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Possible Implications of Integrating the Corporate  
and Individual Income Taxes in the United States

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Abstract

The classical corporate profits tax in the United States involves non-neutralities between: different sources of financing; different forms of business organization; and retaining or distributing earnings and may result in the U.S. investor being at a disadvantage vis-à-vis foreign investors. An international comparison is provided, and the potential effects of different integration schemes on the user cost of capital and tax revenues are assessed. The integration of corporate and individual income taxes in the United States could lead to a more efficient domestic and worldwide allocation of resources.

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### Summary

The paper analyzes the possible implications of integrating corporate and individual income taxes in the United States. The current separate tax treatment of corporate and personal taxation is commonly viewed as influencing a range of economic decisions, including the choice between debt and equity finance, the choice of the legal form for businesses, the decision whether or not to retain or distribute earnings, and the decision of how much to invest.

In addition, the international implications of separate corporate and personal taxes have been receiving increased attention. For example, if other countries mitigate the double taxation of dividends while the United States does not, the overall tax burden on an equity financed investment in the United States may be higher than in other countries. Furthermore, to the extent that foreign investors face a lower tax rate for dividend and interest payments than U.S. investors, foreign financing of U.S. investments may be encouraged by the tax system.

The paper reviews recent developments in the corporate sector in general and the increased use of debt financing in particular. It employs calculations of effective tax rates and the user cost of capital to explore the effects of the 1986 Tax Reform Act, which left many issues concerning tax integration unresolved, on the incentives to use debt rather than equity financing. In addition, the effects of alternative integration schemes are also evaluated. The paper concludes that a lower capital gains tax rate would only have a relatively small impact on the cost of capital while integration of corporate and individual taxes could substantially reduce the effective tax rate on equity capital.

The impact of integration on tax revenues is assessed for a range of alternative schemes. Abolishing the double taxation of dividends could result in tax revenue losses of some \$35 to \$45 billion annually. The revenue losses could, however, be considerably smaller, and possibly eliminated, if some of the interest payments were no longer deductible when calculating the corporate tax. The paper concludes that tax integration could lead to rather substantial efficiency gains arising from a more efficient allocation of resources both within the United States and between the United States and the rest of the world, although other considerations--such as administrative complexity--would also need to be taken into account.



## 1. Introduction

The federal income tax system of the United States taxes individuals and corporations separately without allowing for any integration between the two tax systems. Separate taxation of corporations has been a central feature of the Federal tax structure for over 75 years and the tax code clearly has affected both the financial structure and the investment decisions of corporations. Against this background, proposals to integrate the corporate and the individual income taxes have surfaced from time to time. The most recent proposal was put forward in 1984 <sup>1/</sup> but was never implemented.

A comprehensive study has recently been initiated by the United States Treasury which is expected to be completed later this year. While the Treasury, in re-examining the integration issue, appears to be concerned with the impact of the current code on the financial structure and investment incentives faced by U.S. corporations, a further motivation for the study seems to be a concern that U.S. competitors are taking measures to mitigate the effects of the double taxation of dividends and that as a result U.S. investors may to an increasing extent be placed at a disadvantage vis-à-vis those from other countries.

The paper examines a variety of issues concerning integration of the corporate and individual income taxes in the United States. Section 2 provides a review of important aspects of tax integration. Section 3 discusses the Tax Reform Act of 1986, and section 4 assesses recent developments in the U.S. corporate sector. Section 5 reviews international issues related to tax integration and section 6 discusses alternative ways of approaching integration. The methodology of effective tax rates is used in section 7 to assess the effects on user cost of capital if integration is introduced. Some other implications of tax integration is the topic for section 8, and section 9 provides a conclusion.

## II. A Broad Overview of Issues Concerning Tax Integration

The nonintegration of corporate and personal income taxation in the United States has both domestic and international aspects, where the latter are commonly viewed as increasingly important.

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<sup>1/</sup> The Treasury study on tax reform presented in November 1984, proposed that corporations could deduct 50 percent of dividends paid. The president proposed a 10 percent deduction, the Ways and Means Committee would have phased the 10 percent deduction in over ten years, and the Finance Committee rejected integration altogether, as does the final tax bill of 1986. See U.S. Treasury Department (1984).

As regards the domestic aspects, the traditional analysis of the classical corporate tax system, as adopted by the United States, has focused on the fact that it results in the double taxation of equity income--income is first taxed when earned by the corporation, and again when received as dividend income or as realized capital gains by investors.

Other concerns associated with the classical corporate tax system include the non-neutralities it introduces into the choices between (a) the corporate form of organization as opposed to partnerships and proprietorships; (b) debt versus equity financing; (c) retention or distribution of earnings; and (d) investment in the corporate and the non-corporate sectors.

Many argue that the incentives for choosing a partnership rather than a corporation as the legal form of business increased significantly with the enactment of the tax reform of 1986 (see below). Since then, the number of companies of a size often far exceeding the limits for Subchapter S corporations that re-established themselves in partnership form increased markedly 1/

The tax treatment at the corporate level has implications for the different sources of finance. While the interest charges on a debt financed investment are deductible against corporate tax liabilities, payments to shareholders are not. The corporate tax system therefore favors debt financing over equity financing. Over time, the difference between debt and equity instruments has become less clear. Indeed, many argue that integration is already taking place "through the backdoor" 2/ and that as long as there is a difference in tax treatment between debt

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1/ Subchapter S of the Internal Revenue Code opens an opportunity for companies with a limited number of shareholders to opt for partnership treatment while keeping the corporate legal form. In recent years, the number of widely held partnerships has also shown a significant increase. According to the Treasury Department, in 1978, some 671 partnerships had 500 or more partners; by 1987 the number had grown to 1,735. See U.S. Department of the Treasury (1990).

2/ Eugene Steuerle writes "Because backdoor integration could add considerably to the administrative burden of both partners and of the IRS, Congress may be forced to address more directly how integration should take place". Steuerle (1989), p. 229.

and equity, new instruments will be created and that it will become virtually impossible to make rules distinguishing debt from equity. 1/

Not only is the tax treatment of debt different from that of equity, but various forms of equity finance are also treated differently. By retaining profits, taxes can be deferred and the resulting increase in the value of the share is only taxed at the individual level once the gain is realized. The repeal of the preferential tax treatment of capital gains in 1986 has significantly reduced the incentive to retain rather than distribute profits and the dividend-payout ratio has increased in recent years. Another recent development is corporate repurchases of equity from the shareholders. Interest payments on loans taken for this purpose are deductible for the corporate tax. 2/

The double taxation of dividends and the difference in tax treatment for different forms of financing therefore create several distortions. In order to eliminate the double taxation, taxation at the corporate or personal level would have to be abolished or some integration of the two taxes would have to be implemented. On tax policy grounds, it is difficult to justify a separate tax on corporate income but nevertheless most countries have some kind of corporate tax. 3/ In principle, double taxation could be eliminated by treating the

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1/ The Internal Revenue Code does not provide corporate taxpayers a definition of debt. For a discussion on debt and equity instruments, see Kopcke and Rosengren (1990). For a discussion on factors used by the tax courts to distinguish debt from equity, see Robertson et al. (1990). In the United States, deduction for interest paid or accrued after July 10, 1989 may in certain cases be disallowed (see section 163(j) of the Internal Revenue Code and the Omnibus Budget Reconciliation Act of 1989). The purpose of section 163(j) is to limit the deduction allowed for interest paid by U.S. corporations to controlling foreign shareholders, although in form it applies to interest paid to related domestic tax-exempt persons. The regulation apply to corporations with an debt-equity ratio exceeding 1.5 to 1 and if the corporation has "excess interest expense" in relation to adjusted taxable income. For a description, see "Report on Section 163(j) of the Internal Revenue Code", in Tax Notes, June 18, 1990, pp. 1495-1514. Several countries have introduced legislation against so called "thin capitalization", i.e. the artificial use of what is essentially equity capital in the form of a loan. See Thin Capitalisation, by OECD (1987). A survey of rules in different countries can be found in Hughes et al. (1989).

2/ While dividends tripled between 1977 and 1987, share repurchases increased 16-fold and cash payments via acquisitions increased 15-fold. See Bagwell and Shoven (1989).

3/ It is sometimes argued that the corporate tax is an approximate way of including (undistributed) profits into the personal tax base. For a discussion of the arguments concerning corporate taxation, see Andersson and Norrman (1987).

corporate-shareholder relationship like a partnership. All corporate earnings, whether or not distributed, would be imputed to the shareholders and taxed at individual marginal tax rates. The corporate income tax would then serve as a withholding tax creditable against shareholder tax liability. This is the only method that would fully integrate the corporation and individual income taxes on both distributed and undistributed earnings and would rely entirely on the individual income tax for the taxation of corporate profits. It would further equalize the tax rates on corporate and non-corporate earnings. No country has chosen this kind of full integration. 1/

The international aspects of integration, which have been getting increased attention, have at least three dimensions. First, if other countries mitigate the double taxation of dividends while the United States does not, the overall tax burden on an equity financed investment in the United States may be higher than in other countries, and the pre-tax rate of return required by investors for an investment could therefore be correspondingly higher in the United States. As a result, the overall level of investment in the U.S. may be lower than if some kind of integration had been in place. Second, to the extent that foreign investors face a lower tax rate for dividend and interest payments at the individual level than U.S. investors, foreign financing of U.S. investments may be encouraged by the tax system. Third, to the extent that foreign imputation methods are not extended to U.S. investors, a U.S. investor may be at a disadvantage vis-à-vis domestic investors in foreign countries. These aspects therefore have implications both for international capital flows and for the country distribution of tax revenues. An international comparison of tax integration can be found in section 5.

As for whether the need for integration has become more urgent now than before, it has been argued that there is an increased need due to the internationalization of markets and developments of new financing instruments that have facilitated corporate restructuring. Moreover, some have argued that changes in the tax code arising from the Tax Reform Act of 1986 have made reform in this area more pressing though others are of the opinion that the implications of that Act were effectively neutral in that it did not address the issue of the double taxation of dividends.

The shape of any proposal that might result from the current study undertaken by the Administration is not yet known. However, press reports 2/ indicate that the study would present "three alternatives"; one of the alternatives would be a credit to the recipients of dividends or interest for corporate taxes paid, coupled with elimination of the

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1/ Treatment approximating this method is available in the United States for closely held corporations with no more than 35 shareholders (Subchapter S corporations).

2/ See Tax Notes, January 22, 1990.

deduction for interest paid at the corporate level. Part of the revenue loss would be made up by the increased tax on highly leveraged corporations. 1/ Another proposal would entail taxing all income from corporate dividends at a constant rate, equal to the top individual rate. 2/

In summary, tax integration may be seen as more pressing now than in previous years because of the rising importance of international issues and because various financial innovations (together also with effects of the 1986 tax reform) may have exacerbated the effects of the non-neutralities that a nonintegrated tax system inevitably gives rise to.

### III. Effects of the Tax Reform Act of 1986

#### 1. The treatment of incorporated versus unincorporated businesses

The Tax Reform Act of 1986 reduced the corporate tax rate from 46 percent to 34 percent and the top marginal tax rate for individuals was reduced to 28 percent. Prior to 1986, the top marginal tax rate for individuals had exceeded the top marginal tax rate for corporations by 4 percentage points, while after the 1986 Tax Act, the corporate tax rate exceeds the top individual tax rate by 6 percentage points. Dividends distributed to a shareholder will be taxed at a maximum combined marginal tax rate of 52.48 percent (at the federal level) while by comparison, earnings of an unincorporated business will be taxed at a maximum marginal rate of 28 percent. 3/ The differential is therefore 24.28 percentage points, compared to a differential of 23 percentage points prior to the 1986 Act. 4/ Even before the reform, it was predicted that a reduction of the top marginal tax rate below the corporate tax rate would lead to a tendency among taxpayers favoring the partnership over the corporate form of organization. 5/ Legislation to reduce

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1/ A similar proposal was put forward by Deputy Assistant Secretary Michael Graetz (1989).

