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Progressive Consumption Taxation:The X-Tax Revisited (chapters 1-3)
(co-authored by Robert Carroll)

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November 14, 2016
Vanderbilt Hall-202
4:00-5:50 p.m.
Week Number 4

SPEAKER SCHEDULE FOR INEQUALITY SEMINAR
(Mondays 4:00 to 5:50 pm)

October 24 – Robert Frank, Cornell University
5 short pieces: (1) *Why Has Inequality Been Growing?*, (2)*Why Luck Matters More Than You Might Think*, (3) *Does Inequality Matter?*, (4) *Why have weddings and houses gotten so ridiculously expensive? Blame Inequality*, and (5) *The Progressive Consumption Tax*.
Guest commentator: K. Anthony Appiah, NYU Philosophy Department.

October 31: Kate Pickett, Department of Health Sciences, University of York
(1) *Income Inequality and Health: A Causal Review*;
(2) *The Enemy Between Us: The Psychological and Social Costs of Inequality*
    (both co-authored by Richard Wilkinson).

November 7 – Ilyana Kuziemko, Princeton University Economics Department
Support for Redistribution in an Age of Rising Inequality: New Stylized Facts and Some TentativeExplanations (coauthored by Vivekinan Ashok and Ebonya Washington).

November 14 – Alan Viard, American Enterprise Institute
***Progressive Consumption Taxation: The X-Tax Revisited* (chapters 1-3)**
(co-authored by Robert Carroll)

November 21 – Daniel Shaviro, NYU School of Law
The Mapmaker's Dilemma in Evaluating High-End Inequality
Guest commentator: Liam Murphy, NYU Law School

November 28 – Adair Morse, Haas School of Business, University of California at Berkeley
Trickle-Down Consumption (co-authored by Marianne Bertrand)

December 5 – Daniel Markovits, Yale Law School. *Meritocracy and Its Discontents*

Progressive
Consumption Taxation
The X Tax Revisited

Robert Carroll
Alan D. Viard

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Introduction

The United States is alone among industrialized countries in having no broad-based consumption tax at the federal level. Yet, as we will explain in chapter 1, economic analysis reveals that consumption taxation has an economic advantage, relative to income taxation, because it does not penalize saving and investment. In recent years, a number of proposals to adopt some type of consumption tax have been advanced. As revenue needs increase due to the growth of Medicare, Medicaid, and Social Security in future decades, there is likely to be renewed interest in finding better ways to raise revenue, prompting further consideration of consumption taxes.

Several concerns have blocked a move to consumption taxation, however. On the key question of whether a consumption tax should replace all, or only part, of the income tax system, each approach has drawn strong objections. Partial replacement has been opposed by those concerned that having two revenue sources would fuel the growth of government spending, a concern reinforced by a common perception that the value-added tax (VAT)—the most likely candidate for a partial replacement—is a hidden tax that can function as a money machine. Also, partial replacement of the income tax would yield smaller economic gains than full replacement. On the other hand, full replacement has been opposed on the grounds that completely replacing the progressive income tax with a regressive VAT or sales tax would have unacceptable distributional implications, a concern heightened by the recent rise in economic inequality.

Although there may be other ways to address some of these concerns, we argue that the most appealing and comprehensive solution is to completely replace the income tax system with a *progressive* consumption tax. Progressive consumption taxation is not impossible or self-contradictory, although it does require the use of an unfamiliar tax system. In chapter 2, we describe the two leading forms of progressive consumption taxation,

the X tax developed by the late David Bradford, and the personal expenditures tax (PET).

As we explain, the X tax modifies the VAT so that it no longer imposes a flat-rate tax on all consumption. The X tax splits the value-added tax base, which equals aggregate consumption, into two components, wages and business cash flow. Households are taxed on wages, and firms are separately taxed on business cash flow. Firms expense all investment in computing business cash flow so that the tax imposes a zero effective marginal tax rate on new investment. The business cash-flow tax falls on wealth accumulated prior to the reform and above-normal business investment returns.

The X tax system therefore imposes a household-level tax on consumption financed from wages and a firm-level tax on consumption financed from prereform wealth and above-normal returns. The first category of consumption is taxed at graduated rates, with higher tax rates for higher-wage workers. The second category of consumption, which is largely enjoyed by affluent households, is taxed at a high flat rate, equal to the tax rate on the highest-wage workers. This rate structure makes the X tax progressive.

We compare the X tax to the PET, which is a household-level graduated-rate tax on income minus net saving. While recognizing that the PET has some advantages, we argue that they are outweighed by the simplicity and other benefits of the X tax. We therefore propose that an X tax be adopted to completely replace the individual and corporate income taxes and the estate and gift tax, as well as the Unearned Income Medicare Contribution tax slated to take effect in 2013. Because concerns about whether the X tax can be satisfactorily implemented have helped block its acceptance, we devote the remainder of the book to addressing those concerns.

In chapter 3, we further discuss the progressivity of the X tax. We explain how to measure the distributional effects of moving to the X tax and address misconceptions about those effects. We discuss the possible tax rate structure and examine related issues, such as the tax treatment of the family and the averaging of wages across different tax years.

In chapter 4, we discuss the treatment of employer-provided health insurance and other fringe benefits under the X tax and the impact of tax reform on Social Security and other transfer payments. We discuss the timing rules that should apply to the taxation of defined-benefit pensions and other employer savings accounts. We propose that the X tax disregard

public and private transfer payments, with no tax on the recipient and no deduction for the payer. We discuss options for the tax treatment of charitable giving. We recommend that the Social Security and Medicare payroll taxes be maintained alongside the X tax, to preserve earmarked funding for Social Security and Medicare Part A and the tax-benefit linkage in the Social Security program. We also discuss how to modify means tests for antipoverty programs to operate in a world without an income tax.

In chapter 5, we examine the taxation of business firms. We propose to sweep away the complex and artificial distinctions between partnerships, S corporations, and C corporations that afflict the current income and payroll and self-employment tax systems. We recommend unified treatment of all types of business organizations, apart from a few special rules designed to offer simplification for sole proprietorships. We generally propose that firms be required to pay reasonable compensation to owners who work for the firm. Firms would deduct this compensation under the business cash-flow tax, and the workers/owners would pay household wage tax and payroll tax on this amount. We also emphasize the importance of providing tax relief for firms with negative cash flows, noting that the denial of such relief may result in positive effective tax rates on investment. We therefore propose that firms with negative cash flows be allowed five-year carryback and unlimited carryforward with interest.

In chapter 6, we discuss the tax treatment of financial intermediaries. We explain that, contrary to some claims, this issue can be handled at least as easily under the X tax as under an income tax. We endorse, and elaborate on, proposals to tax financial intermediation transactions under a cash-flow method that integrates real and financial payments. By offering a unified regime for almost all financial intermediaries, this approach largely obviates the need to distinguish among different intermediaries, although it requires that intermediaries be distinguished from other businesses. Although this real-plus-financial cash-flow method requires unfamiliar, or even counter-intuitive, calculations by some intermediaries, the calculations are simple to implement, and tax computations by the intermediaries' customers are unaffected. We also discuss tax accounting issues that arise under the X tax.

In chapter 7, we discuss the taxation of international transactions, often considered a major challenge for the X tax. While VATs throughout the world are border adjusted to rebate tax on exports and impose tax on

imports, international trade agreements are likely to be interpreted as prohibiting border adjustment of the X tax. Although the United States might be able to persuade the international community to modify this prohibition, we conclude that it would be better to simply refrain from border adjusting the X tax. We review the well-established economic finding that border adjustment offers none of the "competitiveness" advantages imagined in popular discussions. We also emphasize the little-understood point that the transition to a border adjustment would transfer several trillion dollars of wealth from Americans to foreigners. We conclude that we should not pressure other countries to modify trade agreements solely for the privilege of giving our wealth to their citizens. We also endorse, and elaborate on, a proposal by David Bradford to address the transfer-pricing challenges that the X tax will face without a border adjustment.

In chapter 8, we discuss the transition to the new tax system, a significant issue for any tax reform. Without transition relief, the adoption of a consumption tax imposes a significant burden on existing wealth accumulated prior to the reform, although the accompanying repeal of the income tax offers some offsetting gains to existing wealth. We propose a policy that offers significant, but limited, transition relief to existing business capital. Our proposed policy can be administered at the firm level in a way that does not require detailed tracking of depreciation allowances and that does not encourage inefficient changes in firms' behavior. We also discuss transition policies for other specific issues.

In chapter 9, we discuss the tax treatment of the nonbusiness sector, including owner-occupied housing, consumer durables, governments, nonprofit institutions, and household employers. We show that, contrary to common myths, the treatment of housing and durables is much simpler under consumption taxation than under income taxation. While income tax principles require the taxation of imputed rent, consumption taxation can employ a prepayment method that need not measure or tax imputed rent. (Ironically, the current "income tax" system, which exempts imputed rent from tax, largely follows consumption tax principles in this area.) We explain that the prepayment method effectively exempts homes and durables from the business cash-flow tax, thereby allowing existing homes and durables to escape the transition burden that the X tax imposes on existing business capital. We conclude that sparing homes and durables from this

burden is appropriate, particularly because these assets will still decline in value to some extent due to income tax repeal. We similarly propose to exempt the federal, state, local, and tribal governments and nonprofit institutions from the business cash-flow tax while requiring their employees to pay household wage tax on the same terms as other workers. We also consider the conformity of state and local tax systems to the federal X tax and the treatment of state, local, and tribal taxes and municipal bonds.

In chapter 10, we examine an alternative policy under which a VAT is adopted as a partial replacement of the income tax. Reviewing the recent interest in the VAT, we note that this outcome is more likely than, though economically inferior to, the complete replacement of the income tax by the X tax that we propose. We consider the extent to which different taxes could be replaced by a VAT and discuss measures to combat the regressivity of the VAT and to prevent it from fueling spending growth.

Because the X tax is a modification of the VAT, we also discuss the extent to which our analysis could be applied to a partial-replacement VAT. Our proposed treatment of financial transactions, owner-occupied housing, and consumer durables under the X tax could be applied under a VAT with little change. One major difference from the X tax, though, is that the VAT would surely be border adjusted, triggering a wealth transfer abroad that our proposal would avoid. Some issues could be handled more easily under a partial-replacement VAT than under the X tax, including the treatment of owners who work for firms and the treatment of firms with negative cash flow, as well as the administration of antipoverty programs. In other respects, though, a partial-replacement VAT would actually cause more disruption than a complete-replacement X tax. Most prominently, the VAT would likely prompt the Federal Reserve to permit a one-time increase in consumer prices. Also, politically sensitive changes to Social Security would be necessary, and economic neutrality would require the imposition of an employer payroll tax on state, local, and tribal governments and nonprofit institutions. Due to the border adjustment, the increase in consumer prices, and administrative differences, the VAT would also require a different transition policy than the X tax, with transition relief provided at the household level.

We hope that this book will prompt renewed consideration of the X tax's potential to achieve a complete replacement of income taxation by progressive consumption taxation.

1

Why Tax Consumption?

Economic theory suggests that consumption taxation is economically superior to income taxation, with simulations suggesting that the complete replacement of the U.S. income tax system by a consumption tax would increase long-run output by several percent. Every other industrialized country raises a significant part of its revenue from consumption taxation, as do most of the U.S. states. A shift from income to consumption taxation in the federal tax system therefore warrants careful consideration.

In this chapter, we explain the economic advantages of consumption taxation, emphasizing how it promotes economic efficiency by removing the income tax's penalty on saving and investment.

Removing the Income Tax Penalty on Saving

The primary economic advantage of consumption taxation is that, unlike income taxation, it does not penalize saving. The savings penalty, which is a penalty on late consumption and early work, causes economic inefficiency.

Penalty on Late Consumption. We illustrate the income tax's penalty on saving with an example drawn from Carroll, Viard, and Ganz (2008). Consider two individuals, Patient and Impatient, each of whom earns $100 of wages today. Impatient wishes to consume only today; Patient wishes to consume only "tomorrow," which is decades later than today. Savings are invested by firms in machines that produce output tomorrow. The marginal rate of return on machines—the additional return available if one more machine is constructed—is 100 percent. If financial markets are competitive, the rate of return that firms pay to savers must be equal to the marginal rate of return on machines.

