
Minimizing the Economic Damage

By our arithmetic, in the coming decades, business tax revenue must rise by roughly 60 percent, from 3 to 5 percent of GDP. Can the economic damage from higher business taxation be minimized? The answer depends a great deal on presidential leadership. But if corporate income taxes can be limited and greater reliance placed on other business taxes, the economic damage will be lessened.¹ Indeed, if alternative business taxes can be substituted for the corporate income tax—the core of our policy recommendation—the efficiency of business taxation, and hence American business performance, may well improve, even with a significantly increased tax burden. To size up the scope for White House leadership in shaping the structure of business taxation, we explore three forces at play: political acceptability, economic distortion, and global competition.

Domestic Considerations

Determining the nature and level of taxes is, of course, an intensely political process. Whenever the current tax regime is being reevaluated, legislators find themselves under pressure both from those who believe

1. In a fixed-effects panel regression analysis of OECD countries (120 observations at five-year intervals from 1980 to 2000), we found that the ratio of corporate income taxes to total business taxes was not affected by the ratio of business taxes to GDP. Instead, idiosyncratic national features, captured in the dummy country variables, explain virtually all of the variation in the relative importance of corporate income taxes. This finding suggests that there is no common underlying feature in the political economy of OECD countries that dictates an increase in corporate income taxes when the ratio of business taxes to GDP rises.

new taxes will hurt them and those who think they will benefit. In this climate, legislators must determine how best to reap the benefits of a new tax system while minimizing the damage, not only by reconciling those who bear the brunt of the costs, but also by paring down economic distortions.

Political Acceptability

The fiscal history of the United States shows a neuralgic sensitivity (summarized in box 4.1) to federal value-added or retail sales taxes. Objections about their regressive character are vigorously rehearsed whenever these revenue sources are discussed. That retail sales tax (RST) and VAT systems can be designed to alleviate their regressive character has so far made little or no difference to the American political debate. As discussed in chapter 3, low-income households could receive a refundable income tax credit to counteract the RST and VAT. A less efficient solution is to reduce or eliminate taxes on items heavily consumed by low-income households. In the following discussion, we assume that some form of offset measure would be implemented.

While US political history weighs heavily against our proposed reforms, international examples indicate that the economic cost of inefficient taxation becomes more potent politically as fiscal demands increase (for several examples, see Lindert 2003). Accordingly, we believe that future revenue demands will weigh on the side of reform, once Congress faces the unpleasant reality that raising more revenue from the current corporate income tax system creates enormous problems.

If tax decisions were made through opinion polls, any rise in taxes generally, and business taxes specifically, would most likely be concentrated on the corporate income tax. This tax most likely remains the most acceptable business levy for the general public. However, the business community will not be silent in the coming debate, and there are good reasons for thinking that, with presidential leadership, future Congresses will give weight to other considerations, especially economic distortion and global competition.

Economic Distortion

The more jagged the tax profile is among firms and industries, the greater the extent of economic distortion, since tax incentives misdirect the market to commit too few resources to heavily taxed sectors (or firms) and too many to lightly taxed sectors (or firms). Executives and professionals devote time and talent to pushing for and seeking out tax shelters rather than doing business. The definition of corporate earnings is inherently so arcane that the system invites not only endless lobbying and legislative

Box 4.1 US congressional experience with value-added and retail sales taxation

As far back as 1921, economists recommended a federal VAT for the United States. In early 1969, President Richard Nixon considered one but did not make a proposal, owing to opposition from state governors (Stotsky and Sunley 1994, 1777). In 1978 and 1979, Representative Al Ullman (D-OR), chairman of the House Ways and Means Committee, proposed a VAT as part of a package including cuts in corporate and individual income tax and social insurance taxes. Ullman's proposal attracted strong opposition (Stotsky and Sunley 1994) and featured prominently in his defeat in the 1980 Oregon congressional election. In 1985, Senator William Roth (R-DE) and Representative Richard Schulze (R-PA) proposed a subtraction-method VAT in the form of a business transfer tax, but again the proposal failed to receive broad support (Oldman and Schenk 1995).

The tax reform debate heated up in the mid-1990s:

- Senator Ernest Hollings (D-SC) proposed a federal credit-invoice (European-style) VAT in 1991 and again in 1994.
- In 1994, Representative Richard Armey (R-TX) and Senator Arlen Specter (R-PA) proposed a flat tax with corporate and individual components to replace the current income tax system.
- The same year, Senators John Danforth (R-MO) and David Boren (D-OK) proposed a business activities tax modeled after a subtraction-method VAT (Oldman and Schenk 1995).
- Also in 1994, Representative Bill Archer (R-TX), chairman of the House Ways and Means Committee, and Senator Richard Lugar (R-IN) proposed a national retail sales tax to replace the federal income tax, both individual and corporate.
- In 1995, Senators Sam Nunn (D-GA) and Pete Domenici (R-NM) proposed the unlimited savings allowance (USA) tax, with features similar to a subtraction-method VAT, again intended to replace both individual and corporate income taxes.
- Through the late 1990s and in the early 2000s, Representative Billy Tauzin (R-LA) energetically expounded the virtues of a national retail sales tax, both in speeches and print.

None of the base-broadening and simplification proposals advocated in the 1990s advanced to the stage of agreed legislation in either the House Ways and Means Committee or the Senate Finance Committee. For more, see Carlson (1980), Shah and Towe (1995), Hufbauer and Gabyzon (1996), and Tauzin (1998).

In the 2004 congressional elections, several Republican candidates—including Senate candidates Jim DeMint (NC) and Pete Coors (CO)—were attacked by opponents for their support of the Fair Tax Bill introduced into the 108th Congress (HR 23) (“Tax Reform Warning,” editorial in the *Wall Street Journal*,

(box continues next page)

Box 4.1 US congressional experience with value-added and retail sales taxation (continued)

November 2, 2004, A22). HR 23 proposes to repeal federal income and payroll taxes and replace them with an NRST. DeMint won his election, but Coors lost. It is difficult to say what role, if any, the NRST proposal played in these outcomes.

Recently, Speaker of the House Dennis Hastert (R-IL) suggested abolishing the corporate and individual income tax—as well as the IRS—and replacing the system with a flat tax, a consumption tax, or a VAT. President Bush found the proposal to be an “interesting idea” (Linda Feldmann, “Scrap the Tax Code? Bush Floats a National Sales Tax,” *Christian Science Monitor*, August 13, 2004, 3). Opponents quickly attacked the president, saying the tax will “shift the burden of taxation off wealth and onto work” (Robert Kutter, “The Latest Bush Plan—Consumption Taxes,” *BusinessWeek*, September 13, 2004, 26).

In the opening weeks of 2005, House Ways and Means Committee chairman Rep. Bill Thomas (R-CA) mentioned a proposal to replace the corporate income tax with a VAT to help fund personal accounts or other reforms to the Social Security system. His musing was roundly attacked by the conservative *Wall Street Journal* (“The Tax that France Built,” editorial in the *Wall Street Journal*, March 4, 2005, A14) for proposing to unleash “a major enabler of the ever-expanding, slow-growth welfare state.”¹

1. However, Thomas’s proposal was favorably reported on by Robert Novak (“While Transforming Social Security, Thomas also would Repeal the Corporate Income Tax and Replace it with a VAT,” *Chicago Sun-Times*, February 10, 2005, 33) and Bruce Bartlett (“Want Reform? Talk to Bill,” *Fortune*, February 21, 2005, 54).

tinkering,² but also creative accounting that blurs the line between tax avoidance and evasion.³ These forces virtually ensure that the corporate tax burden differs greatly among different firms and industries.