2/ This approach would be similar to the one which former Deputy Assistant Treasury Secretary Eugene Steuerle has put forward. See Steuerle (1989b).

3/ If the element of vanishing allowances is taken into account, taxpayers may have to pay 33 percent on the margin until their whole income is taxed at an average rate of 28 percent.

4/ Based on a combined marginal tax rate of 73 percent on distributed dividends, and a top rate of 50 percent on the earnings of unincorporated entities.

5/ Small corporations receive some tax relief because a lower corporate tax rate is applied to them (15 percent on the first \$50,000, 25 percent on the next \$25,000, with a phasing out provision that makes the marginal tax rate 39 percent in the range between \$100,000 and \$335,000).

these tendencies was enacted in 1987 and made it impossible for some forms of partnerships to be treated as corporations. 1/

An important exception to double taxation prior to the 1986 Act was the General Utilities doctrine, which permitted nonrecognition of gains at the corporate level on certain distributions of appreciated property to shareholders and on certain liquidating sales of property. The doctrine typically resulted in a single capital gains tax paid by the shareholder on receipt of a liquidating distribution from the corporation. A liquidating corporation, using General Utilities, escaped the tax liability that comes with appreciated assets. This could be an important element of a liquidation, since the purchaser of the firm's assets would wish to acquire the assets with an increased (stepped-up) tax value (basis) in order to claim larger depreciation for tax purposes. 2/ The Tax Reform Act of 1986 repealed the doctrine and thereby reinforced the double taxation of equity.

## 2. The treatment of debt versus equity financed investments

Another important element in the Tax Reform Act of 1986 is the repeal of the capital gains differential. Prior to the 1986 Act, a stock owner in a corporation with undistributed earnings could dispose of the stock in a capital gains transaction at a maximum capital gains tax rate of 20 percent. The 1986 Act raised the maximum capital gains tax rate to 28 percent. 3/ The higher capital gains tax rate increased the effective taxation of the part of an equity financed investment which is retained while the lower marginal tax rate for dividend payments decreased the tax burden. The overall effect of taxation on an equity financed investment is therefore ambiguous and depends on the financing mix of the investment. The lower statutory corporate tax rate decreased the value of interest deductions and served at the same time to decrease the extent of double taxation of dividends. Therefore, in order to assess whether the Tax Reform Act of 1986 increased or

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1/ So called PTPs (publicly traded partnerships) traded on an established securities market or tradeable in a secondary market, or the substantial equivalent thereof, are treated as corporations.

2/ By using General Utilities and Section 338 of the Internal Revenue Code, the purchaser of at least 80 percent of the stock of a corporation could treat the transaction, for tax purposes, as the liquidation of the corporation and a corporation could obtain the advantages of a basis step-up without paying capital gains tax and without truly liquidating assets. The tax savings arose solely from the change in ownership of a firm's stock. However, the advantage of the basis step-up was reduced by the "recapture" of past depreciation allowances. That is, because depreciation allowances are intended to capture the decline in an asset's value, sale of an asset for an amount greater than the depreciated book value implies that allowances taken in the past overstated the true decline in value. See Steindel (1986) and Leonard (1987).

3/ For a description of the capital gains tax, see Andersson (1989).

decreased the incentive for debt versus equity financing, the overall financing structure would have to be considered as well as the tax situation for the individual investor. <sup>1/</sup> By using the concept of effective tax rates, it is possible to assess the total impact on investments financed by different sources and undertaken by different investors. (Section 7 provides some calculations of cost of capital for different forms of financing.)

Although the tax reform of 1986 had an ambiguous effect on incentives to use debt versus equity financing when average tax rates are considered, some investors faced a significant change in their after-tax income from debt and equity financed investments. For instance, for a household in the top marginal tax bracket, the net of tax interest income for a debt financed investment was only 30 percent of pre-tax corporate earnings in 1980, while in 1987, the proportion was 72 percent. The net of tax income from retained earnings increased from 46.2 percent in 1980 to 55.5 percent in 1987 while net of tax income from dividends increased from 15.1 percent in 1980 to 44.4 percent in 1987 (See Chart 1). The net of tax interest income therefore grew much more rapidly than the net of tax equity income, so for this investor, the Tax Reform Act of 1986 increased the incentives for debt financing compared with equity financing.

Chart 1 also reveals that the Tax Reform Act of 1986 influenced the relative tax burden of an equity financed investment by taxing retained earnings (capital gains) more heavily than before while dividend payments, which are taxed as ordinary income at the marginal tax rate, are taxed less heavily. The incentives for corporations to retain earnings were reduced as the net of tax income from retained earnings increased less rapidly than the net of tax income associated with dividend payments. Although the higher capital gains tax rate tends to increase the so called lock-in effect, the lower marginal tax rates counteracted this by enhancing the incentives to pay dividends. To the extent that the investor receives more of his return in the form of dividends, reallocation of capital between industries may be promoted. However, the increase in the capital gains tax rate resulted in a higher tax burden on an equity financed investment than that which would have been in force if the old capital gains tax rules had remained. The Tax Reform Act of 1986 was seen by many as lower marginal tax rates at the price of higher taxes on capital gains.

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<sup>1/</sup> Some have argued that the Tax Reform Act of 1986 has exacerbated the bias toward unincorporated firms and the preference for debt rather than equity finance while largely eliminating the bias toward retention of earnings, see Rudnick (1989).

#### IV. Some Recent Developments in the Corporate Sector

There has been a great deal of discussion and analysis of the extent to which the tax system influences the financial structure of the corporate sector. While some argue that the tax system encourages corporations to absorb more business-cycle risk than they would otherwise <sup>1/</sup> others argue that the current degree of leverage is not excessive and that the current corporate financial situation is simply an efficient market outcome. <sup>2/</sup> Leverage ratios for nonfinancial corporations have risen in the United States in the 1980s but the levels are still much higher in the Federal Republic of Germany and in Japan. However, institutional structures have to be considered and some have argued that the financial institutions that supply debt in these countries closely monitor the activities of the firm than is typically the case in the United States. <sup>3/</sup> The kind of debt is also important when assessing whether or not the corporate sector is more vulnerable to a downturn in economic activity. A number of newly introduced debt instruments in the United States permit corporations some flexibility in meeting their interest obligations. <sup>4/</sup> In a categorization of the primary factors responsible for the introduction of 68 new types of security, Finnerty (1988) lists tax and regulatory advantages in 27 cases. <sup>5/</sup>

At the same time as debt has increased, the market value of assets has risen and some have argued that the corporate sector has issued large amounts of debt only to prevent what would otherwise have been deleveraging. However, the picture is very sensitive to how the adjustment to market value is done. Without further adjustments from the market value presented in the Flow of Funds data, the ratio of debt to asset values has indeed risen since the mid-1980s (see Chart 2). <sup>6/</sup>

Whether or not leverage has increased and whether or not this development enhances economic efficiency, the increase in interest payments and its implications for overall tax revenues is a reason for concern. Since the interest payments are deductible for the corporate income tax,

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<sup>1/</sup> See Gertler and Hubbard (1990).

<sup>2/</sup> See for instance Jensen (1988).

<sup>3/</sup> See Gertler and Hubbard, *op cit.*

<sup>4/</sup> These instruments include "original issue discount" bonds that defer either all ("zerofix") or part ("split coupon") of the interest payments until maturity. "Payment in kind" obligations allow the issuer to pay interest in additional securities. Many of the new debt instruments are easily renegotiable and therefore in reality very close to equity. It may therefore be hard to distinguish a debt instrument from an equity instrument which has implications for tax integration and for "integration through the backdoor."

<sup>5/</sup> Finnerty (1988).

<sup>6/</sup> Depending on what adjustments are made to the data in order to shift to market value, the ratio of debt liabilities to total assets at market value may actually have decreased since the mid-1980s.

CHART 1

# AFTER-TAX INCOME TO INVESTOR IN THE TOP TAX BRACKET IN 1980, 1984, AND 1987

(in percent of before-tax corporate earnings)

