor of national regulatory strategies, with civil law (particularly French civil law) countries providing less market-friendly regulation than common law countries (see LaPorta et al. 2007 for a survey). Here we check whether corporate taxation and administration, as well as investment and entrepreneurship rates, vary significantly by legal origin.

There is no evidence that statutory corporate tax rates vary by legal origin, although there is some evidence that German legal origin countries (several of which are in East Asia and Eastern Europe) have lower effective rates. The labor tax is higher in

civil law countries, although this might merely reflect the fact that these countries impose labor taxes on firms rather than individuals. French legal origin countries have higher levels of “other taxes,” although the difference is not statistically significant. Overall (with a possible caveat with respect to labor taxes), we do not find much evidence of variation in corporate taxes by legal origin.

For tax administration, French legal origin countries exhibit sharply higher numbers of tax payments and time to comply with taxes than other legal traditions (particularly common law). This result is consistent with the finding of higher formalism and burden of government regulation in the French legal origin countries (Djankov et al 2002, 2003, La Porta et al. 2007). Finally, there is not much difference in overall investment, FDI, or entrepreneurship rates among legal origins.

IV. Results.

Panel A of Table 8 presents our basic findings; Figures 1-4 illustrate them. All regressions control for the logarithm of GDP per capita. Per capita GDP is a statistically significant predictor of our measures of entrepreneurship, but not of investment. We also present each specification using separately the statutory and the effective corporate tax rates. Except for the aggregate investment equation, in which the statutory tax rate does not enter significantly, the two variables generally have similar coefficients and levels of statistical significance. We focus on the effective tax rate in our discussion.

The estimates indicate that raising the effective corporate tax rate by 10 percentage points reduces the investment rate by 2.2 percentage points (average investment rate is 21.5%) and FDI rate by 2.16 percentage points (average FDI rate is

3.36%). Although the literature on corporate taxation and investment usually estimates these equations in a somewhat different form, our estimates appear comparable to those of, say, Desai, Foley, and Hines (2004)⁵.

The effects of taxation on entrepreneurship are large. A 10 percentage point increase in the effective corporate tax rate reduces business density by 1.8 firms per 100 people (average is 5), and the average entry rate by 1.3 percentage points (average is 8). These effects are highly statistically significant. We are not aware of other estimates in the literature that examine the effects of corporate taxes on entrepreneurship.

In Panel B, we control for the number of procedures it takes to start a business from *Doing Business* update of Djankov et al. (2002). The impact of the effective corporate tax rate on investment and entrepreneurship is not materially affected by this control. Entry regulation does not affect investment, but has a significant adverse effect on the entry rate. An extra procedure reduces the entry rate by roughly .23 percentage points, so going from barely regulated to most regulated countries would, according to these estimates, reduce the entry rate by as much as 5 percentage points per year.

In Panel C, we control for another regulatory measure that might deter investment and entrepreneurship, namely the employment rigidity index from *Doing Business* update of Botero et al. (2004). Including the index has relatively minor influence on the magnitude of tax effects: in fact, their statistical significance increases. At the same time, employment regulation adversely affects FDI and to a lesser extent entry.

In Table 9, we summarize the results of regressions of our measures of investment and entrepreneurship on the additional tax variables. We find no effect of labor taxes

⁵ We also examined the effects of taxation on the aggregate capital labor ratio, updating the methodology of Caselli and Feyrer (2006) to 2003 and 2004. We did not find any significant results.

(but recall, we only have those imposed on firms), but a statistically significant, though quantitatively smaller, adverse effect of “other taxes” on investment (but not on other variables). We find a statistically significant adverse effect of the number of tax payments on the entry rate, but no other significant impacts of administrative variables.

In Table 10, we ask whether the adverse effect of corporate taxes on investment and entrepreneurship is an incentive or an imperfect capital markets effect. If firms are restricted from borrowing, corporate taxes might reduce their investment simply because they cannot replace the cash by borrowing, even if they face good opportunities. The prediction of this theory is that the adverse effect of taxes on investment and entrepreneurship should be larger in countries where it is harder for firms to borrow. We consider three measures of firms’ access to external funds: creditor rights from La Porta et al. (1998) and Djankov et al. (2007), efficiency of bankruptcy from Djankov et al. (2006), and the ratio of private debt market capitalization to GDP.

The results are mixed. When we use the creditor rights index as an indicator of the ease of borrowing, we do not find consistent differences in the effect of corporate taxes on investment and entrepreneurship between countries with easy and hard credit. On the other hand, when we use efficiency of bankruptcy as an indicator, the results do provide consistent support for the importance of limited external finance. The results using debt to GDP ratio are inconsistent as well. Our tentative conclusion is that adverse incentive effects of taxation are a more consistent explanation of the findings.

In Table 11, we look at several additional outcome measures (Figures 5-8 illustrate the results). A higher effective corporate tax rate has a large and statistically significant adverse effect on the average growth rate 1996-2005, although the effect is not

significant for 2001-2005. The parameter estimate indicates that a 10 percentage point increase in the effective tax rate reduces the growth rate by about 1 percentage point per year. We include in these regressions initial per capita income, primary and secondary school enrollment rates, inflation, and three regional dummies (Africa, East Asia, and Latin America).

We also look at the effect of corporate taxation on the size of the unofficial economy, since one of the principal ways in which taxes might deter official entry or even official investment is by keeping firms in the unofficial sector. For the effective tax rate, we find a large effect as well: a 10 percentage point increase in the rate raises the unofficial economy as a share of GDP by 3 percentage points. Consistent with Johnson, Kaufmann, and Shleifer (1997) taxation is an important reason firms stay unofficial.

The final regressions ask whether corporate taxes encourage the use of debt finance, since interest payments are universally tax-deductible. A 10 percentage point increase in the effective corporate tax rate raises the debt to equity ratio by highly statistically significant 44 percentage points, e.g., from 100% to 144%. In our data, countries with higher effective (as well as statutory) tax rates use sharply more debt.

V. Conclusion.

The principal contribution of this paper is to present two new data sets that might be of interest to researchers, and to describe some basic statistical relationships using these and other data sets. The first data set computes comparable effective corporate tax rates for 85 countries, using a survey of PriceWaterhouseCoopers local offices designed to estimate all corporate, labor, and “other” taxes each country levies on “the same” firm.