As table 4.1 shows, the US corporate income tax burden, including state as well as federal taxes, is highly uneven between sectors of the economy,

2. The protracted battle in 2003 and 2004 among potential corporate beneficiaries of the revenue raised by repeal of the foreign sales corporation (FSC) illustrates the problem (Jonathan Weisman, “Opposition Softens on Corporate Tax Bill,” *Washington Post*, May 14, 2004, A1).

3. For example, KPMG marketed a tax shelter that saved 29 large companies some \$1.7 billion from 1999 to 2001. The shelter concept called for the firm to establish a trust for possible future tort liabilities, and to claim the deduction well before money was paid to plaintiffs, possibly in excess of money that would ever be paid (“KPMG Shelter Shaved \$1.7 Billion Off Taxes of 29 Large Companies,” *Wall Street Journal*, May 16, 2004, A1). Another popular shelter, one that was modestly limited as part of the American Jobs Creation Act of 2004, involved corporate “purchases” of municipal facilities, such as transport systems, and leaseback to the “selling” municipality, giving the corporation the benefit of a depreciation deduction with no economic stake in the facility.

Table 4.1 Corporate taxes, value added, and shipments by industry, 2000 (millions of dollars)

Tax category	Total taxes on corporate income	Value added^a	Corporate business receipts	Taxes as percent of value added	Taxes as percent of receipts
Total private industries	265,172	8,606,900	19,593,000	3.08	1.35
Agriculture, forestry, fishing, and hunting	512	134,300	106,000	0.38	0.48
Mining	2,474	133,100	141,000	1.86	1.75
Construction	4,895	461,300	1,034,000	1.06	0.47
Manufacturing ^b	77,670	1,520,300	5,259,000	5.11	1.48
<i>Durable goods</i>	36,500	1,164,151	2,379,368	3.14	1.53
Wood products	637	36,093	93,767	1.76	0.68
Nonmetallic mineral products	1,434	55,722	97,484	2.57	1.47
Primary metals	932	66,095	157,056	1.41	0.59
Fabricated metal products	3,708	149,449	269,181	2.48	1.38
Machinery	3,208	148,798	295,754	2.16	1.08
Computer and electronic products	13,119	291,125	513,038	4.51	2.56
Electrical equipment, appliances, components	3,131	62,991	124,865	4.97	2.51
Motor vehicles, bodies and trailers, parts	3,364	156,992	471,650	2.14	0.71
Other transportation equipment	3,651	83,997	167,050	4.35	2.19
Furniture and related products	810	42,267	75,510	1.92	1.07
Miscellaneous manufacturing	2,506	70,621	114,013	3.55	2.20
<i>Nondurable goods</i>	41,170	800,716	1,789,846	5.14	2.30
Food, beverage, tobacco products	10,635	217,490	497,678	4.89	2.14
Textile mills and textile product mills	436	35,198	85,650	1.24	0.51
Apparel, leather, allied products	738	32,720	69,824	2.26	1.06
Paper products	2,216	78,166	166,099	2.83	1.33
Printing and related support activities	813	63,446	104,614	1.28	0.78
Petroleum and coal products	11,872	45,748	235,105	25.95	5.05
Chemical products	13,260	235,614	451,580	5.63	2.94
Plastics and rubber products	1,200	92,333	179,295	1.30	0.67

(table continues next page)

Table 4.1 Corporate taxes, value added, and shipments by industry, 2000 (millions of dollars) (*continued*)

Tax category	Total taxes on corporate income	Value added ^a	Corporate business receipts	Taxes as percent of value added	Taxes as percent of receipts
Transportation and public utilities	31,092	809,300	2,031,000	3.84	1.53
Transportation and warehousing	4,474	313,700	506,000	1.43	0.88
Information and communications	15,212	279,100	817,000	5.45	1.86
Utilities	11,406	216,500	708,000	5.27	1.61
Wholesale trade	13,369	696,800	2,528,000	1.92	0.53
Retail trade	18,237	887,300	2,738,000	2.06	0.67
Finance, insurance, and real estate	71,097	1,976,700	3,121,000	3.60	2.28
Finance and insurance	68,557	853,000	2,916,000	8.04	2.35
Real estate, rental, leasing	2,540	1,123,700	205,000	0.23	1.24
Services	37,687	2,116,400	2,631,000	1.78	1.43
Professional, scientific, and technical services	3,655		623,000		0.59
Management of companies and enterprises	26,348		693,000		3.80
Administrative and waste management services	1,348		314,000		0.43
Educational services	347		22,000		1.58
Health care and social assistance	1,959		404,000		0.48
Arts, entertainment, and recreation	436		64,000		0.68
Accommodation and food services	2,802		347,000		0.81
Other services, except government	792		164,000		0.48

a. Contribution to GDP as reported in National Income and Product Accounts, includes noncorporate value added.

b. Individual manufacturing industry figures on value added and business receipts are based on the Annual Survey of Manufacturers, which includes a small amount of noncorporate activity. The total calculated by adding up individual manufacturing industries does not sum to the totals reported in the *Statistical Abstract of the United States*.

Note: Value-added data are not available for services.

Sources: BEA (2004a, table 6.18d), US Census (2002, table 2; 2003, tables 660 and 733).

whether measured as a proportion of sales (on the theory that the tax is shifted forward to consumers through higher prices) or value added (on the theory that the tax is shifted backward to lower factor earnings). Ignoring the extremes of agriculture, petroleum, and real estate, corporate income taxes across major sectors range between 0.5 percent and 2.9 percent of sales, and between 1.1 percent and 8.0 percent of value added. Within the manufacturing sector, which is most exposed to international competition, corporate taxes also range between 0.5 percent and 2.9 percent of sales (ignoring the highly taxed petroleum industry), but between 1.2 percent and 5.6 percent of value added.

Within individual industries, the tax burden can be especially uneven and distorting, since profitable firms pay tax at the federal statutory rate of 35 percent as well as state taxes that average around 5 percent; meanwhile, the unprofitable firms that compete with them pay no corporate income tax. An analysis of 275 Fortune 500 companies revealed an enormous range of effective tax rates (McIntyre and Nguyen 2004). While the average effective rate from 2001 to 2003 was 18.4 percent, rates ranged from -59.6 percent (Pepco Holdings) to 34.5 percent (CVS). The standard deviation of tax rates was 13.4 percentage points.

For obvious reasons, successful firms generally oppose the corporate income tax. The absence of any semblance of uniform tax burdens, expressed as a percentage of sales, means that firms cannot easily pass corporate taxes forward into higher prices. Instead, they are likely to pass them backward into lower factor earnings—especially, but not only, returns to capital. Successful firms thus tend to be penalized, hampering both the efficient use of resources and economic growth.

By contrast, consumption taxes such as VAT or the national retail sales tax (NRST) impose a uniform tax rate with respect to the selling price. Since every firm's product supply schedule is shifted upward by the same percentage, the tax does not benefit any firm in the marketplace in relation to its competitors. These market conditions make it easier to pass the tax forward to consumers. Thus, profitable businesses tend to favor uniform business taxes such as VAT or retail sales taxes over corporate income taxes.⁴

In addition to interindustry distortion, losses are inflicted through distortion between the corporate and noncorporate sectors.⁵ To the extent that

4. The key point is that corporate income taxes work to the advantage of unprofitable firms. Over the long run, in an efficient economy, unprofitable firms should exit the market and release their resources to better-managed firms and more successful sectors of the economy. When taxes are collected on profits rather than business activity, unprofitable firms escape tax and prolong their existence.

