

TAX REFORM OF THE CENTURY—THE SWEDISH EXPERIMENT

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Abstract - *What can changes in tax structure accomplish? The Swedish tax reform of 1991 is the most far-reaching reform in any industrialized country in the postwar period. It represents a thorough application of a strategy of rate cuts cum base broadening, and it has affected a myriad of economic incentives in a more or less substantial way. This paper reviews the lessons from a major evaluation effort, sponsored by the Swedish government and involving a large number of researchers.*

the Swedish tax reform of 1991 (TR 91) applied the strategy of rate cuts cum base broadening in an unusually thorough manner. Under the catchy slogan “tax reform of the century,” marginal income taxes were dramatically lowered and various tax shelters eliminated. According to prereform estimates, the rate cuts entailed a revenue loss on the order of six percent of gross domestic product (GDP). Measured in this way, TRA 86 stands out as a relatively modest endeavor, with a projected revenue loss of one to two percent of GDP due to rate cuts.

INTRODUCTION

Sweden might be best known as the home of film director Ingemar Bergman and—for better or for worse—as the prototype welfare state. What might be less well known is that Sweden recently implemented the most far-reaching tax reform in any western industrialized country. Although Sweden was a latecomer to the bandwagon of world-wide tax reforms of the 1980s, with the U.S. Tax Reform Act of 1986 (TRA 86) as a celebrated example, the architects of

It goes without saying that sharply reduced income tax rates represent a sensitive political issue, particularly so in a country where tax policy used to center on the idea that a steeply progressive income tax is an efficient way of transferring resources from the rich to the poor. To understand why TR 91 gathered wide political support, both external and internal considerations are important. The integration of world capital markets during the 1980s implied that it became more difficult to tax capital income at rates that differed very much from those applicable elsewhere. Also, the major changes in the tax structures of a number of other

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countries provided an impulse. However, it would be wrong to view TR 91 as a mechanical response to these developments. After all, Ronald Reagan's tax policy is not a very natural source of inspiration for Sweden's Social Democrats. While many of the arguments of the proponents of TR 91 bear a striking resemblance to those put forth in the context of TRA 86,¹ their origin should be traced primarily to the domestic debate.

As early as 1978, Nobel Laureate Gunnar Myrdal complained that high marginal tax rates had turned Sweden into a "nation of wangers." According to Myrdal (1978), the progressive income tax had created such strong incentives for high-income individuals to exploit various tax avoidance schemes (including outright tax fraud) that the Swedish tax system no longer redistributed income. Myrdal's view carried particular weight since he belonged to the political left. Parties more to the right, and quite a few economists, had for long warned that the income tax created large disincentive effects. But Myrdal seemed to suggest that also those in favor of egalitarian outcomes, and concerned less about efficiency, had reason to reconsider the role of the progressive income tax. Although Myrdal offered no hard facts to substantiate his claim, the perception that the rich could avoid their fair share of the tax burden was probably instrumental in softening the Social Democrat's traditional resistance to proposals involving lower marginal tax rates.

But there were also other influential arguments. Since the late 1970s, when inflation reached double-digit levels, there was widespread concern that the tax system promoted the wrong kind of investments. Investments in noncorporate assets, and housing in particular,

were given preferential tax treatment. Many Swedish economists argued, as did many of their colleagues in the United States, that the uneven playing field created substantial efficiency losses. The nonuniform treatment of the returns on different assets also created considerable scope for a number of straightforward tax arbitrage operations, more often than not involving purchases of low-taxed assets with borrowed money. This spelled bad news for the tax collector—for several years, households claimed tax deductions to such an extent that the net revenue from taxes on personal capital income was negative.

The corporate income tax attracted similar criticism. A variety of tax allowances, and a high statutory tax rate, were once part of a deliberate strategy of stimulating firms to plow back profits into their businesses. The idea was that large and expanding firms were good for growth. During the 1980s, there was a shift in emphasis. According to the new view, the corporate tax breaks were an obstacle to efficient capital allocation. The high rates of profit retention required to take advantage of the various tax allowances created a capital lock-in effect, which prevented necessary structural readjustments. Finally, toward the mid-1980s, an overheated economy and concerns about an acute labor shortage seemed to give added weight to the argument that there was an urgent need to strengthen labor supply incentives.

TR 91 was presented as a way of remedying all of these problems in one giant stroke. According to its proponents, the reform would avoid the classical goal conflict between efficiency and income distribution. In spite of drastic marginal tax cuts, high-income earners were not supposed to gain

relative to other groups. As a result of a generally more efficient economy, all strata in society should gain. Moreover, total tax revenue was not supposed to decrease—the Swedish tax take should remain the highest in the world. The revenue gains from broader tax bases were to make up for the losses from lower tax rates.

What can changes in tax structure accomplish? Did the proverbial free lunch materialize? This paper reviews the lessons from a major evaluation effort, commissioned by the Swedish government and involving a large number of foreign and Swedish researchers.² The next section gives a brief outline of TR 91. We proceed by discussing the considerable difficulty in evaluating a tax reform in the midst of a very sharp recession. We review the evidence on behavioral responses, and we seek to identify areas where TR 91 mattered the most. We also present an assessment of the overall effects on efficiency and equity. Our concluding remarks draw some lessons for tax reform more generally.

WHAT TR 91 IMPLIED

Prereform estimates presented by the Ministry of Finance indicated that the rate cuts for the personal income tax alone, together with additional outlays for housing and child allowances to cushion the distributional effects of the reform, would reduce revenues by an amount equivalent to between six and seven percent of GDP. Nearly 40 percent of this loss was to be recouped through a new system of taxing capital income. A broadening of the value added tax (VAT) (of 23 percent) to include goods and services previously exempted, or granted lower rates, would yield additional revenue on the order of 30 percent of the budget loss, while almost

15 percent was to be financed by elimination of loopholes and preferential rules for taxing earned income. Enlarged tax bases due to a generally more efficient economy would offset roughly five percent of the revenue loss. The reform hence brought a major reallocation of the total tax burden away from earned income to consumption and to individual capital income (including the return to housing).

A noteworthy feature of TR 91 was the move away from the principle of global income taxation toward a *dual income tax*, by introducing separate tax schedules for earned income and capital income.³ The new taxation of earned income meant that almost 85 percent of the income earners would pay only local income tax. In 1991, the countrywide average of the local income tax was 31 percent. A national income tax of 20 percent was imposed for incomes exceeding 185,000 kronor (equivalent to U.S. \$33,500, at the 1991 exchange rate), which meant that the top marginal tax rate on earned income was set at 51 percent. TR 91 implied that the marginal rate would be reduced by between 24 and 27 percentage points for large groups of full-time employees (Figure 1).

The new proportional capital income tax was set at 30 percent, and levied on dividends, interest income, and both long- and short-term realized nominal capital gains. As before, interest on all kinds of debt would be fully deductible. A stated purpose of the separate capital income tax was to reduce the value of interest deductions and to limit the scope for tax avoidance in various forms.

Although the initial ambition of TR 91 was to levy a uniform VAT (of an unchanged 23 percent) on all commercial turnover of goods and services,

FIGURE 1. Marginal Tax Rate 1989-91 at Different Levels of Tax Assessed Income; 1 SEK = 0.181 U.S. Dollars (1991)

several areas have remained tax exempt. These include various cultural and social services and housing rents. Housing costs have risen as a result of the tax reform, however, partly because the VAT was broadened to include real estate maintenance, heating, and electricity. Owner-occupiers were further affected by the inclusion of expenditures on housing investment in the new VAT. Before TR 91, the tax was 13 percent.

The changes in the corporate income tax were no less dramatic. The statutory tax rate was reduced from 57 to 30 percent. In order to maintain an unchanged level of revenue from the corporate tax, the rate reduction was combined with substantial broadening of the base. The possibility to undervalue inventories for tax purposes was eliminated, and the investment funds system, introduced in the mid 1950s as the main tool of a countercyclical fiscal policy, was discontinued.

