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Tax Systems

Joel Slemrod*

All tax systems have three aspects. First, they change relative prices, and thus influence and often distort the allocation of resources in the economy. Second, they are instrumental in assigning the burden of government programs among citizens. Finally, they are vast administrative bureaucracies involved in collecting and enforcing the remittance of tax monies. These three aspects loosely correspond to the three classic criteria for evaluating tax systems: efficiency, equity, and simplicity.

Behavioral Responses to Taxation

To understand the efficiency implications of a tax system, one must assess how individuals and businesses respond to it. Two major but qualitatively different tax changes in the 1980s, plus the improved availability of tax return data including panel data, have illuminated these behavioral responses. Large tax cuts in 1981 were followed just five years later by the rate-cutting but base-broadening and revenue-neutral Tax Reform Act of 1986 (TRA86), the most sweeping postwar change in the U.S. federal income tax.¹

Real Responses

My interpretation of the lessons from the 1980s and beyond is that the response of critical real variables, such as labor supply², saving³, and invest-

ment, was much smaller than changes in the timing of taxable activity, income shifting, and other financial or “renaming” responses.⁴ There is a clear hierarchy of behavioral responses.

Although none of the key real variables responded markedly to these tax changes, there was clearly some kind of response. Most notably, after TRA86 there was a large increase in the reported taxable income of those high-income taxpayers who were subject to the largest declines in the marginal tax rate — from 50 percent in 1986 to 28 percent in 1988 when the act was fully phased in. This surge probably was not a coincidence. Although an index of the demand-side factors affecting inequality throughout the income distribution can explain much of the increase in high-income concentration until 1985, it cannot adequately explain all of the post-TRA86 spurt.⁵ The controversial question is what aspects of TRA86 induced behavioral response — the rate cuts or the base broadening? And, what kinds of behavioral response did they induce? Evidence from the top tax rate increases of 1990 and 1993 have resulted in a lowering of estimates of the response of taxable income to tax rates,⁶ as has the surge in income inequality in the mid-1990s that is clearly unrelated to any change in tax structure.⁷

Most of the post-1986 increases in the reported individual income of high-income households consisted of timing and particularly shifting of income — for example, from the corporate tax base to the individual tax base — and not from income creation attributable, for example, to additional labor supply. Much of my work has been devoted to better understanding these non-standard behavioral responses to taxation. A unifying theme is that

the tax system does much more than alter the relative prices of real variables; it also provides incentives to misreport income, restructure financial claims, time transactions differently, change the legal form of organization, and so on.

Timing

At the top of the hierarchy of behavioral response is the effect of taxes on the timing of transactions. The classic example is the realization of capital gains. Early econometric analysis of cross-sectional data obtained from individual tax returns has shown that corporate stock sales are quite sensitive to tax rates, and that the effect on the realization of capital gains is even stronger.⁸ But it left open the extent to which this was permanent or temporary elasticity. More recent evidence based on panel data clarified that the temporary response is much larger than the permanent response.⁹ Further evidence comes from analysis of the seasonal pattern in stock sales, which confirms the unusually heavy realization of capital losses in December.¹⁰

A large timing elasticity has been detected with respect to the exercise of stock options¹¹, undertaking foreign direct investment, and even with marriages and births. Indeed, examination of data from U.S. federal estate tax returns suggests that even the timing of *death* is responsive to its tax consequences. This conclusion emerges from a study of the temporal pattern of deaths around the time of changes in the estate tax system — periods when living longer, or dying sooner, could significantly affect estate tax liability. There is evidence of a small death elasticity, although to some degree this may be an elasticity of the

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reported date of death. If the 2001 tax law changes endure, this hypothesis will be tested with the ideal natural experiment, because the estate tax for 2010 will be abolished, but not for 2009 or 2011.

Income Shifting

Some of the observed behavioral response is the shifting of income across tax bases and jurisdictions in search of a lower tax rate. Analysis of the patterns of corporate rates of return and labor income receipts suggests the presence of income shifting between the corporate and personal income tax bases, affecting the interpretation of both reported corporate rates of return and changes in the concentration of personal income.¹²

Other things equal, a multinational corporation prefers its income to come under the taxing jurisdiction of a low-tax country. Cross-border income shifting, like tax evasion, is not observable directly, but it can leave empirical “tracks.” Puerto Rico is a natural place to look because, for many years, the income of Puerto Rican affiliates of U.S. corporations essentially was untaxed either by Puerto Rico or the United States. This reduced the tax penalty on investment there, but also made it attractive to shift reported taxable income from the U.S. parent corporation to the Puerto Rican affiliate. A structural econometric model of the joint decisions regarding investment and income shifting estimated using firm-level data suggests that the income shifting advantages were the predominant reason for U.S. investment in Puerto Rico.¹³

Income shifting is by no means limited to Puerto Rico. For large U.S. manufacturing firms, U.S. tax liability, as a fraction of either U.S. sales or U.S. assets, is related to the location of foreign subsidiaries in a way that is consistent with tax-motivated income shifting.¹⁴ Having a subsidiary in a tax haven, for example Ireland, or one of the “four dragon” Asian countries — all characterized by low tax rates — is associated with lower U.S. tax ratios. Having a subsidiary in a high tax region is associated with higher U.S. tax ratios.

