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The burden of taxation in the United States and Germany

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After 35 years without significant changes to the federal tax code in the United States, tax reform is back on the legislative agenda. Both the congressional Republican delegation (the House GOP) and the Trump administration (the administration) have released draft proposals for tax reform. And both focus heavily on reform of corporate income taxation. The reason for this is quite simple: Increased globalization has made it easier for multinational enterprises to shift their reported profits around the world in order to pay less in taxes. This has led to concerns about the erosion of the U.S. corporate tax base, with reductions in corporate tax rates (as well as a move from a residential to a destination-based tax system) seen as one way of encouraging corporations to pay taxes here.

Still, the proposals remain quite controversial. Although both Republican proposals have consistently argued that U.S. corporate tax rates are among the highest in the developed world, critics have pointed out that few corporations seem to pay tax at these rates. For example, Senator Elizabeth Warren has said, “It’s not that taxes are far too high for giant corporations, as the lobbyists claim. No, the problem is that the revenue generated from corporate taxes is far too low.” Warren cited a White House study showing that while corporate taxes accounted for roughly 30% of tax revenue in the 1950s, they account for less than 10% today.[1]

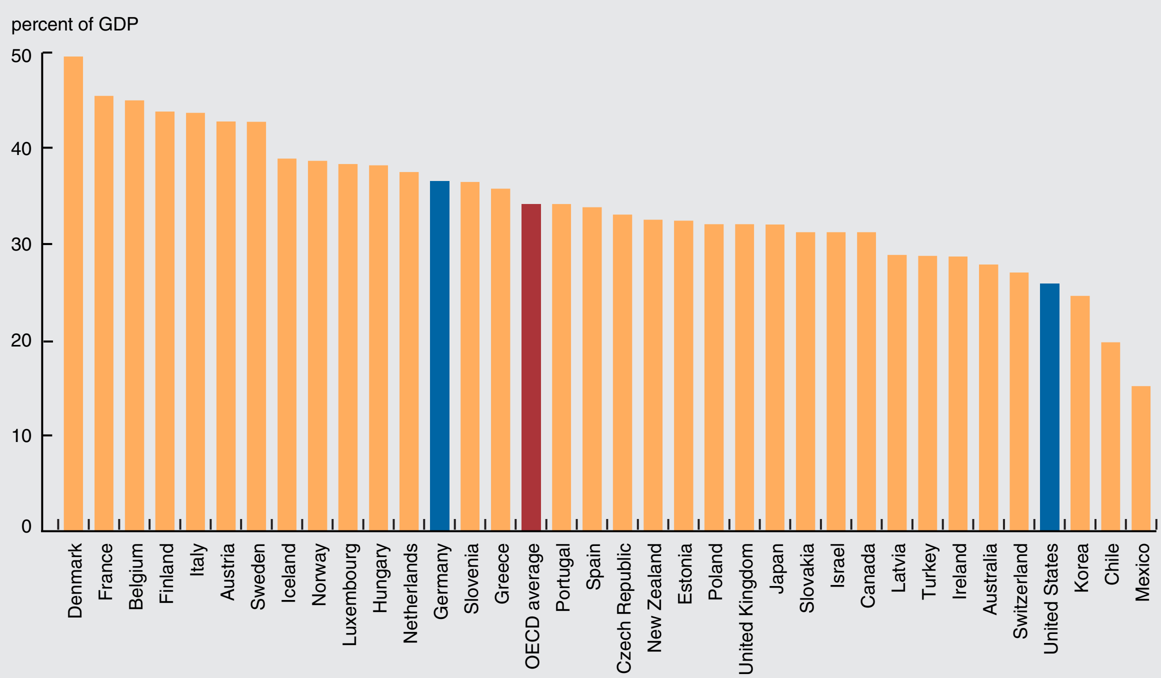
> Comparisons of national government tax rates can be quite misleading in federal countries like Germany and the U.S.

