

# Fiscal Fact

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## Capital Cost Recovery across the OECD

*By*

*Kyle Pomerleau*

### Introduction

Lawmakers are currently looking to reform the United States' corporate tax code, mainly focusing on the high corporate income tax rate. At a combined federal and state rate of 39.1 percent, it is the highest rate in the industrialized world, undermining our international competitiveness, investment, and economic growth.

However, the statutory corporate income tax rate is not the only feature of the business tax code that adversely affects the economy. Capital consumption allowances (how much of the cost of a capital investment a business can claim as an expense) directly affect a business's taxable income and thus affect the amount of tax it pays. When businesses are not allowed to fully deduct capital expenditures, they spend less on capital, which reduces worker productivity and wages.

Currently, the tax code only allows businesses to recover an average 62.4 percent of a capital investment (e.g., an investment in buildings, machinery, intangibles, etc.). This is slightly lower than the Organisation for Economic Co-operation and Development's (OECD) average capital allowance of 66.5 percent. By asset, the U.S. capital allowances for industrial buildings is 35 percent and 63.3 percent for intangibles, both lower than the OECD averages of 43.6 percent and 73.4 percent, respectively. For machinery, the U.S. has a capital allowance of 87.7 percent compared to the 83.5 in the OECD.

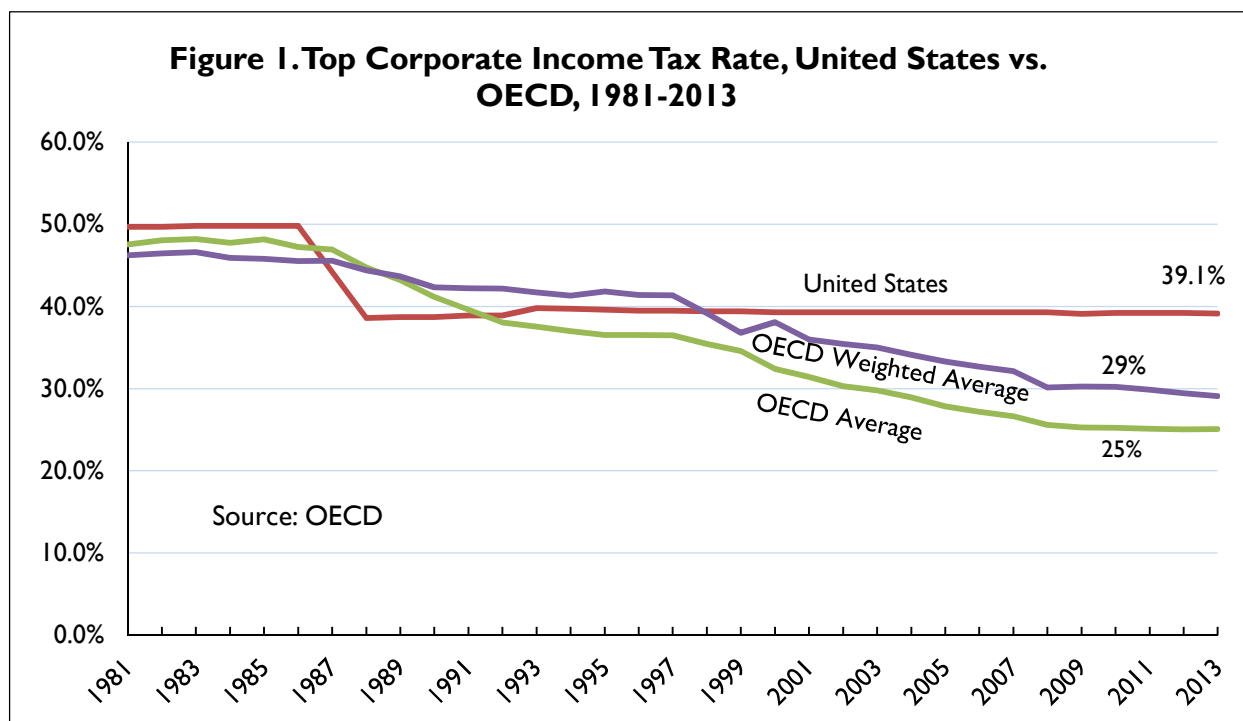
Since 1979, the U.S. has worsened its overall treatment of capital assets, moving from an average capital allowance of 75.8 percent in the 1980s to an average capital allowance of 62.4 in 2012. Capital allowances across the OECD have also declined, but by a lesser extent over the same period: 77 percent in the 1980s to 66.5 percent in 2012. Because of this worsening treatment of capital assets, investment has fallen to a lower level than it would have otherwise.

