

## Corporate Tax Rates: Receipts and Distortions

By Alex Brill

Alex Brill is a research fellow at the American Enterprise Institute and an economic policy adviser at Buchanan Ingersoll & Rooney PC. The author wishes to thank Scott Ganz, Chad Hill, and Alan Viard for helpful comments and assistance. The views expressed here are solely those of the author.

This article explores recent evidence on the relationship between the corporate statutory tax rate and corporate tax receipts among developed economies and then discusses the potential efficiency gains from a large reduction in the corporate tax rate.

### A. Introduction

For the first time since 1993, lawmakers seem poised to seriously alter the statutory corporate tax rate and change the corporate tax base. President-elect Barack Obama has indicated a willingness to consider reducing the corporate tax rate,<sup>1</sup> while House Ways and Means Committee Chair Charles B. Rangel, D-N.Y., has, since October 2007, aggressively advocated for a significant reduction in the statutory rate. In recent weeks Rangel has indicated a desire to reduce the corporate tax rate to 28 percent.<sup>2</sup>

The United States has the second highest statutory corporate tax rates among industrialized countries, largely because other countries have dramatically reduced their statutory rates while the U.S. rate has remained constant. As a result, the rates of return to corporate tax planning strategies for U.S.-based multinational corporations have increased and the efficiency of the tax system has eroded. Furthermore, the higher U.S. tax rate, in conjunction with a worldwide system of taxing income, adversely affects the global competitiveness of U.S. businesses competing abroad, as the after-tax rate of return on foreign investments may be lower for U.S.-based corporations than for foreign-based firms. Finally, the high statutory rate in the United States

exacerbates a range of inefficiencies in the current tax system, including the distortion between debt and equity financing, the interasset distortion from uneven capital taxation, and the tax distortions caused by the choice of organizational form (C corporation versus passthrough entities).<sup>3</sup>

Because the federal corporate tax system generates approximately one-seventh of the revenues collected by the general fund,<sup>4</sup> policymakers may be concerned that a significant reduction in the statutory rate, if not offset with other tax increases, would further strain the fiscal resources of the federal government. Also, some analysts have emphasized that corporate tax receipts as a share of the economy are already low in the United States relative to other industrialized nations.<sup>5</sup>

This article focuses on the potentially neutral or even positive effects of cutting the U.S. corporate tax rate on tax receipts and the clearly positive effects of a reduction in the tax rate on economic distortions. First, to understand the impact of a change in the tax rate on tax receipts, I explore the relationship between the statutory corporate tax rate among developed countries and the corporate tax collections as a share of gross domestic product in those countries. Results suggest a parabolic relationship frequently referred to as a Laffer Curve. The article then discusses the effects of a lower corporate tax rate on the distortion between debt and equity and between the corporate and noncorporate sector, and the implications for global competitiveness and the tax consequences of foreign-source income.

### B. Corporate Tax Rates and Tax Receipts: Related?

Statutory corporate tax rates among OECD countries have been in decline globally for over two decades.<sup>6</sup> KPMG (2008) notes that the average corporate tax rate in

<sup>3</sup>Alex Brill, "Taxing Capital," American Enterprise Institute Tax Policy Outlook 1, Feb. 2008, available at [http://www.aei.org/publications/pubID.27474.filter.all/pub\\_detail.asp](http://www.aei.org/publications/pubID.27474.filter.all/pub_detail.asp).

<sup>4</sup>Congressional Budget Office, "Revenues by Major Source, 1968 to 2007, in Billions of Dollars," Sept. 2008, available at <http://www.cbo.gov/budget/data/historical.pdf>.

<sup>5</sup>Jane G. Gravelle and Thomas L. Hungerford, "Corporate Tax Reform: Should We Really Believe the Research?" *Tax Notes*, Oct. 27, 2008, p. 419, Doc 2008-18748, 2008 TNT 209-18.