In this *Chicago Fed Letter*, we aim to shed light on this debate by providing estimates of the tax burden faced by American corporations, noncorporate businesses, and households, and by comparing them with similarly constructed estimates for Germany, a country that has attracted a great deal of attention from the administration. Our data span the period from 2000 to the present and also include forecasts of how this burden is expected to evolve over time. In the case of the United States, we present forecasts of how the tax burden would evolve under the current tax regime and how it would vary under the Republican proposals. We focus mainly on the congressional Republican plan, both because it is more concrete and because it has been subject to more analysis, although we point to differences in the administration plan as we proceed. We take no stand on the effects of these proposed reforms on the budget deficit and accumulation of debt, instead focusing on the effect on tax rates in the immediate future.

We choose to focus on Germany as our country of comparison for several reasons. First, Germany and the U.S. have similar service-oriented economies with sizable industrial sectors (though Germany's industrial sector is about 50% larger relative to gross domestic product [GDP][2]). Second, members of the administration have consistently singled out Germany for comparison, chiefly on account of its large trade surpluses.[3] Third, German finance minister Wolfgang Schäuble has commented favorably on U.S. tax reform plans, saying in an interview that "U.S. corporate tax rates are among the highest in the world," and that "if the United States lowers its corporate taxes to European or international levels that won't bother me a bit. Just the opposite."[4] Lastly, this comparison provides an excellent example of the difficulties involved in comparing taxes across countries more generally. In particular, comparisons of national government tax rates can be quite misleading in federal countries like Germany and the U.S.,[5] and tax rate data can be misleading due to deductions and details such as dividend imputation, which Germany struck from its tax code at the beginning of the millennium.[6]

We emphasize five findings. First, the U.S. is a relatively lightly taxed country, with an average tax burden that is lower than Germany's by more than 10% of GDP.[7] Second, in the United States, consumption, labor income and capital income (that is, business and property income) all face a lower tax burden than in Germany. Third, the low tax burden on capital income in the United States is driven by low taxes on personal income, and not, for the most part, by lower taxes on business and property income per se. Indeed, U.S. corporate taxes generate more revenue as a share of corporate income, and hence may be viewed as more burdensome, than German corporate taxes, thus creating a greater incentive for U.S. corporations to shift profits to low-tax jurisdictions. Fourth, as their proponents have argued, the GOP proposals would likely lower the U.S. corporate tax burden to a level more in line with that of OECD nations such as Germany. Fifth and finally, effective average tax rates on corporate profits are significantly below statutory tax rates in *both* the United States *and* Germany, illustrating the danger of simple comparisons of statutory tax rates alone.

1. Overall tax burdens in OECD nations, 2014

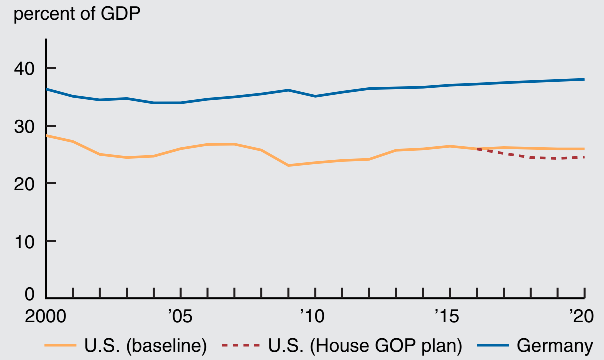


Note: Including social security contributions.
Source: Organisation for Economic Co-operation and Development (OECD).

An overview of taxation in Germany and the United States

Is the United States a low-tax nation? In an aggregate sense, and compared to other developed economies, the answer is unambiguously yes. To illustrate this, figure 1 plots the ratio of total tax revenue (from all sources and across all levels of government) to gross domestic product for all OECD countries in 2014. The U.S. is marked in blue and, with an overall tax burden at just over 25%, is evidently the fourth-lowest-tax nation in the current OECD and the lowest of the OECD's original members. Germany, on the other hand, is a slightly above-average-tax-burden country, taking about 37% of GDP in total tax revenue (compared with the OECD average of 34%).