Even a casual comparison reveals obvious similarities between TRA 86 and TR 91. Both reforms were far reaching with the same intent of reducing various behavioral distortions from the tax systems. The approach to tax reform was similar, combining substantial tax cuts with a broadening of the base. TR 91 was much larger in scope, both in terms of revenue effects from the rate cuts and by covering a wider range of tax instruments. Obviously, these differences partly reflect the vast difference between Sweden and the United States in the financing requirements for the public sector. As a proportion of GDP, the total tax yield was almost 56 percent in Sweden in 1989, compared to 30 percent for the United States. However, the relative importance of different taxes, summarized in Table 1, is broadly similar. In both countries, there is a heavy reliance on receipts from the personal income tax and from Social Security contribu-

TABLE 1
SOURCES OF TAX REVENUE IN SWEDEN AND THE UNITED STATES

Revenue Source	Share of Total Receipts (Percent)		
	Sweden		U.S.
	1989	1991	1991
Taxes on personal incomes (including capital gains)	39.3	34.2	34.9
Taxes on corporate incomes	3.8	3.1	7.3
Social Security contributions	26.7	28.6	29.8
Payroll taxes	2.5	3.0	—
Property taxes	3.3	4.1	11.2
Taxes on goods and services	24.2	26.9	16.8
Miscellaneous taxes	0.1	0.1	0.0
Total receipts (percent)	100.0	100.0	100.0
Share of taxes in GDP (percent)	55.6	52.7	29.5
GDP (Billion U.S. 1991 dollars)	—	237	5,611

Source: *Revenue Statistics of OECD Member Countries 1965–94* (OECD, Paris, 1995).

tions. Taxes on goods and services are more important in Sweden, whereas corporate and property taxes contribute a larger share of tax revenue in the United States. The reallocation of the total tax burden brought by TR 91, away from personal income to consumption, is clearly visible.

A NATURAL EXPERIMENT?

A major reshuffling of the tax structure may seem like that rare opportunity to sharpen the estimates of the behavioral elasticities that would interest a public finance economist. However, the implementation of TR 91 was accompanied by the most severe economic downturn since the 1930s. Between 1991 and 1993 GDP fell by more than five percent, open (i.e., excluding those enrolled in various labor market programs) unemployment rose from less than two percent to more than eight percent, asset prices tumbled, and residential construction activity came to a virtual standstill. At the same time, income inequality increased and the government deficit reached record heights. In this environment, it is clearly hard to sort out cause and effect with much precision.⁴ Macroeconomic time series for the years surrounding TR 91

contain very little of the kind of independent information needed to discriminate between alternative hypotheses about behavioral responses.

Microeconomic panel data, allowing the analyst to control for individual variation over time, may seem like a safer bet, but there is still an obvious risk that the macroeconomic noise pollutes the microeconomic analysis.

The Swedish tax evaluation effort includes several contributions which try to make do with data sets including pre- and postreform observations. But the macroeconomic turmoil has led a number of researchers to confine attention to the information that can be gathered from an *ex ante* evaluation of TR 91. These evaluations have two ingredients in common. The first is an assessment—based on previous findings reported in the literature or on new findings based on prereform data sets—of the reasonable value of some relevant behavioral parameter. The second ingredient is a careful assessment of the change in the incentive structure implied by TR 91. This is a far from trivial exercise, since TR 91 contained several provisions with counteracting influences on the relevant incentive margin. Combining these

ingredients, the *ex ante* evaluation produces a set of predicted responses, which serve the useful purpose of scrutinizing the political arguments. Do recent research and refined analysis of the incentive structure produce the kind of behavioral responses promised by the architects of TR 91?

An additional complication stems from the fact that the sharp drop in the activity level cannot be treated as independent of TR 91. Toward the end of the 1980s, the Swedish economy showed many signs of overheating.⁵ Due to a high demand pressure, wage costs increased substantially, which led to eroded competitiveness in world markets. At the same time, and in the wake of financial deregulation, the indebtedness of households and firms reached very high levels. This left the Swedish economy in a vulnerable position when the international economy slowed down in the early 1990s. While the international recession may explain part of the rise in unemployment, a more important reason for the severity of the recession is probably that macroeconomic policy was firmly devoted to nonaccommodation. As had been the case previously in many other Western European countries, fighting inflation and defending an overvalued exchange rate now became the top priority for Swedish economic policymaking. As a result, manufacturing output fell sharply.

These developments, certainly unrelated to TR 91, explain a major part of the severe economic recession. But TR 91 may help to explain why the slump in the exporting sectors spread to the sheltered parts of the economy. By lowering the value of household interest deductions, TR 91 increased real after-tax borrowing costs and stimulated indebted households to sell off assets.

Also, higher borrowing costs, in conjunction with certain tax hikes aimed specifically at the housing sector, contributed to the collapse of the construction sector. These contractionary impulses amplified the downturn and contributed to a general weakening of aggregate demand.⁶ James Tobin once cautioned that it takes a heap of Harberger triangles to fill an Okun gap. Whatever its long-term merits, it is easy to conclude that the timing of TR 91 was unfortunate. While part of this can be blamed on bad luck, TR 91 was designed to be implemented in a situation with fair macroeconomic wind. The official inquiry which preceded TR 91 contains a wealth of material, but there was hardly any discussion of the macroeconomic aspects.

BEHAVIORAL RESPONSES

As suggested by Slemrod (1992), the evidence about the responses to the major U.S. tax reforms of the 1980s can be interpreted as an indication of a behavioral hierarchy. The most responsive decisions, at the top of the hierarchy, are those involving the timing of transactions, followed by a variety of financial, accounting, and evasion responses. The least responsive decisions, at the bottom, concern the "real" ones, including labor supply, savings, and investment. Let us review the Swedish evidence.

Tax Avoidance

A characteristic feature of the pre-TR 91 tax system was the highly nonuniform treatment of income from capital. The returns to different assets were taxed at vastly differing rates, and the tax paid on a given income could vary systematically depending on the identity of the taxpayer, the kind of income concerned, and when it was reported for taxation.

The steeply progressive tax schedule, in combination with the treatment of children as separate taxpayers, meant that the tax burden could be reduced considerably by shifting capital income from parents in high tax brackets to children with little or no earned income. Likewise, differences among corporate firms in availability and possibilities to take advantage of various nondebt tax shields were extensively exploited. On several occasions, schemes to avoid tax were set up as joint ventures between taxpaying private corporations and tax exempt institutions in the public sector, including several Swedish cities (the operations included sale and leaseback of icebreakers, municipal sewage systems, hospital equipment, etc.).

In Sweden as elsewhere, the strategy of the tax planners was to claim deductible expenses against fully taxable income and report income in forms granted preferential tax treatment. The concessions to specific forms of household savings in the late 1970s and early 1980s provide a simple illustration of this. Savings in special bank accounts were offered a tax-free return plus an initial tax credit, which effectively implied a negative tax. However, nothing prevented households from paying for the contributions to the scheme by borrowed money and deducting the interest against earned income. The special bank account could hence easily be transformed into a *money machine*. Private pension plans, which received the equivalent of consumption tax treatment, provided similar opportunities for reaping the double benefits of tax exemption and full interest deductibility.

As in other countries, much effort was devoted to transforming corporate source income into low-taxed capital gains. Complicated schemes were set

up, often involving the use of new financial instruments, where the tax legislation was either unclear or preliminary in nature. The capital gains tax provided additional opportunities for tax avoidance. Before TR 91, short-term gains on shares held for less than two years were fully taxed, while on long-term gains, the tax rate was 40 percent of the income tax rate. The holding-period distinction thus implied that a short-term loss of one krona could be used to offset the tax on a long-term gain, two and a half times as large.

