

# INTERNATIONAL TAX COMPARISONS

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The incentives to save and invest afforded by the tax system are subjects of continuing debate among politicians and economists. In the last decade a growing concern has been voiced in Sweden about the efficiency effects of the present system of taxing capital income. There is a widespread belief that the tax system diverts savings into "unproductive" investments such as art, antiques, gold and consumer durables at the expense of bank accounts and shares which are regular channels to finance business investment in fixed capital. It is also believed that residential investment in owner-occupied housing and summer cottages is greatly favored by the tax system, contributing to the divergent development of the returns to investments in housing and corporate equity during the 1970s.

There is another aspect of capital income taxation to which comparatively less attention has been paid during recent years, namely the interaction between the domestic tax system and the tax systems of other countries. The emerging importance of multinational corporations and an international credit market in linking the industrial economies together have made the *international* side of capital income taxation valid as a real economic factor.

As an important first step in the process of improving our knowledge of the workings of tax systems in an international setting, IUI accepted in 1979 an invitation from the National Bureau of Economic Research (NBER) in the United States to participate in a large scale comparative study of capital income taxation in Germany, Sweden, the United Kingdom and the United States. The study started in the spring of 1980 under the direction of public finance economists from IUI, Princeton University, the University of Birmingham and Institut für Wirtschaftsforschung (IFO), Munich. After three years of work, the project is now completed and the results will shortly be released by the University of Chicago Press as a joint publication of IFO institute, IUI and NBER.<sup>1</sup>

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<sup>1</sup> The project was first presented in Bradford, David and Södersten, Jan, "An International Comparison of Effective Corporate Tax Rates" in *The Firms in the Market Economy*, IUI Yearbook and Research Program 1979/80.

## Methodology of the Project

The purpose of the project was to examine and compare the incentives to save and invest in the private, non-financial corporate sector afforded by the tax systems of the four countries. We measure the effective *marginal* tax rate on capital income for each of the four countries where the *margin* is a small increase in the level of real investment. Let (p) be the pre-tax, real rate of return on a marginal investment project and let (s) denote the post-tax, real rate of return to the saver (a household or an institution) who supplied the finance for the investment. The effective tax rate can then be defined as the tax "wedge" (p-s), divided by the pre-tax rate of return (p).

There are several kinds of taxes that should be taken into account when estimating the tax wedge (p-s). These include the corporate income tax, the personal income tax and the wealth tax. The size of the tax wedge may vary depending on whether funds are invested in machinery, buildings or inventories, and on whether savings are channeled into real investment as debt, retained earnings or new share issues. It is important also to take into account whether the financial claims on the profits (corporate debt and equity) are held directly by household investors or by institutions such as insurance companies.

The estimates of the tax wedge (p-s) and the effective tax rate to be reported in this article are carried out for a given value of the pre-tax rate of return (p) of 10 percent. For each project we assume the same value for (p) and then we compute the value of (s), the real post-tax rate of return to savers which the project could sustain. It is assumed that all corporations take full advantage of the depreciation allowances, rules of inventory write-down, etc., granted by the tax laws. This implicitly assumes either that the "representative" firm has pre-tax profits which are sufficiently large, or that the tax laws provide full loss offset on "tax accounting" losses.

Our estimates take into account four important characteristics of a hypothetical investment project; (1) the type of real asset (machinery, building or inventory) in which funds are invested, (2) the industry (manufacturing, other industry or commerce) of the project, (3) the way in which the project is financed (debt, retained earnings or new share issues) and (4) the ultimate recipient of the returns (households, tax-exempt institutions or insurance companies). The number of possible combinations of a hypothetical investment project is therefore 81 (=3x3x3x3).

## Results for Sweden

The results of our calculations for three of the 81 possible combinations for Sweden appear in Table 1. The table shows the post-tax, real rate of return (s) received by *households* and the corresponding effective tax rate for investment in *machinery* within the *manufacturing* industry. Three alterna-

Table 1. *Real post-tax rates of return on Swedish household savings and corresponding effective tax rates<sup>a</sup>*  
(Percent)

A. <i>Post-tax rate of return on household savings</i>	
Source of finance	
1. Debt	5.3
2. New share issues	-3.3
3. Retained earnings	-1.6
B. <i>Effective tax rates</i>	
Source of finance	
1. Debt	47.2
2. New share issues	132.8
3. Retained earnings	115.5

<sup>a</sup> The table assumes that household savings are used to finance corporate investment in machinery within the manufacturing industry. The pre-tax rate of return is set to 10 percent.

tive ways of channeling household savings into real investment are considered and the inflation rate is assumed to be 10 percent. For a given pre-tax rate of return of 10 percent on the machine, companies can afford to pay a market interest rate on *debt* such that the post-tax real rate of return to household savers will be 5.3 percent. This implies an effective tax rate of 47.2 percent. For *equity* finance, the effective tax burden is considerably higher as a result of the "double taxation" of corporate profits. A 10 percent pre-tax rate of return on real investment is not sufficient to enable households to earn a positive post-tax rate of return. The figures in Table 1 also confirm the common view of new share issues as the most expensive form of equity finance.

