

**DESCRIPTION OF THE TREATMENT BY  
CERTAIN COUNTRIES OF COST RECOVERY  
FOR BUSINESS INVESTMENT IN TANGIBLE  
AND INTANGIBLE ASSETS**

Prepared by the Staff  
of the  
JOINT COMMITTEE ON TAXATION

April 12, 2013

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## INTRODUCTION

This document, prepared by the staff of the Joint Committee on Taxation, provides information related to cost recovery in different income tax systems in the context of capital investment by businesses. The first section provides a description of the income tax rules, as in effect in 2012, with respect to the cost recovery of capital investment in by businesses in the United States, Canada, Germany, Japan, and the United Kingdom. The second section provides examples illustrating the pattern of depreciation over time and the present value of depreciation allowances for investments in commercial buildings, computers, computer software, tractor trailers, machinery and equipment, and construction equipment based on the aforementioned countries' tax rules.

Given the assumptions made in these examples, the United States offers the most generous depreciation allowances for machinery and equipment, and construction equipment, relative to the other countries. Canada generally offers the most generous depreciation allowances for computers and computer software. The United Kingdom generally offers the least generous depreciation allowances for investments in commercial buildings, computers, computer software, and tractor trailers. Germany provides the least generous depreciation allowances for machinery and equipment and construction equipment. There is no class of assets under study for which Japan has the most favorable, or least favorable, cost recovery system. Across all the types of property presented in the examples, there is no single country that offers the most generous or least generous depreciation allowances overall.

The information regarding income taxation in countries other than the United States was compiled from secondary sources and from informal discussions with tax practitioners.

## A. Present Law Related to Cost Recovery for Business Investment

### In general<sup>1</sup>

Cost recovery refers to the process by which a taxpayer recoups the cost of its investment in business or other income-producing property.<sup>2</sup> Conceptually, depreciation could be viewed as reflecting the decline in value over time of business or income-producing property, as the ageing of the property causes it to lose value. In other words, depreciation could be viewed as measuring the decline over time in the present value of income produced by the property, as its income-producing utility diminishes.

In the absence of depreciation deductions, the decline in value of income-producing property would not be recognized as a deduction or loss in an income tax system that generally requires a recognition event – such as a sale or exchange of the property – in order for gain or loss to be taken into account for tax purposes.

Ascertaining the specific decline in value of each piece of business property for each year that the property is used in the business presents measurement difficulties. Even if the cost of the property is spread formulaically over the property's useful life in the business, administrative difficulties arise in predicting, estimating, or otherwise ascertaining the useful life of the property. These and related difficulties have made the use of a less fact-dependent depreciation system attractive to taxpayers and to the government from a tax administration standpoint.<sup>3</sup> For these reasons, most income tax systems provide formulas for different assets or groups of assets.

Cost recovery formulas generally are governed by two parameters: a method and a recovery period. Different methods can be selected to provide a greater or lesser degree of acceleration of cost recovery for the taxpayer with respect to the depreciable asset. For example, for a given recovery period, a declining-balance method, in which the taxpayer's depreciation deduction is greatest in the early years of the recovery period and smaller in the later years, is more accelerated than the straight-line method, in which the taxpayer's depreciation deduction for the property is the same for each year in the recovery period. Although the same nominal cost for the property is recovered over the same recovery period under both depreciation methods, the acceleration of a greater amount of the deduction into the earlier years of the recovery period means that the present value of the tax benefit to the taxpayer is greater under the accelerated method than under the straight-line method.

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<sup>1</sup> Section references in this document are to the Internal Revenue Code of 1986, unless otherwise noted. The discussion of income taxation in other countries is based on secondary sources and informal discussions with tax practitioners. See, e.g., Ernst & Young, *Worldwide Corporate Tax Guide*, April 2012; <http://www.hmrc.gov.uk/manuals/cirdmanual/cird30540.htm>.

<sup>2</sup> Cost recovery of tangible assets is commonly referred to as depreciation, whereas cost recovery of intangible assets is commonly referred to as amortization.

<sup>3</sup> For a more detailed overview of the evolution of the tax depreciation rules, see, *inter alia*, Boris I. Bittker and Lawrence Lokken, "Depreciation and Amortization - Introductory," *Federal Taxation of Income, Estates and Gifts* (2d/3d ed. 1993-2012 & Cum. Supp. No. 2) par. 23.1.

A formulaic system of depreciation can serve to provide a tax incentive for capital investment to the extent the depreciation deductions are more accelerated than the economic or financial statement depreciation of the property. For example, temporary rules providing for additional first-year depreciation (also known as bonus depreciation) were enacted in the United States several times in recent years for the purpose of providing economic stimulus during times of economic downturn.<sup>4</sup>

Expensing, or allowing a deduction for the cost of business property in the year it is placed in service, provides a tax benefit of a greater present value than any other cost recovery method, including accelerated depreciation, because the full cost of the property is recovered in the first year rather than in subsequent years. Expensing the full cost of the property is economically equivalent to exempting from tax the so-called “normal” return on investment, assuming tax rates remain the same.

Tax credits can also serve as a form of cost recovery or may permit recovery of an amount different from the cost of the property. Prior to 1986, an investment tax credit was allowed for up to 10 percent of a taxpayer’s investment in certain tangible depreciable property (generally not including buildings or their structural components).<sup>5</sup>

### **United States**<sup>6</sup>

In general, a taxpayer is required to capitalize amounts paid or incurred for property used in a trade or business that creates an asset having a useful life beyond one tax year. Immediate expensing is permitted for certain business property of small businesses subject to annual dollar limitations.<sup>7</sup> Tax credits are provided with respect to capital investment in certain types of property, including some types of energy-related property.<sup>8</sup>

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<sup>4</sup> For the past decade, Congress has provided additional first-year depreciation deductions for qualifying assets placed in service in certain years. In general, from September 11, 2001, through May 5, 2003, an additional 30 percent depreciation deduction was allowed in the first year the qualifying asset was placed in service; from May 6, 2003 through December 31, 2004, an additional 50 percent depreciation deduction was allowed in the first year the qualifying asset was placed in service; from January 1, 2008 through September 8, 2010, an additional 50 percent depreciation deduction was allowed in the first year the qualifying asset was placed in service; from September 9, 2010 through December 31, 2011, an additional 100 percent depreciation deduction was allowed in the first year the qualifying asset was placed in service; and from January 1, 2012 through December 31, 2013 an additional 50 percent depreciation deduction was allowed in the first year the qualifying asset was placed in service. Sec. 168(k).

<sup>5</sup> Sec. 46.

<sup>6</sup> For a more detailed discussion of the depreciation and amortization rules in the United States, please see Joint Committee on Taxation, *Background and Present Law Relating to Cost Recovery and Domestic Production Activities*, (JCX-19-12) February 27, 2012.

<sup>7</sup> Sec. 179.

<sup>8</sup> Secs. 47 (rehabilitation credit), 42 (low-income housing credit) and, e.g., 45 (credit for electricity produced from renewable sources) and 48C (advanced energy project credit). For a summary and analysis of present-law energy-related investment credits, see Joint Committee on Taxation, *Present Law and Analysis of*

To account for the wear and tear, deterioration, or obsolescence of its property, a taxpayer is allowed to recover, through annual depreciation or amortization deductions, the cost of certain property used in a trade or business.

Under present law, depreciation for most tangible assets is determined under the modified accelerated cost recovery system (“MACRS”). Under MACRS, depreciation of tangible assets generally is calculated by applying a depreciation method to a recovery period for the category of property being depreciated.<sup>9</sup> The applicable recovery period for different types of property is determined in part by statute and in part by historic Treasury guidance. The depreciation methods generally applicable to tangible personal property are the 200-percent and 150-percent declining-balance methods, switching to the straight-line method for the first taxable year where using the straight-line method with respect to the adjusted basis as of the beginning of that year will yield a larger depreciation allowance. The straight-line method applies to real property and certain other property, and can also be elected by the taxpayer in lieu of the applicable declining balance method.

The alternative depreciation system (“ADS”) is required for property used predominantly outside the United States, tax-exempt bond financed property, and certain tax-exempt use property.<sup>10</sup> An election to use ADS is available to taxpayers for any class of property for any taxable year.<sup>11</sup> Under ADS, all property is depreciated using the straight-line method over recovery periods which are generally longer than those used under MACRS.

Amortization for most acquired intangible assets, including goodwill, is determined using the straight-line method over a 15-year period.<sup>12</sup> In contrast, self-created assets, such as goodwill created through advertising and other expenses, are not required to be capitalized and amortized.

## **Canada**

In general, a taxpayer is required to capitalize amounts paid or incurred for property used in a trade or business that creates an asset having a useful life longer than one year. To account for the wear and tear, deterioration, or obsolescence of its property, a taxpayer is allowed to recover, through annual depreciation or amortization deductions, the cost of certain property used in a trade or business.

