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THE FUTURE OF CAPITAL INCOME TAXATION IN A LIBERALISED FINANCIAL ENVIRONMENT

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THE FUTURE OF CAPITAL INCOME TAXATION IN A LIBERALISED FINANCIAL ENVIRONMENT

This paper first gives a brief account of the main changes introduced by OECD governments in their capital income tax rules during the 1980s with respect to both the corporate and personal sectors. It then examines the evolution of effective capital taxation, using a summary measure ("tax wedges") which takes into account the different nature of national tax systems. Finally, the paper discusses the future of capital income taxation in an environment of increasing international capital mobility.

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Cette étude résume tout d'abord brièvement les principales modifications introduites, durant les années 80, dans la fiscalité des revenus du capital des pays de l'OCDE tant au niveau des ménages que des entreprises. L'étude examine ensuite l'évolution de l'imposition effective des revenus du capital à l'aide d'un indicateur global ("le coin fiscal"), lequel tient compte de la diversité des systèmes fiscaux nationaux. Enfin, l'étude traite de l'avenir de ce type d'imposition dans le contexte d'une mobilité accrue des flux internationaux de capitaux.

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THE FUTURE OF CAPITAL INCOME TAXATION IN A LIBERALISED FINANCIAL ENVIRONMENT

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I. Introduction

A significant feature of the 1980s has been the increase in international capital flows. Technological advances, removal of exchange controls, and financial market deregulation have all contributed to this phenomenon. Concomitantly, direct investment has also increased as multinational corporations have grown in importance and made use of locational advantages, including the ones derived from different taxation regimes. These developments will continue in the 1990s, with two major effects of concern to policymakers. First, the capital tax base may become more elusive in any one country, making it more difficult to maintain revenue or to redistribute income through the tax system. Second, capital mobility induced purely by international tax differences can lead to an inefficient allocation of resources and lower productivity. Issues relating to the taxation of income from capital are therefore receiving increased attention. In particular, proposals have been made for the harmonisation of capital income taxes across countries, or at least closer co-operation among governments. Assessment of these proposals requires knowledge about the impact of various tax systems upon the budget and, more generally, upon economic activity.

The present paper aims to contribute to such knowledge by examining, for selected OECD countries, the evolution of effective capital income taxation in the manufacturing sector over the 1980s. A distinction is made throughout the paper between corporate income taxes, which affect investment, and personal capital income taxes, which affect saving. This contribution complements the analysis presented in OECD (1991c) showing comparable estimates of effective tax rates on domestic and international investment in the manufacturing sector for all Member countries in 1990 (2).

The paper is structured as follows. Developments in capital income taxation over the 1980s are briefly reviewed in Section II. The evolution of effective tax rates of taxation on capital income in the manufacturing sector is examined in Section III. The main policy implications arising from the analysis are discussed in Section IV. This material is supplemented by an annex discussing the method used for the computation of effective tax rates and some related empirical material. A conceptual framework for analysis of the future of capital income taxation and the international effects of changes in capital income tax policies are dealt with in separate OECD Working Papers (Mintz, 1992, and Delorme et al., 1993).

II. Developments in Capital Income Taxation in the 1980s

Personal income derived from capital includes interest, dividends, royalties, rent and capital gains, both realised and accrued. The tax on a corporation's income is also considered to be a tax on income from capital, although there is uncertainty over its ultimate incidence, as is the case for other capital taxes. In the following paragraphs, the main changes to personal and corporate income taxation are described.

{A. Personal sector}

In most OECD countries, there has been a reduction in central government top statutory marginal income tax rates during the 1980s from 60-70 per cent to less than 50 per cent (Table 1). The most notable declines have been in the United States, (from 70 per cent in 1980 to 28 per cent in 1990), the United Kingdom (from 60 per cent to 40 per cent), New Zealand (from 60 per cent to 33 per cent), Norway (from 48 per cent to 20 per cent) and Sweden (from 50 per cent to 20 per cent). Reductions have been more modest in Germany (from 56 per cent to 53 per cent) and France (from 65 per cent to 57 per cent). Personal income taxation at lower levels of government has not, on the other hand, changed significantly.

These reductions in personal income tax rates have, in most cases, resulted in lower marginal tax burdens on capital income (Table 2). Personal capital income tax bases have not in general been widened to compensate for such cuts. However, since 1986, all nominal gains in the United States have been fully subject to tax; only 40 per cent of long-term capital gains were taxable before. Similarly, in 1989 Canada increased the proportion of nominal capital gains which are taxable to 75 per cent in 1989 from 50 per cent previously. Australia also introduced full taxation of capital gains in 1985, although only inflation-adjusted gains are taxable. Inflation-adjusted capital gains (above £5000) are now also taxable at full rates in the United Kingdom, whereas before 1988 nominal gains were taxed at a flat rate of 30 per cent. In addition, Finland also increased the proportion of gains above a ceiling that are subject to full taxation.

In a number of countries capital income is not taxed as other income and benefits from specific favourable tax treatments. This is the case in Japan and some European economies (Belgium, France, Italy and Portugal), where the taxpayer may opt for a final withholding tax on interest income at a flat rate well below the top statutory rate applied to other income. Similarly, final withholding taxes at low flat rates also apply to dividend income in Belgium, Greece, Japan and Portugal. These withholding tax rates were generally stable or declined somewhat during the 1980s.

{B. Corporate sector}

Many governments have reduced the statutory tax rate on corporate income. The trend in rate reductions began in 1984-85 in the United Kingdom, followed by Canada and the United States in 1986 and, subsequently, spread to all other countries except Switzerland (Table 3). In some countries, the corporate tax rate has been set equal to or slightly above the top personal rate so as to limit purely tax-motivated incentives to incorporate.

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The corporate income tax base has evolved in a much less uniform way. A number of countries broadened the tax base by abolishing special investment incentives and making depreciation allowances less generous; the 1986 U.S. tax reform package and the changes in U.K. depreciation allowances during the early 1980s were particularly significant in this regard. By contrast, in some other countries depreciation allowances became more generous. Among the largest OECD economies, Japan, Germany and France increased depreciation allowances during the 1980s. In addition, Germany significantly reduced its corporate tax base by adopting "last in and first out" (LIFO) inventory valuation in 1990.

Double taxation of dividends (at the corporate and personal levels) is often seen as a serious distortion, discouraging corporations from using new equity to finance their operations. Some countries have attenuated or eliminated this double-taxation by adopting dividend imputation systems or split rate corporate tax systems (with a lower rate on distributed profits), or by subjecting dividend income to a withholding tax instead of the higher personal income tax rates which would otherwise be applicable (3). Dividends frequently continue to be subject to full double taxation, however, in countries with a traditionally low corporate tax rate or in those which have significantly reduced it. Belgium returned to the classical system of taxing dividends in 1989, while Austria and Japan eliminated the favourable treatment of distributed profits in 1989 and 1990, respectively. Changes in the tax treatment of distributed profits in OECD countries in the last 30 years can be found in OECD (1991c), Ch. 6.

Two other items of corporate tax reform are the treatment of losses and capital gains. Most countries have left unchanged the rules regulating the shifting of losses through time, but some have made carry-back and carry-forward losses more generous while others (notably the United States and Canada) have restricted the use of these losses. The favourable treatment of corporations' capital gains has been eliminated partly in Canada and completely in the United States.

{C. Trends in corporate tax revenues}

It is of interest to consider whether aggregate data on tax revenues are suggestive of particular trends with respect to capital income taxation. Since internationally comparable figures that identify the capital income taxation component of personal income taxes paid are available for only a few countries, the analysis here is limited to trends in corporate tax receipts. As can be seen from Chart A, the share of corporate income tax receipts in total government revenues over the past 25 years has been either relatively stable at fairly low levels or has declined steadily in the majority of OECD countries. Japan, Luxembourg and, to a lesser extent, the United Kingdom and Italy, are notable exceptions.