5. A report from the Congressional Research Service estimated that the marginal effective tax rate on corporate income was 32 percent in 2003, much higher than the marginal effective rate of 18 percent on noncorporate capital income (Gravelle 2004). This disparity discourages firms from using a corporate structure and corporate investment.

the corporate income tax is absorbed in lower factor earnings, it discourages savings compared with a tax on consumption. Dale W. Jorgenson and Kun-Young Yun (2001, table 7.10) estimate that the average efficiency cost for the corporate income tax is 24.2 cents per dollar raised compared with a “hypothetical, nondistorting” tax.⁶ Jorgenson and Yun do not model efficiency costs at the industry level. The distortions they identify are related to distortions in intertemporal decisions, such as whether to save or consume; distortions in financing decisions regarding debt and equity; and asset allocation between corporate, noncorporate, and household sectors. However, the distortion from the jagged application of the corporate tax to industries and firms is not counted, and, if included, might add significantly to the estimates of Jorgenson and Yun.

It is, however, unfair to compare the corporate income tax with an ideal and hypothetical nondistorting tax. We draw again on Jorgenson and Yun to consider the economic impact of substituting a tax on consumption for the corporate income tax. Jorgenson and Yun simulate replacing all taxes except property taxes with a tax on consumption (2001, table 8.12). They assume that the progressivity of the overall tax system is preserved by household grants, refundable tax credits, or another mechanism. They define their tax base as the value of goods and services produced for consumption. Within the context of their model, the consumption tax could be a subtraction-method VAT, a credit-invoice VAT, or an NRST: “The economic impact is independent of the specific method of implementation” (Jorgenson and Yun 2001, 319). In reality, however, the method chosen will have significant political and legal implications for the size of the tax base and the level of tax rates.

In their simulation, Jorgenson and Yun find that the average economic cost of a consumption tax that raises enough revenue to replace all taxes (except property taxes) and preserve progressivity to be 0.076. In other words, their replacement tax places an average burden of 7.6 cents on the economy for each dollar collected in revenue (Jorgenson and Yun 2001, table 8.12a). Its tax-inclusive rate is approximately 29 percent of consumption spending (Jorgenson and Yun 2001, table 8.4). We estimate below that the tax-inclusive rate of a consumption tax required to replace only the corporate income tax would be between 6 and 8 percent. This lower consumption tax rate would exert a lower efficiency cost on the economy.

To be conservative, we assume that the efficiency costs of this lower consumption tax would be the average economic cost of a consumption tax at half the rate of the replacement tax modeled by Jorgenson and

6. Jorgenson and Yun estimate that the marginal efficiency cost of the corporate income tax is 0.279. In other words, the final dollar of revenue collected via the corporate income tax places a burden of 27.9 cents on the economy above and beyond the dollar of collected revenue. As revenue rises, the marginal efficiency cost of the tax increases.

Yun. According to their estimates, the average efficiency cost of a consumption tax with a rate of about 15 percent is 0.055.⁷ In other words, a 15 percent consumption tax rate places an average burden of 5.5 cents on the economy for every dollar collected.

Based on these coefficients, replacing the corporate income tax with a consumption tax would save 18.7 cents per average dollar of revenue collected (24.2 cents minus 5.5 cents). In 2000, the federal corporate income tax collected \$208 billion. The efficiency gain of switching from a corporate income tax to a less distorting consumption tax would be around \$39 billion annually. Capitalizing this annual efficiency savings at a 4.45 percent discount rate (the rate used by Jorgenson and Yun) indicates that the present value of the switch is roughly \$876 billion.

If the corporate tax burden rises in the future—as it almost certainly will without fundamental tax reform—the annual efficiency savings of a switch would be correspondingly larger. Jorgenson and Yun estimate that an additional dollar of tax revenue will impose an economic burden of 27.9 cents if raised by the corporate income tax, but only 8.5 cents if raised by a consumption tax.⁸ This implies that raising an additional \$300 billion of revenue through the corporate income tax rather than a consumption tax would cost the economy an additional \$58 billion annually.⁹ The present value of that burden, discounted at 4.45 percent, is roughly \$1.3 trillion.

Compared with the complete overhaul of US taxation as illustrated by the simulations in box 4.2, the potential economic gains from replacing only the corporate income tax seem relatively modest. However, most of the plans in box 4.2 are not politically feasible over the next four to eight years. If replacing the corporate income tax with a consumption tax, with a view to raising future rates only as spending commitments require, could begin to close the fiscal gap, it would point federal finances in the right direction and impel greater reform.

7. One reason for the 15 percent figure is to incorporate state and local sales tax rates, which Jorgenson and Yun estimate at 5.5 percent on average. They present the marginal rates resulting from each 10 percent reduction in the consumption tax until its complete elimination (2001, table 8.12a). The average efficiency cost of a tax half as large as their full simulation will be approximately the average of the marginal rates after a 50, 60, 70, 80, 90, and 100 percent reduction of the original tax. This is a rough approximation in part because it does not reflect the efficiency effects of any interaction between income tax and the consumption tax. Individual income and payroll taxes would remain if only the corporate tax was replaced, but they are absent in Jorgenson's and Yun's simulation. Against this, we assume a higher rate of consumption taxation than our analysis indicates would be necessary.

8. This comparison is based on the marginal rates of the corporate income tax versus a 15 percent consumption tax.

9. This estimate assumes a constant gap between the efficiency costs of the corporate income tax and the consumption tax. The gap may actually widen or narrow as more revenue is raised. We believe that the efficiency gap is likely to grow as revenue rises.

Box 4.2 Efficiency gains of adopting new tax structures

Jorgenson and Yun (2001, table 8.2) run simulations to project the efficiency gains of a variety of tax reform plans. Each of these plans effectively replaces current state and federal income tax systems, as well as payroll taxes.

Hall-Rabushka flat tax. Firms can expense the cost of all purchases from other business and all purchases of labor services, but labor is taxed at the individual level. This permits the introduction of deductions in the taxation of labor income, making the overall system more progressive. Interest and dividends paid by firms would not be deductible from the business tax base but would not be taxed at the individual level. All income, business and individual, would be taxed at the flat rate of 19 percent. Jorgenson and Yun (2001) model the efficiency gains from this plan at \$92 billion annually. The present value over an infinite time horizon, discounted at a 4.45 percent annual rate, is about \$2.1 trillion.

Flat sales tax. Imposes a national sales tax at a flat rate on a broad consumption base. The required rate is roughly 29 percent. Efficiency gains are estimated at \$202 billion annually. The present value over an infinite time horizon, discounted at a 4.45 percent annual rate, is about \$4.5 trillion. The efficiency gains are more than twice the size of the Hall-Rabushka flat tax, which taxes corporate income, because investment is not discouraged with a flat sales tax. For the same reason, the flat labor tax creates substantially more efficiency gains than the Hall-Rabushka flat tax.

Flat labor tax. Applies a flat rate on labor income of approximately 25 percent. This generates efficiency gains estimated at \$193 billion annually. The present value over an infinite time horizon, discounted at a 4.45 percent annual rate, is about \$4.4 trillion.

Flat sales, flat labor tax. Applies a flat rate of 12 percent on all labor income and a flat sales tax of 17 percent. Efficiency gains are estimated at \$202 billion annually. The present value over an infinite time horizon, discounted at a 4.45 percent annual rate, is about \$4.5 trillion.

