

FUNDAMENTAL TAX REFORM: A COMPARISON OF THREE OPTIONS

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Revised November 5, 2015

Abstract: Three prominent tax reform options can significantly reduce the tax penalty on saving and investment while maintaining a progressive federal tax system: partially replacing the income tax system with a value added tax, fully replacing the income tax system with a Bradford X tax, or fully replacing it with a personal expenditure tax. This paper compares the options' political viability and their implications for economic growth, progressivity, transitional wealth effects, business taxation, public and private transfer payments, financial intermediation, international transactions, and the non-business sector. The paper also outlines a hybrid option.

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INTRODUCTION

The projected growth of entitlement spending in upcoming decades has increased interest in the design of a better tax system. There has been interest in moving to consumption taxation, which offers potential efficiency advantages by avoiding the individual and corporate income taxes' penalties on saving and investment. However, any move to consumption taxation must address distributional concerns. The complete replacement of the income tax system with a retail sales tax or a value added tax (VAT) would be a troubling and politically problematic move away from tax progressivity.

It is possible, however, to add consumption taxation to the federal tax system while maintaining its overall progressivity. This paper examines and compares three leading options for achieving these goals. The first option would replace part of the income tax system with a VAT. The second option would completely replace the individual and corporate income taxes with a Bradford X tax, a progressive modification of the VAT. The third option would completely replace the individual and corporate income taxes with a personal expenditure tax (PET).

The paper compares the options' effects on economic efficiency and growth and the distribution of the tax burden. It also considers how each option addresses various design challenges, including the treatment of the non-business sector, the taxation of business firms, financial intermediation, and transition policy. It also examines each option's political prospects and outlines a hybrid option.

Because the VAT option would be less sweeping change than the other two options, it would generally cause fewer disruptions and could more readily handle most of the design challenges. Nevertheless, because it imposes a firm-level tax on labor, the VAT would be more disruptive than the other options in a few areas, including its monetary policy implications and its interaction with the Social Security system. The option's biggest drawback, relative to the other two options, is that it would generate smaller gains in efficiency and growth because it would replace only part of the income tax system. Because the VAT option would be a less sweeping change, it would face fewer political obstacles than the other options.

The X tax and the PET options would offer larger efficiency and growth gains, but would be more politically difficult, because neither tax is familiar to the general public. Because the X tax is harder to explain than the PET, it would probably face the most severe political difficulties. The X tax features simpler household tax returns than the PET, but also requires business tax returns and achieves progressivity in a less refined manner than the PET. The treatment of owner-occupied housing and consumer durables is slightly more difficult under the PET, but the taxation of business firms raises significant challenges under the X tax.

An attractive hybrid option may be to adopt a PET along with an X-tax-type business cash flow tax.

I. THREE REFORM OPTIONS

For present purposes, a tax is a consumption tax if its broad conceptual outline features an aggregate tax base that is either consumption or consumption plus net exports. Of course, the actual tax base may deviate from that ideal for a variety of reasons, as discussed below for each of the taxes. Any such tax has the feature that a decision to reduce consumption today and save to increase consumption tomorrow generates a reduction in today's tax base that offsets the increase in tomorrow's tax base, avoiding a systematic bias against saving. Of course, the tax might fail to achieve full consumption-saving neutrality due to variations in tax rates and other factors, as discussed below.

Consumption is equal to income minus investment. Because income is equal to wages plus capital income, consumption can also be expressed as wages plus business cash flow, where business cash flow is defined as capital income minus investment. Any consumption tax can therefore be viewed as a wage tax plus a business cash flow tax.

A new investment with above-normal returns has zero ex ante market-value of business cash flow. Investments with above-normal returns generate positive ex ante business cash flow.¹ Also, existing capital has positive future business cash flows. A tax on business cash flow is therefore a tax on above-normal returns and existing capital. In principle, such a tax can be lump sum.

A. Partial-Replacement VAT

Under a VAT, each business firm remits tax on its value added. Under the subtraction method, each firm is taxed on its sales to consumers and other firms minus its purchases from other firms. Under the credit-invoice method, each firm is taxed on its sales, but claims credit for taxes paid on its purchases, provided that it receives invoices documenting the payment of tax. There is no deduction or credit for wages.

¹ As Carroll and Viard (2012, 48-49) explain, above-normal returns are risk-adjusted returns earned by private parties that are greater than the marginal risk-adjusted return available in the economy. They emphasize (51-52) that lucky returns on risky investments are *not* above-normal returns if the risky returns would be available on a marginal investment and that taxing such risky returns does not yield revenue in ex ante market value even if the risky investment's expected return exceeds the risk-free rate.

Approximately 180 countries have VATs, generally imposed using the credit-invoice method. Because the credit-invoice and subtraction methods are equivalent if firms comply with the tax and if the tax features a uniform tax rate with no exemptions, the difference is not further considered in this paper. Although origin-based VATs are possible, actual VATs are destination-based, employing a border adjustment that imposes tax on imports and rebates tax on exports.

Because a VAT is collected at the business level and does not distinguish between wages and business cash flow, it can be viewed as an employer payroll tax plus a business cash flow tax, both imposed at the VAT rate. Each firm's value added equals its business cash flow plus the wages paid to the firm's employees.

Many recent proposals, from various ideological perspectives, call for the introduction of a VAT and the scaling back of the income tax. Burman (2008), Graetz (2008), and Gale and Harris (2013) offer such proposals. The Bipartisan Policy Center proposed a 6.5 percent VAT in its November 2010 deficit reduction plan. The Free Congress Foundation proposed a VAT with a 15 percent tax-inclusive rate as part of its Growth Code tax plan.

Policymakers and candidates have also offered VAT proposals. House Ways and Means Committee member Paul Ryan, R-Wis., proposed an 8.5 percent VAT in 2010. In 2011, Republican presidential candidate Herman Cain proposed the combination of a 9 percent VAT and a 9 percent retail sales tax. In December 2014, Rep. Ben Cardin (D-Maryland) introduced a bill calling for a VAT with a 10 percent tax-exclusive rate. In 2015, Republican presidential candidate Rand Paul proposed a VAT with a 14.5 percent tax-inclusive rate and rival candidate Ted Cruz proposed a VAT with a 16 percent tax-inclusive rate.

B. Full-Replacement X Tax

Kaldor (1955, 15) argued that "if progressive taxation were levied on an expenditure base instead of an income base it would be possible to advance towards an egalitarian society whilst improving the efficiency of operation and rate of progress of the economy." McCaffery and Hines (2010) identify progressive consumption taxation as "the last best hope for progressivity in tax." One way to achieve progressive consumption taxation is with a Bradford X tax, which is a modification of the Hall-Rabushka flat tax, which is a modification of the VAT.

Hall and Rabushka (1983; 1995) proposed bifurcating a VAT into taxes on wages and business cash flow. Households are taxed on their wages and business firms are taxed on their business cash flows. Each firm computes value added as it would under a subtraction-method VAT, but deducts its wage payments. The cash flow on which each firm is taxed plus the wages on which its workers are taxed sum to the firm's value added.

Under the Hall-Rabushka “flat tax,” firms are taxed at a single flat rate on business cash flow. Workers are taxed at that same rate on wages, but only above a substantial exemption amount. The flat tax is distributionally more attractive than the VAT for two reasons. First, the exemption offered under the wage tax provides some progressivity between high-paid and low-paid workers. Second, the exemption lowers the overall tax rate on wages relative to the rate on business cash flow; as discussed above, business cash flow consists of above-normal returns and returns to existing capital, so a tax on it tends to fall on those who are well off. Even so, replacing the current income tax system with a flat tax would significantly redistribute the tax burden downward.

To promote progressivity, Bradford (1986, 81–82) proposed modifying the flat tax to feature a full set of graduated rates on wages and possibly refundable tax credits. Business cash flow is taxed at a flat rate equal to the top wage tax rate. This approach offers further progressivity between high-paid and low-paid workers and further increases the burden on business cash flow relative to the burden on wages. Bradford referred to this tax as the X tax.²

From an administrative perspective, the flat tax/X tax looks similar to an income tax. However, its individual tax applies only to wages, not to investment income. And, its business tax applies to cash flow rather than net income, meaning that investments are expensed rather than depreciated and that the tax ignores the firm’s financial transactions, notably denying a deduction for interest expense.

The X tax has drawn some interest over the years. One of the two reform options recommended by the President’s Advisory Panel on Federal Tax Reform (2005), the Growth and Investment Tax Plan, would have largely replaced the income tax system with an X tax featuring a 30 percent top tax rate, but would have retained a 15 percent flat-rate tax on capital income. A majority of the panel supported, but the panel did not formally recommend, 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. Carroll and Viard (2012) called for an X tax, using a 38.8 percent top tax rate for illustrative purposes. Antos, Biggs, Brill, and Viard (2015) proposed an X tax with a 35 percent top rate on wages and a 37 percent business cash-flow tax rate. Hubbard (2011) and Marron (2011) tentatively suggested consideration of the X tax. In 2014, Republican presidential candidate Marco Rubio and Mike Lee proposed a reform plan that would transform the income tax system to resemble an X tax. No country has adopted the X tax.

² Because the flat tax and the X tax differ only in their rate structures, they do not logically require separate names. After Hall and Rabushka named the flat tax after its rate structure, though, Bradford’s modification of the rate structure necessitated a new name.

C. Full-Replacement PET

The PET is the other way to achieve progressive consumption taxation. Under a PET, 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, both interest and principal, made on outstanding debts), and adds all dissaving (withdrawals from savings accounts, gross proceeds of asset sales, amounts borrowed from others, and payments, both interest and principal, received on outstanding loans). The resulting measure equals the household's before-tax consumption, which is then taxed at graduated rates. To further increase progressivity, refundable tax credits can be provided to households with low consumption.

Seidman (1997, 11-16) discusses the PET's long history. Kaldor (1955, 11-12) notes that a committee of the British Parliament considered the possibility of taxing expenditures on a personal basis in 1861 and that John Stuart Mill and Arthur Cecil Pigou spoke favorably of the concept, but questioned its practicality. In the United States, as reported by Fisher (1937, 42), Rep. Ogden L. Mills introduced a bill calling for a spending tax in 1921, but no action was taken on it. Fisher (1937, 42-47) sketched the broad outlines of an "income tax" computed under PET principles, with further details provided by Fisher and Fisher (1942). As reported by Kaldor (1955, 12-13), the Treasury Department suggested a tax similar to a PET as a war finance measure in September 1942, but the Senate Finance Committee rejected it 12-0. Kaldor (1955) extensively discussed a PET.

Interest in the PET revived a few decades later, with extensive analysis by Andrews (1974) and Warren (1975). The Treasury Blueprints, U.S. Department of the Treasury (1977), outlined how to implement a PET, as did the Meade Report, Institute for Fiscal Studies (1978), in the United Kingdom. At a Brookings Institution conference, Andrews (1980), Bradford (1980), Mieszkowski (1980), Graetz (1980), and Warren (1980) examined the PET from a variety of perspectives, with Andrews focusing on a supplemental PET on high-consumption households alongside the income tax. Aaron and Galper (1985, 66-107) proposed a PET accompanied by a business cash flow tax.