Lawmakers, while pushing to reform the tax code, should also consider the negative consequences of having low capital allowances on investment and economic growth.

## The Basics of Depreciation Schedules and Capital Allowances

Typically, when a business is calculating its taxable income for the IRS, it takes its revenue and subtracts its costs (such as wages, raw materials, and state and local taxes). However, with capital investments (buildings, machines, and other equipment) the calculation is much more complicated. Businesses in the U.S. and throughout the world are generally not allowed to immediately deduct the cost of their capital investments. Instead, they are required to write them off over several years or even decades.<sup>1</sup>

Depreciation schedules, which generally attempt to reflect the useful lives of given assets, establish the amounts businesses are allowed to write off, as well as the asset lives of capital investments.<sup>2</sup> For instance, a government may estimate that an asset life of a machine is seven years. Therefore, the business is required to deduct a percent of the cost of that investment over the seven-year period during which it is expected to generate income. Over the life of the machine, they would be able to deduct the total initial dollar cost of the asset. However, due to the time value of money (a normal real return plus inflation),<sup>3</sup> write-offs in later years are not as valuable in real terms as write-offs in earlier years. As a result, businesses effectively lose the ability to deduct the full present value of the cost of the investment. This treatment of capital expenses



<sup>1</sup> Stephen J. Entin, *The Tax Treatment of Capital Assets and Its Effect on Growth: Expensing, Depreciation, and the Concept of Cost Recovery in the Tax System*, TAX FOUNDATION BACKGROUND PAPER NO. 67 (Apr. 24, 2013), <http://taxfoundation.org/sites/taxfoundation.org/files/docs/bp67.pdf>.

<sup>2</sup> *Id.*

<sup>3</sup> This can be thought of as the opportunity cost of tying the money up in a particular investment. See Steve Entin, *The Neutral Cost Recovery System: A Pro-Growth Solution for Capital Cost Recovery*, TAX FOUNDATION FISCAL FACT NO. 398 (Oct. 27, 2013), <http://taxfoundation.org/article/neutral-cost-recovery-system-pro-growth-solution-capital-cost-recovery>.

understates true business costs and overstates taxable income in present value terms. This effect becomes exaggerated as the depreciation schedule lengthens and the rate of inflation grows higher.

A capital allowance is measured as a percent of a total investment that can be recovered through the tax code. A 100 percent capital allowance represents a business's ability to deduct the full cost of the investment over its life (e.g., through full immediate expensing or neutral cost recovery). The lower the capital allowance, the more a business's taxable income is inflated and the more its tax bill is overstated. (See Appendix for an example of a calculation of a capital allowance.)

### **Corporate Taxation in the OECD**

Most attention is paid to the corporate income tax rate rather than the income tax base. A high corporate income tax reduces corporations' after tax profits, increases the cost of capital, and slows the growth of the capital stock. This leads to lower productivity, lower wages, and slower economic growth.<sup>4</sup>

In the past thirty years, countries throughout the OECD have repeatedly reduced their corporate income tax rates, pushing the simple average of non-U.S. OECD nations to approximately 25 percent (Figure 1, above).<sup>5</sup> Meanwhile, the United States has had roughly the same combined federal and state rate of 39 percent, the highest corporate income tax rate in the industrialized world.

### **Capital Allowances in the OECD**

While the corporate income tax rate is undoubtedly important, capital consumption allowances are also important. The corporate income tax rate determines how much a corporation pays on their taxable income, which is partly determined by the value of the capital allowances businesses are afforded. As noted earlier, the lower the capital allowance, the higher a corporation's taxable income and the larger the tax bill.

#### *The United States' Treatment of Capital Assets Ranks below Average in the OECD*

Currently the average net present value of capital allowances<sup>6</sup> in the United States is 62.4 percent (Figure 2, below). This means that depreciation schedules in the United States for plant and machinery, industrial buildings, and intangibles, on average, allow the recovery of only 62.4 percent of the present value of an investment.

This is slightly below the OECD simple average of 66.5 percent.<sup>7</sup> The countries with the best average treatment of capital assets are Greece (80.2 percent), Slovakia (77.8 percent), and Belgium (77.3 percent).