We show that these rates are sharply lower than marginal tax rates around the world. The second data set, collected from national statistical offices, presents official registration rates by new firms in 62 countries. We use these data sets, as well as additional publicly available data, to present cross-country evidence that corporate taxes have a large and significant adverse effect on corporate investment and entrepreneurship. They are also associated with a larger size of the unofficial economy, greater reliance on debt as opposed to equity finance, and possibly lower economic growth.

Although the tax data we present has some advantages over what is already available, it is also limited in a number of ways. We do not consider taxes that do not enter the profit and loss statement (such as the VAT), or where the statutory incidence is not on the business. Nor can we deal with the crucial issues of incidence. In future research, we and others can begin to fill these gaps, although getting an integrated picture of taxation in 85 countries will not be a trivial matter.

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Table 1. Pre-tax financial statements

A - Information provided in the balance sheet

Assets

<i>Category</i>	<i>Multiplication Factor</i>
Current Assets	
Net Cash	20
Inventory	35
Accounts Receivable	50
Fixed Assets (acquisition value)	
Land	30
Building	40
Machinery	60
Truck	5
Computers	5
Office Equipment	5
Total Assets	250

Liabilities

<i>Category</i>	<i>Multiplication Factor</i>
Current Liabilities	
Short Term Debt	43
Accounts Payable – Trade	50
Long Term Liabilities	
Long Term Debt	55

Equity

<i>Category</i>	<i>Multiplication Factor</i>
Paid-in Capital	102
Total Liabilities and Equity	250

B - Information provided in the profit and loss statement

<i>Category</i>	<i>Multiplication Factor</i>
Sales	1050
Cost of Goods Sold	875
Yearly salaries for:	
Managers	9.00 (= 2.25 per manager * 4 managers)
Assistants	10.00 (= 1.25 per assistant * 8 assistants)
Workers	48.00 (= 1.00 per worker * 48 workers)
Administrative expenses	10
Advertising Expenses	10.5
Machinery Repair Expenses	3.0
Interest Expense	5.5

Table 2. Variable Definitions and Sources

Variable name	Source	Definition
Statutory Corporate Tax (%)	Authors' calculations	This variable measures tax rate for the highest bracket of all taxes on corporate income. When there are different corporate taxes (for instance federal, state and local) we take into account the deductibility of one or more of those taxes when computing the tax base for corporate income.
Effective Corporate Tax (%)	Authors' calculations	This is the tax rate obtained by dividing the total corporate tax TaxpayerCo pays by its pretax earnings.
Labor Tax (%)	Authors' calculations	This is the sum of all labor-related taxes payable by TaxpayerCo, including payroll taxes, mandatory social security contributions, mandatory health insurance, mandatory unemployment insurance, worker's compensation insurance contributions and any local contributions that are proportional to payroll or number of employees. It is expressed as a percentage of pretax earnings.
Other taxes (%)	Authors' calculations	This is the sum of all taxes payable by TaxpayerCo where the statutory incidence is on the firm, other than corporate income tax and labor tax. It is the sum of all property tax, business license tax, financial transactions tax, turnover tax and asset and capital tax payable by TaxpayerCo. It is expressed as a percentage of pretax earnings.
Number of tax payments	World Bank (Doing Business data)	The tax payments indicator reflects the total number of taxes paid, the method of payment, the frequency of payment and the number of agencies involved for this standardized case during the second year of operation. It covers payments made by the company on consumption taxes, such as sales tax or value added tax.
Time to comply with taxes (in hours)	World Bank (Doing Business data)	Time is recorded in hours per year. The indicator measures the time to prepare, file and pay (or withhold) three major types of taxes: the corporate income tax, value added or sales tax and labor taxes, including payroll taxes and social security contributions.
Investment 2003-2005 as % of GDP (WB)	World Bank (World Development Indicators)	Gross fixed capital formation (formerly gross domestic fixed investment).
FDI 2003-2005 as % of GDP (WB)	World Bank (World Development Indicators)	Foreign direct investment are the net inflows of investment to acquire a lasting management interest (10 percent or more of voting stock) in an enterprise operating in an economy other than that of the investor.
Business density per 100 people (2003/4)	World Bank Group Entrepreneurship Data and authors' data collection	The number of businesses legally registered divided by working population (total population aged 15 to 64). Only businesses with more than one employee are included. The variable is scale to measure the number of businesses per 100 people in the work force.
Average entry rate (%) (2000-2004)	World Bank Group Entrepreneurship Data and authors' data collection	The average number of businesses that registered per year between 2000 and 2004. Only businesses with more than one employee are included.
Procedures to start a business	World Bank (Doing Business data). Updates of Djankov et al. (2002).	Includes all procedures that are officially required for an entrepreneur to start up and formally operate an industrial or commercial business.
Employment rigidity index	World Bank (Doing Business data). Updates of Botero et al. (2004).	The average of three subindices: a difficulty of hiring index, a rigidity of hours index and a difficulty of firing index.
Creditors rights	Djankov, McLiesh, Shleifer (2007) (http://www.nber.org/papers/w11078)	An index aggregating creditor rights, following La Porta et al. (1998). The index ranges from 0 (weak creditor rights) to 4 (strong creditor rights) and is constructed as at January for every year from 1978 to 2003.