Detailed information on the structure of capital income taxation was obtained by computing the effective marginal tax rate for each of the 81 combinations of the hypothetical investment project. This information has been supplemented by estimates of "average" marginal tax rates. These estimates serve the purpose of facilitating comparisons between the four countries, and may be interpreted in terms of a "representative" firm. This "representative" firm undertakes investments in machinery, buildings and inventories in proportion to the *actual* distribution of the net capital stock among assets for the three industry groups, and is financed by debt, new share issues and retained earnings in proportion to *existing* financial patterns. Table 2 presents such average marginal tax rates for Sweden according to the tax rules in force in 1980, assuming a pre-tax real rate of return on corporate real investments of 10 percent. Estimates are provided for both 0 and 10 percent inflation.

The first three rows of Table 2 show the average marginal tax rates for the

Table 2. *Effective marginal tax rates in Sweden.*  
 Pre-tax rate of return (p) set to 10 percent.  
 1980 tax rules  
 (Percent)

	<i>Annual inflation rate</i>	
	Zero	Ten
<i>Owner</i>		
1. Households	57.1	108.0
2. Tax-exempt institutions	- 39.2	- 52.8
3. Insurance companies	- 16.0	22.0
<i>Source of finance</i>		
1. Debt	- 12.9	6.4
2. New share issues	44.2	93.2
3. Retained earnings	40.9	69.5
<i>Asset</i>		
1. Machinery	-18.1	1.5
2. Buildings	28.9	37.3
3. Inventories	26.5	71.0
<i>Industry</i>		
1. Manufacturing	8.1	28.3
2. Other industry	29.6	62.6
3. Commerce	12.1	40.7
Overall average	12.9	37.0

three categories of owners. When the average is taken over industry group, source of finance and type of asset the marginal tax rate for household investors is 108 percent at 10 percent inflation. This means that if all real assets would earn a pre-tax rate of return of 10 percent at the margin, the average of the post-tax marginal rate of return to households would be minus 0.8 percent. Investments financed by savings channeled through tax-exempt institutions, on the other hand, receive a substantial subsidy. The seemingly paradoxical effective tax rate of minus 51.8 percent is explained by the interaction between personal and corporate taxation. The corporate tax system in Sweden via the combined effect of accelerated depreciations and interest deductions reduces the "net cost of investment" relatively more than it reduces the present value of gross earnings from marginal investment projects.

The following three rows of Table 2. show the effective marginal tax rates for the different sources of finance. The 6.4 percent effective tax rate on debt finance at 10 percent inflation implies that the post-tax rate of return on debt

instruments is 9.4 percent when the average is taken over households, tax-exempt institutions and insurance companies. The effective tax burden on equity financed investments is much higher and, as mentioned above, this is explained by the double taxation of corporate profits and also by the fact that, on average, household marginal income tax rates are lower on interest receipts than on dividends.

The variation in the effective tax rate by asset is striking. As far as investment in machinery is concerned, the present tax system approximates an expenditure tax (equivalent to a zero tax rate on capital income). It is, in fact, more favorable than an expenditure tax at a zero inflation rate, providing a net subsidy to investment in machinery. For other assets, the tax rate is higher. With a fully indexed comprehensive income tax, the marginal tax rates corresponding to Table 2. would equal an average of marginal income tax rates. In 1980, the average marginal income tax rate of households taken over debt and equity was 57.3 percent, and apart from investment in inventories when inflation is high, the present tax system is more favorable than an income tax.

The differences in effective tax rates among the industry groups are explained mainly by differences in the composition of their capital stock. Inventories constitute twice as large a share of the total net capital stock in other industry and commerce as in manufacturing, and inventory investment is the most heavily taxed type of real investment. The average allowed rate of inventory write-down is only 19.3 percent for other industry compared to 60 percent for the other two industry groups, and this contributes to the dispersion of tax rates.

Finally, the last row of Table 2. shows the overall average marginal tax rates, where the average is taken over source of finance, category of owner, industry and type of asset. At 10 percent inflation, this overall tax rate is considerably below the average marginal income tax rate of household investors in equity and debt, which (as mentioned above) was 57.3 percent in 1980. On *average*, therefore, the present tax system is more favorable than a comprehensive income tax (which would tax capital income at an effective rate of 57.3 percent) and is closer to an expenditure tax (with a zero effective tax rate) than to a comprehensive income tax at zero inflation. An important difference between the present system and either an expenditure tax or a comprehensive income tax is of course the wide distribution of effective tax rates around the mean and the sensitivity of effective tax rates to inflation.