III. Evolution of effective capital income taxation

{A. The tax wedge methodology}

To judge the relative importance of changes in statutory rates and other elements of capital income tax regimes, and to compare different regimes, a summary measure of marginal effective taxation is needed for two reasons: to permit a joint evaluation of the different components of the tax code, and to focus on the effect of taxation upon saving and investment behaviour. Average and marginal rates can differ widely, and only marginal rates give information about incentives and distortions. One such summary measure is the "effective tax wedge", and the associated "tax rate". The methodology used here to obtain this measure is the same as in OECD (1991c). It is based on the King and Fullerton method (4), briefly described in Annex 1.

This method consists of estimating the tax-inclusive cost of capital (p) for a hypothetical marginal investment project, and comparing this return to the investor with the one earned by the saver (s). The difference between the two equals the total "tax wedge". In the absence of taxation and capital market imperfections, arbitrage would ensure that the rate of return on a marginal investment equalled the real interest rate (r) to be earned on a riskless bond, which would also equal the rate of return received by a saver. Tax systems generally give rise to two deviations from these conditions which together comprise the tax wedge. First, corporate taxation causes p and r to differ. The difference between p and r -- the corporate tax wedge -- is an index of how capital income taxation affects the incentives to invest. Second, personal taxes on capital income cause r and s to differ. The difference between r and s -- the personal tax wedge -- is an index of how the taxation of personal interest income affects the incentives to save.

To illustrate, suppose that r (the real interest rate) is 5 per cent. As a result of taxation, a company might have to earn 8 per cent (the cost of capital, p) before tax to earn 5 per cent after corporate tax; in this case, the corporate tax wedge is 3 percentage points. Alternatively, if the marginal investment is subsidised, the company might have to earn only 3 per cent before tax to earn 5 per cent after tax. In this case, the corporate tax wedge would be -2 percentage points. At the same time, the return to the saver (s) may be reduced from 5 to 1 per cent after personal taxes, giving a personal tax wedge of 4 percentage points. The computation of s is simple, as shown in Annex 1. The computation of p is much more complex, given that it depends upon all the factors affecting the present value of the expected income flow to be generated by the marginal investment. Conceptually, p is the rate of return that equates this present value to the cost of the project, net of discounted depreciation allowances and investment tax credits.

In a closed economy, only the total tax wedge matters and not its decomposition (5). A given total wedge will unambiguously reduce both saving and investment, which are equal ex post. In an open economy, saving and investment are no longer equal ex post, and international capital flows make up the difference between them at the world rate of interest. Investment decisions are only affected by the corporate tax wedge and savings decisions only by the personal tax wedge. Changes in each wedge can have different

impacts upon saving and investment, depending upon whether capital is exported or imported, and whether the country is large enough to affect the world rate of interest.

Expected inflation plays an important role in determining both the personal and corporate tax wedges. For instance, inflation increases personal interest income taxation because nominal, rather than real, interest flows are taxed. Conversely, for given corporate tax rates and real interest rates, corporations' real borrowing costs are lower, the higher the inflation rate owing to the deductibility of nominal interest payments. Inflation can also increase corporate tax wedges through the taxation of nominal inventory valuation gains under the "first in-first out" (FIFO) inventory valuation rules prescribed by many tax codes and by diminishing the present value of depreciation allowances where they are based on the historical cost of assets. In addition, inflation can influence the rate of taxation of capital gains when the tax is based on nominal rather than real gains. Because of these effects, it is important to account for the sensitivity of tax wedges to variations in inflation rates.

The main strength of tax wedge calculations is their usefulness in assessing on a comparative basis, the burden of capital income taxation across countries (or across sectors) as well as its evolution through time. However, the tax wedge calculations are subject to several major caveats and therefore need careful interpretation. As such, these calculations have to be seen as simple approximations of complex tax structures.

{B. Empirical results}

{1.} {Tax wedges in OECD countries}

Tax wedges for investments in manufacturing in all OECD countries in 1990 are presented in Table 4, the estimates having been obtained using the data and software of OECD (1991c). It is assumed that all lenders receive the same before personal tax rate of return, r, set at 5 per cent. It is also considered that the rate of inflation is equal to OECD {Economic Outlook} 49 projections for 1991 in each country, and that the representative saver either saves through a tax-exempt institution, such as a pension fund (columns 1 and 2) or that he faces the average (columns 3 and 4) or the top (columns 5 and 6) marginal personal income tax rates in each country (5). The corporate tax wedges are different, depending on the assumption made about the relevant marginal personal tax rate because, in the King-Fullerton methodology, this affects the discount rate used by the firm to evaluate investment projects. These tax wedges (and all others in this paper) are averages of the wedges for hypothetical investments in three types of assets (buildings, machines, and inventories) using three sources of finance (debt, new equity issues or retained earnings), a total of nine possible investment projects. For the background data, including the weighting matrix, see Annex 1.

The personal tax wedge is positive in all countries (except, of course, in the case of zero personal capital income tax, when the wedge is zero by definition) while the corporate tax wedge is negative, in general, (except again in the case of zero personal capital income tax). Capital income taxation has a negative impact on saving (assuming a positive interest elasticity) and, if the typical saver pays personal capital income taxes, a

positive impact on manufacturing investment (assuming a negative interest elasticity). In general, OECD countries subsidise manufacturing investment, at the margin. This is particularly so for investments financed through debt, and it is consistent with the large increase in the debt-equity ratios during the 1980s.

{2.} {Changes in tax wedges in five major countries}

Trends in capital income taxation over the 1980s in five large OECD economies (the United States, Japan, Germany, France and the United Kingdom) can be ascertained from changes in their tax wedges. The first set of personal and corporate tax wedge calculations is based upon historical rates of interest and inflation in these countries so as to allow for the impact of changes in these variables on the wedges. The calculations are then repeated assuming a fixed real interest rate -- 5 per cent -- and a fixed expected inflation rate -- 5.5 per cent -- for all countries and all periods in order to isolate the influence on the wedges of tax policy changes alone (7).

Estimates of tax wedges based on country-specific rates of interest and inflation for each period are reported in Table 5, assuming that the typical saver faces average marginal personal income tax rates. Corporate tax wedges in the United States, France and the United Kingdom are negative, but declined in absolute value over the 1980s, indicating a reduction in the marginal subsidy to manufacturing investment. By contrast, the marginal subsidy increased in Germany, while it disappeared in Japan, where the tax wedge has been positive since 1985. Personal tax wedges in all five countries are positive, have declined, and have converged somewhat (these wedges were distributed with mean and standard deviation respectively of (3.2, 1.3) in 1980 and (2.2, 0.8) in 1990).

Given a fixed real interest rate (5 per cent) and inflation rate (5.5 per cent, which is the average of OECD projections for the countries considered over the observation period), and assuming that the typical saver pays average marginal personal tax rates, personal tax wedges continue to decline, but to a lesser extent, in all countries except Japan, where they remain constant (Table 6). By contrast, trends in corporate tax wedges are somewhat different in the variable interest rate and inflation rate case. The marginal subsidy to manufacturing investment declines in the United States and the United Kingdom; it is rather stable in Japan and France; and it increases in Germany. The implication is that a large part of the change in corporate tax wedges reported in Table 5 should be attributed to the fall in inflation over the last decade.

