ITIF
The Information Technology & Innovation Foundation

Assessing U.S. Corporate Tax Reform in an Age of Global Competition

BY JOSEPH V. KENNEDY | MARCH 2014

Although the current outlook for corporate tax reform is questionable, it is one of the most important actions Congress can take to spur economic growth.

For the past several years U.S. policymakers from both parties have been promoting income tax reform. Although the current outlook for corporate tax reform is questionable, it is one of the most important actions Congress can take to spur economic growth. In an environment of slow economic growth and intense global competition, the tax burden placed on companies with highly mobile operations can have a large effect on the location of investment and jobs. Unfortunately, the United States is lagging behind other developed nations in creating a business tax environment conducive to growth and competitiveness. The country needs sensible reforms that lower corporate rates while maintaining, or even expanding, proven incentives to invest.

This report describes the impact of the corporate income tax on the economy and analyzes the major issues involved in creating tax reform that both increases economic growth and reduces the burden of federal debt. Although individual tax reform is clearly needed, this paper will concentrate largely on corporate reform.

INTRODUCTION

The current corporate tax code is troublesome for several reasons. The first is the accurate perception that the United States faces intense tax competition from other countries for global business activity and the U.S. code imposes relatively higher costs on economic activity in the United States.

Second, whereas almost all other countries tax only the income earned within their borders, the United States taxes the worldwide profits of its companies. This tax is ameliorated by

two factors. First, companies receive a credit for any taxes paid to foreign jurisdictions. Second, for most forms of income the tax is not levied until the profits are brought back or repatriated into the United States.

This worldwide system discourages U.S. companies from moving activity overseas in search of lower tax rates. But it also places them at a disadvantage when they compete in foreign markets because their competitors pay lower taxes. It also discourages multinationals from headquartering in the United States and gives foreign corporations an advantage in acquiring U.S. corporate assets.

Third, while the corporate tax law contains a number of pro-growth incentives (such as the research and development (R&D) tax credit and accelerated depreciation), it also contains incentives that are not pro-growth. Most of the latter are the product of political power rather than public interest and should be eliminated, with the tax savings devoted to lowering the statutory rate. However, a few tax incentives play a clear role in encouraging companies to invest in productive activity in the United States. Thoughtful tax reform should maintain or even increase these incentives in order to spur and attract as much economic growth as possible.

The report makes the following major points:

- The United States faces intense competitive pressure in keeping and attracting corporate investment and the jobs that come with it. This new competition limits the degrees of freedom policymakers have in crafting corporate tax policy.
- Both U.S. statutory and effective corporate tax rates are significantly higher than those of most other countries.
- The current policy of taxing the worldwide profits of U.S. companies puts them at a disadvantage when competing for world markets, although this disadvantage can sometimes be significantly mitigated due to careful tax planning and deferral.
- Although lowering the statutory rate is important, it is even more important to lower the effective rate. This is best done by expanding the few tax provisions, such as the R&D tax credit and accelerated depreciation, which clearly cause companies to expand investment, while also lowering the statutory rates.
- Any reduction in the effective corporate tax rate should be at least revenue neutral within the overall tax code, and can be accomplished by a variety of means including a carbon tax, a value added tax, and taxing dividends, carried interest, and capital gains as normal income.

A SHORT HISTORY OF THE CORPORATE TAX CODE

A recent review of corporate tax law began with this summary:

> The U.S. corporate tax system debuted more than 100 years ago and has evolved little to meet the challenges of today's economy. The country

> would benefit greatly from a reform of this system that maintains corporate tax revenues while increasing incentives for businesses to locate, invest, and produce in the United States, thus offering the prospect of higher wages and better job opportunities for American workers.[1]

Although the tax code has not changed much, the national and global economies have. As a result, tax law has become increasingly out of sync with the needs of the nation. Corporate tax receipts have declined significantly over the past half-century, both as a percentage of GDP and as a percentage of federal revenues (See Figure 1). But this decline does not indicate that U.S. companies face low effective tax rates. There are a number of reasons for this decline, including the shift in corporate form away for C-corporations, proliferation of tax preferences, greater debt financing by companies, and growth in foreign investments.[2]

Corporate tax receipts have declined significantly over the past half-century, both as a percentage of GDP and as a percentage of federal revenues. But this decline does not indicate that U.S. companies face low effective tax rates.

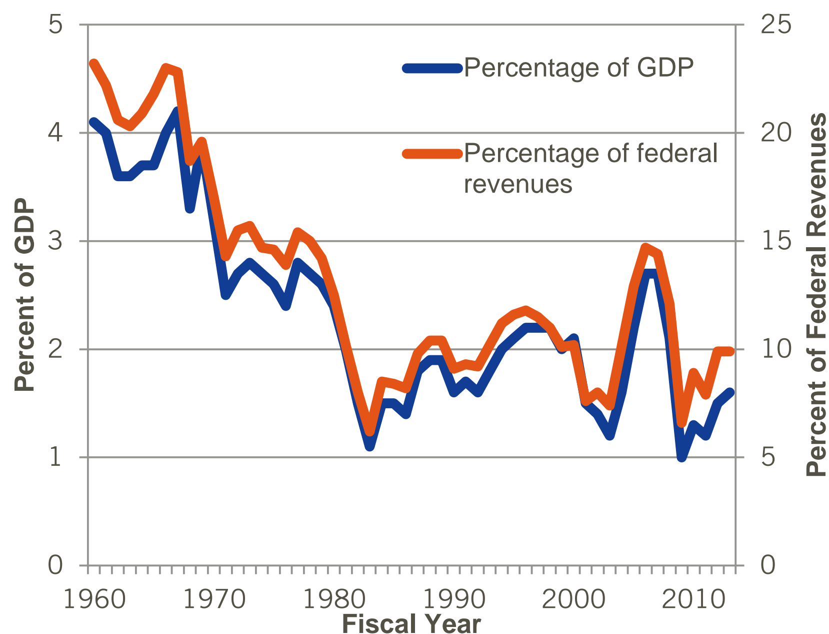

Figure 1: Corporate Revenues as a Percent of GDP and Federal Revenues[3]

Although corporate tax revenues make up a declining share of the federal tax base, they continue to have important effects. First, the interplay between corporate and individual income taxes plays a large role in how businesses are structured. Ultimately, all taxes fall on individuals. This is obviously true of the individual income tax. But it is also true of corporate and property taxes. A tax on land is paid for by the person who owns it. Similarly, a tax on corporate profits is in the first instance a tax on the individuals who own shares in the company. Those individuals can avoid the corporate income tax by doing business in one of several other forms such as a sole proprietorship, a partnership or a subchapter S corporation. In each of these, income is considered to flow through the business entity and is taxed solely as individual income. In contrast, doing business as a corporation subjects its owners to double taxation. Income is taxed first at the corporate level and then again at the individual level when it is either paid out in dividends or the individual sells his ownership stake.

This is not necessarily the end of the story, however. The owners of the corporation may still be able to escape some or all of the burden of the tax. They can do this by raising prices on customers or reducing wages to employees. Their ability to do this will be limited by the amount of competition they face for customers and workers, but it will generally be stronger over time as new investment replaces old and existing contracts are renegotiated. In the end, customers and workers will end up paying a portion of the corporate tax, although how much is not clear.

Third, the corporate tax also plays a role in determining the degree to which companies invest in their businesses, which businesses they conduct, and the places where they conduct them. In a world in which capital is increasingly mobile (and now also relatively cheap) investors have many options for how much capital to purchase, what to produce with that capital, and where to do business. Tax provisions that delay deductions for capital investment, for example, will encourage companies to purchase less capital. This won't preserve jobs, but it will mean less prosperity since in the long run wages and living standards are closely tied to the amount of investment capital in the economy.[4]

Economists do not worry about the direct effects of corporate tax. Although any corporate tax burdens businesses, this burden is matched by a gain in government revenues. Economists do worry, however, about the indirect effects of any tax. Specifically, any tax on corporate income is likely to discourage a key input that benefits society: investment (in buildings, equipment, software, knowledge creation and other forms of capital).[5] As a result, by discouraging otherwise productive activity, taxes can reduce, or even destroy, economic value.

In an excellent review of corporate tax law, Daniel Shaviro mentions four main aspects of business operations that tax policy might strongly affect: 1) the organizational choice between corporate and non-corporate forms of doing business; 2) the choice between debt and equity; 3) the choice between distributing corporate earnings to shareholders and retaining them within the corporation; and 4) the choice between realizing distributions as dividends or capital gains.[6] Companies also make choices regarding the optimal mix of capital and labor and the location in which they do business. In each of these areas Shaviro argues that globalization and financial innovation are increasing the ability of companies to "effectively elect" which parts of the tax code will apply to them. If companies then find it easier to engage in the optimal business arrangements irrespective of tax consequences, this may reduce the deadweight burden imposed by the tax code. However, it also reduces the leverage that governments have to collect revenues.

Laws that tax the profits of some industries less than others will draw investment into the favored areas and away from others and, depending on the tax provisions and the industry, this can be welfare enhancing or detracting. Owners will tend to locate economic activity in jurisdictions with lower tax rates, especially new activity. Corporate taxes are not definitive, however. The advantages of incorporation often outweigh the cost of double taxation. Business decisions about investment, production, and location depend on many factors besides tax law. And changes cannot be made instantaneously. Yet flexibility increases with time and over a decade companies generally have a great ability to rearrange their affairs to

take advantage of whatever incentives and disincentives governments offer them. As Shaviro notes:

> The main precipitating forces [behind corporate tax reform] … are globalization and rising worldwide capital mobility, along with financial innovation in designing the instruments that are traded in capital markets. These trends have the potential to transform such fundamental elements in the functioning of the corporate tax as how much revenue it raises, whom it burdens, and to what extent it burdens anyone at all.[7]

WHO PAYS CORPORATE TAXES?

The initial burden of corporate tax is borne by the corporations themselves. But since corporations are not real people, this burden must ultimately be placed on persons. The three most likely groups are shareholders, employees, and customers. Any change in corporate taxes impacts shareholders most immediately because it directly reduces company profits and therefore both the value of the company and the amount of dividends that it can pay out to owners.

But this is not likely to be the end of the story. Over time, the corporation may try to pass some of the burden of higher taxes on to its customers in the form of higher prices, especially if the higher taxes apply to most or all corporations at the same time. However, in an environment where U.S. corporations have to compete against foreign companies as well as non-corporate entities, the ability to pass higher costs on to customers may be very limited. But conversely, because of competition both between U.S. corporations and with foreign businesses and U.S. non-corporate companies, some of the benefit from lower corporate taxes would be passed on to customers in the form of lower prices as firms compete for market share.

In a similar way, the firm’s employees may end up bearing part of the tax burden through salary cuts or job losses. A firm’s ability to do this is limited by the extent to which they have to pay prevailing national wages in order to attract workers.