In a world with no taxes, Impatient consumes $100 today. Patient lends her $100 of wages to a firm, which buys a machine that yields the 100 percent marginal rate of return and therefore provides a $200 payoff tomorrow. The firm pays Patient back her $100 loan with $100 interest, allowing her to consume $200 tomorrow.

What happens in a world with a 20 percent income tax? Impatient pays $20 tax on his wages and consumes the remaining $80, which is 20 percent less than he consumed in the no-tax world. Patient also pays $20 tax on her wages and lends the remaining $80 to the firm. On her $80 loan, she earns $80 interest and is therefore repaid $160 by the firm. However, a $16 tax is imposed on the $80 interest. Patient is left with $144 to consume tomorrow, which is 28 percent less than the $200 she consumed in the no-tax world.

The income tax has reduced Patient's consumption by 28 percent, compared to a mere 20 percent reduction in Impatient's consumption. Under the income tax, Patient faces a higher percentage tax burden than Impatient solely because she consumes later. In other words, she is penalized because she saves for future consumption rather than engaging in immediate consumption. Another way to understand the penalty is to note that the income tax reduces the after-tax rate of return on saving. Because Patient sacrifices $80 of consumption today to obtain $144 tomorrow, she receives an 80 percent after-tax return, which falls short of the 100 percent before-tax return.

In contrast, consumption taxation yields a neutral outcome if the tax rate remains constant over time. For simplicity, consider a 20 percent consumption tax that is imposed directly on individuals, with the tax being applied to income minus saving (or plus dissaving). This tax can be viewed as a personal expenditures tax, a tax that we will discuss in chapter 2. Although the X tax has a different design, we will verify in chapter 2 that it produces the same results when applied to this example.

After earning $100 of wages, Impatient consumes $80 and pays $20 tax, the same outcome as under the income tax. Patient lends her entire $100 to the firm and owes no tax because she has not yet consumed; she reports $100 of income, with an offsetting deduction for $100 of saving. On her $100 loan, she earns $100 interest, accumulating $200. She consumes $160 tomorrow and pays $40 tax; her tax is 20 percent

of $200, equal to her $100 interest income plus $100 of dissaving. Each worker's consumption is reduced by 20 percent relative to a world with no taxes. Because both workers face the same percentage tax burden, the consumption tax does not distort the choice between current and future consumption.

The neutrality of this constant-rate consumption tax is confirmed by the fact that Patient earns an after-tax return of 100 percent on her savings, identical to the before-tax rate of return. When Patient makes the $100 investment, she gives up only $80 of consumption today; if she had not invested, she would have paid $20 tax and consumed only $80. Her sacrifice of $80 today provides her with $160 of consumption tomorrow, a 100 percent rate of return.

Because the after-tax rate of return is equal to the before-tax rate of return under the consumption tax, the effective marginal tax rate on saving is zero. In contrast, the income tax imposed a 20 percent effective marginal tax rate on savings, because the 80 percent after-tax rate of return was 20 percent lower than the 100 percent before-tax return.

The example assumes that the consumption tax rate remains constant over time. Consumption taxation ceases to be fully neutral if the tax rate varies over time; it penalizes saving if the tax rate rises over time and rewards saving if the tax rate falls over time. It is important to realize, though, that the income tax inescapably penalizes saving, even if the tax rate remains constant over time.

Penalty on Early Work. So far, we have described the income tax's penalty on saving as a penalty on late consumption. But it is also a penalty on early work, as can be seen from a variant of the above example. Consider two other individuals, Young Worker and Old Worker. Young Worker earns $100 of wages today, and Old Worker earns $200 of wages tomorrow. As before, the interest rate between today and tomorrow is 100 percent. Both Old Worker and Young Worker wish to consume only tomorrow. In a world with no taxes, Young Worker saves her $100 of wages, earns a $100 return, and consumes $200 tomorrow. Old Worker earns $200 of wages tomorrow, which he immediately consumes.

What happens with a 20 percent income tax? Young Worker pays $20 tax on her wages today and saves the remaining $80. She earns an $80

before-tax return, on which she pays $16 tax, and consumes $144 tomorrow. In contrast, Old Worker pays $40 tax tomorrow on his $200 of wages and consumes $160. The results fit the previous pattern, as the individual who saves (in this case, Young Worker) is hit with a 28 percent tax burden, while the individual who does not save (Old Worker) bears only a 20 percent tax burden.

As before, consumption taxation with a constant 20 percent rate results in neutral treatment. Young Worker saves her $100 of wages and earns $100 interest, which allows her to consume $160 tomorrow after paying $40 tax. With his $200 of wages tomorrow, Old Worker also consumes $160, after paying $40 tax.

Saving occurs when individuals consume later than they work. The income tax's penalty on saving therefore creates artificial incentives both to consume earlier and to work later.

Understanding the Penalties. Because the heavier tax on saving under the income tax arises from the imposition of two taxes—one on wages and one on the return to savings—it is sometimes referred to as the "double taxation of saving." Others object to the double-taxation terminology, arguing that no single event is taxed twice, as the earning of wages and the receipt of interest income are separate events.

Fortunately, we need not resolve this semantic dispute. The relevant economic reality is that income taxation places a higher effective tax rate on future consumption than on current consumption and on current work than on future work. It is irrelevant whether the higher effective tax rate arises from one event being taxed twice or from two events being taxed; it is even irrelevant that it arises from the collection of two taxes rather than from a single larger tax. All that matters is that the tax burden on future consumption and current work is larger, in percentage terms, than the tax burden on current consumption and future work.

It is sometimes thought that neutrality is attained through equal taxation of all income, whether from capital or labor, as occurs under a well-designed income tax. But that is not the case. Economic neutrality requires uniform taxation of all uses of resources, not of all income. Although someone who consumes later than she works earns additional income, that fact provides no justification for imposing additional tax.

Gains from Reform

Ending the income tax penalty on saving would improve economic efficiency and promote simplicity.

Efficiency Gains. By eliminating the penalty on saving, consumption taxation offers efficiency advantages. The consumption tax's neutral treatment of work and consumption at different dates allows individuals to choose the most efficient allocation of work and consumption across their lifetimes. Under broad assumptions about preferences, consumption taxation involves lower deadweight loss or excess burden than income taxation, as the incentive effects of consumption taxation prompt households to work later and consume earlier, thereby increasing saving.

A common argument holds that, for any given amount of revenue, consumption taxation imposes a heavier tax on work than does income taxation. Because consumption is smaller than income (in an economy with positive saving), a consumption tax generally requires a higher statutory tax rate than an income tax to raise the same revenue. Proponents of this argument assert that this higher tax rate increases work disincentives. Moving from income to consumption taxation is said to amplify work disincentives even as it eliminates saving disincentives, with the net impact on economic efficiency reflecting a trade-off between these two effects.[1]

Although this argument has superficial appeal, a deeper examination reveals it to be invalid, as explained by Auerbach (1997), Bankman and Weisbach (2006, 1417–30), Viard (2006), Toder and Reuben (2007, 103), Shaviro (2007b, 759–60), Weisbach (2007), and others. A revenue-neutral move to consumption taxation does increase the tax rate on working to consume today. But it reduces the effective tax rate on working to consume tomorrow, which, under income taxation, is hit with both a wage tax and a tax on income from saving. The revenue-neutral shift therefore leaves overall work disincentives roughly the same under consumption taxation as under income taxation. We explain this point further in the "Trade-off Fallacy" box (pages 18–19).

A long-standing body of literature considers the role of consumption taxation in an optimal tax system. The starting point is the result of Atkinson and Stiglitz (1976), which establishes that different consumer

goods should be taxed at a uniform rate when consumers' choices among the various goods are separable from their decisions about how much to work. If this separability condition holds, uniform taxation of consumer goods is desirable even if policy makers place a strong emphasis on redistribution, because such redistribution can be advanced more efficiently by increasing tax rates on all goods rather than by singling out some goods for higher taxes than others. As Kaplow (2008b, 221–24) and others have explained, this result can be applied to the choice between income and consumption taxation by treating consumption at different dates as different goods. If consumers' choices about when to consume are separable from their decisions about how much to work, then the Atkinson-Stiglitz result states that consumption at different dates should be taxed at a uniform rate. As we demonstrated in the Patient-Impatient example, consumption taxation with a constant tax rate achieves such uniformity, whereas income taxation does not.

Of course, the separability condition is unlikely to hold precisely, and the stylized Atkinson-Stiglitz model omits some relevant features of real-world tax policy. In a more general framework, it may well be optimal to deviate from a policy of taxing consumption at all dates at exactly the same rates. But such deviations are likely to be minor and difficult to identify precisely. Moreover, the deviations may go in either direction; depending on various factors, it may be optimal to tax late consumption at either slightly lower, or slightly higher, rates than early consumption. The general analysis therefore offers little support for abandoning the uniformity achieved by consumption taxation and adopting the income-tax policy of imposing markedly higher tax rates on late consumption. Kaplow (2008b, 225–48), Bankman and Weisbach (2006), and Auerbach (2008) discuss these issues.

A number of economic simulations report substantial long-run economic gains from replacing income taxation with consumption taxation, although the size of the gains is sensitive to economic assumptions and to the design of the reform. We defer a discussion of the magnitude of the gains from reform to the concluding chapter.

Simplicity Advantages. As Slemrod (1995), Edwards (2003), and others emphasize, consumption taxation also offers powerful simplicity gains.

Whereas consumption taxation requires the measurement of consumption, which is relatively observable, income taxation faces the inherently more complex task of measuring the return on saving and investment to determine the change in the household's wealth.

Income taxation must either measure accrued gains and losses or (like the current tax system) defer taxation until gains and losses are realized, a policy that penalizes asset sales and requires the tracking of cost basis. A host of tax shelters seek to realize losses without realizing associated gains or to manipulate the allocation of cost basis across assets. Income taxation must also distinguish between principal and interest on loans, requiring complicated original-issue-discount, market-discount, and imputed-interest rules. Firm-level income taxation requires rules on capitalization and amortization, depreciation, and inventory accounting. Because these complexities are inescapably required by income tax principles, they cannot be avoided even in well-designed income tax systems. All these complexities are eliminated under consumption taxation.

The U.S. Supreme Court has recognized the inherent complexity that the income tax system faces in distinguishing between capital expenditures that should be amortized and current business expenditures that should be immediately deducted. In 1933, in an opinion by Justice Benjamin Cardozo, the Court said, "One struggles in vain for any verbal formula that will supply a ready touchstone. The standard set up by the statute is not a rule of law; it is rather a way of life. Life in all its fullness must supply the answer to the riddle" (*Welch v. Helvering,* 290 U.S. 111, 115 [1933]). Consumption taxes allow all business expenditures to be immediately deducted, avoiding any need to seek guidance from "life in all its fullness."

To be sure, no tax can be completely simple in a complex economy. Consumption taxation *retains* many complexities that are present under income taxation, including the need to distinguish between consumption and costs of earning income and the need to measure the consumption services provided by financial intermediaries. But consumption taxation removes the complexities discussed above without introducing any significant complexities that are absent under income taxation, except a few complications arising from the fact that tax rate changes are more disruptive under consumption taxation than under income taxation.

Of course, any tax can be complicated by poor design. It is surely true that any actual consumption tax will be more complex than a textbook consumption tax. By the same token, though, the actual income tax is vastly more complex than a textbook income tax, adding many extraneous complications (such as the distinction between debt and equity and the distinction between corporate and noncorporate firms) to the unavoidable income-tax complexities listed above. There is no reason to expect more such extraneous complications under a consumption tax than under the current income tax.

A balanced comparison reveals that consumption taxation is significantly simpler than income taxation.

Fallacious Arguments. The real advantages of consumption taxation, as outlined above, are sometimes overshadowed by invalid arguments offered by some consumption tax supporters.

One argument assumes that consumption taxes can and will be imposed on imports and rebated on exports and concludes that a switch to consumption taxation permanently reduces the trade deficit by making domestic producers more "competitive." Despite its superficial appeal, economists have long recognized that this argument is invalid, as we will discuss in chapter 7. As explained in that chapter, we actually recommend that the X tax *not* be imposed on imports or rebated on exports.

Another argument holds that consumption taxes do not penalize work because tax is triggered by consuming rather than working. This claim is invalid, because individuals work in order to consume, either in the present or the future. Accordingly, as Metcalf (1996, 99), Cnossen (2009, 690), and others note, income and consumption taxes both penalize the decision to work and consume rather than to enjoy leisure. As discussed above and in the "Trade-off Fallacy" box (pages 18–19), the two tax systems impose roughly the same penalty on work at any given revenue level. Consumption taxation removes income taxation's penalty on saving, but not its penalty on work.