{3. Summary}

As of 1990, marginal investment in manufacturing in OECD countries was subsidised (corporate tax wedges were generally negative). Only if the typical saver paid no personal tax at the margin (as is the case with pension funds and other such institutions) would the corporate tax wedge have been positive. The personal tax wedge, on the other hand, was positive, usually larger than the corporate wedge (in absolute value), and varied greatly across countries. Changes in tax wedges over the 1980s for the manufacturing sector of five major OECD countries were as follows: personal tax wedges declined, and converged somewhat, while the corporate one generally increased, (or declined in absolute

value when negative). The fall in inflation since 1980 does not account for the decline in the personal tax wedge, given that computations with a constant rate of inflation yield a similar result. This is not true for the corporate tax wedge: when computed under constant inflation, the wedge is negative and roughly constant in two of the five major countries and increases much less in another two. Other calculations, not presented in this paper, show that changes in the corporate tax wedge over the 1980s are roughly similar to those in Table 5, when computed with a fixed rate of interest. Thus, it is falling inflation, rather than changes in real interest rates, which affects the estimates of the corporate tax wedge.

IV. Policy Implications

The above analysis raises three major policy issues about the taxation of income from capital:

-- If, overall, the effective taxation of income from capital is being reduced in OECD countries, is this desirable from a global perspective?

-- If, for a given level of capital income taxation, there is a shift towards source-based (corporate) taxation, is this to be encouraged?

-- To the extent that the reductions in capital income taxes are uncoordinated, and if the international spillovers from such unilateral policy changes are undesirable, is it necessary to co-ordinate tax policy?

{A. How much taxation of capital income?}

What is good for one nation (low taxation of capital) given the high mobility of capital, may not be desirable for global welfare. If the world supply of capital is inelastic, the gradual erosion of capital income tax rates will, everything else being equal, require higher rates of tax on other bases in more elastic supply, raising the overall level of tax-induced economic distortions. For example, a higher marginal rate of tax on labour can increase the labour-leisure distortion. This could well raise the overall welfare losses from taxation.

The erosion of the capital income tax base may also eventually undermine the ability of governments to redistribute income through progressive taxation (8). However, it is not evident that income redistribution has to be based on capital income taxation. First, to the extent that differences in income are attributable to differences in human capital, redistribution through labour income taxation or expenditure taxation would still be possible. Second, redistribution to the poor could be improved in many OECD countries by introducing a greater degree of means-testing for benefits. Third, progressiveness with respect to consumption, if not income, could be achieved converting current income tax bases to consumption bases. To the extent that there is at least a perception that progressive taxation requires the inclusion of capital income in the tax base, however, the degree of permissible decline

in capital taxation may be subject to political constraint. Finally, short of this, some degree of progressiveness with respect to consumption can be obtained through higher indirect taxes on luxury goods and services (9).

{B. Is source-based taxation to be encouraged?}

Residence-based taxation (personal income taxes) is sometimes preferred to source based taxation (corporate income taxes) since the benefit of government spending largely accrues to the country's population (9). Ideally, the government should be accountable for its expenditure decisions by raising taxes on the population it serves. Thus, taxes should be assessed against capital income regardless of where it is earned. Second, residence-based taxation is generally seen as more efficient and more equitable than is source-based taxation. The former, such as income or consumption taxes, can be levied optimally on resident households taking into account their ability to pay and preferences for the public goods and services (i.e. the desired size of the public sector). In contrast, source-based taxes, such as production or corporate income taxes, reduce the efficiency of the economy without leading necessarily to optimal taxes on households (11).

Nevertheless, as described in greater detail in Mintz (1992), there are at least two reasons why source-based corporate taxes may be seen as desirable by governments. First, the corporate income tax may function as a withholding tax in countries with full integration of the corporate and personal income taxes -- in this role, the tax assists with the enforcement of personal taxation of capital income. A second motivation for retaining the corporate income tax is that it can also be seen as a payment for the benefits from government services which accrue to the business sector and which help to increase corporate profitability (e.g. expenditures on infrastructure) (11).

However, unless there is full integration on a world-wide basis, with personal taxes levied on both domestic and foreign investors (12), the corporate tax will distort production decisions and the international allocation of capital; investors subject to low or zero tax rates on capital income will, in the absence of corporate tax refunds, tend to invest in countries with low corporate income tax rates. Thus, some governments may view corporate taxes as harmful and seek to co-ordinate tax policy in this area. Others may consider that co-ordination attempts would undermine their ability to pursue tax policies aimed at attracting investment or to raise revenue on foreign-owned capital. Clearly, there would be obstacles to reaching a world-wide consensus regarding the desirable degree of reliance on source-based taxation.

{C. Options for co-ordination}

If governments wish to maintain capital income taxation, what options are available to them in a global financial market? Some experts have called for international co-operation whereby governments would agree to a formal set of rules relating to the definition of tax bases and possibly of tax rates -- a sort of GATT-type agreement in the tax field (14). However, multilateral treaty negotiation has never been sought for taxation. This reflects to a great extent the fact that governments often have different and conflicting tax policy objectives. First, there is little consensus over what are the "best" taxes. Second, governments have different views regarding the relative

importance of the pure revenue-raising function of taxation and its allocative role. Multilateral agreements would likely be perceived as an encroachment on each government's sovereign right to shape and implement fiscal policy.

Faced with the twin objectives of maintaining capital income and national sovereignty over fiscal policy, the following options, that go less far than a comprehensive GATT-type agreement, can reasonably be envisaged to build on existing co-operative arrangements (15):

i) Exchange of information. To improve enforcement of the personal and corporate income tax, governments would agree to an exchange of information. This could involve the reporting of accounts held by non-residents to foreign governments. It could also entail a sharing of information used to determine transfer pricing for transactions of multinational corporations. But there are, obviously, a number of significant obstacles to greater information sharing. First, many countries have strict bank secrecy laws that effectively protect depositors and which command wide support from those concerned about the unwarranted intrusion by governments into their personal affairs. Second, there exist administrative problems in tracing company names across jurisdictions because of different reporting requirements. Finally, without some form of revenue-sharing between countries, there is little incentive for the tax authority of one country to allow taxpayer audits within its borders.

ii) New provisions in bilateral treaty negotiations. All OECD countries currently have treaties with trading partners to eliminate double taxation of cross-border flows of income. This form of co-operation has allowed countries to share revenue from taxation of capital income as well as reduce tax barriers to capital flows. Recent work by the OECD (1991c) highlights well, however, the fact that existing bilateral agreements, together with different domestic tax systems, are far from providing complete capital export neutrality (16) among OECD countries. And, in any event, the objective of current bilateral treaties is not to reduce tax competition or to limit tax evasion. The possibility therefore arises for governments to negotiate non-resident withholding taxes on interest incomes so that foreign-source interest income can be taxed in the host country. The recent experience of the EEC Members in seeking a common withholding rate testify, however, to the difficulties that this approach would face on a world-wide basis.

iii) Broader informal co-ordination of tax policies. Recent years have witnessed an increase in the degree of consultation among governments regarding overall macroeconomic policies. This has been motivated to a large extent by recognition that fiscal and monetary policies can often be better formulated if the potential international impacts (viz. spillovers) of policies in another country are taken into account. With respect to tax policy, for instance, it may be preferable from a global perspective for governments, to the extent that they may be mutually interested in stimulating investment and saving, simultaneously to adopt similar policies.