Workers are also affected by corporate taxation in another way. Historically, worker pay and living standards have been linked to productivity. Productivity, in turn, is highly affected by how much capital an employee has to work with. For although in the short run capital may compete with labor by displacing it, in the long run capital and labor complement each other and a given worker can produce much more with a higher amount of capital and/or higher quality capital (produced through innovation).[8] Corporate taxes that discourage firms from investing capital will likely reduce overall economic growth and productivity.

Attempts to empirically determine who bears the ultimate burden of corporate taxes have produced widely divergent results. The initial view was that most of the burden was distributed to all owners of capital (not just to shareholders since competition will equalize the rate of return among all businesses, not just corporations).[9] In fact, under certain assumptions, corporate taxes could even end up raising wages by increasing the demand for

labor in the corporate sector. That view, however, relied on an absence of international competition and a strict division of the economy into corporate labor-intensive industries and non-corporate capital-intensive industries.

New studies have tried to measure the impact of global markets, in which capital faces far fewer international barriers than labor. Most recent studies find that "immobile factors bear most, if not all, of the long-run incidence of the corporate tax in the open economy due to capital flows across borders."[10] One survey found that on average economists at leading universities believe that capital now bears only 40 percent of the corporate tax, although the disagreement among those polled was large.[11] On the low side, Congressional Budget Office economist Jennifer Gravelle estimates that, under certain conditions, capital could bear virtually the entire corporate income tax burden.[12] More common results include Desai, Foley, and Hines who estimate that between 45 and 75 percent of the burden is carried by labor,[13] and Liu and Altshuler who estimate that a $1 increase in the corporate tax revenue reduces total wages by about 60 cents.[14] On the high end, Felix finds that a one percentage point increase in the corporate tax rate would reduce wages by 4.2 times the amount of additional revenue raised.[15] Conversely, a reduction in corporate taxes would lead to an increase in U.S. wages.

One survey found that on average economists at leading universities believe that capital now bears only 40 percent of the corporate tax, although the disagreement among those polled was large.

These results imply that the corporate tax is much less progressive than many think; particularly if dividends and capital gains were to be taxed as normal income. Unfortunately, the politics of reform will be strongly affected by the fact that the official estimators of tax legislation assume low-end estimates. The Office of Tax Analysis within the Department of Treasury assumes that labor only bears 18 percent of the burden,[16] while the Congressional Joint Committee on Taxation assumes the burden is 25 percent.[17] These estimates reflect the low end of the literature. But even in the unlikely scenario that most of the burden of corporate taxes is borne by the owners of capital in the form of lower profits, at some point higher taxes could mean that profits become too low to enable additional investment.

In theory, one would expect labor to bear much more of a burden as international capital barriers decrease. With capital free to move to wherever risk-adjusted expected returns are highest, the after-tax rate of return should be the same everywhere. Higher corporate taxes would then have to be either passed on to workers or customers or the pre-tax rate of return would have to increase to compensate. Shapiro notes that "[i]ncreased worldwide capital mobility suggests that workers, rather than investors, may principally bear the burden of the corporate tax, but this remains empirically uncertain (although supported by several recent studies)."[18]

One study that fails to support this claim does so for a very interesting reason. Kimberly Clausing compiles an exhaustive data base and tests a variety of models, finding that labor bears little of the economic burden of corporate taxation. She acknowledges that this contradicts most other studies. She speculates that one of the reasons for the discrepancy is that companies may have become much more adept at divorcing corporate earnings from the location of economic activity and shifting the former to low-tax jurisdictions.[19] Management can then make separate decisions about where to place operations and where

to declare earnings. Although this may help workers avoid the tax burden, it significantly reduces governments' abilities to capture revenues.

Putting aside models and looking at history, it is worth noting that U.S. corporate profits as a share of national income are about the same today as they were in the 1960s.[20] But the corporate tax of 35 percent is significantly lower than the average rate of 50 percent during the 1960s (when an investment tax credit also existed).[21] Clearly this significant cut in the corporate tax rate was not associated with higher corporate profits, suggesting that consumers or workers were the main beneficiaries.

DO NATIONS COMPETE?

The answer to this question has an important impact on public policy. If nations do not compete in any sense, then what other countries do should have little negative (or positive) effect on us. Specifically, if other countries pursue lower effective corporate tax rates over time, we should not feel pressure to respond; in fact, we might pursue all sorts of policies that raise costs on globally mobile economic activity with little to worry about. On the other hand, if international competition is a reality and if foreign competitive advantage can diminish U.S. economic success, then lower tax rates or better business conditions abroad will likely cause capital to flow overseas (and reduce the global market share of U.S. companies).

Some economists have argued that competitiveness is a meaningless, even dangerous, concept when applied to nations.[22] The argument is that "competitiveness" in a national sense means little more than "productivity," which everyone agrees raises living standards. This argument is backed by several assertions. First, unlike companies, nations do not go out of business. Second, an improvement in productivity overseas should benefit, not hurt Americans. Third, because of comparative advantage, international trade makes all nations better off.

Before addressing each point it is worth noting that many of the above arguments seem more directed against any attempt at higher trade barriers and a more interventionist "industrial policy." Indeed, much of Krugman's 1994 article was devoted to criticizing the writings of Ira Magaziner and Robert Reich, both of whom argued for a much more active government policy in helping individual industries against a perceived threat.[23] But the argument that nations compete should be separated from policy arguments about the relative benefits of "industrial policy" vs. "laissez-faire."

Responding to the specific objections: first, although nations do not go out of business, they can pursue unsustainable policies leading to insolvency and stagnation.

Second, being "competitive" is not synonymous with being "productive." Competitiveness represents a country's ability to not run a trade deficit in its traded sectors without subsidizing exports or maintaining an artificially low currency.[24] Productivity represents the ability of a nation to have high levels of outputs for a given level of inputs. A nation could have high productivity and low competiveness if it had high productivity in its non-traded sectors but its traded sectors had higher costs and/or lower quality than competitor nations.

Third, while increased productivity in foreign nations can be in America's interest, it depends on how nations achieve that productivity. If it comes from them gaining global market share in high-value-added economic activity that had previously been located here, competition can hurt the United States. In this case, the United States loses these high paid jobs and other nations gain them. Some economists who deny the reality of competitiveness simply assume that this capital will automatically be redeployed for other equally high-value industries and that America should not worry if it loses industries like semiconductors, aeronautics, and software. But this assumes that there are other high-value industries out there waiting to be created; clearly an unrealistic assumption given that the global amount of high-value-added industries is relatively fixed, at least in the short and medium term.

Related to this, some economists who deny the impact of international competitiveness tend to believe that capital is relatively immobile.[25] This would imply that the United States does not lose much investment when European countries, for example, lower their business tax rates. It also implies that lowering taxes will not attract much additional investment from abroad or retain investment already here.

Capital has become increasingly mobile and is only likely to get more so.

Yet compared to two decades ago when Krugman was writing this, capital has become increasingly mobile and is only likely to get more so. Publicly traded corporations can borrow or issue stock in a large number of countries. Once raised, this capital can be invested in whichever location in their global operations offers the best rate of return. And with improvements in logistics, supply chains and trade are much more global than ever before. National capital controls limit these flows of capital or goods and services, but only partially and at a high cost. Governments are then forced into the position of competing against each other for whatever net gains are associated with having a particular company located in their territory, just as U.S. states have had to do for over a half century. In return for taxes they offer a package of services that may increase corporate profitability. These include a consumer market, an educated workforce, infrastructure, support for science and technology, legal and political stability, and reasonable regulatory requirements, among other factors. The problem is that on some of these attractions, such as education, science and technology, and infrastructure, the United States is falling behind.

In addition, companies are now truly global rather than multinational. Instead of owning a number of national companies, each of which operates largely independently, multinationals increasingly integrate all of their locations into global supply chains.[26] In a recent article about an American auto parts manufacturer, Adam Davidson describes its engineers constantly reviewing the parts that they sell to their customers in order to decide whether they should purchase them from third parties or manufacture them themselves, and, if they manufacture, where among their global operations to assign production.[27] Companies are likely to consider many factors when making these decisions, including transportation costs, wages, worker quality, tariffs, and reliability. Taxes are also likely to play a large role.

Whether or not this competition represents a zero-sum game and a "race to the bottom," it is inevitable. It as a race that requires the United States to compete, or else we will go to the

bottom automatically. The reality is that countries are increasingly having a hard time taxing internationally mobile activities at rates that are out of line with international norms and practices.[28]

Since U.S. companies will presumably have to offer the same prices and after-tax rate of return on capital as their foreign competitors in order to compete successfully, the competitiveness argument essentially relies on two points. The first is that actual business activity will tend to shift at the margins from higher-tax to lower-tax countries as investors try to keep as much of their pre-tax profits as possible. This is especially the case if the lower-tax nations also provide a comparable mix of public goods paid for by taxes on non-mobile activity (such as personal income taxes or sales taxes). Lowering the U.S. rate would therefore attract business investment. Second, to the extent that companies are increasingly able to choose the location in which to declare profits irrespective of where their operations are located, a lower rate will encourage both domestic and foreign companies to declare a greater portion of their profits in the United States.

This is not to say that when companies decide where to locate their headquarters and business activity they focus only on taxes. In fact, they consider a wide range of factors. Many of these, including tax rates, but also the legal environment, infrastructure, domestic demand, and transportation costs, are influenced by government policy. Policy therefore does have an effect on investment, productivity and jobs. When other countries lower their corporate tax rates, the return to capital from investment in those countries will rise, drawing additional investment. This in turn raises wages in that country by increasing the amount of capital workers have to work with.

ITIF has already spoken on the need for corporate tax reform. In testimony before the Senate Finance Committee, Robert D. Atkinson pointed out that America's competitiveness as a place for creating economic value is declining and called for several reforms that would encourage domestic and foreign companies to invest and produce in the United States.[29] Policies to enhance competitiveness are important because they improve the ability of companies to locate production in the United States, especially higher-value-added jobs that pay more and contribute more to the GDP. This in turn creates jobs and improves the trade deficit. It also ensures that any balance of payments deficit is driven by an increase in foreign investment rather than a desire to consume more than we earn.

Unfortunately, much of the current debate is focused elsewhere. Democrats tend to view tax reform as an opportunity to raise the additional revenue needed to protect entitlements from being cut. They are skeptical of the argument that higher taxes discourage investment and cause companies to move activity overseas, and highly critical of companies that don't invest and use "tax shelters" to minimize their taxes. Lowering corporate rates and limiting the taxation of foreign income appears like a "race to the bottom" in which countries engage in a zero-sum competition to give rich companies a free ride in order to attract business.

Meanwhile, Republicans seem to favor tax cuts over anything else, without distinguishing pro- from anti-growth tax policies. While they are very vocal about the damaging effect of

large deficits caused by spending increases, they are much more sanguine about deficits caused by tax cuts. This is partly because almost all taxes impose deadweight losses on the economy by deterring economic activity, while most spending—with notable exceptions such as infrastructure, education and research—has little effect on growth. But it is misleading to pretend that all taxes are equally damaging to the economy and all tax cuts equally positive. Finally, Republicans are reluctant to acknowledge the distributional impact of economic policies. In an era of highly skewed incomes, it is only fair to ask those who have benefited most during the last two decades to bear most of the burden of returning our economy to strong foundations.

