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Consumption Taxes: An Overview

Updated January 14, 2016

Congressional Research Service
https://crsreports.congress.gov
R44342

CRS REPORT
Prepared for Members and
Committees of Congress

Summary

Commentary abounds suggesting the current U.S. income tax code is overly complicated, unfair, a drag on the economy, and in need of reform. One option for tax reform would be fundamentally change how taxes are collected in the United States, and tax consumption instead of income. Multiple proposals have been introduced in the 114th Congress to shift revenue collection away from income and towards consumption. H.R. 25 and its companion legislation in the Senate, S. 155, would replace the income tax with a national retail sales tax, often referred to as a "fair tax." H.R. 1040 would offer taxpayers the ability to opt into a consumed-income tax.

Within the current income tax structure, an individual's tax liability is determined as a function of total income. Under a consumption tax, however, an individual's tax liability would be determined as a function of total expenditures on goods and services. Consumption taxes can take many different forms—which differ in when the tax is collected, how the tax is calculated, and who is responsible for remitting the tax—but they all share the common tax base of consumption. Common consumption tax designs include a value added tax (VAT), a national sales tax (NST), and a consumed-income tax.

Taxes are necessary for the government to raise revenue to provide necessary and desired goods and services. However, taxes also tend to introduce distortions into a market economy and can hinder economic efficiency. Proponents of consumption taxes argue that a broad-based consumption tax could replace the federal income tax, raising requisite revenue while improving economic efficiency, and increasing economic output.

Broadly, taxes tend to distort individual decisions by altering price signals within the economy. Taxes can affect individual behavior in a number of ways, including labor participation decisions, and saving and investment decisions. As discussed in the report, the effects on labor supply from switching to a consumption tax are expected to be small, if any. However, there is evidence that transitioning to a consumption tax may increase individual saving. Increased individual savings could contribute to increased economic output.

Effects on the distribution of the tax burden are also often considered in tax policy debates. When comparing a hypothetical *pure* consumption tax to a hypothetical *pure* income tax, consumption taxes place a greater tax burden on lower income individuals. Additionally, in this stylized comparison, consumption taxes place a greater tax burden on younger and older individuals, especially retired individuals drawing down their savings.

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Introduction

Fundamental tax reform is an oft-cited policy priority among legislators, and appeals for tax reform seem to achieve broad support across political parties. Commentary abounds suggesting the current U.S. income tax code is overly complicated, unfair, a drag on the economy, and in need of reform. Disagreements, however, often surface when discussing the specifics of tax reform. Previous legislative debates have focused on changes to the current income tax code, such as changing marginal income tax rates or altering how different types of income are taxed. Although these debates reflect important policy considerations, they focus largely on changes within the current income tax.

Alternative discussions around tax reform have suggested fundamentally altering the federal tax base, shifting towards taxing consumption instead of income. Within the current income tax structure, an individual's tax liability is determined as a function of total income. With a consumption tax, however, an individual's tax liability would be determined by total expenditures on goods and services. Income not spent on goods or services, or "savings," would not be taxed. Consumption taxes can take many different forms—which differ in when the tax is collected, how the tax is calculated, and who is responsible for remitting the tax—but they all share the common tax base of consumption. Common consumption tax designs include a value-added tax (VAT), a national sales tax (NST), and a consumed-income tax.

Consumption taxes are commonplace across the developed world. Among countries in the Organization for Economic Cooperation and Development (OECD), the United States is the only country without a broad-based national-level consumption tax.[1] However, many states have their own consumption taxes in the form of sales taxes. In fact, the OECD encourages countries to shift away from income taxes and towards consumption taxes.[2] The European Union even requires its member countries to implement a VAT.[3] Many of these countries also include personal and corporate income taxes alongside their VATs.

Multiple proposals have been introduced in the 114th Congress to shift revenue collection away from income and towards consumption.[4] H.R. 25 and its companion legislation in the Senate, S. 155, would replace the income tax with a national retail sales tax, often referred to as a "fair tax." H.R. 1040 would offer taxpayers the ability to opt into a consumed-income tax.

This report will provide a survey of consumption taxes and their basic structures, including the VAT, the NST, and the consumed-income tax (also known as a cash-flow tax). After an overview of these tax structures, the report will discuss the effects of consumption taxes on economic efficiency, the distribution of the tax burden, and tax administration.

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[1] Many of the excise taxes implemented by the U.S. government could be considered consumption taxes, but are not as broadly applied as those in other OECD countries. OECD, *Consumption Tax Trends 2014*, December 2014, p. 14, http://www.oecd-ilibrary.org/taxation/consumption-tax-trends-2014_ctt-2014-en.

[2] OECD, "Tax revenues rebounding from the crisis but tax mix varying widely, OECD says," press release, October 12, 2014, http://www.oecd.org/newsroom/tax-revenues-rebounding-from-the-crisis-but-tax-mix-varying-widely-oecd-says.htm.

[3] Praxity, "European VAT—Business and Taxation Guide," 2013, p. 7, http://www.bkd.com/docs/solution-sheets/european-value-added-tax.pdf.

[4] For more information, see CRS Report R43060, *Tax Reform in the 114th Congress: An Overview of Proposals*, by Molly F. Sherlock and Mark P. Keightley.

Taxation Fundamentals

In order to provide goods and services, a government must raise revenue. Generally there are three tax bases from which governments can raise this revenue directly from individuals: income, wages, and consumption. The United States implements taxes on all three of these bases. The first tax base, income, includes all income from both labor and capital (e.g., wages and interest on investments). In the United States, income is taxed through a federal income tax, which applies differential tax rates on income from labor and capital. The second tax base, wages, includes all income that results from labor. The payroll tax, which in part funds the Social Security program, is a type of wage tax. The third tax base, consumption, includes all money spent on goods and services. A number of narrow consumption taxes exist at the federal level, such as the gasoline excise tax. Broader consumption taxes are popular at the state level in the form of sales taxes.

State sales taxes are a commonplace consumption tax in the United States. There are differences, however, across states regarding the base to which state sales taxes are applied. For example, many state sales taxes exempt certain necessities from their sales tax base, such as certain medicines under Virginia's state sales tax.[5]

A broad and comprehensive consumption tax could be applied to all money spent on goods and services for final consumption. Examples of broader consumption taxes can be found in Europe, where many countries implement national-level consumption taxes referred to as value-added taxes (VATs). These taxes generally do not have as many exemptions as consumption taxes in the United States, and therefore have a broader tax base. A broader tax base, other things equal, allows more revenue to be collected with lower tax rates.