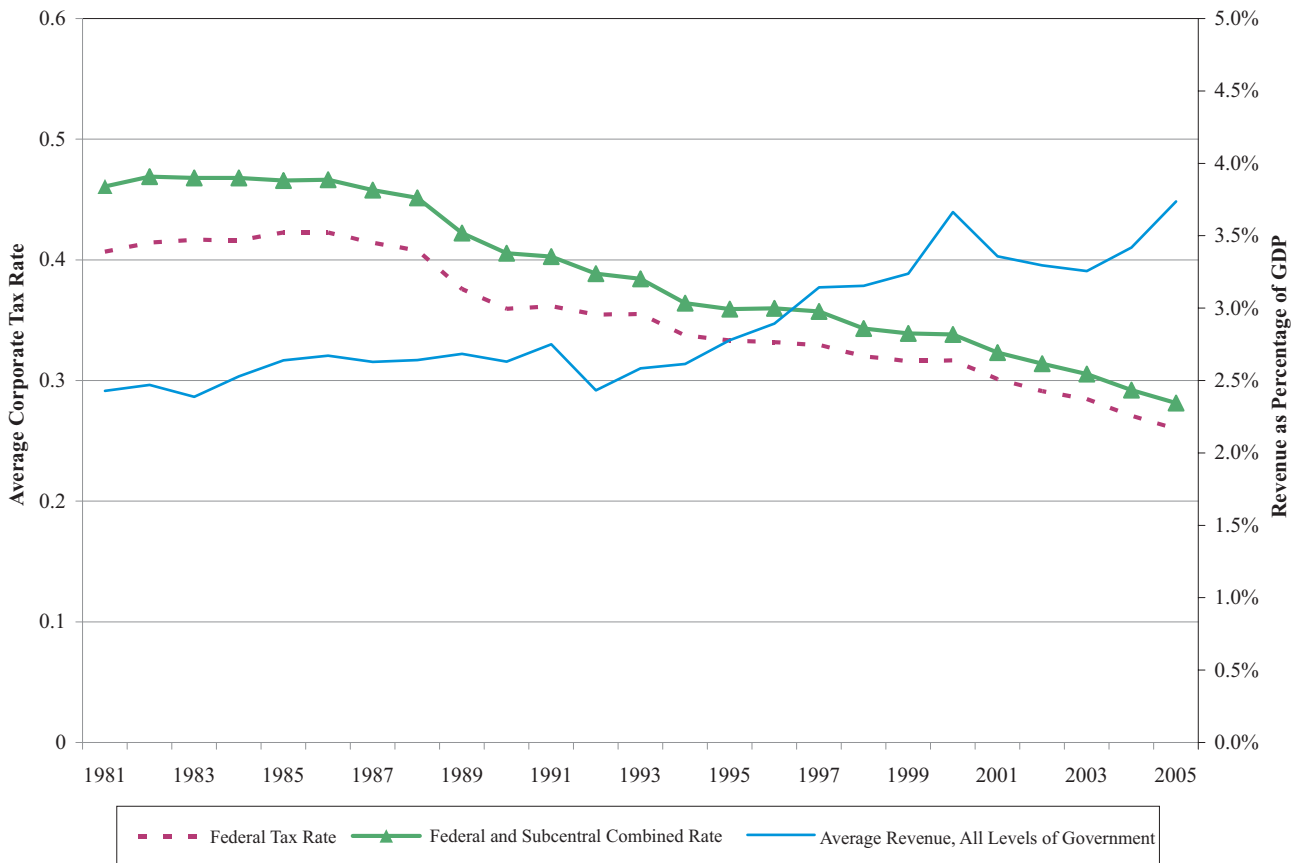
<sup>6</sup>Asa Hansson and Karin Olofsdotter, "Integration and Tax Competition: An Empirical Study of OECD Countries," Working Paper 2004:4, Department of Economics, Lund University, Jan. 2004; James R. Hines Jr., "Corporate Taxation and International Competition," Ross School of Business Paper No. 1026, July 2005; Kimberly A. Clausing, "Corporate Tax Revenues in OECD Countries," *International Trade and Public Finance* 14, Apr. 2007, 115-133; Alex Brill and Kevin A. Hassett, "Revenue-Maximizing Corporate Income Taxes," AEI Working Paper No. 137, July 2007; KPMG, "KPMG's Corporate and Indirect Tax Rate Survey, 2008," Aug. 2008, available at <http://>

(Footnote continued on next page.)