Percent

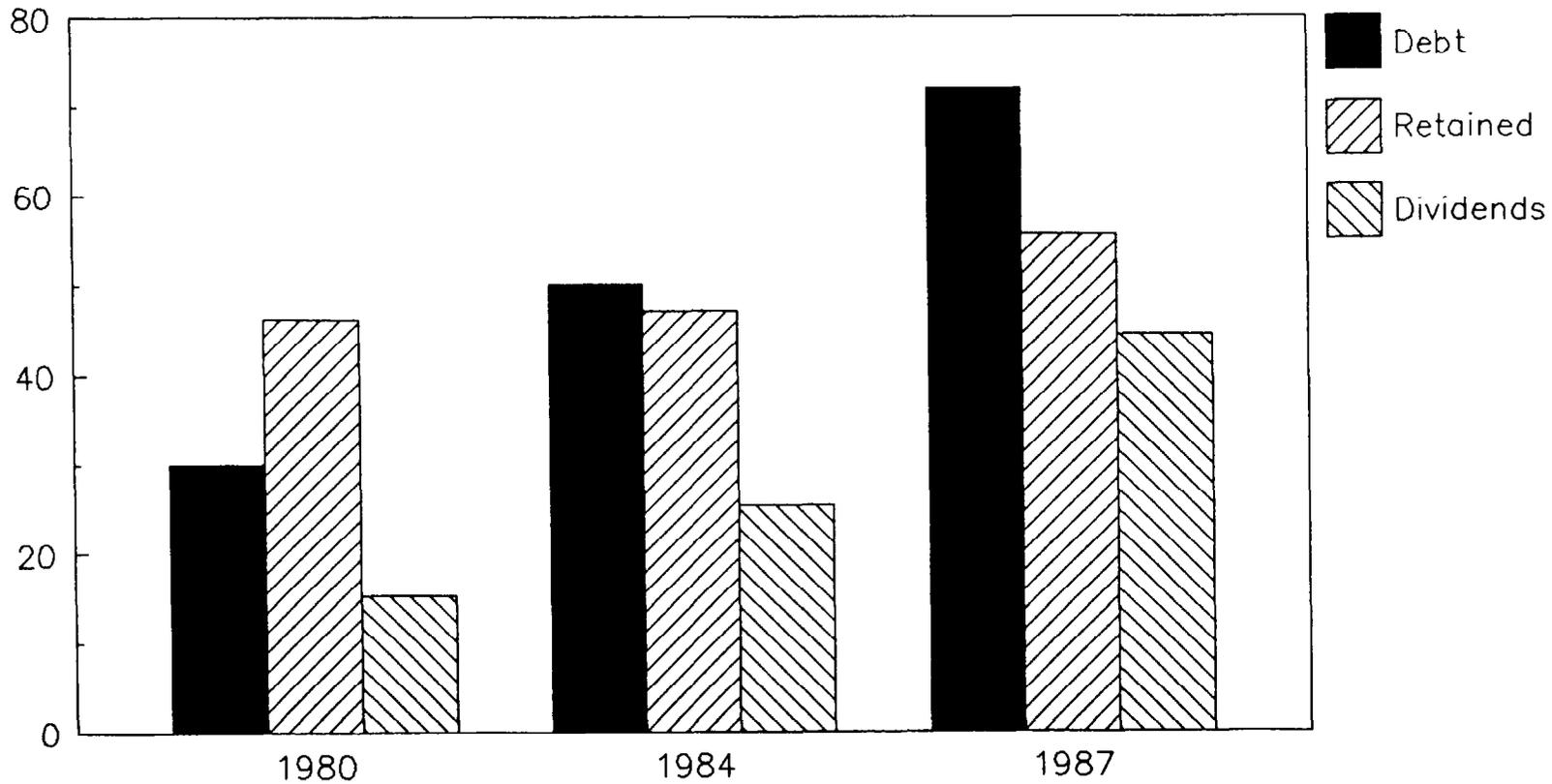
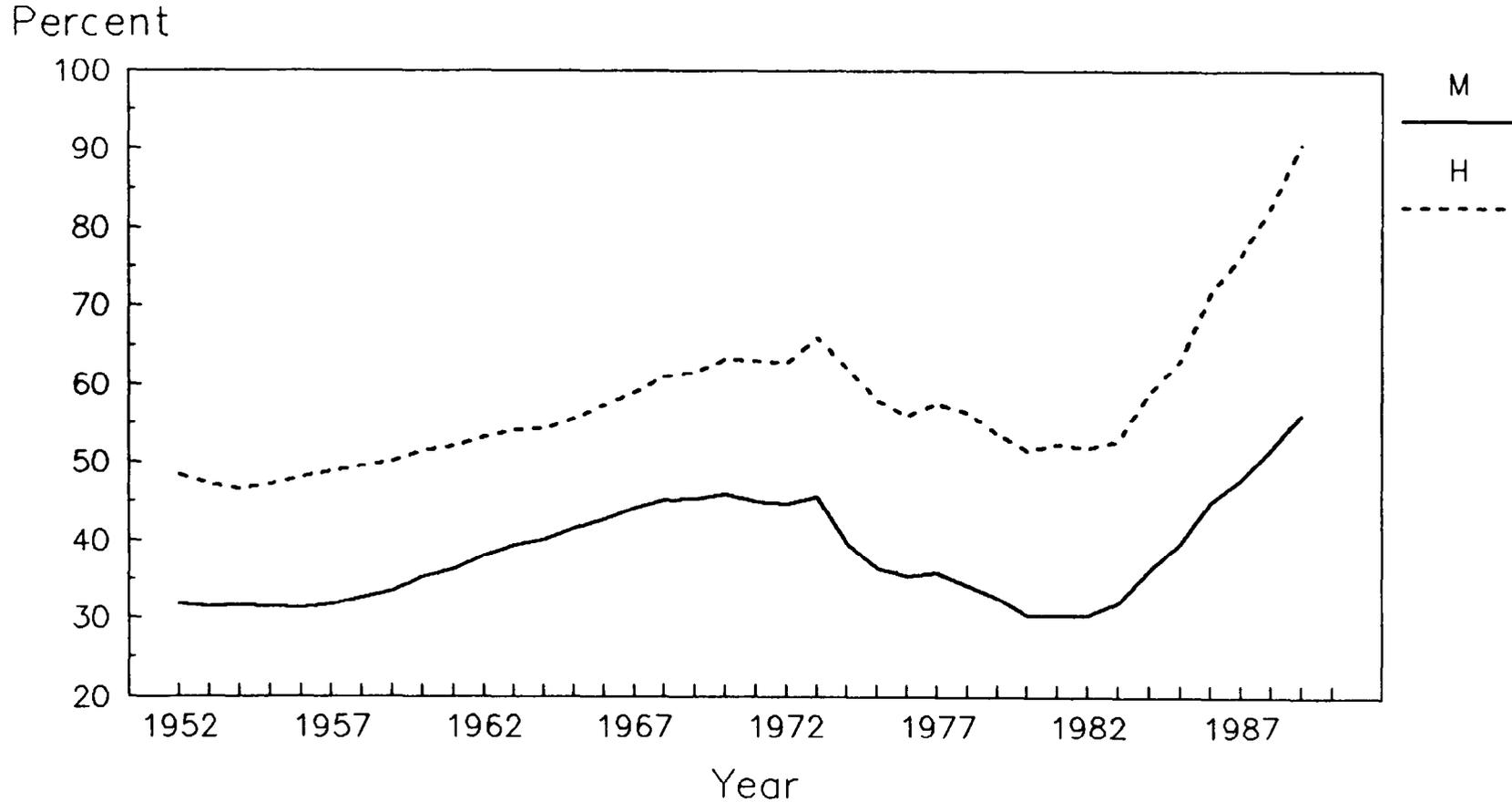




CHART 2

RATIO OF DEBT TO NET WORTH  
IN THE NONFINANCIAL CORPORATE BUSINESS SECTOR  
1952-1989



M = Total Assets at Market Value  
H = Total Assets at Historical Cost  
Source: Flow of Funds Accounts.



interest payments lower corporate taxable profits and thereby corporate tax revenues. If increased leverage results in a more efficient allocation of resources, some of the tax revenues may be recouped through dynamic effects. The immediate impact is, however, likely to be lower tax revenues. This is especially the case if interest income is mainly received by foreigners or by tax-exempt institutions. As it turns out, some 40 percent of all U.S. interest payments are received by tax exempt institutions or by foreigners and another 45 percent are received by institutions facing a lower tax rate than would a taxed household (see Table 1). It is therefore likely that a large portion of interest payments will not be subject to the same level of taxation as equity capital and that the increased relative importance of interest payments, at least in the short run, could result in lower overall tax revenues than otherwise.

Table 1. Recipients of Debt and Equity Payments  
in the United States

	1988 Tax Rate (Percent)	Percentage of Total	
		Interest Receipts	Equity Holdings
Households (untaxed)	--	2.8	
Households (taxed)	28	4.8	62.0
Foreigners	--	12.7	5.4
Commercial banks	15	5.7	--
Savings and loans	18	3.0	--
Mutual savings banks	6	1.1	0.2
Insurance companies	20	35.7	5.1
Private pensions	--	12.7	15.5
State and local government			
Retirement funds	--	10.9	6.2
Mutual funds	28	4.4	5.2
Securities brokers and dealers	34	1.5	0.9

Source: "Taxation, Corporate Capital Structure, and Financial Distress," by M. Gertler and G. Hubbard, in Tax Policy and the Economy, NBER, No 4, 1990, p. 60.

Interest payments in the nonfinancial corporate sector have risen rather markedly during the last decades. In 1950, the ratio of interest payments to the sum of profits after corporate taxes and interest payments was merely 4 percent. The ratio increased to 7 percent in 1965 and to 30 percent ten years later. In 1985, the share had reached 45 percent and by 1989, the share was over 55 percent and interest payments

exceeded net of tax profits for the first time. While gross profits net of capital cost allowances have increased by over 50 percent between 1986 and 1989, interest payments have increased by over 68 percent and tax payments by only 32 percent (see Chart 3). Corporate tax revenues from nonfinancial corporate businesses were down in 1989 and early 1990 compared to 1988 but they are significantly above the level of 1986 (see Chart 4). The revenue aspects are however only one issue of many when considering reforming the corporate tax system perhaps by introducing some kind of integration between corporate and individual taxes. More important may be a corporate tax structure which does not distort the economy and which promotes economic growth.

During the 1980s the dividend-payout ratio (measured as the ratio of dividend payment to after corporate tax profits) also increased (see Chart 5). The dividend-payout ratio was around 50 percent for most of the 1950s and 1960s but has risen drastically during the 1980s. The increase in the dividend-payout ratio means that corporations are retaining a smaller share of their after-tax profits. It is likely that the increase in the capital gains tax rate coupled with the decrease in the tax rates for dividend income has had an impact on the dividend policy of corporations.

The effect on private savings of the change towards dividends instead of retained earnings depends on the stockholder's propensity to reinvest his received dividends. While the overall level of savings may have decreased as a result of the change in dividend payments, the so called "lock-in effect" has decreased and a more efficient allocation of savings may have taken place. Incentives to save and invest have to be evaluated with the entire tax situation in mind rather than from the change in one or two tax parameters. For a discussion on the treatment of equity capital and the effect of the Tax Reform Act of 1986, see the section on cost of capital below.

## V. An International Comparison

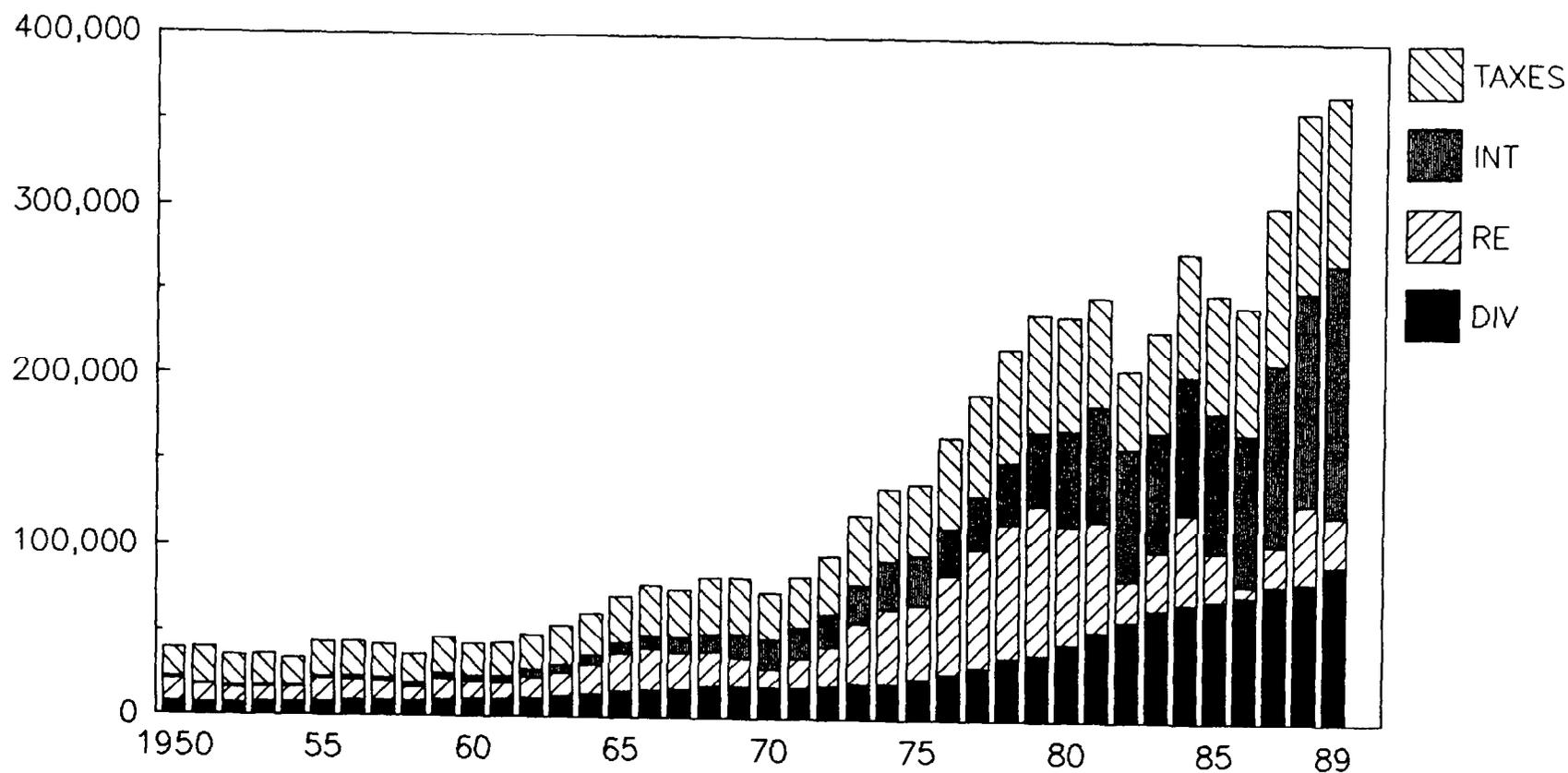
### 1. Introduction

As mentioned before, one of the main reasons the United States may want to integrate the corporate and the individual taxes is a concern that a U.S. investor may be at a disadvantage vis-à-vis foreign investors both in the United States and abroad. Five OECD countries provide no relief from the double taxation of dividends (Belgium, Luxembourg, the Netherlands, Switzerland, and the United States). Seven countries provide full relief from the double taxation of corporate income: Australia, Germany, Italy, and New Zealand provide relief at the shareholder level while Greece, Norway, and Turkey provide relief at the company level. Eleven countries provide partial integration relief where shareholders often pay taxes on the sum of dividends plus a