These results suggest that U.S. manufacturing companies shift income out of high tax countries into the United States, and from the United States to low tax countries.

Evasion

Evasion is another response to the attempt to tax. The IRS has estimated that the income tax gap is about 15 percent of what should be paid. Evasion affects the efficiency, equity, and simplicity of the tax system. Moreover, most econometric analysis of the behavioral response to taxation is based on data reported to the tax authorities, and thus may reveal a combination of real and evasion responses.¹⁵

Ascertaining the determinants of evasion is hampered by the difficulty of identifying exogenous sources of variation in policy parameters. If, for example, the probability of audit is higher in one region of the United States than another, might that be because the IRS suspects that taxpayers there are less compliant? A field experiment done with the cooperation of the Minnesota Department of Revenue was designed to clarify the source of policy variation and to study the effectiveness of alternative enforcement strategies.¹⁶ One group of randomly selected Minnesota taxpayers was informed by letter that the returns they were about to file would be “closely examined.” Compared to a control group that did not receive this letter, the low and middle-income taxpayers in the treatment group increased tax payments on average compared to the previous year, indicating the presence of noncompliance. The effect was much stronger for those with more opportunity to evade, for example, those with self-employment or farm income and who paid estimated tax. Surprisingly, however, the reported tax liability of the high-income treatment group fell sharply relative to the control group, possibly because the letter signaled to them the beginning of a prolonged negotiation, of which the tax return was just the opening bid. Two letters containing different normative appeals had no significant impact on compliance behavior.¹⁷

In the last couple of years I have

been examining the estate tax, which poses the classic tradeoff between equity and efficiency in its most extreme form.¹⁸ It is the most progressive by far of the major taxes the federal government levies, because of the million dollar exemption which implies that only the largest 1 or 2 percent of estates owe anything at all. But the base of the tax is wealth accumulation, indisputably a key element in economic growth. If the estate tax deters wealth accumulation, this is a serious detriment. If it encourages avoidance, that is also a symptom of excess burden. But does it? Using data from estate tax returns for 1916 to 1996, one can investigate the impact of the estate tax on reported estates, reflecting the impact of the tax on both wealth accumulation and avoidance.¹⁹ An aggregate measure of reported estates is generally correlated negatively with summary measures of the level of estate taxation, holding constant other influences. The analysis suggests that at the current rate of tax, the richest 0.5 percent of the population reports estates 10.5 percent lower than otherwise, because of decreased wealth accumulation and increased avoidance.

Link between Real and Avoidance/Evasion

How do the opportunities for tax avoidance and evasion mitigate the real substitution response to taxation? For example, if the estate tax is avoided easily, why bother to reduce saving as well? The income and substitution effect of taxes on the real decision depend on both preferences and the avoidance technology.²⁰ The effective marginal tax rate on working and saving must be modified by the addition of an avoidance-facilitating effect, which measures how the cost of avoidance changes with higher income and wealth. Econometric analysis in general will not allow one to identify the two influences separately, unless one can specify observable determinants of the cost of avoidance.

Summary Measures

Because the elasticity of taxable income to the income tax rate captures all of the responses to taxation, it holds the promise of more accurately summarizing the marginal efficiency cost of taxation than a narrower measure of taxpayer response, such as the labor supply elasticity. The promise, though, comes with problems and caveats. It must account for shifts across tax bases and time periods, and anyone using it for policy analysis must be sensitive to the idea that it is a policy parameter itself rather than an immutable value set by preferences and production technologies.²¹

The combination of income shifting across tax bases and between individuals and companies subject to different tax rates erodes tax revenues. This is especially true for the taxation of capital income. Although the United States nominally taxes capital income, the U.S. tax system raised no more revenue in 1983 than would a modified cash flow tax, which imposes a zero marginal tax rate on new investment and saving. This suggests that, at the time, the U.S. "income" tax system on average imposed no tax on capital income, although it certainly caused distortion in capital allocation and portfolios. By 1995, this conclusion no longer applied, because of tax law changes but also because of the drop in nominal interest rates and the economy being at a different point in the business cycle. In 1995 a switch to a modified (R-base) cash flow tax would have cost \$108 billion in revenue.²²