The most prominent PET proposal, apparently the only one to be drafted into legislative language, was the Unlimited Savings Allowance (USA) plan, introduced as S. 722 in the 104th Congress by Senators Sam Nunn (D-Georgia) and Pete Domenici (R-New Mexico) in 1995. The bill featured a PET with a 40 percent top tax rate, accompanied by a 12 percent VAT. Alliance USA (1995) provided an extremely detailed description of its provisions and Feld (1995), Ginsburg (1995), Kaplow (1995), Merrill, Wertz, and Shah (1995), Warren (1995), Seidman

(1996), and Weidenbaum (1996) critically examined various aspects of the bill. The analyses identified several provisions that unnecessarily added to the proposal's complexity.³

Calls for a PET have become more common in recent years. McCaffery (2002; 2003; 2005), McCaffery and Hines (2010), Cranford (2005), Frank (2005; 2007; 2008a; 2008b; 2011; 2012), MacGuineas (2007), and Golub (2012) advocate the PET. Riordan (2008) calls for a PET accompanied by a VAT. Echoing Andrews (1980), Seidman and Lewis (2009), Frank (2010), and Thuronyi (2011) support a supplemental PET for high-spending taxpayers alongside the income tax. In more tentative terms, Landsburg (2011) suggests consideration of the PET. Heritage Foundation (2011) proposed a PET accompanied by a business cash-flow tax.

As discussed by Toye (1989) and Pressman (1995), two countries have adopted the PET, each of which abandoned it after a short time. In response to Kaldor's advice, India and Ceylon (now Sri Lanka) each imposed a PET as a surtax on a small number of high-spending households alongside an income tax. India's PET was in place from 1957 to 1962 and 1964 to 1966 and Ceylon's was in place from 1959 to 1963. Each country abandoned the tax due to the belief that it was too costly to administer relative to its small revenue yield.

II. PROGRESSIVITY, EFFICIENCY, AND GROWTH

A. Different Paths to Progressivity

The public and policymakers support the maintenance of tax progressivity. In 2013, the Democratic chair of the Senate Finance Committee and the Republican chair of the House Ways and Means Committee stated, "We have agreed that tax reform should result in a system that is as progressive as the current one ... low-income and middle-income Americans will pay no more taxes than they do under current law," Baucus and Camp (2013). The President's Advisory Panel (2005) also aimed for distributional neutrality.

The X tax and the PET take different approaches to achieving progressivity. It is useful to compare each to the VAT, which is not progressive.

³ For example, the bill disallowed a deduction for real estate purchases and taxed the sale proceeds net of cost basis. Although Alliance USA (1995, 1573-75) defended this treatment by claiming that real estate is not a savings asset, Seidman (1997, 73-74) rightly noted that the standard PET treatment (a deduction for purchase costs and a tax on gross sale proceeds) should apply to real estate. Siedman (1997, 92) noted that the bill also exempted municipal bond interest from tax and adopted complex rules to prevent taxpayers from claiming a deduction for saving that income. Also, see the discussion of transition relief in section III.B and the treatment of borrowing in section IX.C.

The key differences of the VAT from the PET arise from the treatment of financial transactions. The VAT is a real-based tax that tracks only the production activity of firms. The PET is a real-plus-financial tax system that also tracks financial transactions. The X tax has a design intermediate between those extremes.

The VAT's real-based approach makes household tax returns unnecessary. However, the lack of household information precludes rate graduation, an essential step toward progressivity. The VAT must impose a flat tax rate on all consumption because it does not track consumption to its final recipients. At the other extreme, the PET requires that all financial transactions be reported on household tax returns. However, obtaining that information allows the PET to tax consumer spending at graduated rates.

The X tax seeks to capture both taxes' advantages by tracking wages, but not business cash flow, to final recipients. Unlike the VAT, the X tax requires household tax returns. But, they are far simpler than PET household returns because households report only wages, not their financial transactions. The X tax therefore achieves much, but not all, of the VAT's simplicity. The X tax's more limited information set means that it, unlike the PET, cannot calibrate marginal tax rates to a household's consumer spending. But, the X tax calibrates marginal tax rates on wages to a household's wage level and taxes business cash flow, which largely accrues to those who are well off, at a high flat rate at the firm level. It thereby achieves progressivity, though in a less refined manner than the PET.

The X tax penalizes workers with volatile wages. The PET penalizes households with volatile consumption, but that may be less of a problem because households may smooth consumption. Either the X tax or the PET can adopt averaging provisions, but that is a solution for taxpayers with large short-term swings in wages or consumption, not those with longer-term fluctuations. Carroll and Viard (2012, 44) recommended that the X tax adopt averaging.

By modifying the VAT to tax wages at the household level, the X tax achieves much greater progressivity than the VAT with a slight loss of simplicity. Because the wage tax treatment is the X tax's sole underlying difference from the VAT, any advantage or disadvantage that a full-replacement X tax would have relative to a full-replacement VAT must arise, directly or indirectly, from that feature. As it turns out, however, the wage-tax feature has surprisingly widespread implications, including effects on monetary policy, the capital levy, Social Security, the taxation of business firms and cross-border transactions, and transition policy. Of course, the full-replacement X tax has further differences from a partial-replacement VAT because the income tax is eliminated.

B. Efficiency

Income taxes impose a penalty on saving (consuming later than working). Income taxation favors early consumption over late consumption and late work over early work.

If taxpayers' tax rates do not vary over time, the VAT, the X tax, and the PET impose zero tax on new investments with normal returns. The tax penalty on saving and investment is reduced if any of those taxes fully or partially replace the individual and corporate income taxes. The economic gains are greater under the two full-replacement options than under the partial-replacement-VAT option.

Because consumption is significantly smaller than income for well-to-do households, revenue and distributional neutrality may require that statutory tax rates be higher at the top than they are under the current income tax system. Of course, the relative levels of statutory tax rates also depend upon the degree of base broadening adopted under each system; statutory tax rates need not be as high if preferences for health insurance, state and local taxes, charitable contributions, and other items are reduced. Kaldor (1955, 49-50) discussed the possible need for greater rate graduation under a consumption tax and the effects of base broadening.

As Carroll and Viard (2012, 42-43) emphasize, high statutory tax rates under a consumption tax, either a PET or an X tax, do not have the damaging effects as the same statutory rates have under the income tax. Most notably, the effective marginal tax rate on saving is zero at any level of tax rates.

The impact on work incentives is also diminished. Carroll and Viard (2012, 18-19) rebut the tradeoff fallacy, which holds that a revenue and distributionally neutral shift from income to consumption taxation increases work disincentives by raising statutory tax rates. Although the statutory rate increase amplifies the disincentive to work to finance current consumption, it diminishes the disincentive to work to finance future consumption, as Siedman (1997, 135) notes. Under an income tax, a person who works to consume tomorrow pays both the wage tax and the capital income tax; the burden on working to consume tomorrow is lower under a consumption tax, where there is only a single level of tax. The net effect on work incentives from the move to consumption taxation depends on consumer preferences.

If the timing of consumption is separable from leisure and work is performed at a single date, there is no net effect on work incentives from a revenue-neutral distributionally neutral move from income taxation to consumption taxation in simple models, as explained by the sources cited by Carroll and Viard (2012, 18-19). If work is performed at multiple dates, the move to consumption taxation increases the incentive for early work and reduces the incentives for later work, correcting the income tax's bias against early work.

To be sure, high statutory tax rates can cause some real economic problems, including an increased incentive to commit some forms of tax evasion, difficulties with the treatment of negative cash flows under the X tax, and so on. The optimal implications of high statutory tax rates are considered in section IX.C.

C. Tax-Rate Fluctuations

Full neutrality requires that the consumption tax rate remains constant over time. A consumption tax penalizes saving if the tax rate is rising over time and it rewards saving if the tax rate is falling over time. Consumption taxation is more vulnerable to tax-rate fluctuations than income taxation. The relevant tax rates cannot be guaranteed to remain constant under any of the taxes, due to legislated changes in rate schedules or, under graduated-rate tax systems, due to taxpayers' movement among brackets.

First, consider consumption timing. Suppose that an individual reduces consumption by one dollar today, saves the dollar, and increases consumption by one dollar plus interest tomorrow, with no change in labor supply at either date.

- VAT: Because total value added shrinks today and expands tomorrow, the relevant rate is the VAT rate. Because the VAT is a flat-rate tax, neutrality holds unless there is a legislated rate change.
- X tax: Because business cash flow shrinks today and expands tomorrow, the relevant rate is the top tax rate, which applies to business cash flow. Because the cash-flow tax is a flat-rate tax, neutrality appears to hold unless there is a legislated rate change. However, binding limitations on firms' deductions for negative cash flows may also prevent neutrality, as discussed in section VI.A.
- PET: Because the household's consumption shrinks today and expands tomorrow, the relevant rate is the household's PET tax rate. Because the PET is a graduated-rate tax, neutrality requires that the legislated rate schedule remain unchanged *and* that the household remains in the same tax bracket.

Next, consider labor timing. Suppose that an individual increases labor supply to earn one more dollar of wages today, saves the dollar, and reduces labor supply to earn one dollar plus interest less in wages tomorrow, with no change in consumption at either date.

- VAT: Because total value added is unchanged, neutrality holds regardless of any rate changes.

- X tax: Because the household's wages shrink today and expand tomorrow, the relevant rate is the household's wage tax rate. Because the wage-tax component of the X tax is a graduated-rate tax, neutrality requires that the legislated rate schedule remain unchanged *and* that the household remains in the same tax bracket.
- PET: Because the household's consumer spending is unchanged, neutrality holds regardless of any rate changes.

It is difficult to say which tax is likely to induce greater timing distortions. Because households are likely to smooth consumption relative to wages, they may be less likely to move between the PET's consumption-based brackets than the X tax's wage-based brackets. On the other hand, consumption timing may be more sensitive to tax-rate variations than work timing. Then again, the PET's artificial tax incentive to smooth consumption has little economic cost if households would smooth consumption anyway.

The averaging discussed in subsection A would curb tax-rate fluctuations to some extent.

III. TRANSITIONAL WEALTH EFFECTS IN CLOSED ECONOMY

This section considers the three options' transitional wealth effects. As explained below, the repeal or reduction of income taxes is likely to increase the value of existing wealth, with the gains accruing to equity holders. The introduction of a consumption tax reduces the value of existing wealth by a larger amount. The incidence of the reduction varies across the options.

In this section, the economy is assumed to be closed. As discussed in section VIII.B, an origin-based X tax has sharply different transition wealth effects than the VAT and the PET in an open economy. This section also assumes that there is no non-business capital, deferring discussion of its transitional treatment to section V.C.

A. Wealth Effects of Income Tax Reduction or Repeal

As discussed by Carroll and Viard (2012, 118-20), the Johansson (1969)-Samuelson (1964) theorem establishes that income tax repeal or reduction leaves the values of existing capital unchanged when both of two conditions hold. First, an unlimited amount of new capital that substitutes perfectly for existing capital can be produced as quickly as desired at constant replacement cost and with no adjustment costs. Changes in the demand for capital then translate fully and immediately into changes in the quantity of capital as the price remains fixed at the constant replacement cost. Second, the income tax on capital is collected concurrently, with a constant ratio of tax payments to net income throughout each capital asset's lifetime.

Under these assumptions, the reduction or repeal of income taxes does not increase the value of existing capital. Instead, the increased volume of saving and investment reduces before-tax cash flows and/or drives up discount rates so that the present discounted value of after-tax cash flows remains unchanged even as income taxes are reduced or eliminated.

However, the constant-cost assumption generally does not hold in the actual economy. If income tax reduction or repeal causes more capital to be produced, the production cost of new capital is likely to rise, increasing the value of existing capital. An increase in firms' demand for capital does not instantly increase the quantity of capital with no price change; instead, quantity rises sluggishly and price also rises.