Progressive sales tax. Imposes a national sales tax at a progressive rate on a broad consumption base. The average tax is 29 percent, but the marginal rate is 40 percent (this figure is tax inclusive, which means the tax-exclusive rate at the cash register would be 66 percent). This plan yields a welfare gain of \$145 billion annually. The present value over an infinite time horizon, discounted at a 4.45 percent annual rate, is about \$3.3 trillion.

Progressive sales, progressive labor tax. Replaces the current system, except for property taxes, with two progressive taxes on sales and labor income. The average tax on labor is 12 percent, with a marginal rate of 21 percent, while the average rate on sales is 17 percent, with a marginal rate of 23 percent. The efficiency gain of this plan is \$85 billion annually. The present value over an infinite time horizon, discounted at a 4.45 percent annual rate, is about \$1.9 trillion.

Connection Between Rates and Revenues

Many countries now have lower effective corporate tax rates than the United States, but they do not necessarily collect less corporate tax as a percent of GDP. Using the data in table 4.2, regression analysis shows no meaningful correspondence between corporate income tax revenues and either effective or statutory rates.¹⁰ Using the effective rate estimates of M. P. Devereux, R. Griffith, and A. Klemm (2002) for 2002 yields the same result (tables 4.3 and 4.4; 2002 is the latest available year for comparable revenue statistics).¹¹ In contrast, higher VAT rates do appear to correspond to higher revenues. Using the 2001 data presented in table 3.1 for 16 OECD countries, a simple regression found that a 1 percent increase in the VAT rate raises revenues by 0.3 percent of GDP, a highly significant relationship.¹²

Within a broad range, statutory corporate tax rates apparently make little difference to the amount of revenue collected. There are three explanations: Higher corporate rates invite more deductions from the tax base as firms clamor for relief; the administrative difficulty of enforcing the tax law rises as corporate tax rates increase; and the share of economic activity performed by private corporations, as opposed to partnerships, proprietorships, or state-run firms, probably falls as the corporate tax rate rises.¹³

These results have significant implications for countercyclical fiscal policy. During economic downturns, Congress is tempted to enact fiscal stimulus packages, sometimes including adjustments to the corporate income tax. However, several scholars question whether any discretionary counter-cyclical stimulus is effective (Taylor 2000, Auerbach 2002, Feldstein 2002). In general, they prefer a fiscal policy that adjusts automatically to

10. The simple ordinary least squares (OLS) regression coefficients (for 20 observations) are less than 0.04, and have no statistical significance. The absence of a strong correlation may be due to the dynamic effect of lower taxes on the corporate tax base. Mankiw and Weinzierl (2004) present a theoretical model that indicates that if the marginal tax rate on capital and labor are both 25 percent, half of the static revenue loss (calculated assuming a constant tax base) from a cut in the capital rate will be recovered through higher corporate profits. Clearly, dynamic scoring of tax changes can produce different revenue estimates from static scoring. Dynamic scoring is also more speculative. To be conservative, we present revenue estimates calculated using static scoring.

11. Simple OLS regressions using the 19 countries listed in tables 7 and 8 produced coefficients of the wrong sign (negative) that were not statistically significant from zero. Although three countries, Norway, Germany and Ireland, could be considered outliers from the data set, their removal did not appreciably change the regression results.

12. The simple OLS model has an adjusted R-squared of 0.75, and the coefficient is significant at a 99 percent confidence level. A logarithmic analysis of VAT revenues indicates that a 1.0 percent increase in the VAT rate corresponds to a 0.8 percent rise in VAT revenue.

13. These results can be broadly interpreted as Laffer curve effects: Higher rates are offset by more tax avoidance and less real activity.

Table 4.2 Effective and statutory corporate tax rates and corporate tax revenue, selected countries

Country	Average effective tax rate ^a (percent)	Statutory corporate tax rate ^b (percent)	Corporate income tax revenue ^c (percent of GDP)
Asia and Pacific			
Australia	21.8	36.0	4.9
China (mainland)	11.3	33.4	0.5
China (Hong Kong)	13.4	16.0	n.a.
India	32.2	35.0	1.4
Indonesia	0.2	28.5	4.3
Japan	48.2	57.0	3.7
Malaysia	8.2	28.0	n.a.
South Korea	30.1	34.0	2.6
Taiwan	13.7	25.0	n.a.
Thailand	15.2	30.0	2.0
Europe			
France	22.7	39.3	2.7
Germany	30.5	60.0	1.6
Italy	40.9	41.3	3.0
Netherlands	14.2	35.0	4.3
United Kingdom	18.2	30.0	4.0
Western Hemisphere			
Argentina	13.6	35.0	1.5
Brazil	16.6	32.0	1.3
Canada	28.2	40.1	3.6
Mexico	15.1	35.0	n.a.
United States ^d	30.1	40.0	2.6
Small low-tax countries			
Bermuda ^e	11.6	0	n.a.
Chile	10.0	35.0	n.a.
Costa Rica	0.9	30.0	2.0
Ireland ^f	8.5	32.0	3.4
Netherlands Antilles	5.7	50.0	n.a.
Panama ^g	7.0	30.0	1.1
Singapore	10.0	26.0	n.a.
Switzerland	10.3	31.0	2.1

n.a. = not available

a. The average effective tax rate for all countries except the United States is based on 1998 data for US-controlled foreign corporations, as reported to the IRS on Form 5471. The average effective tax rate for the United States is based on the 1998 US corporate profits tax liability (federal and state) as reported in the *Statistical Abstract of the United States*.

b. Based on 1999–2000 Corporate Taxes—Worldwide Summaries, PricewaterhouseCoopers (1999). The rates reported are the highest marginal corporate tax rates in each country.

c. Based on 1998 data. For OECD countries, figures collected from OECD (2003); for non-OECD countries, calculated from tax revenue data in IMF (2002) and GDP data in IMF (2003b). Mexico and many non-OECD countries do not report corporate income revenue separate from total income tax revenue.

d. For the United States, the federal statutory rate is 35 percent and the average state statutory rate is assumed to be 5 percent.

e. The nonzero effective tax rate for Bermuda reflects a statistical discrepancy in the data, possibly a result of taxes paid by second-tier and third-tier subsidiaries of US affiliates based in Bermuda.

f. Inward direct investment to Ireland in manufacturing and some services may be eligible for a 10 or 12.5 percent statutory rate.

g. Income derived from exports produced in the Colon Free Zone are not taxed.

Sources: PricewaterhouseCoopers (2003) for effective tax rates in foreign countries; PricewaterhouseCoopers (1999) for statutory tax rates; US Census (2003) for effective tax rate in the United States; OECD (2003) and IMF (2002, 2003b) for corporate income tax revenue and GDP.