<sup>1</sup>Bob Davis and Amy Chozick, "Obama Plans Spending Boost, Possible Cut in Business Tax," *The Wall Street Journal*, June 17, 2008.

<sup>2</sup>Ryan J. Donmoyer and Peter Cook, "Rangel Plans Push to Cut Top Corporate Tax Rate to 28 Percent," Bloomberg.com, Nov. 15, 2008, available at <http://www.bloomberg.com/apps/news?pid=newsarchive&sid=ag7ISuB.yyII>.

**Figure 1. Corporate Income Tax Revenue From All Levels of Government, Average Corporate Income Tax Rate (Federal and Total Combined) in OECD Countries**



the 106 countries surveyed fell in 2007 to 25.9 percent and that no country in the survey raised the statutory rate. According to KPMG, the OECD rate fell a full percentage point in 2007 to 26.7 percent. Meanwhile, the corporate statutory tax rate in the United States has remained at 35 percent since 1993. Because most states impose a corporate income tax as well, the net combined average corporate tax rate is approximately 39 percent.

While the corporate rate (central and subcentral, individually and combined) have been trending down, corporate tax receipts as a share of the economy have not. As Figure 1 indicates, the average (combined) statutory rate among OECD countries appears inversely correlated with the average tax receipts data.

There are several considerations that may contribute to this apparent inverse relationship between the statutory rate and collections over the last 20 years. First, it is important to recognize that this data show only the relationship between the 20-year average rate and the 20-year average of receipts for the countries studied.

Within each country, the relationship between rates and receipts from year to year could be quite different. I will address this issue in the more formal regression analysis below. Second, several variables that affect corporate tax receipts are not evident in the figure. For example, if corporate profits as a share of the economy increase, corporate tax receipts also rise. Most importantly, and perhaps least understood, is an emerging economic literature that measures the responsiveness of foreign direct investment (FDI) to a host country's corporate tax rate. In short, a relatively low corporate tax rate draws in taxable assets and activities from outside the country's borders. This surge in FDI results in an increase in tax collections. Altshuler, Grubert, and Newlon (1998) demonstrate that the sensitivity of FDI to host-country tax rates has increased over time,<sup>7</sup> and De Mooij and Ederveen (2003) in a meta-analysis find a tax rate elasticity for foreign

<sup>7</sup>Rosanne Altshuler, Harry Grubert, and T. Scott Newlon, "Has U.S. Investment Abroad Become More Sensitive to Interest Rates?" National Bureau of Economic Research Working Paper 6383, Jan. 1998, available at [http://www.nber.org/papers/w6383.pdf?new\\_window=1](http://www.nber.org/papers/w6383.pdf?new_window=1).

[www.kpmg.com/SiteCollectionDocuments/Corporate-and-Indirect-Tax-Rate-Survey-2008v2.pdf](http://www.kpmg.com/SiteCollectionDocuments/Corporate-and-Indirect-Tax-Rate-Survey-2008v2.pdf).

capital to be -3.3.<sup>8</sup> Hence, modest reductions in the tax rate lead, on average, to large increases in foreign investment. This is consistent with the view that tax rate cuts could lead to an offsetting investment boom large enough to generate an increase in tax collections.

Simply, if a reduction in the statutory tax rate is joined with a revenue-offsetting increase in the tax base in a manner that is truly “pro-growth,” the net result could likely be a net increase in tax receipts. This is because official scorekeeping models by the Joint Committee on Taxation and Congressional Budget Office fail to incorporate the stimulative effect of change in tax policy, and thus a policy package “scored” to be revenue neutral will, in reality, be a revenue gain. Therefore [changed to eliminate echo], if lawmakers seek tax changes that are intended to be budget-neutral improvements in the efficiency of the tax code, they could be pleasantly rewarded with an unanticipated increase in receipts.