THE TREND IN CORPORATE TAX RATES

So what has been the trend in corporate tax rates overseas? Figure 2 shows combined (federal and state) statutory corporate tax rates for OECD countries from 1981 to 2013. Table 1 shows the rates for a broader set of countries as of 2013. It is easy to see a steady decline in the rates of almost all countries as they faced increased global competition. In fact, after the United Kingdom, the United States was one of the first countries to start this trend, lowering its federal rate from 46 percent to 34 percent in the 1986 tax reform. But rather than continue this trend, Congress actually raised the top rate a percentage point starting in 1993 and has kept it there for the last two decades.

The United States was one of the first countries to start the trend toward lower corporate taxes. But rather than continue this trend, Congress actually raised the top rate a percentage point starting in 1993 and has kept it there for the last two decades.

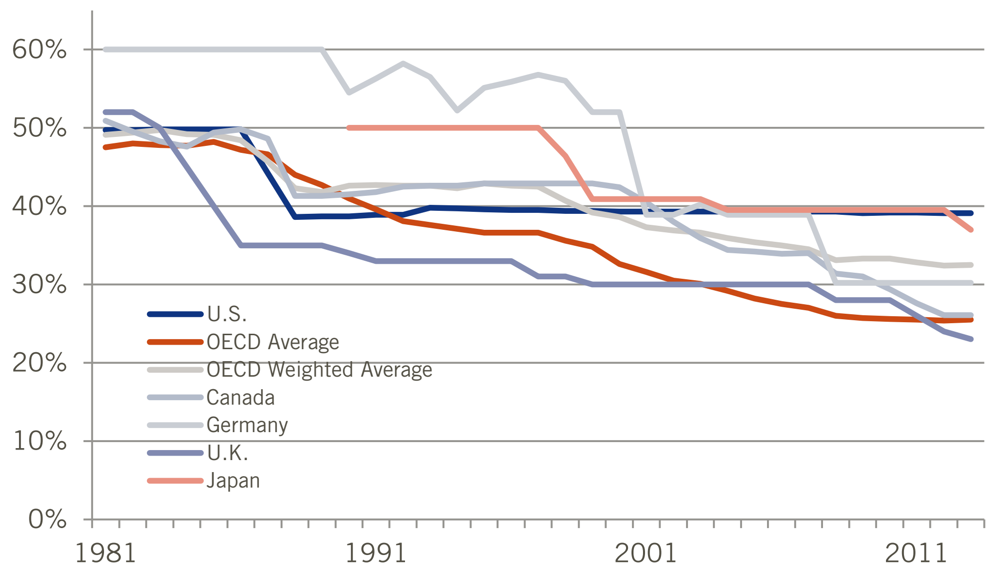

Figure 2: Combined Corporate Tax Rates of OECD Countries 1981-2013[30]

Countries that have lowered their statutory rates have generally not seen a decline in total corporate tax revenues. Devereux finds little relationship between the average statutory tax rate and the average ratio of corporate tax revenues to GDP in 20 OECD countries between 1965 and 2004.[31] He concludes that the differences do not seem to be only due to changes in the legal tax base:

> There is some (weak) evidence that—due to other opportunities such as reducing investment, shifting activity out of the taxed corporate sector, or

shifting profits to other countries—revenue-maximising [sic] tax rates could actually be rather low. That is, only at low rates of tax does the rate have a positive impact on tax revenues. Above moderate rates, further increases in the tax rate may actually reduce revenues.[32]

Country	Central Government Rate	Sub-central Government Rate	Combined Rate*
Canada*	15.0	11.3	26.1
Denmark	25.0		25.0
Finland	24.5		24.5
France	34.5		34.5
Germany*	15.8	14.4	30.2
Ireland	12.5		12.5
Japan*	28.1	10.8	37.5
Italy	27.5		
Sweden	22.0		22.0
United Kingdom	23.0		23.0
United States*	35.0	6.3	39.1

Table 1: Statutory Corporate Tax Rates in Selected OECD Countries 2013[33]
*The combined tax rate does not equal the sum of central and sub-central tax rates because companies receive a tax deduction from central taxes for taxes paid to sub-jurisdictions.

But companies normally do not pay the full statutory rate on their income. Specific exclusions and deductions may cause income from some sources to be taxed at a different, usually lower rate. The U.S. tax code contains a large number of provisions that advantage particular industries or forms of investment. Each of these is a subsidy to the activity in question. In all, corporate "tax expenditures" were expected to cost the U.S. Treasury $148 billion in 2014.[34] Of course, if these were eliminated and the money used to cut rates, the cost to the government would be the same, at least in a static sense.

As a result, when one divides taxes paid by the actual profit a corporation makes, the effective rate of tax can be much lower. The exact rate, however, has been the source of controversy recently. In May 2013 the Government Accountability Office (GAO) issued a study estimating that profitable U.S. corporations paid an average effective federal tax of only 12.6 percent.[35] However, this estimate was immediately questioned by other economists.

The GAO calculated the tax rate only for 2010. Although this was the latest data available at the time, it also closely followed the severe recession of 2008. As a result, many

companies had past losses that they could deduct against their current income, lowering their tax liability. Thus, 2010 did not represent tax liability in an average year. Second, GAO omitted companies that had net losses in 2010. This artificially raised the calculation of total corporate profits and reduced the effective tax rate for the corporate sector as a whole. Finally, the study excluded foreign taxes paid. Although these revenues do not go to the United States, they are a burden on corporate earnings and, given current tax law, if foreign governments did not collect them, the United States would.

Martin A. Sullivan, who writes for *Tax Notes*, published a separate analysis of U.S. corporate taxes that included foreign taxes and calculated effective rates for several years. He concluded that "it seems reasonable not to revise the consensus view that average world-wide effective corporate tax rates are somewhere in the mid- or upper 20s when we are not in the throes of a recession."[36] Likewise, a 2011 study jointly issued by PricewaterhouseCoopers and the Business Roundtable calculated an average effective rate of 27.7 percent for the United States compared to 22.6 percent for other OECD countries and 18.9 percent for 18 European countries.[37] The study found that in 2009, U.S.-headquartered companies faced a higher effective rate than their counterparts in 42 out of the 58 countries surveyed.

Not only does the United States have the highest statutory corporate tax rate but it also has a relatively high effective tax rate.

AEI economists Kevin Hassett and Aparna Mathur calculated effective average tax rates and effective marginal tax rates for OECD countries in 2010.[38] The U.S. effective average rate was 29.0 percent compared to an OECD average excluding the U.S. of 20.5 percent. The effective marginal rate was 23.6 percent compared to a rest-of-OECD rate of 17.2 percent.

For 2012, the World Bank calculated the amount of taxes on profits (as opposed to labor and other taxes) as a percentage of commercial profits.[39] The U.S. percentage was 27.9, whereas the OCED rate was only 16.1. The World Bank estimates that, from 2009 to 2013, the total tax rate on U.S. companies equaled 46.3 percent of total commercial profits.[40] This rate was lower than that of Germany (49.4 percent), Japan (49.7 percent) and France (64.7 percent), but much higher than Canada (24.3 percent), the United Kingdom (34.0 percent) and Ireland (25.7 percent), three countries that are now in the forefront of tax competition.

A recent National Bureau of Economic Research working paper found that of 20 nations and regions, the United States had the second-highest effective corporate tax rate (with Japan the highest, although the paper was written before Japan lowered its corporate rate).[41] Moreover, of ten nations with data going back to 1989, only the United States saw an increase in its effective corporate tax rate. The other nine, including nations like Canada, France, Switzerland, and the United Kingdom, all saw reductions. In summary, not only does the United States have the highest statutory corporate tax rate but it also has a relatively high effective tax rate.

On top of these lower effective rates, many nations also provide tax holidays to particular firms making investments in their nation.[42] In India, semiconductor firms can deduct all their profits for the first ten years. In Vietnam, select foreign investments located in the Ho Chi Minh City high-tech economic zone pay no corporate taxes for the first four years of

operation and enjoy a 50 percent tax break the following nine years, after which the corporate rate is only 10 percent, compared with the normal 28 percent corporate rate.

THE POSSIBLE GOALS FOR TAX REFORM

Eric Toder of the Tax Policy Center has pointed out that, in a world of relatively fixed resources, countries compete for a variety of inputs, including skilled labor, financial and physical capital, corporate residence and intangible capital, tax revenues, and natural resources.[43] Because every policy has both a benefit and a cost, the wisdom of any policy to attract more of a resource needs to be balanced against its cost, often in the form of reduced tax revenues.[44]

Policymakers may also want to pursue a variety of goals with corporate tax policy. These might include:

- Not encouraging U.S. firms to move their domestic operations overseas.
- Encouraging foreign-owned firms to move their operations and/or headquarters to the United States.
- Not placing the foreign operations of U.S. companies at a disadvantage against foreign-owned firms.
- Encouraging investors to invest in U.S. companies.
- Encouraging firms to invest in key growth drivers, like R&D and equipment and software in their U.S. establishments.
- Not placing U.S. companies at a disadvantage when they are either acquiring another company or being acquired.
- Maximizing tax revenues.

Unfortunately, policies that achieve one goal may conflict with policies aimed at another resource or goal.[45] This is especially true if reform needs to be budget neutral because in that case any tax reduction must be offset with an increase. For instance, a reform bill that lowers statutory corporate rates by eliminating deductions will lower taxes on firms that use few deductions, but increase taxes on firms that use more. In the latter case, these firms are likely to be firms in internationally traded sectors that invest more in R&D and equipment.[46]

If this is true, then how can corporate tax reform significantly improve competitiveness and productivity? One solution is to reduce the effective corporate tax rate and to raise any compensating revenue from individuals. But if it must be budget neutral within the corporate sector, it is possible for it to support growth if it reduces compliance costs. A recent IRS publication estimated the costs of compliance for C corporations totaled $24.5 billion in 2009. The addition of S corporations and partnerships brought the total to $100 billion.[47]

Reform could also spur growth if it corrects significant growth-reducing inefficiency in the current tax laws. According to economic theory, if markets are working well, then any tax will impose a deadweight loss on the economy by discouraging otherwise desirable activity.[48] This loss can be offset if the tax revenues are spent in a way that benefits society, including on pro-growth tax incentives. But economics also predict that the battle over

how to spend public resources will encourage rent-seeking from private interest groups who try to divert them to private gain.[49] Put together, these two responses may cause the costs of tax policy to exceed its benefits.

Certainly some provisions of the corporate tax code are particularly inefficient sources of revenue and create perverse incentives for companies. The tax code contains significant incentives for companies to finance their investments with debt rather than equity because companies can deduct interest that they pay to bondholders but they cannot deduct dividends paid to stockholders. The latter thus are taxed at both the corporate and individual levels.[50]

By taxing dividends, but not interest, current law encourages companies to finance investments, including acquisitions, with debt, thus encouraging takeovers that may not be in the long-term interest of shareholders. Differential taxation of dividends can also encourage companies to engage in share repurchases rather than distributing profits to shareholders in the form of dividends.[51] The latter of course triggers a second level of taxation. If retained earnings are being productively employed, retention may be beneficial. But because the interests of corporate managers may differ from those of their shareholders, particularly long-term shareholders, retaining earnings may not lead to the most efficient capital utilization.