A consumption and income tax with broad bases can be similar depending on an individual's saving behavior. An individual who saves no money at all would experience no difference between an income and a consumption tax. Without savings, consumption is equal to income. A consumption tax distinguishes itself from an income tax when taxpayers save a portion of their income. For example, under a consumption tax, a taxpayer who makes $100,000 and saves $10,000 a year would only pay taxes on the $90,000 that was spent on goods and services. However, under an income tax the same taxpayer would pay taxes on the full $100,000, whether it was saved or spent.

Tax Inclusive vs. Tax Exclusive

Tax rates can be characterized in two different ways, tax-inclusive and tax-exclusive. A tax-exclusive rate describes the amount of tax paid as a percentage of the pre-tax price of the good or service. Alternatively, a tax-inclusive rate describes the amount of tax paid as a percentage of the post-tax price of the good or service. Most sales tax rates are discussed in tax-exclusive rates, while income tax rates are often discussed in tax inclusive terms. For example, a $10 book subject to a 10% tax-exclusive rate would cost $11. The corresponding tax-inclusive rate would be 9% ($1/$11).

Proponents of a consumption tax argue that by allowing savings to be carried forward tax-free, taxpayers will choose to save more of their income. Economic theory suggests that with a higher level of savings, the productivity of the economy could increase and improve living standards in the long run. The potential economic effects of switching from an income tax system to a consumption tax system are discussed further below (see the "Alternative Tax Bases: Economic Considerations" section).

[5] Virginia Department of Taxation, "Information Regarding Nonprescription Drugs and Proprietary Medicines," *Tax Bulletin 13-5*, March 15, 2013.

Alternative Consumption Tax Designs

Consumption taxes often differ in how they are implemented, but they all share a common tax base. The implementation of consumption taxes can differ with respect to when the tax is collected, how the tax is calculated, and who is responsible for remitting the tax. Three common consumption tax designs include (1) a value-added tax (VAT); (2) a national sales tax (NST), sometimes referred to as a "fair tax"; and (3) a consumed-income tax, also known as a cash-flow tax.

Value-Added Tax

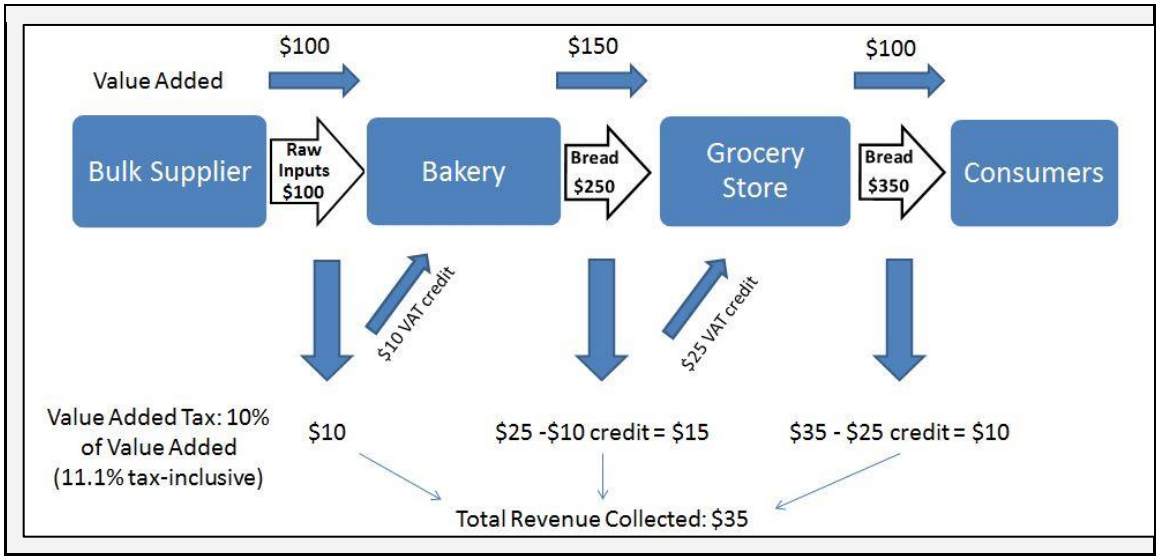
The value added of a firm is the difference between a firm's sales and a firm's purchases from all other firms. In other words, a firm's value added is simply the amount of value that a firm contributes to a good or service by applying its factors of production (land, labor, capital, and entrepreneurial ability). A value-added tax is a tax levied at each stage of production on a firm's net value added.

There are three accounting methods to calculate and keep track of a VAT throughout the production process. The credit-invoice method is the most popular accounting method for VATs. Under the credit-invoice method, a firm would calculate and collect the VAT on its sales. Next, the firm would compute its VAT liability by subtracting the VAT paid on its inputs from the VAT collected on its sales, and remit the difference to the federal government to satisfy its tax liability. Other accounting methods include the subtraction and addition method.[6]

How Does a VAT Work?

An example is often helpful to understand how a VAT would work in practice. In the illustration below, a bakery purchases ingredients from a supplier for $100. The bakery then produces bread, using the purchased raw materials in combination with its other factors of production (land, labor, capital, and entrepreneurial ability), and sells the bread to a grocery store for $250, increasing the value of the inputs by $150. The grocery store then sells the bread for $350 at the retail level, increasing the value of the inputs by $100. Under the credit-invoice method with a 10% VAT, the bulk supplier would collect and remit $10 in taxes from the sale of the raw ingredients to the bakery (10% of $100). The bakery would then collect $25 when selling the bread to the grocery store (10% of $250). The bakery remits $15 to the government after claiming a credit for the $10 in VAT paid to the bulk supplier ($25 less the $10 credit). The grocery store would then collet $35 dollars when selling the bread at the retail level (10% of $350). The grocery store remits $10 to the government after claiming a credit for the $25 in VAT paid to the bakery ($35 less the $25 credit).

[6] Under the subtraction method, the firm calculated its value added by subtracting its cost of taxed inputs from its sales. Next, the firm determines its VAT liability by multiplying its value added by the VAT rate. Under the addition method, the firm calculates its value added by adding all payments for untaxed inputs. The firm then multiplies its value added by the VAT rate to calculate VAT to be remitted to the government.