CHART 3

# PAYMENTS IN THE NONFINANCIAL CORPORATE SECTOR 1950-1989

Million of dollars



INT = interest payments  
RE = retained earnings  
DIV = dividend payments



CHART 4

# CORPORATE TAX REVENUES IN THE NONFINANCIAL CORPORATE SECTOR 1980-1989

Million of dollars

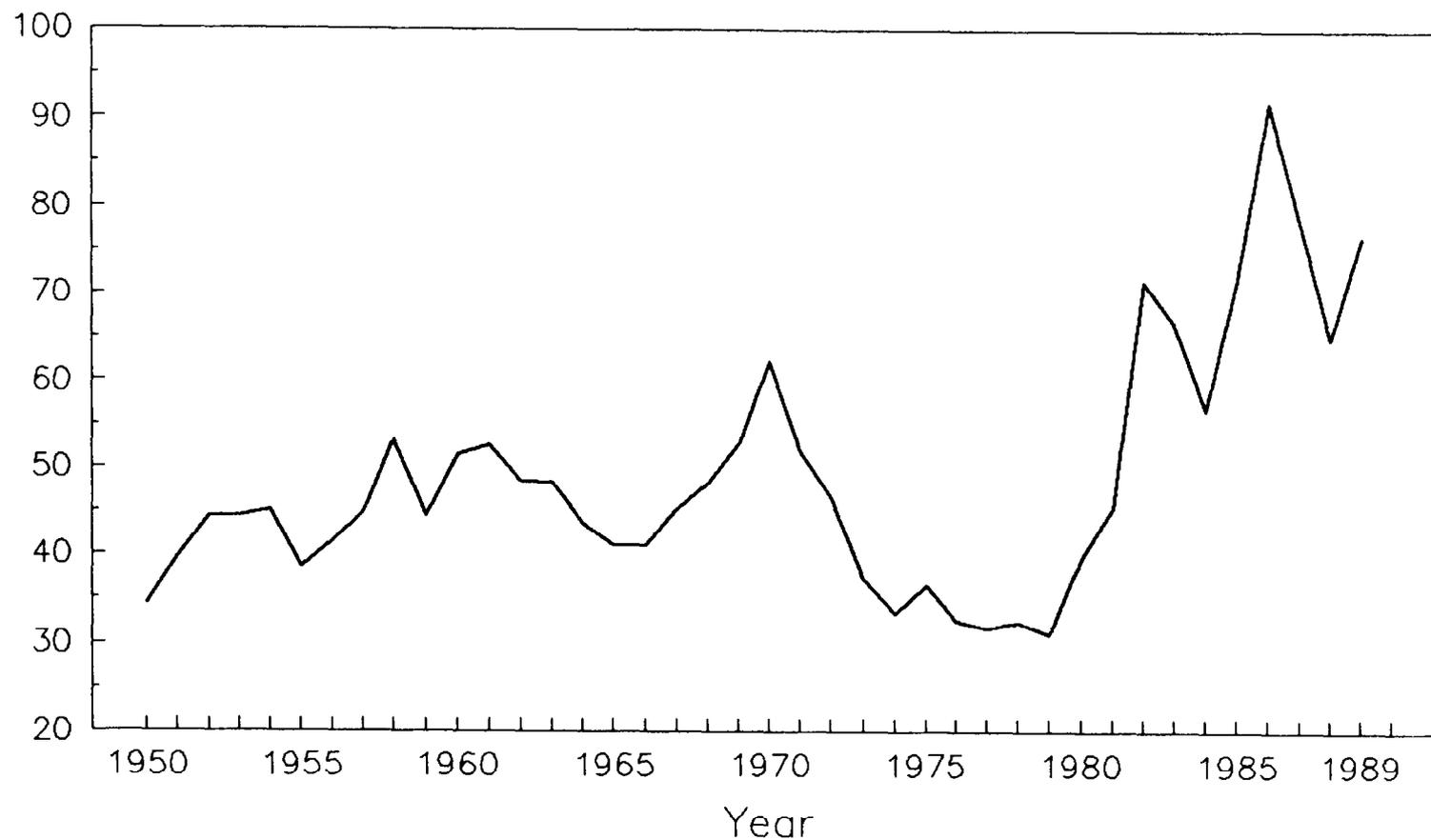




CHART 5

# DIVIDEND-PAYOUT RATIO IN THE NONFINANCIAL CORPORATE SECTOR 1950-1989

Percent





"grossed up" amount that represents the tax levied at the corporate level. The shareholder is then allowed a credit against the individual income tax for the corporate tax. 1/

2. The tax treatment of domestic investments in selected countries

The various methods of integration used in other countries increase the net of tax dividend income a shareholder receives. However, not only is the degree of integration important but also the overall level of corporate tax. The lower the corporate tax rate is, the less need there is to have any kind of integration. By looking at a gross income amount and comparing the income net of all taxes in different countries, we can calculate a measure of the overall level of taxation. 2/ From Table 2, we can see that from a gross income of 100 units distributed as dividends, a U.S. investor gets to keep 39 after corporate and individual taxes while an U.K investor would get to keep more than 61. Of the countries included in Table 2, only the Japanese investor retains less than a U.S. investor. The top marginal tax rate in Japan (applicable to income above approximately \$135,000) is the principal reason for the low net of tax return for a Japanese investor.

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1/ For a discussion on trends in international corporate income tax and corporate tax shares in various countries, see Wilkins (1990).

2/ It should be kept in mind that all international comparisons are subject to a large degree of arbitrariness and in principle, entire tax systems rather than specific tax parameters should be analyzed at the same time.

Table 2. Net of Tax Dividend Income in Selected Countries

	Germany <u>1/</u>	United King- dom <u>2/</u>	Canada <u>3/</u>	Japan	United States	France
Gross income	100	100	100	100	100	100
Statutory cor- porate tax rate (percent)	45	35	40	50 <u>4/</u>	38	42 <u>5/</u>
Corporate taxes	45	35	40	50	38	42
Distributed dividends	55	65	60	50	62	58
Top marginal tax rate (percent)	50	40	45 <u>6/</u>	65	36 <u>7/</u>	57
Individual taxes: on dividend income	27	26	27	32	22	33
double taxa- tion relief	31	22	15 <u>8/</u>	5 <u>9/</u>	--	29 <u>10/</u>
Net income	58	61	48	22	39	54

1/ In Germany, the federal statutory tax rate on distributed income is 36 percent compared to 50 percent for undistributed income. With local taxes included, the rates are 45 percent and 57 percent, respectively. The dividend credit amounts to 9/16 of received dividend payments.

2/ In the United Kingdom, the dividend credit is equal to 25/75 of the received dividend payment.

3/ The calculations do not include the surtax.

4/ The split rate system in Japan (with a 35 percent rate on distributed earnings and 40 percent on undistributed earnings) has been abolished and a uniform rate of 37.5 percent has been introduced. While distributed earnings are heavily taxed, capital gains almost entirely escape taxation (the taxpayer may elect a tax of 20 percent of the deemed gains (the deemed gain is 5 percent of the sales proceeds of stock). Another option is a tax of 1 percent of the proceeds of the sale (see International Tax Summaries, Coopers and Lybrand).

5/ In France, the corporate tax rate is higher on distributed earnings than on undistributed earnings (37 percent).

6/ Combined federal and provincial tax rate for Ontario.

7/ The state and local tax rates are assumed to equal 8 percent.

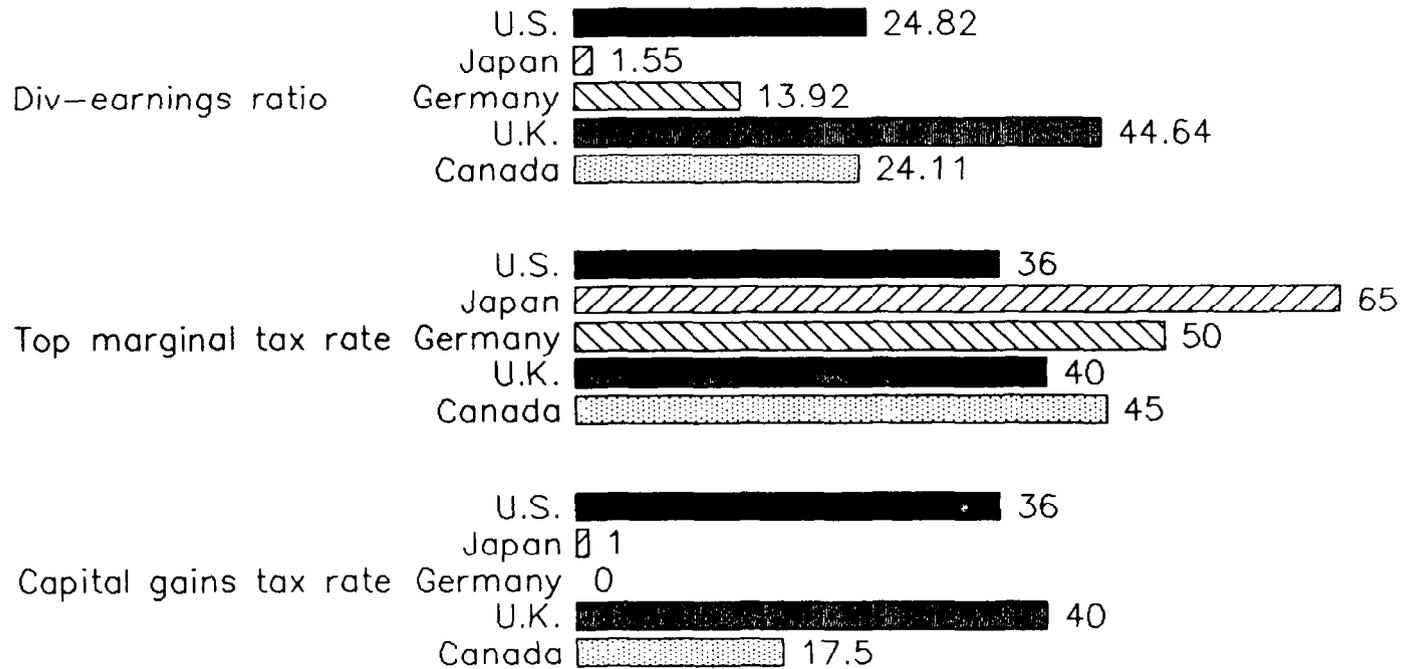
8/ Dividends are grossed up by 25 percent and the combined federal and provincial tax credit equals 25 percent of received dividends (13.33 percent at the federal level).

9/ The dividend relief is 10 percent of received dividends.

10/ The "avoir fiscal" or dividend relief is equal to 50 percent of received dividends.