Tables and Charts

Tables

Chart

Table 1

Table 2. Top personal marginal tax rates on capital income: central and lower levels of government (1) (excluding real estate)

	Interest earnings		Dividend income		Capital gains (b)	
	1980	1990	1980	1990	1980	1990
Australia	60.0	48.3	60.0	48.3	0	(R) 48.3/48.3
Austria	62.0	50.0	62.0	25.0	50.0/0	50.0/0
Belgium	25.0 (3)	10.0 (3)	20.0	25.0	0	0
Canada	63.2	49.1	63.2	49.1	(N) 31.6/31.6	(N) 36.8 (4)/36.8
Denmark	65.0	57.8	65.0	45.0	(N) 65.0/0	(N) 57.8/0
Finland	0	0	67	60.0	0	0
France	25.0 (3)	17.0 (3)(5)	65.0 (5)	56.8	(N) 0-16 (5)/0-16	(N) 0-17
Germany	56.0 (3)	53.0 (3)	56.0	53.0	0	0
Greece	n.d.	0	n.d.	50.0	0	0
Iceland	n.d.	0	n.d.	39.8	-	(N) 39.8/39.8
Ireland	65.0 (3)	53.0 (3)	65.0	53.0	(R) 50.0/30.0	(R) 50.0/30.0
Italy	0 (7)	12.5 (7)	72.0	50.0	0	0
Japan	20.0	20.0	35.0	35.0	0	(N) 20.0/20.0
Luxembourg	57.0	51.3	57.0	51.3	0	0
Netherlands	72.0	60.0	72.0	60.0	0	0
New Zealand	60.0	33.0	60.0	33.0	0	0
Norway	48.0	40.5	n.d.	20.0	(N) 30.0/0	(N) 40.0/0
Portugal	n.d.	20.0-25.0	n.d.	25.0	0	0
Spain	65.0	56.0	66.0	56.0	(N) 66.0/66.0	(N) 56.0/56.0
Sweden	50.0	30.0	50.0	30.0	(N) 50.0/50.0	(N) 30.0/30.0
Switzerland	44.0	44.0	44.0	44.0	0	0
Turkey	-	10.0	-	10.0 (8)	-	(N) 50.0/50.0
United Kingdom	75.0	40.0	75.0	40.0	(N) 30.0	(R) 40.0
United States	74.0	36.0	74.0	36.0	(N) 30.0	(N) 36.0

Notes - Table 2

Key: (N) = Nominal capital gains taxed
(R) = Real capital gains taxed.

Notes :

1. A more detailed description of the tax treatment of personal capital income is available the sources listed below.

2. Capital gains ons hares (in case of minority shareholder) first figure refers to short-te capital gains, second figure (after slash) to long-term ones (country specific definition for short and long term).

3. Some interest earnings (savings accounts, government bills or bonds, ...) may be exempt, sometimes up to a certain ceiling.

4. Life-time tax allowance: CS$ 100 000 (500 000 for farmers).

5. Add 1.1 per cent to rtes from 1991 onwards.

6. Second rate applies only if transactions exceed 7th bracket of personal income tax progressive schedule.

7. Various rates: table refers to Treasury bills or bonds.

8. First 100 000 TL exempt.

Sources:

1980: OECD (1986), {Personal Income Tax Systems Unders Changing Economic Conditions}.
OECD (1988), {Taxation of Net Wealth, Capital Transfers and Capital Gains of Individuals}
OECD, An Inventory of Corporate Tax Provisions in OECD Member Countries, (DAF/CFA/81.10).
1990: OECD, DAFFE/CFA/WP2(91)1.

Table 3

Table 4. Personal and corporate tax wedges in OECD countries for 1991
(Assuming fixed-r of 5 per cent and country-specific inflation)

	Zero personal marginal tax rate		Average personal marginal tax rate		Top personal marginal tax rate	
	Personal	Corporate	Personal	Corporate	Personal	Corporate
Australia	0	2.1	3.5	-2.3	4.4	-2.9
Austria	0	0.4	3.4	-2.3	4.3	-3.0
Belgium	0	0.4	0.8	0.1	0.8	0.1
Canada	0	1.2	4.7	-2.0	5.2	-1.3
Denmark	0	0.8	4.0	-2.0	4.5	-2.4
Finland	0	0.6	1.0	1.6	1.0	3.5
France	0	0.4	0.5	0.6	1.5	0.6
Germany	0	0.8	3.2	-2.3	4.3	-3.3
Greece	0	-1.5	n.a.	n.a.	0.0	0.2
Iceland	0	1.7	0.0	2.4	0.0	3.7
Ireland	0	0.1	3.0	-1.5	4.2	-2.3
Italy	0	0.6	1.4	1.2	3.3	-0.8
Japan	0	1.5	1.5	1.3	1.5	1.3
Luxembourg	0	1.3	2.0	-0.3	4.3	-2.0
Netherlands	0	0.7	3.7	-2.0	4.6	-2.6
New Zealand	0	1.7	n.a.	n.a.	2.9	-1.0
Norway	0	1.7	n.a.	n.a.	3.5	-1.1
Portugal	0	0.2	3.9	-2.7	3.9	-2.7
Spain	0	1.3	3.4	-1.2	6.0	-4.0
Sweden	0	-0.1	4.1	-1.6	4.1	-1.6
Switzerland	0	0.4	3.0	-1.7	4.2	-2.5
Turkey	0	3.2	4.4	0.6	4.4	2.9
United Kingdom	0	1.0	3.4	-1.4	4.3	-2.2
United States	0	0.8	2.8	-0.2	3.3	-0.3

Source: OECD (1991c) data file and software.

Table 5. Personal and corporate tax wedges
with average marginal personal tax rate

(assuming country-specific interest rates and inflation rates) (a)

Year	Personal	Corporate	p	r	s
			United States		
1980	3.1	-2.8	-1.3	1.6	-1.5
1985	2.8	-0.6	6.7	7.3	4.5
1990	2.0	-0.2	2.8	3.0	1.1
			Japan		
1980	1.7	-0.9	2.1	3.0	1.3
1985	1.3	1.6	7.0	5.5	4.3
1990	1.5	0.6	5.9	5.3	3.8
			Germany		
1980	2.6	-0.6	3.1	3.7	1.1
1985	2.1	0.3	5.2	4.9	2.9
1990	2.3	-1.6	3.3	4.9	2.6
			France		
1980	3.1	-1.6	-0.6	1.0	-2.1
1985	2.9	-0.5	6.0	6.4	3.5
1990	1.7	-0.4	6.3	6.7	5.0
			United Kingdom		
1980	5.2	-2.7	-2.6	0.2	-5.0
1985	4.1	-1.1	4.8	5.9	1.7
1990	3.6	-1.2	4.4	5.7	2.1

a. See Annex 2 for inflation rates.

Source: OECD Secretariat estimates.

Table 6. Personal and corporate tax wedges
with average marginal pesonal tax rate

(assuming fixed-r and average inflation) (a)

Year	Personal	Corporate	p	r	s
			United States		
1980	2.9	-1.2	3.8	5.0	2.1
1985	2.6	-1.3	3.7	5.0	2.4
1990	2.3	0.1	5.1	5.0	2.7
			Japan		
1980	2.0	-0.4	4.6	5.0	3.0
1985	2.0	-0.2	4.8	5.0	3.0
1990	2.0	-0.2	4.8	5.0	3.0
			Germany		
1980	3.3	-0.7	4.3	5.0	1.7
1985	3.1	-0.7	4.3	5.0	1.9
1990	2.8	-2.3	2.7	5.0	2.2
			France		
1980	2.6	-0.5	4.5	5.0	2.5
1985	2.7	-0.6	4.4	5.0	2.3
1990	1.7	-0.6	4.4	5.0	3.3
			United Kingdom		
1980	4.3	-1.7	3.3	5.0	0.7
1985	4.0	-1.1	3.9	5.0	1.0
1990	3.3	-1.2	3.8	5.0	1.7

a. r is set equal to 5 per cent and inflation to 5.5 per cent in all countries and time periods. See Annex 2 for inflation sensitivity analysis.

Source: OECD Secretariat estimates.

Chart A

Chart A (continued)

Chart A (continued)

Notes

1.• This paper has benefited from comments by Lars Bovenberg, François Delorme, Robert Ford, Constantino Lluch, John P. Martin, Jack Mintz and Jeffrey Shafer. The authors are grateful to Yuki Kitamura for assistance with the effective taxation calculations and to Andrea Prowse and Paula Simonin for secretarial support. Robert Hagemann is currently working at the International Monetary Fund in Washington.