VATs can differ in their tax treatment of capital purchases (plant and equipment). The consumption-type VAT treats capital purchases the same way as the purchase of any other input, which excludes all capital goods purchases from the tax base (i.e., it is equivalent to expensing under an income tax). Two other types of VATs are the income VAT and the gross product VATs. Under an income-type VAT, the VAT paid on the purchases of capital inputs is amortized (credit against the firm's VAT liability) over the expected life of the capital inputs. Under a gross product-type VAT, no deduction for the VAT on purchases of capital inputs is allowed against the firm's VAT liability. Most countries use a consumption-type VAT.[7]

National Sales Tax

A national sales tax (NST), sometimes referred to as a "fair tax," would be a federal consumption tax collected only at the retail level by vendors. The NST would equal a set percentage of the retail price of taxable goods and services. Retail vendors collect the NST and remit the tax revenue to the federal government.

The retail price of a good or service equals the sum of the value added at all stages of production. Consequently, a value-added tax and a national sales tax with the same tax rate and tax base would yield the same amount of revenue. Both policymakers and economists generally assume that both types of taxes are fully shifted forward onto consumers; that is, the price to the consumer increases by the full amount of the tax.

A number of legislative proposals have been introduced in the 114th Congress to implement a form of an NST, including H.R. 25 and S. 155. These proposals would replace the current federal income tax with a 23% tax-inclusive sales tax rate in 2017, or a 29.9% tax exclusive rate, with adjustments to the rate moving forward.

Consumed-Income Tax

Under a consumed-income tax, taxpayers would keep their savings in an account that would be the tax equivalent of a current individual retirement account or IRA. Net contributions to this account (contributions less withdrawals) would be deducted from income to determine the level

[7] For further information on the alternative structures of a VAT please refer to OECD, *Consumption Tax Trends 2014*, December 2014, http://www.oecd-ilibrary.org/taxation/consumption-tax-trends-2014_ctt-2014-en.

of consumed income. A tax would then be applied to only an individual's consumed income. In contrast to a VAT or sales tax, policymakers would have the option of applying a progressive rate structure to the level of consumed income. Each individual would be responsible for calculating his or her consumed income and remitting the resulting tax obligation.

H.R. 1040, introduced in the 114th Congress, would allow taxpayers to elect to file their taxes under a consumed-income tax rather than the personal income tax. The proposal would allow taxpayers to irrevocably elect to be subject to a flat tax, with a 19% tax-inclusive rate the first two years (23.5% tax exclusive rate), and a 17% tax-inclusive rate thereafter (20.5% tax-exclusive rate).

Consumption Taxes Abroad

Across the world consumption taxes are common, with more than 120 countries using a VAT as a major source of revenue.[8] Among OECD countries, general consumption taxes accounted for 20% of total tax revenue in 2012, nearly all of which was generated from VATs.[9] General consumption taxes are also prevalent worldwide, but generally act as a supplemental source of tax revenue in addition to other taxes. Among OECD countries, 25% of total tax revenues were collected through personal income taxes in 2012. The United States is the only OECD country without a broad-based consumption tax at the national level.[10]

Alternative Tax Bases: Economic Considerations

Taxes allow governments to provide desired goods and services for its citizens; however, taxes also tend to distort individual economic decision making. In a perfectly competitive market, it is expected that individuals and businesses will decide to spend their money and time in the most valuable manner possible, resulting in the most efficient economy possible. Taxes distort these decisions by interfering with prices. Beginning the policy discussion with the understanding that taxes generally impede economic efficiency, the goal is then to design a tax structure that minimizes distortions, allowing the market to operate as efficiently as possible.

It is important to note that a "perfectly competitive market" is a purely theoretical concept in economics, which requires several very strict assumptions to achieve economic efficiency. For a perfectly competitive market to function according to economic theory, the market must consist of many buyers and sellers such that no individual can exert market influence independently, firms can freely enter or exit the market (i.e., there are no barriers to entering a market), the good being sold by producers is homogenous, and buyers and sellers have access to all information related to their economic decisions. Few markets, if any, achieve all of these characteristics.

There are also situations where a tax, or subsidy, can improve economic efficiency, by correcting for a market failure. Market failures can occur for a number of reasons, but result in an inefficient allocation of resources, either producing too little or too much of a good than the optimal quantity. For example, the current income tax code contains a number of tax benefits to support education. Education generates positive externalities, as there are benefits to society that individuals do not consider when making education consumption choices. Thus, absent

[8] Liam Ebrill, Michael Keen, and Jean-Paul Bodin, et al., "The Allure of the Value-Added Tax," *Finance and Development*, vol. 39, no. 2 (June 2002).

[9] OECD, *Consumption Tax Trends 2014*, December 2014, p. 41, http://www.oecd-ilibrary.org/taxation/consumption-tax-trends-2014_ctt-2014-en.

[10] Ibid.

intervention, markets would tend to result in an allocation of resources for education that is below socially optimal levels.

Taxes are thought to introduce distortions into individual work decisions and saving decisions, and impact the performance of the economy overall. Replacing the federal income tax with a consumption tax has been offered as a means to reduce distortions caused by taxation within the economy. The following sections will discuss the potential impact and relative merits of consumption taxes compared to income taxes with respect to impacts on work choices, savings, and the economy.

Impact on Work Choices

As discussed above, taxes are generally expected to alter individual decisions away from their optimal choices by distorting price signals. One of the main concerns voiced when discussing tax policy is its potential impact on individual work decisions. Taxes can impact individual work decisions through two avenues, (1) by reducing the real value of work, known as the income effect, and (2) by changing the relative value of work in relation to other activities, known as the substitution effect. The impact of these effects is discussed below.

Income Effect

As individuals are subject to either an income or consumption tax their ability to pay for goods and services will decrease. Under an income tax, an individual's take-home salary is reduced by the amount of the tax. Under a consumption tax, an individual's purchasing power is reduced either through increased prices or reduced wages.[11] For example, consider an individual whose total monthly expenditures equal $1,500, and who has a job that pays $10 per hour. He would have to work 150 hours a month to cover his expenditures. However, if an income tax of 20% is implemented, his effective wage is reduced to $8 per hour, and he would have to work 187.5 hours a month to cover his expenses. Similarly, under a 20% consumption tax, assuming the tax is passed on completely to consumers through higher retail prices, the effective cost of his monthly expenditures increases to $1,800, and he must now work 180 hours to cover his monthly expenditures.