Table 2. Variable Definitions and Sources

Case A efficiency	Djankov, Hart, McLiesh, Shleifer (2006) (http://www.nber.org/papers/w12807)	An index of efficiency of bankruptcy procedure measured as a percentage of estate expected to remain after bankruptcy procedures are completed.
Private debt to GDP	IMF International Financial Statistics Database.	Ratio of credit from deposit taking financial institutions to the private sector (IFS lines 22d and 42d) relative to GDP (IFS line 99b).
Growth rate	World Bank (World Development Indicators)	Annual percentage growth rate of GDP at market prices based on constant local currency.
Size of informal sector as % of GDP	Friedrich Schneider (2005)	Size of the production done by the informal sector as percentage of total GDP estimated using the DYMMIC approach.
Debt to Equity Ratio	IMF	Firm's debt as percentage of firm's equity averaged by country. This ratio is computed using IMF's Corporate Vulnerability Utility which uses firm level data from Datastream and Worldscope.
GDP per capita	World Bank (World Development Indicators)	GDP per capita is gross domestic product divided by midyear population. Data are in constant U.S. dollars.
Primary school enrollment	World Bank (World Development Indicators)	The ratio of children of official school age based on the International Standard Classification of Education 1997 who are enrolled in school to the population of the corresponding official school age.
Secondary school enrollment	World Bank (World Development Indicators)	The ratio of children of official school age based on the International Standard Classification of Education 1997 who are enrolled in school to the population of the corresponding official school age.
Deviation from average inflation	World Bank (World Development Indicators)	Measured as the difference between the mean inflation rate and the inflation of each particular country.
Capital Labor ratio for 2003 and 2004	Penn World Tables 6.2 and World Bank (World Development Indicators). Caselli and Feyrer (2006)	Capital per worker in USD. The capital stock is computed using the permanent inventory method and using data from Penn World Tables 6.2, following Caselli, Feyrer (2006). The number of worker are measured as active population (from age 15 to 64)
Income group	World Bank (World Development Indicators)	Economies are divided according to 2004 GNI per capita, calculated using the World Bank Atlas method. The groups are: low income, \$905 or less; lower middle income, \$906 - \$3,595; upper middle income, \$3,596 - \$11,115; and high income, \$11,116 or more.
Legal origin	La Porta et al (1999)	A dummy variable that identifies the legal origin of the Company law or Commercial Code of each country. The four origins are English, French, German, and Nordic.

Table 3. Labor Tax Calculation (Argentina)

<u>Managers:</u>			
Total annual salaries for the 4 managers	9*GNI per capita =	95,808	
Monthly salaries	95,808/(12*4) =	1,996	
Monthly Soc. Sec. Contr.	23%*1,996 =	459	
Yearly Soc. Sec. Contr. per manager	12*459 =	5,509	
Total annual Soc. Sec. Contr. for the 4 managers	4*5,509 =	22,036	
<u>Assistants:</u>			
Total annual salaries for the 8 assistants	10*GNI per capita =	106,453	
Monthly salaries	106,453/(12*8) =	1,109	
Monthly Soc. Sec. Contr.	23%*1,109 =	255	
Yearly Soc. Sec. Contr. per manager	12*255 =	3,061	
Total annual Soc. Sec. Contr. for the 8 assistants	8*3,061 =	24,484	
<u>Workers:</u>			
Total annual salaries for the 48 workers	48*GNI per capita =	510,975	
Monthly salaries	510,975/(12*48) =	887	
Monthly Soc. Sec. Contr.	23%*887 =	204	
Yearly Soc. Sec. Contr. per manager	12*204 =	2,448	
Total annual Soc. Sec. Contr. for the 48 workers	48*2,448 =	117,524	
Total annual Social Security Contributions paid by TaxpayerCo.			164,044

Table 4. Depreciation Calculation (Argentina)

Building (40*GNI per capita)	425,812
- Depreciation (2% straight line)	8,516
Machinery (60*GNI per capita)	638,719
- Depreciation (10% straight line)	63,872
Truck (5*GNI per capita)	53,227
- Depreciation (20% straight line)	10,645
Computers (5*GNI per capita)	53,227
- Depreciation (33.33% straight line)	17,742
Office Equipment (5*GNI per capita)	53,227
- Depreciation (20% straight line)	10,645
Total annual depreciation allowance	111,421

Table 5. Income Statement (Argentina)

Sales (= 1050*GNI per capita)	11,177,578
Cost of Goods Sold (= 875*GNI per capita)	9,314,648
Operating Expenses (= 77*GNI per capita)	819,689
Labor Taxes (as calculated above)	164,044
Other possible deductions (i.e. advertising expenses at 10.5*GNI per capita and machinery repair expenses at 4*GNI per capita)	143,712
EBITDA	735,485
Depreciation and Amortization (as calculated above)	111,421
EBIT	624,064
Interest Expense (5.5*GNI per capita)	58,549
Earnings before Taxes	565,514
Income Tax (at 35%)	197,930
Net Income	367,584

Table 7. Averages by legal origin

Tax rates		English	French	German	Nordic	Grand Total	T-test English vs French
Legal Origin	Obs	24	40	17	4	85	
	Statutory Corporate Tax Rate (%)	30.99	29.35	25.62	28.75	29.04	0.962
	Effective Corporate Tax Rate (%)	18.68	18.86	12.72	16.80	17.49	-0.112
	Labor Tax (%)	7.43	17.83	19.62	14.44	15.09	-5.356 a
	Other taxes (%)	2.51	5.40	1.46	0.55	3.57	-1.317
Admin variables - number of payments							
Legal Origin	Obs	31	42	30	11	35	
	Number of tax payments	282	506	404	152	406	-1.809 c
	Time to comply with taxes (in hours)						-1.984 c
Investment and entrepreneurship variables							
Legal Origin	Obs	21.18	20.45	24.96	18.30	21.46	0.681
	Investment 2003-2005 as % of GDP (WB)	3.15	3.50	3.91	1.03	3.36	-0.417
	FDI 2003-2005 as % of GDP (WB)	5.35	3.73	6.80	8.96	5.05	1.597
	Business density per 100 people (2003/4)	8.50	7.51	7.89	9.92	8.07	0.946
	Average entry rate (%) (2000-2004)						

Table 8. Taxes, investment and entrepreneurship

	Panel A - controlling for income per capita only							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Investment 2003-05 (WB)	FDI 2003-05 (WB)	Business Density	Average entry rate (00-04)				
Statutory Corporate Tax Rate	-0.074 (0.077)	-0.195 (0.046)***	-0.157 (0.051)***	-0.128 (0.057)**				
Effective Corporate Tax Rate		-0.223 (0.074)***	-0.216 (0.046)***	-0.18 (0.051)***				-0.133 (0.054)**
Log GDP per capita	-0.234 (0.326)	0.092 (0.198)	0.056 (0.194)	1.443 (0.227)***	0.566 (0.242)**			0.546 (0.242)**
Constant	25.501 (3.549)***	27.65 (2.956)***	6.675 (1.839)***	-3.751 (2.137)*	7.053 (2.581)***			5.769 (2.242)**
Observations	85	85	84	80	80			62
R-squared	0.02	0.1	0.18	0.22	0.39	0.41	0.14	0.16