2.• These estimates actually reflect tax rules as at 1 January 1991. Similarly all 1990 effective taxation calculations presented in this paper are based on 1 January 1991 tax rules.

3.• France has an unusual system in this regard, in that double taxation of dividend income is attenuated through a partial imputation system but exacerbated (since the late 1980s) by a higher corporate tax rate on distributions than on retentions.

4.• For a thorough explanation of the conceptual basis of effective tax wedges, see Boadway (1985). See also OECD (1991c), Annex 1, where the method is extended to cover transnational investment. For an early empirical application of this methodology to the OECD-wide area, see McKee et al. (1986).

5.• See, for instance, Boadway et al. (1984) and Bovenberg et al. (1990).

6.• Although in principle one might also want to consider savers abroad, cross-border holdings do not appear to be very important. French and Poterba (1991) quote the following domestic shares for the five major countries studied in more detail in the next section: United States 92.2 per cent; Japan 95.7 per cent; Germany 79 per cent; France 89.4 per cent; and United Kingdom 92 per cent. The issue of transnational investment, and the wedges that result from the opportunity to invest (and save) abroad, are considered in OECD (1991c), Chapter 5.

7.• These are not, of course, the only factors that affect the estimates of tax wedges. Thus Scott (1989, p. 406) reports estimates that are considerably smaller than the ones of King and Fullerton for 1980, due partly to different treatment of depreciation. He also reports changes in effective tax rates between 1960 and 1980 for the United States and the United Kingdom. His estimates indicate that investments in machinery and manufacturing have a favourable tax treatment.

8.• See Sinn (1990).

9.• This method of redistribution may, however, be costly in terms of economic efficiency because demand for luxury goods tends to be much more elastic than that for necessities.

10. Most OECD countries operate their personal capital income tax systems on a residence basis. The United States differs in this respect by including in a citizen's tax base all income earned world-wide regardless of residence. Most corporate tax systems operate a source base (i.e. the tax is paid where the income is earned).

11. See Diamond and Mirrlees (1971).

12. In addition, from the point of view of a capital importing country, the elimination of the corporate income tax may simply lead to a transfer of net revenue from the domestic to foreign treasuries, as noted earlier.

13. Giovannini and Hines (1990) propose a form of imputation that would integrate corporate and personal taxes for each type of investor, domestic and foreign.

14. See McLure (1990).

15. Existing cooperative arrangements include: Model Convention on Income and Capital, OECD 1977; United Nations Double Taxation Convention between Developed and Developing Countries, 1980; Transfer prices and Multinational Enterprises, OECD 1979.

16. Capital export neutrality exists when taxation does not alter the relative returns available on investments in different countries.

Annex 1

Effective Tax Wedge Calculations: Methodology and Data

This annex contains supporting information for the effective taxation calculations shown in Section IIB of the paper. The King Fullerton methodology used to make the calculations is first briefly discussed; for a more comprehensive statement of this methodology, see King and Fullerton (1984) and OECD (1991c) Annex 1, which also gives an extension to the case of transnational investments. The relationship between the "fixed-r" approach and international capital mobility is then discussed. This is followed by some inflation sensitivity analyses, a decomposition of tax wedges across asset-types and finance sources and an assessment of the impact of different marginal rates of taxation on personal capital income upon the tax wedges. Supporting data for the calculations are presented in the tables attached to this annex.

I. The King and Fullerton Methodology for Computing Tax Wedges

As noted in the text, the corporate tax wedge wc and the personal tax wedge wp are respectively defined as follows:

$$w_c = p - r \quad [1]$$

$$w_p = r - s \quad [2]$$

where p is pre-corporation tax (real) rate of return (cost of capital), r is the real interest rate and s is the post-personal tax rate of return.

It is assumed that households hold equity at the margin to the point where the post-personal tax real return is the same as that on riskless bonds. Accordingly, s will be the same for all financial instruments and depends on the (riskless) real interest rate, r, and the taxation of interest income as follows:

$$s = (1-m^i)(r+p) - p, \quad [3]$$

where mi is the marginal personal tax rate on interest income and p is the expected inflation rate.

The calculation of p is considerably more complicated. p can be written as the gross marginal return on an investment, net of depreciation, i.e.:

$$p = h - d \quad [4]$$

where h is the gross marginal rate of return on an investment and d is the (true) depreciation rate.

The present value of the project's earning stream, with corporate tax rate on retained earnings t and discount rate r, is:

$$PV = S_o^{\bullet} [(1-t)h - vtp]e^{-(r+d-p)u} du \quad [5]$$

$$= \frac{(1-t)h-vtp}{r+d-p}$$

where v is the proportion of inventories subject to FIFO valuation. The numerator of equation [5] is the after-corporate tax gross marginal rate of return adjusted for any inflation-related taxation of inventories (i.e. vtp). The denominator is the real discount rate which a company uses to discount the project's gross returns.

Different forms of financing the investment project imply different discount rates. The discount rates for retained earnings, new equity and debt finance are respectively given by equations [6] to [8]:

$$r_r = \frac{i(1-m_i) - z}{1-z} \quad [6]$$

$$r_{ne} = \frac{i(1-m_i)(1-c)(1-t)}{(1-m_d)(1-t_d)} \quad [7]$$

$$r_d = i(1-t), \quad [8]$$

where i is the nominal interest rate; zi, the accrual equivalent capital gains tax rate adjustment for inflation; z, the accrual equivalent capital gains tax rate; c, is the imputation credit rate; md, the marginal personal tax rate on dividends; td, the corporate tax rate on distributed earnings.

The accrual equivalent capital gains tax rate is calculated using [9]:

$$z = az^R \left\{ 1 + \frac{1-a}{1+r} + \left(\frac{1-a}{1+r}\right)^2 + \left(\frac{1-a}{1+r}\right)^3 + ... \right\} \quad [9]$$

R

$$= \frac{a\, z\ (1+r)}{a+r},$$

where a is the proportion of capital gains realised annually (assumed to be 10 per cent). zR is the statutory capital gains tax rate. zi, the inflation-adjustment to capital gains (which is only relevant in the United Kingdom in 1990), is defined as:

$$z^i = z_a p_a \quad [10]$$

where pa is actual (as opposed to expected) inflation.

To compute p, the present value PV in [5] is equated to the cost of a project, C, defined as:

$$C = (1-A), \quad [11]$$

where A is the present value of tax depreciation allowances and grants on a unit of capital. A is respectively defined for declining balance and straight-line depreciation schedules in [12] and [13]:

$$A = bt + \frac{(1-b)\, d^t\, t}{r+d^t} + fg \quad [12]$$

$$A = bt + \frac{(1-b)\, d^t\, t}{r} \left[1 - \frac{1}{(1+r)^{N-1}} \right] + fg \quad [13]$$

where b is the proportion of assets subject to immediate depreciation; dt, is the tax depreciation rate; f,the proportion of assets subject to grants; g, the grant rate; N, the tax lifetime of the asset.

Investments will be undertaken until the cost of the marginal investment is equal to the expected present value of its returns, i.e.

$$1-A = \frac{(1-t)h - vtp}{r+d-p} \quad [14]$$

Substituting p+d for h (equation [4]) and solving for p (1) gives:

$$p = \frac{(1-A)(r+d-p)}{1-t} + \frac{vtp}{1-t} - d, \quad [15]$$

the basic expression to compute the cost of capital.