2. Overall tax burdens in the U.S. and Germany



NOTES: Including social security contributions. Data from 2016 (U.S.) and 2017 (Germany) onward are projected.
SOURCES: Authors' calculations based on data from the Organisation for Economic Co-operation and Development; Congressional Budget Office; Tax Policy Center, Urban Institute and Brookings Institution; and Macroeconomic Policy Institute, Düsseldorf, Germany.

Figure 2 homes in on the U.S. and Germany and shows that these patterns have been very stable from 2000 to the present. Since 2000, tax revenue in Germany as a fraction of the economy has been almost 50% larger than in the U.S. Figure 2 also includes forecasts of the tax burden out to 2020 under both the existing tax system (according to Congressional Budget Office [CBO] estimates) and the House GOP tax reform plan (using forecasts from the Urban–Brookings Tax Policy Center). As shown, under the GOP plan, the average tax burden for the U.S. would be slightly under 25% in 2020.

Thus, the conventional wisdom is correct: At this broad level, the United States is a relatively low-tax nation. The composition of tax revenue across the two economies is also very different. Figure 3 records the total amounts of tax revenue raised split into major categories for both 2010 and 2015, as well as forecasts of the same split in 2020 under current arrangements for Germany and under the House GOP plan for the U.S.

As shown in figure 3, panel B, much of the higher tax revenue in Germany comes from a national value-added tax (VAT), which accounted for almost one-third of overall revenue raised in 2010. Total taxes on consumption accounted for nearly half of revenue in 2010 and are expected to account for more than two-fifths of revenue by 2020. In contrast, U.S. sales taxes account for roughly 10% of total revenue—all of which is collected by state and local governments—with less than one-fifth of revenue coming from consumption taxes in total.

The other large differences come from taxes on business income and property. Taxes on real estate property have accounted for more than one-eighth of U.S. tax revenue in this period compared with around 4% in Germany. Corporate taxes account for a larger share of revenue in the U.S., even when Germany's municipal "trade tax" is included (see next section); though if we look only at the federal tax, the difference is starker still: 9% of total U.S. revenue compared with 3% of German revenue in 2015. Corporate income tax revenue would fall considerably under the House GOP plan—by 2020, federal corporate taxes would account for about 7% of revenue.

The above data refer to revenue raised and not directly to tax rates. This is deliberate: Average effective rates of taxation are often much lower than statutory rates due to deductions and other complicating factors (such as dividend imputation). Nonetheless, for comparative purposes, figure 4 plots official tax rates on consumption (sales and value-added taxes) and the highest marginal tax rates on corporate profits and individual income. The figure shows that tax rates in the U.S. have remained roughly constant this millennium, while in Europe the top marginal tax rates

3. The composition of tax revenue

A. U.S.

Billions of USD in 2010 prices	2010		2015		2020	
Taxes on income	**1,492**	**57%**	**2,148**	**64%**	**2,101**	**63%**
Wage tax	894	34	1,233	37	1,409	42
Federal income tax (nonwage)	216	8	346	10	243	7
Federal corporate tax	219	8	310	9	220	7
State/local income taxes (nonwage)*	162	6	260	8	228	7
Taxes on property	**462**	**18**	**455**	**14**	**422**	**13**
Taxes on real estate and its transfer	435	17	425	13	412	12
Inheritance tax	20	1	23	1	0	0
Taxes on consumption	**644**	**25**	**736**	**22**	**830**	**25**
Sales tax	294	11	337	10	376	11
Taxes on energy (fuel, electricity, etc.)	68	3	66	2	76	2
Other indirect taxes	282	11	333	10	378	11
Total taxes	**2,598**	**100**	**3,339**	**100**	**3,353**	**100**