	Panel B - controlling for procedures to start a business							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Investment 2003-05 (WB)	FDI 2003-05 (WB)	Business Density	Average entry rate (00-04)				
Statutory Corporate Tax Rate	-0.063 (0.079)	-0.197 (0.047)***	-0.149 (0.053)***	-0.112 (0.056)*				
Effective Corporate Tax Rate		-0.22 (0.077)***	-0.215 (0.047)***	-0.171 (0.052)***				-0.111 (0.054)**
Procedures to start a business	-0.053 (0.181)	0.018 (0.174)	-0.068 (0.107)	-0.102 (0.119)	-0.257 (0.133)*			-0.233 (0.135)*
Log GDP per capita	-0.302 (0.392)	-0.265 (0.375)	-0.019 (0.232)	1.337 (0.273)***	0.274 (0.268)**			0.282 (0.283)
Constant	26.266 (4.729)***	27.328 (4.242)***	7.869 (2.620)**	-1.988 (2.976)	11.209 (3.316)***			9.584 (3.118)***
Observations	84	84	83	79	62			62
R-squared	0.02	0.1	0.2	0.23	0.42	0.19	0.2	0.2

	Panel C - controlling for labor regulation							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Investment 2003-05 (WB)	FDI 2003-05 (WB)	Business Density	Average entry rate (00-04)				
Statutory Corporate Tax Rate	-0.074 (0.077)	-0.223 (0.074)***	-0.194 (0.045)***	-0.135 (0.056)**				
Effective Corporate Tax Rate		-0.027 (0.029)	-0.041 (0.018)**	-0.015 (0.020)	-0.038 (0.023)*			-0.133 (0.053)**
Employment rigidity index	-0.294 (0.353)	-0.341 (0.318)	-0.002 (0.194)	1.411 (0.236)***	0.478 (0.245)**			0.478 (0.243)*
Log GDP per capita	27.002 (3.927)***	29.123 (3.358)***	8.962 (2.046)**	-2.934 (2.408)	9.199 (2.848)***			7.553 (2.507)***
Constant	85	85	84	80	80			62
Observations	0.03	0.11	0.23	0.26	0.42	0.18	0.19	0.19
R-squared								

Standard errors in parentheses
 * significant at 10%, ** significant at 5%, *** significant at 1%

Table 9. Other taxes and admin variables

	Investment 2003-05			FDI 2003-05 (WB)			Business Density			Average entry rate (99-03)		
	coefficient	standard error	observations	coefficient	standard error	observations	coefficient	standard error	observations	coefficient	standard error	observations
Labor taxes	0.108	(0.055)*	85	0.026	(0.038)	84	0.049	(0.040)	80	0.005	(0.042)	62
Other taxes	-0.158	(0.068)**	85	-0.036	(0.046)	84	-0.069	(0.048)	80	-0.061	(0.049)	62
Log of Number of tax payments	-0.006	(0.877)	85	-0.194	(0.582)	84	-0.442	(0.625)	80	-1.776	(0.638)**	62
Log of Time to comply with taxes	0.027	(0.693)	85	-0.627	(0.468)	84	-0.241	(0.491)	80	-0.378	(0.558)	62

Standard errors in parentheses
 * significant at 10%; ** significant at 5%; *** significant at 1%

Table 10a. Sample divided by creditor rights index.

Panel A - Creditors rights equal to 0 or 1								
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Investment 2003-05	FDI 2003-05 (WB)	Business Density	Average entry rate (99-03)				
Statutory Corporate Tax Rate	-0.147 (0.090)	-0.08 (0.046)*	-0.063 (0.072)	-0.136 (0.077)*	-0.077 (0.104)	-0.172 (0.118)	-0.077 (0.104)	-0.198 (0.165)
Effective Corporate Tax Rate								0.305 (0.612)
Log GDP per capita	-0.834 (0.410)*	-1.173 (0.434)**	-0.292 (0.210)	-0.411 (0.233)*	1.638 (0.358)***	1.419 (0.389)***	0.586 (0.561)	8.624 (7.208)
Constant	32.298 (4.766)***	36.619 (5.312)***	7.354 (2.444)***	8.332 (2.846)***	-7.243 (3.968)*	-4.242 (4.639)	5.015 (6.222)	20 (7.208)
Observations	29	29	29	29	27	27	20	20
R-squared	0.18	0.25	0.14	0.14	0.49	0.52	0.1	0.14

Panel B - Creditors rights equal to 3 or 4								
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Investment 2003-05	FDI 2003-05 (WB)	Business Density	Average entry rate (99-03)				
Statutory Corporate Tax Rate	-0.289 (0.137)**	-0.284 (0.115)**	-0.442 (0.100)***	-0.36 (0.092)***	-0.139 (0.117)	-0.148 (0.101)	-0.02 (0.115)	0.042 (0.097)
Effective Corporate Tax Rate								0.938 (0.480)*
Log GDP per capita	1.011 (0.605)	1.042 (0.589)*	0.832 (0.445)*	0.834 (0.469)*	1.488 (0.622)**	1.525 (0.612)**	1.001 (0.474)*	-0.315 (4.263)
Constant	19.68 (6.253)***	16.076 (5.365)***	8.954 (4.596)*	2.583 (4.278)	-2.203 (5.881)	-3.937 (5.453)	0.38 (4.973)	19 (7.208)
Observations	25	25	25	25	23	23	19	19
R-squared	0.23	0.27	0.49	0.44	0.24	0.26	0.22	0.23

Standard errors in parentheses

* significant at 10%; ** significant at 5%; *** significant at 1%

Table 10b. Sample divided by case a efficiency.