The concurrent-tax assumption also does not hold for the U.S. tax system. Business income taxes are generally back-loaded due to accelerated depreciation and up-front credits. Because taxes are a higher fraction of net income late in each asset's life, existing capital carries deferred tax liabilities and is valued below replacement cost. If the King (1974)-Auerbach (1979)-Bradford (1981) new view is partly or fully correct, then individual income taxes on dividends also create deferred tax liabilities. Reducing or repealing income taxes forgives part or all of the deferred tax liabilities, raising the value of existing capital relative to its replacement cost.

The wealth gains from income tax reduction or repeal generally accrue to equity holders rather than bondholders. Because equity holders are the firm's residual claimants, they capture the gains from the forgiveness of the firm's deferred tax liabilities and the increase in the value of its capital due to increased production with rising replacement costs. And, corporate shareholders benefit from the forgiveness of any deferred dividend taxes.

B. Capital Levy

In the absence of transition relief, consumption taxes generally impose capital levies because consumption out of existing wealth is subject to tax. It is useful to consider the normative evaluation of the capital levy before considering how the levy would be imposed under each of the reform options.

Assessing the Capital Levy

Simulation studies estimate larger long-run output gains from tax reform that impose heavier tax burdens on existing capital. The gains arise from two sources.

The first effect arises from intergenerational redistribution, as the tax on existing capital is borne by older generations alive when it is imposed and permits a lighter tax burden on subsequent

generations. The redistribution stimulates saving and increases long-run output. This effect improve social welfare if, and only if, current policy is considered to assign too few resources to future generations, relative to current generations. This redistribution could be achieved through other budgetary policies and could be offset by such policies.

The second effect is an efficiency gain because the tax on existing capital is, in principle, a lump-sum tax. Of course, the efficiency gain relies on the tax being unexpected.

These effects have led some economists to conclude that capital levies are desirable. But, Kaplow (2008), Viard (2009b), and Carroll and Viard (2012, 126-27) argue that deliberate attempts to impose unexpected taxes are antithetical to the rule of law. Economic welfare is surely higher under a government that steadfastly honors patents as a matter of principle and abhors suggestions to deviate “just this once” than it is under a government that continually searches for excuses to invalidate prior patents while persuading today’s innovators that their patents will be honored. A policy of imposing a levy on past productive activity whenever the motivation for the levy can be concealed is pernicious, particularly because that policy must itself be concealed. Viard (2009b) comments that the capital levy is truly the policy that dares not speak its name.

Moreover, because capital levies can be imposed at any time, the switch to consumption taxation does not offer a unique opportunity to impose a levy. Given that Congress can unexpectedly tax existing wealth at any time while promising never to do so again, why should it wait for the introduction of a consumption tax? It may seem that the promise not to repeat the levy is more credible if the levy is imposed during a switch to consumption taxation because such a switch can happen only once. That advantage disappears, though, if it becomes known that the tax was an opportunistic attempt to unexpectedly tax capital that has already been accumulated, because investors would then recognize that that the government is likely to make similar attempts in numerous other policy contexts.

It is not clear why a reform that lowers the marginal tax rate on new investment should tax the entire value of existing capital at the same rate that applies to above-normal returns on new investment. But it is also not clear that existing capital should escape completely unscathed, particularly as its owners benefit from the higher asset values and higher after-tax returns induced by income tax reduction or repeal. Although it is hard to identify the ideal treatment of existing capital, transition policy should adhere to announced principles that apply to other policies, including those that lower after-tax rates of return, ensuring that reform is not used as an excuse for opportunistic taxation of existing capital.

Capital Levy Under PET

I begin with the PET, whose capital levy has the simplest form and incidence. Because each household is taxed on its consumption, it faces a capital levy on the wealth it holds on the effective date. There is a negative capital levy benefiting households with debts, because interest and principal payments on the debts will be deductible. The tax rate at which the capital levy is imposed is equal to the tax rate that each household faces. The PET's impact is similar to that assumed in textbook discussions of the capital levy. Because the tax applies to all consumer spending, including spending out of existing wealth, the levy falls on the owners of existing wealth, based on their net worth.

In isolation, the PET's capital levy seems equitable because it does not depend upon the type of asset or liability that is held and does depend on the household's tax bracket. Nevertheless, the net effect of the move from income tax to the PET is more burdensome to debt holders than to equity holders because the latter benefit from the rise in the value of business capital. The issues can be clarified by applying some (purely illustrative) values to the above example.

The primary transition relief under the PET is likely to be a deduction by households of their pre-enactment income-tax basis in their asset holdings. As Seidman (1997, 101), Domenici (1994, 301), and Kaplow (1995) forcefully argue, households should deduct pre-enactment basis on a fixed schedule that does not depend upon whether or when assets are sold. The USA plan followed this simple approach for households with less than \$50,000 of old wealth (other than retirement accounts), permitting a three-year straight-line deduction of the pre-enactment basis. For households with larger assets, however, the plan allowed basis to be recovered only as assets were sold. Although Aaron and Galper (1985, 78-79) recommended that approach, it creates an artificial incentive to sell and added to the USA plan's complexity, as discussed by Seidman, Ginsburg (1995, 598), and Kaplow (1995, 1112).

Cash hoarding prior to the enactment of a PET is also a transition problem, as discussed by Seidman (1997, 106-7) and Graetz (1980, 274).

Capital Levy Under X Tax

The X tax's capital levy is dramatically different because it is imposed at the firm level through the business cash flow tax. The levy reduces the value of the firm's capital stock by a fraction equal to the flat tax rate on business cash flow. The burden falls on equity holders as the firms' residual claimants.

The X tax's capital levy is quite different from the standard textbook discussion. Although the aggregate magnitude of the levy is equal to the cash flow tax rate multiplied by aggregate wealth, the levy does not fall proportionally on all wealth. Bondholders escape the levy and equity holders effectively pay bondholders' share of the levy.

A normative comparison of the PET's and X tax's capital levies is difficult. As discussed above, the PET can be viewed as being too harsh on bondholders because they, unlike equity holders, do not benefit from the increase in the value of existing capital caused by income tax repeal. On the other hand, the X tax may appear to go too far in the other direction by placing the entire levy on equity holders. Then again, equity holders have contractually agreed to be the firm's residual claimants, so it may be appropriate that they bear the risk of unexpected tax changes, in the same way that they bear the risk of unexpected economic downturns. Because equity holders are, on average, more affluent than debt holders, the X tax's capital levy is more progressive than the PET's capital levy, a difference that should be reflected in distributional analyses of the two taxes.

The primary transition relief under the X tax is likely to be a deduction by firms of their pre-enactment depreciable basis in their capital stock. The equity holders receive the benefit of this transition relief, which is appropriate because they bear the capital levy. The transition relief should include inventories as well as fixed business capital.

As under the PET, the deduction should be claimed on a fixed schedule that does not depend on whether or when the firm sells its capital. Hall and Rabushka (1995, 78-79) suggested that pre-enactment basis be deducted on the prior-law schedule. President's Advisory Panel (2005, 173-74) proposed less generous relief, allowing 80 percent of prior-law deductions to be claimed in the first year, declining to 20 percent in the fifth year, with no subsequent deductions. Carroll and Viard (2012, 131) recommend allowing percentages of firms' pre-enactment basis in assets to be deducted over a 10-year period, with the percentages set so that the deductions have approximately the same value as current-law deductions. Antos, Biggs, Brill, and Viard (2015, 6) allow 85 percent of prior-law deductions.

Another significant issue concerns the treatment of interest on existing debt contracts. Other transition issues concern firms' unused credits and net-operating-loss carryforwards.

Another issue concerns existing tax-preferred retirement accounts. Antos, Biggs, Brill, and Viard (2015, 6 n.6) propose that existing front-loaded tax-preferred savings accounts be closed to new contributions and that withdrawals from such accounts be subject to the household X tax, but with no early-withdrawal penalties or minimum-distribution requirements. Existing Roth-type accounts would become ordinary accounts.

Capital Levy Under VAT

If the Federal Reserve does not accommodate the VAT, its capital levy has the same incidence as the X tax's capital levy. The value of business capital is reduced by a fraction equal to the VAT

rate. Debt holders and household borrowers are unaffected because they continue to receive their contractually specified interest and principal payments and face unchanged consumer prices.

As Viard (2014) and numerous others discuss, nominal wages appear to be downwardly rigid in the United States and other countries. The adoption of a tax that reduces the market-clearing level of real wages may prompt the Federal Reserve to implement a one-time increase in the consumer price level. The one-time price increase is referred to as “monetary accommodation” of the tax.

Downward nominal rigidity applies to the quoted wage that the firm pays to the worker, which is what workers generally think of as their wage rate. That wage is net of firm-level taxes on labor, including employer payroll taxes, excise taxes, retail sales taxes, and VATs, but is gross of household-level taxes on labor, including employee payroll taxes, individual income taxes, PETs, and the wage-tax component of the X tax. Accordingly, the Federal Reserve would likely accommodate the former taxes, but would have no reason to accommodate the latter taxes.

With perfect wage flexibility, employer and employee payroll taxes have the same economic effects. But, with downward rigidity of the nominal net-of-employer-payroll-tax-gross-of-employee-payroll-tax wage, the two payroll taxes may yield different nominal outcomes because the Federal Reserve may accommodate the employer tax. If it does, then the employer payroll tax yields a higher consumer price level and an unchanged after-tax nominal wage while the employee payroll tax yields an unchanged consumer price level and a lower after-tax nominal wage. Despite the divergent monetary policy response to the two taxes, they yield identical reductions in the after-tax real wage.

The VAT reduces the market-clearing real value of the quoted wage by taxing the output produced by workers; as noted above, the VAT includes an implicit employer payroll tax. Accordingly, the Fed is likely to accommodate the VAT, and other countries’ central banks have often, but not always, accommodated VATs.

Assuming that debt contracts are fixed in nominal terms, the price increase from accommodation reduces the real value of debt by the VAT rate. The incidence of the capital levy is then the same as under the PET, with all asset and liability holders facing an equal percentage burden. As with the PET, however, the net impact of the reform falls disproportionately on debt holders, because equity holders reap the gains from the income tax reduction. All of the effects are smaller because the income tax is reduced rather than repealed and because the partial-replacement VAT would have a lower interest rate than the full-replacement PET.

In contrast, the wage-tax component of the X tax is imposed at the household level, similar to the individual income tax and the employee payroll tax. Similarly, the PET taxes households on

wages as they are spent. Also, business taxes that allow a deduction for wage costs, such as the business-cash-flow component of the X tax (and the corporate income tax), do not reduce the market-clearing level of real wages and therefore face no challenge from nominal wage rigidity and require no accommodation. Accordingly, as Carroll and Viard (2012, 166-169) and Viard (2014) note, the Fed would not accommodate the X tax or PET.

IV. BASIC DESIGN ISSUES

A. Treatment of the Family

The VAT need not address the treatment of the family. The options for the treatment of the family are also similar across the X tax, the PET, and the income tax. With graduated tax rates, the familiar conflict between marriage neutrality and equal taxation of couples with equal incomes arises in each case.

However, the X tax is somewhat simpler than the PET because non-wage income and financial flows need not be allocated between spouses and property settlements in divorce. Also, the PET, like the current income tax, is likely to require a “kiddie tax” to ensure that capital income is not shifted to children who are in lower tax brackets; the USA plan included such a provision. Because the household component of the X tax does not apply to capital income, no such provision is needed.