Still another argument holds that consumption taxation is desirable because it taxes people on what they take out of the economy rather than what they put into the economy. It is not entirely clear what this means, because budget constraints require that what each individual takes out of the economy be equal, in present discounted value, to what the individual

puts into it. The actual flaw of income taxation is that it induces economic inefficiency by penalizing people for taking late consumption, rather than early consumption, out of the economy and for putting early work, rather than late work, into the economy.

A final argument holds that consumption taxation is less prone to evasion than income taxation. In reality, both systems offer the same fundamental opportunities and incentives for evasion, including the use of cash transactions and personal expenditures disguised as business expenditures. The level of evasion is likely to vary to some extent across different forms of consumption and income taxes, but there is no inherent reason why it should be smaller under consumption taxation.

These fallacies should not obscure the real efficiency and simplicity advantages of consumption taxation.

Consumption-Tax Features in the Current Income Tax System

Some observers have noted that the current U.S. income tax system has certain features that alleviate the tax burden that a pure income tax would impose on saving. As detailed below, many of these features are similar to those found in consumption tax systems. The presence of these features in today's tax system may suggest that today's system already provides many of the advantages of consumption taxation, thereby diminishing the urgency of a full-fledged switch to consumption taxation.

The actual policy implications are somewhat different. Although the current tax system includes some features that resemble consumption taxation, these features provide only limited relief from the problems of income taxation, and they add problems of their own. Moreover, other features of the tax system actually increase the tax burden on saving beyond that which would be imposed by a pure income tax system.

One consumption-tax feature of today's tax system is the provision of tax-preferred savings accounts and retirement plans. Reflecting a fundamental ambivalence about taxing saving, Congress has created more than twenty types of tax-preferred savings plans and accounts, each of which is subject to different contribution limits, eligibility rules, and restrictions on withdrawals.[2] The National Taxpayer Advocate (2004, 423–32) and the Joint Committee on Taxation (2001, 149–54, 163) document the

complexity that these accounts have added to the tax system. The Advocate noted a study in which 30 percent of workers choosing not to participate in 401(k) plans cited complexity as the principal reason.

While adding complexity, these accounts play only a limited role in reducing the tax burden on saving. Although the accounts shield about 36 percent of household financial assets from taxes, according to the President's Advisory Panel on Federal Tax Reform (2005, 22), they probably do much less to promote saving than would a 36 percent across-the-board reduction in tax rates on saving. Tax-preferred accounts are inferior ways to encourage saving because taxpayers can reduce their tax liabilities by shifting money from taxable to tax-preferred accounts without doing additional saving. Also, the accounts offer no marginal incentive to save for those households that bump up against the maximum contribution limits, who are likely to be the households in the best position to increase their saving.

Sheppard (2011) and others have pointed to the availability of tax-preferred accounts to argue that the current tax system functions as a consumption tax for most Americans. In reality, though, the current system does not offer the simplicity advantages of consumption taxation to most Americans, as they can avoid taxes on their saving only if they comply with the intricate restrictions governing tax-preferred accounts. Moreover, the current system does not function like a consumption tax for those Americans who do most of the saving, so the economic advantages of consumption taxation remain largely unattained.

The income tax system also allows some investments to be expensed, which, as we will explain in chapter 2, effectively removes the marginal tax burden on those investments. Other investments receive accelerated depreciation, which reduces, but does not eliminate, the marginal tax burden. Also, as we will discuss in chapter 9, imputed rent on owner-occupied homes and consumer durables is not taxed, which is consistent with consumption-tax principles. But these provisions are selective and limited in scope, inefficiently favoring some investments over others. Similarly, the deferral of tax on capital gains until they are realized lowers the effective tax rate on gains but introduces a new distortion by encouraging asset holders to postpone asset sales.

Meanwhile, other features of the tax system amplify the basic saving penalty imposed by the income tax. Notably, the corporate income tax

imposes an additional tax burden on investment done through C corporations, although the additional burden is partly offset by preferential individual income tax rates for dividends and capital gains. Estate and gift taxes also impose an additional tax burden on saving to pass wealth on to the next generation. At the state and local levels, individual and corporate income taxes, property taxes, sales taxes on capital goods, and inheritance taxes further penalize saving; because our proposal does not directly alter the state tax system, it may not eliminate these disincentives. Also, the current tax system does not correct for inflation in its measurement of the income from saving. For example, a taxpayer who receives 5 percent interest, when inflation is 2 percent, has real interest income of only 3 percent, but the full 5 percent of nominal interest income is taxed. The tax system also fails to correct for inflation in the measurement of taxable capital gains and depreciation allowances, which also amplifies the tax penalty on saving and investment. As Hubbard, Skinner, and Zeldes (1995) observe, the means tests used in many transfer payment programs also create saving disincentives by reducing or eliminating benefits based on the asset holdings of potential recipients; as we will discuss in chapter 4, some of these disincentives will remain in place under our proposal.

Recent laws and proposals point to an increased tax burden on saving in upcoming years. Under the March 2010 health care reform law, a new 3.8 percent Unearned Income Medicare Contribution tax on interest, dividends, and capital gains received by high-income households is slated to take effect in 2013. In late 2011, five bills that would have imposed surtaxes, ranging from 0.5 to 5.6 percent, on the adjusted gross income, including interest, dividends, and capital gains, of millionaires received majority support in the Senate, but did not win the sixty votes required for passage. President Barack Obama has also proposed that the 2001 and 2003 tax cuts be allowed to largely expire for high-income households at the end of 2012, which would increase marginal tax rates on those households' capital incomes by several percentage points (more than twenty percentage points for dividends). Moreover, the projected growth in federal spending over the upcoming decades, detailed by the Congressional Budget Office (2011b), is likely to create pressure for additional taxes on saving, pressure that may be difficult to forestall unless the United States makes a full-scale move to consumption taxation.

In summary, the current tax system includes some selective, complex, and ineffective features that ease the tax penalty on saving and other features that actually amplify that penalty. A full consideration of the current system makes clear that a move to consumption taxation is the only effective way to address the penalty on saving.

Conclusion

Economic theory suggests significant economic gains from moving toward consumption taxation. In this book, we explain how a particular type of consumption tax, the Bradford X tax, offers a progressive and relatively simple form of consumption taxation, and we recommend that the United States adopt this tax.

Except in chapter 10, we focus on proposals to adopt a consumption tax as a complete replacement for the federal taxes that penalize saving and investment, namely, the individual and corporate income taxes (including the individual and corporate alternative minimum taxes), the estate and gift tax (including the generation-skipping tax), and the Unearned Income Medicare Contribution tax. Complete replacement offers larger efficiency gains than partial replacement. And only complete replacement offers real simplicity gains; if the income tax remains in place as even part of the overall tax system, its complexity is still present.

We do not propose, however, to replace other federal taxes that pose little or no penalty on saving. As we will explain in chapter 4, we propose that the Social Security and Medicare payroll taxes be maintained; as we will explain in chapter 5, we recommend that the self-employment tax system be folded into the payroll tax system. We do not propose that excise taxes or customs duties be modified as part of the move to consumption taxation.

We reject the notion of allowing taxpayers to choose between the current income tax system and the new X tax system. Allowing taxpayers a choice between tax systems preserves some of the complexity of the current tax system and also makes it more difficult to meet revenue targets. Moreover, a consumption tax system generates the proper incentive effects only if all taxpayers are subject to it in all years.

In chapter 2, we survey the different types of consumption taxes and explain our preference for the X tax.

Box
The Trade-off Fallacy

The trade-off fallacy can best be understood through an analogy. Consider an economy in which people choose between leisure, apples, and oranges. The "general" tax rate is 20 percent, but oranges are subject to an 8 percent surtax, so apples are taxed at 20 percent and oranges at 28 percent. Economists note that the surtax inefficiently favors apples over oranges and propose moving to a uniform 24 percent tax, which is revenue neutral if half of wages are spent on each fruit. A critic acknowledges that the proposed reform eliminates the bias in favor of apples over oranges, but contends that it increases the bias in favor of leisure over work by raising the general tax rate from 20 percent to 24 percent. The critic perceives a trade-off between increased efficiency in the fruit market and decreased efficiency in the labor market.

The critic's analysis is flawed. Because apples and oranges are both alternatives to leisure, work disincentives depend on the tax rates on both fruits; the oranges surtax, no less than the general tax, penalizes work. It is true that the proposed reform increases the bias in favor of leisure relative to apples by raising the tax rate on apples from 20 percent to 24 percent. At the same time, though, the proposal reduces the bias in favor of leisure relative to oranges by lowering the tax rate on oranges from 28 percent to 24 percent. The net effect on work incentives is ambiguous.

Similarly, in the Patient-Impatient example, a 20 percent income tax imposes a 20 percent tax rate on consumption today and a 28 percent tax rate on consumption tomorrow, effectively imposing an 8 percent surtax on the latter. Just as the oranges surtax increased the bias in favor of leisure over oranges and thereby added to work disincentives, so this surtax increases the bias in favor of leisure over consumption tomorrow

and thereby adds to work disincentives. A person who works to consume tomorrow must pay both the wage tax and the tax on capital income, and both taxes therefore discourage work.

If half of wages are consumed today and half are saved, replacing the 20 percent income tax with a 24 percent consumption tax is revenue neutral in present-value terms. The tax rates on consumption today and consumption tomorrow are then both 24 percent. How are work disincentives affected? Although the bias in favor of leisure relative to consumption today rises from 20 percent to 24 percent, the bias in favor of leisure over consumption tomorrow falls from 28 to 24 percent. The net effect on work incentives depends on consumer preferences.

If the two types of consumption are equally complementary to leisure, the revenue-neutral switch to consumption taxation has no net effect on work incentives. If consumption today is relatively complementary to leisure, a revenue-neutral move to consumption taxation actually reduces work disincentives and increases labor supply. On the other hand, if consumption tomorrow is relatively complementary to leisure, a revenue-neutral move to consumption taxation increases work disincentives and reduces labor supply. In any case, the net change in work disincentives is likely to be small. The largest efficiency effect of the switch to consumption taxation is the gain from the removal of the saving disincentive.

In summary, the trade-off argument is invalid. Although taxing income rather than consumption permits a lower tax rate on wages, doing so does not substitute a saving disincentive for a work disincentive. Instead, it adds a saving disincentive while maintaining a roughly unchanged work disincentive. Under almost all types of consumer preferences, income taxation is less economically efficient than consumption taxation.

2

The Case for the X Tax

In this chapter we discuss the leading types of consumption taxes—the retail sales tax, the value-added tax, the flat tax, the Bradford X tax, and the personal expenditures tax—and explain our preference for the X tax. Part of this discussion is drawn from Viard (2011a, 185–95).

The Retail Sales Tax and the Value-Added Tax

The retail sales tax is the type of consumption tax that is most familiar to Americans, and the VAT is the type with the most widespread international use.

Retail Sales Tax. A retail sales tax is easily recognized as a consumption tax because, in its pure textbook form, it is imposed only on retail sales to consumers. Sales from one business firm to another are excluded from the tax base. Although a general sales tax has never been used at the federal level in the United States, forty-five states and the District of Columbia currently impose sales taxes, as do many local governments. Unfortunately, as we will discuss in chapter 10, most state and local sales taxes diverge significantly from this pure textbook design, exempting significant amounts of consumer purchases while taxing a substantial amount of sales between business firms.

The retail sales tax is a real-based tax, which means that it applies only to the sale of real goods and services and does not tax, or provide deductions for, financial transactions such as loans and stock purchases. Also, firms do not deduct payments of wages or other employee compensation in computing their sales tax base.

The discussion of the sales tax offers a useful opportunity to clarify the distinction between the tax-exclusive and tax-inclusive methods of quoting tax rates. For example, consider a sales tax system that imposes a $20 tax on a consumer good that costs $80 before tax so that the total price paid by the

consumer is $100. The tax-exclusive rate is 25 percent, because the $20 tax is 25 percent of the $80 net-of-tax price. This method of quoting the tax rate is called tax-exclusive because the tax payment is excluded from the tax base to which the rate is applied; here, the $20 tax payment is excluded from the $80 tax base to which the 25 percent rate is applied. The tax-inclusive rate in this example is 20 percent because the $20 tax is 20 percent of the $100 total price. Under the tax-inclusive method, the tax payment is included in the base to which the rate is applied; here, the $20 tax payment is included in the $100 base to which the 20 percent rate is applied.