Panel A - below median Case A Efficiency								
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Investment 2003-05		FDI 2003-05 (WB)		Business Density		Average entry rate (99-03)	
Statutory Corporate Tax Rate	-0.175 (0.136)	-0.364 (0.147)**	-0.283 (0.055)***	-0.235 (0.076)***	-0.208 (0.095)**	-0.349 (0.099)***	-0.169 (0.121)	-0.098 (0.088)
Effective Corporate Tax Rate								
Log GDP per capita	-1.183 (1.129)	-1.253 (1.057)	-0.275 (0.456)	-0.33 (0.544)	2.042 (0.784)**	1.973 (0.709)***	0.721 (0.851)	0.342 (0.769)
Constant	35.649 (9.682)***	37.311 (8.790)***	13.817 (3.907)***	10.426 (4.523)**	-5.839 (6.720)	-5.283 (5.894)	7.094 (7.164)	7.143 (7.438)
Observations	33	33	33	33	33	33	22	29
R-squared	0.08	0.2	0.47	0.25	0.28	0.41	0.11	0.05

Panel B - above median Case A Efficiency								
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Investment 2003-05		FDI 2003-05 (WB)		Business Density		Average entry rate (99-03)	
Statutory Corporate Tax Rate	-0.055 (0.082)	-0.04 (0.094)	-0.127 (0.091)	-0.211 (0.099)**	-0.123 (0.080)	-0.128 (0.092)	-0.131 (0.078)	-0.195 (0.135)
Effective Corporate Tax Rate								
Log GDP per capita	-1.393 (0.703)*	-1.423 (0.704)*	-0.047 (0.773)	-0.098 (0.740)	0.91 (0.684)	0.85 (0.687)	0.534 (0.764)	0.624 (0.844)
Constant	36.47 (7.022)***	35.827 (6.944)***	7.508 (7.725)	7.913 (7.301)	1.929 (6.834)	1.075 (6.774)	7.455 (7.234)	6.23 (6.930)
Observations	33	33	32	32	33	33	29	22
R-squared	0.13	0.13	0.06	0.14	0.11	0.1	0.1	0.12

Standard errors in parentheses

* significant at 10%; ** significant at 5%; *** significant at 1%

Table 10c. Sample divided by private debt.

Panel A - below median Private Debt to GDP								
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Investment 2003-05		FDI 2003-05 (WB)	Business Density		Average entry rate (99-03)		
Statutory Corporate Tax Rate	-0.09 (0.120)		-0.143 (0.059)**	-0.166 (0.055)***	-0.19 (0.065)***		-0.16 -0.10	
Effective Corporate Tax Rate		-0.19 (0.111)*						-0.18 (0.090)*
Log GDP per capita	-0.201 (0.651)	-0.243 (0.606)	0.134 (0.322)	0.218 (0.297)	0.74 (0.370)*	0.87 (0.356)**	0.19 -0.58	0.37 -0.53
Constant	25.588 (6.635)***	26.575 (5.044)***	6.526 (3.278)*	4.683 (2.472)*	3.21 -3.65	0.00 -2.94	10.53 (5.744)*	7.61 (4.301)*
Observations	42	42	42	42	37.00	37.00	27.00	27.00
R-squared	0.01	0.07	0.16	0.22	0.35	0.36	0.13	0.17
Panel A - above median Private Debt to GDP								
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Investment 2003-05		FDI 2003-05 (WB)	Business Density		Average entry rate (99-03)		
Statutory Corporate Tax Rate	-0.108 (0.088)		-0.238 (0.076)***	-0.253 (0.075)***	-0.156 (0.078)*		-0.130 -0.08	
Effective Corporate Tax Rate		-0.23 (0.083)***						-0.104 -0.07
Log GDP per capita	0.268 (0.587)	0.037 (0.540)	0.291 (0.504)	-0.116 (0.490)	1.270 (0.521)**	0.995 (0.497)*	0.790 (0.469)	0.636 (0.478)
Constant	21.535 (5.619)***	24.589 (5.346)***	7.669 (4.812)	8.956 (4.843)*	-0.245 (4.981)	1.299 (4.925)	5.061 (4.916)	4.421 (4.917)
Observations	42	42	41	41	42	42	34	34
R-squared	0.04	0.16	0.21	0.23	0.18	0.23	0.14	0.12

Standard errors in parentheses

* significant at 10%; ** significant at 5%; *** significant at 1%

Table 11. Other outcomes

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Other outcomes							
	Average growth rate 1996 to 2005 (%)							
	to 2005 (%) ⁽¹⁾				to 2005 (%) ⁽²⁾			
	Average growth rate 2001 to Size of informal sector as % of GDP							
Statutory Corporate Tax Rate 2004	-0.103 (0.027)***		-0.108 (0.046)**	-0.057 (0.049)	0.017 (0.148)	0.319 (0.146)**	4.725 (1.377)***	4.481 (1.502)***
Effective Corporate Tax Rate		-0.13 (0.038)***				-6.348 (0.614)***	24.926 (6.658)***	25.177 (6.831)***
Log GDP per capita					-6.430 (0.631)***	75.454 (5.827)***	-255.274 (74.950)***	-193.468 (68.785)***
Constant	8.814 (2.000)***	8.231 (2.095)***	24.933 (5.296)***	23.706 (5.579)***	81.209 (6.868)***	85 (5.827)***	51 (74.950)***	51 (68.785)***
Observations	30	30	45	45	85	85	51	51
R-squared	0.66	0.62	0.66	0.62	0.56	0.58	0.34	0.31