II. The Relationship Between the "Fixed-r" Approach and International Capital Mobility

The way in which the "fixed-r" approach corresponds to open economy analysis can be highlighted by considering the following investor equilibrium conditions. Let the marginal investor be indifferent between holding foreign currency assets and home country assets when their after-tax returns adjusted for expected currency movements are the same:

$$i\,(1-m^{i}) = i^{*}\,(1-m^{i}) + f\,(1-x) \quad [16]$$

where i is the nominal interest rate; m is the investor's marginal interest income tax rate; x is the foreign exchange gains/losses tax rate; and f is the expected appreciation of the foreign currency. * signifies foreign equivalent.

Re-arranging [16], the domestic interest rate is given by:

$$i = i^{*} + f\,\frac{(1-x)}{(1-m^{i})} \quad [17]$$

If purchasing power parity is assumed,

$$f = p - p^{*} \quad [18]$$

In the tax wedge calculations where inflation was assumed to be the same in all countries, f equals zero and domestic and foreign interest rates are identical. Accordingly, so too are real interest rates. For the tax wedge calculations where country-specific inflation but common real interest rates were assumed, open economy arbitrage conditions (as in [16]) are only satisfied when the foreign exchange capital gains/losses tax rate is the same as the interest income tax rate. To the extent that foreign exchange gains/losses are in fact taxed at lower rates than interest income, open economy arbitrage would instead imply higher real interest rates in high inflation countries and lower real interest rates in low inflation countries.

III. Further Analysis of Tax Wedges

Inflation interacts with nominal-based taxation systems to affect significantly personal and corporate tax wedges. As discussed in the text, inflation raises the personal tax wedge because the inflation-compensation component of nominal interest payments is taxed as income. Conversely, the tax-deductability of nominal interest payments in inflationary periods reduces the corporate tax wedge by subsidising firms' real borrowing costs. This reduction in the corporate tax wedge is, however, partially offset by a loss in the present value of depreciation allowances, which are based on historic rather than replacement cost, greater taxation of inventories valued using the FIFO method and of capital gains, if not inflation-adjusted.

•

As can be seen in Table A1, where tax wedges are calculated assuming three common inflation rates (0, 5.5 and 10 per cent) but otherwise the same assumptions as in Table 6 of the main text, corporate tax wedges are inversely related to inflation in all countries. The benefit which corporations receive from lower real borrowing costs in inflationary periods outweighs the other costs which are associated with inflation. Conversely, inflation raises the personal wedge in all countries. Tax reforms in the 1980s generally reduced the benefit which companies get from inflation and, with the exception of Japan (2), the additional personal interest income taxation which individuals pay.

Corporate tax wedge trends over the 1980s are qualitatively unaffected in most of the countries by the range of inflation assumptions presented in Table A2 -- corporate tax wedges always rise in the United States and United Kingdom and decline in Germany (albeit marginally at zero inflation). But in Japan, the increase in the corporate tax wedge observed at medium and high inflation rates does not occur at zero inflation -- indeed, the wedge declines in the absence of inflation. Similarly, the increase in the corporate tax wedge in France does not occur at zero inflation -- in this case, the wedge remains stable. Personal tax wedge trends, on the other hand, are robust to these changes in inflation assumptions.

While the sensitivity of the trends in corporate tax wedges to the inflation rate assumption could be a problem were inflation rates arbitrarily chosen, the standard inflation rate assumption used in the paper was the average for the countries considered and proved, in fact, quite realistic for all of them. In order to verify that the trends observed in Table 6 of the main text were not attributable to unrealistic standard inflation rate assumptions, the calculations were repeated assuming in each country its average inflation rate (Table A2). As can be seen in Table A2, the same trends as in Table 6 are observed -- corporate tax wedges were broadly stable in Japan and France, but rose in the United States and the United Kingdom and fell in Germany.

The way in which tax systems discriminate by assets and finance sources is indicated in Table A3, which shows an "across-asset" and "across finance sources" decomposition of the average tax wedges shown in Table 6 of the main text. These calculations show that the most tax-favoured asset in many countries was machinery, both at the beginning and at the end of the decade; the exception in 1980 was Japan, where inventories were the most favoured, and Germany in 1990, where again inventories were most favoured. The most heavily taxed asset was inventories in countries without LIFO valuation systems (i.e. France, the United Kingdom and, before 1990, Germany) and buildings in the other countries. With respect to finance, debt was the most favoured instrument in all countries and, in countries without dividend imputation systems (the United States and Japan), new equity was the most taxed source of finance.

Tax wedges across assets converged in all countries over the 1980s. Thus, the claims frequently made by governments that they were aiming to reduce tax distortions across different asset types are borne out by the data. There was also convergence of tax wedges by source of finance in the United States, Germany and the United Kingdom. However, in Japan there was divergence of tax wedges across finance instruments as the wedge on the most discriminated

against instrument, new equity, rose a great deal more than did the other finance in wedges. This occurred because the corporate tax rate on distributions increased in each period as Japan moved away from a split rate corporate tax system. Tax wedges across finance instruments also diverged in France, despite a significant reduction in the subsidy on debt, the most tax-favoured instrument. This divergence was due to a very large increase in the wedge on new equity which resulted from larger reductions in the corporate tax rate on retentions than on distributions.

There are two other issues related to sensitivity analysis of tax wedges that deserve consideration. One is the impact of variations in r. The other is the impact of variations in m, the marginal tax rate on capital incomes. Variations in r, within observed ranges, do not have major consequences. Variations in mi do: in the extreme case of mi=0, which is the case for pension funds and other institutions, the personal tax wedge is zero, and the corporate wedges are higher than in the case of average mi. When mi is taken to be the top marginal tax rate, the personal tax wedge is larger, and the corporate wedge smaller than in the average mi case. These results are given in Tables A4 and A5. The changes in wedges across countries and periods are also presented in these tables.

Notes

1. The discrete-time equivalent of equation [15] was actually used in the calculations. This equation is:

$$p = \frac{(1-A)(r+d(1+p)-p)}{(1-t)(1+p)} + \frac{vtp}{1-t} - d$$

2. The relationship between inflation and the personal tax wedge in Japan was unchanged during the 1980s because there was no change in the personal interest income tax rate -- it remained at 20 per cent throughout the decade.

Table A1. Corporate and personal tax wedges
Inflation sensitivity analysis
Country specific: average marginal personal tax rate
Common factors: real interest rates, inflation expectations, average weights

	INFLATION RATES											
	1980			1985			1990			Change 1990-1980		
	0.0	5.5	10.0	0.0	5.5	10.0	0.0	5.5	10.0	0.0	5.5	10
United States												
Corporate	-0.1	-1.2	-2.5	-0.2	-1.3	-2.5	0.9	0.1	-0.8	1.0		
Personal	1.4	2.9	4.0	1.3	2.6	3.6	1.1	2.3	3.2	-0.3	-0	
Japan												
Corporate	1.3	-0.4	-2.0	1.7	-0.2	-2.0	0.9	-0.2	-1.3	-0.4		
Personal	1.0	2.0	2.8	1.0	2.0	2.8	1.0	2.0	2.8	0.0	0	
Germany												
Corporate	1.0	-0.7	-2.5	0.8	-0.7	-2.3	0.0	-2.3	-4.3	-1.0	-	
Personal	1.6	3.3	4.5	1.5	3.1	4.2	1.4	2.8	3.8	-0.2	-0	
France												
Corporate	0.0	-0.5	-1.1	0.0	-0.6	-1.2	-0.1	-0.6	-1.0	0.0		
Personal	1.3	2.6	3.5	1.3	2.7	3.7	0.9	1.7	2.4	-0.5	-1	
United Kingdom												
Corporate	-0.3	-1.7	-2.8	-0.1	-1.1	-2.0	0.3	-1.2	-2.3	0.6		
Personal	2.1	4.3	6.0	2.0	4.0	5.5	1.6	3.3	4.5	-0.5	-1	

Table A2. Corporate and personal tax wedges:
Country specific average inflation expectations (a),
average marginal personal tax rates.
Common factors: real interest rates (5 per cent), average weights

Year	Personal	Corporate	p	r	s
			United States		
1980	3.2	-1.5	3.5	5.0	1.8
1985	2.9	-1.6	3.4	5.0	2.1
1990	2.5	-0.1	4.9	5.0	2.5
			Japan		
1980	1.6	0.5	5.5	5.0	3.4
1985	1.6	0.7	5.7	5.0	3.4
1990	1.6	0.4	5.4	5.0	3.4
			Germany		
1980	2.7	0.0	5.0	5.0	2.3
1985	2.5	-0.1	4.9	5.0	2.5
1990	2.3	-1.4	3.6	5.0	2.7
			France		
1980	2.9	-0.7	4.3	5.0	2.1
1985	3.0	-0.8	4.2	5.0	2.0
1990	2.0	-0.7	4.3	5.0	3.0
			United Kingdom		
1980	5.3	-2.3	2.7	5.0	-0.3
1985	4.9	-1.6	3.4	5.0	0.1
1990	4.0	-1.8	3.2	5.0	1.0

a. See Table A13, Annex 2 for inflation rates.

