

TAX POLICY AND COMPETITIVENESS

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1. Introduction

In recent years, members of the U.S. business, government, and academic communities have exhibited heightened awareness of international economic issues. The attention is not surprising given the increased volume of trade that has occurred over time. For example, between 1970 and 1990 both real exports and real imports more than tripled. Much of the discussion of international issues has been focused on whether the United States is holding its own in global markets. These concerns about U.S. competitiveness have been prompted by chronic trade deficits (imports exceeded exports in every year between 1983 and 1990), and by apparently lagging growth rates in income compared to other countries. For example, between 1985 and 1990, the average annual growth rate in real Gross National Product for countries in the Organization for Economic Cooperation and Development was 3.35 percent; for the United States, the figure was only 2.90 percent.¹

A number of culprits for U.S. competitiveness problems have been suggested. These include an unsatisfactory system of public education, a regulatory system that is hostile to business, burdensome environmental laws, etc. However, virtually every discussion of competitiveness sooner or later gets around to tax issues. Is the U.S. tax structure hurting our competitive position, and if so, how could it be modified to enhance competitiveness? The purpose of this paper is to explore the relationship between tax policy and competitiveness. Section 2 puts the U.S. tax system in perspective by comparing its tax structure to those of some of its competitors. Section 3

¹ Figures in this paragraph computed from Economic Report of the President, 1991, pp. 289, 411.

discusses alternative definitions for "competitiveness," and shows how different definitions can have very different implications for appropriate tax policy. With Sections 2 and 3 as background, Section 4 discusses in a generic way how taxes can affect competitiveness. Section 5 then looks more carefully at value-added taxes, which have been receiving a lot of consideration as a solution to U.S. competitiveness problems. Particular attention is devoted to the analysis of Congressman Richard Schulze's Uniform Business Tax proposal, a package of tax changes that includes a value-added tax. A concluding section speculates on the prospects for the enactment of such a proposal over the next several years.

2. International Comparison of Tax Structures

2.1 Basic Comparisons

Is the U.S. revenue system very different from those of its competitors? Table 1 provides some data relating to the sources of revenue for a selected group of developed countries. It shows how the countries differ with respect to the proportion of tax revenues attributable to taxes on personal income, corporate income, social security, consumption, and other taxes. The table suggests that, relative to other countries, the U.S. federal tax system relies relatively lightly on consumption taxes and relatively heavily on income and social security taxes.² Figures such as those in Table 1 have led some observers to the conclusion that the U.S. system taxes income (and particularly capital income) at unduly high rates.

Of course, the tax burden in a country depends not only on the

² When state and local taxes are included in the calculation, the share of all consumption taxes in the U.S. increases to 14.7 percent, still considerably below that in the other countries.

Table 1
Sources of Tax Revenue in Selected Countries for 1988
(Percentage from Each Source)

Country	Individual Income Tax	Corporate Income Tax	Social Security Taxes ¹	General Consumption Taxes ²		Other Consumption Taxes	Other Taxes	Taxes as % of GDP ³
Australia	45.9	10.6	-	9.1	14.9	19.5	31.3	
Canada	36.7	8.6	13.0	15.5	10.8	15.4	34.5	
Denmark	51.0	4.4	2.2	19.4	12.3	10.7	52.0	
France	12.1	5.2	39.7	19.7	8.9	14.4	44.8	
West Germany	28.9	5.3	35.3	15.6	8.6	6.3	37.6	
Japan ⁴	22.9	24.4	25.5	-	10.8	16.4	30.2	
Sweden	38.8	5.2	24.3	13.3	10.0	8.4	56.7	
United Kingdom	26.6	10.8	18.0	16.5	13.1	15.0	37.5	
United States ⁵	41.2	9.7	41.2	-	5.2	2.7	30.0	

Source: Joint Committee on Taxation, Factors Affecting the International Competitiveness of the United States, U.S. Government Printing Office, May 1991, pp. 323-24.

¹ Includes sum of employer and employee taxes.

² Includes value-added taxes and general sales taxes.

³ Figures are for 1987 and from U.S. Bureau of the Census, Statistical Abstract of the United States: 1990, U.S. Government Printing Office, p. 845.

⁴ Japan introduced a broad-based retail sales tax in 1989.

⁵ Except for last column, excludes state and local taxes.

percentage distribution of taxes, but their overall level as well. Therefore, the last column of Table 1 shows the ratio of tax revenues to Gross Domestic Product. These figures suggest that the U.S. devotes a relatively small percentage of its output to taxes. However, such comparisons must be made with caution because of the differences across countries in the services that governments provide to their citizens. To the extent that citizens in one country purchase services through the public sector, their tax burden will be higher than countries in which the same services are obtained privately. Thus, for example, the fact that a much higher proportion of health care is provided publicly in the United Kingdom than in the United States needs to be considered when evaluating the fact that the United States devotes a smaller proportion of its GDP to taxes.