B. Fringe Benefits and Work-Related Costs

The VAT, the X tax, the PET, and the income tax each have the option to tax all, some, or no non-savings fringe benefits at the household level. The X tax and the income tax have some additional flexibility because they can effectively impose a tax on fringe benefits at the firm level by denying or limiting the firm’s deduction for the costs of the benefits. In contrast, the PET, which has no tax on firms, can tax fringe benefits only at the household level. The USA plan imposed tax on most fringe benefits, including employer-provided health insurance.

Both the X tax and the PET can provide tax relief for work-related expenses on their household tax returns. Antos, Biggs, Brill, and Viard (2015, 4) provide a deduction for child care costs and large employee business expenses. The VAT can provide relief only by zero-rating items that are thought to be work-related; it cannot distinguish among households based on whether their circumstances suggest a stronger or weaker connection to work.

The VAT can ignore pensions. Under the PET, as households deduct contributions and pay tax on withdrawals and benefit payments. Employer contributions to pension funds are disregarded.

The treatment of pensions under the X tax is somewhat more difficult. The approach most consistent with the tax's internal logic would allow firms to deduct, and require workers to pay tax on, the market value of pension benefit accruals, but that would pose formidable valuation difficulties. Antos, Biggs, Brill, and Viard (2015, 4) recommend that employees not be taxed on pension benefits or employer contributions, but that employers be allowed to deduct only half of contributions, effectively subjecting contributions to a flat firm-level tax at half the business cash flow tax rate. Carroll and Viard (2012, 56) recommend that firms deduct contributions to pension funds and that workers pay tax on benefits and withdrawals, in line with current law (which follows consumption-tax principles).

C. Gifts, Bequests, and Other Private Transfers

Consumption taxes must apply to consumption that is financed from gifts and bequests in the same manner as other consumption. That result is readily achieved under a VAT. The question of whether to tax the consumption at the donor's or the recipient's tax bracket does not arise because a single flat rate applies to all consumption.

Under a PET, the most natural treatment is to allow donors to deduct gifts and bequests and require recipients to include them in their tax base,⁴ thereby taxing the resulting consumption at the recipient's tax rate. Surprisingly, the USA plan departed from this treatment, providing no deduction for donors and no inclusion for recipients and thereby taxing the consumption at the donor's tax rate. Seidman (1997, 87-88) recommended deduction and inclusion. Because the household component of the X tax is a wage tax, the natural treatment is to deny donors a deduction and exempt recipients from tax, thereby taxing the resulting consumption at the donor's tax rate. All X-tax proposals appear to follow that approach.

Whether the tax is collected from the donor or the recipient determines the tax rate, but does not determine the economic incidence of the tax. If tax is collected from recipients, but donors increase their gross gifts and bequests, donors bear the burden. If the tax is collected from donors, but they reduce their gross gifts or bequests, recipients bear the burden.

Seidman (1997, 58 & 60-61 & 84-88 & 114 & 138), Graetz (1980, 201), Domenici (1994, 302-03), and McCaffery and Hines (2010, 1075 n.118) warn against the double taxation that results from inclusion for recipients without a deduction for donors. However, Aaron and Galper's (1985, 68 & 75 & 95-96) proposed PET embraced that approach.

⁴ For a financial asset for which the donor has already claimed a purchase deduction, no further deduction is necessary; similarly, the recipient need not separately include the receipt of the asset, but includes its future income as it arises.

If concerns about wealth concentration are thought to support double taxation of large gifts and bequests, that should be done through an estate and gift tax. Many proposals for a partial-replacement VAT would preserve the estate and gift tax, but the proposals by the Free Congress Foundation and Senators Paul and Cruz would repeal it. Many PET proposals, including the USA bill, would preserve the estate and gift tax, but Heritage Foundation (2011) would repeal it. Most X-tax proposals, including Carroll and Viard (2012, 17) and Antos, Biggs, Brill, and Viard (2015, 3), would repeal the estate and gift tax.

Charitable Contributions

One type of gift is likely to receive favorable treatment. Under the current income tax, gifts to charitable 501(c)(3) organizations are deducted by the donor and excluded by the recipient, escaping tax on both ends. That treatment can be continued under the PET, if desired. As Carroll and Viard (2012, 60-61) note, however, a tax preference for charitable contributions under the X tax would need to be structured as a refundable tax credit, in order to extend the incentive to investors with little or no wage income. They note (181-82 n.8) a potential constitutional difficulty; if cash payments under a refundable tax credit are viewed as similar to direct government spending, a credit for contributions to religious organizations may be held to violate the establishment clause of the First Amendment.

Compulsory Private Transfers

The natural treatment of compulsory private transfer payments, such as child support and alimony, is the same as that for gifts and bequests. The PET should provide a deduction for payers and require inclusion by recipients, taxing the resulting consumption at the recipient's tax rate. The USA plan followed that approach. The X tax should provide no deduction to payers and no inclusion by recipients, taxing the resulting consumption at the payer's rate. Carroll and Viard (2012, 60) and Antos, Biggs, Brill, and Viard (2015, 4) followed that approach. Either approach is superior to the current income tax's approach, which uses no-deduction-and-no-inclusion for child support and deduction-and-inclusion for alimony, requiring the tax system to classify hybrid payments ordered by state family courts.

As with gifts and bequests, the incidence of the tax depends on whether and how the real value of the transfer responds to the tax. Because child support and alimony payments are usually fixed in nominal terms with no automatic inflation adjustment, their real value falls if a VAT is adopted and the Federal Reserve accommodates it, unless state family courts adopt offsetting discretionary increases in the nominal payments.

D. Public Transfer Payments

Taxation of Payments under X Tax and VAT

Under the X tax, the natural treatment of public transfer payments is exemption. Carroll and Viard (2012, 60) recommended exemption of all public transfer payments, but President's Advisory Panel (2005, 87-89) proposed partial taxation of Social Security benefits and Antos, Biggs, Brill, and Viard (2015, 4) proposed full taxation of Social Security and unemployment insurance (UI) benefits.

Under the PET, the natural treatment of public transfer payments is inclusion. However, exemption of means-based transfer payments is a sensible simplification measure because most of the recipients would be too poor to owe tax in any event. The USA plan provided for partial taxation of Social Security benefits. Seidman (1997, 94) urged that Social Security and UI benefits be taxed under a PET, but his sample tax return (71) listed only Social Security benefits as taxable.

Social Security and Other Transfer Payments Under the VAT

Whether recipients of public transfer payments bear a burden under a VAT depends on how and whether the real value of the transfer payments responds to the VAT. Many transfer payment recipients bear no burden from a VAT. Notably, as Viard (2015b) emphasizes, current Social Security recipients bear little or no burden, because the VAT has little or no effect on their real benefits. If the Federal Reserve does not accommodate the VAT, nominal benefits and prices are unchanged; if the Fed accommodates, prices rise, but the program's annual cost-of-living adjustment increases nominal benefits (with a short lag) to offset the price increase.

However, the VAT reduces Social Security benefits for retirees who turn 60 in or after the year in which the VAT takes effect. As Toder, Nunns, and Rosenberg (2011), Carroll and Viard (2012, 172-74), and Viard (2015b) explain, the benefit formula makes each annual cohort's real Social Security benefits proportional to the real value of the Social Security Administration's National Average Wage Index in the year that the cohort attains age 60. The definition of the wage used to construct that index and the wage on which payroll taxes are imposed is the same as the definition of the wage that exhibits downward nominal rigidity; it is net of VAT and other firm-level labor taxes, but gross of household-level labor taxes. As discussed in section III.B, the VAT reduces the real value of this wage, regardless of whether the Federal Reserve accommodates the tax. Accordingly, real benefits for these future retirees are reduced. The reduction in the real wage also causes a reduction in real payroll tax revenue. Because the revenue reduction begins immediately, but the benefit reduction applies only to future retirees,

the net effect is to reduce the Social Security trust fund's financial outlook. Viard (2015b) recommends that any adoption of a VAT be accompanied by measures to offset these effects.

The VAT similarly reduces real UI benefits for some recipients because UI benefits are partly linked to wages. As with future retirees' Social Security benefits, this result holds whether or not the Federal Reserve accommodates. A few transfer payments, notably Temporary Assistance to Needy Families (TANF), are fixed in nominal terms with no automatic inflation adjustment. If the Fed does not accommodate, real benefits are unchanged; if the Fed accommodates, real benefits fall unless state legislatures choose to make offsetting increases in nominal benefits.

Administration of Means Tests

Means tests are employed by many public transfer programs, including Medicaid, TANF, food stamps, Supplemental Security Income (SSI), subsidized Medicare Parts B and D premiums, the refundable tax credits for health insurance purchased on state and federal exchanges, and housing assistance. These means tests generally rely on a mixture of labor income, capital income, and assets to determine eligibility and benefit amounts. The income information is often verified from income tax returns. That poses no problem under a partial-replacement VAT because the income tax system remains in place. However, the full-replacement options must confront this issue, which, as Steuerle (2005) notes, many consumption tax advocates have overlooked.

The PET faces little or no difficulty because its household tax returns include much of the same information as today's income tax returns, although they do not distinguish between interest and principal or between capital gain and return of cost basis. Because PET returns also include information on saving flows, the PET has the flexibility to accommodate either income-based or consumption-based means tests.

Although consumption, unlike income, is a neutral tax base when marginal tax rates are constant over time, consumption-based means tests may be less neutral than income-based means tests. As Carroll and Viard (2012, 62-64) observe, a program's means test imposes positive marginal tax rates on households in the years that they are on the program and zero marginal tax rates in other years. A consumption-based means test therefore gives households an incentive to reduce consumption in selected years to qualify for the program. Because income taxation is less vulnerable to tax rate changes than consumption taxation, income may provide a better basis than consumption for means testing in programs that households tend to be on for only brief periods of time.

Therefore, although the PET can accommodate consumption-based means tests, income-based tests should be maintained. Yin (1995, 471-74) takes that view, but Seidman (1997, 63) suggests a consumption-based means test for Medicare. The USA plan did not change any means tests.

The X tax faces significant difficulties in this area. Because household X tax returns report only wages, they lack the information required to implement income-based means tests (or consumption-based tests). Carroll and Viard (2012, 64) propose maintaining income-based means tests for most transfer payment programs, but acknowledge that the programs may face greater enforcement problems because capital income information cannot be verified from household tax returns. A small part of the X tax's simplicity gains from requiring less information on tax returns may be offset by complications for means-tested transfer programs.

For some means-tested programs for the elderly, benefits can be based on lifetime wages, as computed from Social Security records. As explained above, the Social Security system pays higher benefits, relative to taxes, to workers with low lifetime wages. Basing benefits on lifetime wages does not penalize saving, although, like any other means test, it penalizes work. Adopting a suggestion by Steuerle (1997), Carroll and Viard (2012, 63-64) recommend basing the means tests for Medicare Part B and D premium subsidies on lifetime wages, rather than current income. That change would be desirable under the X tax, the PET, or the current income tax.

But, some means-tested programs for the elderly should not base benefits on lifetime wages. As Carroll and Viard (2012, 63) emphasize, individuals with high lifetime wages who, for whatever reason, fail to save, must be protected from destitution, although that commitment prevents the attainment of full neutrality with respect to the consumption-saving decision. Accordingly, the Medicaid and SSI means tests must continue to be based on current income. Retirees who had high lifetime earnings (and therefore receive unfavorable treatment from Social Security and, under the proposal outlined above, from Medicare Parts B and D), but who failed to save, can turn to Medicaid and SSI to avoid destitution.