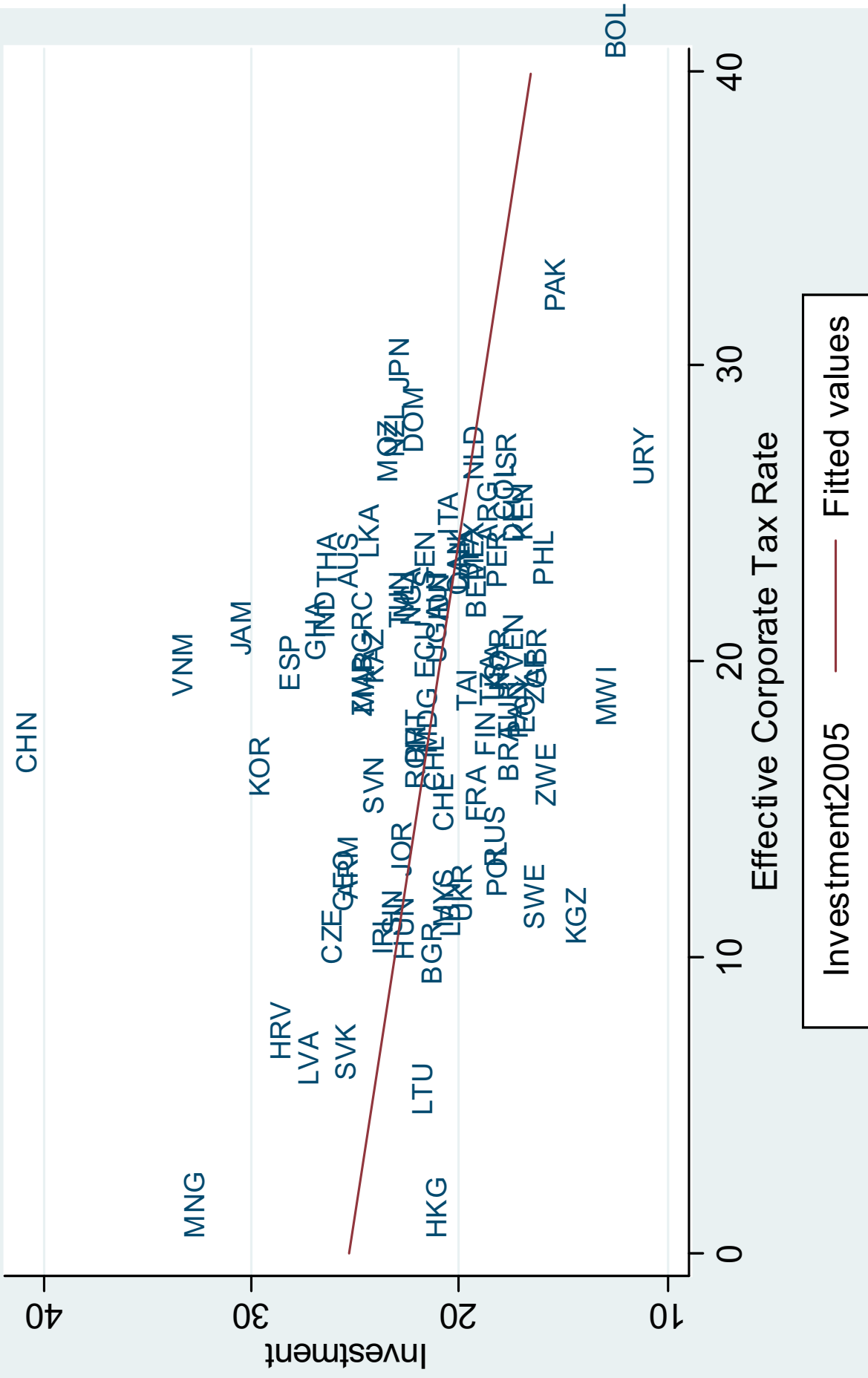
Standard errors in parentheses

* significant at 10%; ** significant at 5%; *** significant at 1%

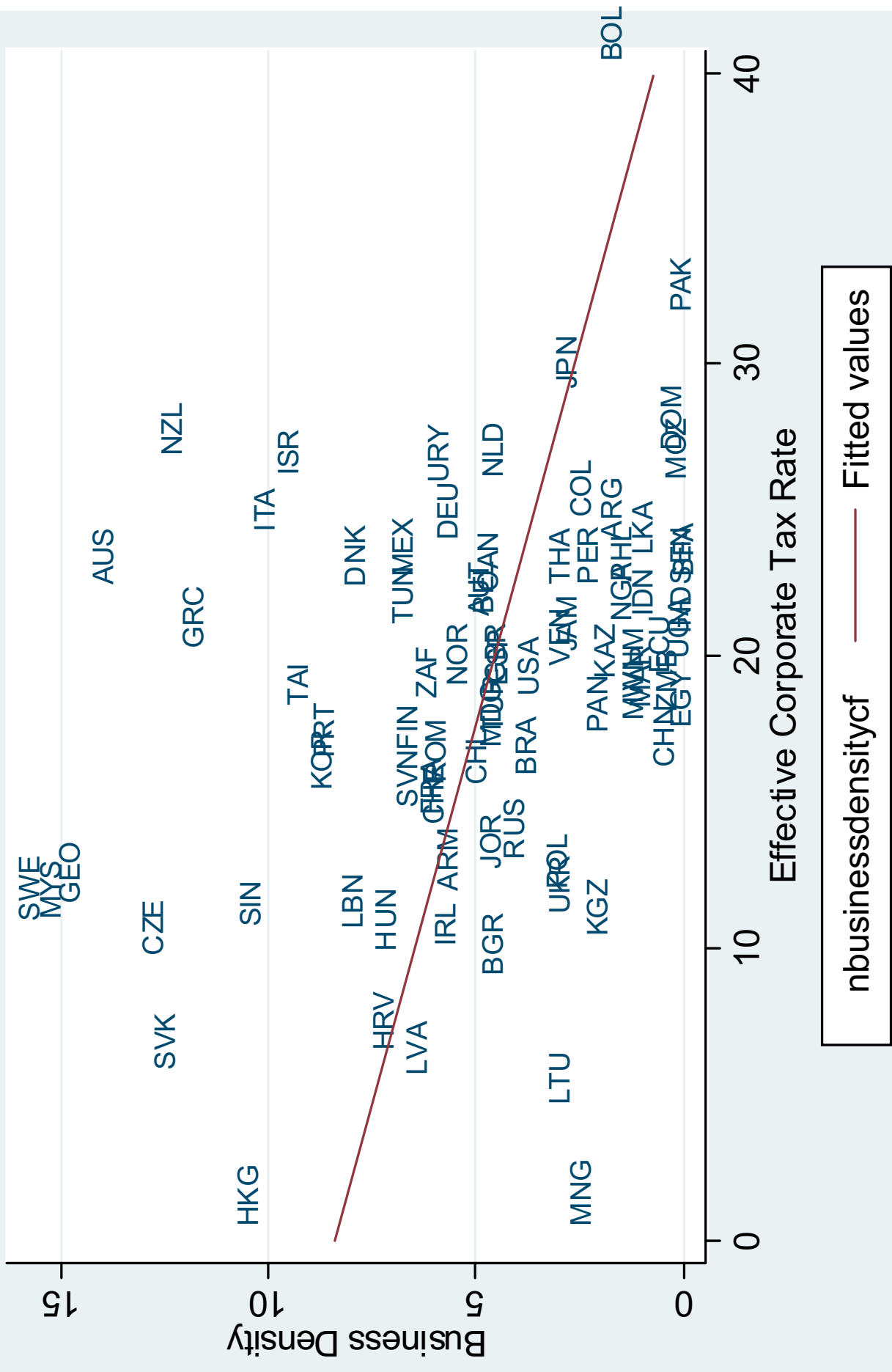
(1) controls for initial level of income per capita (1996), primary and secondary schooling enrollment, deviation from average inflation, plus 3 regional dummies (Africa, East Asia and Latin America) are included.