In response to the decreased value of work due to an income or consumption tax, individuals are expected to increase how much they work to make up for some of the lost consumption power. This response to taxation is referred to as the income effect. If a consumption tax proposal were revenue neutral, the income effect produced from switching to a consumption tax is likely to be similar to the income effect under the income tax.

Substitution Effect

In addition to decreasing an individual's purchasing power, taxes also decrease the relative value of work in relation to leisure. Individuals have to make numerous decisions about how to spend their time each day, allocating time between work, friends, family, and numerous other activities. With the implementation of a tax on income or consumption, the value of spending an hour at work is reduced in relation to these other activities. Under an income tax, this occurs because the tax reduces an individual's income for a given level of work by the tax rate. Whereas under a consumption tax, this occurs because the tax decreases the amount an individual can purchase for

[11] A consumption tax can either increase prices or decrease wages, based on a number of factors. It is generally expected that under a consumption tax, policy makers would attempt to accommodate a one-time increase in prices rather than a decrease in wages.

a given level of work by increasing the price of goods or reducing his or her wages. As taxes reduce the real value of work, the relative value of leisure and other activities increases and individuals are expected to decrease the amount of time they spend working. This response, referred to as the substitution effect, works in opposition to the income effect discussed above.

The degree to which the substitution effect impacts individual work decisions is largely a function of the tax rate used. A higher tax rate is expected to increase the substitution effect, and therefore increase the disincentive to work by making leisure relatively more valuable. A consumption tax is likely to have a higher tax rate than an income tax if the taxes are to be revenue neutral, because the tax base under a consumption tax is necessarily smaller than the tax base under an income tax.[12] A higher tax rate under a consumption tax would be expected to decrease the relative value of work to a greater degree than under an income tax, and therefore decrease work effort to a greater degree.

There is, however, an important feature inherent in the transition to a consumption tax limits the need for higher rates, thus limiting changes in behavior arising from the substitution effect. While transitioning to a consumption tax, there would be an additional implicit tax placed on savings and assets owned before the transition to a consumption tax is complete. Under the current income tax, individuals purchase assets and save a portion of their income to finance consumption later in life. These savings and assets have a certain value under an income tax, but with the implementation of a consumption tax, the real value of these assets and savings would decrease. The value declines because when individuals begin to consume (by drawing down their savings) their purchases would now be subject to the consumption tax. The real value of assets and savings is reduced by the amount of the consumption tax rate.[13] The decrease in value arising from the transition to a consumption tax is often referred to as a tax on old capital.

As discussed earlier, most taxes tend to distort individual behavior and reduce economic efficiency. There are a number of exceptions to this rule however, and the inherent tax on old capital under a consumption tax is one such example. The tax on old capital is not expected to distort individual behavior because there is no legal way for individuals to alter their behavior in a way to reduce their tax burden. All decisions to purchase assets or save income occurred in the past, and because individuals cannot travel back in time to reduce their asset purchases or saving behavior, individuals cannot alter their behavior to avoid the tax on old capital. This kind of tax is referred to as a lump-sum tax, and is not expected to distort the economy because individuals will not alter their behavior in response to it.

As discussed above, a revenue-neutral consumption tax is likely to require a higher tax rate than an income tax because the tax base under a consumption tax is necessarily smaller. This would, all else equal, generate a larger substitution effect and discourage individuals from working as much when compared to an income tax. However, in practice, a lower consumption tax rate can be used while remaining revenue neutral because the lump sum tax on old capital generates additional tax revenue. In addition, this tax raises revenue without introducing distortions into the economy. The result is that the anticipated substitution effect under a consumption tax may not be significantly larger than under an income tax when the tax plans are revenue neutral.[14]

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[12] Theoretically, consumption is income less savings. Thus, the tax base for a comprehensive income tax would be larger than the tax base for a comprehensive consumption tax. In practice, both income and consumption taxes may have exemptions and other tax preferences that reduce the size of the tax base.

[13] Joseph Bankman and Barbara Fried, "Winners and Losers in the Shift to a Consumption Tax," *Georgetown Law Journal*, vol. 86, no. 3 (January 1998), pp. 539-568.

[14] Eric Engen, Jane Gravelle, and Kent Smetters, "Dynamic Tax Models: Why They Do The Things They Do," *National Tax Journal*, vol. 50, no. 3 (September 1997), pp. 657-682.

Empirical Discussion

In summation, economic theory suggests that taxes have two opposing effects on an individual's work decisions. The net impact on work, thus, is ambiguous in theory, although distortions are expected. Researchers have sought to determine how the income and substitution effects play out in reality, and have produced varying estimates. In empirical work, economists attempt to quantify the responsiveness of workers to changes in after-tax wages—the "labor supply elasticity." These estimates yield the percentage change in hours worked arising from a percentage change in after-tax wages.

Estimated elasticities range between zero and 1.3, but elasticities tend to bunch at the low end. Numerous studies have found elasticities between zero and 0.3.[15] An elasticity of 0.3 suggests that a 10% decrease in after tax-wages would decrease hours worked by 3%. Some researchers have critiqued the work finding low elasticities, citing poor methodological choices. These critics believe the response would likely be higher once these methodological shortcomings are accounted for, suggesting a larger decrease in hours worked in response to the same decrease in after-tax income.[16]

According to the empirical literature, increased taxes tend to result in decreased work effort. Therefore, empirically, the substitution effect is larger in magnitude than the income effect. While increasing taxes will likely decrease individuals' work effort, it is unlikely that there would be a significant difference in work effort under a revenue neutral consumption tax compared to an income tax. The additional lump sum tax on old capital under a consumption tax is the principal reason for the anticipated minimal impact on work effort. One study found that a consumption tax is likely to decrease labor participation more than an income tax, but the difference is expected to be relatively small.[17]

Impact on Savings

A key difference between an income tax and a consumption tax is in how individual savings are treated. Individuals generally earn income through two avenues: the first is through their labor, for which they receive a wage, and the second is capital income, which results from interest, dividends, or capital gains earned on savings and investments. A generic income tax would be applied to both income earned from labor and capital. In addition to the impact on work choices discussed previously, an income tax is expected to affect individuals' saving behavior by reducing the after-tax return to savings. By reducing the after-tax return to savings, an income tax is expected to change individual saving behavior.