2.2 Corporate Income Taxes: Rates

Because the taxation of corporations has been the subject of much discussion in the competitiveness debate, it is useful to devote a bit more time to comparisons of corporate tax systems. Table 2 shows statutory corporate tax rates (including central and sub-central units of government). Interestingly, the U.S. statutory rate is lower than that of many other countries, including Germany and Japan. However, comparisons among statutory rates may be misleading. The effective tax rate on capital invested in the corporate sector depends on a number of attributes of the corporate tax system in addition to the statutory tax rate. These include the depreciation schedules for plant and equipment, the existence and magnitude of investment tax credits, etc. The link between the statutory rate and effective rates is further attenuated when we recall that corporate income is taxed at the shareholder level as well as corporate level. Hence, the effective rate

Table 2

Taxation of Corporate Income in Selected Countries

<u>Country</u>	<u>Statutory Rate¹</u>	<u>Tax Wedge²</u>
Australia	39	2.0
Canada	41.7	3.9
Denmark	38	2.9
France	34	2.6
West Germany	56.5	0.7
Japan	49.9	4.4
Sweden	30	2.1
United Kingdom	34	2.8
United States	38.3	2.9

Source: Organization for Economic Cooperation and Development, Taxing Profits: The Experience of OECD Countries, mimeo, May 1991, Tables 3.13, 4.6.

¹ Overall tax rate including local taxes.

² Combination of corporate and personal income taxes.

depends on the tax rates applied to interest, dividends and capital gains, and the extent to which individuals receive tax relief for taxes paid at the corporate level ("tax integration").

Economists have developed a concept called the "tax wedge" to summarize the effect of all of these considerations on the tax rate on corporate income.³ Essentially, the tax wedge is the difference between the before and after tax cost of capital for firms. Other things being the same, the larger the tax wedge, the greater the disincentive to invest in the corporate sector.

Of course, the notion that one can characterize the entire corporate tax system by a single tax wedge number is a great simplification. Tax wedges vary across investments depending on the type of asset (equipment vs. structures), type of finance (debt vs. equity), and so on. To make international comparisons, a sensible approach is to compute the tax wedge for a hypothetical standardized project in each country. This is the approach followed in a preliminary study by the Organization for Economic Cooperation and Development (OECD). Some of the OECD results are reported in the last column of Table 2. The results suggest that the United States is by no means an outlier with respect to the taxation of corporate income. However, it should be stressed that figures of the kind in Table 2 depend on various assumptions (e.g., the magnitude of the inflation rate), and that reasonable changes in assumptions could lead to different estimated tax wedges. It seems unlikely, though, that such modifications would drastically change the basic story being communicated by the table.

³ See King and Fullerton [1984] for a careful discussion of the computation of tax wedges.

2.3 Distributional and Efficiency Effects of the Corporate Income Tax

As will be noted below, the reduction or elimination of the corporate income tax is a proposal that comes up in many proposals to improve U.S. competitiveness. To discuss sensibly the desirability of such changes, we must move beyond the measurement of tax wedges to the issue of how their existence affects the distribution of income and economic efficiency.

The distributional implications of the corporation tax are complicated because although corporate shareholders (and their agents) have the statutory responsibility to pay the tax, various market responses to the tax may lead to it being shifted to other people. Economists use the term incidence to describe the distribution of the real (as opposed to the statutory) burden of the tax. Unfortunately, due to the complexity of the corporation tax, economists have not been able to reach a firm consensus on its incidence. However, a sizable number of economists have been persuaded that the incidence of the corporate tax is on all owners of capital, not just owners of corporate capital.

To see the reasoning behind this conclusion, imagine that the economy consists of two sectors, corporate and non-corporate. Prior to the imposition of the corporate tax, the (risk-adjusted) rates of return will be equal in the two sectors (because otherwise capital would migrate to the sector with the higher marginal return). When a tax on the income from corporate capital is imposed, this brings the after-tax return in the corporate sector below that in the non-corporate sector. Consequently, owners of capital begin moving their assets out of the corporate sector and into the non-corporate sector, driving down rates of return in the former, and increasing rates of return in the latter. The process continues until after-tax rates of return are equal

throughout the economy. In the process, the rate of return to capital in the non-corporate sector is depressed so that ultimately all capitalists, not just those in the corporate sector, are affected. The reallocation of capital between the two sectors can also affect the return to labor. The extent to which capital and labor bear the ultimate burden of the tax depends upon the technologies used in production in each of the sectors, as well as the structure of consumers' demands for corporate and non-corporate goods. In his seminal study of this issue, using what he considered to be plausible values for the relevant technological and behavioral parameters, Arnold Harberger [1962] concluded that capital bore the entire burden of the tax. This finding was confirmed by later research; see Shoven and Whalley [1976].⁴

One should note, however, that this conclusion may not hold in the very long run. In the very long run, the tax on corporate capital may change the total amount of capital available to the economy. If the tax lowers the capital stock, then labor will be less productive on the margin, and the wage rate will fall. Thus, labor could share some portion of the burden of the tax in the very long run. However, as noted below, there is considerable uncertainty about the responsiveness of saving to tax rates. Hence, it is difficult to determine with any certainty what share of the tax, if any, labor bears. This observation goes to illustrate the point that I stressed at the outset of this discussion -- because of the complicated chain of events set in motion by the corporate tax, its incidence is murky. Nevertheless, many

⁴ In the model of Gravelle and Kotlikoff [1989], all owners of capital bear the tax. However, they estimate that the return to capital falls by more than the tax collected.

economists are willing to accept as a working hypothesis that it is borne by owners of all capital, and that will be the primary assumption in this paper as well.