The decades preceding TR 91 witnessed a continuing battle between the tax planners and the tax authorities. New and increasingly complicated rules were set up to combat tax avoidance, and at least to some extent the added complexity created new and unforeseen opportunities to avoid tax. Rather than continuing along the same path, TR 91 cut the Gordian knot by focusing on the circumstances that had opened up the tax planning, that is, the asymmetric tax rules and the high tax rates. Family transactions set up to exploit differences in the marginal tax rates between parents and children were rendered meaningless, since individual capital income was taxed at a proportional rate with no exemption. The uniform tax on capital income also meant that the tax could be levied at the source.⁷ Transactions among firms driven by differences in taxpaying status were less rewarding because of the lowered statutory tax rate, while the broadening of the tax base reduced the differences in availability of tax shields between companies. The elimination of the holding-period distinction for capital gains meant a further blow to tax planning.

The balance between taxation of labor income and corporate source capital income was much discussed in the tax

reform process and during the following years. TR 91 retained a difference of some 15 percentage points between the total (including payroll taxes) marginal rate on earned income and the total corporate and personal tax on profits. Hence, for owners of corporate firms active as managers, there remained a clear incentive to reclassify labor income as corporate profits. While a thoroughgoing attack against tax avoidance would seem to require that this incentive be eliminated, the tax legislators do in fact face a difficult dilemma posed by the increased openness of the Swedish economy. Following the deregulation of financial markets and the elimination of currency controls at the end of the 1980s, Swedish households have both legal and easy access to international portfolio investments. Though taxation of individual income from capital follows the residence principle, Swedish tax authorities in practice have little opportunity to enforce taxes on income earned abroad. The prospect of introducing a functioning reporting system from foreign banks and/or a system of withholding taxes on dividends and interest payments seems bleak indeed. If, on the other hand, the tax legislators would attempt to keep domestic investors at home by more lenient taxation, the difficulties of defending the line of demarcation against labor income would magnify.

Consumption

Private consumption is normally considered to be one of the least volatile of all macroeconomic variables. In Sweden, however, consumption fell by about five percent between 1991 and 1993.⁸ Can changes in tax structure explain the consumption bust? TR 91 may have had a negative impact on consumption via three channels: (1) intertemporal substitution in response to

an increase in the real after-tax interest rate,⁹ (2) a downward revision of expected future labor income, and (3) wealth effects due to reevaluations in asset markets, in particular, in the markets for residential real estate. Of these channels, only (3) seems to hold some promise in explaining the consumption bust.

With a large intertemporal elasticity of substitution, periods of high expected interest rates should coincide with rapid consumption growth, and periods of low interest rates with stagnant consumption (e.g., Hall, (1988)). However, although there are reasons to be cautious about the information that can be drawn from representative agent models and aggregate data, empirical studies in Sweden and elsewhere suggest that the intertemporal elasticity of substitution is close to zero.¹⁰ Moreover, some basic aspects of the data are hard to reconcile with a story of intertemporal substitution. Between 1986 and 1989, when consumption growth was brisk, the average real after-tax interest rate was negative. Between 1991 and 1993, when consumption growth was negative, the average real after-tax interest rate was exceptionally high. If intertemporal substitution is to characterize the data, consumption growth should follow the opposite pattern.

When households make a downward revision of their forecasts of future labor income, consumption should fall. However, while there are good reasons to believe that permanent labor income fell during the Swedish consumption bust,¹¹ TR 91 is not likely an important factor. Indeed, most assessments of the efficiency effects of TR 91—discussed below—suggest that it lowered excess burdens due to tax wedges in the labor market. If anything, this effect should increase permanent income.

Capitalization effects in asset markets, whether due to TR 91 or something else, may certainly affect consumption. The consumption boom of the late 1980s was associated with an increase in real estate prices, and the bust period with decreasing prices. Of course, correlation is not the same as causation. But recent macroeconomic work indicates that variables such as real housing prices and windfalls in the housing market seem to have power in explaining aggregate Swedish consumption behavior.¹² Moreover, TR 91 led—as discussed below—to a dramatic increase in the rental cost of housing and contributed to the sharp fall in house prices after 1991. Although these housing market adjustments are unlikely to explain a very large part of the consumption bust, they seem like the most important mechanism for an adverse consumption response to TR 91.

Consumption Pattern and Asset Composition

While TR 91 may have had a small effect on the aggregate consumption *level*, it mattered more for the *composition* of consumption and savings. The move toward a broader base for the VAT implied substantial tax hikes for some previously favored consumption categories. Available data and a few econometric studies suggest that there was a strong negative demand response for some of these categories, including hotel and restaurant services and domestic tourism.¹³ These responses serve as a healthy reminder of the fact that one of the guiding principles of TR 91—the purported superiority of a system with uniform tax rates on goods and services—has no obvious connection with the tax structure implied by the “inverse elasticity rule” of models of optimal commodity taxation.

Our prior was that household asset choice—at the top of the response hierarchy—was an area where TR 91 should matter. Microeconomic evidence suggested that the old tax system created strong tax clientele effects, in the sense that households tended to specialize in assets according to their marginal tax rate.¹⁴ Macroeconomic evidence suggested that the large shifts from financial to nonfinancial savings outlets (e.g., consumer durables and housing investment) during the decades preceding TR 91 were highly correlated with after-tax returns.¹⁵

TR 91 removed many of the asymmetries on the asset side of households’ balance sheets. The 30 percent tax rate on personal capital income mitigated the tax disadvantage of bank savings and reduced the tax premium for investments in durables and real estate. There were also important consequences for the treatment of liabilities. In the early 1980s, nominal interest expenses were fully deductible against often quite high marginal income tax rates. This created a strong incentive to inflate balance sheets by purchasing assets with borrowed money. In 1980, an individual with the marginal tax rate of an average blue-collar worker paid a real after-tax interest rate of *minus* seven percent. In 1991, when nominal interest expenses became deductible at the new flat tax rate of 30 percent and inflation was lower, the same individual paid a real after-tax interest rate of *plus* seven percent.

On balance, TR 91 gave households strong incentives to shift from real to financial savings outlets and to shrink balance sheets by selling off assets and amortizing debt. Households seem to have adjusted accordingly. In the early 1990s, net investments in tangibles and

durables turned negative, and household financial savings increased dramatically. Between 1988 and 1992, net lending as a share of disposable income increased by an astonishing 13 percentage points, while the nonfinancial savings ratio decreased by more than 8 percentage points.¹⁶ Although the rapid fall in inflation and the macroeconomic crisis played a role, calculations reported in Agell, Berg, and Edin (1995) indicate that about one-third of the increase in the net lending rate can be attributed to TR 91.

Housing

Valuing and taxing the services rendered by owner-occupied housing constitute a classical difficulty in implementing a comprehensive income tax. In Sweden, this has been handled by imputing a measure of the implicit income from an owner-occupied home at one to two percent of market value and adding this imputed income on top of other taxable income. With nominal interest income being fully taxable and interest payments deductible, this introduced substantial asymmetries in the tax treatment of housing and other sectors of the economy, and within the housing sector itself, especially with the high inflation and nominal interest rates of the 1970s and 1980s. Owner-occupied housing was tax advantaged relative to other forms of household investment, user costs of owner-occupied housing varied across households according to marginal tax rates, and owner-occupied housing had a general tax advantage¹⁷ over rental housing. Apart from the provisions of the income tax code, housing was also favored through government-guaranteed interest-subsidized loans, a lower VAT rate for building and construction, and income-dependent housing allowances.