CHART 6

DIVIDEND-EARNINGS RATIO AND TAX RATES  
IN SELECTED COUNTRIES, 1990





Both the tax treatment of dividend income and the tax treatment of capital gains are important when comparing the overall level of taxes in different countries. It is likely, for instance, that if a country imposes a relatively high tax burden on dividends that a large part of the return to equity will be in the form of retained earnings and capital gains. Although many factors influence dividend decisions, 1/ one would expect a country like Japan, with its relatively high tax rates on dividends and very low capital gains tax rate to have a low dividend-earnings ratio, thereby allowing the Japanese investor to receive a large part of the return as capital gains. This is clear from Chart 6 where both tax rates for dividend income and capital gains together with dividend-earnings ratios are shown. 2/ The U.S. investor receives a much larger part of his return on equity as dividends than for instance a German investor. Germany does not impose any capital gains tax. 3/ It is somewhat surprising to find that the U.K. which has the highest capital gains tax rate also has the highest dividend-earnings ratio. 4/

Given the tax structure of the United States with a rather high statutory capital gains tax rate and the lack of integration of corporate and individual taxes, a U.S. investor may very well face a higher tax burden than his counterparts in other countries. A higher tax burden may discourage U.S. investors from domestic investments but the impact on savings in the U.S. will also depend on the tax treatment a U.S. investor receives if he invests abroad. The tax treatment of foreign investors in the United States as well as the tax treatment of U.S. investors abroad is central when evaluating whether or not U.S. investors are at a disadvantage vis-à-vis foreign investors.

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1/ The person with the highest marginal tax rate is not necessarily the "marginal investor" and even if he is the marginal investor, other more indirect ways of channeling investment funds could be used (probably with considerably lower tax liabilities). Any conclusions are therefore, at best, tentative and can only be interpreted as possible effects on incentives rather than on actual investment behavior.

2/ The chart is based on data from Morgan Stanley Capital International Perspective, April 1990.

3/ Special rules apply to the taxation of capital gains from the sale of a significant holding (25 percent or more) in a business.

4/ It must be kept in mind however, that only gains accrued since 1982 are taxed and gains since 1982 are indexed for inflation. Furthermore, the first 5,000 pounds in capital gains per individual are exempt. The effective capital gains tax rate is not necessarily high since there is no capital gains tax on an investor's unrealized gains at death. See Andersson (1989).

3. The tax treatment of cross border investments

a. The tax treatment of foreigners' capital income in the United States

The U.S. economy has become significantly more open to international financial capital in the last two decades and the debate on the tax treatment of foreign-owned capital has intensified. The amount of foreign-owned assets in the United States grew more than 700 percent between 1975 and 1988 and more than three-fold since 1980. <sup>1/</sup> Since 1985, the amount of foreign-owned assets in the U.S. has exceeded that of U.S. assets abroad, although the comparison is of course heavily affected by the use of book value rather than market value accounting. <sup>2/</sup>

The United States exerts jurisdiction to tax all income, whether derived in the United States or not, of U.S. citizens, residents, and corporations. By contrast, the United States taxes nonresident aliens and foreign corporations only on income with sufficient nexus to the United States. Under the Internal Revenue Code, certain gross income of a foreign person is subject to a 30 percent U.S. withholding tax. Most U.S. income tax treaties with other countries reduce or eliminate the withholding tax, and business profits of an enterprise carried on by a resident of the treaty partner are not taxable by the United States unless the enterprise carries on a business through a permanent establishment in the U.S.

Foreign investors have been subject to this 30 percent withholding tax on dividends, rents and royalties for a long time. However, in July 1984, a major component of the tax was removed with the elimination of withholding taxes on foreigners' interest income. The Tax Code now exempts from the 30 percent tax certain interest paid on portfolio obligations. <sup>3/</sup> The United States generally does not tax capital gains of a nonresident alien individual that are not related to U.S. real estate or U.S. trade or business.

b. The U.S. tax treatment of U.S. foreign investments

The Administration discussed its rationale for U.S. tax policy toward international income in its 1985 tax reform proposal. The proposal states <sup>4/</sup> "...the general rule is that U.S. taxpayers are subject to U.S. tax on their worldwide income. A credit is allowed against U.S. tax for foreign income taxes paid in order to avoid double taxation... The special measures include the deferral of U.S. tax on income earned by U.S.-controlled foreign corporations until that income is remitted to U.S. shareholders."

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<sup>1/</sup> See U.S. Department of Commerce (1989).

<sup>2/</sup> In 1988, private, non-direct investments represented two thirds of foreign assets in the United States.

<sup>3/</sup> See sections 872(h) and 881(c) of the Internal Revenue Code.

<sup>4/</sup> U.S. Government Printing Office (1985).

The most important goal for U.S. taxation of international income is to prevent distortion of the locational decisions of U.S. firms. This view is often referred to as capital export neutrality (CEN). The U.S. tax code does not however fully reflect CEN. The two major exceptions are the deferral of tax generally provided to active business income earned abroad and the limitation that no credit is provided for foreign taxes that, on average, exceed the U.S. tax rate. 1/ Many countries take another view, the so called "territorial" rule and, exempt profits of foreign subsidiaries and branch operations from domestic tax. 2/

c. The role of tax treaties

An important factor affecting U.S. tax policy regarding investment by foreign persons is the shift of the United States from net international creditor to debtor. Capital-importing nations and capital-exporting nations often have conflicting objectives concerning the country distribution of tax revenues. Capital-importing countries tend to prefer that the tax be collected at source while capital-exporting countries typically prefer tax to be collected by the country of residence. 3/

Through treaties with a number of countries the U.S. has tried to avoid double taxation of income. The preferred U.S. tax treaty position has been expressed from time to time in model treaties and agreements. Nondiscrimination has been an important goal of the United States tax treaty policy. 4/ While withholding taxes on portfolio investments usually are creditable against income tax imposed by the country of residence, no credit is generally available to portfolio investors with

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1/ See Internal Revenue Code sections 903 and 904. The Administration's budget shows a revenue loss of \$800 million from this feature. See Budget of the United States Government, Fiscal Year 1991, U.S. Government Printing Office, p. A-71.

2/ Countries that fully or partially take this approach include Germany, France, the Netherlands, and Canada. See Frisch (1990).

3/ According to a joint committee print "United States tax policy, as expressed in tax treaty policy, for example, reflects its history as a capital exporter. Many argue that U.S. tax policy should respond to its new status by placing more emphasis on taxation at source." The report also mentions the problems connected with such a shift with increasing internationalization of business and financial markets and the possibility that the U.S. may once again become a net international creditor. See Joint Committee on Taxation (1990).

4/ "Nationals of a Contracting State shall not be subjected in the other Contracting State to any taxation or any requirement connected therewith which is other or more burdensome than the taxation and connected requirements to which nationals of that other State in the same circumstances are or may be subjected." See the 1981 U.S. Model Income Tax Treaty, Article 24.

respect to denial of integration (imputation) benefits. 1/ For direct investments, the integration benefits have generally not been extended to foreign direct investors. 2/ The U.S. has consistently insisted upon the extension of the integration benefit to the U.S. portfolio shareholders and the majority of the countries have granted these benefits. However, countries with integration generally do not extend integration benefits by treaty to U.S. corporate direct investors. 3/

In their report on the taxation of foreign investment in the United States, 4/ the Joint Committee mentions that a source country may have incentives to impose a tax if the foreign investment in that country is relatively insensitive to the tax levied. The larger, industrialized countries are those most likely to have sufficient market power to obtain an advantage from this kind of policy. A completely different strategy, typically used by small countries with little market power, is to provide tax exemption or tax holidays for foreign capital investment. The report rightly points out that a "beggar thy neighbor" policy would leave all nations worse off if generally adopted. 5/ The introduction of some kind of integration (imputation) system in the United States could potentially imply a conflict with the previous non-discriminatory line. 6/

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1/ In a treaty with Finland, ratified on June 14, 1990, Finland refused to grant any type of imputation credit or refund for U.S. shareholders of Finnish corporations. The Finns were willing to give credit only in situations in which their citizens receive reciprocal benefits and given the U.S. classical corporate tax system, no benefit for U.S. investors was given. The Treasury was however able to get a partial concession in the proposed U.S.-German income tax treaty. See "Breezy Ratification Expected For U.S.-Finland Tax Treaty" in Tax Notes, June 11, 1990.

2/ One exception to this rule is the United Kingdom, which allows a refund to foreign direct investors equal to one-half of the imputation benefit which would be available to a U.K. portfolio shareholder.

3/ The Business and Industry Advisory Committee to the OECD (BIAC) urges the OECD to concentrate its efforts in the taxation area more toward the goal of eliminating international double taxation. One of their main concern "arises from the fact that existing imputation systems, generally speaking, either do not deal at all with the problem of economic double taxation at the international level or may indeed add to the problem." See BIAC (1990).

4/ See Joint Committee on Taxation, op. cit., 1990.

5/ The report continues by indicating the potential desirability for some type of international coordination in tax policy. See Joint Committee on Taxation op. cit., p. 62.

6/ For a discussion, see Wrappe (1990).

4. The U.S. investor in an international perspective

The combined effect of worldwide taxation of U.S. residents investing abroad while foreign investors are exempt from taxation on portfolio interest income and capital gains could put a U.S. investor at a disadvantage. During the 1980s, the capital income taxes in the United States and Japan encouraged capital flows to the United States by favoring investment in the United States and by harming the country's relative savings performance. As regards the taxation of savings, for assets located in both countries, a U.S. saver faced a heavier tax burden than a Japanese saver. <sup>1/</sup> While data are not available for other investment combination than the U.S.- Japan case, it seems that the U.S. investor may face a heavier tax burden than many of his international competitors.

There are several different ways to mitigate double taxation of equity capital in general and dividend income in particular. A lower capital gains tax rate would increase the net rate of return on the part which is retained in the corporation while some kind of dividend relief would decrease the overall tax burden on dividends. The corporate tax rate has a major role to play in the taxation of capital income and the net subsidy it provides to debt financing. The decision whether to lower the capital gains tax and/or mitigate the double taxation of dividends or even disallow deductibility of interest payments for the corporate tax should be based on efficiency, administrative and equity considerations. The following section indicates some possible ways to integrate the individual and corporate tax systems.

VI. Integration of Corporate and Individual Taxes

1. Some possible ways of integrating the corporate and the individual taxes

Given the existence of the corporate tax, the tax differential against the distribution of profits could be removed or partially mitigated in several ways. There are four possible ways of achieving a more

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<sup>1/</sup> In 1987, for a debt financed investment in the United States, a Japanese saver faced a net subsidy of 1.7 percentage point in real terms while a U.S. saver faced a subsidy of 0.6 percentage point. For an equity financed investment in the United States, a Japanese saver faced a net real tax wedge of 2 percentage points while a U.S. saver faced a tax wedge of 3 percentage points. For a debt financed investment in Japan, a Japanese investor faced a net real subsidy of 0.3 percentage points while a U.S. investor faced a net real tax of 0.8 percentage points. For an equity financed investment the net tax was 6.5 percentage point for a Japanese investor and 7.8 percentage points for a U.S. investor. See "Tax Incentives and International Capital Flows: The Case of the United States and Japan", by L. Bovenberg et al. (1990).

equal tax burden on distributed and undistributed profits. One approach would be a split-rate system, under which there is one rate of corporation tax on undistributed profits and another and lower rate on distributed profits. Germany is among the countries using this method. 1/ The split-rate system is similar in effect to a deduction for dividends paid (see below).