Turning now to the efficiency aspects of the tax, the key point is that the tax wedges created by the tax generate a bias against corporate sector investments relative to investments in the non-corporate sector. By inducing less capital accumulation in the corporate sector than otherwise would have been the case, the corporation tax diverts investment from its most productive uses and reduces overall productivity.⁵ This reduction in productivity is a hidden cost of the tax, and is sometimes referred to as an "excess burden." To illustrate, suppose that the before-tax rate of return in the corporate sector is 16 percent, while in the non-corporate sector it is 10 percent (i.e., the tax wedge is 6 percentage points). In this case, moving \$100 of capital from the non-corporate to corporate sector would reduce output in the non-corporate sector by \$10, and increase output in the corporate sector by \$16. That is, society would have \$6 more of output merely by reallocating existing resources. However, because investors respond to after-tax rates of return (which are 10 percent in each sector), there is no incentive for such a transfer to be made. This is the source of the excess burden.

For the reasons discussed above in our discussion of incidence, it is difficult to calculate with precision the excess burden of the corporate tax. One careful estimate by Ballard, Shoven, and Whalley [1982] is that on the margin, a dollar of revenue raised by the corporation tax creates 49 cents worth of excess burden. Thus, as well as having distributional effects that

⁵ Our focus here is on real investment decisions. It is likely that the corporation tax also distorts financial decisions such as the choice between debt and equity. This, too, reduces efficiency.

are difficult to fathom, the corporation tax appears to be highly inefficient. It is no wonder that many students of the tax system would like to eliminate the tax. I will discuss the competitiveness consequences of doing so later on in the context of a specific proposal.

3. What is Competitiveness?

Competitiveness has become a Washington buzzword, and like most such buzzwords, it is not very precisely defined. The Joint Committee on Taxation (JCT) [1991, pp.7-8] notes that the term competitiveness has been used to refer to three distinct notions, which they call "trade competitiveness," "standard of living competitiveness," and "multinational competitiveness." This section discusses and evaluates each of these notions of competitiveness.

"Trade competitiveness" refers to the ability of U.S. firms to compete with foreign firms at home and abroad. According to this notion, the more the United States exports and the less it imports, the more competitive it is. Hence, a natural way to measure trade competitiveness is by the size of the trade deficit. "Standard of living competitiveness" refers to current and prospective standards of living in the United States vis-à-vis other countries. Here the trade deficit per se is not of interest. Rather, the focus is on items that affect the level of real income such as labor force productivity and its determinants. Finally, "multinational competitiveness" refers to the ability of multinational firms to compete with other firms in foreign markets. A natural way to measure multinational competitiveness in a given foreign country is the after-tax return on investments in that country.

As the JCT correctly stresses, the various definitions of competitiveness are linked through a series of accounting identities. To

begin, note the standard textbook definition of Gross National Product (Y) as the sum of expenditures on consumption (C), investment (I), government (G), and net exports [exports (X) minus imports (M)]:⁶

$$Y = C + I + G + (X-M). \quad (3.1)$$

Gross National Product can also be written as the sum of consumption, saving (S), and net taxes (T):

$$Y = C + S + T. \quad (3.2)$$

Substituting (3.2) into (3.1) and rearranging gives us

$$I = (T-G) + S + (M-X). \quad (3.3)$$

The first expression on the right-hand side of (3.3) is the excess of tax revenues over government expenditure, which is government saving. (When G exceeds T, there is a government deficit, and government saving is negative.) Hence, we can characterize the sum of (T-G) and S as national saving, S^N , and re-write 3.3 as

$$I - S^N = (M-X). \quad (3.4)$$

Equation (3.4) is central to understanding the various definitions of competitiveness. It says that if a country is investing more than it saves [(I-S^N) is positive], then it must be running a trade deficit [(M-X) is positive]. Alternatively, equation (3.4) tells us that a country cannot run a trade surplus [have (M-X) negative] unless national saving exceeds national

⁶ For simplicity, we ignore net income from abroad.

investment -- i.e., unless it exports capital. To firm up our understanding of this observation, consider the following position: "Let's try to enhance standard of living competitiveness by encouraging investment from abroad and at the same time try to enhance trade competitiveness by running a balance of trade surplus." Equation (3.4) tells us that we cannot enhance both kinds of competitiveness simultaneously, other things being the same. As a matter of arithmetic, we cannot run a trade surplus without exporting capital abroad.

If trade competitiveness and standard of living competitiveness may not both be achievable, which one should we choose? Most economists believe that trade deficits are not necessarily bad things. According to equation (3.4), for example, a trade deficit might emerge because of foreign capital inflows to finance some important new investment opportunities in the United States. In this case neither current nor future U.S. citizens are made worse off, because the payments to service the foreign debt come out of the investment returns. On the other hand, what if the borrowing from overseas is used to finance domestic consumption? In this case, the capital inflows prevent domestic investment by falling as much as it otherwise would have. Moreover, the associated trade deficit is ultimately self-correcting. Eventually, foreigners become less willing to lend to the United States, and their demand for dollars falls, which leads to a depreciation of the dollar, which in turn spurs American exports and lowers the trade deficit. Nevertheless, when borrowing for consumption is the source of a trade deficit, it does not portend well for the standard of living for future generations.

In short, the trade deficit per se does not tell us much about whether the status quo is good or bad for current and future generations of Americans. It therefore makes more sense to focus on factors that relate to the ability

of current and future generations of Americans to maintain and increase their standards of living. These include the rate of technological change, increases in worker productivity, new methods of organizing production, etc. Again, it must be stressed that to the extent that any of these items lead to demands for investment that cannot be met by domestic saving, there will be an inflow of foreign capital and an increase in the trade deficit. This is why trade deficits are not a useful way to look at competitiveness -- their links to national welfare are ambiguous.