As a reflection of the progressivity of the tax schedule, with widely differing marginal tax rates, after-tax interest payments varied a lot across households. Before TR 91, this resulted in rental costs of owner-occupied housing ranging from two percent in the upper marginal tax bracket up to six percent at low marginal tax rates, according to calculations discussed in Englund, Hendershott, and Turner (1995). With the new flat 30 percent tax schedule for all forms of capital income, after-tax interest costs became the same for all households. Owner-occupied housing was no longer cheaper for high-income groups. But TR 91 also affected housing costs through increased VAT and reduced interest subsidies. The combined impact of TR 91 was to fundamentally transform the price structure in the housing market. Rental costs increased substantially and became essentially uniform across households.

Based on microsimulations, we predict that these cost changes should lead to an aggregate demand decrease on the order of 15 percent. Since the stock of housing capital adjusts so sluggishly, the immediate response to the reform should be on prices and new construction. Simulations with a perfect foresight model in the vein of Poterba (1984) suggest a drop in prices of around 10 to 15 percent upon announcement of TR 91 and a sharp fall in new construction.¹⁸ These predictions of falling prices and a virtual standstill of new construction have been borne out by developments after the implementation of TR 91. The reform year of 1991 marks the peak of house prices and of the rate of new construction. Construction virtually ceased after 1992, and nominal house prices fell by a total of 19 percent from the peak in the third quarter of 1991 to the trough in the first quarter of 1993.¹⁹ The total price

fall from peak to trough is well in line with expectations, although here as elsewhere it is hard to isolate the effects of TR 91 from those of the severe recession. The timing, however, is somewhat puzzling in view of the fact that the reform could reasonably have been expected by 1989 and was certainly known when the reform bill was passed by Parliament in June 1990. The fact that it took two years until this was reflected in house prices casts some doubt on the rationality of pricing in the Swedish housing market.

When house prices started to fall, however, they did so quite rapidly. In fact, this is the first episode in modern times with falling *nominal* prices. This raises two issues. First, the capital losses of homeowners gave rise to a potentially sizable redistribution of income both vertically, since the average homeowner is higher up the income distribution than the average renter, and horizontally from homeowner to renter at the same income level. Second, falling house prices dug deep holes in the net wealth of many homeowners, even to the point of creating negative net equity. This most likely created a temporary lock-in effect, as homeowners short of equity could not put up the down payment necessary for a new house. Indeed, the transactions volume in the secondary market decreased substantially.

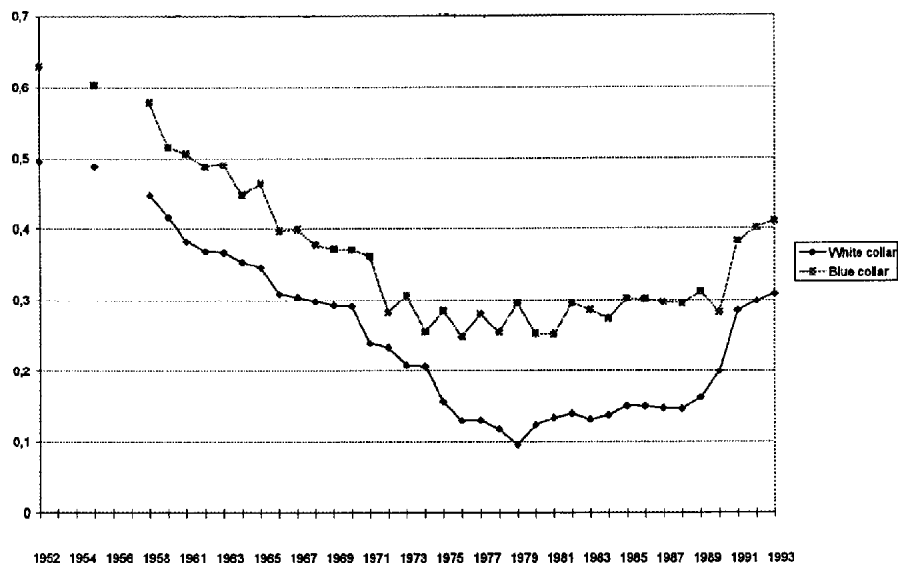
Labor Supply

In the public debate surrounding the reform, the potential impact on labor supply played a major role, although many economists cautioned against overly optimistic supply projections. The development of the wedge between labor costs to the employer (including wage taxes) and the after-tax remuneration of blue- and white-collar employees

(accounting for income taxes, as well as VAT and other indirect taxes) is depicted in Figure 2. We see that TR 91 marks a sharp break of a long-term trend, where by the end of the 1970s the marginal take-home pay of the average blue-collar worker had fallen to less than 30 percent of pretax labor costs. In relative terms, the increase from 1989 to 1991 was 23 percent for the blue-collar worker and as much as 76 percent for the upper-tier white-collar worker.

Although these numbers clearly demonstrate the magnitude of the reform, one should not be misled into generalizing to all groups in society. In fact, looking across a representative sample of all individuals, it appears that around a quarter saw an *increase* in the tax wedge.²⁰ The explanation is that a large fraction of Swedish wage earners work less than full-time at relatively modest marginal-tax rates that were not much affected by the reform, and that many households in this category are entitled to income-dependent housing allowances that were increased as part of the reform. A similar pattern with a mixture of increased and decreased marginal tax rates holds for TRA 86 (Hausman and Poterba, 1987). In fact, as is emphasized by Auerbach and Slemrod (1997, forthcoming), it lies in the nature of a reform aimed at maintaining the degree of redistribution that it is very difficult to lower marginal taxes for everybody.

Various labor supply studies, conducted before TR 91 and as part of the evaluation effort, tend to confirm the “elasticity pessimism” underlying Slemrod’s response hierarchy, with labor supply at the bottom. A representative estimate of the compensated wage elasticity of hours worked among Swedish prime-age males is on the order of magnitude of 0.1,²¹ but the estimates are so

FIGURE 2. The Marginal Take-Home Pay per Dollar of Employer Costs, of Blue- and White-Collar Workers, 1952-93

Note: Marginal take-home pay is calculated as $(1 - \text{marginal tax rate}) / [(1 + \text{wage taxes})(1 + \text{indirect taxes})]$

Source: DuRietz (1994)

imprecise that the predicted hours response to the reform of the representative white-collar worker of Figure 2 has a typical confidence interval ranging from 1.5 to 15 percent. Unfortunately, there is a paucity of *ex post* studies of the impact of the reform, but the panel study of Klevmarken (1996) finds that changes in marginal wages between 1985 and 1992 were associated with statistically significant increases of the supply of hours worked, both for men and for women.²²

Although a very large amount of research has focused on hours worked, it is possible that other margins of labor supply response may prove more important in the longer run. It is noteworthy that TR 91 implied a large change in the incentive to undertake investment in education. TR 91 lowered tax rates at higher (postinvestment) income levels, but left tax rates more or

less unchanged at lower (preinvestment) income levels. Edin and Holmlund (1995) calculate internal rates of return to investing in a four-year university program. In the early 1980s, the return was four to five percent before tax and one to three percent after tax, implying effective tax rates between 40 and 90 percent depending on the year chosen as a basis for the calculations. After the reform, the effective tax rate fell to 25 percent. The impact of this reduction is not confined to formal education but applies more broadly to the choice between careers with different earnings profiles.

The Corporate Response

The new corporate tax rules meant a noteworthy departure from the previous long-standing policy of stimulating business investment in fixed capital through a combination of a high

statutory tax rate and generous allowances to investing firms. The tax rate was cut almost in half, and, to keep the tax payments of the corporate sector roughly constant, the base of the tax was considerably broadened. Many of the innovative incentive provisions that had set the Swedish tax system apart were eliminated, notably the investment funds system.²³

Though there was a widespread view among policymakers that cutting the statutory tax rate in half would itself greatly improve investment incentives, estimates using conventional methodology indicate that the corporate tax reform had little effect on the cost of capital. The base broadening largely offset the effects of the tax cut. However, TR 91 somewhat reduced the previous strong incentives to use debt rather than equity as a source of funds.²⁴

An important complication in evaluating the effects of the corporate tax reform is that Swedish companies to a large extent both paid corporate income tax and abstained from fully using the generous tax allowances. A detailed study (Forsling, 1996) indicates that, over the period 1979–88, the average rate of utilization of tax allowances (deductions for depreciation, contributions to investment funds, and undervaluation of inventories) among tax-paying firms was a mere 72 percent. Only one out of five firms used the maximum allowed by the tax code. An increase in the rate of utilization from 72 to 76 percent would have been sufficient to completely eliminate all tax payments. Conventional estimates of the cost of capital or effective tax rates, assuming full utilization of existing tax allowances, may therefore give a misleading picture of the incentive effects of the corporate tax.