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*Energy-Related Tax Expenditures and Description of the Revenue Provisions Contained in H.R. 1380, the New Alternative Transportation to Give Americans Solutions Act of 2011 (JCX-47-11), September 20, 2011.*

<sup>9</sup> Sec. 168.

<sup>10</sup> Sec. 168(g).

<sup>11</sup> Sec. 168(g)(7).

<sup>12</sup> Sec. 197.

Capital assets generally are pooled into various classes based on the type of property. Depreciation of tangible assets is calculated at a specific rate per year for each class of property (regardless of the year the asset is placed in service) using the declining-balance method. Under this method, a recovery period is not specified, rather, depreciation for the class of property is computed based on a constant rate of decline.<sup>13</sup> Tax depreciation may be fully or partially claimed at the taxpayer's option. Any amounts not claimed in the first year remain as part of the undepreciated cost basis of the class of property which is subject to depreciation in the future at the specified rate.

Amortization is available for three-quarters of the capitalized amount of goodwill and certain other intangible assets at a maximum annual rate of seven percent using the declining balance method.

If an asset within a class is disposed of, any proceeds from the disposition first reduce the depreciable basis of the class of property, and any excess is treated as income. If a balance remains in a class of property after all the assets in the class are disposed, the remaining balance is treated as a deductible loss.

### **Germany**

In general, a taxpayer is required to capitalize amounts paid or incurred for property used in a trade or business that creates an asset having a useful life longer than one year. However, immediate expensing is allowed for movable tangible assets with a cost under €410 (approximately \$521). To account for the wear and tear, deterioration, or obsolescence of its property, a taxpayer is allowed to recover, through annual depreciation or amortization deductions, the cost of certain property used in a trade or business.

Depreciation of tangible assets is calculated generally by applying the straight-line method to a recovery period for the category of property being depreciated.<sup>14</sup> Recovery periods for moveable tangible assets are published by the Federal Ministry of Finance. Deviation from the published recovery period is permissible, but requires justification by the taxpayer. Recovery periods for buildings are provided under German law.

Intangible assets are amortized over their useful lives under the straight-line method. Acquired goodwill is amortized over 15 years, while other intangibles acquired individually are typically amortized over periods between five and 10 years.

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<sup>13</sup> In contrast to the United States, in Canada the depreciation method does not switch to straight-line when straight-line results in a greater depreciation allowance.

<sup>14</sup> Special rules allowing more generous depreciation allowances may apply for certain classes of taxpayers, such as small businesses. The declining balance method was temporarily allowed for assets acquired or manufactured between December 31, 2008 and January 1, 2011.



## **Japan**

In general, a taxpayer is required to capitalize amounts paid or incurred for property used in a trade or business that creates an asset having a useful life longer than one year. However, immediate expensing is allowed for assets with a cost of ¥100,000 (approximately \$1,258) or less, provided that the cost is also immediately expensed for financial accounting purposes. To account for the wear and tear, deterioration, or obsolescence of its property, a taxpayer is allowed to recover, through annual depreciation or amortization deductions, the cost of certain property used in a trade or business. However, assets that do not decrease in value as time elapses (*e.g.*, land) may not be depreciated.

Depreciation of tangible assets generally is calculated by applying a depreciation method to a recovery period for the category of property being depreciated.<sup>15</sup> The depreciation methods generally applicable to tangible personal property are the straight-line method and the 200-percent declining balance method, switching to the straight-line method for the first taxable year where using the straight-line method with respect to the adjusted basis as of the beginning of that year will yield a larger depreciation allowance. The straight-line method also applies to real property. While the depreciation methods and recovery periods are stipulated under Japanese law, the amount of tax depreciation deducted cannot exceed the depreciation claimed for financial accounting purposes.

Intangible assets are amortized over their useful lives using the straight-line method. For acquired goodwill, the useful life is five years.

## **United Kingdom**

In general, a taxpayer is required to capitalize amounts paid or incurred for property used in a trade or business that creates an asset having a useful life longer than one year. Immediate expensing is allowed for the first £25,000 (approximately \$39,703) of investment by any business in plant and machinery (other than cars). Immediate expensing also is allowed for certain energy-saving assets, low-emissions cars, and on a temporary basis for businesses owning or leasing property in economically disadvantaged areas.

To account for the wear and tear, deterioration, or obsolescence of its property, a taxpayer is allowed to recover, through annual depreciation or amortization deductions, the cost of certain property used in a trade or business. However, the cost of industrial and agricultural buildings is not eligible for depreciation.

Expenditures on plant and machinery, including certain cars, are pooled together and depreciation allowances are provided at specified rates using the declining balance method. In general, a pool of assets with a useful life of less than 25 years is recovered at an 18 percent rate. A pool of assets with a useful life of 25 years or more is recovered at an eight percent rate. The recovery rate for cars is based on emissions.

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<sup>15</sup> Special rules allowing bonus depreciation or investment tax credits for specified machinery and equipment may apply to certain classes of taxpayers, such as small businesses.

Intangible assets are recovered over their respective useful life on a basis that reflects the pattern of expected depletion, which is assumed to be straight-line unless the taxpayer can demonstrate otherwise. The useful life of an intangible generally does not exceed 20 years.

### **Summary**

Each of the countries described above generally require the capitalization of expenditures that create an asset with a useful life greater than one year. In Germany and Japan, immediate expensing is allowed for an inexpensive items below a specified per item value. The United States and the United Kingdom both provide an annual expensing allowance for a total capital investment below a certain threshold. However, the expensing allowance in the United Kingdom applies to all businesses, while the section 179 deduction in the United States is phased out for taxpayers with aggregate capital investment above a certain dollar threshold.

Similar to the United States, most of the countries allow different types of depreciation allowances for different types of property. The United States and Japan both allow the double declining balance method to be used for certain tangible personal property, which is the most accelerated depreciation method described above. Canada and the United Kingdom allow the declining balance method based on the pooling of assets within a specified class, rather than tracking each asset separately.<sup>16</sup> All of the countries, with the exception of Canada, require that taxpayers use the straight-line method to depreciate real property and amortize the cost of intangibles. However, as illustrated in the examples below, it is the combination of the depreciation method and recovery period which determines the overall economic value of the cost recovery allowances.

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<sup>16</sup> In the United States, a similar simplified record-keeping election can be made to pool certain assets into general asset accounts. Sec. 168(i)(4).

## **B. Sample Recovery Periods and Depreciation Methods**

Table 1 summarizes cost recovery systems for selected assets in the United States, Canada, Germany, Japan, and the United Kingdom.<sup>17</sup> Differences in depreciation systems described in the table result in different patterns of depreciation allowances for the selected assets over time, with some countries offering more accelerated cost recovery than others, resulting in a greater amount of depreciation allowances in present value terms. The table also summarizes the cost recovery system for the assets under ADS in the United States for purposes of comparison with MACRS, which is the recovery system generally used under present U.S. law.

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<sup>17</sup> The recovery rate or period and depreciation method for assets in Table 1 were gathered from information discussions tax practitioners and other secondary sources. See, e.g., Ernst & Young, *Worldwide Corporate Tax Guide*, April 2012; <http://www.hmrc.gov.uk/manuals/cirdmanual/cird30540.htm>.

**Table 1.–Cost Recovery Systems for Selected Assets in Selected Countries**

<b>Country</b>	<b>Recovery Period or Rate</b>	<b>Method</b>
<b>Commercial Buildings</b>		
<b>U.S. - MACRS</b>	39 years	Straight-line
<b>U.S. - ADS</b>	40 years	Straight-line
<b>Canada</b>	4% per year	100% Declining Balance
<b>Germany</b>	3% per year	Straight-line
<b>Japan</b>	21 or 50 years	Straight-line
<b>UK</b>	No capital allowance	Not Applicable
<b>Computers</b>		
<b>U.S. - MACRS</b>	5 years	200% Declining Balance*
<b>U.S. - ADS</b>	6 years	Straight-line
<b>Canada</b>	55% per year	100% Declining Balance
<b>Germany</b>	33% per year	Straight-line
<b>Japan</b>	4 years	200% Declining Balance*
<b>UK</b>	18% per year	100% Declining Balance
<b>Computer Software</b>		
<b>U.S. - MACRS</b>	3 years	Straight-line
<b>U.S. - ADS</b>	3 years	Straight-line
<b>Canada</b>	Currently expensed	Not Applicable
<b>Germany</b>	Varies	Straight-line
<b>Japan</b>	4 years	Straight-line
<b>UK</b>	18% per year	100% Declining Balance
<b>Tractor Trailers</b>		
<b>US - MACRS</b>	5 years	200% Declining Balance*
<b>US - ADS</b>	6 years	Straight-line
<b>Canada</b>	30% per year	100% Declining Balance
<b>Germany</b>	16.6% per year	Straight-line
<b>Japan</b>	3 or 6 years	200% Declining Balance*
<b>UK</b>	18% per year	100% Declining Balance

Country	Recovery Period or Rate	Method
<b>Machinery and Equipment</b>		
<b>U.S. - MACRS</b>	7 years	200% Declining Balance*
<b>U.S. - ADS</b>	12 years	Straight-line
<b>Canada</b>	20%-50% per year	100% Declining Balance
<b>Germany</b>	6%-12.5% per year	Straight-line
<b>Japan</b>	8 years	200% Declining Balance*
<b>UK</b>	18% per year	100% Declining Balance
<b>Construction Equipment</b>		
<b>U.S. - MACRS</b>	5 years	200% Declining Balance*
<b>U.S. - ADS</b>	6 years	Straight-line
<b>Canada</b>	20% per year	100% Declining Balance
<b>Germany</b>	6%-12.5% per year	Straight-line
<b>Japan</b>	8 years	200% Declining Balance*
<b>UK</b>	18% per year	100% Declining Balance

\* When employing a declining-balance method, the Japanese and U.S. tax laws require taxpayers to switch to the straight-line method in the year the straight-line method results in a greater depreciation allowance.