We turn now briefly to "multinational competitiveness," which refers to the position of U.S. firms that produce abroad. Such firms often claim that U.S. tax rules are stacked against them. The tax rules governing the transactions of multinational firms are very complex, and the exact tax rate levied on income from operations abroad depends on a number of specific characteristics of the firm.⁷ In any case, as the JCT [1991, p.12] notes, this type of competitiveness "refers more to the competitiveness of certain types of firms relative to other types. It does not provide a measure of the overall international competitiveness of the U.S. economy."

4. Effects of Tax Policy on Competitiveness

This section discusses in a fairly generic fashion how tax policy can affect competitiveness. As argued in Section 3, the most important kind of competitiveness is "standard of living competitiveness," and most of the discussion focuses on that topic. Nevertheless, the effects of tax policy on the trade deficit are of some interest, and they are discussed as well.

⁷ See Ault and Bradford [1990] for details.

4.1 Taxes and Efficiency

Taxes can and do affect real levels of income by creating distortions in the pattern of economic activity -- "excess burdens," using the jargon introduced in the previous section. No feasible tax system can raise revenue without creating some excess burden. The trick is to design a tax system with as little excess burden as possible, subject to constraints imposed by administrative feasibility and distributional concerns. There is now a substantial theoretical literature showing how to minimize excess burden.⁸ However, the informational requirements for implementing these schemes are quite burdensome, and for practical purposes, a good rule-of-thumb is that taxes should be set so as to maintain a "level playing field," i.e., tax all activities at the same rate. In this way, market forces rather than the tax system guide economic decision-making, and resources are put to their most productive uses. By this criterion, the U.S. corporation tax impairs competitiveness. As noted earlier, by taxing corporate and non-corporate business at different rates, it leads to a misallocation of resources and lowers real income.

For purposes of our later discussion, it will be useful to note that the level playing field approach also has implications for the design of consumption taxes. Specifically, efficiency requires that the system should be designed so as to tax all goods at about the same rate. The logic is the same as before -- to the extent that the tax system changes the relative prices of various commodities, consumer choices among these commodities are distorted, lowering real income.

⁸ See, e.g., Sandmo [1976].

4.2 Taxes and Saving

Much of the discussion of U.S. competitiveness has focused on the saving rate, and properly so. There is a strong correlation between national saving and national investment, and societies with high investment rates tend ultimately to have both higher levels of real income and higher growth rates of real income. For example, Barro's [1991] recent econometric study of growth rates in 98 countries over the period 1960 to 1985 found that the ratio of real private domestic investment to real Gross Domestic Product exerted a statistically significant impact on the growth rate of real per capita Gross Domestic Product.

The national savings rate in the United States is low relative to its competitors. Over the period 1960-89, the U.S. national saving rate was 7.2 percent of GDP, compared to 20.7 percent in Japan, 14 percent in West Germany, 13.9 percent in Italy, and 7.4 percent in the United Kingdom.⁹ The rate was also lower than the 9.9 percent rate of Canada, another North American country with economic and demographic attributes that are similar in many respects to those of the United States. The recent U.S. saving performance is low even relative to its own historical record. In the 1980s the savings rate was 3.6 percent; in the 1970s it was 8.2 percent; and in the 1960s, 9.8 percent.

There is no consensus on the causes for the low U.S. savings rate. However, one hypothesis that receives a great level of attention is that the heavy U.S. reliance on income taxes (which tax the returns to saving) as opposed to consumption taxes (which don't), tends to decrease the U.S. savings

⁹ The savings figures in this paragraph are from Joint Committee on Taxation [1991, p.50].

rate.¹⁰ The policy implication is that the United States should rely more heavily on consumption taxation and less heavily on capital income taxation.

Interestingly, from a theoretical perspective, it is not obvious that decreasing the tax rate on capital income would increase the rate of saving. Given that in many policy discussions it is a presumption that decreasing tax rates on capital income would increase saving, I would like to discuss with some care the economic theory of saving and why it yields ambiguous predictions.

Most modern theoretical work on saving decisions is based on the "life-cycle model" that says individuals' consumption and saving decisions during a given year are the result of a planning process which considers their lifetime economic circumstances. It may be helpful to think about this in the context of a model in which a person lives two periods: "now" and "the future." Given a certain amount of income in each period, the individual has to decide how much to consume each period. Importantly, when an individual decides how much to consume, he simultaneously decides how much to save or borrow. If his consumption this period exceeds his current income, he must borrow. If his consumption is less than current income, he saves.

Suppose now that the government imposes a tax on interest. The tax brings into play two effects. On one hand, taxing interest means that for each dollar consumed today, less consumption is sacrificed in the future. This effect tends to increase current consumption and lower saving. On the other hand, the fact that interest is being taxed makes it harder to achieve any future "consumption goal" -- it is necessary to save more to attain any given level of future consumption. An extreme case of this second effect is the

¹⁰ Consult again table 1.