One way to make sure corporate tax reform significantly drives competitiveness and productivity is to reduce the effective corporate tax rate and to raise any compensating revenue from individuals.

Not all distortions, however, are efficiency reducing. For example, U.S. law also provides stronger incentives to invest in equipment rather than structures. The combination of depreciation rules and high statutory rates results in marginal rates for equity-financed investments in structures that are much higher than most other OECD countries, even though marginal rates on debt-financed investments in machinery are much lower.[52] But the evidence suggests that investment in equipment has a bigger impact on worker productivity than does investment in structures, so in this case this incentive is likely to be pro-growth.[53]

The inefficiency of the current system raises the possibility that a reduction in corporate taxes might pay for itself, either by generating more total revenue as a result of greater economic growth that generates investment and jobs, or by creating enough other social and economic benefits to justify the decrease in revenue.

STATUTORY RATES VS. CAPITAL INCENTIVES

As mentioned above, U.S. corporate tax laws contain a myriad of provisions giving specific activities and industries tax advantages. If the costs to the Treasury of all the provisions are added together, they total $148 billion in 2014.[54] Some of these do little to benefit either society or the economy. Instead of representing the public interest they often reflect only the political influence of the specific industry that benefits from them. There have been many calls to broaden the tax base by eliminating these tax expenditures and using the revenues to lower the statutory rate. But as described above, many of the provisions are in fact pro-growth and correct for real market failures.

Unfortunately, most of these provisions cost relatively little money. Repealing some of these may be good policy and raise some revenue, but it will not be enough to lower the corporate rate to anywhere near 25 percent. Table 2 lists the Treasury's estimate of how much the ten largest corporate tax provisions will cost in 2015 and over the next five years.

Tax Provision	2015	2015-2019
Deferral of income from controlled foreign corporations (normal tax method)	$75.5	$373.2
Deduction for U.S. production activities	$11.0	$59.4
Exclusion of interest on public purpose State and local bonds	$9.9	$66.5
Accelerated depreciation of machinery and equipment (normal tax method)	$8.1	$58.1
Credit for low-income housing investment	$7.9	$41.7
Expensing of research and experimentation expenditures (normal tax method)	$4.5	$28.6
Exclusion of interest on life insurance savings	$4.1	$22.7
Graduated corporation income tax rate (normal tax method)	$4.1	$21.0
Inventory property sales source rules exception	$3.9	$23.0
Credit for increasing research activities	$3.3	$12.4
Total of top 10 expenditures	$132.0	$818.1
Percent of total corporate tax expenditures	88.3%	89.0%

Table 2: The Ten Top Corporate Tax Expenditures[55]

Most of these provisions have the effect of reducing the cost of new capital investment, either across the board or in specific sectors such as manufacturing. As such, there is a problem with lowering the statutory rate going forward. The purpose of tax reform is presumably not to reward shareholders or corporate management for past investments. It is instead to encourage new investment in the country, either by getting individuals to invest in U.S. companies or convincing companies to locate and/or expand their operations here. Yet the initial impact of a lower corporate rate is to reward past investment, which is now unexpectedly taxed at a lower rate. As a result, little of the revenue loss ends up with new investors or new investment. As Shaviro says: "why hand to a given group what is arguably a windfall gain, just because its members happen to hold a given set of assets at the moment when people first realize that the law is going to change?"[56]

An alternative is to keep statutory rates where they are, but to lower the effective cost of new investment, for example by letting companies expense new capital investment. This

does not change the total amount of tax they will owe, but, because of the time value of money allowing them to defer at least some of the tax to later periods, it does save them money. Many of the main tax expenditures have this purpose either directly or indirectly. Faster capital recovery primarily benefits industries that invest more than average in capital equipment. This "distortion" can be desirable if it spurs additional investment going forward.

Other tax expenditures may also represent good policy. Economic theory says that society should invest in an activity as long as its social benefit outweighs its social cost. However, individuals—who make most of the investment decisions—only invest until the private benefit they receive no longer exceeds their cost. This does not make much of a difference when there are no externalities. But when a large portion of the benefit from investment goes to society and not the individual investor, the total amount of investment is less than it should be.

A classic example of this is research and development (R&D). Companies invest in R&D because it gives them a competitive advantage in producing better products and services at cheaper prices. However, research has shown that companies are able to capture only a portion of the benefit from their R&D.[57] The rest, especially in the case of earlier stage research, ends up benefiting the broader economy. This is good, except that companies then invest less than they otherwise might. The research and development tax credit attempts to address this problem by subsidizing some of the cost. The rationale is that the cost of this credit is more than paid for by the portion of R&D benefits that companies are unable to capture.

The purpose of tax reform is to encourage new investment in the country, either by getting individuals to invest in U.S. companies or by convincing companies to locate and/or expand their operations here. Elsewhere, ITIF has called for increasing and making permanent the R&D tax credit to bring it closer to those of other industrialized countries. The proposed credit would equal 45 percent of a company's investments in R&D and skills training and 25 percent of spending on new equipment and software. Only expenditures in excess of 75 percent of a base period (instead of the current 50 percent) would qualify, however.[58]

The effect of various tax provisions shows up in the degree to which the effective tax rate differs between industries. Finance professor Aswath Damodaran has calculated effective tax rates for individual companies and industries.[59] Table 3 shows his estimates of the aggregate effective tax rates facing specific industries. The table shows that rates vary widely depending upon the industry. Whether this makes sense or reflects the economic realities of each sector are separate questions. Specifically, it is not clear that current policy favors either capital intensive, highly internationally mobile, or highly innovative industries. Yet these are the types of industries that are both most important to future productivity and competitiveness and the most likely to respond to tax incentives.

Industry	Aggregate Effective Tax Rate for 2013
Aerospace/Defense	30.71%
Auto Parts	13.64%
Bank	30.38%
Biotechnology	37.63%
Computer Services	23.31%
Computer Software	19.30%
Construction	20.47%
Entertainment	28.94%
Healthcare Services	35.16%
Hotel/Gaming	9.91%
Internet software and services	23.25%
Machinery	26.47%
Metals & Mining	36.36%
Pharma & Drugs	22.65%
Restaurant	29.72%
Retail (General)	35.10%
Semiconductor	20.48%
Telecom. Services	12.69%
Trucking	40.80%
Utility (General)	32.04%
Total Market	**20.47%**

Table 3: Effective Tax Rates for Specific U.S. Industries[60]

INTERNATIONAL ASPECTS OF U.S. CORPORATE TAXATION

The United States is one of the few countries that tax home corporations on all of their worldwide income. Although no country totally exempts all foreign income from tax, for the most part other countries tax domestic corporations only on the income earned within their borders. U.S. corporations do, however, receive a credit for taxes paid to foreign jurisdictions.[61] U.S. law is significantly complicated by the fact that the tax on foreign income is not levied until the profits are repatriated to the United States. As long as companies keep the money abroad, no tax is due. Partly as a result, American companies

currently hold an estimated $2 trillion overseas.[62] Many have argued that bringing this money back would increase tax revenues, domestic investment, and jobs.[63] Others have been less sanguine.[64]

Deferral is further complicated by the complicated rules of subpart F of the tax code, which makes certain types of foreign income immediately taxable. Shaviro concludes that: "[t]he unholy combination of deferral plus the foreign tax-credit limit does much to make the U.S. tax rules for outbound investment by our multinationals so administratively costly, relative to the revenue raised."[65]

So long as different countries have different corporate tax rates, decisions to tax foreign income require policymakers to choose between irreconcilable goals.

So long as different countries have different corporate tax rates, decisions to tax foreign income require policymakers to choose between irreconcilable goals. On the one hand, tax policy should not encourage companies selling to American consumers to move their production activities or headquarters overseas in search of a lower tax rate. This can be prevented by subjecting foreign earnings to the same tax rate as domestic earnings. On the other hand, tax policy should not disadvantage U.S. companies that want to export their product by imposing a higher tax rate than their overseas competitors face. Nor should it disadvantage U.S. companies that need to move some operations overseas in order to compete in these markets. The latter can be prevented by not taxing foreign income. Going even further, tax policy should not tilt the balance when individual investors are deciding whether to purchase U.S. or foreign stock and when U.S. and foreign companies are trying to purchase other corporations or move their production and/or headquarters.

It is not possible to accomplish all of these objectives with tax policy alone. Historically, the United States has seemed much more worried about the threat of U.S. companies investing off-shore than it has been with allowing them to compete effectively in foreign markets. This view has assumed that American investors would be reluctant to shift their stock portfolios from American companies to foreign ones. It also assumed that the benefits to the U.S. economy from stronger U.S. multinationals, even if more production was outside the United States, were relatively low. And finally, the United States has remained relatively unworried about the national ownership of specific firms. This lack of concern has been buttressed by anti-inversion rules that make it harder for U.S. companies to relocate their headquarters to low-tax jurisdictions.

But it is reasonable to ask whether this is now a wise long-term strategy. Companies are increasingly able to move operations, headquarters, and ownership overseas. Much of the economic growth in the future is expected to be abroad. As economist Ike Brannon testified:

> Do U.S. corporations operate abroad in order to avoid expensive labor costs here or in order to service and compete in those markets abroad? An honest answer would concede that some of both is at work, but I submit that in a global economy that is growing more integrated every day—and where tens of millions of households in developing countries are joining the ranks of the middle class every year—the main driver in the expansion of U.S. companies abroad is the profitable opportunities presented by these growing markets.[66]

While existing firms may face economic and legal barriers, new firms have complete freedom over whether to incorporate, where to incorporate, and where to operate. Moreover, the current system is likely imposing large deadweight losses. Shaviro finds that:

> U.S. international tax rules provide an almost canonically bad system for taxing outbound investment given how little revenue they raise relative to the tax-planning, compliance, and administrative costs that they generate. Many of these costs would be reduced by moving to either of the poles between which our international tax policy is suspended—that is to full worldwide taxation (with foreign tax credits but without deferral) or to exemption.[67]

Nor is it clear that U.S. investment overseas comes at the cost of domestic investment. Shaviro finds that "a set of firm-level or industry-level studies analyzing data from Australia, Canada, Germany, and the United States have failed to find any association between outbound investment and reduced domestic investment."[68] One study estimates that, because foreign and domestic investment are complements, a 10 percent increase in foreign investment is associated with a 2.6 percent increase in domestic investment, and a similar increase in foreign employee compensation is associated with 3.7 percent more domestic compensation.[69]

The debate in Congress is currently between moving even closer toward full worldwide taxation by eliminating deferral, or moving toward a territorial system in which foreign-source active income is largely exempt from tax. Of course, the perverse effects of the current system decline as the statutory tax rate is lowered.

WHY DOES IT MATTER?