To illustrate the cross-country differences in cost recovery systems, the following sections include figures mapping out the pattern of annual depreciation allowances (in nominal terms) over the recovery period, and charts comparing the present value of those allowances for a hypothetical \$1,000 investment in the assets listed in the Table 1: commercial buildings, computers, computer software, tractor trailers, machinery and equipment, and construction equipment.<sup>18</sup> For purposes of the calculations, it is assumed that the assets have no salvage value and are not disposed of. A range of recovery periods or rates may be applicable when there are multiple classifications of property in a country within the selected category. In the case of assets with a range of recovery periods or a range of recovery rates in Table 1, the midpoint of the range of periods or the range of recovery rates is used for computations. The present value calculations assume a nominal discount rate of eight percent. As a convention, depreciation allowances for an asset are discounted starting in the first year. The calculations do not take into account the income tax rates for each country.

Two general themes emerge from the analysis of these stylized examples. First, no country under study offers a cost recovery system that is more favorable, across all assets considered, than the other countries studied. In other words, one country may offer a more favorable cost recovery system for one class of assets than another country, but a less favorable

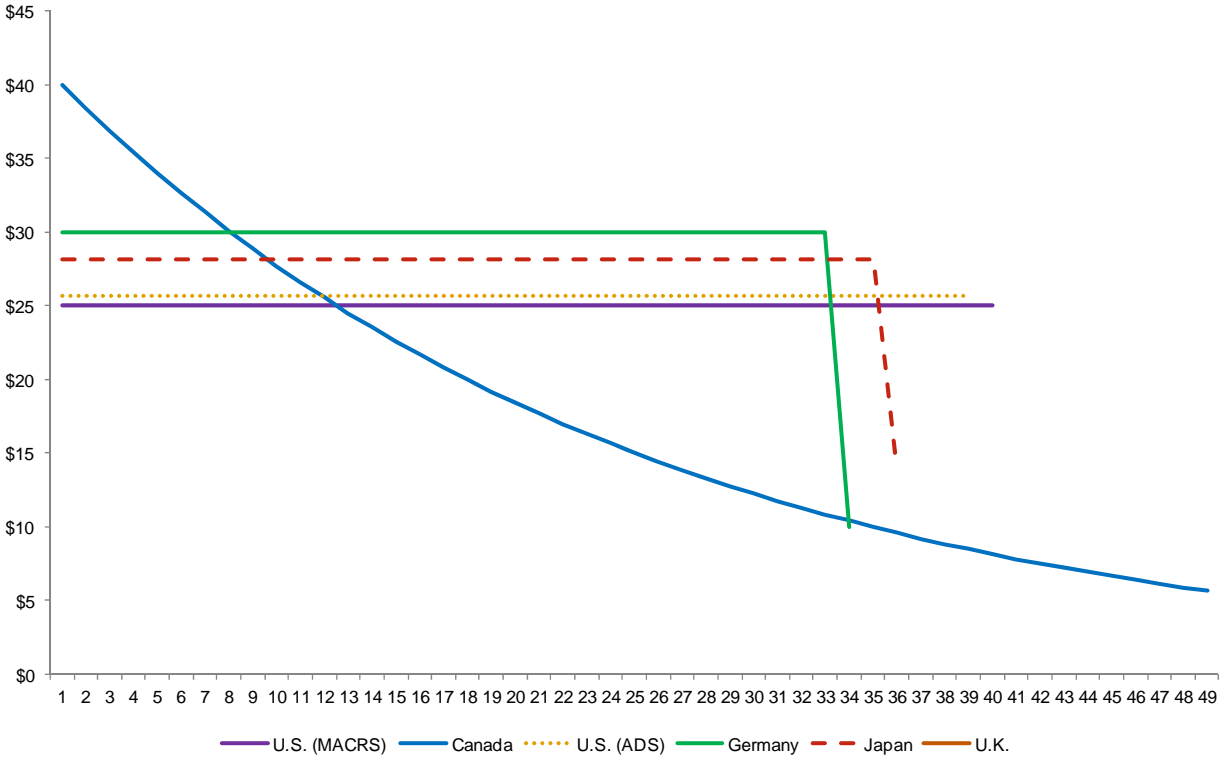
<sup>18</sup> The examples do not take potentially applicable expensing allowances into account. For example, the examples ignore immediate expensing that may be available in Japan for assets with a cost of ¥100,000 (approximately \$1,258) or less, the section 179 deduction in the United States, *etc.*

cost recovery system for another class of assets. Second, the straight-line method may allow for greater total cost recovery, in present value terms, than an accelerated method (such as the declining-balance method) even if the accelerated method offers greater annual depreciation allowances, on a nominal basis, in the first years of an asset's life. This can occur when there are differences in recovery periods or recovery rates.

### **Commercial buildings**

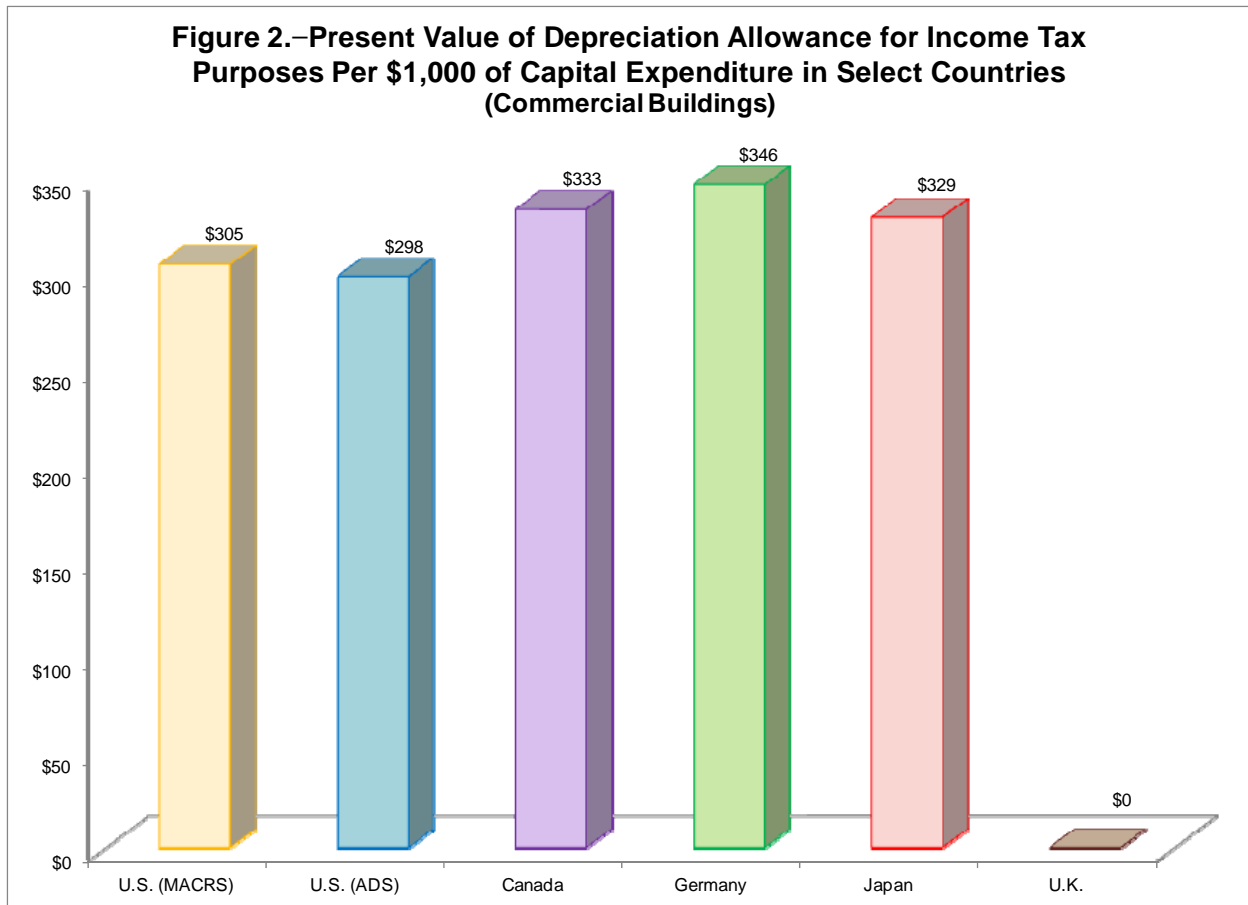
Figure 1 maps annual depreciation allowances for commercial buildings. The United Kingdom is the only country (among those studied) that does not permit a capital allowance, and Canada is the only country that allows for cost recovery under a declining-balance method. Germany, Japan, and the United States (MACRS) have adopted a straight-line method. In this example, Canada offers the most generous annual depreciation allowance for each of the first eight years of a commercial building's life. After the eighth year, Germany offers greater annual depreciation allowances. Although upfront depreciation allowances for commercial buildings are greatest in Canada, the present value of such depreciation allowances is greatest in Germany, as Figure 2 shows. This result is sensitive to the assumptions made in the calculations (such as the discount rate) but does highlight how a country that allows for more accelerated cost recovery than another country in the first years of an asset's life may ultimately offer total depreciation allowances that are smaller in present value terms. In this example, the present value of depreciation allowances for commercial buildings is greater in Germany than the United States even though both use the straight-line recovery method. The difference in results arises because Germany permits a recovery rate of three percent each year for commercial buildings (equivalent to a recovery period of 33.3 years because the straight-line method is used), while the United States allows for a longer recovery period of 39 years.