Distribution

Incentives to shift income across time and tax bases also can affect the distributional analysis of taxation. For example, conclusions about inequality based on cross-sectional snapshots of annual income can give a misleading picture of the inequality of a more permanent notion of income, attributable to the mobility of individuals across annual income classes. However, replacing annual income with "time exposure" income, defined as

average real income over a period of several years, does not significantly reduce the measured degree of inequality in the recent past.²³

The effect of changing tax rates on revenue must be kept conceptually distinct from its effect on the measured distribution of income, particularly with respect to capital gains. When realizations increase, the resulting increase in measured income inequality does not reflect an increase in the concentration of welfare. Because of rank reversal, including capital gains as a measure of income also will bias measures of the concentration of other sources of income, such as wages.²⁴

Compliance Costs and Complexity

The resource cost of running a tax system includes the administrative cost of the IRS that appears in the budget. This seems quite low, about 0.6 percent of revenue raised. But what about the costs borne directly by the taxpayers — the compliance costs?

In a series of studies based on taxpayer surveys, I have tried to obtain reliable quantitative estimates of the size and nature of the compliance costs of the U.S. individual income tax. Overall, they suggest that the compliance costs dwarf the administrative costs, and are the dominant source of the cost of collecting taxes. The first study, done in 1982, suggested that the cost of compliance of the individual income tax system was between 5 and 7 percent of the revenue raised, including two billion hours of taxpayer time.²⁵ Some was attributable to allowing itemized deductions, the cost of which can be inferred from data reported on tax returns that suggest that many taxpayers would save money by itemizing but choose not to.²⁶ A follow-up study, done after TRA86 which had simplification as one of its main aims, indicated that tax reform did not reverse the growth in compliance costs in the 1980s.²⁷ Despite indirect evidence that tax-induced transactional complexity declined after 1986, measures of the overall compliance cost of

the individual income tax system showed a significant increase in the cost of all components of compliance.²⁸

Survey-based analysis of the compliance costs of the biggest 1,000-plus U.S. corporations in the early 1990s revealed that the average annual cost of compliance with federal and sub-federal corporate income taxes averaged over \$1.5 million.²⁹ As a fraction of revenue raised, these compliance costs are lower than the estimates for the individual income tax. The cost-to-revenue ratio is higher for state corporate tax systems than it is for the federal tax system, presumably reflecting the non-uniformity of tax systems. In particular, corporate tax officers point to the alternative minimum tax, inventory capitalization rules, and the taxation of foreign-source income as growing sources of complexity. The compliance cost of the rules surrounding foreign-source income is about 40 percent of the total tax compliance cost of large U.S. corporations, which is disproportionately higher than the aggregate share of assets sales and employment that is abroad.³⁰ It is also very high compared to the revenue raised by the United States from taxing foreign-source income, although arguably a principal purpose of this system is to protect U.S. revenues collected on domestic-source income.

Assessing the magnitude and nature of compliance costs highlights its importance, but a more important and more difficult task from a policy perspective is determining what policy changes would reduce compliance costs. One approach is to estimate an empirical model that treats the discrete choices of whether to itemize deductions and whether to hire professional tax advice, and the choice of how much time and money to spend, conditional on the discrete choices made. Simulations based on estimating this model suggest that significant resource saving could be expected from eliminating the system of itemized deductions, although no significant saving can be predicted confidently from changing to a single-rate tax structure.³¹

There are much simpler ways to

collect tax — I've estimated that the Hall-Rabushka flat tax would cut compliance costs in half — but some simplification comes at the cost of the ability to fine-tune tax liability to personal characteristics. Some of the cost of the current system comes from the inherent structural difficulties of an income tax. But replacing the income tax with a consumption tax is neither necessary nor sufficient for significant tax simplification. European experience with the VAT shows that it is not sufficient; real-life VATs are as costly to operate as a real-life income tax. Depending on what is meant by "substantial," a consumption base is not necessary for substantial simplification because a clean-base, return-free income tax system with a single rate covering most of the taxpaying population achieves a lot.³²

Why do tax systems get so complicated, and why are some more complicated than others? Analysis of U.S. state income tax forms and instructions suggests that complexity arises when revenue needs increase, and when the top rate of tax increases. There is only weak evidence that ideological or party tendencies in a state are associated with complexity. States with full-time legislatures, as measured by the salary legislators are paid, tend to have more complex tax systems, as if complexity is one of the things that more professional legislatures *do*. Finally, there is some weak evidence that a more active voting population, as measured by voter turnout, acts as a deterrent to the growth of tax complexity.³³

Optimal Tax Systems

The empirical analysis of behavioral response puts flesh on the structure of the normative theory of taxation. The modern normative theory of optimal tax progressivity, pioneered by Mirrlees³⁴, seeks to formalize the notion of a tradeoff between equity and the efficiency costs of the high marginal tax rates that progressivity requires.³⁵ Since Mirrlees, most research has focused on the optimal linear income tax, which features a demogrant and one marginal tax rate.