(2) controls for initial level of income per capita (2001), primary and secondary schooling enrollment, deviation from average inflation, plus 3 regional dummies (Africa, East Asia and Latin America) are included.

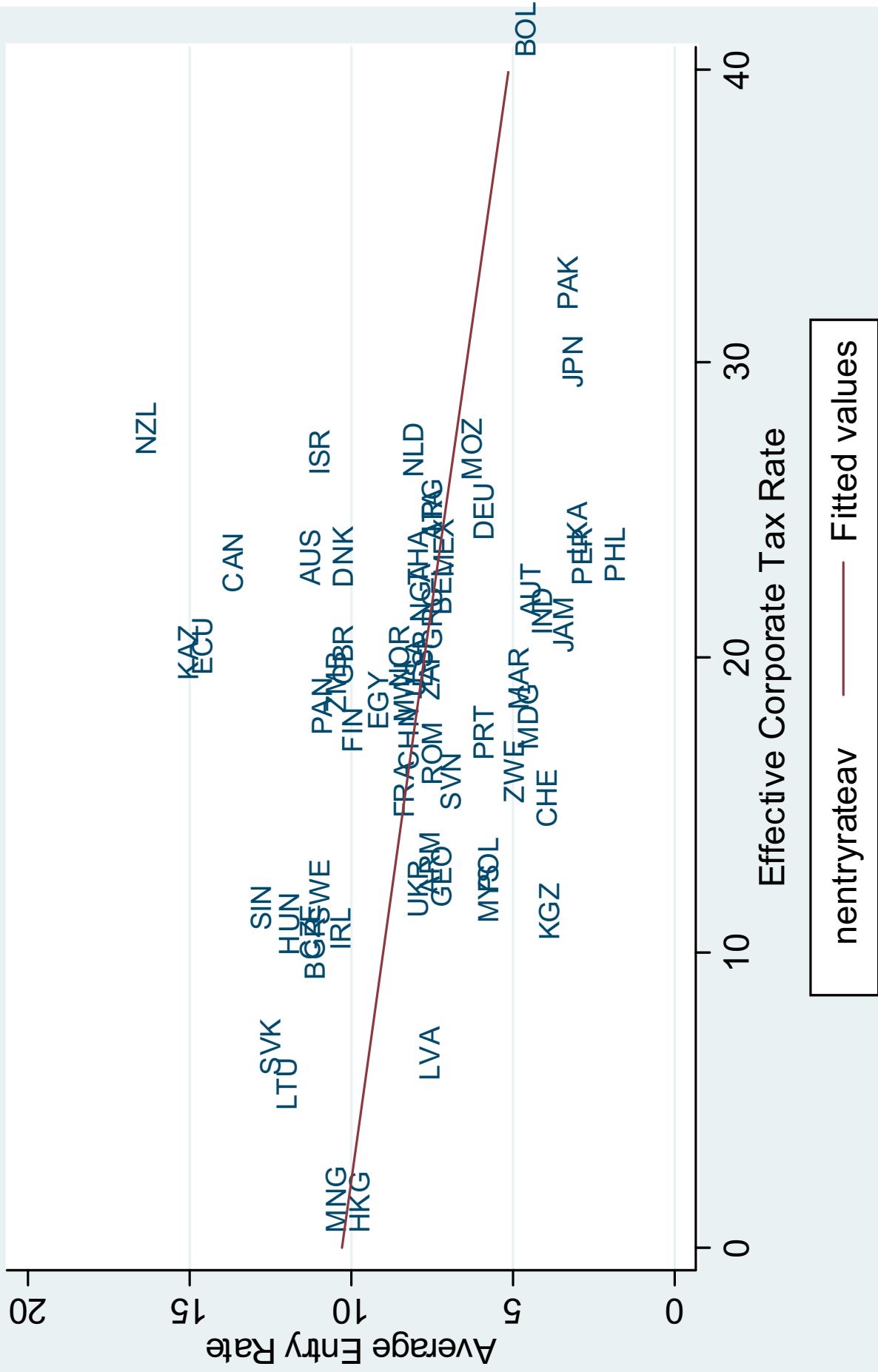
Effective Corporate Tax Rate on Investment