**Figure 1.—Annual Depreciation Allowance for Income Tax Purposes Per \$1,000 of Capital Expenditure in Select Countries (Commercial Buildings)**



Note: Except in the case of Canada, any allowance for any year beyond that graphed equals zero, as costs have been fully recovered. Under the assumptions used in making these calculations, costs are not fully recovered in Canada until a later period (not shown in figure). The United Kingdom does not provide for capital allowances for commercial buildings.

Source: JCT staff calculations.



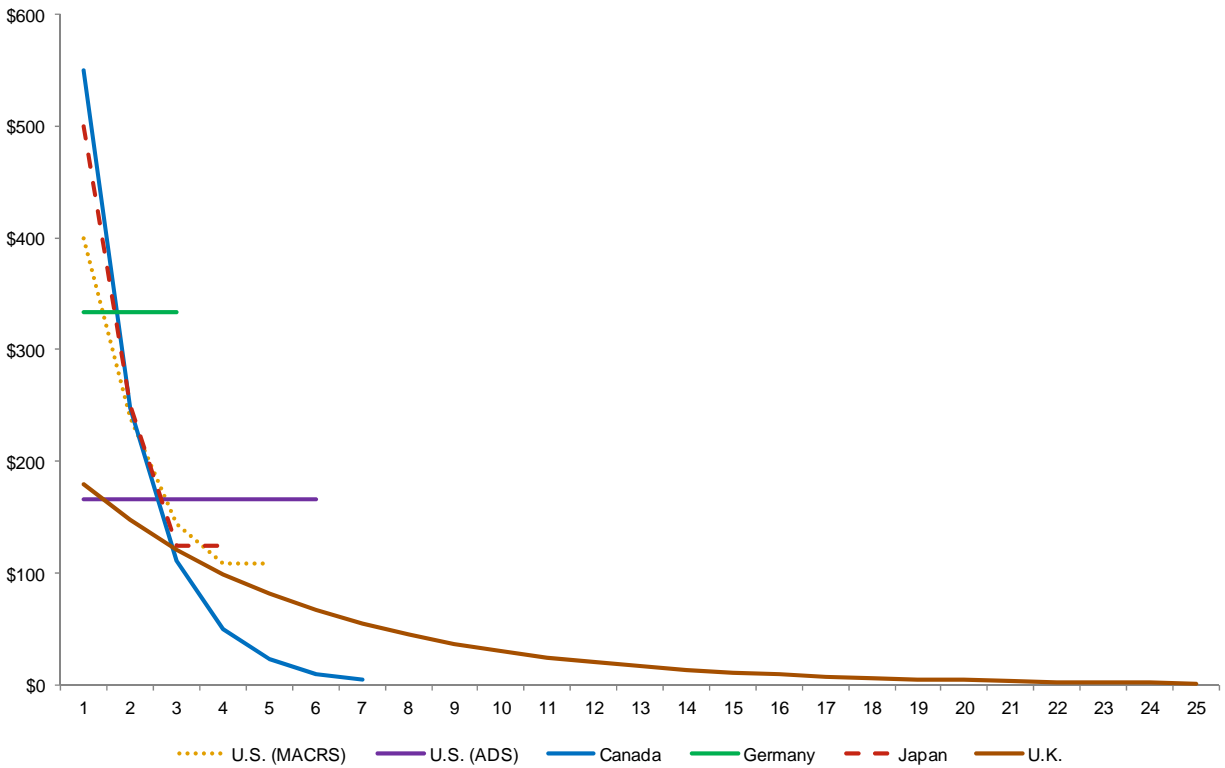
Source: JCT staff calculations.

### **Computers**

For recovering the cost of computers, Germany uses the straight-line method, while Canada, Japan, the United Kingdom, and the United States (MACRS) use declining-balance methods. Canada (\$550) and Japan (\$500) offer the greatest depreciation allowances in the first year of a \$1,000 investment in a computer, but Germany (\$333 each year) offers the greatest depreciation allowance in the second and third year of the computer's life, at which time the cost of the computer has been fully recovered (Figure 3). As Figure 4 shows, the present value of depreciation allowances for a \$1,000 investment in computers is greatest in Canada (\$871), Germany (\$859), Japan (\$868), and the United States (\$843), followed by the United Kingdom (\$692).

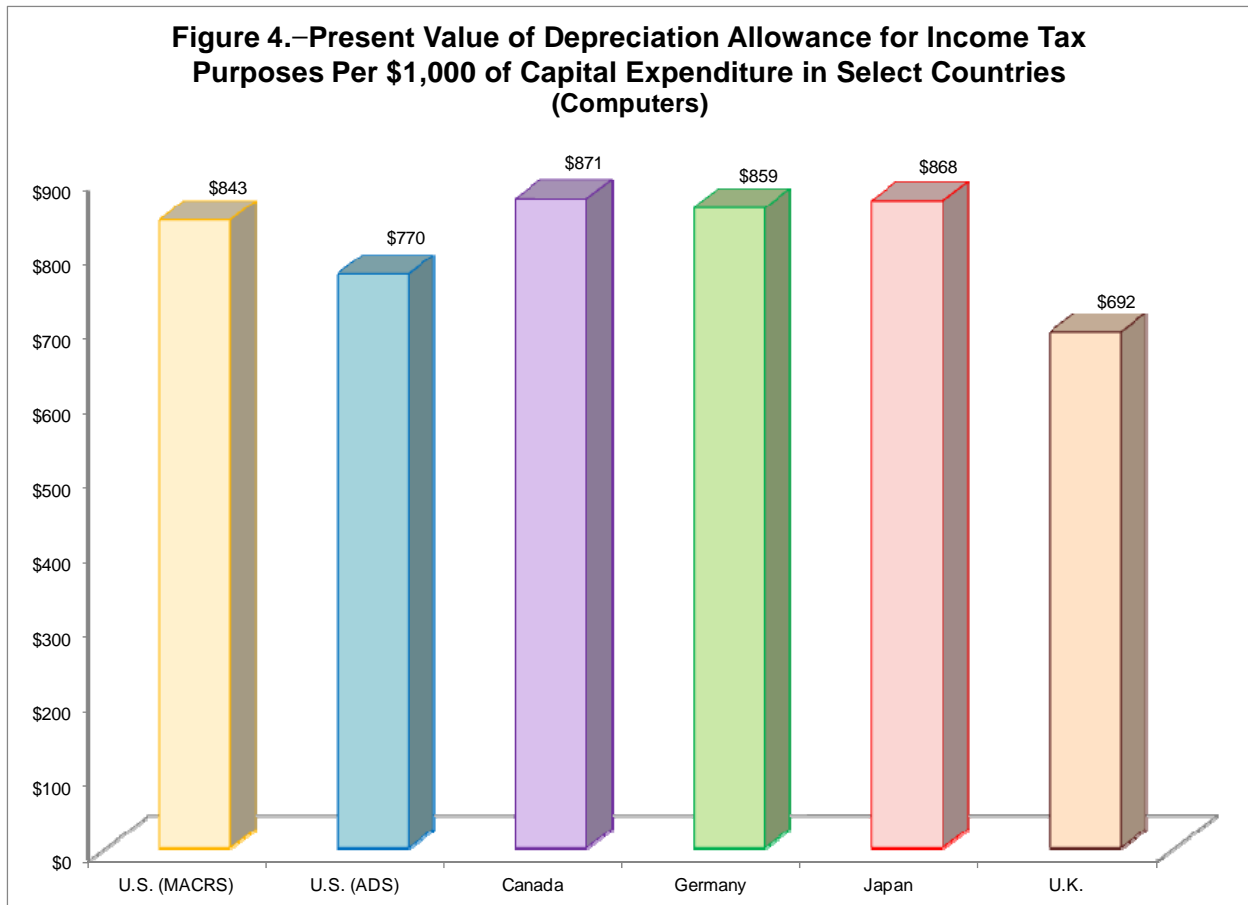


**Figure 3.—Annual Depreciation Allowance for Income Tax Purposes Per \$1,000 of Capital Expenditure in Select Countries (Computers)**