V. THE NON-BUSINESS SECTOR

A. Owner-Occupied Housing and Consumer Durables

A tax system that followed income-tax principles would have to measure and tax imputed rent, as it taxes other investment returns. A consumption tax could also measure and tax imputed rent, while allowing a deduction for home and durable purchases. Unlike an income tax, however, a consumption tax can adopt a simpler method that is economically equivalent.

A consumption tax can use the prepayment method, which ignores imputed rents and treats purchases (and maintenance) of homes and durables as consumption and sales as negative consumption. The prepayment method results in a zero expected effective tax rate on new homes

and durables because the purchase price equals the present value of the expected imputed rents from the purchase date to the sale date plus the present value of the expected sale price.

The prepayment method is broadly similar to the current income tax system's treatment of housing and durables, in which these assets are purchased with after-tax dollars and there is no tax on the imputed rent or on most sales.⁵ The current tax system effectively applies consumption-tax treatment to houses and durables, avoiding the complexity that would arise from income-tax treatment.

The prepayment method is very easy to apply under a VAT or X tax. Although the method poses timing complications under the PET, they can be addressed relatively easily. The PET also faces possible political pressure to impose an unwarranted tax on capital gains on owner-occupied homes.

Consider an economy in which the interest rate on savings and mortgages and the rate of return on owner-occupied housing is 5 percent per year. Initially suppose that a house with a constant value of \$100,000 is rented at a constant \$5,000 rent to a family.

Now, suppose that the following events occur:

- At the beginning of a ten-year period, the family buys the house from the landlord for \$100,000 by drawing down its financial assets to make a \$20,000 down payment and taking out an \$80,000 seller-financed mortgage. The landlord increases her financial assets by \$20,000.
- In each year of the ten-year period, the family receives \$1,000 less interest income because it has \$20,000 less of financial assets, pays \$4,000 interest on its mortgage (making no repayments of principal), and enjoys \$5,000 of imputed rent. The landlord receives \$1,000 of interest income on the \$20,000 of financial assets and receives \$4,000 interest on the mortgage loan.
- At the end of the ten-year period, the family sells the house back to the landlord for \$100,000, retires the \$80,000 mortgage, and restores \$20,000 to its financial assets. The landlord reduces her financial assets by \$20,000 to repurchase the home.

The family consumes \$5,000 of housing services per year under each scenario. Because the rent payments under the rental scenario equal the interest expense and loss of interest income under the ownership scenario, the family's other consumption is also the same across the two scenarios.

⁵ As Carroll and Viard (2012, 139) note, the prepayment method is actually a little simpler than the current tax system because it has no casualty loss deduction and no taxation of capital gains on home resales.

The landlord's consumption is also the same because the interest income on the mortgage and her additional financial assets replaces her rental income.

VAT and X Tax

Under a VAT or X tax, the prepayment method is implemented by taxing the initial sale of houses and durables. The landlord's tax base under the VAT (or the sum of the landlord's tax base plus her employees' tax bases under the X tax) rise by \$100,000 from the home sale at the beginning of the period, falls by \$5,000 per year throughout the period because rent is no longer collected, and falls by \$100,000 at the end of the period reflecting the business purchase of the home. The present values of the changes sum to zero.

PET

If the prepayment method is employed in its pure form under the PET, home purchases and sales make the tax base highly volatile. A family buying a house cannot deduct the purchase cost because the purchase is treated as a form of consumption, but the family must add to its tax base any asset draw-downs and borrowing for the purchase. Conversely, a family that sells a house is not taxed on the sale, which is treated as negative consumption, but it deducts any assets purchased or debt retired with the sale proceeds. Families also deduct mortgage payments, both principal and interest, as they do payments on any other loans. The tax base can be very large in the year of purchase and can be negative in the year of sale.

Under the pure prepayment method, the family's tax base is increased by \$100,000 at the beginning of the ten-year period (because the household borrows \$80,000 and draws down \$20,000 of assets), reduced by \$5,000 per year throughout the ten-year period (because the household has \$1,000 less interest income and makes \$4,000 of mortgage payments), and reduced by \$100,000 at the end of the period (because the household repays \$80,000 of debt and buys \$20,000 of financial assets). The household's tax-base changes are the same as those that occur in the business tax base under the VAT and X tax, as outlined above.

Under the PET, however, the tax base volatility may move the family into different tax brackets, disrupting the tax-rate constancy required for the neutrality of consumption taxation. There may also be a perceived liquidity problem associated with the large up-front tax payment when the home is purchased, although a family that borrows to buy the house should also be able to borrow to pay the tax. Finally, there may be an optical problem associated with the wide swings in tax payments.

Fortunately, these timing complications can be addressed relatively easily. Andrews (1974, 1154-55), Graetz (1980, 197), Mieszkowski (1980, 190), Aaron and Galper (1985, 91), and

Seidman (1997, 79-80, 83) proposed that the PET ignore mortgage debt, so that there is no inclusion of the borrowing and no deduction for interest and principal payments. The only tax consequences of purchasing, owning, and selling a home are then the inclusion of the down payment, the tax reduction arising because returns are not earned on the funds used for the down payment, and the deduction for the investment of the cash portion of the sale proceeds (the portion not used to retire the mortgage). In the example, the effect of the house ownership on the tax base is a \$20,000 increase at the beginning of the period, a \$1,000 per year reduction throughout the period, and a \$20,000 reduction at the end. The changes, which still have a zero present discounted value, are five times smaller.

To further diminish tax base volatility, Aaron and Galper recommended that down payments be taxed over a ten-year period; the effect of the house ownership on the tax base is then a \$1,000 per year increase throughout the period (reflecting the \$2,000 per year inclusion of the down payment minus the \$1,000 interest income reduction) and a \$20,000 reduction at the end. The tax base changes have a present discounted value of negative \$4,261, reflecting the benefits of the interest-free tax deferral on the down payment. The fluctuations are far more modest.

Carroll and Viard (2012, 154-55) argue that capital gains on homes should not be taxed under the prepayment method. If homeowners earn only a normal rate of return and there is no uncertainty, because the prepayment method already taxes all housing services and no additional tax is appropriate. For example, if the normal rate of return is 5 percent per year and a home's imputed rent is \$10,000 today and rises 1 percent per year, then the home sells for \$250,000 today and its price rises by 1 percent per year. Each year, the homeowner receives imputed rent equal to 4 percent of the home value and experiences a 1 percent capital gain, thereby earning the 5 percent normal return. Taxing the original \$250,000 sale price as consumption is sufficient because it equals the present value of the future imputed rents. Any additional tax overtaxes the imputed rents and violates the neutrality of consumption taxation.

In the actual economy, some homeowners may earn lucky returns on homes. Although a tax on capital gains at the time of sale might seem like a good way to tax the lucky returns, that approach would create serious problems. However, there is no way to accurately measure the size of the lucky returns without measuring imputed rents. Also, if lucky returns are to be taxed, neutrality requires that there be some offsetting relief for unlucky returns, which would be difficult to administer. Realization-based capital gains tax also creates a lock-in effect, disrupting efficient allocation of the housing stock and impeding mobility. A gains tax also requires that home improvement costs be tracked and capitalized.

Proposals to tax capital gains on homes have not been made for the X tax, but they have been common for the PET. The USA plan taxed these capital gains. Graetz (1980, 197) and Seidman (1997, 81-82) suggested that capital gains on homes and durables be taxed.

B. Governments and Nonprofit Organizations

The appropriate treatment of non-business entities (the federal, state, local, and tribal governments and nonprofit organizations) is clearest under the X tax. That treatment then clarifies the appropriate treatment under the other taxes.

Under the X tax, non-business entities should be exempt from the business cash flow tax on the production of goods and services that they do not sell at market value, because there is no way to accurately value those goods and services. Carroll and Viard (2012, 148) recommend that these entities' commercial enterprises also be exempt to avoid the need to separate the enterprises from the entities' other operations and, as discussed in subsection C, to avoid imposing a capital levy on these entities.

Employees of non-business entities should be subject to the household wage tax on the same terms as other workers. This policy would resemble current law, as those employees pay the same individual income taxes as other workers. As Carroll and Viard (2012, 146-147) explain, exempting the employees from the wage tax would artificially lower hiring costs for state, local, and tribal governments and non-profits relative to costs in the business sector; it would favor in-house production by these entities relative to contracting production out to businesses. And, because the wage tax has graduated rates, an exemption would artificially draw high-bracket workers into government and non-profit employment.

A VAT combines the two components of the X tax, but with the wage tax moved to the employer level and imposed at the same flat rate as the cash flow tax. Based on the above analysis for the X tax, the non-business entities should be subject only to the wage-tax component of the VAT. As Viard (2012) and Carroll and Viard (2012, 145-48) explain, rather than paying VAT, the non-business entities should pay an employer payroll tax at the VAT rate. The proposals by Senators Paul and Cruz include such a tax.

Unfortunately, the employer payroll tax has drawn strong objections by Graetz (2008, 187–88) and others, who view it as a special burden on non-business employers. In reality, the payroll tax would restore neutrality by eliminating the disincentive to contracting that would otherwise arise from the imposition of VAT on private businesses.⁶ The absence of such a payroll tax would be a significant shortcoming of a VAT.

⁶ It makes no economic difference whether or not a similar payroll tax is imposed on the federal government, as the government would pay the tax to itself. Carroll and Viard (2012, 172) note that the federal government's recorded outlays currently include gross-of-individual income-tax wage payments to its employees and its recorded receipts currently include the income taxes collected on those employees' wages. Imposing the payroll tax, with offsetting inclusions in both outlays and receipts, would therefore maintain continuity in budgetary accounting.

C. Transitional Wealth Effects in Non-Business Sector

The prepayment method spares existing owner-occupied homes and consumer durables from the capital levy discussed in section III.B. The method treats the consumption from those assets as having already taken place; the future imputed rents are not subject to VAT, the X tax's business cash flow tax, or PET. On balance, sparing homeowners from the capital levy seems appropriate. They are less affluent, on average, than the business equity holders who bear the capital levy under the X tax or the general holders of net worth who bear it under the PET or an accommodated VAT. And, as discussed above, most proposals would provide transition relief for those groups.

Furthermore, tax reform is likely to reduce the demand for owner-occupied homes and durables at the same time that it increases the demand for business capital, because the latter will lose its tax-favored status. If the constant-cost assumption does not hold, the replacement cost, and hence the value, of existing homes and durables will fall even as the replacement cost of existing business capital rises. For homes and durables, imposing a capital levy would amplify a decline in before-tax values, not offset a rise in before-tax valuation.

The decision not to tax the cash flow of non-business entities also exempts their initial capital from the capital levy. It would make little sense for the federal government to impose a capital levy on state, local, and tribal governments. And, a capital levy on non-profit institutions seems unappealing.

As Carroll and Viard (2012, 148-151) discuss, rules must be adopted to prevent capital from migrating to the non-business sector after the reform is announced and before it takes effect. Non-arms-length movement of capital after the reform is in effect must also be prevented.

VI. BUSINESS TAXATION

The X tax faces two potential difficulties in its treatment of business firms. The PET avoids these problems because it has no separate tax on firms and, as explained below, the VAT also avoids them.