*Includes state corporate taxes

B. Germany

Billions of EUR in 2010 prices	2010		2015		2020	
Taxes on income	**258**	**47%**	**326**	**51%**	**382**	**53%**
Wage tax	157	29	194	30	235	33
Income tax (residual)	53	10	70	11	76	11
Federal corporate tax	13	2	19	3	24	3
Local income tax (trade tax)	36	7	43	7	47	7
Taxes on property	**21**	**4**	**29**	**4**	**31**	**4**
Taxes on real estate and its transfer	17	3	23	4	25	3
Inheritance tax	4	1	6	1	6	1
Taxes on consumption	**269**	**49**	**288**	**45**	**303**	**42**
Value-added tax	180	33	196	31	217	30
Taxes on energy (fuel, electricity, etc.)	46	8	45	7	40	6
Other indirect taxes	43	8	47	7	46	6
Total taxes	**548**	**100**	**642**	**100**	**715**	**100**

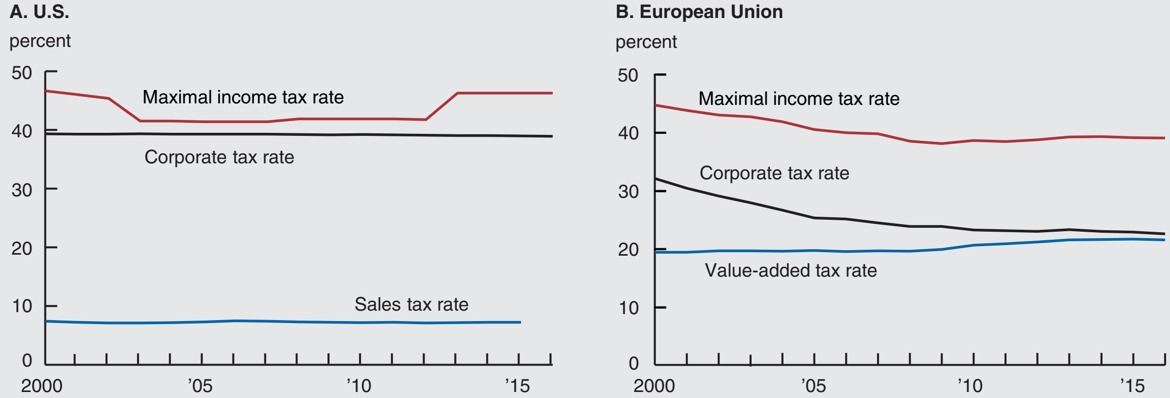
Note: Excluding social security.

Sources: Authors' calculations based on data from the Organisation for Economic Co-operation and Development; Congressional Budget Office; Tax Policy Center, Urban Institute and Brookings Institution; German Federal Finance Ministry; German Federal Statistical Office; and Macroeconomic Policy Institute, Düsseldorf, Germany.

on both corporate and personal income have trended steadily downward. In Germany specifically, the nominal corporate tax rate (including trade tax) has decreased from 50% in 2000 to 30% in 2017.

Next, we present estimates of the tax burden organized by the type of income being taxed. We distinguish three broad categories: taxes on the compensation of employees, on consumption, and on "capital" defined as property and business income, including corporate profits.

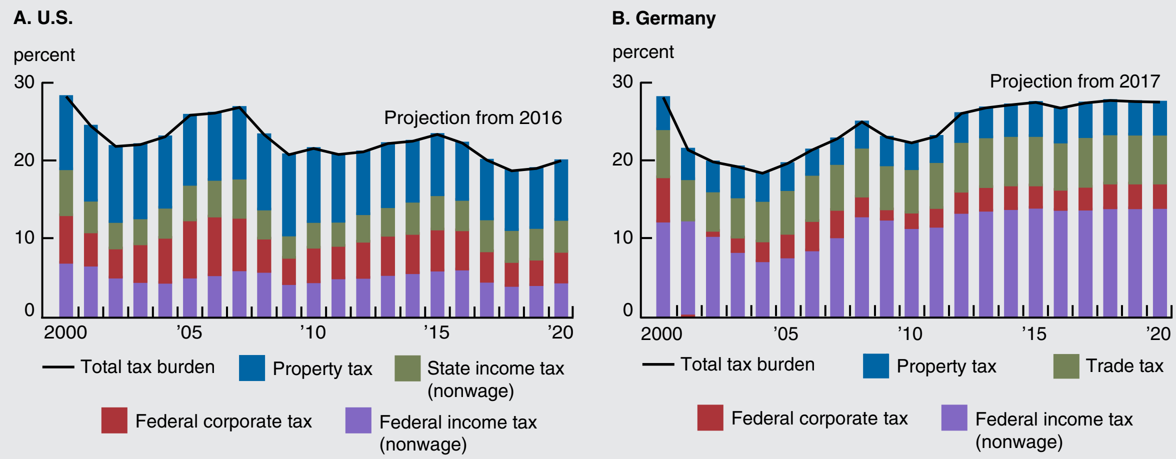
4. Statutory tax rates in the U.S. and European Union