Note: Except in the case of the United Kingdom, any allowance for any year beyond that graphed equals zero, as costs have been fully recovered. Under the assumptions used in making these calculations, costs are not fully recovered in United Kingdom until a later period (not shown in figure).

Source: JCT staff calculations.

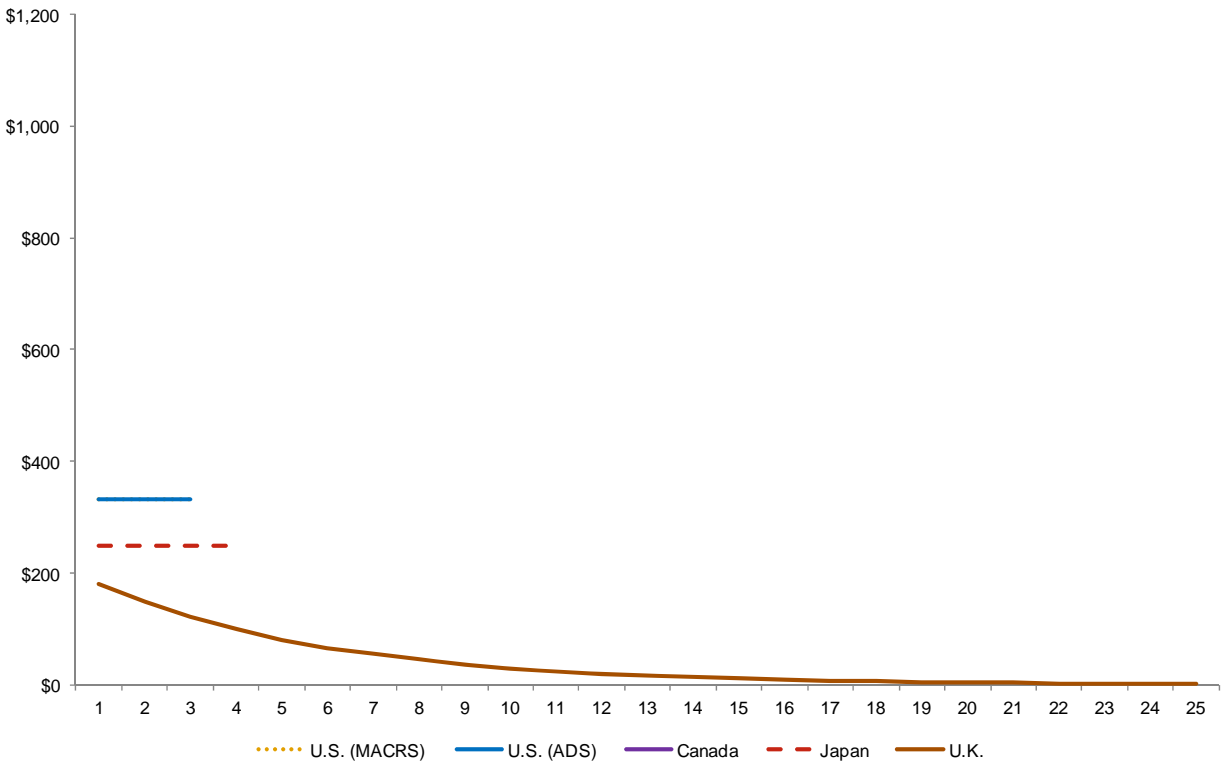


Source: JCT staff calculations.

### **Computer software**

Cost recovery for expenditures on computer software is most favorable in Canada, where such expenditures can be fully expensed. Germany, Japan, and the United States (MACRS) each use the straight-line method when recovering the cost of software, while the United Kingdom uses a 100-percent declining-balance method. In the United States, computer software is one class of assets for which cost recovery under MACRS and ADS achieves the same result, since they both involve the use of the straight-line method and permit a three-year recovery life. Since Japan allows for a longer recovery life for computer software (four years), annual depreciation allowances for expenditures on computer software are greater in the United States than in Japan (Figure 5). When compared to Canada, Japan, and the United States, the United Kingdom offers least amount of cost recovery for investment in computer software, both in terms of annual depreciation allowances (Figure 5) and the present value of total depreciation allowances (Figure 6). Because the systems used to recover costs for investments in computers and computer software are the same in the United Kingdom, the present value of depreciation allowances for a \$1,000 investment in either computers or computer software is \$692 (Figure 6).

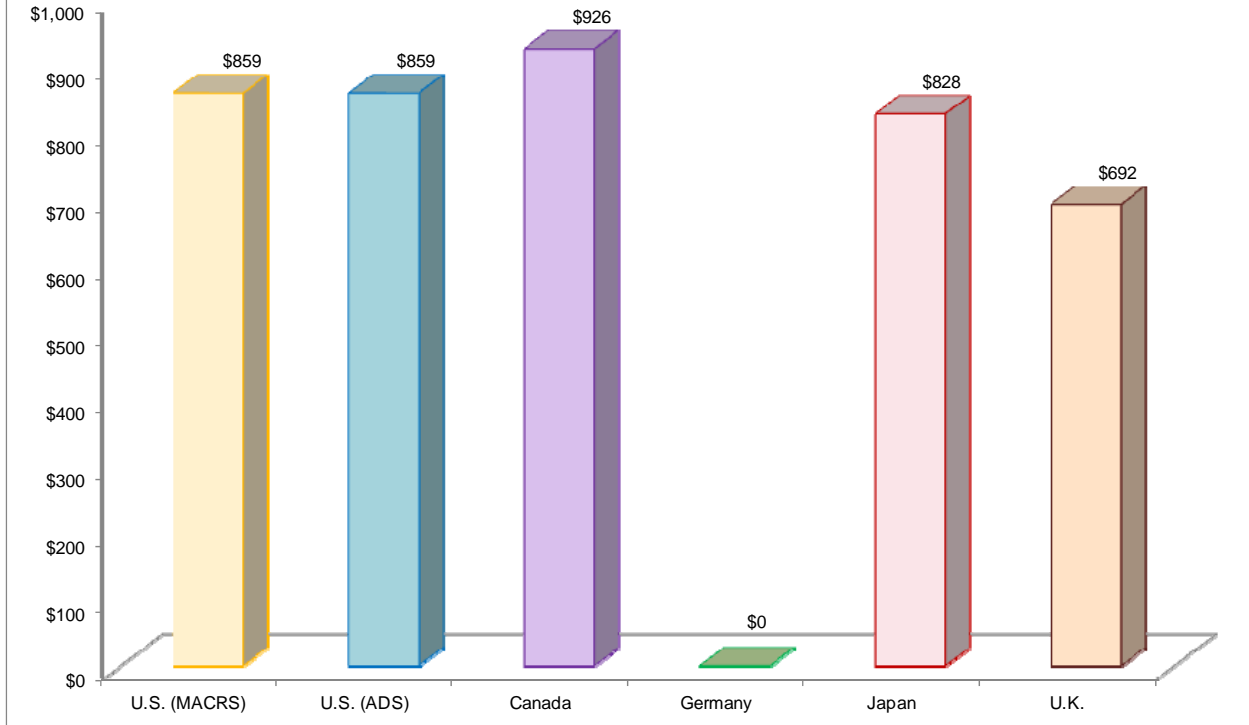
**Figure 5.—Annual Depreciation Allowance for Income Tax Purposes Per \$1,000 of Capital Expenditure in Select Countries (Computer Software)**



Note: Calculations are unavailable for Germany. Except in the case of the United Kingdom, any allowance for any year beyond that graphed equals zero, as costs have been fully recovered. Under the assumptions used in making these calculations, costs are not fully recovered in the United Kingdom until a later period (not shown in figure). Canada allows for expensing of investments in computer software.