Recent research (Kanniainen and Södersten, 1994) has attributed this rather odd tax behavior to the uniform reporting convention used in Sweden (and several other OECD countries). Firms can distribute cash dividends only to the extent of their after-tax profits, taking account of fiscal depreciation, contributions to investment funds, etc. Hence, corporate civil law imposes a dividend constraint on using tax allowances, and, in practice, this constraint seems to have been more tight than the upper limits set by the tax code. When tax allowances on existing assets have not been fully used, an additional investment project will not affect total tax payments, that is, at the margin, the corporate tax rate is zero. Put differently, the corporate income tax is effectively turned into a tax on distributions or a cash flow tax with no impact on the cost of capital.²⁵ The mechanism involved here is similar to that analyzed in the literature about dividend taxation.²⁶ To the extent that paying dividends is the only way to get cash to the shareholders (share repurchases are disallowed in Sweden), the firm is in a “trapped equity” regime where the corporate tax is capitalized in share prices.

The possibility that large groups of Swedish firms effectively faced a zero marginal corporate tax rate makes it unclear to what extent the old tax system actually did offer an advantage to debt finance. Even the direction of change in the incentives for borrowing brought by TR 91 is unclear, as the base broadening would be expected to raise the rate of utilization of the still remaining tax shields.²⁷ Firms experiencing a switch from being taxed on their cash flows to being subject to a regular income tax would find the value of interest deductions increase at the margin, despite the sharp cut in the

statutory tax rate. Moreover, given that the financial markets in Sweden are highly integrated with the international markets for debt and equity, it seems unlikely that the switch to the dual personal income tax with a flat rate 30 percent tax on personal capital incomes would be of much importance for corporate financial decisions. The after-tax costs of funds of the large Swedish firms are more likely determined by the operations of international portfolio investors, say, United States pension funds, than by the savings and portfolio decisions of Swedish households.

Auerbach, Hassett, and Södersten (1995) focus on the effects on business fixed investment. A model of equipment investment is estimated in order to determine which of several potential regimes best described investment behavior before the reform. Even though the regression results do not settle the issue, evidence on the use of tax allowances and investment funds generally supports the view that the pre-reform corporate tax system had essentially no effect on investment. The change in the user cost of capital due to the reform is found to be very small and swamped in recent years by the impact of the rise in real interest rates and decline in profitability. The authors conclude, "with some confidence," that the effects of TR 91 itself (as opposed to contemporaneous macroeconomic factors) on investment are likely to have been minor.

INCOME DISTRIBUTION

In the political process of selling TR 91 to various interest groups and the electorate in general, a key element was the claim that the reform would be distributionally neutral. This was interpreted in a bookkeeping sense to mean an unchanged relation between

an exogenously given distribution of pretax factor income and the distribution of income after taxes and allowances. Against this background, it was natural that a mechanical evaluation of the distributional impact along these lines was one element of the evaluation effort, although it comes natural for an economist to point to the limitations of such an exercise.

During the 1980s, a growing number of critics came to doubt whether the Swedish tax system achieved much in terms of redistribution. There were three ingredients to the critique. First, various loopholes and tax arbitrage activities created a wedge between "true" income and taxable income. Second, substitution between market labor and leisure and household production created a discrepancy between taxable income (which only derives from market activities) and potential income (which also includes the value of leisure and home production). Third, taxation based on yearly income redistributes income across different phases in an individual's life cycle, i.e., from more toward less productive ages, but it is less clear how much redistribution actually is achieved across households with different lifetime incomes.²⁸

The recent study by Björklund, Palme, and Svensson (1995), however, gives little support to the critics of the old system. According to this analysis, the old Swedish tax system certainly achieved a substantial amount of redistribution of yearly incomes.²⁹ The amount of redistribution is not much affected by going from actual income to a measure of full income. Also, when the authors follow a panel of individuals over the period 1974–91 and take the sum of discounted income over this period as a measure of lifetime income, the conclusion is that the tax system

redistributes almost as much in terms of lifetime income as in terms of yearly income. Of course, this only says something about the tax system as it evolved over this 18-year period and gives no conclusive evidence on the long-run redistributive properties of the system of the late 1980s. Nevertheless, it leads us to be somewhat skeptical about some of the more popular views of the old tax system as being void of any redistributive effect.

Björklund, Palmer, and Svensson (1995) also examine differences in pre- and post-tax Gini coefficients under the old and new tax rules. Looking at the aggregate amount of redistribution across all groups of households, the differences appear minuscule; i.e., at least in the short term (up to 1992), TR 91 seems to have lived up to the promise of “neutrality” with respect to the income distribution. This conclusion, however, conceals important differences in the structure of the tax and subsidy system. Broadly speaking, there are three counteracting differences between the old and new tax systems. First, the taxation of earned income is clearly less redistributive under TR 91. Second, with the new flat tax on capital income, tax payments become more proportional to actual capital income than under the old system, where it was possible to avoid capital taxes altogether through tax arbitrage. Since capital income is concentrated at the top of the income distribution, this tends to make the new system more redistributive than the old one. Third, child and housing allowances play a larger role after TR 91 than before. Since they largely redistribute income from households without children to families with children, TR 91 represents a shift of emphasis toward more redistribution across various phases of the life cycle rather than between households with different lifetime incomes.

By simply comparing Gini coefficients before and after taxes, one takes an unduly narrow view on income distribution. In particular, one takes the pretax distribution of factor income for granted, thereby glossing over the strong assumptions about tax incidence implicit in such an exercise. Whereas it may be reasonable for a small open economy like the Swedish one to assume that the pretax return to capital is determined in international markets and unaffected by Swedish tax policy, the assumptions about the incidence on wages merit more attention than they are commonly given by income distribution analysts. In fact, there has been a recent trend in Sweden, as elsewhere, toward more inequality of factor incomes, and one may ask if this development has been induced by tax reform to any extent. This should depend on the relative supply responses of high- and low-skilled workers and on the degree of complementarity in production between different types of labor. However, given the generally small labor supply responses, it appears unlikely that the changing wage structure has primarily been induced by changes in tax structure. In the longer run, the strengthened incentives to invest in human capital should be more important for the wage distribution. It is hard, though, to have a very definite opinion on the implications for the distributional analysis of TR 91.³⁰

EFFICIENCY — A DOUBLE DIVIDEND?

A main argument of the proponents of TR 91 was that economic efficiency should improve. For many politicians, efficiency was here interpreted as a synonym for various easy-to-observe responses, such as increased labor supply and higher savings. In some quarters, there was also a hope that TR 91 should deliver an easily detectable

growth bonus. For an economist, however, efficiency is defined in terms of not directly observable areas between compensated demand and supply curves, and there is no simple relation between the implied tax distortions and the magnitude of behavioral responses. Much the same goes for economic growth. According to the standard neoclassical growth model, a badly designed tax system may create important negative level effects, without the long-term rate of growth being affected. As we will see shortly, TR 91 even contained provisions which tended to *reduce* registered GDP growth but to increase consumption opportunities.