A second method is a credit system under which all profits are first taxed at a single corporate tax rate and dividends are subsequently endowed with an imputed tax credit which can be set against the liability for direct personal tax. Italy and Canada are among the countries that apply this system. Between 1954 and 1963, U.S. taxpayers were allowed a credit of 4 percent of received dividends after a \$50 exclusion (\$100 for joint returns). 2/ A similar system would be to allow corporations to deduct from their taxable income all or a portion of the dividends they pay out. This system was used in the United States in 1936 and 1937. One of the merits of this system is that it treats dividends like interest payments and all shareholders are treated equally. However, the method has been criticized for encouraging pay-out of earnings and for discouraging internal financing.

A third method is a dividend exclusion which permits individual income taxpayers to exclude all or a portion of their dividends from taxable income. In the United States, between 1964 and 1986 there was an exclusion of \$100 (\$200 for joint returns) per taxpayer. 3/

The fourth method is an "avoir fiscal" system, under which the recipient of cash dividends is once again endowed with an imputed credit (the avoir fiscal) but in which this tax credit is reckoned as a certain fraction of the corporation tax which has been levied on the profits used to pay the cash dividends. 4/ The avoir fiscal system is used in France and Finland among other countries. For a summary of the different methods, see Appendix.

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1/ In 1990, the tax rate on distributed profits is 36 percent and the tax rate on undistributed profits is 50 percent.

2/ The form of credit granted the same relief on a dollar of dividends at all income levels but the value of the credit differed depending on the marginal individual income tax rate. For those subject to a zero rate, the credit was worthless while the percentage of additional tax burden at the individual level removed by the dividend credit increased by income. This regressive pattern of relief led to its repeal. See Pechman (1987).

3/ The exclusion was introduced as a compromise when the 4 percent dividend credit was repealed.

4/ In the imputation system, the tax credit is reckoned as a given imputed rate of tax on the dividends.

A very comprehensive study of tax integration was presented in Canada in 1966, by the Carter Commission. 1/ The Carter proposal includes a technique allowing for "voluntary allocation" by any corporation of earnings to shareholders even if earnings are retained by the corporation and such allocations (though retained) plus earnings actually distributed would be "grossed up" and would carry a shareholder imputation credit for the corporate tax paid.

Former Deputy Assistant Treasury Secretary Eugene Steuerle has an alternative to other forms of integration (called Simplified Integrated Tax (SIT)) which would assess tax once on income earned within a corporation. 2/ The tax rate would equal the top rate applying to individuals or corporations and low-income and nontaxable taxpayers would not benefit from lower rates. Taxes would be withheld at the corporate level and for most taxpayers, withheld taxes would equal final tax liability.

A number of other proposals has surfaced during the years but rather than going into the details of these, it may be valuable to assess the impact that different methods of integration would have on the cost of capital and revenue. Section 7 develops a cost of capital methodology and reports tax wedge calculations for different integration schemes.

## 2. Some of the problems connected with integration

Integration of corporate and individual taxes raises a number of difficult issues. First, it would be inappropriate to assume that all corporations are subject to a 34 percent tax when calculating the credit for the individual taxpayer. All corporations are taxed at a reduced rate on the first \$75,000 of their earnings. Furthermore, the effective tax rate on corporations is less than 34 percent since they are allowed accelerated depreciation for tax purposes and tax on foreign source income may be deferred. Second, as pointed out earlier, the tax treatment of foreign shareholders and tax-exempt institutions could be designed in several ways and is by no means non-controversial. Third, withholding of taxes at the corporate level and credit at the individual level would entail increased administrative complexity.

If not only dividends but also undistributed earnings are taxed at the individual level, the basis of the stock must be written up by the amount of taxed earnings, to prevent double taxation of any subsequent capital gains resulting from the retentions. This would make the tax system more complicated. 3/ If the partnership approach is taken, the data processing requirements could be very substantial, since it would be necessary to report each person who held stock in a given corporation during any part of the year. Other areas of concern are intercorporate

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1/ See Carter Commission (1966).

2/ See Steuerle (1989b), pp. 335-336.

3/ For a discussion, see McLure (1979), p. 148.

dividends and the overall progressivity of the tax system. One has to conclude, however, that the problems of integrating the corporate and individual taxes depend to a large extent on the chosen method. Dividend relief at the corporate level for dividend payments when calculating the corporate tax would be relatively easy to administer. It would be possible only to give relief for dividend payments on new investments thereby avoiding a windfall gain to existing shareholders.

## VII. Cost of Capital Calculations of Some Integration Methods

### 1. The user cost of capital

The present study uses the methodology of effective tax rates derived directly from the parameters of the tax system. <sup>1/</sup> The essential concept used in the estimation of the tax rate on capital income is the tax wedge. The tax wedge provides a measure of the effective tax burden on new investments and it can be explained by defining three rates of return; the required before-tax rate of return on investment,  $p$ , the market return (after corporate taxes),  $r$ , and the after-tax rate of return to the saver,  $s$ . All these returns are measured in real terms. In the case of debt finance, the market return corresponds to the real interest rate, and for equity financing, it amounts to the real return on equity (taking into account dividends and capital gains) before personal taxes. The total tax wedge,  $w$ , can therefore be thought of as consisting of two parts; a corporate tax wedge,  $w_c$ , which equals  $(p-r)$  and a tax wedge at the investor level,  $w_i$ , equal to  $(r-s)$ . When cross-border investments are considered, a more useful separation of the total tax wedge is a host country tax wedge and a home country tax wedge. The host country levies corporate taxes but often also withholding taxes on dividend and interest payments. The home country in turn, taxes these returns, possibly subject to some form of double taxation relief.

The corporate tax wedge is derived from the neoclassical theory of investment behavior, where firms carry out investments until the before-tax rate of return,  $p$ , equals the required real rate of return. <sup>2/</sup> Solving for the before tax rate of return, one obtains:

$$p = \frac{1}{(1-tc)} [(1 - k - tc \cdot z) (\tau + \delta - \pi)] - \delta \quad (1)$$

---

<sup>1/</sup> Earlier work in this field include Fromm (1971), King (1977), and King and Fullerton (1984).

<sup>2/</sup> The expression for  $p$  is derived from the equality between the after-tax marginal benefit and the marginal cost of an investment project:  $(1 - tc) (p + \delta) = (1 - k - tc \cdot z) (\tau - \pi + \delta)$ .

where

tc = statutory corporate tax rate  
k = investment grant  
z = present value of depreciation allowances  
 $\tau$  = nominal discount rate  
 $\delta$  = economic rate of depreciation  
 $\pi$  = rate of inflation  
p = required before-tax real rate of return

In the absence of taxes and grants, the nominal discount rate,  $\tau$ , is simply equal to the market rate of return on the financial asset. In the presence of corporate taxes, the difference between p and the real market rate of return on financial assets, the corporate tax wedge, provides a measure of the burden (or subsidy) of the tax system on investment.

The company's discount rate depends on the source of financing. If an investment is debt financed, debt servicing costs are usually deductible when calculating the corporate tax liability, thereby reducing the company's financing costs and its discount rate. However, under the classical corporate tax system, no relief is given for investments financed by equity capital. <sup>1/</sup> In general, the corporate tax system tends to favor debt financing while capital gains taxation at the investor-level often leads to a favorable tax treatment of the part of an equity financed investment which is retained in the company. The framework used here allows us to incorporate these effects (including the difference in discount rates for different types of financing) and compare tax wedges across modes of financing and for different integration schemes.

Even at the investors' level, the taxation of dividend and interest income can differ. Hence, we need to define two rates of return: one for an equity financed investment and one for a debt financed investment. The real after tax rate of return on a debt financed investment,  $s_d$ , can be expressed as,

$$s_d = (1 - m) \phi (r + \pi) - \pi \quad (2)$$

---

<sup>1/</sup> The discount rate will therefore be higher in this case, and the present value of depreciation allowances, z, will therefore be lower and the user cost of capital correspondingly higher.

where

m = marginal personal tax rate on capital income  
φ = parameter representing relief for corporate taxes  
r = real interest rate  
π = inflation rate

For an equity financed investment the real after tax rate of return,  $s_e$ , is equal to:

$$s_e = \{\alpha(1 - m) \phi + (1 - \alpha)(1 - c)\} \mu - \pi \quad (3)$$

where

α = fraction of real earnings on equity paid as dividends  
μ = nominal return on equity before personal taxes  
c = tax rate on nominal capital gains.

By imposing an arbitrage condition at the investors' level, it is possible to calculate the tax wedges when the investor earns the same after-tax rate of return on a debt financed investment and on an equity financed investment. 1/ The present study imposes this arbitrage assumption, assuming that an investor requires a two percent real net of tax rate of return on both an equity and debt financed investment. 2/

---

1/ Some studies include an exogenous risk premium on equity (see for example Feldstein (1986)). An alternative approach is to directly estimate observed price-earnings ratios on shares (see for example Boadway et al. (1987)). If the arbitrage condition is imposed at the corporate level, resulting in the same net cost for the firm regardless of the source of finance, the investor will typically receive a lower rate of return for an equity financed investment than for a debt financed investment. The user cost of capital is therefore not unaffected by the applied arbitrage assumption.

2/ From the above formulation for the user cost of capital, it is obvious that the concept of effective tax rate is limited in several respects: it only considers explicit taxes on capital income; it ignores quantitative restrictions and nontax policies; it is based on assumptions that tend to make the calculations of cost of capital static; it often does not take into account expected future changes in interest rates and tax rates; and finally, it often abstracts from risks. In most countries, the effective tax rate depends on the type of investment or investor. Some agents are even tax exempt or are able to influence the effective tax rate that they will face by tax planning. The user cost of capital therefore only gives us a broad picture and all results should be interpreted with some caution.

Tax parameters broadly in line with the economic situation in 1987 have been used (see Table 3).

Table 3. Tax Parameters and Some Economic Variables 1/

(In percent)

	1984	1987
Corporate tax rate	49.5	38.3
Individual tax rate		
Dividend income	39.6	32.0
Interest income	25.8	22.4
Capital gains (accrual)	5.9	11.0
Assets life in years (machinery)	4.6 <u>2/</u>	6.0 <u>3/</u>
Dividend-payout ratio	56.7	78.2
Inflation rate	6.2	5.3
Interest rate (endogenous)	12.5	9.4
Net of tax real rate of return (exogenous)	2.0	2.0

1/ The tax rates include an estimate of state and local taxes.

2/ Assuming that 150 percent declining balance has been used for tax depreciation purposes and as first year convention, half a year's deduction.

3/ Assuming double declining balance has been used for tax depreciation purposes and as first year convention, half a year's deduction.

## 2. Cost of capital in the United States and the Tax Reform Act of 1986

By using the methodology described above, it is possible to make an overall assessment whether the Tax Reform Act of 1986 on average increased or decreased the incentives for a specific kind of financing. The U.S. corporate tax system favors debt financing over equity financing since interest payments are deductible for the corporate tax while dividend payments are not. In 1984, the total tax wedge for a debt financed investment was highly negative, i.e. the tax system provided a subsidy to debt financing of more than 3 percentage points in real terms. An equity financed investment faced a positive tax burden and the total tax wedge was almost 2.5 percentage points. The Tax Reform Act of 1986 increased the tax burden on both an equity financed investment and on a debt financed investment. The subsidy to a debt financed investment was reduced to less than 1 percentage point while the total

tax wedge on an equity financed investment increased by more than 1 percentage point to 4.5 percentage points (see Chart 7).

The tax rates used in the calculations are average marginal tax rates and the effect of the tax reform may very well have been different for different investors. The general picture is however, that the increase in the capital gains tax rate largely offset the lower tax rate on dividends and the lower corporate tax rate reduced the subsidy to debt financing. The tax reform does not seem to have reduced the incentives for debt finance and if anything, it increased the relative incentive for debt financing. The inherent bias against equity financing therefore remains but there are several possible options to mitigate the effect. These options are discussed in the next section.