NOTES: Averaged across member countries. Rates include taxes at all levels of government.

SOURCES: Authors’ calculations based on data from the Organisation for Economic Co-operation and Development, Tax Foundation, and EU Taxation and Customs Union.

5. Tax burdens on capital income in the U.S. and Germany



NOTE: Projection for U.S. assumes revenue changes from House GOP plan, beginning in 2017.

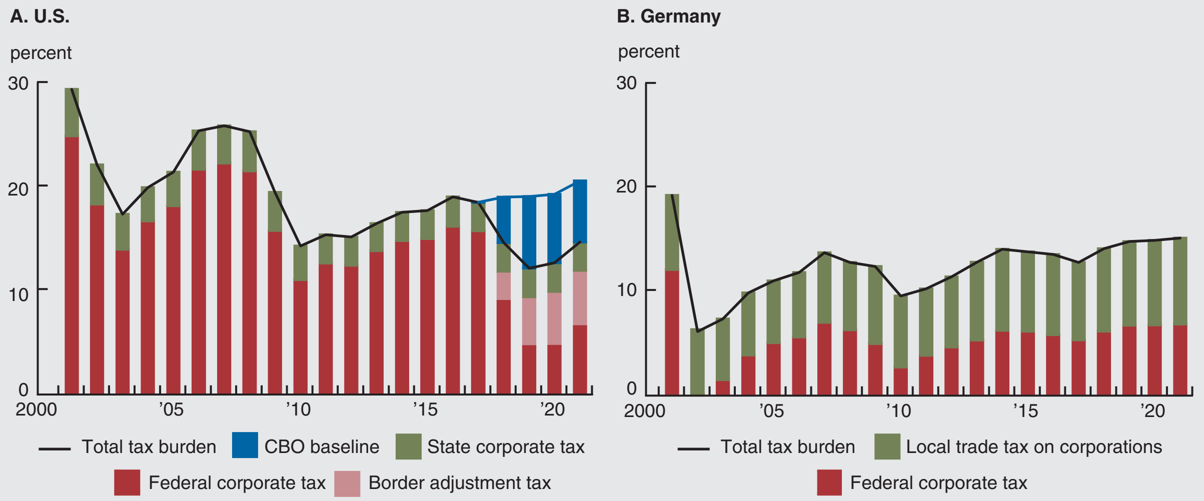
SOURCES: Authors’ calculations based on data from the Organisation for Economic Co-operation and Development; Congressional Budget Office; Tax Policy Center, Urban Institute and Brookings Institution; German Federal Finance Ministry; German Federal Statistical Office; Macroeconomic Policy Institute, Düsseldorf, Germany; and U.S. Bureau of Economic Analysis (BEA).

The tax burden on capital

The owners of capital are taxed in many ways. Some taxes, such as most property taxes, are imposed directly on the value of owners’ assets, while others, such as capital gains taxes, tax income accruing to capital. Sometimes this income is taxed twice: once when earned as profits by a corporation and a second time when earned as dividends by an individual. We set out to measure all of these tax revenues and compare them with an estimate of returns to capital in the economy. Specifically, we begin with corporate tax revenue and then add an estimate of tax revenue from capital income on individual tax returns. We use data from the U.S. Internal Revenue Service and the German Federal Finance Ministry to split income tax receipts between wage taxes and other personal income taxes. Taxes on capital gains and property are also included. The totals are then divided by gross operating surplus from the national accounts to get a measure of the average tax burden.