In contrast, under a consumption tax, the after-tax return to saving is not reduced by taxes. Therefore, under a consumption tax, no disincentive to saving is introduced and individuals would not be expected to make tax-induced changes in savings behavior. The mechanism through which taxes impact saving decisions is discussed further below.

[15] Michael P. Keane, "Labor Supply and Taxes: A Survey," *Journal of Economic Literature*, vol. 49, no. 4 (2011), pp. 961-1075.

[16] Ibid., pp. 961-1075.

[17] Eric Engen, Jane Gravelle, and Kent Smetters, "Dynamic Tax Models: Why They Do The Things They Do," *National Tax Journal*, vol. 50, no. 3 (September 1997), pp. 657-682.

How does an income tax reduce the return to saving?

An example is often helpful to understand how alternative tax bases can impact the return on investments. Two individuals each place $100 into savings accounts, which earn 15% interest annually. One individual is subject to a 10% income tax, while the other is subject to a 10% consumption tax. After one year, both individuals would have earned $15 in interest. The individual subject to an income tax must remit 10% of his earnings due to the income tax. Thus, the after tax return on the investment under an income tax is 13.5%, while the return on investment is 15% under a consumption tax.

Economic theory does not provide a definitive answer on how individuals will respond to increased returns to investing. Similar to the impact taxes have on work decisions, the impact of rising returns to saving results in two opposing effects on saving behavior. The income effect is expected to result in individuals saving less. In contrast, the substitution effect is expected to result in individuals saving more.

Income Effect

The income effect is expected to diminish individual savings and investment because as the rate of return to saving increases, individuals have to save and invest less of their income to achieve a given level of income in the future. For example, if an individual has a target savings goal for retirement, an increase in the rate of return to saving allows an individual to save less and still reach that target goal for future consumption during retirement.

Substitution Effect

In opposition to the income effect, as the return to saving increases, individuals are expected to increase the amount they save. This is referred to as the substitution effect. As the return to saving increases, the price of current consumption increases in relation to future consumption, and individuals substitute current consumption for future consumption.

Empirical Discussion

Economic theory suggests that an increased rate of return to saving and investment will have two opposing effects on an individual's saving behavior—one pushing them to save more and the other to save less. Therefore, due to the expected increase in the return to saving under a consumption tax, individual saving may actually decrease, increase, or remain unchanged based on the magnitude of these oppositional responses compared to saving under an income tax.

Researchers have generally found that as the return to saving increases, as measured by the real interest rate, consumers tend to increase the amount they save, but researchers have found wide variation in the magnitude of this increase.[18] Analysis of the literature suggests that on average, a 10% increase in the real return to savings will tend to increase gross savings by about 5%.[19] The economic literature has not reached a clear consensus on the saving response however, with many researchers finding a wide range of estimates, including no response at all.[20]

[18] The real interest rate is measured as the market interest rate less inflation.

[19] Tomas Havranek, Roman Horvath, and Zuzana Irsova, et al., "Cross-Country Heterogeneity in Intertemporal Substitution," *Journal of International Economics,* vol. 96, no. 1, (May 2015), pp. 100-118.

[20] Jonathan Skinner and Daniel Feenberg , "The Impact of the 1986 Tax Reform on Personal Saving," in *Do Taxes Matter? The Effect of the 1986 Tax Reform Act on the U.S. Economy,* ed. Joel Slemrod (Cambridge : MIT Press, 1989) and Robert Hall, "Intertemporal Substitution in Consumption," *Journal of Political Economy* , vol. 96 (April 1988), pp. 339-357.

Impact on the Economy

One of the main justifications for a consumption tax is that in comparison to an income tax, a consumption tax would lead to an improved standard of living over the long run. Or in economic terms, switching to a consumption tax would lead to an increase in the level of gross domestic product in the long run. The expected increase in standard of living is due to a number of factors, including increased personal savings, but also the inherent lump sum tax on capital that occurs while transitioning to a consumption tax. The inherent lump sum tax allows policy makers to use a lower consumption tax rate than without the lump sum tax, while raising similar amounts of revenue to those under an income tax. The anticipated increase in economic welfare from switching to a consumption tax is largely due to a combination of these two factors, increased private saving, and the lower effective tax rate afforded by the lump-sum tax on capital.

Transitioning to a consumption tax is expected to increase economic welfare in part due to an increase in private saving. The economic literature suggests that individuals would likely save more of their income due to the expected increased return to saving under a consumption tax, as discussed in the previous section. An increase in private saving would theoretically increase the amount of capital available for firms to borrow and use for investments in improved facilities, machines, and workers. Increases in the amount of capital available to firms are expected to increase productivity and lead to increased economic output in the long run, according to economic theory.

Additionally, the lump-sum tax on old capital allows for additional tax revenue without introducing significant distortions into the economy.[21] As discussed earlier, individuals tend to save part of their income while young, investing in capital to finance consumption in retirement. They then draw down that savings to finance consumption when they are retired. As such, older individuals with retirement savings would own a significant amount of old capital, and would therefore bear a larger burden from the lump-sum tax when transitioning to a consumption tax.

Researchers have produced varying estimates of the potential impact on the economy of transitioning to a consumption tax.[22] These estimates vary for a number of reasons including the type of model, assumptions, and parameter estimates used. Researchers have found that switching to a consumption tax could increase total economic output by 5% to 10% in the long run compared with a stylized income tax.[23] The projected increase in economic output occurs over a long period of time, often in the range of 100 years, meaning that the change in annual GDP growth is very small. It should also be noted that to achieve these economic gains under a consumption tax, near-term consumption spending necessarily decreases.

The burden the lump-sum tax on old capital would impose on the elderly with retirement savings may motivate policymakers to look for a policy remedies to ease the tax burden on this cohort.

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[21] Joseph Bankman and Barbara Fried, "Winners and Losers in the Shift to a Consumption Tax," *Georgetown Law Journal*, vol. 86, no. 3 (January 1998), pp. 539-568.

[22] As implemented in most European countries, VATs are generally used as a supplementary source of tax revenue in addition to income tax revenues. The economic implications of an add-on VAT are discussed in the section "Supplemental Consumption Tax" below.