Sales tax rates are usually quoted in tax-exclusive form, and income tax rates are usually quoted in tax-inclusive form. (An individual who pays $20 tax on $100 before-tax income is usually viewed as paying a 20 percent tax rate, not a 25 percent rate on her $80 after-tax income.) Because the tax-exclusive rate is always higher than the corresponding tax-inclusive rate,[3] this practice artificially makes sales tax rates look higher than income tax rates. Nevertheless, deviating from common practice by quoting sales tax rates in tax-inclusive form can cause confusion.

At the federal level, the most prominent sales tax proposal is the FairTax plan, put forward by Americans for Fair Taxation. The plan would replace the individual and corporate income taxes, payroll and self-employment taxes, and the estate and gift tax with a retail sales tax featuring a 29.87 percent tax-exclusive (23 percent tax-inclusive) rate. The FairTax plan has repeatedly been introduced in Congress but has never emerged from committee. The FairTax bills in the 112th Congress, H.R. 25 and S. 13, have attracted sixty-seven sponsors in the House of Representatives and nine sponsors in the Senate.

Value-Added Tax. The VAT can be viewed as a modification of the sales tax. Durner, Bui, and Sedon (2009) report that more than 145 countries have a VAT; they tabulate each country's tax rate and the year in which the tax was introduced.

A VAT, like a retail sales tax, applies to goods and services sold to consumers. But unlike a retail sales tax, which is collected once on the final sale to a consumer, a VAT is imposed and collected at every stage in the production and distribution of a good or service. This collection structure helps prevent the tax from being evaded at the retail level.

Like the retail sales tax, the VAT is a real-based tax that disregards financial transactions. Also like the sales tax, it does not allow a deduction for wages or other employee compensation. Like sales tax rates, VAT rates are usually quoted in tax-exclusive form.

For simplicity, the discussion below focuses on a subtraction-method VAT. (As we will explain in chapter 10, most actual VATs use the distinct, but highly similar, credit-invoice method.) Under a subtraction-method VAT, the tax base for each firm is receipts from sales of real goods and services minus purchases of real goods and services, including capital goods, from other firms. Sales minus purchases measures the firm's valued added, which is the contribution of the firm to the overall value of output.

For the economy as a whole, the base of a VAT is sales of real goods and services to consumers, because sales from one business to another are subject to offsetting inclusion and deduction and therefore do not comprise part of the net tax base. So, the aggregate VAT tax base is equal to consumption, which is also the aggregate sales tax base.

Figure 2-1 illustrates the relationship of the VAT to the sales tax in an economy with two firms and two individuals. Firm A produces a machine that it sells for $100 to Firm B and pays $70 of wages to Jones, its employee. Firm B buys the machine for $100, pays $40 of wages to its employee Smith, and produces $150 of consumer goods. Jones buys $90 of the consumer goods, and Smith buys the remaining $60.

Under a retail sales tax, tax is collected from firm B on the $150 of consumer goods that it sells. Under a VAT, tax is collected from firm A on the sale of the $100 machine and from firm B on its $50 value added ($150 sales to consumers minus $100 machine purchase). Because the sale of the machine nets out, the VAT has the same $150 aggregate tax base as the sales tax.

The Regressivity Problem. As we will discuss in chapter 10, a number of recent proposals call for the adoption of a VAT alongside the income tax. Except for the FairTax plan mentioned above, however, policy makers have shown little interest in completely replacing the income tax with a sales tax or VAT.

The most important reason for this lack of interest is that such complete replacement would result in politically unacceptable regressivity. Without

FIGURE 2-1
FOUR WAYS TO TAX CONSUMPTION

Firm A	←——— $100 payment	**Firm B**
	Machine ——→	

Labor | $70 wage

$40 wage

Labor
Consumer goods

$90 payment

Consumer goods

$60 payment

Labor
Consumer goods
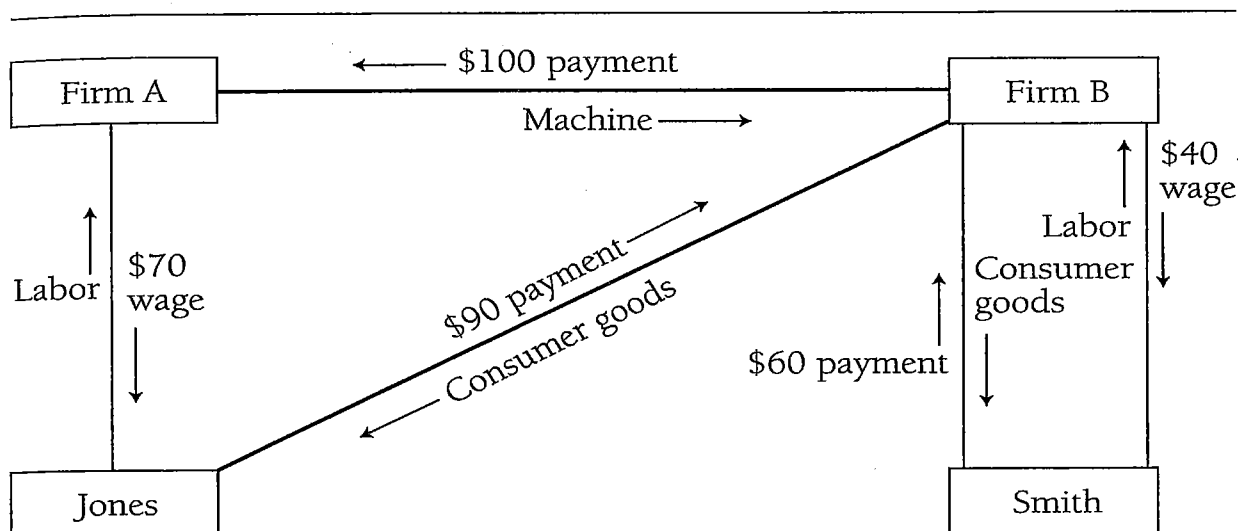
Jones

Smith

$150 TOTAL CONSUMPTION

Retail Sales Tax: B $150
VAT: A $100, B $50
Flat Tax/X Tax: A $30, B $10, Jones $70, Smith $40
PET: Jones $90, Smith $60

SOURCE: Example drawn from Viard (2011a).

any modification, the sales tax or VAT is regressive because all consumers pay tax equal to a fixed fraction of their consumer spending. The importance of the regressivity concern has been amplified by the rise in economic inequality during the last few decades; the Congressional Budget Office (2011c) reports that the top 20 percent of households received 59.9 percent of national income before taxes and transfers in 2007, up from 49.6 percent in 1979.

The regressivity problem can be addressed to some extent by providing rebates (as the FairTax plan does), expanding transfer payments, or exempting necessities while taxing luxuries at higher rates. Unfortunately, these solutions fall short of fully addressing the problem. Rebates and transfer payments provide only a limited offset to regressivity, leaving a politically unacceptable share of the fiscal burden on the middle class. Taxing different goods at different rates creates complexity and economic inefficiency and also provides only a limited offset to regressivity.

Accordingly, any sales tax or VAT that is adopted is likely to serve as only a partial replacement of the income tax, with an income tax retained to provide progressivity. Given our interest in complete-replacement options, we set the sales tax and VAT aside for most of this book, although we will discuss in chapter 10 how a partial-replacement VAT could be designed if complete replacement cannot be achieved.

We therefore turn to more progressive consumption taxes, beginning with the flat tax and the X tax. These taxes, which differ only in their rate schedules, both use the same tax base, which is obtained by splitting the VAT tax base, value added, into two parts. Before discussing the rate schedules of the flat tax and the X tax, we discuss the two-part VAT tax base design that both taxes share, explaining why, despite its initial appearance, this design yields a consumption tax rather than an income tax.

The Two-Part VAT

To alleviate the regressivity of the VAT, the Hall-Rabushka flat tax and the X tax split the VAT base, value added, into two components, wages and business cash flow, and tax them separately.

Household Wage Tax and Business Cash-Flow Tax. Robert Hall and Alvin Rabushka (1983) proposed to split the VAT into two taxes, one imposed on business firms and the other imposed on households. Business firms compute value added, as they would under a subtraction-method VAT, but deduct their wage payments. The resulting tax base is called business cash flow. Households are taxed on their wages but not on their investment income. The total tax base is the same as under a VAT and therefore the same as under a retail sales tax; the only difference from a VAT is that wages are taxed to workers rather than to firms.

Throughout this book, we will refer to the components of the two-part VAT as the "household wage tax" and the "business cash-flow tax." The tax rates under both components of the two-part VAT are generally quoted in tax-inclusive form, as income tax rates are usually quoted. This practice makes the tax rates look artificially lower than sales tax and conventional VAT rates, but does not lower the true level of the rates.

Figure 2-1 shows the application of the two-part VAT in the simple economy. Firm A is taxed on its $30 cash flow ($100 value added minus $70 wage payment), and Firm B is taxed on its $10 cash flow ($50 value added minus $40 wage payment). Smith and Jones are taxed on their wages.

Although its aggregate tax base is equal to national consumption, the two-part VAT looks more like an income tax than a consumption tax, at least at first glance. After all, it includes a household tax on wages, a major component of income, and it does not appear to include any tax on consumers. Adding to the confusion, the name of the two-part VAT's first incarnation, the "flat tax," offers no clue that it is a consumption tax. Many early descriptions of the flat tax were ambiguous about the nature of the tax; Zelenak (1999, 1180–82) describes how the status of the flat tax as a consumption tax has been obscured in the popular debate. Further confusion occurs when supporters of a flat-rate income tax refer to that quite different levy as a flat tax or even, as in Laffer (2010), as a "true flat tax." The name of the two-part VAT's later incarnation, our preferred "X tax," avoids misleading income-tax connotations, but also fails to reveal that it is a consumption tax.

No Tax Penalty on Saving. One way to see the proper classification of the two-part VAT is to introduce it into the Patient-Impatient example that we used in chapter 1. If wages and business cash flow are both taxed at 20 percent, do Patient and Impatient ultimately receive the same treatment that they experienced under the 20 percent consumption tax, or do they instead receive the treatment that they experienced under a 20 percent income tax?

Little information can be gleaned by considering Impatient. Under both the income tax and consumption tax considered in chapter 1, he paid $20 tax on his wages and consumed the remaining $80. The two-part VAT also yields that same result, because Impatient pays $20 tax on his wages. Moreover, his consumption results in no firm-level tax being collected. If we imagine a firm paying workers $80 to produce the consumption goods sold to Impatient, the firm is taxed on the $80 sale proceeds and deducts the $80 wage payment, leaving no net tax.

The litmus test is the treatment of Patient. Does the 20 percent two-part VAT cause her to consume $144 tomorrow (the income-tax result) or $160 (the consumption-tax result)? Under the two-part VAT, Patient pays $20

tax on her wages today and lends the remaining $80 to the firm. So far, this looks like an income tax, because Patient has paid tax on her wages, even though she has not yet consumed anything. The picture changes, though, as we walk through the remaining steps.

With the $80 obtained from Patient, the firm buys a machine with a before-tax cost of $100. Under the two-part VAT, a $100 machine costs only $80, because the firm immediately deducts the $100 cost of the machine under the business cash-flow tax, reaping a $20 tax savings. If the firm produces the machine itself, it deducts the $100 wages paid to its workers; if the firm buys the machine from another firm, it deducts the $100 purchase cost.

The $100 machine yields a $200 payoff tomorrow, on which the firm pays $40 of business cash-flow tax. With the remaining $160, the firm pays Patient her $80 principal plus an $80 return. Patient then consumes the entire $160; she makes no tax payment because investment income is exempt from the household tax.

As with the direct consumption tax considered in chapter 1, Patient bears only a 20 percent burden, the same as the burden on Impatient, and is not penalized for her decision to save. Because the defining characteristic of the consumption tax is that it does not penalize saving, this outcome confirms that the two-part VAT is a consumption tax. It is easy to see why the household component of the two-part VAT does not penalize saving, as the tax applies only to wages and exempts income from saving. The question of why the firm-level component of the two-part VAT, the business cash-flow tax, does not penalize saving is a little more complicated, with the answer turning on the fact that this tax allows investment to be expensed.