<sup>4</sup> William McBride, *What is the Evidence on Taxes and Growth?*, TAX FOUNDATION SPECIAL REPORT NO. 207 (Dec. 18, 2012), <http://taxfoundation.org/article/what-evidence-taxes-and-growth>.

<sup>5</sup> Organisation for Economic Co-operation and Development, *OECD Tax Database*, <http://www.oecd.org/ctp/tax-policy/tax-database.htm>.

<sup>6</sup> The weighted average of the net present value of capital allowances for machinery, industrial buildings, and intangibles

<sup>7</sup> Average includes the United States.

Countries with the worst treatment of capital assets are Chile (41.7 percent), Great Britain (46.7 percent), and New Zealand (55.8 percent).<sup>8</sup>

*The U.S. has Below Average Treatment of Industrial Buildings and Intangibles and Slightly above Average Treatment of Machinery*

While the U.S. ranks below average in its overall treatment of capital assets, its treatment of different asset types varies. Capital consumption allowances for assets can be broken down into three general categories: Plant and Machinery (factory machinery), Industrial Buildings (factories), and Intangible Assets (patents and “know-how”).<sup>9</sup>

Machinery generally has the best treatment across the OECD, with an average allowance of 81.1 percent.<sup>10</sup> The U.S. is above average at 87.7 percent. The countries with the highest capital allowances for machinery are the Netherlands and Canada, both at 96.5 percent. The country with the worst tax treatment of machinery is Chile with a net present value capital allowance of 63.3 percent.

In contrast to the treatment of machinery, industrial buildings have relatively poor tax treatment across the OECD. The average net present value of the capital allowance for industrial buildings in the OECD is 43.6 percent.<sup>11</sup> The U.S. has even worse treatment with a net present value of 35 percent. Greece has the best treatment of industrial buildings at 68.2 percent. The countries with the worst capital allowances for industrial buildings are the United Kingdom (0 percent),<sup>12</sup> Hungary (27.9 percent), and Japan (27.9 percent).

The average net present value of intangibles across the OECD is 73.4 percent. The U.S. is more than 10 percentage points below the average at 63.3 percent. Italy currently has the best treatment of intangible assets at 96.5, followed by Switzerland (90.5 percent) and France (87 percent). The worst treatment is in

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<sup>8</sup> Calculations of the present discounted value of capital allowances were based on data from the Oxford University Centre for Business Taxation Tax Database (CBT Tax Database), available at <http://eureka.bodleian.ox.ac.uk/4635/>. The average weighted capital allowance is the average present discounted value (as a percent) of capital allowances for machines, industrial buildings, and intangibles weighted by their share in the capital stock. The OECD average is the weighted average capital allowance of all OECD countries averaged together and weighted by GDP.

<sup>9</sup> For more information on how each asset’s depreciation schedule is accounted for in the CBT Tax Database, see Oxford University Centre for Business Taxation, *CBT Tax Database, Data Description* (July 2012), [http://www.sbs.ox.ac.uk/sites/default/files/Business\\_Taxation/Docs/Publications/Reports/corporate-tax-ranking-data-description.pdf](http://www.sbs.ox.ac.uk/sites/default/files/Business_Taxation/Docs/Publications/Reports/corporate-tax-ranking-data-description.pdf).

<sup>10</sup> Average excludes Estonia, which has a unique corporate tax system that does not specify depreciation schedules for tax purposes or tax profits in the traditional sense. Instead, profits are determined by Estonian GAAP and corporate profits are only taxed when they are distributed through dividends. For more information, see PricewaterhouseCoopers, *PWC Worldwide Tax Summaries, Corporate Taxes 2013/14*, <http://www.pwc.com/gx/en/tax/corporate-tax/worldwide-tax-summaries/assets/pwc-worldwide-tax-summaries-corporate-2013-14.pdf>.

<sup>11</sup> Average excludes Estonia.