A. Negative Business Cash Flows

The X tax must also address the treatment of firms with negative business cash flows. The cash-flow tax imposes a zero effective marginal tax rate on a marginal new investment only if the firm's expensing deduction provides tax savings equal in present value to the taxes imposed on

the investment's future cash flows. Problems arise if firms with negative cash flows are not accorded refundability or equally generous treatment. With no tax relief for negative cash flows, a firm that is in negative-cash-flow status when making an investment and positive-cash-flow status when it receives the investment's payoffs faces a positive effective marginal tax rate.

Unfortunately, a significant number of firms may have negative cash flows in any given year. Moreover, because the X tax taxes cash flows at the firm level and does not flow them through to the owners, it offers no mechanism for an individual who owns equity in two firms to deduct negative cash flows from one firm against positive cash flows from the other. In contrast, the current income tax system allows owners of flow-through firms to net losses from one firm against gains from other firms.

Allowing negative tax on negative cash flows to be refunded in cash is a potential solution, but it may facilitate abuse and is politically unpopular. Income tax systems typically limit tax relief for losses to deter taxpayers from overstating losses, either by committing fraud, incurring hobby losses, or exploiting tax shelters or rules that allow artificial losses to be reported for tax purposes. Also, direct cash payments to firms with losses may be perceived as "corporate welfare." That objection proved fatal to the safe-harbor leasing arrangement sanctioned by the 1981 tax law, which effectively enabled firms to sell their loss deductions to other firms.

Carroll and Viard (2012, 80) recommended five to ten years of carryback and unlimited carryforward with interest; they noted that Congress has allowed five-year carryback of certain farming losses and losses during recent economic downturns and ten-year carryback of product liability losses, although it has never allowed interest on carryforwards. Hall and Rabushka (1995, 144-45) and President's Advisory Panel (2005, 166) recommended unlimited carryforward with interest, as did Aaron and Galper (1985, 82-83) for the cash-flow tax they proposed to accompany their PET. Carryback and carryforward are more politically acceptable than refundability because they are less likely to be perceived as corporate welfare; firms are viewed as recovering their past tax payments or avoiding future taxes rather than receiving outright grants. Moreover, carryback and carryforward provide relief only to firms with past or future positive cash flow, who may be less likely to report spurious negative cash flows.

Extended carryback and unlimited carryforward with interest should result in effective tax rates of zero for many firms, but the effective tax rate on new investment would be positive for firms that face a risk of going out of business before the carryforwards can be used.

The VAT largely avoids this problem because negative value added is much less common than negative business cash flow. Some countries provide at least limited refundability for negative value added.

B. Distinguishing Wages from Business Cash Flow

The X tax must distinguish wages from business cash flow. Except for workers in the top bracket, wages are taxed more favorably than business cash flow due to the graduated tax rates. Owners who work for closely held firms have an incentive to overstate their wages if they are not in the top bracket and it may be difficult to detect and correct such overstatements.

A related complication arises for C corporations under the current income tax system. The capital income generated by such firms face double income taxation (although at preferential rates at the household level) while wages face income tax only at the household level (although they are also subject to payroll tax). To prevent corporate income tax avoidance, the IRS seeks to limit wage deductions to a reasonable level.

In one critical respect, the problem is less severe under the X tax than under the current income tax. For owners in the top bracket, it makes no difference whether payments are classified as wages or business cash flow.

In another critical respect, though, the problem is considerably more severe under the X tax than under the income tax. Under the X tax, the problem arises for flow-through firms as well as C corporations. Under the current income tax, in contrast, the problem does not arise for flow-through firms; the distinction between labor and capital generally does not matter for income tax purposes because the owners are taxed at individual rates on both types of income. For general partners, neutrality carries over to the payroll and self-employment taxes, which also apply to both types of income. However, limited partners and S corporation shareholders are subject to payroll tax on their labor income but not on their capital income, actually creating a small incentive to understate wages.⁷

Carroll and Viard (2012, 73-74) seek to solve the problem by fiat, recommending that firms be required to limit wage payments to owners to “reasonable compensation.” The self-employment tax would be abolished, with payroll tax applying to the reasonable compensation paid by firms. Their acknowledgement that “there may be some difficulties in applying the above rules” understates the problem. It is simply not realistic to think that reasonable compensation levels can be set for the vast number of firms in the economy.

Carroll and Viard provide a special rule for sole proprietorships, allowing them to treat all of their cash flow as wages. Antos, Biggs, Brill, and Viard (2015, 5) keep this rule and also allow other owners who worked more than 500 hours during the year for the firm to treat all payments

⁷ To prevent payroll tax avoidance, the IRS requires that owners of S corporations pay themselves a reasonable level of wages.

from the firm as wages. Owners, other than sole proprietors, who work less than 500 hours would receive wage-tax treatment only for payments equal to reasonable compensation for his or her labor. That approach may still be problematic because it relies on reasonable-compensation rules for some owners. It also relies on measuring hours worked and has a cliff effect when work falls below 500 hours, which is also true for some taxpayers under the current passive-loss rules.

In general, it is not crucial that wages and cash flow be “correctly” identified. Doing so would minimize the distortion between arrangements in which the owners and the worker are the same person and arrangements in which they are different people, but that distortion may not be particularly important. The primary reason to distinguish the two types of payments is to allow wages, which tend to go to people who are less well off, to be treated more leniently than business cash flow. If a person is performing substantial work, it is reasonable to give them the benefit of this arrangement; if the person’s total wages are high, they will move into the top bracket anyway.

The VAT avoids these problems because it applies the same flat tax rate to wages and business cash flow.

VII. FINANCIAL INTERMEDIATION

A. Disguised Charges for Financial Services

Consider the following example, taken from Carroll and Viard (2012, 83-86). Suppose that safe assets that provide no financial services, such as Treasury bills pay 5 percent interest. A depositor with a \$1,000 checking account will not receive the \$50 net return that she could have received by holding Treasury bills because she must pay for banking services, such as check processing and record keeping. If the services cost \$30 per year, the bank must charge the depositor these costs, allowing her to clear only \$20 per year on the account.

The bank could pay a 5 percent interest rate and charge a \$30 explicit fee. Alternatively, the bank could pay a 2 percent interest rate and charge no explicit fee. Or the bank could use a mixture of the two approaches, perhaps a 3 percent interest rate and a \$10 explicit fee. In a no-tax world, the choice between these methods might turn on a variety of considerations. Economic efficiency might be promoted by charging fees closely tied to marginal costs; for example, it may be efficient for check-processing costs to be recovered through a fee based on the number of checks written, rather than through an interest income reduction linked to the account balance. On the other hand, administrative savings might be achieved by simply reducing the interest rate rather than administering a whole set of fees.

A similar process occurs on the other side of the ledger. Suppose the bank makes a \$1,000 loan with no default risk and performs \$10 of services for the borrower. The bank can charge a 5 percent interest rate and a \$10 fee, a 6 percent interest rate and no fee, and so on.

Many other financial institutions also provide services for which they do not charge explicit fees. For example, insurance companies often cover the costs of such services by charging premiums in excess of benefit payments and brokers often recover the costs of their services from the bid-ask spread.

B. Treatment Under VAT and X Tax

Neutral Tax Treatment

In a world with income or consumption taxes, proper tax policy requires that true interest income and expense (the payment for the use of money) be treated differently from the costs of banking services. In the example, the true interest rate on both the deposit and the loan is 5 percent, regardless of the quoted interest rate, and the true costs of the financial services are \$30 for the depositor and \$10 for the borrower, regardless of the explicit fees.

Assume that the bank's \$40 costs of providing banking services consist of \$20 wage payments to bank workers and the purchase of \$20 of supplies from another firm and that the supply firm pays its \$20 of receipts to its workers in wages. For simplicity, the bank and the supply firm use no capital and have no business cash flow.

The treatment of this transaction under a conceptually correct income tax, VAT, and X tax is shown (in italics) in the first, third, and fifth columns of the table, under the assumption that the depositor and the borrower are households. In each case, the \$40 of financial services is taxed and there is no net tax on the borrower's payment of true interest to the depositor. Under a conceptually correct income tax, savers are taxed on interest income and borrowers deduct interest expense, so taxable income is \$50 for the depositor and negative \$50 for the borrower. The workers are taxed on their wages. The firms have no tax liability because their sales receipts are offset by wage payments to their workers.

Because the VAT is real-based, it disregards the true interest income and expense. The bank and the supply firm are taxed on their value added. The X tax is similar to the VAT, except that the wage component of each firm's value added, which is the only component in this example, is taxed to the workers. All three tax systems readily achieve the correct treatment if the bank applies the 5 percent market interest rate to both the checking account and the loan and charges explicit fees for its services.

Taxation of Bank Transaction under Various Tax Systems

	<i>Correct Income Tax</i>	Naïve Income Tax	<i>Correct VAT</i>	Naïve VAT	<i>Correct X Tax</i>	Naïve X Tax
Bank workers	20	20	0	0	20	20
Supply workers	20	20	0	0	20	20
Bank	0	0	20	-20	0	-40
Supply firm	0	0	20	20	0	0
Saver	50	20	0	0	0	0
Borrower	-50	-60	0	0	0	0
Total	40	0	40	0	40	0

Source: Carroll and Viard (2012, 84).

Under the naïve income tax, the bank and supply workers continue to be taxed on their wages, and the supply firm continues to have no net tax liability. The same is true for the bank; it reports \$60 interest income and deducts \$20 interest expense, \$20 wage costs, and \$20 supply purchases. The depositor reports \$20 interest income, while the borrower reports negative \$60 interest income. The combined tax base is now zero, indicating that the household financial services have disappeared from the tax base. The problem is that the financial services have been disguised as a reduction in interest income and an increase in interest expense, each of which lowers taxable income.

The naïve VAT encounters the same problem. As under the correct VAT, there is no tax on workers or on the depositor and the borrower. The supply firm's treatment is also the same as under the correct VAT, as it reports \$20 value added from its sale of supplies to the bank. The bank, though, has a value added of negative \$20, reflecting the fact that it spent \$20 on supplies while appearing to earn nothing from its real business activity (assume, for the moment, that the bank can obtain refunds for its negative tax base.) The naïve VAT ignores the bank's \$40 net margin on deposits and lending because this spread looks like net interest income. Once again, the net tax base is zero and the \$40 of financial services escape tax, thanks to their interest disguise.

The naïve X tax is identical to the naïve VAT, except for the treatment of wages. The tax on the supply firm's activity is imposed on its workers rather than on the firm. The bank's tax base moves even further into negative territory, to negative \$40, as it deducts its \$20 wage payment on which its workers are taxed. The net tax base is still zero, and the financial services still escape tax.

Interest-Spread Method

Hall and Rabushka (1995, 73–75) embrace this method. The method imputes an interest rate on each financial transaction and uses it to distinguish true interest income and expense from the cost of financial services. In the above example, the conceptually correct 5 percent interest rate is imputed to both the checking account and the loan, deeming the borrower to pay, and the depositor to receive, \$50 of true interest. The spread method recognizes the difference between the stated interest and the imputed true interest as the cost of providing financial services and taxes it as such. The bank is deemed to charge the depositor \$30 and the borrower \$10 for financial services and is required to treat these amounts as receipts from the sale of real services, despite their interest label. By construction, neutral tax treatment is achieved.

As Carroll and Viard (2012, 88-92) emphasize, the method's difficulty concerns risk adjustment. Determining an ex ante risk-adjusted rate for each financial transaction in the economy is a hopeless task. A more viable method is an ex post risk adjustment. The risk-free rate is applied to each account, but the bank is taxed, not on the difference between the stated interest rate and the imputed risk-free rate, but instead on the difference between its actual ex post return and the imputed risk-free rate. The bank is taxed on the interest rate premium that it charges to compensate for default risk, but deducts its default losses if and when they occur. Although the ex post tax base may bear little resemblance to the value of services provided, the ex-ante market value of the tax base equals the value of services. The method is feasible, but becomes complex when multiple cash flows are involved.