3. The effect on cost of capital of different integration schemes <sup>1/</sup>

a. A lower capital gains tax rate

As mentioned earlier, a number of possibilities exists for lowering the effective tax on equity capital and/or to decrease the bias in favor of debt financing in the present tax system. One proposal which has been widely debated in the last couple of years is a lower capital gains tax rate. In the 1991 U.S. budget, the argument in favor of a lower capital gains tax rate is that "Lowering the tax rate on capital gains would lower the cost of capital in vital areas of investment activity." <sup>2/</sup> However, a lower capital gains tax would only influence the part of an equity financed investment which is retained in the corporate sector. <sup>3/</sup> No doubt a lower capital gains tax rate would influence dividend policies in the corporate sector and a larger share of return on equity capital than today might well be received in the form of capital gains. A reduction in the capital gains tax rate to its 1984 level would reduce the total tax wedge on an equity financed investment from 3.3 percentage points to 2.8 percentage points (see Table 4). If we assume that a larger share will be received in the form of capital gains if the capital gains tax rate is reduced, the result is a further decrease in the total tax wedge to 2.5 percentage points. <sup>4/</sup> Although these changes are significant, the overall effect on tax wedges is rather limited. <sup>5/</sup>

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<sup>1/</sup> The comparisons described in this section are not revenue neutral, in the sense that increases (decreases) in some taxes are not compensated by corresponding decreases (increases) elsewhere.

<sup>2/</sup> See Budget of the United States Government, Fiscal Year 1991, U.S. G.P.O., p. 47.

<sup>3/</sup> A lower capital gains tax rate would have a number of other consequences for tax administration, tax arbitrage and efficiency aspects as well. For a discussion of these aspects, see Andersson (1989).

<sup>4/</sup> It is assumed that the dividend-payout ratio returns to its level of 1984.

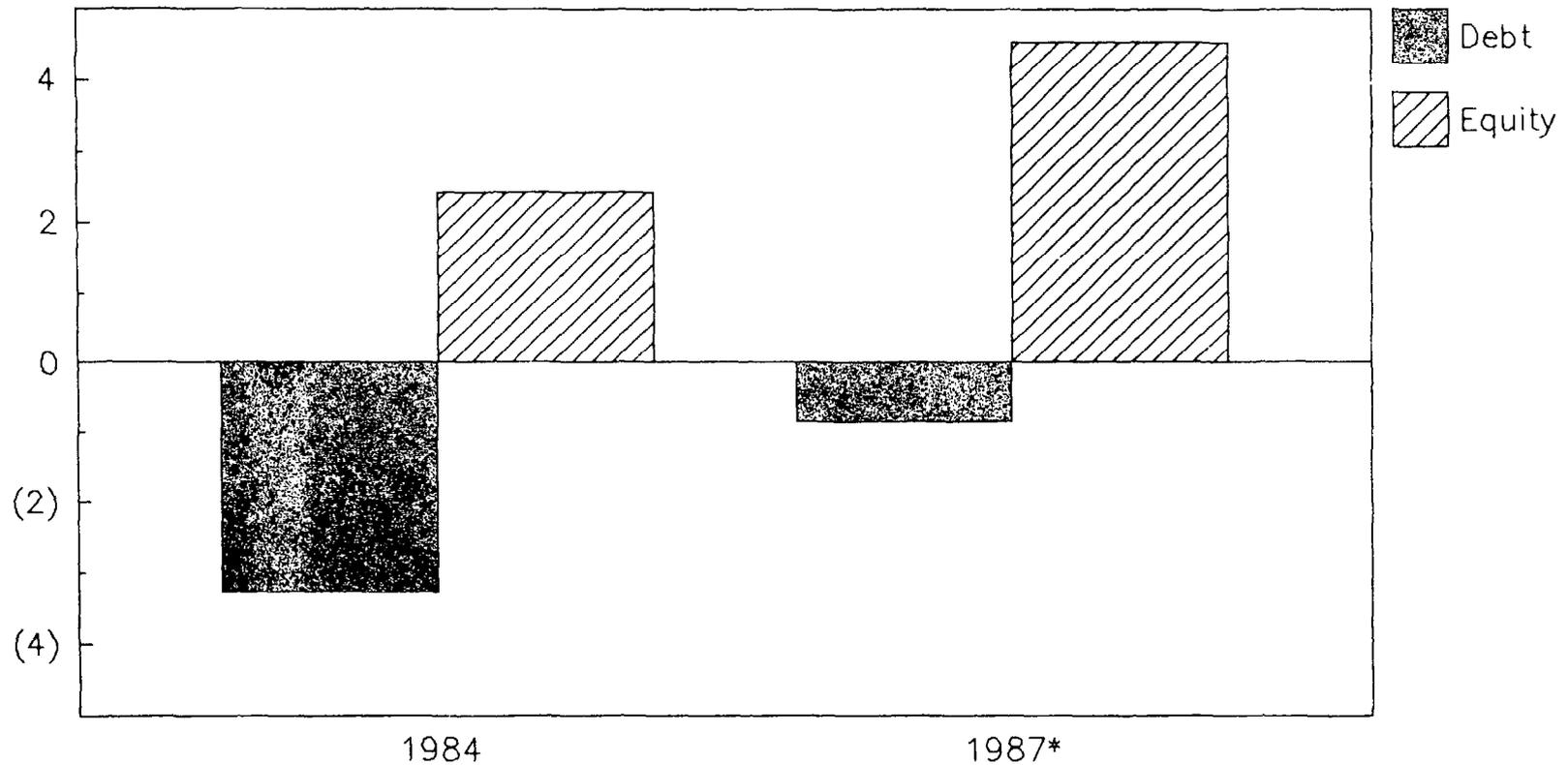
<sup>5/</sup> The overall economic effect may be larger since a lower capital gains tax rate may promote more entrepreneurial activities.

CHART 7

# TOTAL TAX WEDGES IN THE UNITED STATES

(Percentage points in real terms)

Percentage points



\* Assuming unchanged economic environment from 1984.



Table 4. The Effects of Different Tax Changes on the User Cost of Capital

	1987		No Integration But Reduced Capital-Gains Tax; 1987		No Integration But Reduced Capital-Gains Tax; 1984		Full Integration		Full Integration and Reduced Capital Gains Tax to 1984 Level		Full Inte- gration and no Capital Gains Tax		No Deductibility of Interest Pay- ments but Full Integration of Interest and Dividends	
	Debt	Equity	Debt	Equity	Debt	Equity	Debt	Equity	Debt	Equity	Debt	Equity	Debt	Equity
	Payout Ratio		Payout Ratio		Payout Ratio		Payout Ratio		Payout Ratio		Payout Ratio		Payout Ratio	
Total tax wedge	-0.46	3.33	-0.46	2.80	-0.46	2.53	-0.46	1.94	-0.46	1.59	-0.46	1.19	0.87	1.94
Corporate tax wedge	-2.57	1.77	-2.57	1.66	-2.57	1.61	-2.57	1.49	-2.57	1.42	-2.57	1.34	1.28	1.49
Personal tax wedge	2.11	1.56	2.11	1.14	2.11	0.92	2.11	0.45	2.11	0.17	2.11	-0.15	-0.41	0.45
Change in total tax wedge from 1987	—	—	—	-0.53	—	-0.80	—	-1.39	—	-1.74	—	-2.14	1.33	-1.39
User cost of capital	14.04	17.83	14.04	17.30	14.04	17.02	14.04	16.44	14.04	16.09	14.04	15.70	15.37	16.44
Difference in user cost of capital between debt and equity	-3.79		-3.26		-2.98		-2.40		-2.05		-1.66		-1.07	
Return after all taxes, s (in real terms)	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00

b. Full integration for dividend payments (imputation)

By grossing-up dividend payments and allowing full credit for the corporate tax, the double taxation of dividends can be eliminated. There will still be a difference between debt and equity financing since interest payments are deductible for the corporate tax while dividend payments are not. By taxing dividend income only once, the total tax wedge for an equity financed investment would decrease from 3.3 percentage points in 1987 to 1.9 percentage points (see Table 4 and Chart 8). One of the reasons why imputation seems to have a larger impact on the total tax wedge than a lower capital gains tax rate would have is the relatively high dividend-payout ratio in the United States. This ratio could increase further if imputation was introduced and the total tax wedge could thereby decrease further. Imputation has no direct effect on the part of the return which is received in the form of capital gains. If imputation was combined with the capital gains tax rate of 1984, the total tax wedge would be 1.6 percentage points. If imputation is introduced and the capital gains tax is abolished, the tax wedge would be reduced to less than 1.2 percentage points.

c. No deductibility of interest payments for the corporate tax and single taxation at the corporate level of both dividend and interest payments

From the above calculations, it is clear that the difference between debt and equity financing would largely remain intact if interest payments continue to be deductible while return to equity capital is not. If the deductibility of interest payments were disallowed at the corporate level, the cost of capital in the United States would increase. In such a case, there would be a trade off between the adverse effect this might have on the total volume of investments and the decreased distortions in corporations' financing decisions. One possible solution would be to let corporations withhold taxes on both interest and dividend payments and to allow full credit at the individual level for these taxes. Another possibility would be to simply tax all income once at the corporate level.

If interest income and dividend income are withheld at the corporate level and if the investor receives a full credit at the individual level, the total tax wedge for a debt financed investment would go from a subsidy of half a percentage point in 1987 to a tax wedge of 0.9 percentage points. Debt and equity capital would still not face an equal tax burden since the average marginal tax rate for interest income is 22 percent while that for dividend income is 32 percent. <sup>1/</sup> Furthermore, part of the return on an equity financed investment is in the form of capital gains and this part does not receive any mitigation of the