[23] Lawrence Summers, "Capital Taxation and Accumulation in a Life Cycle Growth Model," *The American Economic Review*, vol. 71, no. 4 (September 1981), pp. 533-544; and Jane Gravelle, "Income, Consumption, and Wage Taxation in a Life-Cycle Model: Separating Efficiency from Redistribution," *The American Economic Review*, vol. 81, no. 4 (September 1991), pp. 985-995; and David Atlig, Alan Auerbach, and Laurence Kotlikoff, et al., "Simulating Fundamental Tax Reform in the United States," *The American Economic Review*, vol. 91, no. 3 (June 2001), pp. 574-595.

However, this sort of policy intervention would reduce the expected increase in economic output. Estimates suggest that by compensating the owners of old capital, the efficiency gains of switching to a consumption tax could decrease by 60% to 90%.[24] This occurs in part because any structure to compensate owners of old capital will require a higher tax rate under the consumption tax to maintain revenue neutrality. The higher tax rate distorts individuals' decision making more significantly, thus inducing a larger impact economic efficiency.

Supplemental Consumption Tax Options

The majority of economic research tends to estimate the economic benefits of a full transition to a consumption tax, even though this is rarely the policy prescription that is implemented. Instead, governments often incorporate an additional tax on an alternative tax base to raise further revenue, as is the case in most countries within the Eurozone. For this reason, it is worth discussing two potential alternative consumption tax schemes, including a partial replacement of the income tax with a consumption tax, and an additional consumption tax on top of the current income tax.

There is limited research on the economic effects of replacing a portion of income tax revenue with a consumption tax. However, it is likely that economic benefits similar to those of full replacement would be seen, but of a smaller magnitude. The CBO estimated the economic effects of replacing a quarter of the income tax in the United States with a consumption tax in the form of a VAT. The beneficial impacts highlighted above are all diminished when partially replacing the income tax with a consumption tax. According to the CBO, the saving rate would increase by 0.5 percentage points, consumption would increase by 1.2%, and overall output would increase by 1.5% in the long run.[25] The expected increase in overall output from partial replacement is 8.5 to 3.5 percentage points lower than the estimate for full replacement of the income tax with a consumption tax.

Similarly, there is limited evidence on the impact of implementing a VAT on top of an income tax. The limited empirical work on the subject has focused on changes to the VAT rate after the tax has been established. However, given these limitations, the literature suggests that increasing the VAT rate, in to economies which also have an income tax, tends to decrease consumption and increase saving as well. The impact appears be of a smaller magnitude however, suggesting that a one percentage point increase in the VAT rate will reduce consumption between 0.4 and 1% in the near term, with a larger decrease in the long term.[26] This decrease in consumption would likely be accompanied by an increase in savings, which could contribute to greater economic output in the long term through the processes discussed in the "Impact on the Economy" section.

[24] Jane Gravelle, "Income, Consumption, and Wage Taxation in a Life-Cycle Model: Separating Efficiency from Redistribution," *The American Economic Review* , vol. 81, no. 4 (September 1991), pp. 985-995, and David Atlig, Alan Auerbach, and Laurence Kotlikoff, et al., "Simulating Fundamental Tax Reform in the United States," *The American Economic Review*, vol. 91, no. 3 (June 2001), pp. 574-595.

[25] U.S. Congressional Budget Office, *Effects of Adopting a Value-Added Tax*, February 1992, pp. 49-65, http://www.cbo.gov/publication/20769.

[26] James Alm and Asmaa El-Ganainy, "Value-Added Taxation and Consumpotion," *International Tax and Public Finance*, vol. 20 (March 28, 2012), pp. 105-128, and Ray Barrell and Martin Weale, "The Economics of a Reduction in VAT`," *Fiscal Studies*, vol. 30, no. 1 (April 16, 2009), pp. 17-30.

Alternative Tax Bases: Distributional Considerations

In addition to considerations of economic efficiency, policymakers often consider how the tax burden is distributed when crafting tax policy. The following discussion will compare some of the potential distributional implications of transitioning from an income tax to a consumption tax. It is important to note that the following sections examine the impact of a revenue-neutral switch from a stylized income tax to a stylized consumption tax, and not the current income tax as implemented in the U.S.

The discussion is complicated because the distributional implications of a tax structure can be changed by altering specific parts of the tax. For example, under an income tax the first $10,000 earned could be exempted, thereby increasing the progressivity of the tax. Similarly, under a consumption tax certain staple goods, such as groceries, could be exempted, which would make the tax more progressive. To simplify the discussion, this section will consider a *pure* income and a *pure* consumption tax structure, both with a flat 20% tax rate and similarly sized tax bases.

Tax Burden across Income Classes

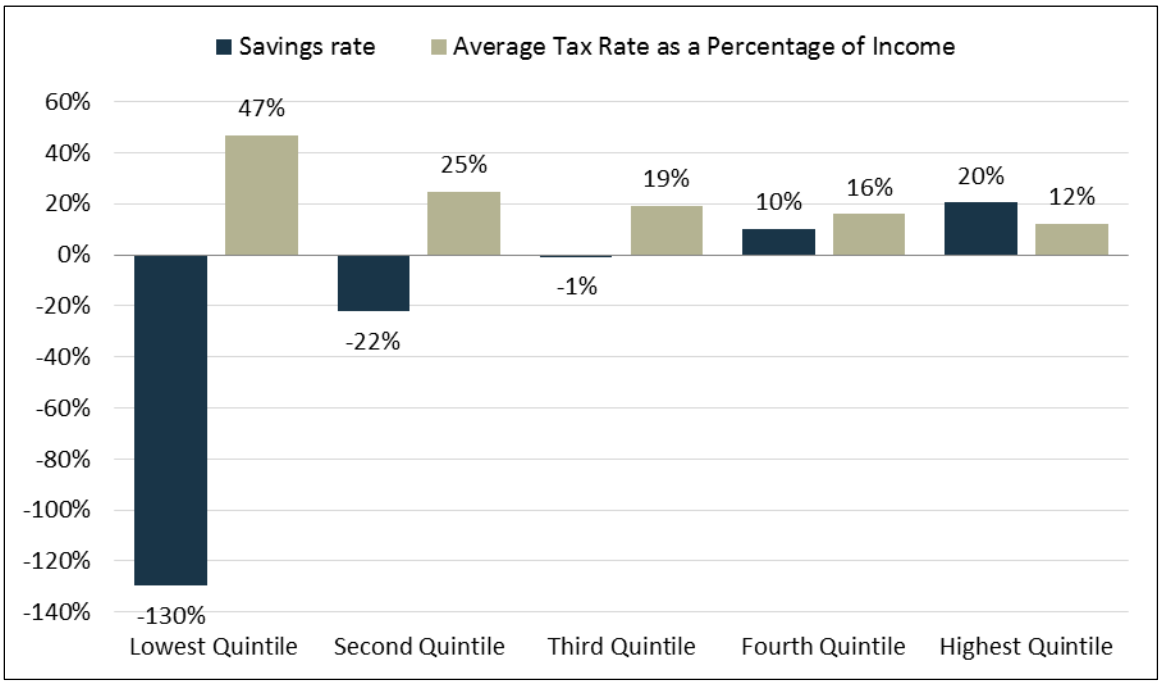
A common critique of consumption taxes is that they tend to be regressive, where an individual's average tax rate decreases with income. Estimates of the distribution of the tax burden are sensitive to how income is measured. When observing individuals' average tax rates with respect to annual incomes, a consumption tax tends to be regressive, since higher-income individuals tend to save a greater proportion of their income than lower-income individuals. Therefore, a larger portion of income from lower-income individuals would be subject to a consumption tax.