Like any other public policy, corporate tax reform should not be an end in itself. Lawmakers should pursue it only to the extent that it benefits society. The fact that lower corporate taxes and tax incentives for investment and research and development would benefit U.S. companies is also not in itself a sufficient reason for change; so would any other policy that transferred resources from the general public to corporations and their shareholders. Tax reform is only important if the benefits are spread widely throughout the population through stronger and more sustained economic growth.

Recent research suggests that these benefits do exist. Future standards of living depend upon continued improvements in productivity. Higher productivity in turn requires a steady stream of innovation to discover better ways of doing things and increased investment in equipment and software because such capital increases worker productivity. Economic studies show that corporate tax policy can have important effects on the willingness of businesses to make major investments, including those in capital equipment and research and development. These investments in turn often have huge spillover effects that benefit the rest of society.

Taxes and Investment

Citing the work of economists Roseanne Altshuler and Harry Grubert, the Obama administration has acknowledged that there is ample evidence that the decisions of U.S. multinationals about where to invest are highly sensitive to the effective tax rates that they will face.[70] Looking at the period from 1984 to 2000, Altshuler and Grubert concluded that: countries competed on tax rates; that U.S. manufacturers may have become more sensitive to differences in local tax rates across countries; that manufacturers' transactions with related parties had increased dramatically; and that low-tax countries were becoming much more important destinations for U.S.-produced intangible assets.[71] In other words, with companies facing many more choices globally as to where to locate production and with much more intense international economic competition, tax policy now matters more than ever in determining investment.

With companies facing many more choices globally as to where to locate production and with much more intense international economic competition, tax policy now matters more than ever in determining investment.

A number of other studies show that corporate investment is sensitive to tax rates. For instance, Djankov et al. looked at effective corporate income tax rates in 85 countries in 2004 and concluded that a 10 percent increase in the effective corporate tax rate reduced the aggregate investment-to-GDP ratio by 2.2 percentage points and reduced the ratio of foreign direct investment to GDP by 2.3 percentage points.[72] Gemmell et al. looked at corporate tax rates in 11 European countries and found that productivity growth in small firms was slower in the higher tax jurisdictions, presumably because high rates reduced the after-tax returns of investments that would allow the firms to catch up to the productivity frontier.[73] Ben Bernanke found that "a one percentage point innovation in the investment tax credit raises net equipment investment 1.9 percent and net structures investment 0.3 percent in the first year."[74]

There is also evidence that the relationship between tax policy and investment has increased over time. Altshuler, Grubert, and Newlon found that the elasticity of foreign direct investment to corporate tax rates increased from 1.5 to 3.0 between 1984 and 1992.[75] In a meta-analysis of previous studies, DeMooij and Ederveen found that the median elasticity was around 3.3 and that studies using more recent data tended to yield higher elasticities.[76]

Taxes and Economic Growth

Other studies show a clear link between corporate tax rates and economic growth.[77] One of the most influential was by Christina and David Romer (Ms. Romer later became President Obama's first Chair of the Council of Economic Advisors).[78] They tried to identify unexpected changes in U.S. tax rates and link them to business activity, and they found that tax changes have a large effect on economic output: an unanticipated tax increase of 1 percent of GDP lowers real GDP by almost 2.5 to 3.0 percent, although tax increases to reduce an inherited budget deficit might have lower costs. Perotti uses a different technique to separate out the different causes of tax increases and estimates that increasing taxes by one percentage point of GDP causes output to fall by about 1.3 percentage points after three years.[79]

Other studies have looked specifically at corporate taxes. Roberto Ferede and Bev Dahlby looked at corporate rates in Canadian provinces from 1977 to 2006 and found that a higher statutory rate was associated with lower private investment and slower economic

growth. A one percentage point cut in the corporate tax rate was associated with a 0.1 to 0.2 percent increase in the annual growth rate.[80] Karel Mertens and Morton Ravn look at changes in U.S. personal and corporate tax rates and find that a one percentage point rise in the average corporate income tax rate causes real GDP to fall by 0.6 percent after one year.[81] The cut in the corporate rate produces a large increase in the tax base, which rises by 3.8 percent in the first six months. As a result, corporate tax revenues vary insignificantly so cuts appear to be self-financing. Young Lee and Roger Gordon review data from 70 countries between 1985 and 1997 and conclude that cutting the corporate tax rate by 10 percentage points would increase annual GDP growth by 1.1 to 1.8 percentage points.[82]

A series of OECD papers confirm these results. The first study looked at 100,000 firms in 41 European countries between 1998 and 2004. The study finds that a 10 percent increase in the user cost of capital (through higher taxes) lowered investment by 7 percent and that reducing the corporate tax rate from 35 percent to 30 percent would increase annual productivity by 0.4 percentage points.[83] The second paper looked at 21 industries in 16 OECD countries between 1983 and 2001 and concluded that reducing the corporate rate from 35 percent to 30 percent would increase average yearly total factor productivity in the industry by 0.1 percentage points.[84] The third paper looked at general tax revenues in 21 OECD countries between 1971 and 2004 and concluded that, among all types of taxes, corporate income taxes have the most negative effects on GDP per capita.[85]

Taxes and Research and Development

Finally, there is also a large body of literature on both the economic benefits of research and development and the responsiveness of corporate R&D to tax credits.[86] As early as 1998 Charles Jones and John Williams computed the social rate of return from R&D and concluded that the optimal level was at least two to four times actual investment.[87] Nicholas Bloom, Mark Schankerman, and John Van Reenen estimate that the gross social returns from R&D are at least two times as high as the private rate.[88] Clearly more investment in innovation would benefit the country.

President Obama's proposal cites evidence showing that every dollar of federal revenue spent on the research and development tax credit leads to companies spending at least one additional dollar on R&D.[89] This finding has been duplicated in numerous studies. Bronwyn Hall and John Van Reenen find the same result when looking across OECD countries.[90] Martin Falk finds that tax incentives for R&D have a significant effect on business R&D spending, with a 1 percent decline in the price of R&D leading to a 0.9 percent rise in corporate R&D.[91] Many other studies find even larger impacts per unit of tax expenditure. Dominique Guellec and Bruno Van Pottelsberghe find that tax incentives have a positive effect on business R&D, especially when they are stable over time.[92] The administration argues that the social benefit from each dollar of foregone revenue from the tax credit ranges from $2 to $2.96.[93]

THE INTERRELATIONSHIP BETWEEN CORPORATE AND INDIVIDUAL INCOME TAXES

Another issue is whether corporate reform should depend on or be accompanied by reform of the individual income tax. Individual taxes need reform. For fiscal year 2013, income tax

expenditures are estimated to total $1.09 trillion, while total individual income tax revenue is estimated at $1.36 trillion.[94] While some of these incentives serve important social purposes (e.g., the charitable contributions deduction) others appear to lead to economic distortions that reduce growth (e.g., the mortgage interest deduction).

Any significant reform of the corporate income tax will likely impact the individual tax code in three important ways. The first is in how small businesses are organized. A great deal of economic activity takes place within small businesses owned by at most a few people. These businesses generally have a great deal of latitude to determine the exact legal structure under which they operate. When the 1986 tax reform lowered individual tax rates far below the top corporate rate, there was a large shift in economic activity away from regular corporations and into pass-through entities that are taxed only at the individual level. Between 1986 and 2004, the share of taxable business income earned by pass-through entities rose by 75 percent, from 29 percent of all business income in 1987 to 52 percent in 2004.[95] As a result, in 2007 the U.S. corporate tax base was just 13 percent of GDP, compared to an unweighted average in the rest of the OECD of 22 percent.[96] Many of these are sole proprietorships. Others are partnerships or chapter S corporations. The change did not happen overnight, but it became significant over time. Reform that significantly lowered corporate taxes but left the highest individual rates at roughly 40 percent would cause at least some pass-throughs to incorporate.

The second impact is that, even without a change in the statutory individual tax rate, any reform that eliminates tax expenditures will also raise the effective tax rate on pass-through entities to the extent that they also take advantage of these provisions.[97] For example, any delay in capital write-offs would presumably apply to all firms, whether or not they were incorporated. But partnerships and chapter S corporations would not benefit from the reduced corporate tax rate that came with it (although they do benefit from not having to pay the corporate tax at all).

Corporations offer business owners both benefits and costs. One of the primary disadvantages is that income might be taxed twice, once at the corporate level and again at the individual level, unless the business owner can structure his finances in a certain way. Some sensible reforms, such as letting companies deduct dividends as they can interest, could reduce this extra burden. One of the primary benefits is that public corporations are a particularly efficient means of raising large sums of capital. However, the increased sophistication of financial markets and the growth of private equity firms may have reduced the relative importance of equity markets over the last few decades. A second benefit is that corporate profits are not taxed at the individual level until the investor receives them in the form of dividends or capital gains. They can thus be used to shelter income for an extended time. This is one of the principal reasons why, despite its imperfections, some form of corporate tax might be needed. Whenever the top corporate rate is significantly below the top individual rate, wealthy individuals will be able to indefinitely postpone the taxation of large amounts of their income so long as they keep it within the corporation.[98] Although this exposes the owners to double taxation for all gains (including investment gains) as long as assets are held in the company, if stock is held until the death of the owner the new owner gets a stepped-up basis to reflect its current value.

Thus gains may never be subject to the individual income tax, although they might be subject to the estate tax.

TAX REFORM AND THE BUDGET PROCESS

The Statutory Pay-As-You-Go Act of 2010[99] requires that all new legislation changing revenues or mandatory spending be offset with other changes so that there is no increase in the federal deficit.[100] This requirement is governed by the official estimates of the Congressional Budget Office (CBO) and the Joint Committee on Taxation (JCT).

As a result, any reduction in tax rates or increase in investment incentives must normally be offset by other changes that reduce the deficit. In practice, the expectation is that reductions in tax revenue will be offset by tax increases rather than spending cuts and that these changes will occur within the same bill rather than in separate pieces of legislation. This revenue-neutral requirement severely limits the ability of policymakers to substantially lower effective tax rates to the point where they would be comparable with those of other countries. Ignoring macroeconomic dynamic growth effects also biases the process against lower effective rates.

The pay-go requirement exists for good reasons. Congress always finds it easier to please constituents than to disappoint them. And generally increasing spending is politically more popular than cutting it, just as reducing taxes is easier than raising them. Before pay-go this dynamic led to steady increases in the federal deficits and made it hard to enforce any large budget deals on subsequent Congresses. Under pay-go every Congress must find a way to pay for new spending programs or tax cuts.

Yet not all spending increases and tax cuts are equal. Some clearly have a positive effect on economic growth. Unfortunately, this effect is not included in the official estimates of either CBO or JCT. As an example, if legislation reduced the corporate tax, the JCT estimate would include the cost of the reduced tax rate, holding business investment steady. This cost would be offset by new revenues on the additional investment that the Committee believed would occur as a result of lower taxes. But the JCT would not estimate the effect of this additional investment on economic growth and the lower spending and higher tax revenues that growth would produce.