Source: JCT staff calculations.

**Figure 6.—Present Value of Depreciation Allowance for Income Tax Purposes Per \$1,000 of Capital Expenditure in Select Countries (Computer Software)**



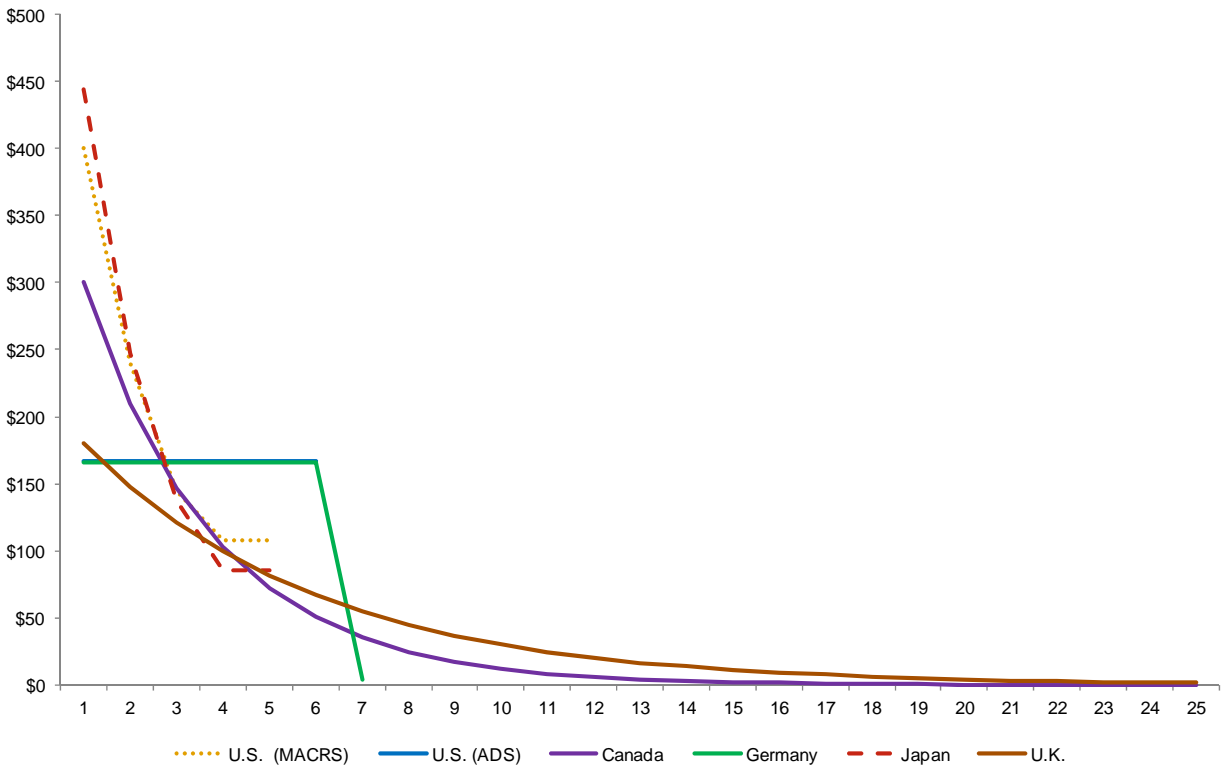
Note: Calculations are unavailable for Germany. Canada allows investment in computer software to be expensed, but as a convention in this document, depreciation allowances are discounted starting in the first year.

Source: JCT staff calculations.

### **Tractor trailers**

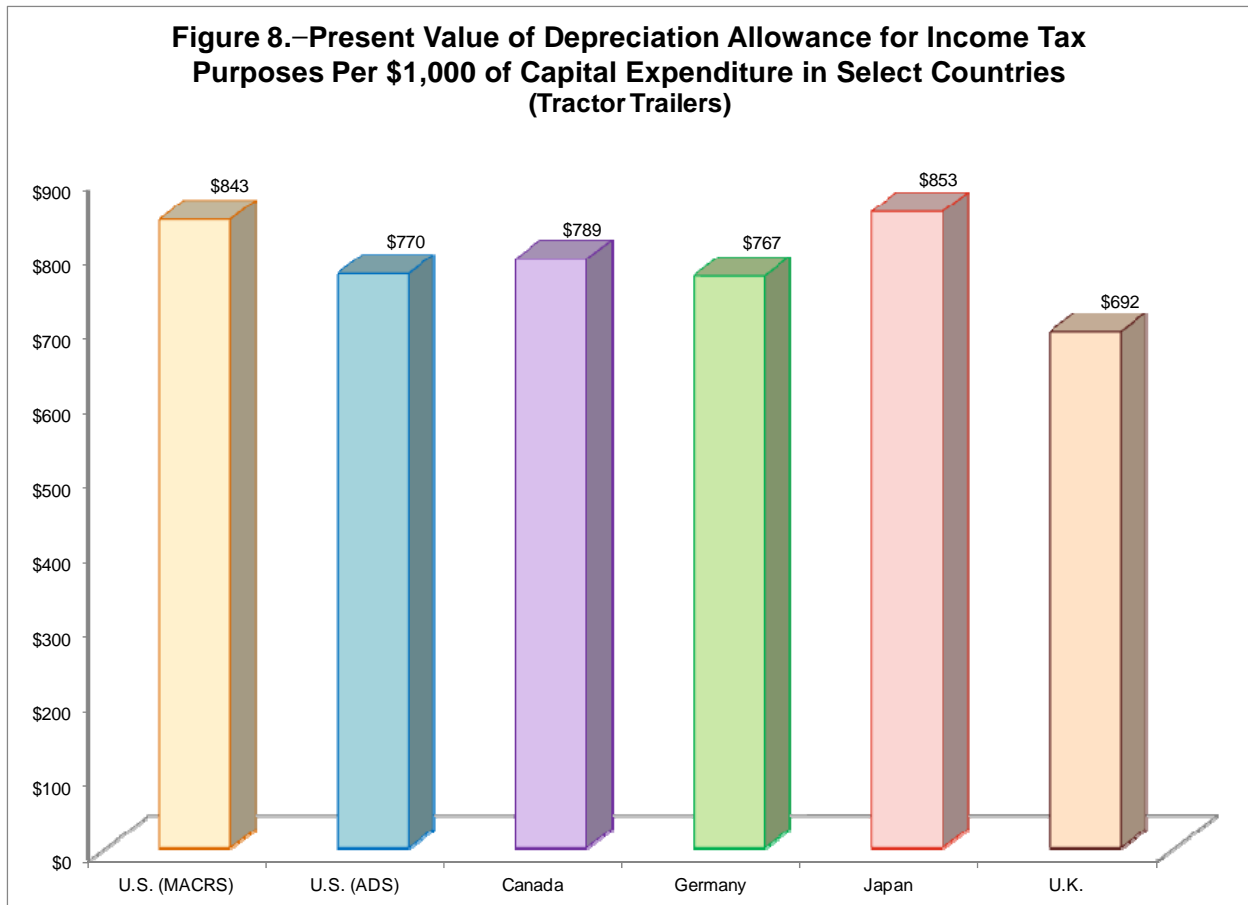
Under the assumptions used in the structured examples, expenditures on tractor trailers can be recovered most rapidly in Japan and the United States (MACRS), both of which use the 200-percent declining-balance method (Figure 7). Canada and the United Kingdom use accelerated methods as well (100-percent declining balance), while Germany uses the straight-line method. Figure 8 shows the present value of depreciation allowances, in these countries, for a \$1,000 investment in tractor trailers. The United Kingdom offers the least favorable system of cost recovery for tractor trailers.

**Figure 7.—Annual Depreciation Allowance for Income Tax Purposes Per \$1,000 of Capital Expenditure in Select Countries (Tractor Trailers)**



Note: Except in the case of Canada and the United Kingdom, any allowance for any year beyond that graphed equals zero, as costs have been fully recovered. Under the assumptions used in making these calculations, costs are not fully recovered in Canada and the United Kingdom until a later period (not shown in figure).

Source: JCT staff calculations.