For example, **Figure 1** shows that individuals in the second quintile of the income distribution had a savings rate of negative 22% in 2013, meaning they spent more money on consumption than they earned, while individuals in the fourth quintile of the income distribution had a savings rate of 10%.[27] Given these differential savings rates, under a 20% consumption tax an individual in the second income quintile would tend to have an average tax rate of about 25% with respect to their annual income, while an individual in the fourth quintile would have an average tax rate of about 16% with respect to their annual income as shown in **Figure 1**.

[27] Consumer Expenditure Survey, Table 1101, 2013.

Figure 1. Savings and Average Tax Rate by Income Quintile

Assuming a 20% consumption tax with no exemptions



Source: CRS calculations based on Consumer Expenditure Survey, Table 1101, 2013.

Notes: Income before taxes is used to calculate savings and average tax rates. The average tax rate is calculated as a proportion of pre-tax annual income. Expenditure levels for the lowest income quintile may suffer from measurement error,

When using lifetime income as a measure of ability to pay, instead of annual income, the burden of a consumption tax tends to be more equitably distributed. This is because over an individual's lifetime, lifetime consumption tends to approximate lifetime income.[28] Since lifetime consumption tends to equal lifetime income, an individual with a higher lifetime income will likely spend more on consumption and therefore have to pay more through a consumption tax. Therefore, a consumption tax will generally approach proportionality across lifetime income levels.

Under an income tax with a single tax rate, the tax burden is spread proportionately across income classes. With no exceptions or deductions, all individuals would have a 20% average tax rate regardless of their income level. As income rises, individuals would pay a larger absolute amount in taxes, but as a percentage of income everyone would pay the same amount. Under an income tax, the use of annual versus lifetime income has no effect on the distribution of tax burdens—it remains proportional regardless.[29]

[28] In the absence of bequests this will hold true. If an individual receives bequests, consumption can be greater than income. If an individual gives bequests, consumption can be less than income.

[29] To remain proportional bequests must be treated as consumption and include the present value of future taxes paid by heirs.

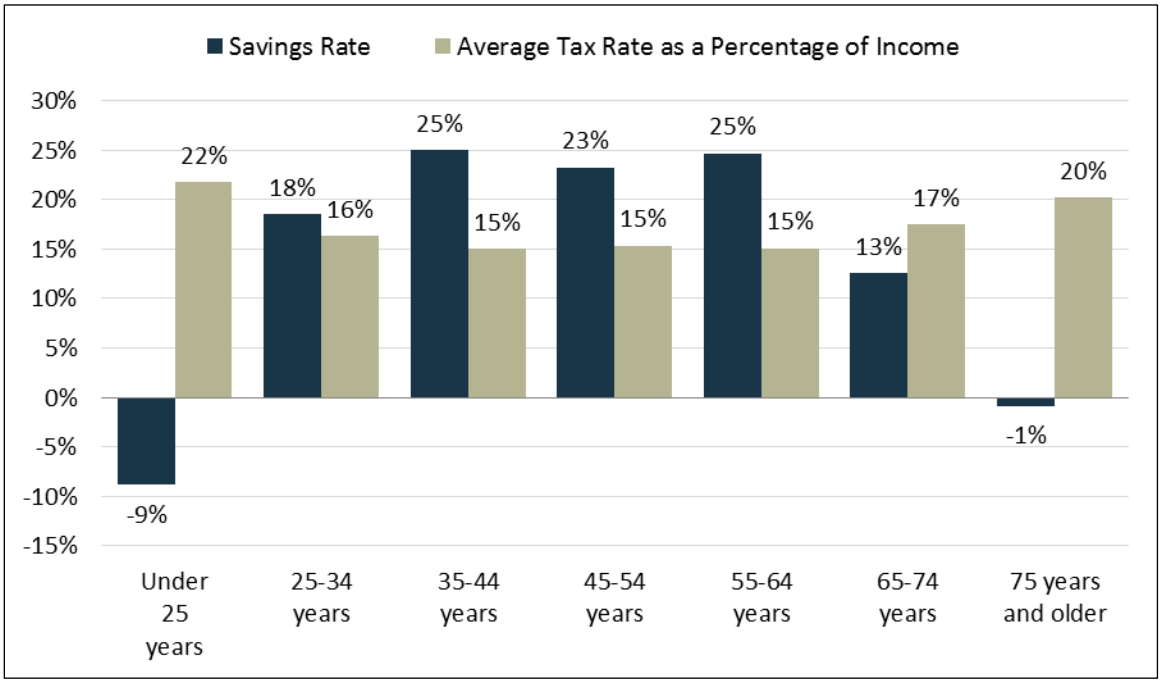
Tax Burdens across Generations

Tax burdens also tend to differ across generations. At different points in their lifecycle, individuals tend to have different consumption and saving behavior, contributing to differences in their tax burden.