Real-Plus-Financial Method

Bradford (1996) advocated a real-plus-financial method, which Carroll and Viard (2012, 92-98) and Antos, Biggs, Brill, and Viard (2015, 5) adopt. The method taxes financial intermediaries' transactions on a real-plus-financial basis, differing from the real basis normally employed by the VAT and X tax. The method is similar to the ex-post risk spread method because it seeks to match the tax base to the value of financial services only in ex ante market value. Rather than taxing the bank on the cash inflow minus a risk-free return on the earlier cash outflow, it allows an up-front deduction for the cash outflow and taxes all of the cash inflow. The method is simpler than the ex post risk spread method, because past cash flows need not be tracked to apply

the risk-free rate to them. However, it involves transition arrangements that the ex post risk spread method does not require.

Additional Issues

Any of the methods must define which entities are considered financial intermediaries and which of their transactions are thought to involve the provision of financial services for which explicit fees have not been charged.

Each of the methods must face address the treatment of financial services provided to businesses. The methods are intended to tax the financial intermediary on the financial services it provides. Under a VAT or X tax, a sale by one business to another normally features a tax on the selling firm and an offsetting deduction for the purchasing firm. It would be awkward, however, to require the intermediary's business customers to compute a deduction for the financial services that it received using the specialized method that the intermediary used to compute its tax. Carroll and Viard (2012, 95-96) propose that the intermediary pay no tax on financial services provided to businesses and that the businesses claim no deduction. The intermediary applies the real-plus-financial method (or whatever method is specified) only to its transaction with business customers. The success of this strategy depends on financial intermediaries being able to set different terms for business and non-business customers.

C. Treatment Under PET [TO BE ADDED]

VIII. THE OPEN ECONOMY

In an open economy, the VAT, X tax, and PET have further differences, some of which have been overlooked.

A. Destination v. Origin Basis and Competitiveness

The PET is inherently destination based because it taxes consumption by domestic residents. VATs are universally border-adjusted and therefore destination-based.

In contrast, the X tax lends itself most naturally to an origin basis, in which domestic production is taxed. To place the X tax on a destination basis, it is necessary to institute a border adjustment that imposes tax on imports and rebates tax on exports. The percentage value of the import tax and the export rebate could be set equal to the tax rate on business cash flow. President's Advisory Panel (2005, 167-72) recommended border adjustment and Heritage Foundation (2011)

proposed the same for its cash-flow tax. As discussed by Huffbauer (1996, 47-61 & 69-70), these border adjustments are likely to violate international trade agreements.

A major motivation for border adjustment is the fallacy that destination-based taxes improve competitiveness by boosting exports and reducing imports. Because a country's future exports must be equal in present value to its future imports plus its current net debt to foreigners, though, the border adjustment cannot increase exports without increasing imports. The exchange rate adjusts in response to the border adjustment, with the country's currency appreciating to choke off the putative increase in exports and reduction in imports. In any case, achieving the mercantilist goal of boosting exports and reducing imports would mean forever consuming fewer goods.

It might be thought that the PET's destination basis, even if conveying no actual economic advantage, would at least make the tax politically attractive due to the competitiveness fallacy. Oddly, that is not the case. Because proponents of the fallacy attribute the imagined competitiveness advantages to the explicit collection of taxes on imports and the rebate of taxes on exports, they perceive no advantage from the taxation of imports, but not exports, on household PET returns. That may be due to the fact that the underlying economic treatment of imports and exports is not visible on the face of the returns as consumer spending is constructed as a residual from income and savings flows. Hartman (2004, 1081) even criticizes the PET on the grounds that international trade rules prohibit it from being border adjusted.

The destination basis not only fails to provide a competitiveness advantage, but actually transfers wealth from Americans to foreigners.

B. Cross-Border Wealth Transfers

The move from an origin-based tax to a destination-based tax brings into the tax base the consumption of Americans financed by their existing foreign assets and removes from the tax base the consumption of foreigners financed by their existing American assets. As a result, Americans' holdings of foreign assets decline in real value, while foreigners' holdings of American assets rise in real value. The appreciation of the dollar reduces the dollar-value of Americans' foreign assets and increases the foreign-currency value of foreigners' American assets. The result is a wealth transfer from Americans to foreigners.

As Viard (2004; 2008; 2009a), Auerbach (2007; 2008), and Carroll and Viard (2012, 110) note, the cross-border wealth transfer depends on the *gross* holdings of American assets by foreigners. Bureau of Economic Analysis data reported by Nguyen (2015) reveal that, at the end of 2014, foreigners held \$31.62 trillion of American assets and Americans held \$24.60 trillion of foreign

assets, with a \$7.02 trillion U.S. net external debt. A simplified calculation suggests that a 35 percent PET, relative to a 35 percent origin-based X tax, would impose an \$11.1 trillion lighter tax burden on foreign consumers, in present discounted value. It would also impose an \$8.6 trillion heavier burden on American consumers, leaving a net revenue loss of \$2.5 trillion to be offset through rate adjustments.

A one-time wealth transfer to foreigners of \$11.1 trillion, more than seven months of GDP, would impose a staggering burden on Americans. Auerbach (2007, 45–46; 2008, 19–20), Viard (2009a), and Carroll and Viard (2012, 110-11) provide similar calculations with older data and different tax rates.

Transition relief would reduce the wealth transfer to some extent. As discussed in section III.B, transition relief under the X tax would be provided at the firm level, easing the burden on firms' foreign stockholders, while transition relief under the PET would be provided to Americans at the household level. Even so, the transfer to foreigners is likely to be several trillion dollars. Because this transfer rivals the efficiency gain from tax reform, the move to a destination-based consumption tax is more a gift to the world than a gain for the United States.

The desire to avoid this wealth transfer offers a strong argument for not adopting the PET and not border adjusting the business cash flow tax under the X tax. Nevertheless, as noted above, many X-tax plans call for border adjustment. The border adjustment's virtue is that it avoids transfer pricing, the bane of origin-based taxes.

C. Transfer Pricing and Internationally Mobile Rents

Following Carroll and Viard (2012, 112-13), suppose that an American has an idea that will give rise to \$1 million of future receipts in present value. A destination-based tax is neutral with respect to the location at which the idea is developed because the American's consumption will be taxed, no matter where she develops the idea. In contrast, an origin-based tax may deter the development of the idea inside the United States because it applies only to investment inside the United States. As Bradford (2004, 19–20) explains, an origin-based tax can theoretically avoid this problem. The tax creates no incentive for the American to sell or lease his idea to an unrelated foreign firm for \$1 million rather than developing it in the United States; the American's \$1 million receipt remains subject to the origin-based tax as the proceeds from the export of an intangible asset. If the American instead develops the idea through a foreign firm she wholly owns, the firm should, in principle, make the same \$1 million payment to the American and tax should be imposed on it. Because the American owns the firm, though, the price she "charges" it is merely an accounting entry, permitting her to choose a lower value to minimize tax liability. The wholly-owned firm then earns excess profits, due to the understated

payment, and those profits are ultimately paid to the American as dividends. The origin-based tax may therefore prompt the American to develop the idea abroad and to understate the value of the idea. Weisbach (2000) discusses transfer pricing and related complications under an origin-based flat tax or X tax.

Bradford (2003; 2004, 34-35) proposes to solve the transfer pricing problem by applying a real-plus-financial cash flow method to related-party transactions that cross international boundaries. Under this method, which Carroll and Viard (2012, 113-14) endorse, a U.S. parent firm deducts any payments made to its subsidiaries, including loans or equity contributions, and is taxed on any receipts from them, including loan repayments and dividends. Any mispricing of real transactions is then automatically reversed through the inclusion of the accompanying financial flows. In the above example, the excess dividends are eventually taxed, correcting the understatement of the value of the idea.

The practicality of the Bradford approach has been questioned. Sullivan (2012, 810) commented that the approach would seem “revolutionary” to transfer pricing practitioners and would have “serious transition problems that are not easily solved.” He concluded that “if a consumption tax without border tax adjustments became law, we would probably still be stuck with the same transfer pricing problems that we have now.”

IX. POLITICAL ISSUES

A. Pressure for Base Erosion

All of the taxes are likely to be subject to political pressure to narrow the tax base. Many countries’ VATs have also experienced significant base narrowing. For example, food and other necessities are often zero-rated. The X tax and the PET, like the income tax, feature household tax returns. As a result, exclusions, deductions, and credits on household returns can be provided under each tax system. Indeed, some of the same preferences may be provided under each system.

As Carroll and Viard (2012, 60-61) note, base narrowing under the X tax will need to diverge in one respect from base narrowing under the income tax and the PET. Because households are taxed only on wages under the X tax, tax preferences provided on household returns will be unavailable to households living off of investments unless the preferences are structured as refundable tax credits, as the investors have no tax liability against which to claim deductions or norefundable credits. The adoption of the X tax would dramatically transform the debate over refundable tax credits. Today, such credits are adopted to ensure that tax preferences are available to low-income households. Under the X tax, refundability would also be needed to

ensure that tax preferences are available to investors with little or no wage income, as was noted in section IV.C with respect to a preference for charitable contributions.

The restriction on how tax preferences can be structured under the X tax is a two-edged sword. While the need to adopt refundable tax credits may deter the addition of undesirable tax preferences to household tax returns, it may also impede the proper functioning of desirable tax preferences.

B. VAT as Possible Money Machine

A common concern about the VAT, vividly expressed by Christian and Robbins (2011), is that it may function as a money machine that fuels the growth of federal spending. Pierson (2011) reports that members of the Simpson-Bowles commission identified this concern as the decisive factor dissuading them from recommending a VAT. Tait (1988, 226) reports that President Ronald Reagan criticized the VAT on this ground at a February 21, 1985, press conference.

It is difficult to determine the extent, if any, to which the VAT actually functions as a money machine. Although countries with VATs tend to have larger public sectors than those without, this correlation does not necessarily establish that the VAT *causes* an expansion of government. Keen and Lockwood (2006, 917) find evidence that increases in VAT rates do not predict subsequent increases in the size of government, after controlling for other relevant variables while Holtz-Eakin and Smith (2010) obtain the opposite results. In any event, the fact that one variable moves before the other need not determine causality. Tait (1988, 226–28) argues that the VAT has not had a significant effect on the size of government. The uncertainty in the evidence makes it impossible to dismiss the concern or to treat it as conclusively established.

A specific concern about the VAT relates to its visibility, as it is easier to raise a tax when voters have little awareness of it. If the VAT were not listed on customer receipts, it would be a highly invisible tax. Viard (2015b) notes that recent Republican proposals call for VATs that would not be listed on customer receipts.

Nevertheless, the VAT could be separately listed on customer receipts, as is currently done for state and local retail sales taxes in the United States. Edwards (2005) and Sullivan (2010) note that Canada, unlike most European nations, requires that the VAT be listed on customer receipts. Sullivan (2010) argues that the Canadian VAT's visibility has prevented it from serving as a money machine. The VAT was adopted at a 7 percent rate in 1991, but the rate was reduced to 5 percent in 2006, and the VAT did not spark an increase in total revenue or spending.