Table 4.3 Statutory corporate tax rates (percent of income) and corporate tax revenue (percent of GDP) of 19 industrial countries

Country	1985			1995			2003		
	Statutory rate	Rank	Revenue	Statutory rate	Rank	Revenue	Statutory rate	Rank	Revenue ^a
Ireland	10.0	1	1.1	10.0	1	2.8	12.5	1	3.7
Norway	50.8	13	7.4	28.0	3	3.8	28.0	2	8.2
Sweden	60.4	17	1.6	28.0	3	2.8	28.0	2	2.4
Finland	60.2	16	1.5	25.0	2	1.8	29.0	4	4.3
Australia	50.0	11	2.7	36.0	11	4.4	30.0	5	5.3
United Kingdom	40.0	4	4.7	33.0	5	3.3	30.0	5	2.9
Portugal ^b	55.1	14	—	39.6	14	2.6	33.0	7	3.6
Switzerland	34.6	2	1.8	34.6	7	1.9	33.7	8	2.7
Belgium	45.0	7	2.6	40.2	16	3.0	34.0	9	3.5
Austria	61.3	18	1.4	34.0	6	1.5	34.0	9	2.3
Netherlands	43.0	5	3.0	35.0	8	3.1	34.5	11	3.5
Spain	35.0	3	1.4	35.0	8	1.8	35.0	12	3.2
Greece	44.0	6	0.8	40.0	15	2.0	35.0	12	3.8
France	50.0	11	1.9	36.7	12	2.1	35.4	14	2.9
Canada	45.1	8	2.7	35.6	10	2.9	35.6	15	3.4
Italy	46.4	9	3.2	52.2	18	3.6	38.3	16	3.2
United States	49.6	10	2.0	39.3	13	2.6	39.3	17	1.8
Germany	62.6	19	2.1	56.6	19	1.1	39.6	18	1.0
Japan	56.1	15	5.7	50.0	17	4.2	40.9	19	3.1

a. Latest available year: 2001 for Portugal, 2002 for all others.

b. 1985 revenue data are unavailable.

Sources: OECD (2003, 2004); Devereux, Griffith, and Klemm (2002), database maintained at www.ifs.org.uk/corptaxindex.shtml.

cyclical conditions.¹⁴ Given the complexity of the corporate income tax and the apparent disconnect between rates and revenues, it seems an especially poor vehicle for countercyclical stimulus.¹⁵ The better justification for altering the structure of corporate income taxes is to improve supply-side efficiency, not to stimulate demand.

14. A classic example of an “automatic stabilizer” in fiscal policy is unemployment insurance. Since more people lose their jobs in an economic downturn, the government automatically increases outlays. Taxes on profits and expenditures can also be viewed as automatic stabilizers, in the sense that tax receipts fall in a downturn without the need for an act of Congress.

15. Congress may be quick to change the corporate tax code to meet short-term goals, but these changes typically come in the form of narrow tax provisions (special credits, depreciation allowances, etc.) that further distort the tax system. See Auerbach (2002) for an analysis of discretionary fiscal stimulus within the context of the corporate income tax. In particular, he considers the specific case of the temporary introduction of expensing (as opposed to depreciation) of certain investment goods in 2002.

Table 4.4 Effective average corporate tax rates (percent of income) and corporate tax revenue (percent of GDP) of 19 industrial countries

Country	1985			1995			2003		
	Effective rate	Rank	Revenue	Effective rate	Rank	Revenue	Effective rate	Rank	Revenue ^a
Ireland	5.5	1	1.1	8.4	1	2.8	11.2	1	3.7
Sweden	53.6	18	1.6	22.8	3	2.8	22.8	2	2.4
Finland	53.4	17	1.5	20.2	2	1.8	24.8	3	4.3
Norway	42.6	12	7.4	25.3	4	3.8	25.3	4	8.2
United Kingdom	30.7	4	4.7	28.4	7	3.3	25.7	5	2.9
Greece	39.4	10	0.8	35.6	16	2.0	26.2	6	3.8
Portugal ^b	51.9	16	—	32.9	13	2.6	26.9	7	3.6
Austria	49.7	14	1.4	27.1	5	1.5	27.0	8	2.3
Australia	42.9	13	2.7	33.1	14	4.4	27.4	9	5.3
Switzerland	28.6	2	1.8	28.6	8	1.9	27.8	10	2.7
Belgium	39.2	8	2.6	34.6	15	3.0	28.8	11	3.5
Spain	29.5	3	1.4	27.5	6	1.8	29.0	12	3.2
France	40.8	11	1.9	30.0	9	2.1	29.5	13	2.9
Netherlands	37.8	7	3.0	30.3	10	3.1	29.8	14	3.5
Italy	37.4	6	3.2	43.8	17	3.6	30.6	15	3.2
Canada	34.3	5	2.7	30.9	11	2.9	30.9	16	3.4
United States	39.3	9	2.0	32.7	12	2.6	32.7	17	1.8
Germany	55.3	19	2.1	49.0	19	1.1	35.3	18	1.0
Japan	50.8	15	5.7	44.7	18	4.2	35.8	19	3.1

a. Latest available year: 2001 for Portugal, 2002 for all others.

b. 1985 revenue data are unavailable.

Note: Effective average corporate tax rate calculated from statutory rates, depreciation statutes, and other allowances to estimate the effective tax rate for a company of average profitability.

Sources: OECD (2003, 2004); Devereux, Griffith, and Klemm (2002), database maintained at www.ifs.org.uk/corptaxindex.shtml.

The NRST and VAT offer a better lever for countercyclical fiscal stimulus. Consumption tax changes seem well suited to expanding or contracting short-term consumption, as changing the VAT rate is a simple way to affect the broad economy without distorting economic incentives. The real question, as with all discretionary fiscal policy, is whether rate changes could be debated and implemented in a timely fashion.

Global Considerations

In addition to the domestic complexity of changing a tax regime, legislators must contend with global factors. They must contemplate the impact of taxes on the competitiveness of US firms doing business abroad and foreign firms seeking to do business in the US market. More specifically,

they must figure out how taxes will alter the flow of exports and imports crossing the border, and the effects that tax laws could have on the current account balance and the exchange rate.

Global Competition

Political leaders have long accepted that investment location and business activity are to some degree motivated by tax considerations. In the past decade, econometric analysis has shown how much.

Forty years ago, debates on foreign investment focused on how US-based MNEs affected US employment.¹⁶ During the 1970s, the AFL-CIO embraced the view, which it holds to this day, that investment abroad steals good jobs from the United States. Empirical studies during the same decade, however, showed that the employment effect was not large and might even have been positive (Bergsten, Horst, and Moran 1978). Subsequent econometric analyses (see Graham 2000, appendix B; Hanson, Mataloni, and Slaughter 2003) reinforce the view that investment abroad by US-based MNEs on average actually boosts US exports, and that MNEs have a better record for creating American jobs than their purely domestic counterparts.

Meanwhile, the world has changed. The United States has become more concerned about its rank in the global contest for business investment, not because more investment abroad is bad for employment at home, but because more investment at home is good for enhancing productivity. While corporate taxes are certainly not the only consideration driving investment and location decisions, they are important. Jan Ondrich and Michael Wasylenko (1993) found that an affiliate of a foreign company choosing to locate in one of the 50 states was very favorably inclined toward states with low corporate taxes. Their analysis suggested that raising individual income taxes and using the funds to pay for a corporate tax cut would have a stronger effect on luring foreign affiliates than using the same funds to pay for higher education.

John Mutti (2003) studied the location decisions of foreign affiliates of US-based MNEs. A key table from his study is reproduced as table 4.5. Mutti's dependent variable is not investment, but corporate activity, measured by real gross product.¹⁷ Population and GDP per capita are always significant attractors of business activity: The larger the country and the higher its per capita income, the more attractive it is as a place to do

16. Before panel econometric analysis, it was commonly assumed that investment abroad by US firms substituted dollar-for-dollar for their domestic investment, causing a one-for-one shift from domestic to foreign employment. Krause and Dam (1964) and Hufbauer and Adler (1968) were among the first to challenge this assumption.

17. Mutti argues that business activity is a better dependent variable because investment flow decisions are lumpy and investment stock figures replete with statistical anomalies.