Under an income tax, an individual's tax burden is independent of their age and would face a proportional tax rate throughout their life of 20%. Under a consumption tax, middle-aged individuals will tend to have the smallest tax burden as a percentage of annual income because they save a larger portion of their income. As shown in **Figure 2**, individuals between the ages of 35 and 44 had an average savings rate of 25%, in comparison with individuals under 25, who had an average savings rate of -9%, and individuals above 75 years old, who had an average savings rate of -1%.[30] Due to the differing savings rates of individuals over their lifetimes, differing average tax rates are produced under a consumption tax as shown in **Figure 2**. An individual under the age of 25, who has an average savings rate of -9%, would have an average tax rate of 22% with respect to annual income, while an individual between the ages of 35 and 44, who has an average savings rate of 25%, would have an average tax rate of 15%. Assuming that this distribution of savings rates would prevail under a consumption tax, middle-aged individuals would have the lowest average tax rates, as a function of their income, while older and younger individuals would have the highest average tax rates, as a function of their income.

Figure 2. Savings and Average Tax Rate by Age

Assuming a 20% consumption tax with no exemptions



Source: CRS calculations based on Consumer Expenditure Survey, Table 1300, 2013.

Notes: Income before taxes is used to calculate savings and average tax rates. Average tax rate is calculated as a percentage of annual income, assuming no behavioral changes. Average tax rates are also calculated assuming there are no exemptions to the consumption tax base.

[30] Ibid. After-tax income was used to calculate savings rates.

Alternative Tax Bases: Administrative Considerations

Tax Code Complexity and Administrative Cost

Proponents of a consumption tax often tout the potential for increased simplicity.[31] Although a consumption-based tax could be designed to be very simple, a consumption-based tax is not inherently simpler than an income-based tax. An income-based tax could also be designed to be simpler and more manageable than the current income tax code. The complexity of the current tax code is not a result of using income as the tax base, but rather the political process and the gradual additions and revisions to the tax code.

While complexity is not necessarily inherent to either of these tax bases, consumption or income, limited evidence shows that some consumption-based taxes tend to have lower administrative costs. For example, European countries with VATs have average administrative costs of 3 to 5 cents per dollar collected in tax revenue, compared with 13 cents per dollar in the United States.[32] Another study found that VAT administration costs in the United Kingdom were estimated to be 0.55% of revenue collected, compared with 1.27% in the United States for the federal income tax.[33] As discussed earlier, most European countries have introduced VATs to supplement their income taxes. If the United States were to follow this example, administrative costs associated would likely increase, as a new or expanded agency would be required to administer the new consumption tax.

Transitional Monetary Policy Considerations

With the implementation of a VAT or NST, certain decisions around monetary policy could have significant impacts on either wages or the consumer price level. Under a VAT or NST, the relative price of consumer goods and services would necessarily increase with respect to production costs and wages as the new tax is applied to goods and services.[34] Because the price increase is relative to production costs and wages, assuming production costs cannot be lowered, the relative increase in prices can be achieved either by price increases or wage decreases. Whether prices or wages are impacted depends on "the institutions of wage- and price-setting and on monetary policy."[35] Policy analysts generally believe that a one-time increase in consumer prices would be accommodated, in part because workers are reluctant to accept lower wages and could cause many workers to leave their jobs if wages were lowered.[36] Additionally, if inflation expectations

[31] Jake Miller, "Could Americans Someday File Their Tax Returns on a Postcard?," *CBS News*, April 15, 2015, http://www.cbsnews.com/news/could-americans-some-day-file-their-tax-returns-on-a-post-card/.

[32] Report of the President's Advisory Panel on Federal Tax Reform, "Simple, Fair, and Pro-Growth: Proposals to Fix America's Tax System," November, 2005, p. 201.

[33] U.S. Government Accountability Office, Value-Added Taxes Lessons Learned from Other Countries on Compliance Risks, Administrative Costs, Compliance Burden, and Transition, GAO-08-566, April 2008, p. 4, http://www.gao.gov/products/GAO-08-566.

[34] C. Alan Garner, *Consumption Taxes: Macroeconomic Effects and Policy Issues*, Federal Reserve Bank of Kansas City, Second Quarter 2005, pp. 5-29.

[35] David E. Bradford, "Consumption Taxes: Some Fundamental Transition Issues," in *Frontiers of Tax Reform* (Stanford: Hoover Institute Press, 1996).

[36] Alan Garner, "Consumption Taxes: Macroeconomic Effects and Policy Issues," *Economic Review – Federal Reserve Bank of Kansas City*, Second quarter 2005.

remain well-anchored, a one-time price adjustment might not lead to any subsequent changes in inflation, in which case monetary policy would not need to be modified.[37]

Interactions with State Tax Codes

State tax codes and the federal tax code interact in a number of ways, which could complicate the implementation of a broad consumption tax in the United States. As discussed earlier, a number of states have consumption taxes in the form of retail sales taxes. If the federal government were to implement a broad-based consumption tax as well, states could object that the federal government is encroaching on their tax base.

Additional implementation hurdles arise due to the inconsistent tax bases across states. Many states have exempted certain items and entities from their sales tax. With the implementation of a consumption tax, such as the NST, businesses would have to keep track of two separate lists of taxable items based on the federal tax code and their home state tax code. Businesses would be tasked with managing a tax structure in which either one, both, or neither tax is applied to certain items at the point of sale. This sort of added complexity reduces the administrative efficiency gains that could be achieved under a consumption tax. However, under the current income tax structure similar complexity exists due to alternative income tax deductions available at the state and federal level.

Interactions with the Business Cycle

Both income- and consumption-based taxes are countercyclical to the business cycle. Under a progressive income tax, as the economy expands and individuals' incomes grow, individuals' tax burdens also grow, which some believe has a stabilizing effect on the economy. Similarly, under a consumption tax, as the economy expands, individual demand for goods grows which will increase individuals' tax burdens and decrease demand. It is a matter of debate whether countercyclical tax policy helps promote stability of the business cycle or potentially leads to further destabilization of the business cycle.

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Acknowledgments

Jeffrey Stupak, former CRS Analyst in Macroeconomic Policy, contributed to this report.

[37] George R. Zodrow, "Transitional Issues in the Implementation of a Flat Tax or a National Retail Sales Tax," in *United States Tax Reform in the 21st Century* (Cambridge, UK: Cambridge University Press, 2002).

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