A household's PET liability or X tax liability on wages would be as, but no more, visible than individual income tax liabilities today. In each case, the tax would be displayed on an annual return after having been collected through withholding. It is not clear, however, whether visibility would be higher or lower than a VAT listed on receipts. The listed VAT may be relatively invisible because it is collected in numerous small increments throughout the year. On the other hand, withholding may allow the X tax or PET liability to largely escape notice throughout the year; when returns are filed, taxpayers may focus on their refunds rather than their net annual liability. Moreover, like today's income tax, the X tax or PET would exempt economically disadvantaged households from tax while a VAT would apply to all households. Burman (2008) argued that a VAT earmarked to pay for federal health care programs would increase the visibility of those programs' costs and create pressure to restrain their growth.

Still, because even a visible VAT gives the government an additional revenue source to exploit, other measures to restrain spending may be desirable. One possibility is to adopt budget procedures to restrain spending when a VAT is introduced. For example, Burman (2008) suggests that the introduction of a VAT be accompanied by entitlement spending caps and super-majority voting requirements for new entitlements. The effectiveness of these measures is unclear.

C. Political Viability

Each of the options, particularly the PET and the X tax, face serious political obstacles.

One commonality of the three taxes is that some of their advocates try to disguise their nature as consumption taxes. Republicans and conservative organizations proposing VATs, including Paul Ryan, the Free Congress Foundation, Herman Cain, Rand Paul, and Ted Cruz, have described them as "business" taxes, as discussed by Viard (2015a). The USA bill also referred to its VAT as a "business income" tax. The flat tax/X tax is even easier to mislabel because it looks like an income tax, as discussed above, and the names "flat tax" and "X tax" do not identify the tax base. Zelenak (1999, 1180–82) documents some advocates' efforts to depict the flat tax/X tax as an income tax. The PET is frequently referred to as a "consumed income tax." Fisher (1937) insisted that consumption was the correct measure of income, making the PET a true income tax. Andrews (1974) referred to the PET as a "consumption-type or cash-flow personal income tax" and Aaron and Galper (1985) referred to their proposed PET as a "cash flow income tax." The USA bill referred to its PET as the "USA income tax" and described its base as "taxable income"; Siedman (1997, 72 & 142-143) noted that some of the bill's complexity arose from its misguided attempt to maintain the appearance of income taxation.

VAT

On April 15, 2010, the Senate voted 85-13 (Democrats 43-12, Republicans 40-1, independents 2-0) to approve a nonbinding resolution stating, “It is the sense of the Senate that the Value Added Tax is a massive tax increase that will cripple families on fixed income and only further push back America’s economic recovery.” As Carroll and Viard (2012, 162-63) note, however, history suggests that this resolution may be an unreliable guide to the VAT’s ultimate prospects. Although the Senate voted 98–0 on July 14, 1981, to adopt a nonbinding resolution stating that Social Security benefits should not be subject to income tax, partial income taxation of benefits was included in the bipartisan Social Security reform package adopted less than two years later.

Overwhelming support for symbolic resolutions that condemn an unpopular measure in isolation does not always preclude subsequent enactment of the measure as part of a *bipartisan* response to a widely recognized problem. The resolution actually indicates that adoption of the VAT would probably require bipartisan agreement, as would the other two options.

X Tax

The X tax has a severe optical problem because it does not satisfy the political demand for a *visible* tax on households living off of capital income. Although no consumption tax system imposes a marginal tax on capital income from new saving, consumption taxes do tax existing capital and above-normal returns. The PET makes those levies visible because households 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, old capital and rents are taxed much less visibly at the firm level through the cash-flow tax. Seidman (1997, 134) notes this optical problem. To address this “Buffett/Romney” optical problem, President’s Advisory Panel (2005) called for a 15 percent flat-rate tax on capital income alongside its X tax, confirming the prediction by Metcalf (1998) that political factors might require a Hall-Rabushka flat tax to be accompanied by a household tax on capital income.

A related concern is that the X tax does not look like a consumption tax. But, it also does not look like (and is not) a sensible or well-designed *income* tax. As a result, it may be almost impossible to market it to policy makers and the public. Although this problem is optical rather than substantive, it may be the X tax’s fatal flaw.

PET

A potential optical problem is that the PET does not include a tax on business firms, which may give rise to the complaint that people are being taxed while businesses are not. The PET also 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, a pure form of the PET taxes households on the proceeds of borrowing, but allows the borrower to deduct all subsequent payments, principal and interest, on the loan. Although those deductions offset the initial tax in present discounted value (if the household remains in the same tax bracket), the tax on borrowing may still be unpopular. The X tax avoids this optical problem by not tracking financial flows; tax on borrowers' consumption is collected at the firm level.

Many PET proposals seek to soften this result. Aaron and Galper (1985, 74-75) recommended that households be allowed to carry up to \$10,000 of debt (\$20,000 for couples) outside the PET, in addition to home mortgages and possibly student loans. Borrowing proceeds are not included and interest and principal payments are not deducted. They described this provision as an "averaging provision." The USA plan featured rules that sought to protect most households from having to pay tax on borrowing proceeds while denying a deduction if the borrowed amounts were saved, which added complexity, as noted by Seidman (1997, 102-104) and others.

It is a serious mistake for a PET to try to avoid taxing borrowing proceeds. Kaldor (1955, 13-14, 192) stressed the importance of taxing dissaving, even asserting that the income tax's failure to do so was more serious than its failure to provide a deduction for saving. Seidman (1997, 75-80) forcefully argued that a PET must include the proceeds of borrowing. Similar views were expressed by Fisher and Fisher (1942, 8), Andrews (1974, 1153), Graetz (1980, 183), and Warren (1995, 1108). As Seidman notes, an exception can be made for credit card debt that is outstanding only for a short time.

Although the inclusion of borrowing proceeds in the tax base is likely to meet initial resistance, education of the public may alleviate the concerns, as noted by Graetz (1980, 183). The ability to deduct principal repayments is an obvious offset to the inclusion of the initial borrowing. And, if the public is persuaded that consumer spending is the right tax base, then they should be able to see that the addition of borrowing proceeds is necessary to obtain a correct computation of households' consumer spending.

High Statutory Tax Rates

For either the X tax or the PET, there may also be political or optical problems associated with high statutory tax rates. A feature shared by the PET and X tax prevents the optical impact of high statutory tax rates from being even worse. Both tax systems quote their rates in tax-inclusive, rather than tax-exclusive, form.

X. A HYBRID OPTION

As discussed above, the X tax faces political complications because it does not impose individual-level tax on individuals financing consumption from capital income and does not appear to be a consumption tax. The PET avoids these problems, but has the political complication that it does not impose a tax collected from business firms. One solution is to combine a PET with some type of business cash flow tax. The overall federal tax system would then consist of a household level consumption tax that applies impartially to wages and business cash flow, a payroll tax that applies only to wages, and a firm-level tax that applies only to business cash flow.

This general approach has been proposed before. Although Treasury's 1977 Blueprints rejected a separate firm-level tax alongside the PET, U.S. Department of the Treasury (1977, 133), the Meade report the following year recommended that a real-plus-financial cash-flow tax be imposed alongside a PET, Institute for Fiscal Studies (1978, 227-58). A mere two years later, Graetz (1980, 240) stated that "most proponents of expenditure taxation ... would like to retain a separate corporate tax in some form or other" and Warren (1980, 123) noted that it was "unrealistic to expect the repeal of the corporate income tax" under a PET. Aaron and Galper (1985, 66-107) proposed maintaining a real-plus-financial corporate tax alongside the PET and suggested that the rates of the two taxes be set to maintain the split between individual tax revenue and business tax revenue of the tax system then in place. Heritage Foundation (2011) called for a business cash-flow tax alongside the PET.

The USA plan sought similar political gains through different means by calling for a VAT to accompany the PET. The bill labeled the VAT as a "business tax" imposed on "gross profit" and even set forth a finding that "corporations and other businesses pay about the same portion of the total tax as under the current Code," with the VAT treated as a business tax. Seidman (1997, 3 & 127) echoed this terminology. From an optical perspective, of course, the VAT is likely to be perceived as a consumer tax rather than a business tax. Moreover, adopting a VAT alongside the PET does not have the substantive advantage, discussed of concentrating the extra tax on business cash flow.

Within this broad category of proposals, there has been variation in the type of business tax envisioned. There are three fundamental dimensions of choice. First, should the tax apply only to corporations or should it also apply to non-corporate firms? Second, should the tax be real-based like the business component of the X tax system or should it be a real-plus-financial tax? Third, should the tax be border adjusted? Another important issue concerns the tax rate. Of course, any proposal also faces numerous specific design issues.

Aaron and Galper (1985, 79-84) recommended a real-plus-financial tax applied only to corporations. The corporation pays tax on all receipts, except from the sale of stock, and deducts all outlays, excluding dividends and other distributions to stockholders and the costs of any

fringe benefits not taxed to employees. The Meade Report also recommended a real-plus-financial tax. Heritage Foundation (2011) recommends a real-based tax on both corporate and non-corporate firms.

The most attractive approach is a real-based origin-based tax on corporate and non-corporate firms.

This hybrid has many political advantages. By imposing a PET, it addresses the X tax's Buffett/Romney problem and the problem of the X tax not looking like a consumption tax. But, by also imposing a business cash flow tax, it addresses the PET's optical problem of not taxing firms. Moreover, the optical challenge of high statutory tax rates that confronts both taxes is alleviated; the rates under the PET and the business tax can each be lower given that revenue is raised by both taxes.

To be sure, the hybrid does not address the optical problem that the PET taxes the proceeds of borrowing. As discussed above, however, that problem may be less challenging than the others. Objections might also be raised against the application of the cash flow tax to flow-through firms, given that owners are also subject to the PET.

The hybrid also has economic advantages. It permits heavier taxation of business cash flow, which would be subject to both taxes, thereby raising taxes on above-normal returns. The heavier taxation of business cash flow does not magnify the transfer pricing problem relative to the X tax because the household-level tax on cash flow is destination-based.

There could also be some increase in the capital levy because existing capital would also be taxed at both the household and firm levels. This effect would likely be counteracted, however, by the provision of transition relief at both levels. The PET would feature a wealth transfer to foreigners, but the origin-based cash flow tax would not.

As discussed in section IV.B, the X tax has greater flexibility than the PET in the taxation of fringe benefits, because the X tax has the option of taxing them at the firm level by denying the firm a deduction for its benefit payments. As Seidman (1997, 95-96) notes, having a tax on firms alongside a PET reintroduces that flexibility. The hybrid also shares the simplicity of the PET with respect to the administration of means-tested transfer payments because household returns provide the necessary information.

Unfortunately, the hybrid approach combines some of the disadvantages of the PET and those of the X tax. The problem of firms with negative cash flows, which arises under the X tax but not the PET, arises under the hybrid. The hybrid would feature the PET's relatively complex

household returns as the PET and would require its smoothing rules for purchases of owner-occupied housing and consumer durables.

The situation is even worse with respect to the problem of distinguishing wages from business cash flow, which arises under the X tax but not the PET. The challenge is far more severe under the hybrid. Wages, but not cash flow, are deducted under the business tax. But, wages have no offsetting disadvantage under the household tax, as wages and business cash flow are both included on the same terms on household tax returns. In general, therefore, the gain from restating cash flow as wages is equal to the full business tax rate.

CONCLUSION

The partial-replacement VAT, the full-replacement X tax, and the full-replacement PET each has some advantages and disadvantages. A hybrid that combines a PET with a tax on business cash flow also merits consideration. Although such a hybrid has its own challenges, it may strike a reasonable balance among the competing policy objectives.

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