The results are plotted for both the U.S. and Germany in figure 5. Taxes on capital came in at around 23% and 27% of gross capital income in 2015 for the U.S. and Germany, respectively. Whereas this burden is expected to remain constant for Germany, it is expected to decline somewhat for

6. Tax burdens on corporate income in the U.S. and Germany



NOTE: Projection for U.S. assumes revenue changes from House GOP plan (black line), shown against the CBO baseline under current policy (blue).

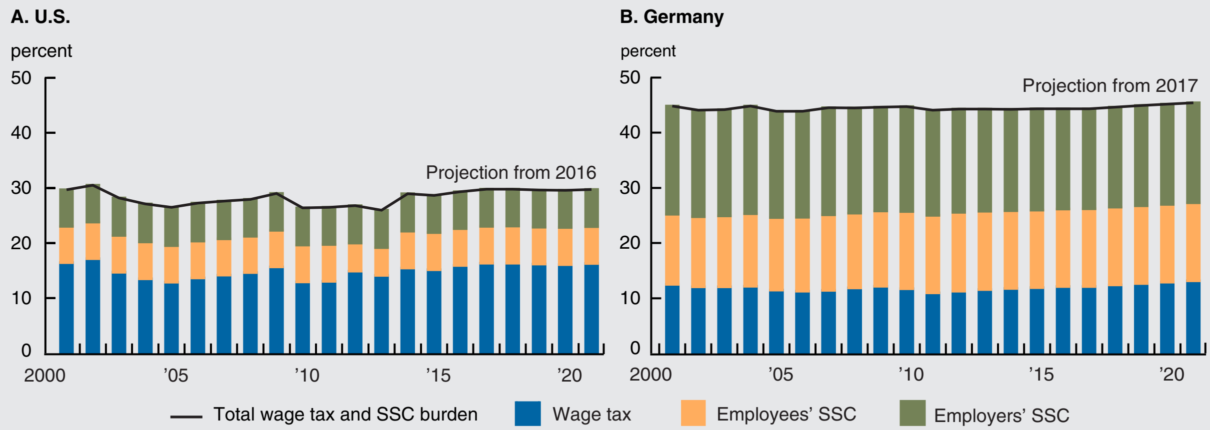
SOURCES: Authors' calculations based on data from the Organisation for Economic Co-operation and Development; Congressional Budget Office; Tax Policy Center, Urban Institute and Brookings Institution; German Federal Finance Ministry; German Federal Statistical Office; Macroeconomic Policy Institute, Düsseldorf, Germany; and U.S. Bureau of Economic Analysis (BEA).

the U.S. by 2020 if the House GOP plan becomes law. The composition of capital tax revenue is also quite different. In Germany, a greater proportion (more than half) comes from federal taxes on individual business income, while in the U.S. a larger share (more than one-third) comes from property taxes. The federal corporate tax also accounts for a considerably larger share of capital tax revenue in the U.S. The picture is complicated somewhat by state corporate taxes in the U.S. and the local trade tax in Germany, which is a municipal tax on corporate and noncorporate business income. Corporate income comprises over 60% of the German trade tax's base, considerably more than the 20% to 25% of U.S. nonfederal business income taxes owing to corporate income. This complication illustrates the importance of looking beyond federal tax rates when comparing tax burdens across countries.

Although the tax burden on total capital income is lower in the U.S. than in Germany, we are especially interested in taxes on corporate income as this form of capital income is easier to shift between tax jurisdictions. We plot corporate tax revenue as a fraction of corporate income for both countries in figure 6. We see that the overall tax burden on U.S. corporations was just under 20% in 2015, compared with less than 15% in Germany, even after including municipal trade taxes on corporations; that is, the tax burden on corporations in the U.S. is one-third higher than in Germany. Under the current U.S. tax system, the CBO estimates that the corporate tax burden will rise to over 20% by 2020. Under the GOP tax plan, the tax burden would fall to around 15% by the same year. If the border adjustment tax is not implemented, which seems plausible given its omission from the administration's plan, the corporate tax burden would fall to roughly 9%.[8] In Germany, the current federal corporate income tax burden is on the order of 6%. When municipal trade taxes are included, the tax burden rises to about 13%, a figure that is expected to grow slightly by 2020. Notably, in both countries, the corporate tax burden—the effective average tax rate on corporate income—is considerably less than the statutory corporate tax rate.