Source : OECD Secretariat estimates.

Table A3. Corporate tax wedges
Across asset-types and finance-sources
Country specific: average marginal personal tax rates
Common factors: real interest rates (5 per cent)
average inflation (5.5 per cent in all countries
and in all time periods), average weights

•••	1980	1985	1990
Asset•••	•	United States	
Buildings••	0.1	• -0.7•	0.9
Machinery••	-2.0	• -1.7•	-0.4
Inventories••	-1.1	• -1.1•	0.2
Source of Finance			
Retained earnings•	0.5	• 0.6•	2.0
New equity••	10.2	• 7.7•	4.7
Debt•••	-4.5	• -4.6•	-2.8
Asset•••	••	Japan	
Buildings••	0.6•	0.9•	0.6
Machinery••	-0.3•	-0.1•	-0.7
Inventories••	-1.6•	-1.7•	-0.1
Source of Finance			
Retained earnings•	2.1•	2.8•	2.4
New equity••	5.4•	6.5•	7.9
Debt•••	-4.2•	-4.7•	-4.3
Asset•••	••	Germany	
Buildings••	-0.2•	-1.0•	-2.0
Machinery••	-1.5•	-1.3•	-2.2
Inventories••	0.3•	0.6•	-2.9
Source of Finance			
Retained earnings•	2.1•	2.2•	-0.1
New equity••	-0.7•	-1.0•	-2.4
Debt•••	-4.3•	-4.4•	-5.2
Asset•••	••	France	
Buildings••	-1.5•	-1.6•	-0.8
Machinery••	-1.8•	-1.9•	-1.6
Inventories••	2.9•	2.8•	1.6
Source of Finance			
Retained earnings•	1.3•	1.1•	0.4
New equity••	0.0•	-0.2•	1.4
Debt•••	-2.8•	-2.8•	-1.9
Asset	•	United Kingdom	
Buildings••	-2.2•	-1.9•	-1.7
Machinery••	-3.9•	-2.1•	-1.9
Inventories••	3.0•	1.5•	0.5
Source of Finance			
Retained earnings•	-0.3•	-0.3•	-0.8
New equity••	0.5•	0.1•	-1.8
Debt•••	-3.6•	-2.3•	-1.7

Table A4

Table A5. Personal and corporate tax wedges
(assuming fixed-r and country specific inflation) (a)

	Zero personal taxes		Average personal tax rate		Top personal tax rate	
Year	Personal	Corporate	Personal	Corporate	Personal	Corporate
			United States			
1980	0	-0.2	4.1	-2.5	10.6	-5.6
1985	0	0.3	2.2	-0.9	4.7	-1.5
1990	0	0.3	2.4	0.0	3.9	-1.2
			Japan			
1980	0	1.5	2.1	-0.5	2.1	-2.2
1985	0	2.6	1.2	1.4	1.2	0.4
1990	0	0.9	1.4	0.6	1.4	0.6
			Germany			
1980	0	3.1	3.0	-0.4	5.3	-3.1
1985	0	2.7	2.1	0.3	3.9	-1.8
1990	0	0.6	2.3	-1.6	4.6	-3.7
			France			
1980	0	1.9	4.1	-1.5	4.1	-1.2
1985	0	1.6	2.6	-0.5	2.6	-0.3
1990	0	0.5	1.4	-0.4	1.4	-0.2
			United Kingdom			
1980	0	0.4	7.3	-3.7	12.8	-8.4
1985	0	0.7	3.8	-1.0	5.8	-2.7
1990	0	0.9	3.3	-1.3	4.2	-2.0

a. R set equal to 5 per cent in each period in all countries.

Source: OECD Secretariat estimates.

Table A6. Typical capital allowances for machin

Country	System (a)	Switch-over	Allowance rates			First year	Switch-over	Post
			allowance rate		over period	over rate	allowances	
	SL	DB	Per cent		1st year of switch-over rate	Per cent	Per cent	
			1980	1985	1990	1980	1985	1990	1980	1985	1990	1980
United States	SL/DB	Yes	10.0	ACRS (b)	14.3 (d)	15.0	ACRS (b)	28.6	15.0	ACRS (b)	28.6	
Japan (e)	SL/DB	Yes	10.0	10.0	10.0	23.0	23.0	30.0	23.0	23.0	30.0	9
Germany	SL/DB	Yes	10.0	10.0	10.0	20.0	20.0	30.0	20.0	20.0	30.0	5.
France (f)	SL/DB	Yes	11.1	11.1	14.3	27.8	27.8	35.7	27.8	27.8	35.7	
United Kingdom	DB	No	..	..	..	..	25.0	25.0	100.0	50.0	25.0	..

a. SL = straight line; DB = declining balance.
b. The accelerated cost recovery system (ACRS) was in place in 1985. Machinery was a 10-yea

Years	Percentage allowance rates
1	8
2	14
3	12
4-6	10
7-10	9

c. The base for depreciation was diminished by 5 per cent in the presence of the investment
d. A 7-year lifetime is assumed. The class of machinery being used had a 10-year tax lifeti
e. Assets were depreciated until a salvage value of 10 per cent of cost except in 1990, when
f. A 9-year lifetime for 1980 and 1985 is assumed. To capture the change in practice in 198
lifetime of the assumed asset was reduced to 7 years for 1990.

Table A7. Typical capital allowances for buildings used i

Country	System (a)	Switch-over	Allowance rates			First year allowance rate	Switch-over rate	Post-switch-over rate
			Per cent			Per cent	1st year of switch-over rate	Per cent
	SL	DB	1980	1985	1990	1980	1985	1990	1980	1985	1990	1980	1985	1980	1985
United States	SL	No	3.5	ACRS (b)		3.2	..	..	..	3.5	5.0	3.2			
Japan (c)	SL/DB	Yes	1.5	1.5	2.2	3.5	3.5	6.6	3.5	3.5	6.6				
Germany	SL	No	2.0	See (d)	See (e)	..	..	..	2.0	5.0	10.0	..			
France	SL	No	5.0	5.0	5.0	..	..	..	5.0	5.0	5.0	..			
United Kingdom	SL	No	4.0	4.0	..	..	..	..	50.0	50.0	4.0				

a. SL = straight line; DB = declining balance.

b. The accelerated cost recovery system (ACRS) alternative method was in place in 1985. Bui
rates:

Years	Percentage allowance rates
1	5
2-10	6
11-18	5
19	1

c. Assets were depreciated until a salvage value of 10 per cent of cost except in 1990, when
value remained.

d. German depreciation allowances in 1985 were:

Years	Percentage allowance rates
1-8	5
9-14	2.5
15-50	1.25

e. German depreciation allowances in 1990 were:

Years	Percentage allowance rates
1-4	10
5-7	5
8-25	2.5

Table A8. Net present values of depreciation allowances (a)

	Average weights, average inflation Per cent of cost											
	Zero marginal personal tax rates						Average marginal personal tax rates					
	Buildings			Machinery			Buildings			Machinery		
	1980	1985	1990	1980	1985	1990	1980	1985	1990	1980	1985	1990
United States	20.7	28.0	14.2	44.9	44.3	32.4	22.0	29.3	14.4	45.9	45.3	32.5
Japan	18.7	20.4	24.3	43.3	46.2	43.4	19.9	21.6	24.8	44.2	47.2	43.7
Germany	19.2	28.8	35.2	50.5	50.5	49.2	21.7	31.2	37.2	52.5	52.4	50.4
France	26.8	26.8	16.3	42.3	42.3	29.8	29.0	28.8	17.0	43.4	43.3	30.1
United Kingdom	34.0	26.0	14.7	52.0	34.8	27.2	34.7	26.4	16.3	52.0	35.4	28.

a. Corresponds to variable A in the tax wedge formulae shown in Section I of this annex.