From an excess burden perspective, the most important aspect of TR 91 is that it implied a shift in the tax burden from highly taxed labor income to lightly taxed housing capital. As a consequence, the relative prices of leisure and housing consumption increased. Although there is room for disagreement on the exact magnitudes of some key behavioral elasticities, there is little reason to question the soundness of this strategy. Table 2 shows the results from an attempt at quantifying the marginal efficiency cost due to labor supply distortions of the Swedish tax system.³¹ The compensated elasticities of labor

supply are chosen to reflect the range of findings in recent empirical studies.³² The marginal tax wedges (differences between productivity and real take-home pay) for some categories of employees, before and after TR 91, account for income, payroll, and indirect taxes.

A key point is that a small behavioral elasticity matters if the marginal tax wedge is sufficiently high. The logic behind the marginal welfare cost per dollar of tax revenue implies that there is a region of tax wedges at which the efficiency cost starts to increase rapidly. At some marginal tax wedge, an additional tax hike creates additional excess burdens but no extra tax revenue. Although the table brings out the sensitivity of results to alternative behavioral assumptions, one can hardly rule out the possibility that prereform tax wedges were close to that level. The point estimates of labor supply elasticities, not to mention the confidence intervals, reported in recent studies are consistent with the view that the pre-TR 91 tax system had marked negative incentive effects.

Of course, microeconomic estimates suggesting high marginal welfare costs of taxation do not necessarily imply that

TABLE 2
MARGINAL EXCESS BURDEN PER KRONA OF TAX REVENUE (IN PERCENT)

	Compensated Labor Supply Elasticity		
	0.05	0.11	0.25
<i>Marginal tax wedge (in percent):</i>			
62 (average blue-collar worker, 1991)	8.2	19.0	54.7
63 (average earned income, 1991)	8.6	20.1	59.0
70.5 (average blue-collar worker, 1988)	12.7	31.6	121.8
71.5 (average white-collar worker, 1991)	13.4	33.9	139.1
73 (average earned income, 1988)	14.6	37.8	175.0
79 (average white-collar worker, 1988)	22.0	65.3	2,280.0
85.5 (average senior white-collar worker, 1988)	41.0	192.5	—
<i>Tax rate which maximizes tax revenue</i>	94.5	89.5	79.5

Source: Agell, Englund, and Södersten (1995).

tax cuts are in order. When there is a binding revenue constraint, lower tax wedges on labor income make sense only if other taxes can be raised in a less distortionary way. The remarkable aspect of the Swedish situation was that there was scope for a “double dividend.” Higher taxes on housing generated a substantial part of the revenue required to finance the tax cut on labor income, but they also reduced intersectoral investment distortions. Due to the generous tax and subsidy rules, discussed above, housing investment was given a considerable advantage over investments in other sectors. Available estimates indicate (for realistic values of the debt-equity mix, inflation, etc.) that new investments in owner-occupied housing could reap a *net* marginal subsidy—the (financial) cost of capital for the prospective homeowner was well below the real rate of interest. TR 91 did much to promote a less inefficient allocation of investment resources.

The case of housing illustrates that the short-term response of an aggregate production measure, such as GDP, may provide a poor indicator of the welfare effects of tax reform. Before TR 91, household savings was channeled into an activity where the marginal productivity of capital was considerably below the opportunity cost, which in an open economy can be approximated by the world real rate of interest. At the same time, the housing sector gave a substantial contribution to Swedish GDP. In any year, housing investment, valued from the production side, added to aggregate investments. TR 91 gave households strong incentives to redirect their savings to other uses, including net purchases of foreign assets.³³ During the adjustment phase (when the housing sector shrinks and the net foreign asset position improves), GDP

growth tends to slacken. In spite of this negative production effect, aggregate consumption possibilities tend to increase—every krona’s worth of savings transferred from the housing sector to international asset markets implies that Swedish national income increases with the difference between the world real rate of interest and the marginal productivity of housing capital.

Undoubtedly, TR 91 has affected economic efficiency along a number of margins in addition to those just discussed. The reduced progressivity of the income tax has enhanced educational incentives. The new corporate income tax brought about a more uniform treatment of investment projects *within* the corporate sector. The broader base for the VAT implied higher tax wedges on the “white” consumer service sector, which competes with do-it-yourself activities and services produced in the underground economy. However, in these cases, there is scant evidence on the behavioral response.

Finally, an important objective of TR 91 was to simplify the tax code, and there is reason to believe that TR 91 did much to reduce the transaction complexity of the tax system. TR 91 made it much less profitable to invest resources in a variety of tax avoidance activities. Survey evidence indicates that households’ time spent on tax compliance declined substantially in the years after TR 91.³⁴ There is also evidence suggesting that the tax authorities got an easier workload.

Concluding remarks

What is the verdict on TR 91 five years after its implementation? Have we seen the behavioral responses that the reform architects expected? Did the reform contribute to a more efficient economy?

Although we should keep our fingers crossed in view of the severe crisis in the Swedish economy in the early 1990s, we concur with Auerbach and Slemrod (1997, forthcoming), who argued in their survey of TRA 86 that there has been a hierarchy of responses. A number of financial activities related to tax planning were rendered meaningless and have been virtually wiped out. We have also seen large and expected effects on portfolio composition in general, with a shrinking of both sides of private sector balance sheets. Households have been induced to shift out of owner-occupied housing, resulting in falling house prices and a standstill of new construction. In the longer run, this will result in a more efficient allocation of the capital stock.

At the other end of the spectrum, major real activities such as labor supply and savings appear quite insensitive, at least as far as can be inferred from short-run behavior. Since real activities can be expected to be more important from a welfare perspective, it might be conjectured that the reform only has made a small contribution to increase the efficiency of the Swedish economy, like Auerbach and Slemrod (1997, forthcoming) conclude for TRA86. While such a conclusion may be warranted at U.S. tax rates, it is hardly correct when starting out from marginal tax rates of 70 percent and more. At such levels—close to the top of the Laffer curve—the marginal excess burden is highly nonlinear in tax rates, implying that accounting for heterogeneity and uncertainty about the correct elasticity values is very important; the expected aggregate excess burden is much larger than the marginal excess burden for the average taxpayer evaluated at point estimates of elasticities.

Although a standard efficiency calculation—comparing hypothetical equilibria

before and after the reform—unambiguously shows that TR 91 was efficiency improving, these benefits were not without costs. In fact, the reform may be viewed as an investment with quite visible short-run costs that have to be weighed against less visible, and perhaps also less certain, long-run benefits. The short-run costs of TR 91 were primarily of two types. First, by shifting savings out of real assets such as housing and consumer durables into financial assets, the reform implied a reduction of effective demand. Since the reform was implemented in a recession when output was arguably demand determined, we conclude that it led to a further deepening of the recession with accompanying short-term production losses. Second, the rapid implementation of the reform led to sizable capital losses in the housing sector, with an ensuing arbitrary horizontal redistribution across households. These observations serve as a reminder of the point emphasized, e.g., by Feldstein (1976), that one has to distinguish between tax reform and *de novo* tax design. While a comparison of the pre- and post-1991 tax systems comes out in favor of the post-1991 system, an evaluation of the reform has to weigh the long-run benefits against the short-term costs.

The costs of the reform were not unavoidable. The government took a rather careless attitude toward the transition problem. A more gradual phase in of the reform certainly would have dampened the short-run costs considerably without giving up any of the long-run benefits. While this would be a rather obvious recommendation to a benevolent dictator, things are more complex in a parliamentary democracy where one cannot tie the hands of future governments. Indeed, bringing about political consensus about a reform as far reaching as TR 91 involved

a rather delicate balance of the gains and losses of different interest groups in society. If parts of the reform would have been implemented gradually or with a lag, they would also have been more susceptible to future political pressures.