In summary, U.S. corporations do face a higher tax burden than German corporations. However, comparisons looking at federal statutory corporate income tax rates are misleading, both because effective tax rates are well below statutory rates and because they ignore taxation of corporations at lower levels of government, which is, at least in Germany, quite substantial. Consistent with its proponents' claims, the GOP plan would likely bring the U.S.'s corporate tax burden into line with that of Germany. However, it would reduce the overall tax rate on capital income even further below that of Germany.

7. Tax burden on wage income in the U.S. and Germany



SOURCES: Authors' calculations based on data from the Organisation for Economic Co-operation and Development; Congressional Budget Office; Tax Policy Center, Urban Institute and Brookings Institution; German Federal Finance Ministry; German Federal Statistical Office; Macroeconomic Policy Institute, Düsseldorf, Germany; and U.S. Bureau of Economic Analysis (BEA).

The tax burden on labor

Next, we examine the tax burden on labor. As before, we attribute individual income tax revenue to labor in proportion to its share of taxable income. To this we add data on both employer and employee contributions to social security, and we compare the result to the tax base of labor income defined as the sum of wages, salaries, and employers' social security contributions from the national accounts. The results are plotted in figure 7.

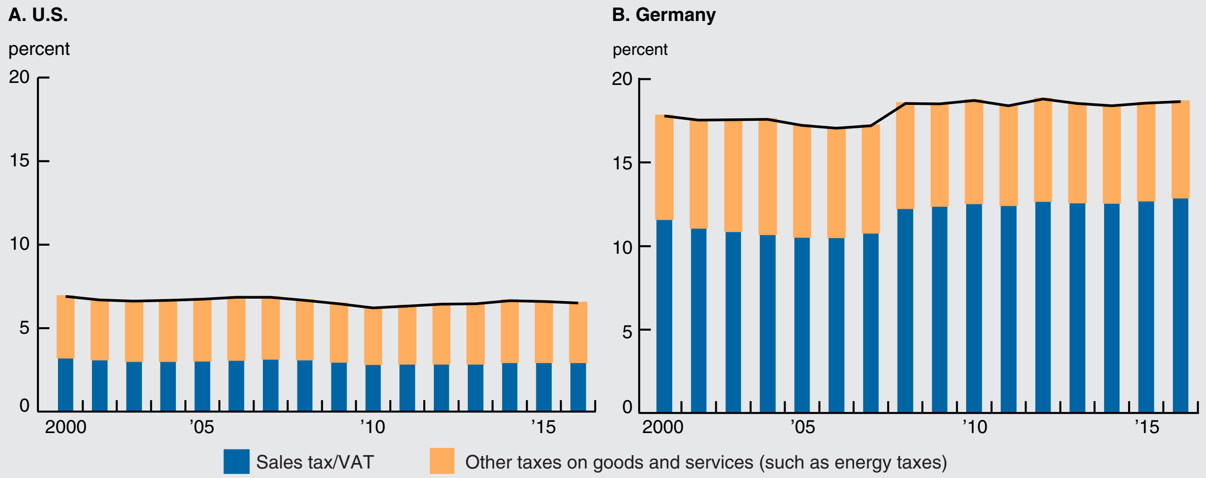
As shown in the figure, the overall tax burden on wages is roughly 17% higher in Germany than in the U.S. While social security contributions (employer and employee) account for less than half of the U.S. wage tax burden, they account for more than two-thirds in Germany. The burden of other wage taxes, however, is slightly higher in the U.S. than in Germany. The GOP tax plan would have only a marginal effect on the wage tax burden: Though it would lower the top marginal rate from 39.6% to 33%, it would also repeal nearly all itemized deductions (with the exception of charitable and mortgage interest) and is hence estimated to have little effect on total revenue raised from labor income.