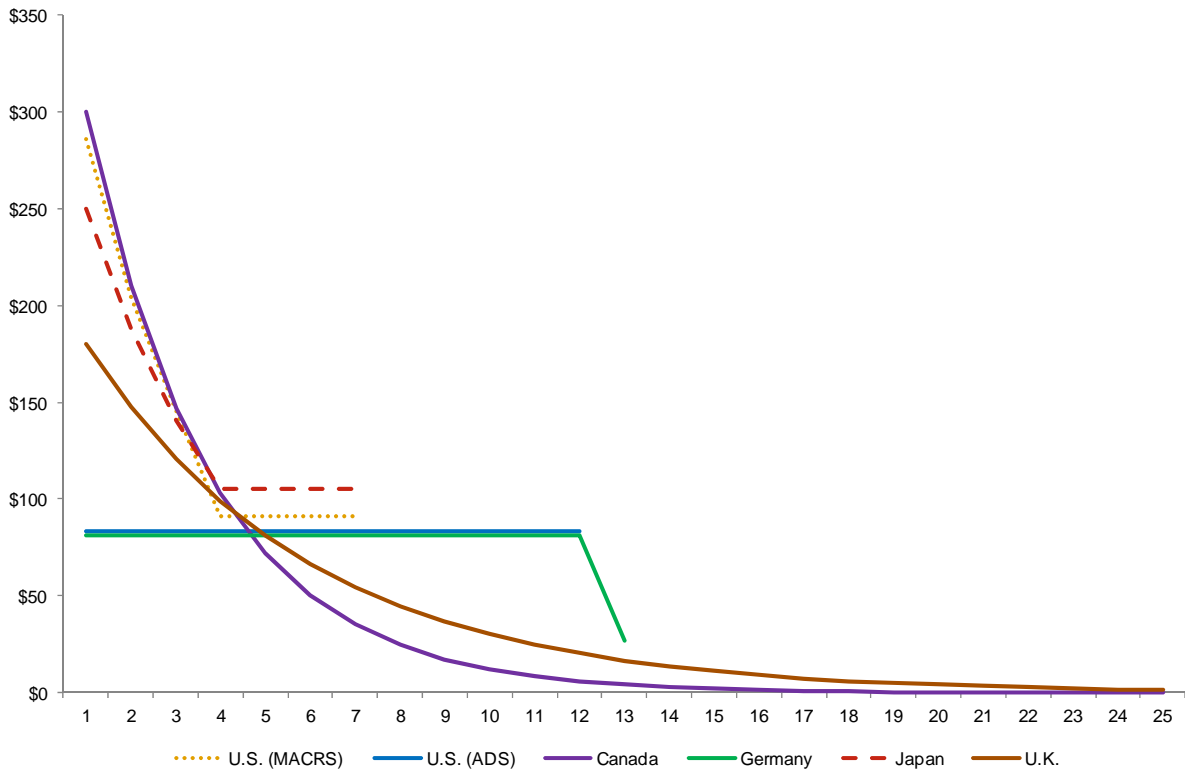


Source: JCT staff calculations.

### **Machinery and equipment**

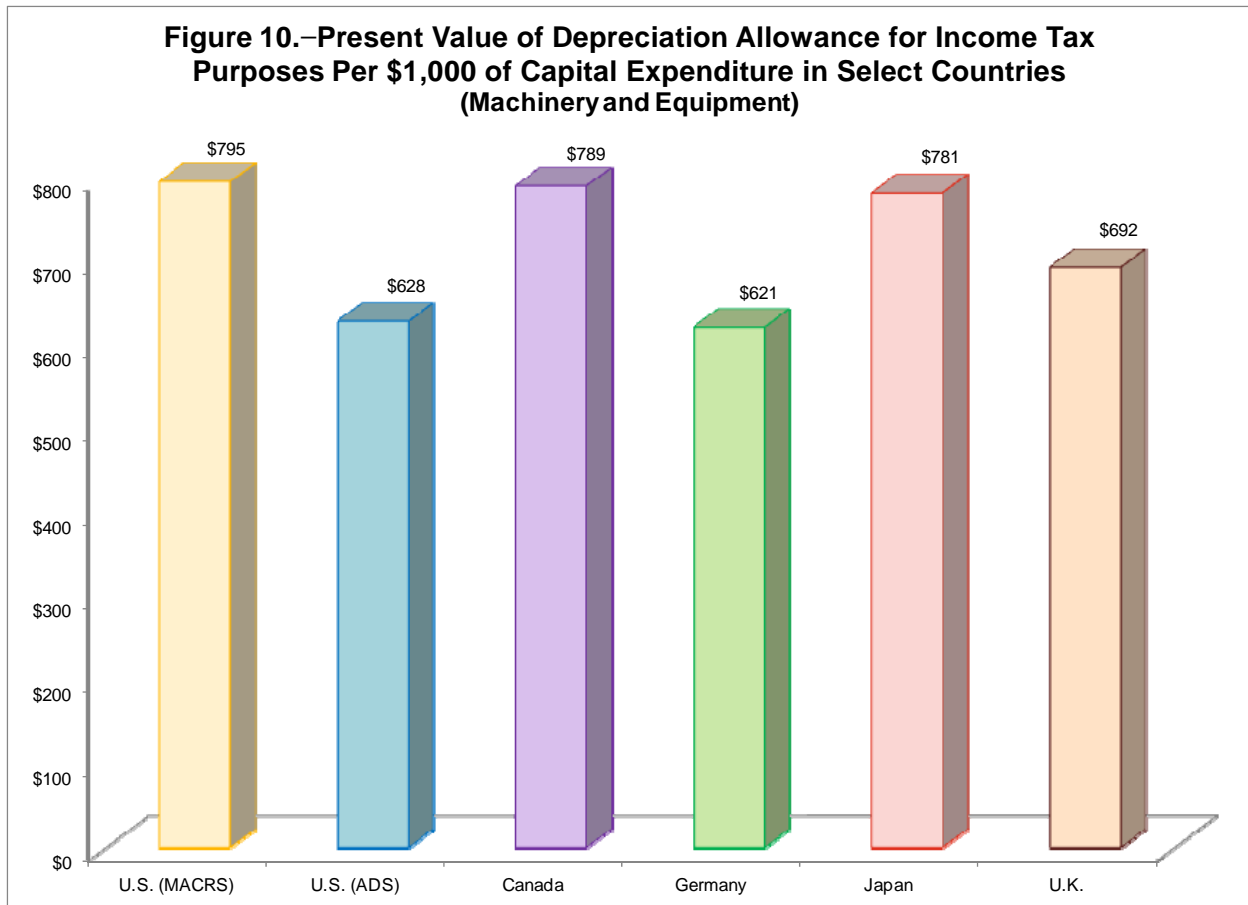
The method used to recover the cost of investments in machinery and equipment is similar to the method used to recover the cost of investments in tractor trailers for each of the countries studied. However, except in the case of the United Kingdom, recovery periods are longer, and recovery rates are larger, for investments in machinery and equipment relative to investments in tractor trailers. (In the United Kingdom, they have the same recovery rate.) Expenditures on machinery and equipment can be recovered most rapidly in Japan and the United States (MACRS), both of which use the 200-percent declining-balance method (Figure 9). Canada and the United Kingdom use an accelerated method as well (100-percent declining balance), while Germany uses the straight-line method. Except in the case of the United Kingdom, annual depreciation allowances, and the present value of depreciation allowances, are generally lower for machinery and equipment than tractor trailers (compare Figures 7 and 8 with Figures 9 and 10). The United States offers the greatest amount of cost recovery, in present value terms, for investments in machinery and equipment, while the United Kingdom offers the least.

**Figure 9.—Annual Depreciation Allowance for Income Tax Purposes Per \$1,000 of Capital Expenditure in Select Countries (Machinery and Equipment)**



Note: Except in the case of Canada and the United Kingdom, any allowance for any year beyond that graphed equals zero, as costs have been fully recovered. Under the assumptions used in making these calculations, costs are not fully recovered in Canada and the United Kingdom until a later period (not shown in figure).

Source: JCT staff calculations.