The Importance of Expensing. Although a tax on a firm's net income, such as the current corporate income tax, penalizes saving, a tax on the firm's business cash flow does not. The difference between the two approaches is the manner in which the firm deducts the costs of its business investments. Under a net income tax, the firm depreciates the cost of the investment over its useful life; under a business cash-flow tax, as under a VAT, the firm immediately deducts, or expenses, the investment costs. This subtle difference has dramatic implications.

Under a 20 percent firm-level net income tax, the firm would have been able to buy only an $80 machine with Patient's $80 of savings because there would be no tax deduction at the time of purchase. When the machine yields $160 tomorrow, the firm would deduct the full $80 cost as depreciation because the machine would then be worthless. The firm would pay $16 tax on its $80 net income, leaving only $144 to be paid over to Patient for her to consume. A 20 percent firm-level tax on net income therefore penalizes saving in the same way and to the same extent as the 20 percent individual income tax we considered in chapter 1.

The two-part VAT avoids that outcome because it taxes firms on business cash flow rather than net income, allowing firms to expense their investments up front. Under the business cash-flow tax, the firm immediately deducts the cost of the $100 machine and reaps an immediate $20 tax saving, which is why it can buy a $100 machine with only $80 of Patient's funds. When the machine delivers its $200 payoff, the entire cash inflow is taxable, so the firm pays $40 tax, leaving $160 to be paid to Patient.

Although the investment triggers a $40 tax on the firm tomorrow, it also triggers a $20 tax saving for the firm today, which is precisely the effect that saving had on Patient's tax liability under the direct consumption tax discussed in chapter 1. Here, as there, the immediate tax savings and the subsequent tax payment cancel out in present value, leaving no net tax penalty on investment.

This neutrality result applies to expensing in general. By definition, the future cash flows from a marginal investment have a present discounted value equal to the cost of the investment. Provided that the tax rate remains constant (always a prerequisite for the neutrality of consumption taxation), the tax on the marginal investment's future cash flows has the same present value as the tax savings from the up-front expensing deduction. As a result, the marginal effective tax rate on saving and investment is zero.

Is the Tax Paid by Consumers? Although the two-part VAT has an aggregate tax base equal to national consumption and does not penalize saving, readers may still resist the conclusion that it is a consumption tax. After all, it looks like a tax on workers and firms rather than a tax on consumers. In figure 2-1, the sales tax and VAT, although remitted by the firms, are universally understood to ultimately be paid by the final

consumers (Firm B's customers), with Jones ultimately taxed on $90 and Smith on $60. The two-part VAT has the same $150 aggregate tax base, but the allocation of tax payments across individuals and firms looks completely different.

The Patient-Impatient example features a similar discrepancy in the timing of payments under the two-part VAT. Today, Impatient is taxed on $100, Patient is taxed on $100, and the firm deducts $100, leaving a net aggregate tax base of $100, which equals today's aggregate consumption, all of which is done by Impatient. Tomorrow, the firm is taxed on $160 with no tax on Patient and Impatient, yielding an aggregate tax base of $160, which equals tomorrow's aggregate consumption, all of which is done by Patient. As in figure 2-1, the tax base is always equal to consumption in the aggregate, but the allocation of tax payments across individuals and firms does not line up with the allocation of consumer spending. Splitting the VAT in two appears to completely change who pays the tax, breaking any link between tax payments and consumption.

Economic theory reveals, however, that these differences in allocation are illusory. According to long-standing principles of public finance economics, the tax burden on a transaction depends on the combined tax of the parties to the transaction, not on the tax liability of either party. Moreover, the manner in which the two parties share the real economic burden of the tax does not depend on the amount of tax liability legally assigned to each party. In the Patient-Impatient example, the two-part VAT imposes zero tax on Patient's saving, just as any good consumption tax should. Yes, Patient pays tax on the $100 that she saves, but the firm to whom she lends her saving claims an offsetting $100 deduction. Moreover, the two-part VAT taxes the $160 consumed by Patient tomorrow, just as a consumption tax should. Although no tax is imposed on Patient, the full $160 is taxed to the firm that pays her the money that she consumes.

A True Consumption Tax. Appearances notwithstanding, the two-part VAT is a consumption tax. It has an aggregate tax base equal to national consumption and, assuming that the tax rate remains constant over time, it imposes a zero effective marginal tax rate on saving and therefore does not penalize saving. It also imposes a combined tax on each transaction equal to that imposed by a conventional VAT, although the legal allocation

of the payment between parties to the transaction is different than under a conventional VAT.

Recall that the combination of two key features makes the two-part VAT a consumption tax. First, the household tax applies only to wages. All returns to saving, including interest, dividends, and capital gains, are exempt from the household tax. Second, firms are allowed to immediately expense, rather than depreciate, their investments. Both of these features are crucial to the design of the tax.

The X Tax: A Progressive Two-Part VAT

The above discussion establishes that a two-part VAT with a 20 percent tax on households' wages and a 20 percent tax on business cash flow is economically equivalent to a 20 percent conventional VAT. Because the conventional VAT is far easier to explain, though, there seems to be little to recommend the two-part VAT. Indeed, if the goal is to tax all consumption at the same proportional rate, the conventional VAT is the way to go.

The purpose of splitting the VAT in two, however, is precisely to tax different components of consumption at different rates, something that cannot be done under the conventional VAT. As explained below, both incarnations of the two-part VAT—the flat tax and the X tax—tax business cash flow more heavily than wages and tax different workers' wages at different rates, an arrangement that promotes progressivity.

Under the flat tax proposed by Hall and Rabushka (1983), firms are taxed at a single flat rate—say, 25 percent—on business cash flow. Workers are taxed at that same rate on wages, but only above a substantial exemption amount. This exemption amount ensures some degree of progressivity across workers and lowers the overall tax rate on wages, relative to the rate on business cash flow. Ironically, this makes the "flat" tax more progressive, and hence less flat, than a conventional VAT or sales tax, casting additional doubt on the utility of its name.

To further promote progressivity, Bradford (1986, 81–82) proposed that the Hall-Rabushka flat tax be modified to feature a full set of graduated rates for the household wage tax. Under this approach, the tax rate on business cash flow is relatively high (as explained in chapter 3, we will use an illustrative value of 38.8 percent throughout this book), and workers

with the highest wages pay a marginal tax rate equal to that rate. But workers with lower earnings face lower rates, and those below the exemption amount continue to pay no tax. If desired, refundable tax credits can be provided to low-wage workers. Bradford (1988) referred to this modified approach as an "X tax."

Taxing higher-wage workers at higher rates clearly allows the flat tax and X tax to promote progressivity in ways that the conventional VAT does not. The other distinctive feature of the flat tax and X tax, though, is that business cash flow is taxed more heavily than wages. This is true even under the flat tax, which allows a fixed exemption amount under the wage tax but not under the business cash-flow tax. The X tax goes further, taxing all business cash flow at the top rate, a rate that applies to the wages of only the highest-paid workers. As explained below, this heavier taxation of business cash flow further promotes progressivity, because the burden of the cash-flow tax largely falls on well-off households.

Role of the Business Cash-Flow Tax. In the current form of the Patient-Impatient example, the business cash-flow tax is irrelevant, and only the 20 percent household wage tax matters. Patient would have the same $144 consumption tomorrow if the 20 percent business cash-flow tax did not exist. As previously discussed, thanks to the expensing of investment, the business cash-flow tax results in a $20 tax saving when Patient saves today and a $40 tax payment when Patient consumes her investment proceeds tomorrow. The government enjoys no net revenue gain because the $40 tax payment it collects tomorrow is the same as what it could have obtained by investing the $20 tax payment forgone today at the 100 percent marginal return available in the economy. As discussed above, this zero-present-value feature is precisely why the business cash-flow tax does not penalize saving. Indeed, there would still be no net revenue gain and no saving penalty if the cash-flow tax were imposed at a 50 or 99 percent rate, as the tax would then yield a $50 or $99 tax saving today, followed by a $100 or $198 tax tomorrow.

But the actual economy differs in important ways from this example. Under more realistic assumptions, the business cash-flow tax raises some revenue from saving, even though it still imposes no penalty on new saving on the margin. This revenue arises from two sources, existing capital that is in place when the tax is introduced and above-normal returns.

The first source of revenue is associated with the introduction of the tax. In the above example, suppose that there is no tax of any kind today and that the business cash-flow tax is unexpectedly introduced between today and tomorrow. Impatient consumes $100 today and is unaffected by the subsequent introduction of the tax. Patient saves $100 today, expecting to consume $200 tomorrow, but ultimately consumes only $160 due to the unexpected $40 tax liability.

The unexpected tax leaves Patient with only a 60 percent after-tax rate of return on her investment, which is actually lower than the 80 percent return she would have cleared under the income tax and far below the 100 percent before-tax rate of return. The problem is one of timing. If the business cash-flow tax is in place all along, Patient's decision to save gives her a $20 tax savings today, offset by a $40 tax tomorrow (all at the firm level, of course). But with the business cash-flow tax introduced in midstream, Patient gets the worst of both worlds. She pays the $40 tax tomorrow, but does not receive the $20 tax savings today because the business cash-flow tax is not in effect today to provide those savings.

So, the business cash-flow tax raises revenue from the savings already put in place before it is adopted and imposes an unexpected penalty on that saving. But this penalty applies only to savings that Patient has already done. The tax does not impose a penalty on *new* saving and therefore does not discourage future saving, unless it creates fears of future unannounced levies on savings already in place. The unexpected burden on past saving does raise fairness and other concerns, which we will discuss in chapter 8. Although most consumption tax proposals respond to these concerns by offering some transition relief, none of them, including our proposal, offer sufficiently generous relief to completely eliminate the tax on capital that is in place when the reform is introduced.

Second, some investments yield above-normal returns, also called rents or pure profits. In the above example, Patient's investment was assumed to be in a machine that yielded the 100 percent marginal rate of return. But some machines may yield a rate of return higher than the marginal machine, perhaps due to innovation or the exercise of market power. Suppose that Patient has access to a specific investment opportunity with a 120 percent return, a machine that yields $220 tomorrow. Under the business cash-flow tax, her decision to invest triggers a $44 tax payment tomorrow. If she

had not saved, the government would have collected $20 tax today, which could have been invested (at the 100 percent marginal yield available on additional investment) to yield $40. So, the government collects $4 of net revenue tomorrow, which is equal to 20 percent of the $20 above-normal return on Patient's investment.

Here, too, the business cash-flow tax appears, at first glance, to impose a penalty on this investment. After all, the tax reduces Patient's consumption by 22 percent, compared to the 20 percent reduction suffered by Impatient.

But the higher tax applies only to the above-normal returns, returns over and above the return on the marginal investment. There is no penalty on a marginal investment, one that yields a 100 percent return. And any investment that yields a before-tax return greater than the marginal return also earns an after-tax return greater than the marginal return. So long as investors are willing to buy machines that yield the marginal return of 100 percent, they must also be willing to buy any that yield more than 100 percent. The business cash-flow tax therefore does not penalize saving and investment *on the margin*. Yet, it raises revenue by taxing above-normal returns, those that exceed the required rate of return on the marginal investment.

In the presence of uncertainty, the cash-flow tax also has other effects, collecting positive tax from lucky investments and negative tax from unlucky ones. We defer a discussion of those effects, which are much less significant than they initially appear, to chapter 3.

Because the business cash-flow tax applies to savings that have already been done and to savings with above-normal returns that will continue to be done even in the face of the tax, it should not cause households to save less. Because the business cash-flow tax does not cause a change in behavior, it cannot be shifted to other people. The burden of the tax therefore falls on those who own capital at the time the tax is introduced and those who are able to invest at above-normal returns.

Because those groups are generally likely to be well-off, the heavy taxation of business cash flow under the X tax promotes progressivity. Under the X tax, therefore, high tax rates apply to high-paid workers, owners of existing wealth, and recipients of above-normal investment returns, while lower tax rates apply to lower-paid workers. This pattern makes the X tax a progressive two-part VAT.

The President's Advisory Panel on Federal Tax Reform (2005) adopted two different tax reform proposals in its final report. Although one plan would have merely reformed the income tax system, the other plan, called the Growth and Investment Tax Plan, would have largely replaced the income tax system with an X tax, featuring a 30 percent tax rate on business cash flow and the wages of the highest earners. This plan would have retained one vestige of the income tax system, a 15 percent flat rate tax on capital income. The panel considered, but did not adopt, a Progressive Consumption Tax Plan that would have completely replaced the income tax system with an X tax, featuring a 35 percent top tax rate. More recently, Hubbard (2011) urged policy makers to consider replacing the income tax with the X tax.