Even a "tax reform of the century" implemented with such force as TR 91 did not stay unaffected for very long. Already after three years, in 1994, one could make a list of some 75 tax changes involving minor and major deviations from the original reform. Such a count of changes obviously is a cheap argument; after all, the world changes continuously, and one would hope that the tax law adapts. Nevertheless, some of the changes represent reversals of the guiding principles of TR 91. One example is the numerous changes in different VAT rates. Another is the increase of the top marginal tax rate on earned income from 50 to 55 percent. The latter change was presented as a temporary measure and part of a package to cut the growing budget deficits after 1992. While these deficits are largely attributable to the recession, they partly reflect an underfinancing of the reform by two to three percent of GDP. It is not surprising that it was easier to sell an underfunded reform package, where all groups could be portrayed as winners, than a fully financed reform, where some groups would appear as losers, at least in a short-run accounting sense.

In what direction should we expect the Swedish tax system to evolve in the future? The 1980s was a decade of tax reforms aimed at a more uniform tax structure, conspicuously ignoring much of the development in public finance since the 1970s, emphasizing the role of differentiated taxation in funding government expenditure. In the 1990s,

the pendulum of tax reform discussion has swung in the opposite direction, with a renewed emphasis on differentiation, e.g., for environmental reasons or as a means of fighting unemployment. When these factors now are being considered in Sweden, future reforms can build on a tax structure that has fewer counterproductive asymmetries than the pre-TR 91 system.

The Swedish public sector ranks among the largest in the world. As long as this remains, Swedish tax rates will inevitably be high. Our discussion suggests that, especially with a high aggregate tax rate, the structure of taxation matters. TR 91 has reduced the aggregate excess burden. However, the ever growing integration with international capital and labor markets will undoubtedly put increasing pressure on the Swedish tax system in the future.

ENDNOTES

We are grateful to Joel Slemrod for his comments on a first draft of this article.

- ¹ See Auerbach and Slemrod (1997) for an extensive discussion.
- ² The evaluation project is summarized (in Swedish) in Agell, Englund, and Södersten (1995) (an English version will be published by Macmillan Press.) The 1995 Autumn issue of the *Swedish Economic Policy Review* includes a selection of the background papers. A complete list of background papers is available from the National Institute of Economic Research, Box 3116, 103 62 Stockholm, Sweden.
- ³ See Sørensen (1994) for further discussion.
- ⁴ From the point of view of evaluation research, the timing of TRA 86 was more fortunate. As discussed by Auerbach and Slemrod (1997, forthcoming), the U.S. macroeconomy was well behaved in the years surrounding TRA 86.
- ⁵ For an overview of the Swedish macroeconomic experience, see Calmfors (1993).
- ⁶ However, compared with the international recession and the nonaccommodative exchange rate policy, TR 91 was most likely a less decisive factor. A back-of-the-envelope calculation of Agell, Englund, and Södersten (1995) suggests that TR 91 may explain about one-fifth of the sharp decline in Swedish GDP between 1991 and 1993.

- ⁷ The Swedish Central Securities Depository handles both domestic source taxation and the withholding tax on dividends paid to foreign shareholders.
- ⁸ For a discussion of consumption behavior in Sweden, see Berg (1994).
- ⁹ A complication in assessing the effects of TR 91 on intertemporal incentives stems from the fact that TR 91 contained provisions with counteracting effects on the real after-tax interest rate. The lower statutory tax rate on capital income strengthened incentives, but some of the base-broadening ingredients, such as the abolishment of the favorable treatment of long-term capital gains, worked in the opposite direction. On balance, however, it seems reasonable to conclude that TR 91 implied lower effective marginal tax rates for a majority of households. This can be contrasted to the case of TRA 86, where the conclusion seems to be that the impact on savings incentives was of an ambiguous sign (Auerbach and Slemrod, 1997).
- ¹⁰ For Swedish evidence on the intertemporal elasticity of substitution, see Campbell and Mankiw (1991) and Agell, Berg, and Edin (1995).
- ¹¹ A more likely factor in a drop in permanent labor income is the sharp increase in unemployment after 1991. While higher unemployment may induce consumers to revise their expectations of future labor income, it may also boost precautionary savings. When consumers are prudent, more uncertain earnings prospects can have strong negative effects on current consumption (e.g., Caballero, 1991). Although we believe that part of the increase in unemployment can be explained by the short-term contractionary impact of TR 91, the major impulses should, as already discussed, be sought elsewhere.
- ¹² See Agell, Berg, and Edin (1995).
- ¹³ See, e.g., Hultkrantz (1995).
- ¹⁴ See, e.g., Agell and Edin (1990).
- ¹⁵ For an analysis of household asset choice, before and after TR 91, see Agell, Berg, and Edin (1995).
- ¹⁶ According to the National Accounts of Statistics Sweden, household net lending is defined as the sum of borrowing and lending in the credit market, net purchases of corporate shares, individual insurance savings, and savings in other interest bearing assets.
- ¹⁷ The latter advantage, however, was offset by special interest subsidies at high rates to recent-vintage rental housing.
- ¹⁸ See Åsberg and Åsbrink (1994) for a presentation of the model including a discussion of the sensitivity of the results to demand and supply elasticities.
- ¹⁹ These effects are qualitatively similar to, but much larger in magnitude than, those of TRA 86 according to the discussion in Poterba (1990).
- ²⁰ This fraction applies to a comparison between 1985 and 1992 for a sample of households from the HUS panel (Klevmarken et al., 1995). It accounts for the broadening of the VAT coverage and other factors affecting the real wage.
- ²¹ See studies by Blomquist and Hansson-Brusewitz (1990), Ackum Agell, and Meghir (1995), and Aronsson and Palme (1995).
- ²² The estimated effects are quite large. Women who experience a tax decrease of more than 20 percentage points are estimated to increase yearly labor supply by 400 hours, i.e., by roughly 30 percent of average work hours. Corresponding estimates for men are 200 hours and 10 percent.
- ²³ See Taylor (1982) and Södersten (1989) for a discussion of the investment funds system.
- ²⁴ See Södersten (1993).
- ²⁵ For further explanation of the Kanninen-Södersten theory, see also Sørensen (1995) in this journal.
- ²⁶ Cf. Auerbach (1979).
- ²⁷ Though data are still scant, preliminary observations seem to confirm this assumption.
- ²⁸ The two latter lines of criticism received some support from a study by Hansson and Norrman (1986), based on a cross section of households.
- ²⁹ Measuring pretax income by the sum of taxable labor income and an imputed measure of capital income (net wealth times a three percent real interest rate) and using the square-root equivalence scale to adjust for differences in household composition, the Gini coefficient based on yearly pretax income was around 0.25 during the 1980s, a quite low number by international standards. After taxes and housing and child allowances, the coefficient was around 0.20, i.e., a sizable redistribution.
- ³⁰ It should also be pointed out that the calculations reported above are confined to personal income taxes and disregard the incidence of the corporate income tax. However, as is seen from Table 1, corporate tax revenues did not change much as a result of TR 91, and assumptions about corporate tax incidence should not be crucial.
- ³¹ See Agell, Englund, and Södersten (1995). The numbers derive from a partial equilibrium model, where an individual maximizes a single-period constant-elasticity-of-substitution utility function in leisure and goods consumption, subject to a linear income tax system, and where there is no avoidance type of response that creates a discrepancy between true and taxable income. To make life easy, it is assumed that all incremental tax revenue is returned as a lump sum (all income effects are eliminated). The marginal welfare cost per unit of tax revenue is defined as $\frac{\Delta W}{\Delta T}$, where ΔW is the change in excess burden and ΔT the change in tax revenue.
- ³² The highest elasticity, 0.25, is of relevance for women's labor supply. The intermediate elasticity, 0.11, is typical for many studies of the labor supply of married prime-age males. The smallest elasticity, 0.05, is taken from a recent study on the labor supply of blue-collar workers.

³³ The drastic increase in household financial savings in the early 1990s was accompanied by a rapid improvement of the current account.

³⁴ See Malmer and Persson (1994).

REFERENCES

Ackum Agell, Susanne, and Costas Meghir.