"target saver," whose only goal is to have a given amount of consumption in the future, no more and no less. (Perhaps he is saving to pay future college tuition bills for his children.) If the net rate of return goes down, the only way for a target-saver to reach his goal is to increase saving. Conversely, if the net rate of return goes up, the target-saver's goal can be met with smaller saving. Thus, for the target saver, saving and the net interest rate always move in opposite directions. Although the target saver is an extreme case, this tendency is generally present when the net rate of return changes. In short, increasing the tax rate on interest brings into play two effects that work in opposite directions. It cannot be known a priori which effect will dominate. That is why one cannot predict whether saving increases or decreases.

In light of this theoretical ambiguity, economists have attempted to estimate statistically the responsiveness of saving to changes in the net rate of return. Unfortunately, several studies have reached rather different conclusions. Taking the various pieces of evidence together, Hausman and Poterba [1987] argue that a reasonable estimate of the overall responsiveness is about zero. That is, for the population as a whole, the two conflicting effects mentioned above more or less cancel each other out. Hence, it is unlikely that changing tax rates would have much of an effect on saving rates.

Does this mean that the government can do nothing to effect the national saving rate? Note that by definition, national saving is the sum of private saving and public saving. I have just argued that tax policy probably doesn't have much of an effect on private saving. However, by increasing public saving (or reducing public dissaving), the government can increase national saving. In short, reducing the federal deficit would be the most

effective way for the government to increase national saving. This observation is cogent in light of the fact that in 1990, gross private saving was \$784 billion while federal dissaving was \$161 billion. Hence, elimination of the federal deficit would have increased national saving by roughly 25 percent, other things being the same.

An important caveat must be added to this discussion of saving incentives. It relates to the fact that the entire argument that saving incentives can help increase the capital stock rests on the premise that investment in the economy depends on its own rate of saving: all national saving is channeled into national investment. This is true in an economy that is closed to international trade. In an open economy, however, domestic saving can be invested abroad. This means that tax policy designed to stimulate saving may not lead to more domestic investment. To the extent that saving flows freely across national boundaries to whatever investment opportunities seem most attractive, the ability of tax policy to stimulate investment through saving is greatly diminished.

How open is the American economy? Martin Feldstein and Charles Horioka [1980] find that countries with high domestic saving tend to have high domestic investment, and vice versa. While the data are open to other interpretations, this suggests that saving may not flow into and out of the economy as freely as one would expect in a completely integrated world capital market. As long as saving and investment are correlated, tax policy that affects saving can generally be expected to affect investment. The size of the effect, however, is smaller than one would find in a completely closed economy.

Let us now apply the analysis of this section to the corporate income tax. If the corporation tax were reduced and the revenue loss were offset in a way that did not involve taxing capital income, then there would be some economy-wide increase in the after-tax rate of return. But this increase would probably not induce much of an increase in private saving. Thus, the main benefits to replacing the corporate tax would come from the improvement in the allocation of a given stock of capital (as described in Section 4.1), not from increasing the stock of capital.

4.3 Taxes and the Trade Deficit

Although we have argued that standard of living competitiveness is a more useful concept than the trade deficit concept, it is still interesting to consider how saving incentives would affect the trade deficit. Equation (3.4) provides the answer -- to the extent that national saving increases, the trade deficit will decrease (or the trade surplus will increase.) Thus, if tax incentives can increase private saving and the increase exceeds the revenue loss to the Treasury, the trade deficit will be reduced. Similarly, to the extent that the government reduces its deficit, the trade deficit will be reduced.

Of course, if one is interested in using the tax system to reduce the trade deficit, a more direct approach might be some kind of tax incentive for exports. However, if a tax break increases export sales, this means that foreign buyers will need to obtain more dollars in foreign exchange markets to pay for the exports. Under our system of floating exchange rates, the resultant increase in the value of the dollar has adverse effects on all U.S. industries that compete with foreign producers. In addition, if the tax incentive creates a loss in tax revenue and greater borrowing by the Treasury,

then it will probably also induce an increase in U.S. borrowing from abroad and put further upward pressure on the dollar in foreign exchange markets. Any net increase in borrowing from abroad must be matched by a worsening of the current account balance. In short, there is little reason to believe that a tax break for exports would improve the overall trade balance, even in the short run.

5. Border-Adjustable Taxes and the VAT

The possibility of a value-added tax (VAT) for the United States has played a prominent role in discussions of competitiveness in the United States. In this section, I utilize results from earlier in the paper to discuss VATs in general. I then turn to a recent proposal of Congressman Richard Schulze, which includes a VAT as one of its key components.

5.1 VATS in General

As a prelude to discussing VATs in general, it is important to note that the desirability of a national VAT can be determined only if we know what tax (or taxes) it would replace, how the revenues would be spent, and so forth. For example, many public finance economists believe that the corporation income tax is undesirable in practically all respects and would be happy to see a VAT replace it, other things being the same. However, they would probably not be as well disposed toward replacing the personal income tax with a VAT. Nevertheless, I conduct most of the discussion in this section without specifying alternative packages of which a VAT might be a part. As already noted, I subsequently discuss the VAT in the context of a specific proposal that indicates which taxes would be replaced by the VAT.

5.1.1 Description¹¹

Typically, goods are produced in several stages. Consider a simple model of bread production. The farmer grows wheat and sells it to a miller who turns it into flour. The miller sells the flour to a baker who transforms it into bread. The bread is purchased by a grocer who sells it to consumers. A hypothetical numerical example is provided in Table 3. Column 1 shows the purchases made by the producer at each stage of production, and column 2 shows the sales value at each stage. For example, the miller pays \$400 to the farmer for wheat, and sells the processed wheat to the baker for \$700. The value added at each stage of production is the difference between the firm's sales and the purchased material inputs used in production. Because the baker paid \$700 for the wheat and sold the bread for \$950, his value added is \$250. The value added at each stage of production is computed by subtracting purchases from sales, shown in column 3.