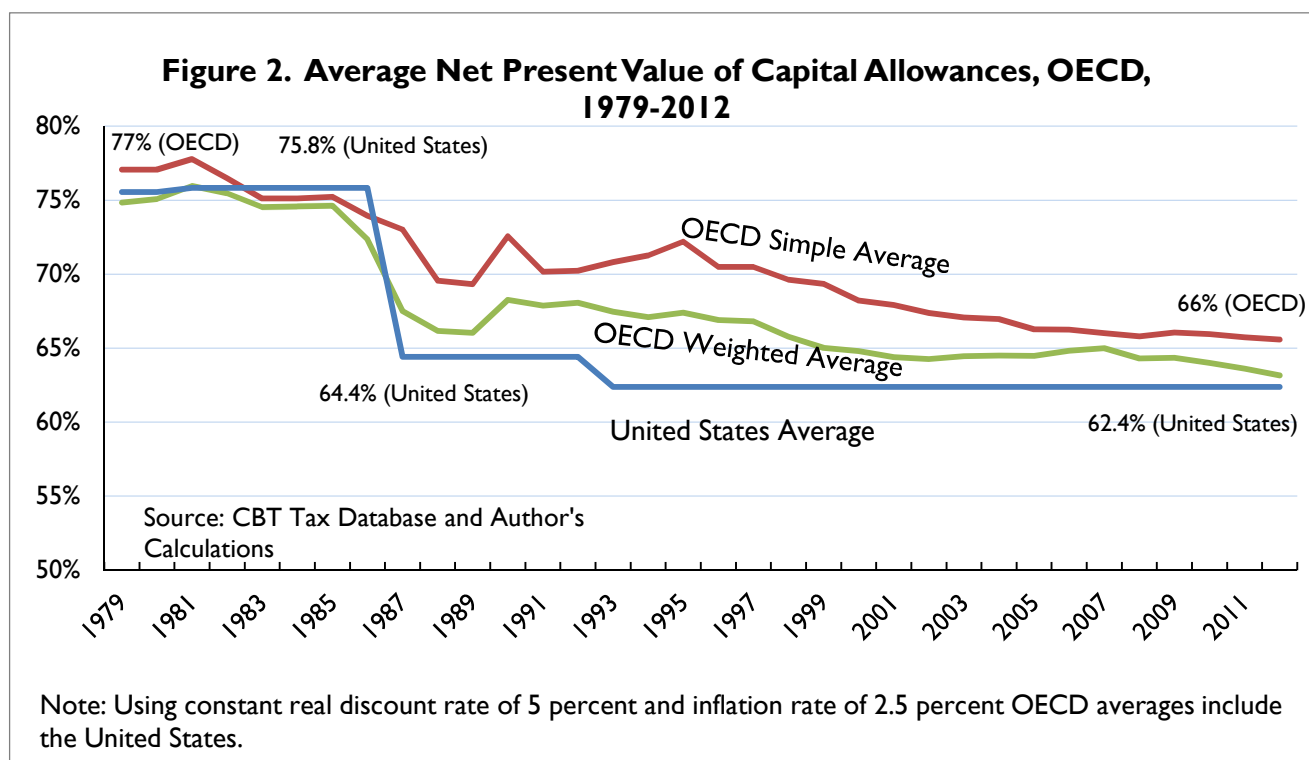
<sup>12</sup> From 2008 to 2012, the United Kingdom began to phase out the capital allowance for industrial buildings. As of 2012, there is no longer a write-off.

Chile, which does not allow corporations to deduct the cost of intangible investments, followed by Canada (51.9 percent) and Australia (54.8 percent).

*Both U.S. and OECD Capital Allowances have Followed the Same Downward Trend*

Although once competitive, the net present value of capital allowances in the U.S. has been below the OECD average since 1987.<sup>13</sup> Under the Accelerated Cost Recovery System (ACRS) in the 1980s, the average capital allowance was 75.8 percent (Figure 2). As part of the Tax Reform Act of 1986, the U.S. changed to the Modified Accelerated Cost Recovery System (MACRS), which significantly lengthened the asset lives of industrial buildings from around 13 years to 31.5 years, lowering the overall value of capital allowances in the U.S. to around 64.4 percent. The average net present value of capital allowances declined again to 62.4 percent in 1993 when asset lives of buildings increased to their current length of 39 years.

The value of capital allowances across the OECD has also declined, but by a lesser degree. In 1979, the average net present value of capital allowances in the OECD was 77 percent. During the 1980s, the average declined to around 70 percent. Since then, it has declined slightly to an average of 66 percent.



<sup>13</sup> Calculations assuming a fixed inflation rate of 2.5 percent and fixed interest rate of 5 percent in order to measure the differences in policy from year to year.