"Male Labour Supply in Sweden: Are Incentives Important?" *Swedish Economic Policy Review* 2 No. 2 (Fall, 1995): 391–418.

Agell, Jonas, and Per-Anders Edin. "Marginal Taxes and the Asset Portfolios of Swedish Households." *Scandinavian Journal of Economics* 92 No. 1 (January, 1990): 47–64.

Agell, Jonas, Lennart Berg, and Per-Anders Edin. "The Swedish Boom to Bust Cycle: Tax Reform, Consumption and Asset Structure." *Swedish Economic Policy Review* 2 No. 2 (Fall, 1995): 271–314.

Agell, Jonas, Peter Englund, and Jan Södersten. *Svensk skattepolitik i teori och praktik. 1991 års skattereform (Swedish Tax Policy in Theory and Practice. The 1991 Tax Reform)*. Stockholm: Fritzes, 1995.

Aronsson, Thomas, and Mårten Palme. "A Decade of Tax and Benefit Reforms in Sweden—Effects on Labour Supply, Welfare and Inequality." Tax Reform Evaluation Report No. 3. Stockholm: National Institute of Economic Research, 1995.

Åsberg, Per, and Stefan Åsbrink. "Capitalisation Effects in the Market for Owner-Occupied Housing: A Dynamic Approach." Tax Reform Evaluation Report No. 2. Stockholm: National Institute of Economic Research, 1994.

Auerbach, Alan. "Wealth Maximization and the Cost of Capital." *Quarterly Journal of Economics* 93 No. 3 (August, 1979): 433–46.

Auerbach, Alan, Kevin Hassett, and Jan Södersten. "Taxation and Corporate Investment: The Impact of the 1991 Swedish Tax Reform." *Swedish Economic Policy Review* 2 No. 2 (Fall, 1995): 361–83.

Auerbach, Alan, and Joel Slemrod. "The Economic Effects of the Tax Reform Act of 1986." *Journal of Economic Literature* 35 No. 1 (forthcoming, March, 1997).

Berg, Lennart. "Household Savings and Debts: The Experience of the Nordic Countries." *Oxford Review of Economic Policy* 10 No. 2 (Summer, 1994): 42–53.

Björklund, Anders, Mårten Palme, and Ingemar Svensson. "Tax Reforms and Income Distribution: An Assessment Using Different

Income Concepts." *Swedish Economic Policy Review* 2 No. 2 (Fall, 1995): 229–66.

Blomquist, Sören, and Urban Hansson-Brusewitz. "The Effect of Taxes on Male and Female Labor Supply in Sweden." *Journal of Human Resources* 25 No. 3 (1990): 317–57.

Caballero, Ricardo. "Earnings Uncertainty and Aggregate Wealth Accumulation." *American Economic Review* 81 No. 4 (September, 1991): 859–71.

Calmfors, Lars. "Lessons from the Macroeconomic Experience of Sweden." *European Journal of Political Economy* 9 No. 1 (March, 1993): 25–72.

Campbell, John, and Gregory Mankiw. "The Response of Consumption to Income: A Cross-Country Investigation." *European Economic Review* 35 No. 4 (May, 1991): 723–67.

DuRietz, Gunnar. *Välfärdsstatens finansiering (Funding the Welfare State)*. Stockholm: City University Press, 1994.

Edin, Per-Anders, and Bertil Holmlund. "The Swedish Wage Structure: The Rise and Fall of Solidarity Wage Policy in Sweden." In *Differences and Changes in Wage Structure*, edited by Richard Freeman and Lawrence Katz. Chicago: University of Chicago Press, 1995.

Englund, Peter, Patric Hendershott, and Bengt Turner. "The Tax Reform and the Housing Market." *Swedish Economic Policy Review* 2 No. 2 (Fall, 1995): 319–56.

Feldstein, Martin. "On the Theory of Tax Reform." *Journal of Public Economics* 6 No. 1-2 (July–August, 1976): 77–104.

Forsling, Gunnar. "Utilization of Tax Allowances: A Survey of Swedish Corporate Firms, 1979–93." Tax Reform Evaluation Report No. 22. Stockholm: National Institute of Economic Research, 1996.

Hall, Robert. "Intertemporal Substitution in Consumption." *Journal of Political Economy* 96 No. 2 (April, 1988): 339–57.

Hansson, Ingemar, and Erik Norrman. "Fördelningseffekter av inkomstskatt och utgiftskatt" (Distributional Effects of Income Tax and Expenditure Tax). In *Utgiftsskatt. Teknik och effekter (Expenditure Taxation. Techniques and Effects)*. SOU 1986: 40. Stockholm: Liber Förlag, 1986.

Hausman, Jerry, and James Poterba. "Household Behavior and the Tax Reform Act of 1986." *Journal of Economic Perspectives* 1 No. 1 (Summer, 1987): 101–19.

Hultkrantz, Lars. "On Determinants of Swedish Recreational Domestic and Outbound Travel."

Tax Reform Evaluation Report No. 7. Stockholm: National Institute of Economic Research, 1995.

Kanniainen, Vesa, and Jan Södersten. "Costs of Monitoring and Corporate Taxation." *Journal of Public Economics* 55 No. 2 (1994): 307–21.

Klevmarcken, Anders. "Did the Tax Cuts Increase Hours of Work? A Pre-Post Analysis of Swedish Panel Data." Unpublished manuscript, Department of Economics, Uppsala University, 1996.

Klevmarcken, Anders (with Irene Andersson, Peter Brose, Erik Grönqvist, Paul Olovsson, and Marianne Stoltenberg-Hansen). "Labor Supply Responses to Swedish Tax Reforms 1985–1992." Tax Reform Evaluation Report No. 11. Stockholm: National Institute of Economic Research, 1995.

Malmer, Håkan, and Annika Persson. "Skattereformens effekter på skattesystemets driftskostnader, skatteplanering och skattefusk" (The Effects of the Tax Reform on Compliance Costs, Tax Planning, and Tax Fraud). In *Århundradets skattereform (Tax Reform of the Century)*, edited by Håkan Malmer, Annika Persson, and Åke Tengblad, 5–364. Stockholm: Fritzes, 1994.

Myrdal, Gunnar. "Dags för ett nytt skattesystem!" (Time for a New Tax System!) *Ekonomisk Debatt* 6 (November, 1978): 493–506.

Poterba, James. "Tax Subsidies to Owner-Occupied Housing." *Quarterly Journal of*

Economics 99 No. 4 (November, 1984): 729–52.

Poterba, James. "Taxation and Housing Markets: Preliminary Evidence on the Effects of the Recent Tax Reform." In *Do Taxes Matter?: The Impact of the Tax Reform Act of 1986*, edited by Joel Slemrod, 141–60. Cambridge, MA: MIT Press, 1990.

Slemrod, Joel. "Do Taxes Matter?: Lessons from the 1980s." *American Economic Review* 82 No. 2 (May, 1992): 250–6.

Södersten, Jan. "The Investment Funds System Reconsidered." *Scandinavian Journal of Economics* 91 No. 4 (1989): 671–87.

Södersten, Jan. "Sweden." In *Tax Reform and the Cost of Capital. An International Comparison*, edited by Dale Jorgenson and Ralph Landau, 270–99. Washington, D.C.: The Brookings Institution, 1993.

Sørensen, Peter Birch. "From the Global Income Tax to the Dual Income Tax: Recent Tax Reforms in the Nordic Countries." *International Tax and Public Finance* 1 No. 1 (May, 1994): 57–79.

Sørensen, Peter Birch. "Changing Views of the Corporate Income Tax." *National Tax Journal* 48 No. 2 (June, 1995): 279–94.

Taylor, John. "The Swedish Investment Funds System as a Stabilization Policy Rule." *Brookings Papers on Economic Activity* 13 No. 1 (1982): 57–99.