A VAT is a percentage tax on value added applied at each stage of production. For example, if the rate of the VAT is 20 percent, the grocer would pay \$10, which is 20 percent of \$50. Column 4 shows the amount of VAT liability at each stage of production. The total revenue created by the VAT is found by summing the amounts paid at each stage, and equals \$200.

The identical result could have been generated by levying a 20 percent tax at the retail level, that is, by a tax of 20 percent on the value of sales made to consumers by the grocer. In essence, then, a VAT is just an alternative method for collecting a sales tax. Although the United States has never had a national VAT, this method of raising revenue is quite popular

¹¹ For a more thorough description of how value-added taxes work, see U.S. Department of the Treasury [1984, vol.3].

Table 3

Implementation of a Value-added Tax (VAT)

<u>Producer</u>	<u>Purchases</u>	<u>Sales</u>	<u>Value Added</u>	<u>VAT at 20 Percent Rate</u>
Farmer	\$ 0	\$ 400	\$ 400	\$ 80
Miller	400	700	300	60
Baker	700	950	250	50
Grocer	<u>950</u>	<u>1,000</u>	<u>50</u>	<u>10</u>
Total	\$ 2,050	\$ 3,050	\$ 1,000	\$ 200

abroad. About 50 countries, including Canada, France, Germany, Italy and the United Kingdom, have VATs.

5.1.2 Collecting a VAT

There are several possible methods of collecting a VAT. European countries use the "invoice method," which can be illustrated with the hypothetical example in Table 3. Each firm is liable for tax on the basis of its total sales, but it can claim the taxes already paid by its suppliers as a credit against this liability. For example, the baker is liable for taxes on his \$950 in sales, giving him a tax obligation of \$190 ($= .20 \times \950). However, he can claim a credit of \$140 (the sum of taxes paid by the farmer and the miller), leaving him a net obligation of \$50. The catch is that the credit is allowed only if supported by invoices provided by the baker and the miller. This system provides an incentive for the producers to police themselves against tax evasion. For example, whatever taxes the farmer and miller evade must be paid by the baker. The invoice method cannot eliminate evasion completely. For example, producers can collude to falsify invoices. Nevertheless, there appears to be some evidence that multistage collection has cut down on fraud.

An alternative collection mechanism is the "subtraction method." Here, the VAT liability is found by multiplying the tax rate by the difference between the firm's sales and its purchases of inputs from other firms. Thus, the main difference between the subtraction method and the credit invoice method is that the latter taxes the gross amount of sales (allowing a credit for taxes paid on purchases), while the former method taxes the net amount of sales. Clearly, however, they give the same result, at least in the simple example we have been discussing so far. Now, as will be noted below, under

certain circumstances there may be significant administrative and legal differences between the two methods. Such differences should not obscure the fundamental economic equivalence of retail sales taxes, invoice-method VATs, and subtraction-method VATs. Each is just a different method of collecting a consumption tax, and therefore each would have about the same effect on saving, the trade deficit, and other variables of interest.

5.1.3 Rate Structure

In our simple example, all commodities are taxed at the same rate. In most real-world VATs commodities are taxed differentially. For reasons of administrability, very small firms are exempted in some countries. Banking and financial institutions escape taxation because they tend to provide services in-kind; therefore, it is difficult to compute value added. In addition, food and health care products are often taxed at low rates, presumably because of distributional considerations. For example, in the Netherlands the standard rate is 19 percent, but certain commodities face a rate of only 6 percent. In Germany, the standard rate is 14 percent, with a reduced rate of 7 percent. (See Frenkel, Razin and Symanski [1990, p. 237].)

This brings us to the important issue of the incidence of a VAT — how does it affect the distribution of real income? Under the reasonable assumption that the incidence of a consumption tax is on the consumer of the item, a broad-based VAT is regressive with respect to annual income — the ratio of taxes to income falls as income increases.¹² In the U.S. context, a sensible way to deal with this problem would be to increase transfers to the

¹² It is probably more appropriate to measure incidence with respect to some lifetime (rather than annual) measure of income, in which case the VAT is more likely to be proportional instead of regressive. My experience has been that policymakers are generally not impressed by this line of reasoning.

poor, perhaps by increasing the earned income tax credit or food stamp allotments. However, as already noted, the more common approach is to exempt items such as food from the tax base. From an efficiency viewpoint, this is probably not a good idea -- taxing items differentially distorts consumption decisions, creating excess burdens and lowering real incomes. Moreover, nonuniform taxation increases administrative complexity, because sellers of multiple goods have to determine which of their goods are taxable and which are not.¹³

5.1.4 VATs, National Saving, and Public Sector Size

To the extent that a VAT replaced current taxes that fall on capital income, it would increase the net rate of return to saving. As shown earlier in Section 4.2, it is not clear that this would increase private saving. However, to the extent that VAT revenues were used for deficit reduction, then national saving would increase. Any consequent increases in domestic investment would enhance standard of living competitiveness.