Table 4.5 Key coefficients for the sensitivity of MNE foreign affiliate activity

Coefficient	1982	1989	1994
Ln(population)	0.81 (6.82)	0.76 (6.50)	0.82 (7.37)
Ln(GDP per capita)	1.64 (5.50)	1.62 (5.59)	1.24 (4.28)
Ln(1-tax)	1.79 (1.45)	2.44 (2.04)	3.17 (2.31)

MNE = multinational enterprise

Notes: The dependent variable is real gross product originating in affiliates within the host country. The logarithmic formulation allows the coefficient estimates to be interpreted as elasticities (i.e., the coefficient represents the percent change in gross product originating in foreign affiliates resulting from a 1 percent rise in the independent variable). *t*-statistics are shown in parentheses below coefficient estimates. The tax variable is average effective tax rate based on US-controlled foreign corporations reports on IRS form 5471.

Source: Mutti (2003).

business.¹⁸ Likewise, lower corporate taxes are a favorable factor, increasingly so over time. In 1982, a 10 percent drop in the corporate tax rate was associated with an 18 percent increase in affiliate activity; running the same analysis using data from 1994, the same 10 percent drop was associated with a 31 percent increase in affiliate activity.¹⁹ While Mutti's results reflect the experience of affiliates abroad, it seems reasonable to infer that lower corporate tax rates also spur business activity within the United States, though probably to a lesser extent.

Relative Tax Rates, Then and Now

In the 1980s, after the 1981 Reagan tax cuts, the effective US corporate rate was lower than most of its industrial competitors, primarily Canada,

18. When a separate variable is entered for wage levels, in a random effects equation, it only slightly offsets the positive effect of higher GDP per capita. In other words, if a 10 percent increase in wages goes hand-in-hand with a 10 percent increase in GDP per capita, there is still a strong net positive effect on business activity.

19. Altshuler, Grubert, and Newlon (1998) reached much the same result using real capital stock as the dependent variable. They found that in 1992, a 10 percent increase in after-tax returns led to a 30 percent increase in the real capital stock of overseas manufacturing affiliates.

Europe, and Japan. Since then, many OECD countries have slashed their corporate tax rates and introduced new incentives, such as rapid depreciation. New industrial competitors have also emerged: China, South Korea, India, Mexico, and Brazil, among others. While some of the new competitors have high statutory tax rates, their effective tax rates are often much lower because of tax holidays, special credits and deductions, and lenient enforcement.

As table 4.2 shows, in the late 1990s (the latest data available), the average effective corporate tax rates actually paid by foreign affiliates of US-based MNEs to foreign governments were considerably lower in a number of countries than the average effective corporate tax rate paid to state and federal governments in the United States. This was true not only of low-tax countries, such as Singapore, Hong Kong, and Ireland, and tax-haven countries, such as Bermuda, Netherlands Antilles, and the Cayman Islands, but also of major industrial competitors, such as France, the United Kingdom, China, Taiwan, Mexico, and Brazil.

The upshot, two decades after the Reagan revolution, is that the United States has become relatively less attractive from a tax standpoint. Mutti's analysis of 59 countries (2003, table 2.4) found that from 1984 to 1992, some 20 countries had lower effective corporate rates than the United States, while 39 had higher rates. From 1992 to 1996, 43 of the countries had lower effective rates than the United States, and only 16 had higher rates.

Today, the comparison is even less favorable. Devereux, Griffith, and Klemm (2002) have compiled information on combined national and local statutory rates for 19 industrial countries, shown in table 4.3. To account for differences in deductions, depreciation, and other factors, the authors used each nation's tax law to estimate the "effective average tax rate"—roughly, the effective rate of taxation on an investment of average profitability. We present their estimated "effective average rates" in table 4.4. By both statutory and effective measures, the United States has fallen steadily in the league tables between 1983 and 2003, despite cutting its own rate.

More countries have migrated to low effective rates by cutting their statutory rates and devising more favorable tax structures. Based on collections, US effective rates are also lower, falling from about 32.4 percent of corporate profits in 1995 to 26.2 percent in 2002.²⁰ However, lower US effective rates during this period do not reflect major statutory changes since the mid-1990s, as indicated by the statute-based effective rates reported in table 4.4. Rather, they result from the recession of 2001 and

20. Both figures are for combined federal, state, and local corporate income taxes, expressed as a percent of pretax profits, both domestic and foreign (to the extent repatriated as dividends). Data are from National Income and Product Accounts (BEA 2004a, tables 6.17c and 6.18c).

2002, and firms more aggressively avoiding taxes.²¹ The newly enacted American Jobs Creation Act of 2004 (PL 108-357), however, did lower the federal statutory rate for “manufacturing” (broadly defined) from 35 to 32 percent starting in 2005.²²

Border Tax Adjustment Rules

Border tax adjustments occur when a tax is imposed on imports but is either not assessed or rebated on exports. US trade with Germany illustrates the border tax adjustment process. When a US firm exports goods to Germany, it pays, say, a 16 percent VAT as the goods clear German customs. When a German firm exports to the United States, it gets a rebate of the 16 percent VAT when it files its VAT return. For firms that compete in global markets, adjusting business taxes at the border makes them more digestible. Under WTO rules, border adjustment is permitted for value-added, retail sales, and excise taxes, but not for corporate income tax.²³ As mentioned earlier, the RST is implicitly adjusted at the border, whereas VAT is explicitly adjusted.

In economic theory, border adjustments for uniform business taxes are equivalent to a real exchange rate adjustment of approximately the same magnitude, induced either by a change in the market exchange rate or a change in the price level. In theory, if a uniform 10 percent tax is collected on value added in each sector of the economy; if the tax is neither imposed on imports nor rebated on exports; if the tax does not change long-term capital flows;²⁴ and if the country floats its exchange rate, then the exchange rate will depreciate by 10 percent, or its price level will decline by 10 percent relative to the rest of the world, or a combination

21. More aggressive corporate tax avoidance often shows up as lower taxable income relative to reported corporate earnings. Our figures do not reflect this phenomenon, which became more pronounced during the stock market boom of the 1990s.

22. The rate reduction is achieved by allowing a deduction of income from “qualified production activities.” Firms are allowed to deduct 3 percent of qualified production income in 2005 and 2006, 6 percent from 2007 to 2009, and 9 percent thereafter.

23. The idea behind border tax adjustments is to impose the tax in question on final purchases within the country imposing the tax. In its FSC case, the Appellate Body of the WTO held that direct business taxes (such as the corporate income tax) cannot be adjusted at the border, but indirect business taxes (such as the RST and VAT) can be adjusted. See WTO case number WT/DS108, titled *United States—Tax Treatment for Foreign Sales Corporations*, brought in November 1997 and decided by the Appellate Body in January 2002. The GATT/WTO distinction between indirect and direct taxes—one adjustable at the border, the other not—lies at the heart of 30 years of tax disputes between the United States and Europe, involving the domestic international sales corporation, the FSC, and the Extraterritorial Income Act. See Hufbauer (2002) and appendix B.

24. In the absence of border tax adjustments, short-term capital may anticipate the exchange rate change by leaving the taxing country.

of both. The 10 percent real depreciation restores relative prices to their levels before the tax was imposed. However, if instead the uniform tax is adjusted at the border, either implicitly or explicitly, the exchange rate (or the domestic price level) will remain the same. In that case, the border adjustment process itself restores prices to their original levels relative to the rest of the world. Thus the classic economic answer to national differences in business tax rates is that exchange rate and price adjustments will eventually offset tax differences, and wash away any permanent effect on business location decisions. By this logic, firms should not particularly care if business taxes are adjusted at the border.