**1. Testing the data.** Brill and Hassett (2007) and Clausing (2007) empirically test a model to estimate the relationship between a country’s statutory tax rate and corporate tax revenues as a share of GDP. In its simplest form, the model predicts that tax collections as a share of GDP are a function of the corporate tax rate (*rate*) and the corporate tax rate squared (*rate*<sup>2</sup>) and an error term (*e*). Including the square of the rate allows the model to capture nonlinear (parabolic) relationships between tax rates and tax collections. Clausing also explores variations on this model, which includes variables to capture profitability and the relative size of the corporate sector, and Brill and Hassett explore the trend in the relationships and explanatory power among these variables over time. Because the results in all cases are materially consistent, I focus on the simplest construction of the model first.<sup>9</sup>

Brill and Hassett test this model first using a dataset of top statutory tax rates for OECD countries from 1980 to 2005 compiled from the University of Michigan World Tax Database and the 2006 OECD Tax Database, along with data on local level government top statutory tax rates for the period 1981-2002 from *PricewaterhouseCoopers Corporate Taxes: Worldwide Summaries*. Data on corporate revenue collection come from the OECD revenue database.<sup>10</sup>

Brill and Hassett present results for various subsamples to test robustness (excluding some atypical countries, excluding countries for which we do not have data for all years, and imposing a time separation in the model to account for potential lags between when a tax rate changes and when an observed change in revenue is

realized). In all cases the results are similar. Here I present one representative set of results: all countries, 1980-2005, tax rate lagged five years.

<i>Dependent Variable: Corporate Income Tax Revenue/GDP</i>	
Tax rate (t-5)	0.175 [0.18]*
Tax rate (t-5) <sup>2</sup>	-0.286 [0.030]*
Constant	0.007 [0.002]*
No. Observations	535
R-squared	0.15
Revenue-maximizing rate	30.6%
Robust standard errors in brackets. *Statistically significant at 1 percent.	

Those results, namely a positive coefficient on the tax rate variable and a negative coefficient on the tax rate<sup>2</sup> variable, indicate that the corporate tax among OECD nations during the last 25 years has exhibited a Laffer Curve. This means that above some point (the revenue-maximizing point), tax collections have declined as tax rates increased. In the results presented in Table 1, the revenue-maximizing statutory corporate tax rate in the OECD is 30.6 percent. Brill and Hassett also explore this model over time and find that the revenue-maximizing rate has declined over time, and in the most recent five-year period (2000-2005), it is 26.7 percent among OECD countries collectively.<sup>11</sup>

Because of the disproportionate size of the U.S. economy relative to other OECD member countries, the results from this model cannot be directly applied to the United States. Nevertheless, it is plausible that a reduction in the U.S. corporate tax rate need not result in a reduction in tax revenue. In fact, given that the U.S. corporate tax rate is so high, a lower rate could lead to higher tax revenues.

### C. U.S. Corporate Tax Rate: Economic Distortions

In addition to the possibility that the revenue-maximizing corporate tax rate in the United States is below the current statutory rate of 35 percent, there are several improvements in economic efficiency that could be realized by a reduction in the corporate tax rate. The current corporate income tax affects the cost of capital, distorts financing decisions (debt versus equity), and affects the relative cost of different types of assets.

<sup>8</sup>Ruud A. De Mooij and Sjeff Ederveen, “Taxation and Foreign Direct Investment: A Synthesis of Empirical Research,” *International Tax and Public Finance* 10, no. 6 (2003): 673-693.

<sup>9</sup>Formally, the model presented can be described as Corporate Tax Revenue/GDP<sub>it-j</sub> =  $\alpha + \beta_1*(\text{Tax Rate}_{it}) + \beta_2*(\text{Tax Rate}_{it}^2)$  + e<sub>it</sub>, where *i* refers to the country, *t* refers to the year, and *j* refers to the lag.

<sup>10</sup>See Brill and Hassett, *supra* note 6, for a more complete description.

<sup>11</sup>See Gravelle and Hungerford, *supra* note 5, for a critique of Brill and Hassett, *supra* note 6. Gravelle and Hungerford do not find statistically significant results in their analysis of OECD corporate tax rates and receipts. Therefore, their results should not be interpreted to indicate that a lower corporate tax rate always corresponds to lower tax receipts. Taken literally, their results could be interpreted that there is no relationship between tax rate and tax collections at all.