Usually this does not matter. The effects of most legislation are not large enough to affect national output. Moreover, budget scores are controversial enough without "dynamic scorekeeping." The degree to which broad corporate tax reform would increase overall economic activity is highly uncertain. Yet it is also difficult to argue that all major tax cuts or spending increases have the same effect on national savings, investment, and productivity. A dramatic decrease in corporate tax rates almost certainly would generate offsetting revenues as economic activity increased, as would increases in incentives like the R&D credit.[101] Refusing to acknowledge this just because any estimate of the effect lacks more than the already low amount of precision is likely to doom many positive reforms, even before they are debated.

Two recent studies have argued that the revenue-maximizing corporate rate is less than the current combined 39 percent. Kimberly Clausing looked at corporate revenues relative to GDP among OECD states from 1979 to 2002 and found a revenue maximizing rate of 33 percent for the international sample.[102] Alex Brill and Kevin Hassett duplicated her work and extended it back to 1980. They found that the revenue-maximizing rate has decreased over time, and the rate was 26 percent for 2000-2005.[103] These estimates are criticized by Jane Gravelle and Thomas Hungerford, however, who argue that the estimating methods used produce biased and inconsistent estimates.[104]

More recently, a team of economists tried to estimate the economic effects of taxing corporations the way pass-through entities are taxed. The study concluded that doing so would lead to sharp increases in U.S. investment, output, and real wages and would largely finance itself. Replacing the lost revenue with higher personal tax rates would still raise the capital stock by 23 percent, output by 8 percent and real wages by 12 percent.[105]

Recently, a team of economists tried to estimate the economic effects of taxing corporations the way pass-through entities are taxed, and concluded that doing so would lead to sharp increases in U.S. investment, output, and real wages.

A deeper question involves the sanctity of budget neutrality. Assuming Congress agreed that a certain tax reform would have a strong positive impact on economic growth at the cost of a moderate increase in the deficit, surely that is a choice it should be allowed to make. In certain circumstances such reform could actually reduce the burden of debt by increasing GDP even though it increases deficits. As ITIF has argued elsewhere, the best target for correcting our fiscal imbalances is the debt-to-GDP ratio, which measures our ability to repay the debt rather than the size of the debt itself.[106] Policies that have a noticeable impact on economic growth may reduce this ratio by boosting the denominator even if they also marginally increase the numerator.

Yet current budget rules effectively rule out such a policy. Although Congress retains the ability to waive the budget act in some circumstances, doing so invokes procedural hurdles, which, given tax reform's delicate state, would probably doom it. As a result, tax reform will be difficult to achieve without broad agreement that the economic effects of corporate tax reform justifies a relaxation of the pay-go requirements. There is some indication that this is already happening. JCT has agreed to incorporate some macroeconomic effect into its tax estimates. Its official estimate of Chairman Camp's Tax Reform Act of 2014 is that it would raise taxes by $3 billion over ten years, but in a separate analysis it concluded that the legislation would also raise between $50 billion and $700 billion in additional revenues over the decade as a result of higher GDP growth.[107]

But an agreement over the proper budget treatment will be even harder if we cannot agree on the proper goal of tax reform. For many Democrats, the primary purpose of tax reform is to raise revenues, especially in a progressive way which they define as higher taxes on the wealthy and corporations. Although additional revenues are necessary, at least on a temporary basis to help improve the budget situation, tax increases that would reduce economic activity would be self-defeating. One of the best ways to kill both tax and budget reform is to link the need for additional revenues to tax reform rather than a later "grand bargain" that also includes significant reforms to entitlement programs. Another way is to refuse to acknowledge that significant tax reductions on the corporate side will require tax increases elsewhere.

POSSIBLE SOURCES OF NEW REVENUE

A key goal of tax reform should be to lower the effective corporate tax rate, not just the statutory rate. If new income is needed in order to reduce effective corporate tax rates, there are several sources that would impose less of a deadweight burden on the economy and could even promote U.S. competitiveness. But any additional revenues raised during tax reform (and outside of a grand bargain) should be devoted solely to reducing other taxes that have a worse effect on growth.

Higher Individual Marginal Tax Rates on the Wealthiest Americans

The top 1 percent of Americans have benefitted disproportionately from the economic growth of the last few decades.[108] Although much of this income is the legitimate product of entrepreneurial risk that created tremendous social value, much is not. In particular, a large portion of wealth has gone to the financial sector and seems to reflect economic rents from activity that provides little social value. Even where high incomes are legitimately earned, social equity demands that those most able to pay bear a large share of the transition costs associated with restoring the nation's fiscal health and competitiveness. There is little evidence that modestly higher rates will cause the wealthy either to work less or to renounce their U.S. citizenship in search of low tax havens.

However, higher rates on the wealthy cannot be a major source of revenues for two reasons. First any significant gap between individual and marginal rates will invite businesses to change their organizational form in order to reduce tax payments. Specifically, significantly higher marginal rates will encourage businesses to incorporate in order to shield as much income as possible from the higher rates for as long as possible. Second, the wealthy are often in a position to pass on the cost of higher taxes to others or to take more income in nontaxable forms. As a result, raising rates beyond a certain level is likely subject to diminishing marginal returns, especially over the long term. Despite this, expanding the number of taxpayers subject to the maximum tax rate, and taxing dividends, carried interest and capital gains as normal income can be effective revenue raisers to pay for corporate tax reduction.

Carbon Tax[109]

Despite the protestation of many conservatives, climate change is a reality. Yet the American public will not support policies that impose high costs in pursuit of long-term benefits, especially in the absence of action by the developing countries. However, revenue-neutral carbon taxes that rise slowly over time would impose few costs on the American economy. In fact, by reducing other forms of pollution, they could generate significant off-setting health benefits. Moving toward a carbon tax would be even more efficient if it substituted for the administration's current approach of trying to regulate emissions under the Clean Air Act.

The tax would also change relative prices in favor of carbon-neutral technologies over time. CBO estimates that a tax of $25 per metric ton of carbon dioxide and other greenhouse gases that increased by a real rate of 2 percent each year would generate over $1 trillion over 10 years.[110] Using much of these revenues to offset the costs of corporate tax reduction would also reduce the negative impact of the carbon tax on competitiveness.[111]

Value Added Tax[112]

Most other countries rely on some sort of consumption or value added tax (VAT) for a significant portion of their tax revenues. If the revenues from a VAT were used to reduce corporate taxes, this change would move the U.S. system away from taxing savings and investment and toward taxing consumption. The VAT has the added benefit of being border adjustable. Authorities could levy the tax on imports thereby preventing them from enjoying a price advantage compared to domestic production. The tax would not be levied on exports, which typically are already subject to tax in their destination market. This would ensure that U.S. exporters could more effectively compete in overseas markets and reduce the incentive to move production overseas.

THE OUTLOOK FOR CORPORATE TAX REFORM

There is a cost to frequent tax changes because economic uncertainty, including about future tax rates, tends to reduce investment. The stability of the current statutory rate has been beneficial, but, like any other policy, it must eventually adapt to a changed world. Still, given the benefits of stability, policymakers need to choose a corporate tax policy that will work for at least the next 10 to 20 years. In doing so they should ask themselves whether capital is likely to become less mobile or more. Will companies develop more flexibility in how to structure their balance sheets and supply chains or less? Will international competition for jobs and investment grow or decline? Will the share of intangible income as a percentage of profits rise or fall? If the future economy is likely to be more fluid than today's, then high corporate rates are likely to put a greater burden on it.

Over the next decade or two, will companies develop more flexibility in how to structure their balance sheets and supply chains or less? Will international competition for jobs and investment grow or decline? Will the share of intangible income as a percentage of profits rise or fall?

It is difficult to see a way toward corporate tax reform in 2014 or even, for that matter, any time before the 2016 presidential election. Congress is already preoccupied with a number of other issues, including the budget, implementation of the Affordable Care Act, and immigration reform. Increasingly, members' attention will turn toward the elections this fall in which Republicans hope to take control of the Senate and Democrats hope to retain it.

Tax reform is difficult in the best of circumstances. Any change is bound to upset powerful interests. Even a reduction of tax rates on one industry may trigger opposition from indirect competitors who suddenly lose part of their competitive advantage. The arcane language of the statutes and regulations makes it very difficult for all but the most expert practitioners to understand and influence the debate. Surprisingly, even the complete repeal of the corporate tax accompanied by greater pass through of corporate income to the individual level would be opposed by many small businesses people who would suddenly lose an important tool for deferring taxes.

Most importantly, tax reform currently lacks the one thing it needs most: strong and sustained support from the president. Although leaders of the relevant committees are devoted to the idea of reform, most members have not yet focused on it. For them, reform will mean a series of extremely contentious votes with no assurance that a final bill will be passed. Only a president can bring to bear enough political pressure to overcome special interests and persuade reluctant congressmen. Only he or she can build public support for reform and assure negotiators that any agreements will be honored in the final legislation.

Although President Obama has put forward a tentative plan,[113] it is clear that corporate tax reform is not an administration priority. There is no indication that this will change in the next Congress. The reform proposal was not widely regarded as trying to craft a middle ground. There has been little follow up in the two years since it has been issued. Perhaps equally important, it is not clear that President Obama has the ability to craft major legislation in a divided Congress. Even for his greatest legislative accomplishments, the White House was more of a follower than a leader in crafting the specifics of the bill. The leading from behind strategy is unlikely to work in the context of tax reform.

Nevertheless, the urgency of corporate tax reform will remain. A great deal of work will continue to go into educating members and the public about the need for reform, studying the impact of both current law and possible replacements, and searching for common ground among opponents. This work is making steady progress and is likely to bear fruit over the next five to seven years. But if it is to have a real and sustained positive impact on the U.S. economy, tax reform will need to be done right.