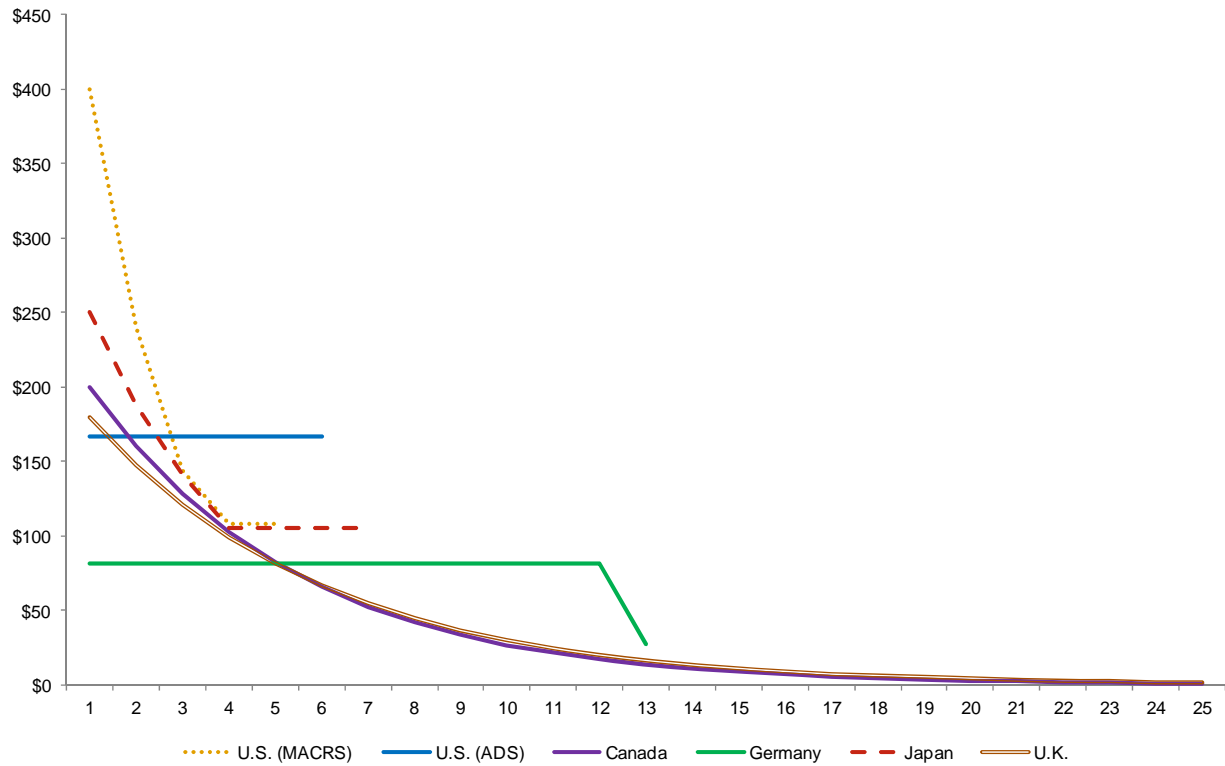
Source: JCT staff calculations.

### **Construction equipment**

The method of depreciation for construction equipment is the same as that for machinery and equipment for the countries studied. In particular, expenditures on machinery and equipment can be recovered most rapidly in Japan and the United States (MACRS), both of which use the 200-percent declining-balance method (Figure 11). Canada and the United Kingdom use an accelerated method as well (100-percent declining balance), while Germany uses the straight-line method. The United States allows for more generous cost recovery for construction equipment than for machinery and equipment, as construction equipment has a shorter recovery life (five years) than machinery and equipment (seven years) while the method of depreciation is the same for both classes of assets. In contrast, Japan and the United Kingdom have each adopted a cost recovery system that treats construction equipment, and machinery and equipment, similarly. For example, recovery lives for construction equipment, and machinery and equipment, are both eight years in Japan, and both are depreciated under the 200-percent declining-balance method. Figure 12 shows the present value of depreciation allowances for expenditures on construction equipment in the countries studied. Under the assumptions made for calculations in this structured example, the United States offers the most generous amount of cost recovery, in present value terms, for a \$1,000 investment in construction equipment (\$843), as was the case for an investment in machinery and equipment.

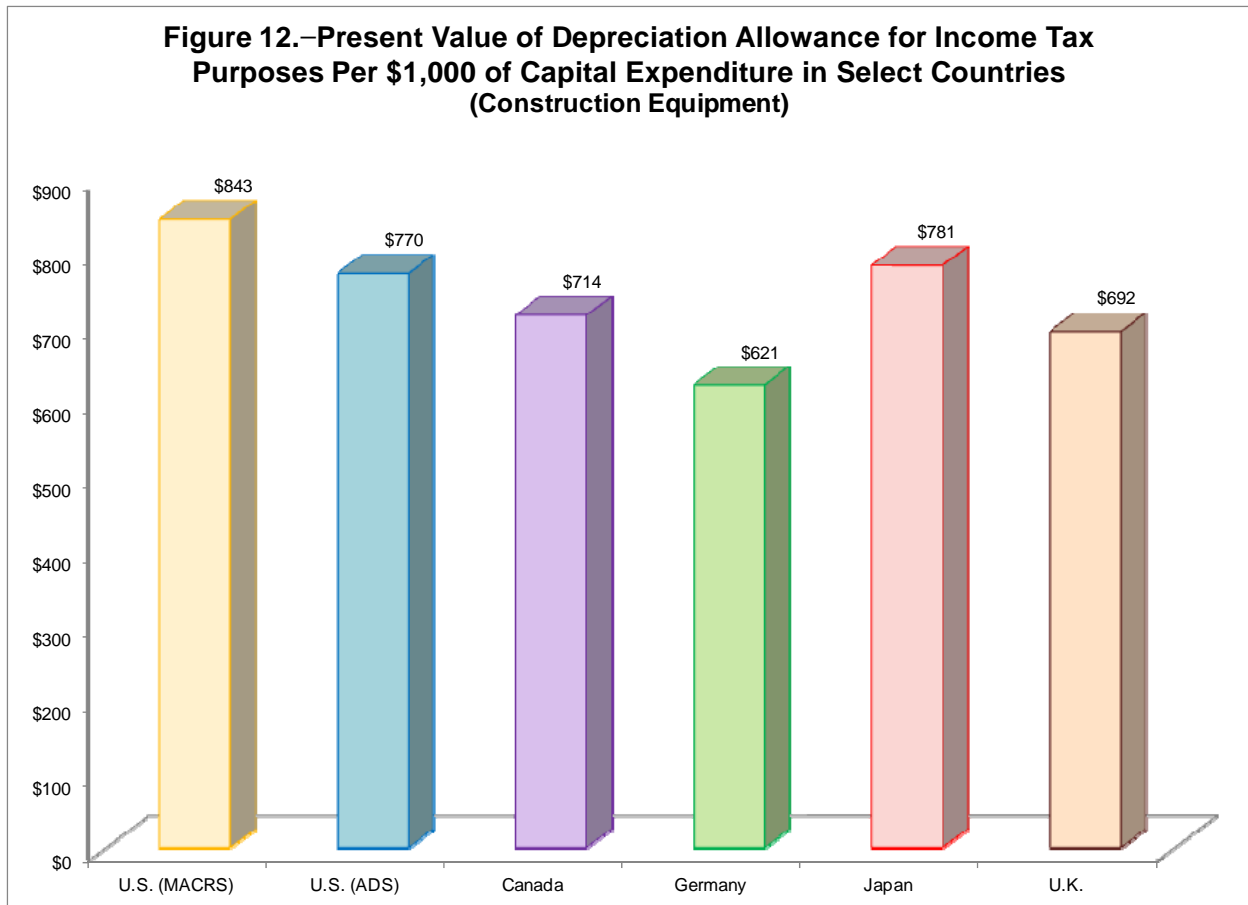


**Figure 11.—Annual Depreciation Allowance for Income Tax Purposes Per \$1,000 of Capital Expenditure in Select Countries (Construction Equipment)**



Note: Except in the case of Canada and the United Kingdom, any allowance for any year beyond that graphed equals zero, as costs have been fully recovered. Under the assumptions used in making these calculations, costs are not fully recovered in Canada and the United Kingdom until a later period (not shown in figure).

Source: JCT staff calculations.



Source: JCT staff calculations.

### **Summary**

Under the assumptions made in these structured examples, the United States, relative to other countries studied, offers the greatest amount of depreciation allowances for machinery and equipment, as well as for construction equipment. In contrast, Canada generally offers the greatest amount of depreciation allowances for computers and computer software. The United Kingdom generally offers the least amount of depreciation allowances for investments in commercial buildings, computers, computer software, and tractor trailers. Germany provides the least amount of cost recovery for machinery and equipment, as well as for construction equipment. There is no class of assets under study for which Japan has the most favorable, or least favorable, cost recovery system. Across all the types of property presented in the examples, there is no single country that offers the most generous or least generous depreciation allowances overall.

As the examples illustrate, cost recovery systems for commercial buildings, computers, computer software, tractor trailers, machinery and equipment, and construction equipment differ across countries along a number of dimensions. The United States and Japan each use a 200-percent declining-balance method for all assets considered except for commercial buildings, in which case they use the straight-line method. Germany uses the straight-line method for all of these assets. Except in the case of computer software (which can be expensed), Canada uses the

straight-line method. Except in the case of commercial buildings (for which there is no capital allowance), the United Kingdom uses both an 18 percent recovery rate and a 100-percent declining-balance method. In particular, the pattern of depreciation allowances, and the present value of depreciation allowances, is the same for expenditures on computers, computer software, tractor trailers, machinery and equipment, and construction equipment in the United Kingdom.

Moreover, the way in which cost recovery systems differ across classes of assets varies across countries. For example, the United States allows for the same amount of cost recovery, in present value terms, for a \$1,000 investment in computers and tractor trailers (\$833 for each). In contrast, Canada, Germany, and Japan offer a more generous amount of cost recovery for investments in computers relative to investments in tractor trailers. In the United Kingdom, the present value of depreciation allowances is the same for a \$1,000 investment in computers, computer software, tractor trailers, machinery and equipment, and construction equipment (\$692 for each).