**1. Domestic distortions: debt versus equity, and corporate versus noncorporate.** The effective marginal tax rate (EMTR) on corporate capital is a function of several variables, including the corporate tax rate, the fraction of debt-versus-equity financing, and the difference between economic depreciation and tax depreciation schedules. The Congressional Budget Office (2005) provides a comprehensive study of the tax rate on capital across assets types and financing structures. The CBO finds the EMTR on capital held by corporate entities to be 24.2 percent.<sup>12</sup> Treasury (2007) finds a similar estimate of 29.4 percent.<sup>13</sup> Those estimates are weighted averages of the EMTR on corporate capital. However, there is considerable variation across asset type. This is mainly because the tax depreciation life and the economic depreciation life can vary significantly. As a result, the EMTR for computers and peripheral equipment (36.9 percent) is much higher than the EMTR for gas pipelines (9.2 percent).<sup>14</sup>

Two important consequences of the current corporate tax system is that debt is tax-favored relative to equity financing and that noncorporate business structures are tax-favored relative to C corporation entities.

The CBO estimates that the EMTR for debt-financed corporate capital is -6.4 percent and that the EMTR on equity-financed corporate capital is 36.1 percent; the spread between those two rates is a whopping 42.5 percentage points. Thus, the tax incentives for leveraged investment are quite high. The EMTR equipment is 20.8 percent in the corporate sector, compared with 15.3 percent in the noncorporate sector — a 5.5 percentage point gap.<sup>15</sup>

Those disparities cause economic distortions, but the distortions can be mitigated by a reduction in the corporate tax rate. Using a model developed by the CBO,<sup>16</sup> I calculate average EMTRs if the U.S. corporate tax rate was reduced to 20 percent. As you can see from Table 2, not only are EMTRs reduced, but the disparity between debt and equity as well as between corporate and noncorporate capital is reduced considerably. The tax rate differential between corporate and noncorporate investment for equipment is eliminated. The tax rate on debt-financed investment is increased 12.6 percentage points and the tax rate on equity-financed investment (in the corporate sector for both) is reduced 12.5 percentage points.

**2. Corporate tax rate: international competitiveness.** The U.S. corporate tax system is a worldwide system of taxation, meaning that all foreign-source income is subject to U.S. taxation. However, the U.S. tax code also

provides a tax credit for foreign income tax paid. As a simple example, if a U.S. corporation earns \$100 abroad in a country with a 20 percent corporate income tax, the company would then pay \$20 to the foreign taxing authority. When the corporation pays U.S. corporate tax on that income at 35 percent, it would receive a \$20 tax credit and thus owe only \$15 to the IRS. While the \$15 in U.S. tax can be deferred until it is repatriated to the United States, this eventual tax burden is nevertheless a penalty relative to the tax paid by a foreign competitor. Many other industrialized countries operate on a territorial tax system whereby foreign-source active income is not taxed. Other countries operate on a worldwide based tax system but with lower rates. Researchers have argued that aspects of the worldwide basis of taxation adversely affects U.S.-based corporations by reducing their after-tax rate of return for a foreign investment below that earned by foreign competitors.<sup>17</sup> This effect is exacerbated by the fact that the U.S. rate is the second-highest among all major developed economies, and thus there is often additional tax due to the IRS for earned foreign-source income. This tax burden not only affects the competitiveness of U.S.-based multinationals but also is associated with significant administrative burden.<sup>18</sup>

However, a reduction in the corporate statutory tax rate could significantly reduce the amount of foreign-source income subject to U.S. corporate tax, thereby allowing more foreign activity of U.S.-based multinationals to be *effectively* taxed in a manner similar to that of a territorial tax system. If the U.S. statutory rate is less than or equal to that of the host country where the foreign-source income is earned, the foreign tax credit would eliminate any U.S. tax liability and, in those cases, create a level playing field for the U.S.-based multinational. Consider again the example above but assume that the U.S. corporate tax rate has been reduced to 20 percent. A U.S. corporation would again pay \$20 in foreign tax on \$100 in foreign-source income and receive a \$20 foreign tax credit. However, when the remaining \$80 is repatriated to the United States, the foreign tax credit eliminates all U.S. income tax liability, so the marginal U.S. tax on that income is zero. In addition to reducing the EMTR, that change would also eliminate the distortion whereby a U.S.-based corporation faces a disincentive to repatriate earnings.