Comparing the X Tax to the Personal Expenditures Tax

The PET offers another way to achieve progressive consumption taxation. Under this tax system, each household files an annual tax return on which it reports income, deducts all saving (deposits into savings accounts, asset purchases, amounts lent to others, and payments made on outstanding debts), and adds all dissaving (withdrawals from savings accounts, gross proceeds of asset sales, amounts borrowed from others, and payments received on outstanding loans). The resulting measure equals the household's consumption, which is taxed at graduated rates. The direct consumption tax considered in the Patient-Impatient example in chapter 1 can be viewed as a PET.

The PET was proposed by Kaldor (1955) and extensively analyzed by Andrews (1974). The tax briefly received attention in the policy arena in 1995 when Senators Sam Nunn (D-Georgia) and Pete Domenici (R-New Mexico) introduced the Unlimited Savings Allowance (USA) plan, which would have replaced the individual and corporate income taxes with a PET, accompanied, oddly enough, by a VAT. Due to various problems in its design, the USA plan never received serious consideration in Congress. Robert Frank of Cornell University (2005, 2008) and Edward McCaffery of the University of Southern California Law School (2002) advocate the PET. Andrews (1980), Seidman and Lewis (2009), and Thuronyi (2011) propose levying a PET on high-consumption households as a supplement

to the current tax system. Landsburg (2011) also suggests consideration of a PET. A budget plan recently released by the Heritage Foundation (2011, 36–38) would replace income and payroll taxes with a PET, although the plan imposes a flat rate of 25 to 28 percent on consumer spending above an exemption amount, rather than using graduated tax rates.

Given that the X tax and the PET can each generate progressivity and serve as a complete replacement of the income tax system, which is superior? It is certainly easier to explain that the PET is a consumption tax than it is to offer the corresponding explanation for the X tax. That, along with other features, may give the PET an optical advantage. Yet, as discussed in the "Optics of the X Tax and the PET" box (page 39), some optical issues cut in favor of the X tax. In any case, we favor the X tax on balance because of the simplicity offered by its real-based nature. Of course, either the X tax or the PET would be a dramatic improvement over the income tax system.

Advantage of Real-Based X Tax. Because the key differences between the X tax and the PET arise from how the two taxes treat financial transactions, it is useful to review the relationship of real production and financial transactions. Firms and workers engage in real production by using labor and capital to produce goods and services, generating wages for workers and capital income for firms. Two sets of financial transactions determine which households ultimately receive the cash flow and income generated by the real production.

One set of financial transactions initially allocate the income and cash flow generated by production to households. Firms obtain funds from households by issuing stock and bonds, pay funds to households in the form of interest and dividends, and retain funds on behalf of stockholders. These transactions do not change the total cash flow or income generated by the firms' real production.

A second set of financial transactions, such as borrowing and lending, occur between households. These transactions further rearrange cash flow and income, but also result in zero aggregate net cash flow and income. For example, when a lending household receives interest income, the borrowing household incurs negative interest income (interest expense).

A real-based tax system tracks only the production activity of firms and workers, whereas a real-plus-financial tax system also tracks financial

transactions. Either system can measure the aggregate income and business cash flow in the economy, but only the real-plus-financial system can measure the income and consumption ultimately enjoyed by specific households. Because the real-based system does not track capital income or business cash flow to the final recipients, it can tax those items only at a flat rate at the firm level. To employ graduated rates based on a household's annual income or consumption, as the PET and the current individual income tax do, we need a real-plus-financial approach that tracks all flows to the final household recipients.

At one extreme, the real-based nature of the VAT eliminates the need for any household tax returns, but it forces all consumption to be taxed at a single flat rate. At the other extreme, the real-plus-financial nature of the PET permits graduated tax rates tied directly to annual consumer spending, but requires households to file annual tax returns reporting a wide array of financial transactions. The X tax follows an intermediate strategy, adopting the real-based approach of the VAT, but taxing wages at the household rather than the firm level. The X tax achieves much, but not all, of the simplicity of the VAT and largely matches the progressivity of the PET.

First, the X tax is almost as simple as the VAT. Although households must file tax returns, they report only their wages, the type of income that is easiest to measure. Like the current individual income tax, the household wage tax would be collected through withholding. As they do today, most households would obtain the necessary information to report their wages from their W-2 forms. Households would not report interest or other capital income and would not deduct interest expense. Few households would need to make quarterly estimated tax payments. The X tax undertakes the relatively simple task of tracking wages to their final recipient, while avoiding the far more difficult task of tracking business cash flows to their final recipients.

Second, the X tax achieves progressivity, but in a less refined manner than the PET. The X tax system taxes wages at graduated rates tied to annual wage income and imposes a high flat tax rate on business cash flow, which largely accrues to the well-off. This progressivity is not as finely calibrated as that achieved by the PET, in which graduated rates are tied directly to annual consumer spending. For example, households that are not affluent may hold a little wealth accumulated prior to the tax reform and may earn

a little in above-normal returns. Under the X tax, such households face the high flat tax rate on the business cash flow that they receive, even though this high rate is not appropriate for their economic circumstances. This outcome is avoided under the PET, which links tax rates directly to spending levels. But the PET achieves this finer calibration only by tracking all financial flows and requiring households to report all of their saving and dissaving. We view the additional refinement of the PET to not be worth the associated complexity. If a small number of disadvantaged households are adversely affected by the business cash flow tax, the best solution is to provide them with targeted relief within the X tax system.

Front-Loaded versus Back-Loaded Treatment of Saving. The difference between the treatment of financial transactions under the PET and under the household wage tax in an X tax system can be most easily understood with an analogy to the treatment of different types of tax-preferred accounts under the current tax system.

The PET treatment of financial transactions matches the current treatment of pensions and conventional IRAs, in which savings receive front-loaded tax breaks. Each household deducts inflows into these savings vehicles and pays tax on subsequent withdrawals. In contrast, the treatment of financial transactions under the household wage tax in an X tax system matches the current tax treatment of Roth IRAs, in which savings receive back-loaded tax breaks. Households do not deduct inflows and do not pay tax on withdrawals.

As economists have long known, the two approaches are equivalent for investments with marginal returns if the household remains in the same tax bracket over time. As we showed in our discussion above of the role of the cash-flow tax, the up-front deduction and the inclusion of the proceeds offset each other in present value. Because each household's financial transactions have zero expected market value, the present value of the outflows equals the value of the inflows. If the tax rate remains constant, a tax on the outflows must have a present value equal to the tax savings from deducting the inflow. As we will explain in chapter 3, this result also holds for risky investments.

Of course, the equivalence of front-loaded and back-loaded treatment breaks down if tax rates are not constant. The conventional front-loaded

approach used by the PET is more generous if the household is in a higher tax bracket when it saves than when it withdraws; the Roth back-loaded approach used by the household wage tax in an X tax system is more generous if the household is in a higher tax bracket when it withdraws than when it saves.

The issue at hand, though, is not which approach is more generous, but whether the PET's use of the front-loaded approach at the household level provides social gains that warrant the complexity of reporting savings and withdrawals on tax returns. On balance, we think not. If the household remains in the same tax bracket over time, the front-loaded approach has no net effect and financial transactions are tracked for no purpose. If the household moves between different brackets over time, the front-loaded approach actually disrupts the neutrality that could be achieved with constant-rate consumption taxation, as taxpayers are encouraged to save in high-bracket years and to withdraw savings in low-bracket years.

The advantage of using the front-loaded approach at the household level is that it achieves a finer calibration of progressivity for households that have highly variable wages but relatively smooth consumption. This advantage does not seem to warrant the complexity of tracking financial transactions, particularly because, as we will discuss in chapter 3, the X tax can partially attain this advantage by allowing households with highly variable wages to average their wages across different years.

Although the household wage tax in an X tax system adopts a Roth back-loaded approach to saving, the overall X tax system, no less than the PET, adopts the conventional front-loaded approach, with a deduction for savings and a tax on outflows. Rather than implementing the deduction and the tax at the household level as the PET does, the X tax implements them at the firm level through the business cash-flow tax as firms deduct their business investments and are taxed on the proceeds of the investments. The business cash-flow tax is simple because it is imposed at a flat rate and does not track financial flows to individual recipients.

The choice between the X tax and the PET is a close call. But for the reasons described above, we judge the X tax to offer the better combination of simplicity and progressivity. Nevertheless, the X tax poses some challenges that must be addressed before it can be accepted as a replacement for the income tax.

Challenges Facing the X Tax. The X tax faces four major difficulties. In the remainder of this book, we will present solutions to these difficulties and discuss other aspects of X tax implementation.

One problem concerns individuals who work for firms while also providing capital to the firms, such as sole proprietors and some partners and S corporation shareholders. There is no simple way to divide payments that such individuals receive from the firm into wages and business cash flow. This division is critical under the X tax because business cash flow is taxed more heavily than wages. We will discuss this issue in chapter 5.

A second problem under the X tax concerns the significant number of firms that are likely to have negative business cash flow in particular years. The neutrality of the X tax requires that each firm immediately deduct its investment outlays, something that it may be unable to do if excess deductions are not refunded in cash. We will also discuss this issue in chapter 5.

A third problem concerns the tax treatment of financial institutions, whose real activities are often mislabeled as financial transactions in the marketplace. Because the X tax is a real-based tax, it runs the risk of not taxing these transactions properly. In chapter 6, we will present a relatively simple solution that separates real and financial activities in expected market value.

A fourth problem concerns international trade. The X tax does not readily fit into the trade rules adopted by the international community, which were written with the VAT in mind. We will address this issue in chapter 7.

In other chapters, we will discuss the transition to the new tax system and the treatment of pensions and fringe benefits, transfer payments, owner-occupied housing and consumer durables, nonprofit organizations, and state and local governments.

In addressing these challenges, we often exploit the flexibility offered by consumption taxation. As explained above, we generally prefer the basic X tax design, which *includes* a firm-level business cash-flow tax that imposes zero present-value tax on marginal investments, and generally *excludes* financial transactions, which also have zero present value. But because these features have zero present value, we can, when appropriate, deviate from the basic X tax design in specific areas without untoward consequences. For example, we choose not to extend the business cash-flow tax to the nonbusiness sector, and we choose to include financial transactions in the tax base for financial institutions and for transactions between U.S. firms

and their foreign affiliates. This mixing and matching allows us to capture the advantages that the basic X tax design offers in most applications while avoiding the disadvantages that it poses in selected areas.

Conclusion

We conclude that the X tax is the best consumption tax to use for a whole-sale replacement of the income tax system. In the next chapter, we will examine the degree of progressivity that can be achieved under the X tax.

Box
OPTICS OF THE X TAX AND THE PET

The PET has an optical advantage over the X tax because it satisfies the political demand for a visible tax on households living off of capital income. Of course, no consumption tax system imposes a marginal tax on capital income from new saving; that is done only by income tax systems. But consumption taxes do tax above-normal returns and existing wealth held on the reform date. The PET makes those levies visible because house-holds report their capital income on a tax return while deducting their new saving. In contrast, the X tax imposes no household-level tax on those with capital income, while imposing a highly visible tax on households with labor income. Under the X tax, above-normal returns and existing wealth are taxed much less visibly, at the firm level through the cash-flow tax.

On the other hand, the PET faces an optical challenge with respect to the tax treatment of borrowing. In accord with income tax principles, the proceeds of borrowing are currently not taxed. In contrast, the PET taxes households on the proceeds of borrowing, but then allows the borrower to deduct all subsequent payments, principal and interest, on the loan. Although those deductions cancel out the initial tax in expected market value (if the household remains in the same tax bracket), the tax on bor-rowing is still likely to be unpopular. The X tax avoids this optical prob-lem by not tracking financial flows; although consumption by borrowers is taxed, the tax is collected at the firm level.

Also, the X tax may have an optical advantage over the PET because Americans generally prefer that business firms "remit" or "pay" part of the tax burden. Although individuals rather than firms ultimately pay taxes, the X tax's inclusion of a cash-flow tax on firms may be politically popular.

3

Maintaining Progressivity

In this chapter, we discuss potential tax rate schedules under the X tax and confirm that the X tax can largely replicate the progressivity of the current tax system. We also discuss how to assess the distributional effects of moving to the X tax, emphasizing some shortcomings of conventional distributional analysis.