Table A9. Net present values of depreciation deductions (a)

	Average weights, average inflation Per cent of cost											
	Zero marginal personal tax rates						Average marginal personal tax rates					
	Buildings			Machinery			Buildings			Machinery		
	1980	1985	1990	1980	1985	1990	1980	1985	1990	1980	1985	1990
United States	42.0	56.6	37.1	91.2	89.5	84.6	46.7	59.2	37.6	93.2	91.5	84.9
Japan	34.4	35.3	48.6	79.7	79.7	86.8	36.6	37.4	49.6	81.4	81.6	87.4
Germany	31.1	46.7	62.3	81.8	81.8	87.1	35.2	50.6	65.8	85.1	84.9	89.2
France	53.6	53.6	47.9	84.6	84.6	87.7	58.0	57.6	50.0	86.8	86.8	88.5
United Kingdom	65.4	65.0	43.2	100.0	87.0	80.0	66.7	66.0	47.9	100.0	88.5	

a. These data show the present value of companies' depreciation deductions for calculating c
taxes payable. The data are simple transformations of the present value of depreciation
allowances shown in Table A6 -- the present values shown in Table A7 are calculated by di
Table A6 data by the corporate tax rate.

Table A10. Inventories
Methods of evaluating costs (a)(b)

••••	1980•	1985•	1990
United States•••	LIFO•	LIFO•	LIFO
Japan••••	LIFO•	LIFO•	LIFO
Germany••••	Average (c)	Average (c)	LIFO
France••••	FIFO•	FIFO•	FIFO
United Kingdom•••	FIFO•	FIFO•	FIFO

a. LIFO is last-in, first-out.

b. FIFO is first-in, first-out.

c. Germany used the average price valuation method in 1980 and 1985.

Table A11. Corporation tax rates

	Central government	Other government (after tax deduction)		Other tax deductible			Overall tax rate			Imputation credit as proportion of gross dividend (a)		
				(Per cent)								
	1980	1985	1990	1980	1985	1990	1980	1985	1990	1980	1985	1990
United States	46.0	46.0	34.0	6.0	6.5	6.5	Yes	49.2	49.5	38.3	0	0
Japan - Retained earnings	40.0	43.3	37.5	14.3	14.5	16.8	Yes	54.3	57.8	50.0		
Japan - Distributed profits	30.0	33.3	37.5	12.2	13.9	16.8		42.2	47.2	50.0	0	0
Germany - Retained earnings	56.0	56.0	50.0	5.7	5.7	6.5	Yes	61.7	61.7	56.5		
Germany - Distributed profits	36.0	36.0	36.0	8.3	8.3	8.3		44.3	44.3	44.3	36.0	36.0	36.0
France - Retained earnings	50.0	50.0	34.0	..	..	..		50.0	50.0	34.0	33.3	33.3	3
France - Distributed profits	50.0	50.0	42.0	..	..	..		50.0	50.0	42.0			
United Kingdom	52.0	40.0	34.0	..	..	..		52.0	40.0	34.0	25.0	25.0	25.0

a. I.e. sum of dividend and tax credit.

Table A12. Average marginal personal tax rates

(Per cent)

		1980	1985	1990
United States	Interest	28.4	25.8	22.4
	Dividends	47.5	39.6	32.0
	Capital gains (a)	19.0	15.8	32.0
Japan	Interest	20.0	20.0	20.0
	Dividends	35.0	35.0	35.0
	Capital gains	0	0	20.0
Germany	Interest	32.0	30.0	27.0
	Dividends	46.0	44.0	39.1
	Capital gains	0	0	0
France	Interest	25.0	26.0	17.0
	Dividends	50.3	50.3	40.0
	Capital gains	0	0	0
United Kingdom	Interest	42.5	39.3	31.9
	Dividends	44.3	41.2	33.3
	Capital gains	30.0	30.0	33.3 (b)

a. For the United States, 40 per cent of long-term capital gains were added to the personal income tax base until 1986, after which 100 per cent of gains were added. Accordingly, the long-term capital gains tax rate was calculated as 40 per cent of the average personal dividend tax rate (on the assumption that the average recipient of capital gains has the same income as the average shareholder).

b. Only inflation-adjusted capital gains are taxes.

Sources: United States (except for capital gains tax rates), Germany, France and United Kingdom: Dale W. Jorgenson & Ralph Landau (1992), (eds.) {International Comparisons of the Cost of Capital}, Washington, The Brookings Institution, (forthcoming). The country chapter authors in this study are respectively: U.S. -- D. Fullerton and M. Karayamis; Germany -- W. Liebfritz; France -- J. Alworth and F. Bourguignon; U.K. -- M. King and M. Robson;
• Japan: OECD.

Table A13. Expected inflation rates (a)

(Per cent)

	1980	1985	1990	Average
United States	10.2	3.8	6.1	6.7
Japan	5.7	0.9	2.0	2.9
Germany	4.6	2.0	3.8	3.5
France	12.7	5.1	3.5	7.1
United Kingdom	13.7	4.9	5.8	8.1
Average across countries and time periods				5.5(b)

a. Two-year ahead projections.
b. GNP weighted average.

Source: OECD Economic Outlook N s 28, 38, 48.

Table A14. Long term interest rates

(Per cent)

	1980	1985	1990
United States	11.94	11.37	9.32
Japan	8.87	6.49	7.39
Germany	8.45	7.04	8.83
France	13.78	11.87	10.42
United Kingdom	13.91	11.06	11.81

Sources:

United States: Moody's AAA corporate bonds rate;

Japan: Longest term life bond rates, Economic Statistics Monthly, Bank of Japan;

Germany: 7-15 years public sector bond rate, Bundesbank;

France: Public and semi-public sector bond rates, Caisse des Dépôts et Consignations;

United Kingdom: 10-year British Government securities rate, Central Statistical Office.

Table A15. Weights (a)

	Assets			Finance		
	Buildings	Machines	Inventories	Retained earnings	New equity	Debt
United States	0.23	0.48	0.29	0.59	0.00	0.41
Japan	0.31	0.46	0.23	0.55	0.05	0.40
Germany	0.34	0.38	0.28	0.42	0.08	0.50
France	0.23	0.55	0.22	0.30	0.11	0.59
United Kingdom	0.24	0.53	0.23	0.73	0.10	0.17
Average	0.26	0.48	0.26	0.52	0.04	0.42

a. 1990 weights are used for all countries except Japan, where 1980 weights are used due to data limitations.

Source: OECD, DAFFE/CFA(91)12, except for Japan which comes from J.B. Shoven and T. Tachibonaki, "The Taxation of Income from Capital in Japan", Reprint series N 281, Kyoto University.

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