Of course most real-life income tax schedules feature two or more rates, and thus allow more flexibility in achieving the desired degree of progressivity. The natural next step is to investigate two-bracket piecewise linear income tax structures. When the social welfare function, utility function, and distribution of abilities are characterized as in the standard optimal linear income tax problem, the optimal second marginal tax rate is less than the first rate although progressivity, in the sense of a uniformly rising average tax rate, generally is optimal.³⁶

As of 1990, the reigning normative approach to taxation did not pay much heed to avoidance and evasion or to administrative and compliance cost considerations. An enriched normative theory, which I refer to as the theory of optimal tax systems, extends optimal taxation to consider the technology of raising taxes and recognizes that the tax system induces people and businesses not only to alter their consumption basket, but also to undertake a range of other actions that do not directly involve a change in their consumption basket.^{37,38}

Acknowledging these realities changes the answers to traditional subjects of inquiry, such as incidence, optimal progressivity, and optimal tax structure, and raises a whole new set of policy questions.

One natural new question that arises is how many resources to devote to enforcement of the tax laws. At first blush, it might appear to be a simple condition: to set marginal revenue equal to marginal costs. But this is certainly wrong. The appropriate condition is that, at the margin, the resource cost of increasing enforcement should equal the saving of excess burden attributable to the decline in exposure to risk.³⁹ The increased revenue gained from stricter enforcement does not enter the expression because it merely represents a transfer from the private to the public sector.

One important old question that must be rethought is that of optimal progressivity. According to standard theory, the optimal progressivity of the tax system depends inversely on the compensated elasticity of labor

supply or, more generally, on taxable income with respect to the marginal tax rate. But there is an important difference between the real response component and the avoidance/evasion component: the latter can be manipulated by policy. One can construct a simple example that shows that ignoring the fact that avoidance can be controlled (that the leak in Okun's bucket can be fixed) can lead to misleading implications about the optimal degree of tax rate progressivity.⁴⁰ For example, the optimal amount of progressivity given a sub-optimal level of tax enforcement may be below the globally optimal degree of progressivity. The standard model of the optimal linear income tax can be generalized to include taxpayer avoidance behavior and the ability of government to control the avoidance, but not the labor supply, response to higher marginal tax rates. Similarly, the marginal-costs-of-funds concept used to determine the optimal supply of public goods can be generalized to include avoidance, evasion, and multiple tax instruments.⁴¹

If the elasticity of taxable income is not immutable and is instead subject to manipulation, how much manipulation is optimal? In other words, what is the *optimal* elasticity of taxable income? This notion can be formalized first in a general model and then in a particular example in which the elasticity of taxable income is determined by how broad the tax base is. In the context of the example, a larger tax base implies a higher optimal degree of progressivity, and vice versa. Moreover, more egalitarian societies will have lower taxable income elasticities. This notion can help explain the pattern of income tax changes and empirical results of the past decade in the United States.⁴²

Administrative and enforcement considerations are key determinants of the structure of taxation in all countries. This is most obvious in developing countries, where presumptive taxes abound, because the theoretically desirable tax base is difficult to measure, verify, and monitor and the presumed tax base can be monitored more readily. What are *de facto* presumptive taxes also are common in developed countries, including fixed

depreciation schedules in place of asset-specific measures of decline in asset value, floors on deductible expenses, and the standard deduction.⁴³ In an important sense, *all* taxes are presumptive, in that the ideal tax base cannot be measured perfectly.

Trust and Deception

Recently I have been exploring two implications of abandoning the standard presumptions that taxpayers act in their self-interest and governments act in their citizens' interest. The first concerns whether people's attitudes toward, or trust in, government can influence their tax compliance behavior and in turn alter the cost of raising revenue, and whether this mechanism can clarify the causal relationship between prosperity and the size of government. Cross-country data from the 1990 wave of the World Values Survey reveal that tax cheating is lower in countries where citizens exhibit more (not-government-related) trustworthiness.⁴⁴ However, holding that constant, tax cheating becomes more acceptable as government grows, to a significant and larger degree. There is also clear evidence of a Wagner's Law relationship such that prosperity increases government size. Holding income constant, though, a more accepting attitude toward tax cheating does limit the size of government. All in all, there is some weak evidence that the strong positive correlation between the size of government and tax cheating masks the fact that big government induces tax cheating while, at the same time, tax cheating constrains big government.

Finally, I observe in recent work that the design of the U.S. income tax system apparently reflects the lessons about human psychology that marketing directors know well—for example, that consumers/taxpayers prefer discounts, they tend to disregard fine print, and they react more to immediate rewards.⁴⁵ Most, but not all, incumbent politicians prefer that the perceived tax burden be as low as possible, and there is circumstantial evidence that tax system design takes advantage of framing to minimize that

perceived burden.

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