But they do care. Hardly a country has imposed a VAT or one of its cousins without adjusting the tax at the border.²⁵ RSTs, by virtue of their imposition at the point of final sale, are inherently adjusted at the border. States do not tax goods exported from their jurisdiction, but they do tax goods that are imported and sold in a retail transaction.²⁶

One reason firms care so much is that border tax adjustments are immediate and certain, while exchange rate adjustments are distant and problematic, even under flexible exchange rate systems (Hartman 2004, Vaughn 2005).²⁷ Extensive research shows that “fundamental” forces do a very poor job of explaining intermediate-term exchange rate movements (Kilian and Taylor 2001; Bofinger, Leitner, and Schmidt 2004; Cheung, Chinn, and Pascual 2004). If broad forces, such as the rate of inflation and the pace of GDP expansion, do not reliably explain past exchange rate changes, what confidence can businesses have in the proposition that future exchange rate changes will offset higher business taxes now?²⁸

25. The only exception we are aware of is that Russia and some other members of the Commonwealth of Independent States (CIS) initially applied origin-principle VAT border adjustments (in other words, taxing exports and exempting imports) on intra-CIS trade while applying the typical destination-principle adjustment rules for trade with non-CIS countries. In July 2001, Russia switched to the destination principle for trade with the CIS for all goods except oil and natural gas, Russia’s two largest exports (Ebrill et al. 2001, 193; Konnov and McDonald 2000). See Konnov and McDonald (2000) for a summary of the Russian VAT system before and after the reforms passed in 2000.

26. Many states have also attempted to impose use taxes—namely, taxes on purchases outside the state for use within its jurisdiction, which include interstate sales over the Internet. Enforcement of these taxes is extremely difficult, since they rely on purchasers to report the transaction and pay the tax; as a consequence, compliance is minimal (Manzi 2003).

27. In the case of a currency union, as between the states of the United States or between the member countries of the European Union, exchange rate adjustments are by definition ruled out.

28. Academic assurances that exchange rate adjustments will, in the long run, redress the competitive burden of high business taxes remind businessmen of Lord Keynes’s famous aphorism: “In the long run, we are all dead.” Another reason that firms insist on border adjustments for business taxes is that the taxes themselves are almost never uniform across business activities. Since an exchange rate change is, by definition, uniform with respect to all international transactions, it will not adequately compensate highly taxed sectors.

Moreover, so long as the United States runs a substantial current account deficit—\$666 billion, or 5.7 percent of GDP, in 2004—Congress will be more sensitive to the fact that any increase in corporate income taxes will drive some manufacturing and services jobs abroad. In an era of trade deficits and outsourcing fears, if business taxes are not raised in a way that permits border adjustments, it seems likely that political forces will therefore create an even more jagged and distorted tax profile.²⁹ By contrast, eliminating the corporate income tax and replacing it with border-adjusted business taxation is likely to attract companies and their manufacturing and services jobs to the United States.

Taxation and the US Current Account

As mentioned, the US current account deficit and its primary component, the trade deficit, may reach \$700 billion, or roughly 6 percent of GDP, in 2005. One interpretation of this large trade deficit is that the United States is living beyond its means.³⁰ Indeed, US gross savings for both households and firms were less than 14 percent of GDP in 2003 and 2004 (BEA 2004a, table 5.1), well below levels in Canada, Europe, or Japan. US public-sector deficits are clearly part of the problem. William G. Gale and Peter R. Orszag (2004) estimate that each 1 percent of GDP increase in the US public deficit (federal and state) reduces national savings by between 0.5 and 0.8 percent of GDP.³¹

However, the experience of the 1990s shows that fiscal integrity, while important, is not the only story. Throughout the late 1990s, the federal budget ran a surplus, but the trade deficit continued to expand because

29. Despite the fiscal deficit in 2004, Congress enacted, and the president signed, the American Jobs Creation Act of 2004 (PL 108-357). The impetus of this bill was to repeal a \$5-billion-a-year export subsidy (the FSC and the Extraterritorial Income Act) and to use the funds on a revenue-neutral basis for corporate tax relief. However, to garner the necessary congressional votes, multiple extraneous provisions were added to the bill. The Joint Committee on Taxation scored the Act as revenue-neutral, but had to embrace doubtful assumptions to reach this result. Reducing the corporate tax rate from 35 to 32 percent on “manufacturers” (broadly defined) turned out to be a core feature of the legislation, in large part because of a US trade deficit in manufactured goods.

30. Mann (2004) points out that current account surpluses (colloquially, trade surpluses) in the rest of the world are the other half of “global codependency.” They reflect both a desire of foreign central banks and private firms to acquire dollars and a persistent reliance on sales of consumer and intermediate goods to the US market to make up for slack domestic demand abroad.

31. This result rejects the Ricardian Equivalence Hypothesis (REH), which posits that rational households will offset a decrease in public saving with an increase in private saving, in anticipation of higher future taxes. An earlier analysis by Doménech, Taguas, and Varela (1997) likewise rejects the REH using panel data across OECD countries.

of very high business investment coupled with low household savings. In the current decade, household savings has continued to dwindle to only 1.2 percent of disposable personal income in 2004 (BEA 2004a, table 2.1).³² This combination has forced US firms to look abroad for sources of capital, the counterpart of the trade deficit.

Historically, governments have found it difficult to alter household saving rates, as determinants of household savings seem to have large components that are somewhat indifferent to government incentives. That said, US public policy has features that strongly encourage consumption over saving.³³ The double taxation of dividends, once as corporate income, then again as personal income, is one such policy. The deductibility of mortgage interest, almost without limit, is an even more important incentive to consume. Pay-as-you-go Social Security and Medicare systems, with their widening actuarial deficits, are the third and largest anti-saving dimension of US fiscal policy.

By shifting part of the tax burden from saving to consumption, the government could begin to change its current proconsumption bias. By contrast, a sharp rise in corporate tax rates would sharpen the antisavings bias. Higher corporate taxes would diminish business savings directly, and household savings indirectly, by reducing long-term prospects for returns on equity investments.

Trade Impact of Border Tax Adjustments

To alter a nation's current account position (colloquially, its trade balance), the conjunction of two forces is required: a change in the real exchange rate, and a change in the savings-investment balance. To reduce the US trade deficit from 6 percent of GDP in 2005 to a lower and more sustainable amount—around \$300 billion, or about 3 percent of GDP³⁴—the real exchange rate must depreciate and private savings must increase relative to the sum of private investment and public deficits.

A change in the real exchange rate alters the price relationship of US products to foreign products. When the dollar depreciates in real terms, that is, adjusting for inflation in the United States and abroad, US exports tend to increase because they become cheaper for foreign buyers

32. This represents a steady decline from about 10 percent during the early 1980s (BEA 2004a, table 2.1).

33. To be sure, other features, such as Roth IRAs and 401(k) plans, do encourage saving. But proconsumption features are stronger and more numerous.

34. If GDP grows at 3 percent per year, a current account deficit equal to 3 percent of GDP (and correspondingly a capital account surplus of the same magnitude) would approximately stabilize the ratio of net foreign liabilities to GDP. At the end of 2003, net US foreign liabilities were about \$2.6 trillion (at market value), or about 24 percent of GDP (BEA 2004b).

and/or more profitable to American producers. Likewise, US imports are discouraged as they become more expensive to American buyers and/or less profitable to foreign producers.³⁵

A change in the saving-investment-deficit balance alters net US demand for foreign savings. When US private savings increase relative to domestic private investment and the public deficit, the nation's net demand for foreign savings shrinks, as there is less need for foreign capital to finance domestic US spending.³⁶ As a matter of accounting, the current account deficit must be matched by a capital account surplus; an autonomous change in one compels an offsetting change in the other.