ENDNOTES

1. Alan J. Auerbach, “A Modern Corporate Tax” (Center for American Progress and Hamilton Institute, December 2010), 1, http://www.americanprogress.org/issues/2010/12/pdf/auerbachpaper.pdf.
2. Eric Toder, “Corporate Income Tax Reform…Dreaming On,” *Milken Institute Review* (First Quarter 2014), 16-27, 18.
3. Office of Management and Budget, *Budget of the U.S. Government, Fiscal Year 2015*, Historical Tables, Tables 2.2 and 2.3.
4. Ben Miller and Robert D. Atkinson, “Are Robots Taking Our Jobs, or Making Them?” (ITIF, September 2013), http://www2.itif.org/2013-are-robots-taking-jobs.pdf.
5. Daniel N. Shaviro, *Decoding the U.S. Corporate Tax* (Urban Institute Press, 2009), 26-27.
6. Ibid., 27-28.
7. Ibid., xi.
8. Miller and Atkinson, “Are Robots Taking Our Jobs, or Making Them?”
9. Arnold C. Harberger, “The Incidence of the Corporation Income Tax,” *Journal of Political Economy* 70, no. 3 (June 1962), 215-40.
10. Jane G. Gravelle and Kent Smetters, “Who Bears the Burden of the Corporate Tax in the Open Economy?” *NBER Working Paper*, no. 8280 (May 2001), 2, http://www.nber.org/papers/w8280.pdf?new_window=1.
11. Victor R. Fuchs, Alan B. Krueger, and James M. Poterba, “Why Do Economists Disagree about Policy? The Role of Beliefs about Parameters and Values,” *NBER Working Paper*, no. 6151 (August 1997), 12, http://www.nber.org/papers/w6151.pdf?new_window=1.
12. Jennifer Gravelle, “Corporate Tax Incidence: Review of General Equilibrium Estimates and Analysis,” *National Tax Journal* 66, no. 1 (March 2013), 185-214.
13. Mihir A. Desai, C. Fritz Foley, and James R. Hines Jr., “Labor and Capital Shares of the Corporate Tax Burden: International Evidence” (unpublished paper, December 2007), http://www.people.hbs.edu/mdesai/PDFs/Labor%20and%20Capital.pdf.
14. Li Liu and Rosanne Altshuler, “Measuring the Burden of the Corporate Income Tax Under Imperfect Competition,” *National Tax Journal* 66, no. 1 (March 2013), 215-38.
15. R. Alison Felix, “Passing the Burden: Corporate Tax Incidence in Open Economies” (unpublished paper, October 2007), http://www.kansascityfed.org/Publicat/RegionalRWP/RRWP07-01.pdf.
16. Julie Anne Cronin et al., “Distributing the Corporate Income Tax: Revised U.S. Treasury Methodology,” *National Tax Journal* 66, no. 1) (March 2013), 239-62.
17. Joint Committee on Taxation, “Modeling the Distribution of Taxes on Business Income” (U.S. Congress, October 16, 2013), publication JCX-14-13, https://www.jct.gov/publications.html?func=download&id=4528&chk=4528&no_html=1.
18. Shaviro, *Decoding the U.S. Corporate Tax*, xiii.
19. Kimberly A. Clausing, “In Search of Corporate Tax Incidence,” *Tax Law Review* 65 (2012), 433-72, 434.
20. According to the U.S. Bureau of Economic Analysis, corporate profits as a share of national income from 1961 to 1970 averaged 11 percent, while from 2001 to 2010 they averaged 11.5 percent.
21. See www.irs.gov/pub/irs-soi/02corate.pd
22. Jane G. Gravelle, “Does the Concept of Competitiveness Have Meaning in Formulating Corporate Tax Policy?,” *Tax Law Review* 65, no. 3 (Spring 2012), 323-47; Paul Krugman, “Competitiveness: A Dangerous Obsession,” *Foreign Affairs* 73, no. 2 (March/April 1994), 28-44.
23. Ira C. Magaziner and Robert B. Reich, *Minding America’s Business: The Decline and Rise of the American Economy* (Vintage, NY: Harcourt Brace Jovanovich, 1982).
24. Robert D. Atkinson, “Competitiveness, Innovation, and Productivity: Clearing Up the Confusion” (ITIF, August 2013), 2-3, http://www2.itif.org/2013-competitiveness-innovation-productivity-clearing-up-confusion.pdf.
25. For example, see Gravelle, “Does the Concept of Competitiveness Have Meaning in Formulating Corporate Tax Policy?,” 343-45.

26. Samuel J. Palmisano, "The Globally Integrated Enterprise," *Foreign Affairs* 85, no. 3 (May/June 2006), 127-36.
27 . Adam Davidson, "Making it in America," *The Atlantic*, January/February 2012, http://www.theatlantic.com/magazine/archive/2012/01/making-it-in-america/308844/?single_page=true.
28. Hearing on Tax Reform Options: Incentives for Capital Investment and Manufacturing Before the United States Senate Finance Committee, # Cong. (2012) (written testimony of Robert D. Atkinson, ITIF), http://www.finance.senate.gov/imo/media/doc/Testimony%20of%20Robert%20Atkinson.pdf.
29. Ibid.
30. Michael P. Devereux, "Developments in the Taxation of Corporate Profit in the OECD Since 1965: Rates, Bases and Revenues," *Oxford University Centre for Business Taxation Working Paper*, no. 07/04, December 2006, http://ideas.repec.org/p/btx/wpaper/0704.html.
Will McBride, "What is the Evidence on Taxes and Growth?" *Tax Foundation Special Report*, no. 207 (December 18, 2012), http://taxfoundation.org/sites/taxfoundation.org/files/docs/sr207.pdf
31 . Ibid.
32. Ibid., 25.
33. Ibid.
34. Office of Management and Budget, "Analytical Perspectives," in *Budget of the United States Government, Fiscal Year 2015* (Washington, DC: OMB, March 2014), Table 14-2.
35. Government Accountability Office, "Corporate Income Tax: Effective Tax Rates Can Differ Significantly from the Statutory Rate" (GAO, May 30, 2013), GAO-13-520, http://gao.gov/assets/660/654957.pdf.
36. Martin A. Sullivan, "Behind the GAO's 12.6 Percent Effective Corporate Rate," *Tax Notes*, July 15, 2013, 199.
37. PricewaterhouseCoopers, "Global Effective Tax Rates" (PricewaterhouseCoopers and Business Roundtable, April 14, 2011), http://businessroundtable.org/sites/default/files/Effective_Tax_Rate_Study.pdf.
38. Kevin A. Hassett and Aparna Mathur, "Report Card on Effective Corporate Tax Rates: United States Gets an F" (American Enterprise Institute, February 2011), http://www.aei.org/files/2011/02/09/TPO-2011-01-g.pdf.
39. World Bank, Doing Business website, accessed February 19, 2014, http://www.doingbusiness.org/data/exploretopics/paying-taxes.
40. World Bank, http://data.worldbank.org/indicator/IC.TAX.TOTL.CP.ZS.
41. Kevin S. Markle and Douglas A. Shackelford, "Cross-Country Comparisons of Corporate Income Taxes," *NBER Working Paper No. 16839* (February 2011), http://www.nber.org/papers/w16839.pdf?new_window=1.
42. Alexander Klemm, "Causes, Benefits, and Risks of Business Tax Incentives," *IMF Working Paper*, no. 09/21 (January 2009), http://www.imf.org/external/pubs/ft/wp/2009/ wp0921.pdf.
43. Eric Toder, "International Competitiveness: Who Competes Against Whom and for What?" *Tax Law Review* 65, no. 3 (Spring 2012), 505-34, 533.
44. Ibid., 533.
45. Ibid., 533.
46. Ibid., 529.
47. George Contos, et al., "Taxpayer Compliance Costs for Corporations and Partnerships: A New Look" (presented at the IRS-TPC Research Conference, June 21, 2012), http://www.irs.gov/pub/irs-soi/12rescontaxpaycompliance.pdf.
48. Shaviro, *Decoding the U.S. Corporate Tax*, 25-27.
49. Anne O. Krueger, "The Political Economy of the Rent-Seeking Society," *American Economic Review* 64, no. 3 (June 1974), 291–303.
50. Shaviro, *Decoding the U.S. Corporate Tax*, 33-36. Shaviro points out that the law favors equity over debt if the corporate rate is lower than the individual rate and investors avoid any distribution.
51. Ibid., 36-39.
52. Congressional Budget Office, "Options for Taxing U.S. Multinational Corporations" (CBO, January 2013), 31.

53 For example, see Jonathan Temple and Hans-Joachim Voth, "Human Capital, Equipment Investment, and Industrialization," *European Economic Review* 42, no. 7 (1998), 1343-62; Bart Van Ark, "Measuring the New Economy, An International Comparative Perspective," *Review of Income and Wealth* 48 (2002), 1-14; Lorin M. Hitt and Prasanna Tambe, "Measuring Spillovers from Information Technology Investments" (proceedings of the 27th International Conference on Information Systems, Milwaukee, WI, 2006), 1793.

54. Office of Management and Budget, "Analytical Perspectives," Table 14-2. This is not an estimate of how much Treasury could raise if all of the provisions were repealed since some of the provisions interact with others.

55. Office of Management and Budget, *Budget of the U.S. Government, Fiscal Year 2015*, Analytical Perspectives, Table 14-2.

56 . Shaviro, *Decoding the U.S. Corporate Tax*, 71. Shaviro answers his own question by suggesting that doing so reduces the discouraging effect of the double tax on new equity while investors are waiting for reform to be enacted. Ibid. at 186.

57. Robert D. Atkinson, "The Case for the Research Tax Credit," *Tax Notes*, no. 11.142 (March 17, 2014): 1126-1231.

58. Robert D. Atkinson, "An Innovation and Competitiveness-Centered Approach to Deficit Reduction" (ITIF, January 2014), 5, http://www2.itif.org/2014-innovation-competitiveness-approach-deficit-reduction.pdf.

59. The industry figures are available at: http://www.stern.nyu.edu/~adamodar/pc/datasets/taxrate.xls. Downloaded February 20, 2014.

60. Ibid.

61. This has the somewhat perverse effect of making them indifferent regarding the tax rate that other countries levy. It also gives other countries a greater incentive to raise taxes on American companies. Deferral reduces these incentives.

62. See Dena Aubin "U.S. Companies' Overseas Earnings Hit Record $1.9 Trillion: Study," *Reuters*, May 8, 2013, http://www.reuters.com/article/2013/05/08/us-usa-taxes-oveseas-idUSBRE9470Z920130508.

63. Laura D'Andrea Tyson, Kenneth Serwin, and Eric J. Drabkin, "The Benefits for the U.S. Economy of a Temporary Tax Reduction on the Repatriation of Foreign Subsidy Earnings" (New America Foundation and Berkeley Research Group, LLC, Fall 2011), http://newamerica.net/sites/newamerica.net/files/policydocs/brg_repatriation_tax_paper.pdf.

64. Kitty Richards and John Craig, "Offshore Corporate Profits: The Only Thing 'Trapped' is Tax Revenue" (Center for American Progress, January 9, 2014), http://www.americanprogress.org/wp-content/uploads/2014/01/TrappedRevenues-brief1.pdf.

65. Shaviro, *Decoding the U.S. Corporate Tax*, 118.

66. Hearing on Tax Reform Options: Incentives for Capital Investment and Manufacturing Before the United States Senate Finance Committee, # Cong. (2012) (written testimony of Ike Brannon), http://www.finance.senate.gov/imo/media/doc/Testimony%20of%20Ike%20Brannon.pdf.

67. Shaviro, *Decoding the U.S. Corporate Tax*, 172.

68. Ibid., 131.

69. Mihir A. Desai, C. Fritz Foley, and James R. Hines Jr., "Domestic Effects of the Foreign Activities of US Multinationals," *American Economic Journal: Economic Policy* 1, no. 1 (February 2009), 181-203.

70. The White House and the Department of the Treasury, "The President's Framework for Business Tax Reform" (The White House, February 2012), 13, http://www.treasury.gov/resource-center/tax-policy/Documents/The-Presidents-Framework-for-Business-Tax-Reform-02-22-2012.pdf.

71. Rosanne Altshuler and Harry Grubert, "Taxpayer Responses to Competitive Tax Policies and Tax Policy Responses to Competitive Taxpayers: Recent Evidence," *Tax Notes International* 34, no. 13 (2004), 1361-62.