This brings us to the intriguing question of how a VAT would affect the size of the public sector. Even if a VAT were ostensibly intended to reduce the deficit and increase national saving, would it instead be used to increase government expenditures? In this context, one should note that once it is in place, each percentage point increase in a broad-based VAT would yield roughly \$25 billion in tax revenues, measured in 1989 dollars.¹⁴ In a world where

¹³ Here, incidentally, is where a key administrative difference between the credit method and subtraction method arises -- in the presence of non-uniform rates, it may not be possible to achieve the correct result under the subtraction method. (See Turnier [1988, p. 1260].)

¹⁴ See U.S. Department of the Treasury [1991, Table 6]. Each point of a narrow-based tax (excluding food consumed at home, prescription drugs, and household energy expenditures), would yield about \$20 billion.

political institutions accurately reflect the wishes of the citizenry, this observation may not be of much significance. But for those who believe that at least to some extent the interests of the government differ from those of the public, the revenue potential of a VAT is frightening. Some fear that the VAT might be used to sneak by an increase in the size of the government sector:

Because it would be collected by business enterprises, VAT would be concealed in the total price the consumer paid and hence not perceived as a direct tax burden. That is its advantage to legislators -- and its major defect to the taxpayers. [Friedman, 1980, p. 90]

Indeed, in virtually all countries with a VAT, the rate has increased over time, as has the share of gross domestic product devoted to taxes. For example, when Denmark introduced a VAT of 10 percent in 1967, total tax revenues as a percent of gross domestic product were 36.1 percent. By 1978, the VAT rate was 22 percent, and the ratio of taxes to gross domestic product was 43.6 percent [Aaron, 1981, p.14]. Of course, this does not prove that the VAT was responsible for a larger government sector. On the other hand, one would not expect to be successful in assuaging the fears just expressed by appealing to the European experience.

5.1.5 Balance of Trade Effects

Some VAT proponents have argued that the tax would enhance America's trade position vis-à-vis its competitors. This notion rests on the fact that according to the General Agreement on Tariffs and Trade (GATT), which regulates international trade practices, a VAT can be rebated on a country's

exports and levied on imports.¹⁵ In contrast, personal and corporate income taxes cannot be rebated. Since a VAT can be rebated while income taxes cannot, some have argued that U.S. international competitiveness would be enhanced if the U.S. adopted a VAT and simultaneously reduced the role of income taxation. For example, Senator William Roth [1986] argued that such a scheme would "help our domestic industries compete with imports."

Imposing a VAT would tend to increase the relative prices of the taxed goods by an amount determined by the supply and demand conditions in the various markets. As Aaron [1986] points out, rebating the VAT "at the border simply undoes this effect for exported goods. There is no reason why loading weight on a horse's back and then taking it off should help the horse run faster." In the same way, imposing a tax on foreign imports equal to the domestic VAT rate would merely restore the price ratio between foreign and domestic goods to its pre-VAT value. There is no reason to see why this would improve the trade balance, even if this were an appropriate goal for tax policy. The U.S. Treasury [1984] drives home this point nicely by making an analogy to state retail taxes:

... in any particular state, charging retail sales tax on a Toyota does not make a Chevrolet more competitive in that state, because the same sales tax applies to both automobiles. Nor would the Chevrolet be more competitive abroad just because it could be exported free of sales tax. As with a retail sales tax, the imposition of a value-added tax, with no offsetting change in any other taxes, would not directly improve the U.S. trade balance. (p.22)

¹⁵ It is not clear that a subtraction-type VAT would qualify for this treatment. While it is true that rebates would be permitted under GATT rules, the estimates of the taxes paid on earlier stages of production would be a problem. Unless the tax rate is uniform at all stages of production, including financial services, the earlier stage taxes cannot be calculated precisely. (See Joint Committee on Taxation [1991, pp. 304-305].) This might be a reason to prefer an invoice-method VAT to a subtraction-method VAT.

5.1.6 Inflation Effects

It is generally agreed that in the presence of a tax system that is not fully indexed, inflation reduces economic efficiency and hence impairs standard of living competitiveness. Are VATs inflationary? As a tax increase, introduction of a VAT would be contractionary fiscal policy. Therefore, unless monetary policy were accommodative, introduction of a VAT by itself would put downward pressure on the price level. Assuming an accommodating increase in the money supply, we would expect a VAT to lead to a one-time increase in the price level. (The increase would be in proportion to the coverage of the tax.) Some second round price increases might occur because some private sector wage and business contracts are indexed to the price level, as are certain government transfer payments.¹⁶ However, these would probably be small relative to the initial shock, and there is no reason to believe that a VAT would generate an inflation, which is a sustained increase in the price level over time.

5.2 Representative Schulze's Uniform Business Tax Proposal

In this section we bring to bear the results from earlier sections of this paper to analyze Representative Schulze's intriguing Uniform Business Tax (UBT) proposal. We begin with a summary of the proposal, and then analyze its effects on competitiveness.

5.2.1 Description

The proposal has three main components:

- a. Impose a flat-rate UBT of 9 percent on the difference between business receipts from sales of goods and services in the United States and

¹⁶ If desired, such second-round increases could be avoided by redefining the consumer price index to exclude the VAT.

purchases of goods and services from other businesses. In cases where the 9 percent flat-rate would yield less than the current employers' share of the Social Security payroll tax, UBT liability would be the same as the employers' current payroll tax liability. (This might occur in a start-up business with more purchases than sales.) The UBT would apply to imports, but not to exports.

b. Repeal the employers' share of the Social Security payroll tax (currently 6.2% up to \$53,400 for each employee). In order to maintain the Social Security Trust Fund, an amount equal to the current employers' share of the Social Security tax would be deposited into the trust fund.

c. Repeal the corporate income tax.