Tax Rate Schedule

Tax rates under the X tax could assume a variety of levels, depending on the desired degree of progressivity and the decisions made about various details of the tax design.

The 2005 Panel's Progressive Consumption Tax Plan. As we noted in chapter 2, the Progressive Consumption Tax Plan considered, but not adopted, by the President's Advisory Panel on Federal Tax Reform (2005, 182–90) called for the replacement of the income tax system by an X tax. We look to this proposal for guidance on possible rate structures and tax credits.

The proposal featured a 35 percent tax rate on business cash flow, which also applied to taxable wages in excess of $115,000 for married couples. A 15 percent rate applied to the first $80,000 of a couple's taxable wages and a 25 percent rate to taxable wages between $80,000 and $115,000. The corresponding bracket end points for unmarried taxpayers were half of those for married couples. The end points were specified for 2006, but were to be indexed for inflation, which would make the 2012 values about 15 percent higher. The proposal had no standard deduction, but included a Family Credit and a Work Credit. The proposal also featured limited deductions for charitable contributions and mortgage interest.

FIGURE 3-1

DISTRIBUTION OF THE FEDERAL INCOME TAX BURDEN UNDER 2015 LAW
AND UNDER THE 2005 TAX PANEL'S PROGRESSIVE CONSUMPTION
TAX PLAN, BY INCOME PERCENTILE
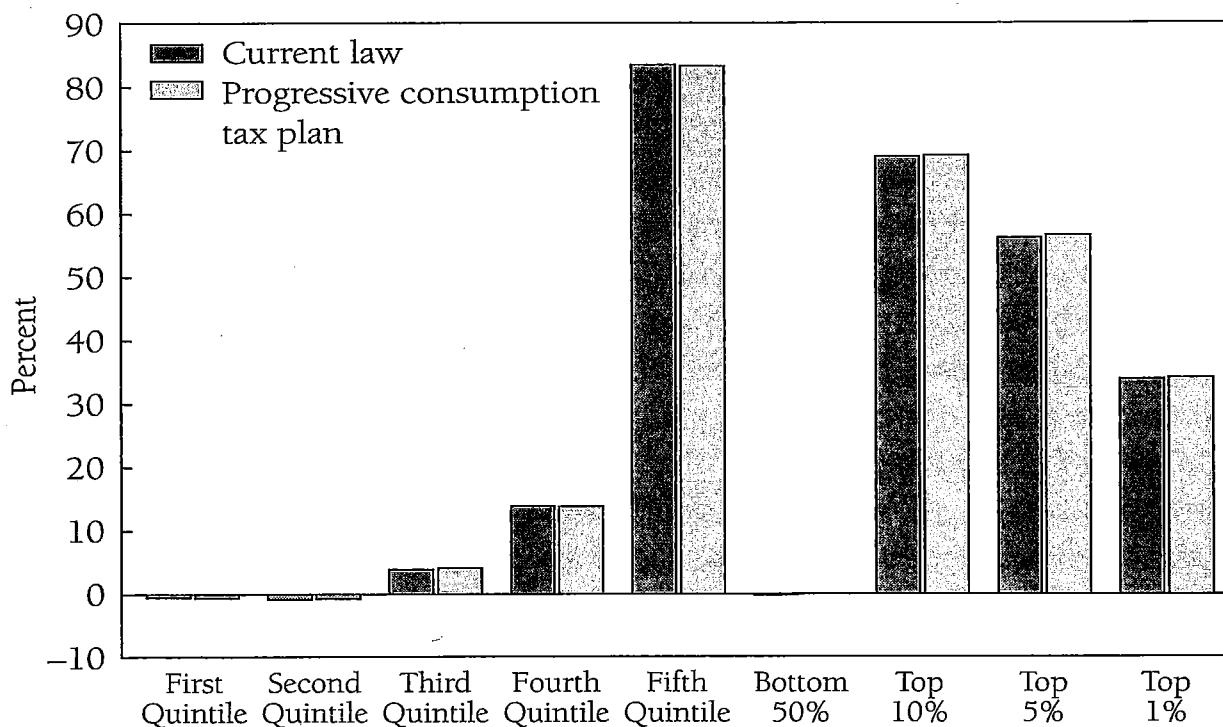
SOURCE: President's Advisory Panel on Federal Tax Reform (2005, 186).

As shown in figure 3-1, the proposal came remarkably close to replicating the distribution of the tax burden under the 2005 income tax system, as projected forward to 2015. The top quintile would have paid 83.3 percent of total federal consumption taxes under the plan, compared to 83.5 percent of total federal income taxes under the 2015 tax system. Similarly, the top 1 percent of taxpayers would have paid 34.1 percent of all federal consumption taxes under the plan, compared to 33.9 percent of all federal income taxes under the 2015 system.

Factors Affecting the Level of Tax Rates. Because consumption is smaller than income, particularly at the top of the income distribution, consumption taxes tend to require higher statutory tax rates than income taxes, holding fixed other factors. The panel's plan avoided an increase in the top

statutory tax rate by including substantial base-broadening measures that were applied primarily to higher-income taxpayers.

We do not try to specify a precise rate structure in this book, because we do not wish to predetermine the numerous factors that may affect rates, including revenue requirements, distributional goals, and the scope of tax preferences. Policy makers must decide whether the level of revenue to be replaced is the revenue raised by the current system (with or without a partial or full extension of the 2001 and 2003 tax cuts and with or without continued relief from the alternative minimum tax) or a higher revenue level designed to address the long-term fiscal imbalance. Distributional goals may also change over time. The required level of tax rates will also depend on whether tax preferences for charitable giving, homeownership, employer-provided health insurance, and other activities are preserved under the X tax, topics on which (as we will discuss in subsequent chapters) we generally reserve judgment.

Low-income tax credits, similar to the current earned income tax credit and child credit, can also be provided under the household wage tax. As under the current system, such credits can be made partially or wholly refundable. We recommend that such credits be provided. We will discuss in chapter 4 administrative challenges posed by such credits, given the absence of information about capital income on household wage tax returns.

As noted above, the panel's plan set the top tax rate on wages, and therefore the flat tax rate on business cash flow, at 35 percent. Purely for illustrative purposes, we assume that the top X tax rate on wages will also be 35 percent. As we will discuss in chapter 4, the highest wage earners are also subject to a 3.8 percent Medicare payroll tax, as of 2013, which would remain in place after our proposed tax reform. The total marginal tax rate on the wages of the top earners will therefore be 38.8 percent.[4] As we will discuss in chapter 5, it is desirable for the flat tax rate on business cash flow to match the total tax rate, including Medicare tax, on the highest wage earners, so we assume a 38.8 percent flat tax rate on business cash flow.

We emphasize again, however, that these tax rates are merely illustrative. In view of the uncertainty about the factors described above, the actual rates could vary significantly in either direction.

Under the X tax, even tax rates significantly higher than those mentioned above would have relatively benign effects on economic incentives.

This is clearly true for incentives to save and invest; as we explained in chapters 1 and 2, the effective marginal tax rate on saving and investment is zero for any level of X tax rates. A similar point holds, although not to the same extent, for work incentives. As we noted in our discussion of the trade-off fallacy in chapter 1, the incentive to work does not depend solely on how taxes affect the trade-off between leisure and current consumption; it also depends on how taxes affect the trade-off between leisure and future consumption. Because much of the wages earned by high-wage households are saved to finance future consumption, the latter trade-off is particularly important for them. That trade-off is more work-friendly under an X tax with a high statutory tax rate on wages and no subsequent tax on the saving done with those wages than it is under an income tax with a lower statutory tax rate on wages followed by substantial taxes on saving.

Wage Averaging. Households are likely to face different marginal tax rates in different years under the household wage tax in an X tax system, as they do today under the income tax. Experience suggests that Congress is likely to periodically change the tax rate schedule for households; major changes in households' tax rates have occurred roughly every four years over the past three decades, and minor changes have been more common. Also, even with a fixed tax rate schedule, households will move into different brackets as their wages fluctuate from year to year.

Variations in a household's marginal tax rate under the household wage tax in an X tax system do not disrupt the neutrality of the X tax with respect to the choice between current and future consumption. As we discussed in chapter 2, the X tax, unlike the PET, provides its deduction for saving and investment at the firm level under the business cash-flow tax. So, although neutrality between current and future consumption requires a constant tax rate, the rate that must remain constant is the tax rate on business cash flow. Because the business cash-flow tax has a single flat rate, we need not worry about firms moving between tax brackets, although we cannot preclude the possibility that Congress will change the flat rate from time to time.

Variations in the household wage tax rates under the X tax system introduce essentially the same problems as rate variations under the income tax. Tax rate variations impose a penalty on human capital investments, in which workers forgo earnings in low-bracket years early in life to increase

earnings in high-bracket years later in life. Tax rate variations also create incentives to shift labor income into low-bracket years, to shift deductions into high-bracket years, and to pursue occupations that involve smooth, rather than variable, labor earnings.

Allowing households with highly variable wages to average their wages across different years would offer a partial solution to these problems. Under such a provision, eligible households would be allowed to compute their tax liability under the assumption that their wages had been earned uniformly over a period of several years, disregarding their actual variation over time. The U.S. income tax system allowed income averaging until 1986, although the averaging provision was criticized for providing relief only to those who experienced income increases rather than income declines. In 1997, Congress restored income averaging for farmers and fishermen.

As we discussed in chapter 2, the progressivity achieved by the X tax is less finely calibrated than that achieved by the PET. Whereas household wage tax brackets under an X tax system are based on annual wages, PET brackets are based on annual consumption, which is likely to reflect a longer-term measure of well-being. Allowing households with variable wages to average their wages over several years would move the X tax toward a somewhat longer-term perspective.

Treatment of the Family. The proper tax treatment of the family is a long-standing issue in the literature on income taxation. It is well known that no tax system can satisfy progressive tax rates, equal taxation of married couples with equal incomes, and marriage neutrality. Because this issue arises under the household wage tax in an X tax system in essentially the same manner as under the income tax, the options for addressing it are similar under both systems. While the President's Advisory Panel on Federal Tax Reform set the bracket end points for joint filers at twice the level of those for single filers, an approach that avoids marriage penalties and offers extensive marriage bonuses, there is no reason why the household wage tax in an X tax system needs to follow this approach.

The options for addressing the thorny issue of classifying children as dependents of particular taxpayers are also the same under the household wage tax in an X tax system as under the income tax. The current-law tax

relief for adoption expenses can also be maintained, if desired. Because there is no household tax on capital incomes, the X tax avoids the problems the current system faces in allocating capital income among family members, including the complexity of taxing property settlements in divorces.

We now discuss three factors that contribute to the progressivity of the X tax, some of which are not properly reflected in conventional distributional analysis.

Assessing the Distributional Effects of the X Tax

We discuss the true incidence of the corporate income tax, the taxation of above-normal returns under the X tax, and the implications of assessing distributional effects based on households' lifetime incomes rather than their incomes at a point in time.

Incidence of the Corporate Income Tax. Conventional distributional analysis assumes that owners of capital bear the full economic burden of the current corporate income tax. Traditionally, the U.S. Treasury and the Congressional Budget Office have distributed the corporate income tax to owners of corporate capital based on returns received as dividends and capital gains. Treasury changed its methodology in 2011, however, and now assigns a modest portion of the corporate tax burden to labor.[5]

The assumption that owners of capital bear the full burden of the corporate income tax has been challenged by recent research suggesting that labor bears part of the burden in an open economy. How is this important to the distributional effect of replacing the current income tax with an X tax? If a substantial portion of the burden of the corporate income tax is borne by labor in the form of lower real wages, then replacing the income tax system with a consumption tax is not as regressive as conventional analysis indicates.

Economic theory indicates that the burden of a tax is borne by the least mobile factor of production. In an increasingly global economy, where capital flows freely across borders but labor does not, labor is much more likely than owners of capital to bear the burden of the corporate income tax, which can generally be avoided by investing abroad. Under this scenario, higher corporate tax rates reduce capital accumulation, which lowers labor productivity and drives down real wages.

This emerging view of the incidence of the corporate income tax has been suggested in theoretical research, including Harberger (2008) and Randolph (2006), and supported by a series of empirical papers that have considered the relationship between corporate tax rates and wages among developed nations over the past two decades. Desai, Foley, and Hines (2007) find that between 45 percent and 75 percent of the corporate tax is likely borne by labor. Other studies show that the countries that have reduced corporate tax rates the most have tended to have the largest gains in real wages. A substantial share of business taxes therefore tends to show up as lower real wages rather than as lower after-tax returns to capital.