72. Simeon Djankov, "The Effect of Corporate Taxes on Investment and Entrepreneurship," *NBER Working Paper*, no. 13756 (January 2008). The paper was later published in the *American Economic Journal: Macroeconomics* 2 (July 2010), 31-64, 47.

73. Norman Gemmell et al., "Corporate Taxation and Productivity Catch-Up: Evidence from European Firms," *Bangor University Business School Working Paper* (March, 2013).

74. Ben S. Bernanke, "The Determinants of Investment: Another Look," *American Economic Review* 73, no. 2 (May 1983), 71-75, 74.
75. Rosanna Altshuler, Harry Grubert, and T. Scott Newlon, "Has U.S. Investment Abroad Become More Sensitive to Tax Rates?," in *International Taxation and Multinational Activity*, ed. James Hines (Chicago, IL: University of Chicago Press, 2004).
76. Ruud A. De Mooij and Sjef Ederveen, "Taxation and Foreign Direct Investment: A Synthesis of Empirical Research," *International Tax and Public Finance* 10, no. 6 (November 2003), 671-93.
77. Will McBride.
    For a rebuttal that stresses the benefit of the resulting government spending, see Chye-Ching Huang and Nathaniel Frentz, "What Really Is the Evidence on Taxes and Growth: A Reply to the Tax Foundation" (Center on Budget and Policy Priorities, February 18, 2014), http://www.cbpp.org/cms/?fa=view&id=4094.
78. Christina D. Romer and David H. Romer, "The Macroeconomic Effects of Tax Changes: Estimates Based on a New Measure of Fiscal Shocks," *American Economic Review* 100, no. 3 (June 2010), 763-801.
79. Roberto Perotti, "The Effects of Tax Shocks on Output: Not So Large, But Not So Small Either," *American Economic Journal: Economic Policy* 4, no. 2 (May 2012), 214-37, 215.
80. Ergete Ferede and Bev Dahlby, "The Impact of Tax Cuts on Economic Growth: Evidence from the Canadian Provinces," *National Tax Journal* 65, no. 3 (September 2012), 563-94.
81. Karel Mertens and Morten O. Ravn, "The Dynamic Effects of Personal and Corporate Income Tax Changes in the United States," *American Economic Review* 103, no. 4 (June 2013), 1212-47, 1228.
82. Young Lee and Roger H. Gordon, "Tax Structure and Economic Growth," *Journal of Public Economics* 89 (2005), 1027-43, 1041.
83. Jens Arnold and Cyrille Schwellnus, "Do Corporate Taxes Reduce Productivity and Investment at the Firm Level? Cross-Country Evidence from the Amadeus Dataset," *Centre D'Etudes Prospectives et D'Informations Internationales Working Paper*, no. 2008-19 (September 2008), 19, http://www.cepii.fr/anglaisgraph/workpap/summaries/2008/wp08-19.htm.
84. Laura Vartia, "How Do Taxes Affect Investment and Productivity? An Industry-Level Analysis of OECD Countries," *OECD Economics Department Working Paper*, no. 656 (December 19, 2008), http://search.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=ECO/WKP(2008)64&docLanguage=En.
85. Jens Arnold, "Do Tax Structures Affect Aggregate Economic Growth? Empirical Evidence from a Panel of OECD Countries," *OECD Economic Department Working Paper*, no. 643 (October 14, 2008), 18, http://search.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=ECO/WKP(2008)51&docLanguage=En.
86. Luke A. Stewart, Jacek Warda, and Robert D. Atkinson, "We're #27! The United States Lags Far Behind in R&D Tax Incentive Generosity" (ITIF, July 2012), http://www2.itif.org/2012-were-27-b-index-tax.pdf.
87. Charles I. Jones and John C. Williams, "Measuring the Social Return to R&D," *Quarterly Journal of Economics* 113, no. 4 (November 1998), 1119-35.
88. Nicholas Bloom, Mark Schankerman, and John Van Reenen, "Identifying Technology Spillovers and Product Market Rivalry," *Econometrica* 81, no. 4 (July 2013), 1347-93.
89. "The President's Framework for Business Tax Reform," op.cit.,12, citing Kenneth J. Klassen et al., "A Cross-National Comparison of R&D Expenditure Decisions: Tax Incentives and Financial Constraints," *Contemporary Accounting Research* 21, no. 3 (Fall 2004), 639-80, and Bronwyn H. Hall, "R&D Tax Policy During the 1980s: Success or Failure?" *Tax Policy and the Economy* 7 (1993), 1-35.
90. Bronwyn Hall and John Van Reenen, "How Effective are Fiscal Incentives for R&D? A Review of the Evidence," *Research Policy* 29 (2009), 449-69.
91. Martin Falk, "What Drives Business Research and Development (R&D) Intensity Across Organization for Economic Cooperation and Development (OECD) Countries?" *Applied Economics* 38, no. 5 (2006), 533-47.
92. Dominique Guellec and Bruno Van Pottelsberghe De La Potterie, "The Impact of Public R&D Expenditure on Business R&R," *Economics of Innovation and New Technology* 12, no. 3 (2003), 225-43.
93. "The President's Framework for Business Tax Reform," 12.

94. National Taxpayer Advocate, *2012 Annual Report to Congress: Volume 1* (Office of the National Taxpayer Advocate, December 31, 2012), http://www.taxpayeradvocate.irs.gov/userfiles/file/Full-Report/Volume-1.pdf.
95. Peter Merrill, "The Corporate Tax Conundrum," *Tax Notes*, October 8, 2007, 175-76.
96. Gary Clyde Hufbauer and Woan Foong Wong, "Corporate Tax Reform for a New Century" (Peterson Institute for International Economics, April 2011), Policy Brief No. PB11-2, http://www.iie.com/publications/pb/pb11-02.pdf.
97. Donald Marron, "A Practical Challenge to Stand-Alone Corporate Tax Reform" (Tax Policy Center, Urban Center and Brookings Institution, May 6, 2013), 677, http://www.taxpolicycenter.org/UploadedPDF/1001678-A-Practical-Challenge-to-Stand-Alone-Corporate-Tax-Reform.pdf.
98 . Switching to a consumption tax would mitigate this problem because the amount and source of income would then not matter. In the absence of a consumption tax some means would need to be found to attribute any rise in corporate wealth to corporate owners. Such an effort would pose significant administrative challenges. But these challenges might still be less than those accompanying the current tax.
99. Public Law 111-139.
100. Office of Management and Budget, "The Statutory Pay-As-You-Go Act of 2010: A Description" (OMB, 2012), http://www.whitehouse.gov/omb/paygo_description.
101. Robert D. Atkinson, "Create Jobs by Expanding the R&D Tax Credit" (ITIF, January 26, 2010), http://www.itif.org/files/2010-01-26-RandD.pdf.
102. Kimberly A. Clausing, "Corporate Tax Revenues in OECD Countries," *International Tax and Public Finance* 14, no. 2 (April 2007), 115-133.
103. Alex Brill and Kevin A. Hassett, "Revenue-Maximizing Corporate Income Taxes: The Laffer Curve in OECD Countries," *American Economic Institute Working Paper*, no. 137 (July 31, 2007), http://www.aei.org/files/2007/07/31/20070731_Corplaffer7_31_07.pdf.
104. Jane G. Gravelle and Thomas L. Hungerford, "Corporate Tax Reform: Issues for Congress" (Congressional Research Service, December 16, 2011), RL34229, 10-12, http://taxprof.typepad.com/files/crs-rl34229.pdf.
105. Hans Fehr et al., "Simulating the Elimination of the U.S. Corporate Income Tax," *NBER Working Paper*, no. 19757 (December 2013), http://www.kotlikoff.net/sites/default/files/Corporate%20Income%20Tax%20NBER%20WP%2019757.pdf.
106. Robert D. Atkinson, "An Innovation and Competitiveness-Centered Approach to Deficit Reduction" (ITIF, January 2014), http://www2.itif.org/2014-innovation-competitiveness-approach-deficit-reduction.pdf.
107. Joint Economic Committee, "Macroeconomic Analysis of 'The Tax Reform Act of 2014" (U.S. Congress, February 26, 2014), publication JCX-22-14, 12, http://waysandmeans.house.gov/UploadedFiles/JCT_Macroeconomic_Analysis_JCX_22_14__022614.pdf.
108. Facundo Alvaredo et al., "The Top 1 Percent in International and Historical Perspective, *Journal of Economic Perspectives* 27, no. 3 (Summer 2013), 3-20.
109. For an overview of carbon taxes in the context of corporate tax reform, see Donald Marron and Eric Toder, "Carbon Taxes and Corporate Tax Reform" (Tax Policy Center, February 11, 2013), http://www.taxpolicycenter.org/publications/url.cfm?ID=412744.
110. Congressional Budget Office, "Options for Reducing the Deficit: 2014 to 2013" (CBO, November 2013), 176-77.
111. Matthew Stepp and Robert D. Atkinson, " An Innovation Carbon Price: Spurring Clean Energy Innovation while Advancing U.S. Competitiveness" (ITIF, March 2011), http://www.itif.org/files/2011-innovation-carbon-price.pdf.
112. For an overview of VAT taxes, see William G. Gale and Benjamin H. Harris, "Proposal 10: Creating an American Value-Added Tax" (The Hamilton Project, Brookings Institution, February 2013),

http://www.brookings.edu/~/media/research/files/papers/2013/02/thp-budget-papers/thp_15waysfedbudget_prop10.pdf.
113. The White House and the Department of the Treasury, "The President's Framework for Business Tax Reform."

ACKNOWLEDGEMENTS

The author wishes to thank the following individuals for providing input to this report: Robert D. Atkinson, Ike Brannon, David Brown, Donald Marron, Peter Merrill, Ben Miller, and Marty Sullivan. Any errors or omissions are the author's alone.

ABOUT THE AUTHOR

Joseph V. Kennedy is a Senior Fellow with ITIF and president of Kennedy Research, LLC. For almost 30 years he has worked as an attorney and economist on a wide variety of public policy issues. His previous positions include Chief Economist with the Department of Commerce and General Counsel for the U.S. Senate Permanent Subcommittee on Investigations. Much of his current research is devoted to the impact of policy on new technology.

ABOUT ITIF

The Information Technology and Innovation Foundation (ITIF) is a Washington, D.C.-based think tank at the cutting edge of designing innovation strategies and technology policies to create economic opportunities and improve quality of life in the United States and around the world. Founded in 2006, ITIF is a 501(c) 3 nonprofit, non-partisan organization that documents the beneficial role technology plays in our lives and provides pragmatic ideas for improving technology-driven productivity, boosting competitiveness, and meeting today's global challenges through innovation.

FOR MORE INFORMATION, CONTACT ITIF BY PHONE AT 202.449.1351, BY EMAIL AT MAIL@ITIF.ORG, ONLINE AT WWW.ITIF.ORG, JOIN ITIF ON LINKEDIN OR FOLLOW ITIF ON TWITTER @ITIFDC AND ON FACEBOOK/INNOVATIONPOLICY.