The tax burden on consumption

Taxes on consumption add to the burden of taxation on individuals by increasing the (after-tax) prices of goods and reducing the spending power of after-tax income. Therefore, taxes on consumption should be included in any cross-country comparison of tax burdens. To calculate the tax burden on consumption, we total the revenue raised from consumption taxes, including but not limited to sales taxes and value-added taxes, and compare it with the value of final consumption expenditure of households from the national accounts.

The results are depicted in figure 8. The differences between the U.S. and Germany are dramatic. In 2015, Germany's consumption tax burden was over 18%, compared with under 7% for the U.S. As noted earlier, the VAT alone accounted for 31% of Germany's tax revenue in 2015, while sales tax accounted for 10% of the U.S.'s tax revenue. Furthermore, Germany's VAT generates federal tax revenue, while in the U.S., sales taxes are only collected by state and local governments. Therefore, the U.S. federal government must rely almost entirely on income tax for revenue. Hence, also, the consumption tax burden will not be affected by the House GOP plan.

8. Consumption tax burdens in the U.S. and Germany



SOURCES: Authors' calculations based on data from the Organisation for Economic Co-operation and Development.

Conclusion

Globalization brings both costs and benefits. One of the costs is that it reduces the ability of a country to tax income earned by multinational corporations that can shift production between countries in order to lower their tax bills. As a consequence, governments around the world have been examining ways to deter such profit-shifting.

One way to deter profit-shifting is to reduce international differences in corporate tax rates. This is a large part of the rationale for the corporate tax reduction embodied in the House GOP and administration tax reform plans. The House GOP plan for border adjustments goes further and would systematically eliminate most forms of corporate tax evasion (especially corporate inversions). If passed, corporate tax reform would likely benefit the U.S. as it would stabilize the tax base; and it may also encourage other countries to introduce similar measures in their own tax codes.

Nonetheless, it is true that the U.S. is a relatively low-tax nation. Notwithstanding the high tax burden on corporate income, the overall tax rate on capital income is low. And we find that the House GOP plan would reduce the overall tax burden on capital income further below that of Germany. If the U.S. Congress does not pass corporate tax reform, other alternatives for deterring profit-shifting will need to be explored. These might include the possibility of ending the corporate tax deductibility of interest and license fee payments (both are major tax evasion vehicles), which has been discussed in both the U.S. and Germany in the past.

[1] Barney Jopson and David Crow, 2015, "Wall Street critic Elizabeth Warren slams tax reform plans," *Financial Times*, November 18.

[2] *The World Factbook 2013–14*, 2013, Washington, DC: Central Intelligence Agency.

[3] Shawn Donnan, 2017, "Trump's top trade adviser accuses Germany of currency exploitation," *Financial Times*, January 31.

[4] Reuters, 2017, "Germany not worried by U.S. corporate tax reform plans: Schaeuble," April 23.

[5] Niall McCarthy, 2017, "How Trump's corporate tax proposal would compare with other countries," *Forbes*, April 27, provides an example of one such misleading comparison.

[6] See Andrew Ainsworth, 2016, "Dividend imputation: The international experience," *JASSA: The Finsia Journal of Applied Finance*, No. 1, pp. 58–63, for more information.

[7] We use the Organisation for Economic Co-Operation and Development (OECD) definition for taxes as compulsory, unrequited payments to governments (national, state, and local). Compulsory social security contributions paid to the government are treated as taxes. In the U.S. (unlike in Germany), most contributions toward health insurance and pension plans (excluding Medicare, Medicaid, and Social Security) are not obligatory payments to the government and therefore are not included in the figures.

[8] The border adjustment tax would increase revenue by broadening the tax base, as it taxes imports rather than sales of exports. For more information, see Brian McGill and Richard Rubin, 2017, "Border adjustment: Explained," *Wall Street Journal*, February 7.

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