Border tax adjustments can be one component of this broader story of external adjustment. A border tax increase of 10 percent on all traded goods and services has roughly the same impact on price relationships as a 10 percent depreciation of the real dollar exchange rate.³⁷ US exports are 10 percent cheaper to foreign consumers, 10 percent more profitable to US producers, or a combination; meanwhile, US imports are 10 percent more expensive to US consumers, 10 percent less profitable to foreign producers, or a combination.

A uniform border tax adjustment will also affect the saving-investment-deficit balance like a change in the exchange rate, but to an extent that is not easy to anticipate or estimate. On one hand, border tax adjustments will encourage investment in the sectors of the economy that produce traded goods and services, because prices realized there will be more favorable compared with sectors producing nontraded goods and services. On the other hand, corporate profitability in the traded goods and service sector will increase, and thus augment corporate savings, but the opposite forces will be at work in the nontraded goods and service sectors. Because consumer products are more expensive, household

35. If producers set their foreign currency prices solely in accordance with conditions in foreign markets, a depreciation of the real exchange rate will have no effect on prices, but it will affect profitability, increasing the profitability of export sales and decreasing the profitability of import sales. After a lag, changes in profitability will alter export and import quantities from the supply side. On the other hand, if producers set their prices in their own domestic currency so that exchange rate changes are quickly reflected in foreign currency prices, a depreciation of the exchange rate will reduce the prices charged to foreign buyers for exports and increase the prices charged to domestic buyers for imports. Price changes will in turn affect export and import quantities from the demand side. In practice, real exchange rate changes affect both prices and profitability, working on both supply and demand.

36. Of course, US firms may be investing abroad at the same time that foreign firms are investing in the United States. The saving-investment-deficit balance determines net inflows of foreign capital. However, net inflows of foreign capital must also equal the difference between gross inflows of foreign capital and gross outflows of US capital.

37. We assume that a border-adjusted tax is imposed to replace a nonborder-adjusted tax. If a border-adjusted tax is instead imposed as an additional tax, the border adjustment would merely maintain the status quo ante.

savings may increase. Finally, if the border tax adjustment is a consequence of a new tax system that enhances public revenue more than public spending, the federal deficit will shrink. In short, different stories can be told about the sign and size of the connection between border tax adjustments (or an exchange rate change) and the saving-investment-deficit balance.³⁸

For purposes of illustrative exposition, we make the strong assumption that the US saving-investment-deficit balance will partly accommodate the change in the trade balance, calculated solely on the basis of relative price changes caused by border tax adjustments. If the necessary alterations in the savings-investment-deficit balance do not appear, any border tax adjustment will be countermanded in whole or part by an opposite appreciation of the dollar. However, we assume that some combination of fiscal tightening (higher taxes, lower spending), increased private savings, and decreased investment (higher interest rates) will alter the savings-investment-deficit balance to partly accommodate the change in the trade balance from relative price changes.

Estimates have been made about the effect of a depreciation in the real dollar exchange rate of 1 percent (expressed on a trade-weighted basis) on the trade deficit. C. Fred Bergsten (2003) cites a \$10 billion improvement after two to three years. Morris Goldstein (2004) adheres to the same “rule of thumb” but cites analysts who believe the coefficient is closer to \$5 billion. Extrapolating from estimates by Catherine Mann (1999, table 10.3), it can also be said that the current account deficit declines \$6 billion for a 1 percentage point depreciation in the short term (one year) and \$9 billion to \$10 billion for a 1 percentage point depreciation in the medium term (five years).³⁹

Based on a general equilibrium model simulation provided by William Cline (2005, forthcoming), a 1 percent trade-weighted depreciation of the dollar will reduce the US trade deficit by about \$5 billion.⁴⁰ However,

38. Our proposal below replaces the corporate income tax (which is not border adjusted) with a border-adjusted tax. While not directly due to border adjustment, to the extent that the corporate income tax discourages investment in the United States, eliminating it will encourage corporate investment and perhaps increase capital inflows from abroad.

39. “Pass-through rates” reflect the extent to which a change in the exchange rate is reflected in a change in the final price of imports. Different views on the appropriate pass-through rate are built into exchange rate response coefficients. Typical estimates of US pass-through rates show them to be smaller than for other countries (Valderrama 2004). By adopting the response coefficients discussed in the text, we also adopt the underlying assumptions about US pass-through rates.

40. Cline (2005, forthcoming) estimates that a 20 percent ex post depreciation in the dollar would have caused the 2004 trade deficit to shrink from 5.2 percent of GDP to 4.4 percent of GDP. The model has a built-in policy response mechanism that operates through the 10-year Treasury interest rate. The simulated 20 percent depreciation would theoretically cause the US 10-year Treasury interest rate to rise from 4.1 percent to 7.5 percent, resulting in a large decline in investment.

Table 4.6 Trade deficit and border tax adjustments

Border tax adjustment rate (percent)	Direct effect of border tax adjustment on trade deficit (billions of dollars)	Intermediate estimated trade deficit		Net public revenue from border tax adjustments (billions of dollars)	Public revenue effect on trade deficit (billions of dollars)	Estimated trade deficit including direct and public revenue effects	
		Billions of dollars	Percent of GDP			Billions of dollars	Percent of GDP
0	0	705	5.7	0	0	705	5.7
5	-25	680	5.5	34	-12	668	5.4
10	-50	655	5.3	66	-24	631	5.1
15	-75	630	5.1	95	-35	595	4.8
20	-100	605	4.9	121	-44	561	4.5

Note: Based on general equilibrium model simulations performed by William Cline. We assume US GDP = \$12.4 trillion in 2005, ignoring the general equilibrium impact of policy changes on GDP. The baseline trade deficit (with zero border tax adjustment) is a rough projection for 2005.

Source: Cline (2005, forthcoming) and authors' calculations.

the government will also gain revenue from border adjustments. A separate Cline simulation suggests that an increase in government revenue by 1 percent of GDP will reduce the trade deficit by slightly more than one-third of 1 percent of GDP.⁴¹ On this basis, table 4.6 shows the possible reduction in the US trade deficit for different rates of an NRST or VAT. The table first estimates the direct effect of border tax adjustments by treating them as equivalent to a change in the exchange rate; it then adds an indirect effect to reflect the increase in government revenues from the border tax adjustment (since US imports substantially exceed US exports).

From the perspective of reducing the current account deficit, a higher NRST or CAT rate is better. The higher the tax rate is, the larger the border tax adjustment, and the greater the change in relative prices. When relative prices move sharply in favor of traded goods and services, US production in this sector increases and the trade deficit shrinks. Table 4.6 provides an illustrative tableau of alternative border tax adjustment rates and the reduction in the trade deficit. Based on our interpretation of Cline's model, a border tax adjustment of 10 percent would reduce the annual trade deficit by roughly \$74 billion. A border tax adjustment of 20 percent would reduce the annual trade deficit by roughly \$144 billion.⁴²

With their ability to address US fiscal problems and minimize the distortions caused by any tax system, both an NRST and a VAT are strong candidates for replacing the current corporate income tax. In the next chapter, we put forth specific proposals for the NRST and a variant of VAT, and weigh the respective costs and potential benefits.

41. Cline (2005, forthcoming) simulates an increase of 3 percent of GDP in tax revenue, which results in a 1.1 percent decrease in the trade deficit. In this simulation, the 10-year Treasury interest rate falls from 4.1 percent to 2.7 percent, causing investment to increase.

42. As a point of reference, the average rate of border-adjusted taxes in 2001 was 15 percent in the EU-15 and 17.7 percent across the OECD (Hartman 2004).