Although the precise extent to which corporate taxes affect real wages remains unclear, current research suggests that real wages are sensitive to corporate taxes. Distributional analyses that assume owners of capital bear the full burden of the corporate income tax overstate the regressivity of shifting to consumption taxation.

Above-Normal Returns. As emphasized by Gentry and Hubbard (1997), consumption taxes do not exempt from tax the entire return to saving and investment. Instead, as we discussed in chapter 2, the business cash-flow tax raises revenue from two sources, the return from existing capital in place on the reform date and above-normal investment returns. We now turn to the distributional effects of the latter component.

When there is no uncertainty, capital income can be decomposed into two components, the normal return earned on a marginal investment, which is sometimes referred to as the opportunity cost of funds or the return to waiting, and above-normal returns. Above-normal returns include economic profits from the exercise of market power or from innovation. Revenue collected on such returns may be significant in an economy with imperfectly competitive industries and a high rate of innovation and technological change.

As shown by the Patient-Impatient example in chapter 1, a consumption tax exempts the marginal return from tax whereas an income tax does not. But as we discussed in chapter 2, above-normal returns continue to be taxed under a consumption tax, just as they are under an income tax. The expensing of investment under the business cash-flow tax generates tax savings that exactly offset, in present value, the future cash flows generated by a *marginal* investment. We showed, however, that a net tax liability

arises for investments that generate future cash flows whose present value exceeds the cost of the initial investment. In particular, future cash flows resulting from above-normal profits, such as those due to innovation or the exercise of monopoly power, are subject to tax. Compared to an income tax, a consumption tax exempts only the marginal investment return from tax.

Although this point may seem minor, it can have important implications for comparing the distributional effects of income and consumption taxes because it means that a significant portion of the return to saving and investment is taxed under both an income and a consumption tax. Whether this distinction is important depends on how large the opportunity cost of capital is in relation to total capital income and who receives this component of capital income. If this component is large and received primarily by higher-income taxpayers, then shifting to the X tax or any other consumption tax is significantly less beneficial to capital owners than it initially appears to be.

To be fair, some distributional analyses accurately account for this point. For example, the Treasury's analysis of the 2005 tax panel's consumption tax proposals appropriately allocated the burden of the business cash-flow tax to owners of capital, recognizing that this tax fell on existing capital and above-normal returns earned by owners of capital. In policy discussions, though, the myth that consumption taxes impose no burden on owners of capital is often still heard.

Estimates by Gentry and Hubbard (1997) shed light on the gap between this myth and reality. Gentry and Hubbard estimated the distribution of the tax burden associated with the current tax system and a revenue-equivalent consumption tax, first under the "traditional" assumption that a consumption tax imposes no tax on capital income and then under a "revised" assumption that the consumption tax applies to all returns except the marginal return, which they measured using the riskless interest rate. Their estimates, reproduced in table 3-1, suggest that, relative to the traditional methodology, the revised methodology, which accounts for the tax imposed on above-normal returns, shows a greater portion of the consumption tax being borne by higher income taxpayers.

As shown in the left-hand-side panel of the table, the share of the consumption tax burden paid by the top 5 percent of households ranked by income would be 30.9 percent under the revised methodology rather than 27.1 percent under the traditional methodology—a 14 percent increase.

TABLE 3-1
DISTRIBUTION OF THE TAX BURDEN BY HOUSEHOLD INCOME AND HOUSEHOLD NET WORTH

| | Household Income | | | Household Net Worth | | | |
| | | Consumption Tax Base | | | Consumption Tax Base | | |
Income Decile	Current Tax Base	Traditional Methodology	Revised Methodology	Current Tax Base	Traditional Methodology	Revised Methodology	Net Worth Decile
1	0.3%	0.4%	0.3%	2.9%	3.8%	3.5%	1
2	1.5%	1.9%	1.7%	2.6%	3.4%	3.1%	2
3	2.6%	3.3%	3.0%	4.3%	5.6%	5.1%	3
4	3.7%	4.5%	4.2%	5.2%	6.9%	6.2%	4
5	5.1%	6.3%	5.8%	5.5%	7.3%	6.7%	5
6	6.5%	7.8%	7.3%	7.5%	10.0%	9.1%	6
7	8.2%	10.0%	9.4%	7.8%	10.0%	9.2%	7
8	10.0%	12.0%	11.4%	9.9%	12.2%	11.4%	8
9	14.0%	15.8%	15.2%	12.7%	13.5%	13.3%	9
10	48.1%	38.0%	41.8%	41.6%	27.3%	32.4%	10
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	Total
Top 5%	37.5%	27.1%	30.9%	32.4%	18.6%	23.5%	Top 5%
Top 1%	21.3%	13.8%	16.3%	17.6%	8.0%	11.3%	Top 1%

SOURCE: Calculations from the 1989 Federal Reserve Survey of Consumer Finances by Gentry and Hubbard (1997).

For the top 1 percent of households, the difference is somewhat more striking, with 16.3 percent of the tax burden paid under the revised methodology rather than 13.8 percent under the traditional methodology—an 18 percent increase. Nevertheless, these are both less than under the current tax system, in which 37.5 percent of the tax burden is paid by the top 5 percent, and 21.3 percent is paid by the top 1 percent of households.

This analysis arguably overstates the point to some extent. In the presence of uncertainty, returns may be above or below the safe interest rate simply due to good or bad luck on risky investments. Because Gentry and Hubbard (1997) measure above-normal returns as the difference between the

total return and the riskless return, they treat lucky returns on risky investments as part of above-normal returns (and treat unlucky returns as negative above-normal returns). As we now explain, the tax treatment of those returns generally does not affect the well-being of investors or the government.

We mentioned in chapter 2, deferring a full discussion until now, the fact that the business cash-flow tax collects taxes on lucky investments and rebates taxes on unlucky investments. As explained in the "Zero Revenue from Taxation of Risky Returns" box (pages 51–52), the tax on risky returns does not actually raise revenue for the government or impose a burden on investors, because the tax can be undone by simply trading in the underlying risky assets. In contrast, the tax on true above-normal returns raises revenue and burdens investors precisely because it cannot be undone through additional investment, which, by definition, yields only normal marginal returns. This zero-revenue property of risky returns will prove to be important for our analysis in chapters 6, 7, and 9.

Lifetime versus Annual Incomes. Another weakness of conventional distributional analyses of consumption taxes is their focus on annual incomes. Distributional analyses that focus on a snapshot of a taxpayer's income and characteristics fail to take into account fluidity in incomes and characteristics over time. Annual income may be a misleading indicator of ability to pay.

Economists studying the impact of the life cycle on taxpayer incomes generally find that annual incomes are a poor representation of their well-being over a longer time horizon. The lowest income group, for example, includes young taxpayers just entering the workforce, older taxpayers who just left the workforce, and some wealthy taxpayers who had a very bad year, as well as those taxpayers who are persistently poor. Younger taxpayers who just entered the workforce, for example, are likely to have relatively low incomes as they continue to acquire human capital through education and job experience, but as their human capital develops, their incomes tend to rise and peak shortly before retirement. Their savings and consumption patterns follow this cycle with a period of accumulation accelerating in midlife and peaking before retirement, when dissaving begins. Conversely, the top income group includes taxpayers who unexpectedly had a very good year or who sold a business or other assets, as well as those taxpayers with persistently high incomes.

These factors and others result in substantial movement of taxpayers through the income distribution over time, as documented by numerous studies. For example, Auten and Gee (2009) find that roughly 50 percent of taxpayers in the lowest quintile are in a higher quintile ten years later and roughly 50 percent of taxpayers in the highest quintile are in a lower quintile ten years later.

The right-hand-side panel of table 3-1 tabulates tax burden by household net worth. These computations at least partially abstract from year-to-year fluctuations in household incomes and provide a somewhat broader view of the distributional effects of shifting to a consumption tax. In general, the distribution of taxes paid is more uniform when tabulated by net worth. One reason for this more even distribution is that annual fluctuations in income can affect both a household's income and tax payments and its relative position in the income distribution, but such fluctuations are less important in distributional analyses based on net worth. Again, the decrease in the fraction of taxes paid by the top 5 percent of the net worth distribution accompanying a switch to a broad-based consumption tax falls by about one-third when the consumption tax base is appropriately defined to include some components of capital income.

Conclusion

The X tax can easily employ a rate schedule that roughly matches the progressivity of the current system, particularly when it is recognized that high statutory tax rates have significantly lower disincentive effects under an X tax than under an income tax.

Conventional distributional estimates of the impact of moving to a consumption tax are inaccurate because they assume that the burden of the current corporate income tax is borne by owners of business capital, despite recent evidence that workers bear a substantial part of the burden through lower wages. Policy discussions often overlook the fact that, under a consumption tax, affluent households continue to pay tax on their above-normal returns, as well as on their existing capital holdings at the time of enactment. Finally, lifetime measures that account for the considerable movement up and down the distributional ladder over a person's life suggest that a consumption tax is less regressive than it appears to be in analyses based on annual snapshots of a taxpayer's income.

Box
ZERO REVENUE FROM TAXATION OF RISKY RETURNS

Consider, for example, a $100 investment with a risky return. If the investment is successful, which happens with 50 percent probability, it earns a 10 percent return. If the investment is unsuccessful, which happens with 50 percent probability, it loses 5 percent. The expected return on this risky investment is therefore 2.5 percent. Furthermore, assume that the return on a safe investment is 1 percent, implying that the risky investment commands a 1.5 percent risk premium.

How is this investment treated under a 20 percent flat consumption tax? In the first period, the investor expenses the investment and receives a tax deduction that yields $20 tax saving. In the second period, if the investment is successful, the investor pays tax on $110, and the government receives revenue of $22. But if the investment is unsuccessful, the investor pays tax on $95 in the second period, and the government receives revenue of $19.

Under this 20 percent consumption tax, the government loses $20 of tax revenue in the first period and receives either $22 or $19 in the second period. Although a number of methods for computing the net revenue have been used, most of them lack a valid economic foundation. For example, using a discount rate of 1 percent (the safe interest rate) and looking at each possible outcome suggests that the government collects $1.78 in present value if the investment is successful and negative $1.19 in present value if the investment is unsuccessful. Another approach, which also uses the 1 percent discount rate, averages across the two possible outcomes and computes the expected value of the revenue as $0.30.

Unfortunately, these computations are meaningless because they use an economically invalid discount rate. The safe interest rate used in the computations does not measure the price at which the government or the taxpayers can undo the effects of the taxation on risk. In reality, the tax makes zero additional revenue available to the government, beyond what it can obtain from its own (or its citizens') financial transactions. The government can obtain exactly the same second-period funds—$22 under the successful outcome and $19 under the unsuccessful outcome—by simply buying one-fifth of the underlying investment, which would cost $20 in the first period. So, $20 is the true first-period present value of the uncertain second-period revenue. Because the government loses $20

> ## Box
> ### ZERO REVENUE FROM TAXATION OF RISKY RETURNS
> ### (continued)
>
> in the first period from the expensing deduction, its net revenue on the whole transaction is exactly zero.
>
> Notice the key difference between these risky returns and the above-normal returns arising from market power or innovation that are discussed in the text. When the government taxes the latter, it gleans returns greater than it can obtain on a marginal investment and thereby reaps a genuine revenue gain. In contrast, the taxation of risky returns gives the government nothing beyond what it can already obtain in asset markets.
>
> The investor's burden in this example is the same as the government's revenue gain—zero. The investor can use his first-period $20 tax savings to buy an additional one-fifth of the risky investment, which will give him exactly the same after-tax payoff in the second period as if the tax did not exist.
>
> There is again a sharp contrast between the risky-asset case and a case involving above-normal returns from market power or innovation. Investors cannot expand their above-normal-return investments, as they have already exploited those to their maximum extent; no investment with a return greater than the marginal return will ever be left undone. The fact that there is a limit on the volume of investments that yield such returns is precisely the reason that they offer a return greater than the *marginal* return on investment; if these superior investments could be made in unlimited amounts, no inferior investments would ever be made and the return on these investments would then be the marginal return.
>
> Although consumption taxes appear to collect revenue on the returns to risky investments, these returns and the revenue raised by taxing them actually have zero value.