#### D. Conclusion and Policy Recommendation

The U.S. corporate statutory tax rate is among the highest in the world. Among OECD countries, corporate tax rates have been declining while tax receipts have been rising. An econometric analysis of OECD data suggests that the revenue-maximizing corporate tax rate within

<sup>12</sup>CBO, "Taxing Capital Income: Effective Rates and Approaches to Reform," Oct. 2005, available at <http://www.cbo.gov/ftpdocs/67xx/doc6792/10-18-Tax.pdf>.

<sup>13</sup>U.S. Department of the Treasury, "Treasury Conference on Business Taxation and Global Competitiveness," Background Paper, July 23, 2007, available at <http://www.treas.gov/press/releases/reports/07230%20r.pdf>.

<sup>14</sup>CBO, *supra* note 12.

<sup>15</sup>*Id.*

<sup>16</sup>CBO "Background Paper: Computing Effective Tax Rates on Capital Income: Data: Corrected\_ETRs.xls," Dec. 2006, available at <http://www.cbo.gov/doc.cfm?index=7698>.

<sup>17</sup>See Altshuler and Mintz (1995) for an explanation of the effects of interest allocation rules on effective tax rates of foreign investment; Roseanne Altshuler and Jack Mintz, "U.S. Interest Allocation Rules: Effects and Policy," *International Taxation and Public Finance* 2, no. 1 (1995), 7-35.

<sup>18</sup>Marsha Blumenthal and Joel Slemrod, "The Compliance Cost of Taxing Foreign-Source Income: Its Magnitude, Determinants, and Policy Implications," *International Trade and Public Finance* 2, May 1995, 37-53.

<b>Table 2. Effective Marginal Tax Rates: 35% vs. 20% Statutory Corporate Tax Rate</b>			
	<b>35% Corporate Tax Rate</b>	<b>20% Corporate Tax Rate</b>	<b>Difference</b>
Total business investment	24.2	19.3	-4.9
Corporate	26.3	18.6	-7.7
Debt-financed	-6.4	6.2	12.6
Equity-financed	36.1	23.6	-12.5
Noncorporate	20.4	20.4	0
Equipment (corporate)	20.8	15.3	5.5
Equipment (noncorporate)	15.3	15.3	0
<b>Measures of Tax Uniformity</b>			
Difference between equity-financed and debt-financed (corporate)	42.5	17.4	
Difference between corporate and noncorporate	5.9	-1.8	
Difference between corporate and noncorporate (equipment)	5.5	0	

the OECD is well below the U.S. statutory rate of 35 percent. It is possible that a reduction in the corporate tax rate in the United States would not result in a loss of revenue, but it is certain that such a move would improve economic efficiencies.

Based on calculations of EMTRs as estimated using a model constructed by the CBO, distortions between corporate and noncorporate capital will be minimal with a corporate tax rate near 20 percent. Such a rate cut would significantly reduce the distortion between debt- and equity-financing, make the United States more attractive for foreign direct investment, and eliminate many distortions in international tax policy. Although large differences would remain between the United States and tax haven countries where little or no tax regimes exist, even in those cases, incentives to shelter income abroad would be reduced.

One approach to lowering the corporate tax rate while mitigating the risk of a large deficit impact would be to phase down the U.S. corporate tax rate over time. This approach would reduce the windfall benefit to existing capital and could encourage a short-term investment boom, because capital investment costs would be deductible at a rate higher than its future income would be taxed.

The U.S. corporate tax system, with its high statutory tax rate, imposes harmful distortions and may be set at a point above its revenue-maximizing level. A dramatic reduction in the corporate tax rate would improve efficiency and global competitiveness. Depending on the magnitude of the reduction and other accompanying tax changes, the change could be revenue neutral.