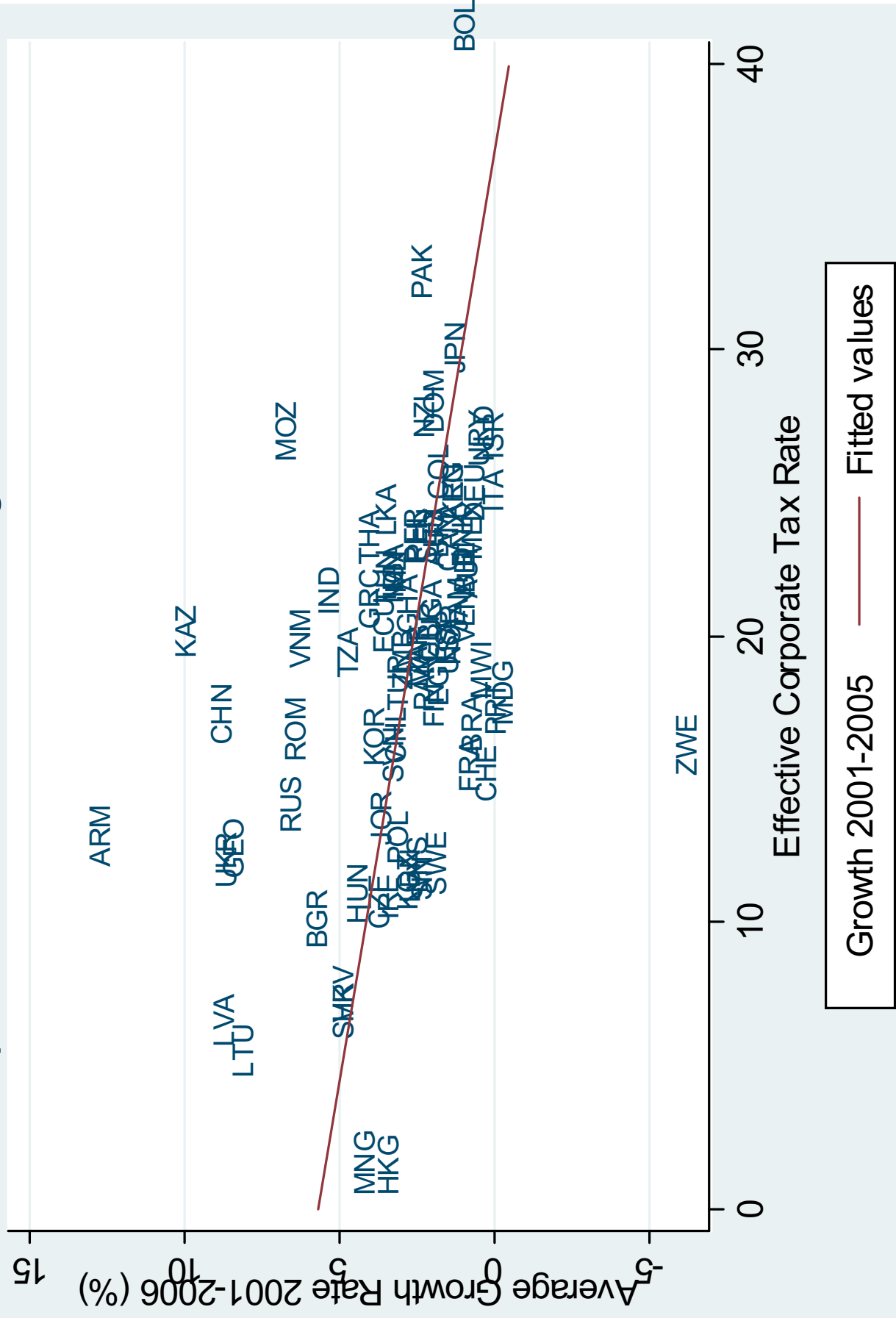
Effective Corporate Tax Rate on Business Density



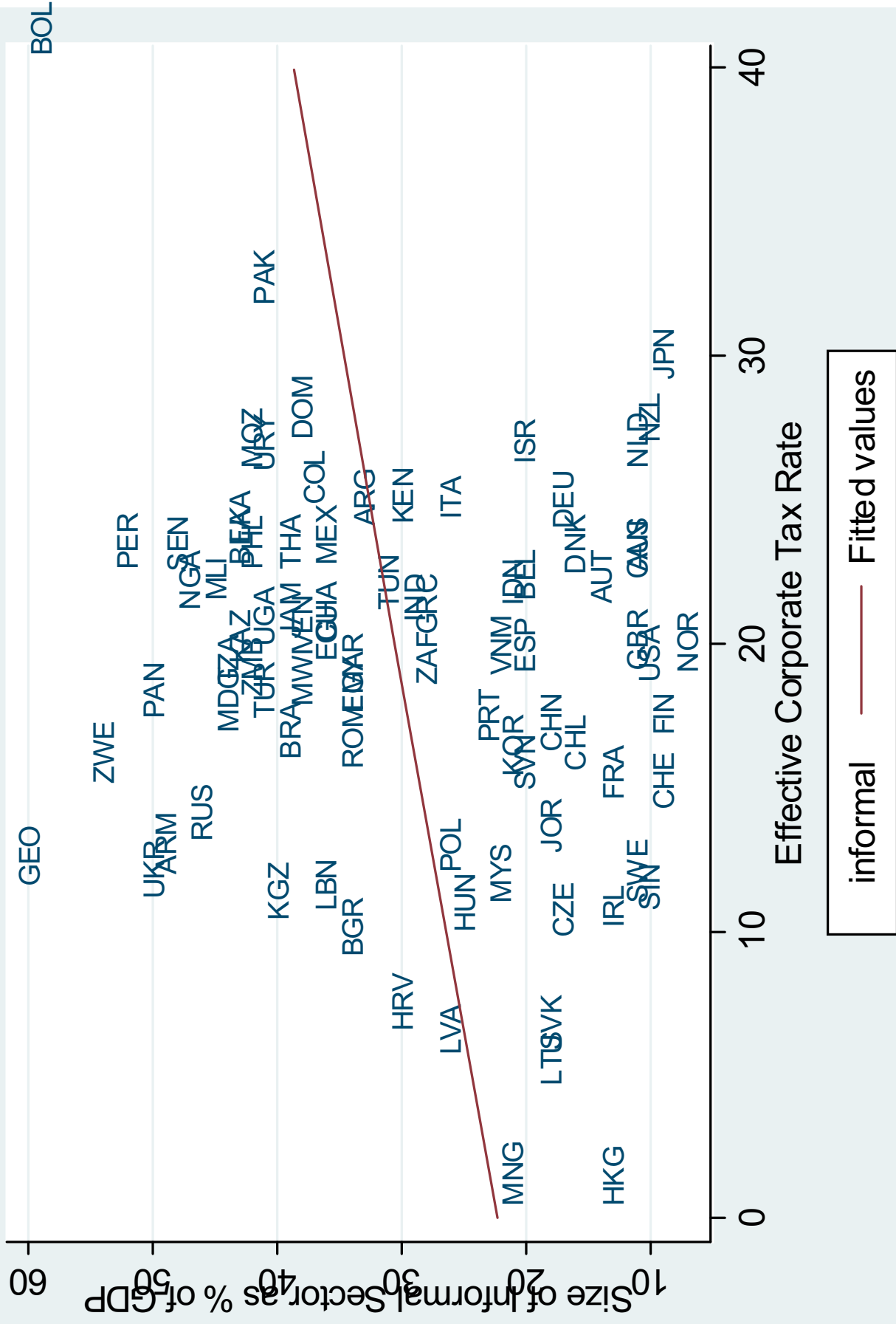
Effective Corporate Tax Rate on Average Entry Rate



Effective Corporate Tax Rate on Average Growth Rate 2001-2005



Effective Corporate Tax Rate on Size of Informal Sector as % of GDP



Effective Corporate Tax Rate on Debt to Equity (%)