A comparison between the different columns of Table 2. reveals the effects of inflation on the effective tax rates. The Swedish tax system is not indexed and it is often assumed that this causes the effective tax burden to rise as the rate of inflation increases. This assumption is in general confirmed by this study. An increase in inflation from 0 to 10 percent almost triples the overall effective tax rate.

Table 3. *Ownership of corporate equity 1980*  
(Market values, percent)

	Germany	Sweden	U.K.	U.S.
Households	44.3	56.0	40.8	71.3
Tax-exempt institutions	12.5	28.0	33.7	20.7
Insurance companies	3.8	8.7	19.2	3.9
Foreign owners	39.4	7.3	6.3	4.1
Total ultimate ownership	100.0	100.0	100.0	100.0

There are several factors that combine to explain the remarkable sensitivity of effective tax rates to inflation in Sweden. FIFO accounting rules make corporations pay taxes on purely nominal capital gains on inventories. The real value of historical cost depreciations is undermined by inflation. The tax reducing effect of allowing corporations to deduct nominal interest costs, furthermore, is outweighed by a full income taxation of nominal interest receipts to households. The taxation of capital income received by (property) insurance companies, finally, is strongly dependent on the rate of inflation, since the tax law exempts from tax a nominal rate of return on the so called "insurance funds" of 4 percent.

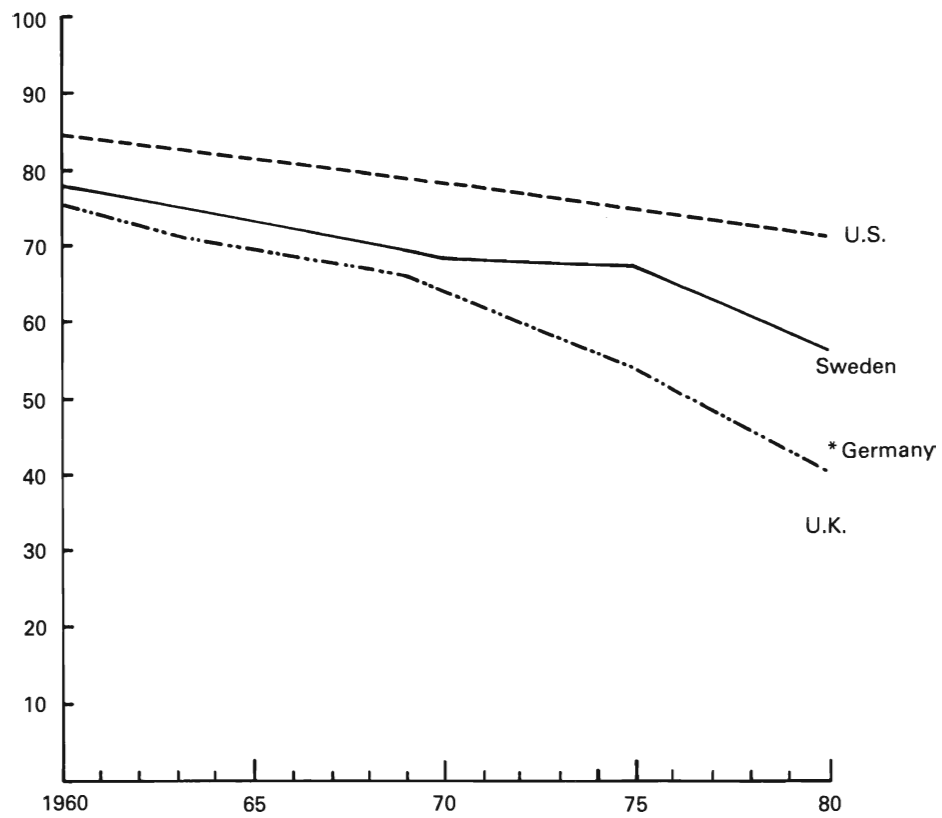
### Comparisons of Equity Ownership

As mentioned earlier, the purpose of this international project was to make possible a comparison of the taxation of income from capital between the four countries. Hence, marginal effective tax rates consistent with the Swedish tax rates presented above, have been computed for Germany, the U.K. and the U.S. We obtained a high degree of comparability by adopting identical definitions in measuring and accounting for the intricacies of the statutory systems and in the actual, institutional settings. A full account of these estimates will appear in the forthcoming volume from the University of Chicago Press.

The empirical foundation of the weighting procedure, on which the average marginal tax measures shown in Table 2. are based, was not readily available in official statistics. Extensive work with many different data sources was required. These data provide interesting descriptions on their own. For instance Table 3. shows the distribution of corporate equities among four categories of owners in the four countries.

Note that the ownership refers to ultimate, beneficial holdings, i.e., after elimination of intermediaries like banks, nominee trusts and Swedish "closed end" investment companies. As apparent from the table the patterns

Figure 1. *Households' share in ultimate ownership of corporate equity*  
1960–80  
(Percent)



Note that only one observation (1980) exists for Germany.