## Capital Allowances and Economic Growth

### *Lower Capital Allowances Lead to Slower Economic Growth*

Any cost recovery system that does not allow the full write-off of an investment—full expensing—in the year the investment is made denies recovery of a part of that investment, incorrectly defines income, boosts the taxable income, and increases the taxes paid by businesses. Lower capital allowances increase the cost of capital, which leads to slower investment and a reduction of the capital stock, reducing productivity, employment, and wages.<sup>14</sup>

Prior research has found that there is evidence that investment is sensitive to changes in the cost of capital. Hassett and Hubbard in a literature review found “a consensus has emerged [among economists] that investment demand is sensitive to taxation.”<sup>15</sup> In other words, as a result of either longer asset lives or a higher corporate income tax rate, the demand for capital decreases and levels of investment decline,<sup>16</sup> reducing the growth in the capital stock. A reduction in the capital stock leads to lower wages for workers and slower economic growth.<sup>17</sup>

### *Unequal Capital Allowances Create a Distortion among Different Investments in the Economy*

It is also important to note that capital allowances can distort the relative prices of different investment and alter the mix of investment and capital in the economy. A government could lengthen depreciation schedules and reduce capital allowances for machinery, which would slow investment in machinery, harming the manufacturing industry. Likewise, if depreciation schedules are shortened, or if businesses are allowed partial expensing of machinery, this increase in the capital allowance may spur more machinery investment relative to other investment in the country.

Recent tax changes in the United States have changed the composition of investment. In 2003, the United States passed the Jobs and Growth Tax Relief Reconciliation Act of 2003 (JGTRRA). Part of this law allowed for partial expensing of certain capital equipment, increasing capital allowances and reducing the cost of certain capital investments by as much as 15 percent.<sup>18</sup> Research on this change found that “investment increased the most for equipment with a longer recovery period and that ‘bonus depreciation had a powerful effect on the composition of investment.’”<sup>19</sup> The best way to avoid such distortions is to grant equal treatment to all assets, which is only accomplished through full expensing.

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<sup>14</sup> See Entin, *supra* note 1.

<sup>15</sup> Kevin A. Hassett & R. Glenn Hubbard, *Tax Policy and Business Investment* (Apr. 10, 2001), [http://www.aei.org/files/2002/03/31/20030122\\_rahass0204.pdf](http://www.aei.org/files/2002/03/31/20030122_rahass0204.pdf).

<sup>16</sup> *Id.*

<sup>17</sup> See Entin, *supra* note 1.

<sup>18</sup> Kevin A. Hassett & Kathryn Newmark, *Taxation and Business Behavior*, in *FUNDAMENTAL TAX REFORM: ISSUES, CHOICES, AND IMPLICATIONS* 205 (John W. Diamond & George R. Zodrow eds., 2008).

<sup>19</sup> *Id.* at 206.

## **Conclusion**

The U.S. not only has the highest corporate tax rate among industrialized nations, but also has one of the worst capital allowance systems. Fixing both is key to improving U.S. competitiveness and the economy.

In the last thirty years, the U.S. has worsened its treatment of capital assets. We have moved from having above-average capital allowances to below-average capital allowances relative to the OECD. Although the value of capital allowances has declined in the OECD, it still remains better than in the U.S.

Although it is important to lower the corporate income tax rate to make the U.S. more competitive internationally, doing so without also considering our capital allowances misses an important aspect of the corporate tax. Lengthening assets lives to “pay for” a lower corporate tax rate takes one step forward and one step back. It may even result in a higher cost of capital and, subsequently, lower investment.

## Appendix

### *Calculating a Capital Consumption Allowance*

**Table 1. Example Calculation of a Capital Allowance on a \$100 Investment.**

Year	Value of Machine	Nominal Write-off	Present Value Write-off
0	\$100.00	\$20.00	\$20.00
1	\$80.00	\$16.00	\$14.88
2	\$64.00	\$12.80	\$11.08
3	\$51.20	\$10.24	\$8.24
4	\$40.96	\$8.19	\$6.13
5	\$32.77	\$6.55	\$4.56
6	\$26.21	\$5.24	\$3.40
7	\$20.97	\$20.97	\$12.64
Total Value:		\$100.00	\$80.94
Total Allowance:		100.00%	80.94%

7-year Declining Balance Method at 20 percent.  
Real Discount Rate of 5 percent, Inflation of 2.5 percent

Table 1 illustrates the calculation of a capital allowance.

Suppose a business made a capital investment of \$100 and assume a real discount rate plus inflation that equals 7.5 percent.

Also suppose the government allows investment in machinery to be deducted on a declining balance method of 20 percent for seven years. This means the business is able to deduct 20 percent of the remaining cost of an investment each year for seven years.