5.2.2 Analysis

Representative Schulze's proposal is essentially a package consisting of a subtraction-method VAT in conjunction with reduction of the payroll tax and elimination of the corporation income tax. Let us begin by analyzing the effects of this package on the U.S. trade deficit. As we showed above, imposition of a VAT would, by itself, have no important effect on the relative price of American exports. How would the rest of the package affect export prices? The effect clearly depends on the incidence of the corporate income and payroll taxes, and no one knows for sure how these taxes affect relative prices. However, as I argued above, many economists believe that the incidence of the corporation tax is on all capital. Under this assumption, partial or total replacement of the corporate income tax would increase the return to capital, but would not change prices of exported or domestic goods. In addition, many economists believe that the incidence of the payroll tax — both the employer's and the employee's contributions — is on labor. Under

this scenario, the entire benefit of the payroll tax reduction would go to workers. Producers' wage costs would be unchanged, and so would prices. Again, the net effect would be no stimulus to exports.

Indeed, adoption of the Schulze proposal might even have an adverse effect on the trade balance in the short run. To see why, suppose that as a consequence of eliminating the corporate income tax, foreigners perceive that the United States is a better place in which to invest. To do this investment, they must buy U.S. dollars, driving up the price of the dollar, and reducing the attractiveness of U.S. exports.

In short, there is no reason to believe the Schulze package would dramatically improve the U.S. trade position. Of course, this fact by itself does not mean that the package is undesirable -- as stressed above, the trade balance per se should not be a major concern of tax policy. This observation leads naturally to the question of whether standard of living competitiveness would be enhanced by the Schulze proposal. On the basis of the analysis of savings incentives in sections 4.2 and 5.1, my guess is that the package would not increase the private saving rate. And, since my understanding is that the package is designed to be approximately revenue neutral, it would not lead to any increase in the public saving rate. However, even if the package did not increase the amount of capital, it might enhance living standards by improving the allocation of existing capital. It is here that I think that the Schulze package really would have a major benefit. The distortionary effects of the corporate income tax were discussed carefully in Section 2.3, and it was argued that they are substantial. Of course, any politically feasible VAT would also be accompanied by some excess burden, because of exemptions or

reduced rates for certain commodities. However, my guess is that on balance, the Schulze proposal would lead to a substantial reduction in excess burden.¹⁷

I should add that in its present form, the Schulze package has an anomalous feature that might reduce its efficiency enhancing properties. As I understand the proposal, it would essentially exempt the return to corporate saving from current taxation. Such tax would be deferred until the shareholder sold his or her stock in the corporation, at which point the return would be subject to capital gains taxation. In contrast, the return to saving that individuals did on their own behalf would be taxed currently at the individual tax rate. Hence, there would be incentives for individuals to create corporations to shelter their capital income from the personal income tax. Such tax-induced changes in organizational form would be inefficient. Moreover, this sheltering activity would reduce tax revenues, and require the government to raise other taxes (assuming that the government would seek to keep the deficit from increasing). It seems, then, that even in the presence of a UBT, some kind of tax on corporate earnings would have to stay in place. If true, this takes away one of the most attractive features of the Schulze package -- easing the administrability of the overall tax system by getting rid of the nightmarishly complicated corporation tax laws.

In conclusion, while I do not think that the Schulze package would have major impacts on the U.S. trade deficit or saving rate, it still might improve the U.S. standard of living by leading to a more rational allocation of

¹⁷ I know of no studies that have analyzed a proposal exactly like the Schulze package. However, Ballard, Scholz and Shoven [1986] studied the efficiency consequences of introducing a European-type VAT in the United States, under the assumption that the VAT revenues would be used to scale down the personal income tax. They estimated that in present value terms, a VAT would reduce excess burden by over \$600 billion.

resources. It is a proposal that deserves serious debate. As the debate proceeds, one hopes that the proposal will be refined and improved.

6. The Political Prospects for a UBT

Since the passage of the Omnibus Reconciliation Act of 1990 (OBRA '90) the Administration's position has been that it will accept no new taxes and no major increases in old taxes. To the extent there has been interest on the part of Congressional Democrats in new taxes, the focus has been on increasing personal income tax rates on high income individuals, and increasing corporation tax rates. Although the Ways and Means Committee held several days of hearings on competitiveness earlier this year, there currently seems to be no serious political interest in enacting important structural changes in the tax system. Specifically, I am not aware of much support for a major expansion of the role of consumption taxes in the federal fiscal system.

All of this could change after the election, but I am doubtful that it will. In recent years, tax policy has been driven by deficit concerns to a remarkable extent. If the deficit falls at about the rate envisioned by the architects of OBRA '90, there will not be a lot of pressure to raise new taxes. Of course, this does not mean that the host of problems associated with the status quo, particularly the inefficiency of the corporate income tax, will go away. But in the absence of deficit reduction concerns, the debate on reforms of the current system may be centered on integration of the corporate and personal income tax systems rather than a VAT.¹⁸ A VAT may turn out to be the tax that everyone expects to come but never does.

¹⁸ The Treasury is expected to issue a major report on corporate tax integration before the end of the year.

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