In the initial year, the business can deduct 20 percent (\$20) of the initial investment from taxable income. That \$20 is subtracted from the initial value of the machine. The next year, the machine has a remaining value of only \$80 (the

initial \$100 minus the 20 percent deduction in the initial year) and, once again, 20 percent, or \$16, is deducted from taxable income and subtracted from the value of the machine. In the next year, another 20 percent is deducted from the remaining \$64 value of the machine, or \$12.80. This method continues until the final year when the remaining \$20.97 of the investment is deducted.

Over time, the present value of each year's write-off declines due to the time value of money. Each subsequent year is reduced by the real discount rate plus inflation, reducing the value of the write-off. Although the nominal value of the entire write-off is \$100, the present value is only \$80.94. As a result, the company can only recover 80.9 percent of the upfront present value of the cost of the machine by the end of the period.



**Table 2. Net Present Value of Capital Allowances, OECD, 2012**

	Rank	Average Allowance	Rank	Industrial Buildings	Rank	Machinery	Rank	Intangibles
Greece	1	80.20%	1	68.20%	3	93.70%	18	73.80%
Slovakia	2	77.80%	2	64.90%	13	86.80%	3	87.00%
Belgium	3	77.30%	3	62.20%	6	88.20%	3	87.00%
Switzerland	4	74.10%	4	55.50%	15	86.00%	2	90.50%
Korea	5	74.00%	6	54.80%	4	92.20%	18	73.80%
Spain	6	73.20%	4	55.50%	14	86.40%	12	83.20%
France	6	73.20%	6	54.80%	18	85.80%	3	87.00%
Czech Republic	6	73.20%	11	54.20%	9	87.20%	11	84.30%
Portugal	9	72.60%	6	54.80%	5	88.80%	18	73.80%
Israel	10	72.50%	6	54.80%	11	87.00%	16	78.70%
Luxembourg	11	71.00%	13	47.90%	10	87.10%	3	87.00%
Sweden	12	70.30%	13	47.90%	15	86.00%	10	86.00%
Iceland	13	69.50%	19	47.80%	15	86.00%	15	80.90%
Finland	14	68.70%	12	51.90%	20	82.70%	18	73.80%
Denmark	15	68.20%	13	47.90%	20	82.70%	14	81.30%
Turkey	16	67.60%	13	47.90%	8	87.60%	30	63.20%
Netherlands	17	67.30%	27	33.80%	1	96.50%	18	73.80%
Italy	18	66.80%	20	46.30%	28	76.00%	1	96.50%
Mexico	19	66.00%	6	54.80%	29	73.80%	18	73.80%
Slovenia	20	65.30%	21	39.10%	11	87.00%	18	73.80%
Ireland	20	65.30%	13	47.90%	24	78.70%	18	73.80%
Australia	20	65.30%	13	47.90%	19	85.10%	31	54.80%
Canada	23	65.00%	25	36.10%	1	96.50%	32	51.90%
Austria	24	62.90%	21	39.10%	23	81.40%	18	73.80%
United States	25	62.40%	26	35.00%	7	87.70%	29	63.30%
Germany	26	61.50%	21	39.10%	29	73.80%	3	87.00%
Norway	27	60.70%	24	37.40%	25	78.20%	18	73.80%
Hungary	27	60.70%	31	27.90%	22	82.60%	3	87.00%
Poland	29	59.30%	27	33.80%	29	73.80%	3	87.00%
Japan	30	57.00%	31	27.90%	27	77.00%	16	78.70%
New Zealand	31	55.80%	30	30.70%	32	73.20%	18	73.80%
Great Britain	32	46.70%	33	0.00%	26	78.20%	13	82.70%
Chile	33	41.70%	27	33.80%	33	63.30%	33	0.00%
Estonia*	34	0.00%	34	0.00%	34	0.00%	34	0.00%
OECD Average	N/A	66.50%	N/A	43.60%	N/A	81.10%	N/A	73.40%
OECD Weighted Average	N/A	63.10%	N/A	37.80%	N/A	83.50%	N/A	73.00%

Note: Average excludes Estonia, which has a unique corporate tax system that does not specify depreciation schedules for tax purposes or tax profits in the traditional sense. Instead, profits are determined by Estonian GAAP and corporate profits are only taxed when they are distributed through dividends.

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National Press Building  
529 14th Street, N.W., Suite 420  
Washington, DC 20045

202.464.6200  
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