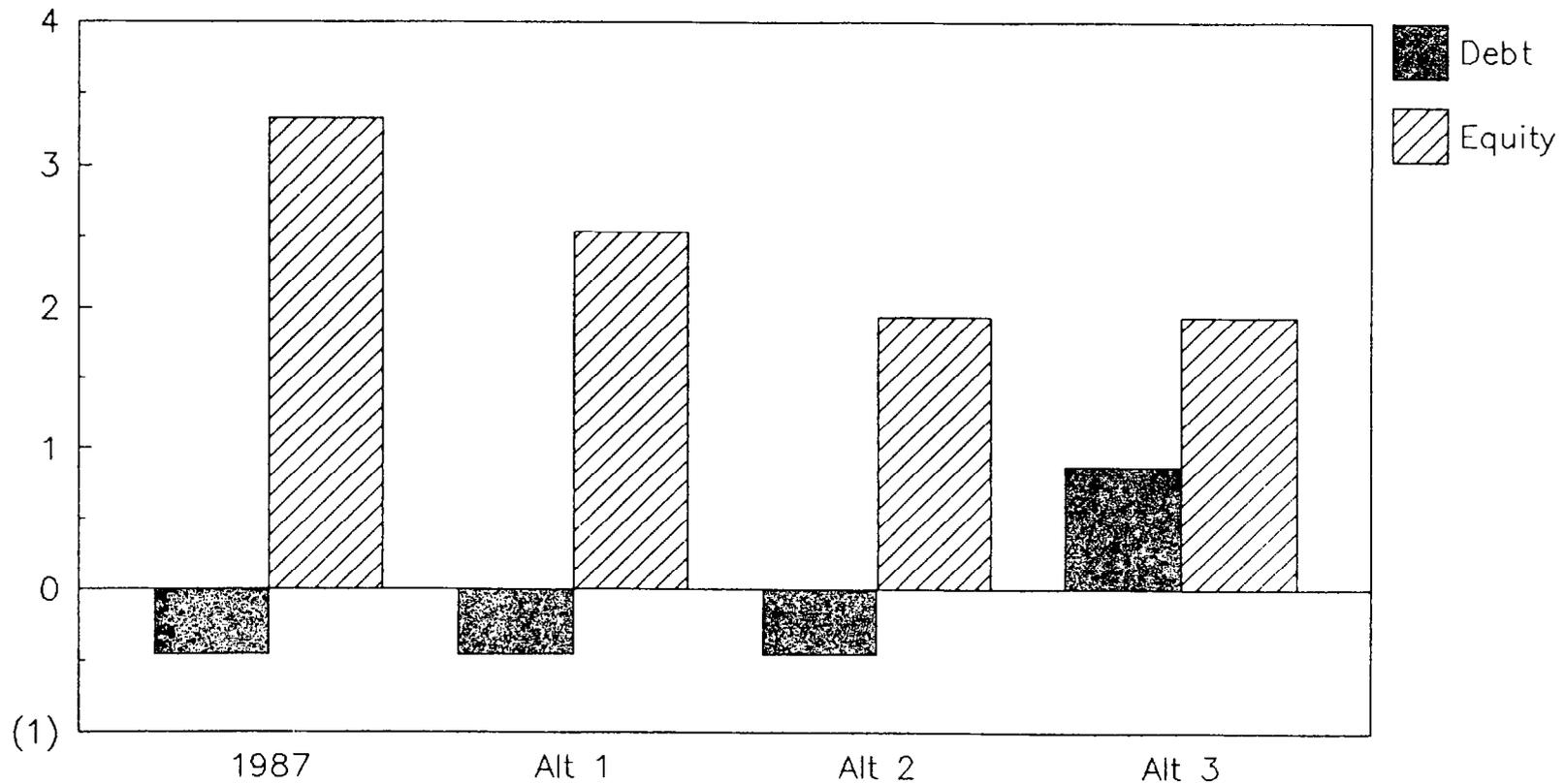
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<sup>1/</sup> Although the average marginal tax rate is higher for dividend income than for interest income, the tax rate for any particular investor would be the same for the two types of income.

CHART 8

# TOTAL TAX WEDGES IN THE UNITED STATES FOR DIFFERENT INTEGRATION SCHEMES (Percentage points in real terms)

Percentage points



Alt 1 = Lower capital gains tax rate  
Alt 2 = Dividend relief, full credit for corp. t

Alt 3 = No deduction for interest payments for corp. tax (single taxation of both dividends and interest payments)



double taxation (although the effective tax rate is lower than for dividend income). An alternative would be to tax both dividend and interest income once at the corporate level. In this case, the total tax wedge for a debt financed investment would increase further since the corporate tax is higher than the individual tax on interest income.

The cost of capital is however only one relevant aspect when evaluating the effects of integration. Other relevant considerations include the tax treatment for households compared for instance to tax exempt investors or foreigners, the possible effect on tax revenues and the effect on private savings. These issues are the topics for the following section.

#### VIII. Some Possible Implications of Tax Integration

##### 1. Effects on the net rate of return for different investors

It may be useful to first look at the situation facing different investors with the present tax system. Table 5 shows the after-tax income for different financing methods when the pre-tax corporate profit is \$100. An investor in the top tax bracket (therefore having the highest marginal tax rate) would receive \$72 dollars on a debt financed investment while only \$59.4 dollars if the earnings are retained (which translates into capital gains) and \$47.5 dollars if the profit is paid out in dividends. A tax exempt investor would receive the same return, \$66, whether the earnings are retained or paid out in dividends while the net return on a debt financed investment would be \$100.

Table 5. Net Return for An Investor in the Top Bracket and a Tax-Exempt Investor, 1990

	Debt	Equity	
		100 Percent Retained	100 Percent Payout
<u>I. An Investor in the Top Bracket</u>			
Pre-tax corporate profits	100.00	100.00	100.00
Corporate taxes	--	34.00	34.00
Investor taxes			
Interest/dividends	28.00	--	18.48
Capital gains	--	6.60	--
After-tax income	72.00	59.40	47.52
<u>II. A Tax Exempt Investor</u>			
Pre-tax corporate profits	100.00	100.00	100.00
Corporate taxes	--	34.00	34.00
Investor taxes			
Interest/dividends	--	--	--
Capital gains	--	--	--
After-tax income	100.00	66.00	66.00

Return on dividends would increase from \$47 to \$72 dollars and would be the same as for return on a debt financed investment if imputation is introduced. A tax exempt investor would be fully reimbursed for the corporate tax and would therefore receive the same return on dividend payments as on interest payments (see Table 6).

Table 6. Net Return for An Investor in the Top Bracket and a Tax-Exempt Investor, With Full Imputation for Dividends

	Debt	Equity	
		100 Percent Retained	100 Percent Payout
<u>I. An Investor in the Top Bracket</u>			
Pre-tax corporate profits	100.00	100.00	100.00
Corporate taxes	28.00	34.00	34.00
Investor taxes			
Interest/dividends	--	--	28.00
Capital gains	--	6.60	--
Double taxation relief	--	--	34.00
After-tax income	72.00	59.40	72.00
<u>II. A Tax Exempt Investor</u>			
Pre-tax corporate profits	100.00	100.00	100.00
Corporate taxes	--	34.00	34.00
Investor taxes			
Interest/dividends	--	--	--
Capital gains	--	--	--
Double taxation relief	--	--	34.00
After-tax income	100.00	66.00	100.00

The effects on the net rate of return for an investor in the top bracket of no deductibility of interest payments for the corporate tax and taxation once at the corporate level without refund at the investors level would be that both dividends and interest payments would yield the same return, both for an investor in the top bracket and for a tax exempt investor. The return on interest payments would decrease from \$72 to \$66 and the tax exempt investor would be worse off than with the present system for interest payments (see Table 7).

Table 7. Net Return for an Investor in the Top Bracket and a Tax-Exempt Investor, With Single Taxation of Both Dividends and Interest Payments at the Corporate Level

	Debt	Equity	
		100 Percent Retained	100 Percent Payout
<u>I. An Investor in the Top Bracket</u>			
Pre-tax corporate profits	100.00	100.00	100.00
Corporate taxes	34.00	34.00	34.00
Investor taxes			
Interest/dividends	--	--	--
Capital gains	--	6.60	--
Double taxation relief	--	--	--
After-tax income	66.00	59.40	66.00
<u>II. A Tax Exempt Investor</u>			
Pre-tax corporate profits	100.00	100.00	100.00
Corporate taxes	34.00	34.00	34.00
Investor taxes			
Interest/dividends	--	--	--
Capital gains	--	--	--
Double taxation relief	--	--	--
After-tax income	66.00	66.00	66.00

If interest payments are no longer deductible when the corporate tax is calculated and if all returns are taxed once at the individual level rather than at the corporate level, the return on dividends and interest payments would still be equal for an investor in the top bracket but the return would be higher than with taxation at the corporate level since the corporate tax rate exceeds the individual tax rate. The full refund would in particular benefit a tax exempt investor who would receive the full pre-tax return on both dividends and interest income. This kind of tax treatment would yield the same net result as a system with full imputation for dividend payments.

Table 8. Net Return for an Investor in the Top Bracket and a Tax-Exempt Investor, With Full Imputation for Both Dividends and Interest Payments

	Debt	Equity	
		100 Percent Retained	100 Percent Payout
<u>I. An Investor in the Top Bracket</u>			
Pre-tax corporate profits	100.00	100.00	100.00
Corporate taxes	34.00	34.00	34.00
Investor taxes			
Interest/dividends	28.00	--	28.00
Capital gains	--	6.60	--
Double taxation relief	34.00	--	34.00
After-tax income	72.00	59.40	72.00
<u>II. A Tax Exempt Investor</u>			
Pre-tax corporate profits	100.00	100.00	100.00
Corporate taxes	34.00	34.00	34.00
Investor taxes			
Interest/dividends	--	--	--
Capital gains	--	--	--
Double taxation relief	34.00	--	34.00
After-tax income	100.00	66.00	100.00

The tax treatment of foreigners is in many ways similar to that of a tax exempt investor. As mentioned before, certain withholding taxes apply but a foreign portfolio investor may escape capital gains taxation. Tables 7 and 8 indicate how extending imputation benefits to a foreign investor affects his net returns. The difference in return is substantial and is likely to have a significant impact on the level of foreigners' investments in the United States.

2. Effects on tax revenues

Estimation of the revenue impact of introducing some kind of integration between corporate and individual taxes is very difficult. Not only would the change to the tax code be substantial but the induced change in behavior could also be large. Even in a static sense, the calculations are very uncertain and the numbers presented below should merely be seen as very preliminary indications of the possible order of magnitude of revenue implications.

Dividends that could be eligible for double taxation relief amounted to some \$100 billion in 1989. If the average corporate and individual tax rates are used, an estimate of the revenue implications of eliminating the double taxation of dividends can be obtained (see Table 9).

Table 9. Revenue Implications of Elimination of the Double Taxation of Dividends

(Billion of dollars)

	Total Tax <u>1/</u>	Federal Tax
Dividends paid out	100.00	100.00
Corporate tax rate (percent)	38	34
Individual tax rate on dividends (percent)	32	28
Profits before dividends	162.07	151.52
Corporate taxes	62.07	51.52
Taxes on dividends	32.00	28.00
Total tax revenues	94.07	79.52
Tax revenues with integration	51.86	42.43
Revenue loss	42.21	37.09

1/ Federal, state, and local.

The revenue loss could be in the range of \$35 to \$45 billion. 1/ A central issue is the classification of dividend and interest payments and the tax situation of the recipients both today and at the time when integration is in place. The choice of the integration scheme would of course be crucial for the revenue impact. If interest payments no longer are deductible for the corporate tax and both interest payments and dividend payments are taxed once at the corporate level, the increase in corporate tax revenues roughly offsets the revenue loss from eliminating the double taxation of dividends (see Tables 10 and 11).

1/ There are few revenue estimates available but J. Kwall reports that "Existing revenue estimates suggest that even a limited integration plan would cost the Government more than \$30 billion." See Kwall (1990).

Table 10. Revenue Implications of Taxing Both Dividends  
and Interest Once at the Corporate Level 1/

(Billion dollars)

	1990	Integration	"Dynamic"
Dividends paid out	100.00	100.00	150.00
Interest payments	150.00	150.00	100.00
Corporate tax rate (percent)	34	34	34
Individual tax rate on			
dividends (percent)	28	28	28
interest (percent)	15	15	15
Dividend taxes:			
Profits before dividends	151.52	151.52	227.27
Taxes on dividends (corporate)	51.52	51.52	77.27
Taxes on dividends (personal)	28.00	--	--
Total tax revenues	79.52	51.52	77.27
Change in revenue from dividends		-28.00	-2.24
Taxes on interest:			
Profits before interest	150.00	150.00	100.00
Taxes on interest (corporate)	--	51.00	34.00
Taxes on interest (personal)	22.50	--	--
Total tax revenues	22.50	51.00	34.00
Change in revenue from interest		28.50	11.50
Total change in revenue		0.50	9.26

1/ Federal tax.

If so called "dynamic" changes are considered, i.e. by assuming that more is paid out in dividends and less in interest payments, such a proposal might even raise revenue. The increase in revenue could, however, have severe effects on the overall level of investment, since the cost of capital in the United States would increase (see above), and not allowing any credit for the taxation of interest payments for tax exempt investors like pension funds could have a significant impact on their ability to meet pension obligations. Table 11 examines the revenue impact if

pension funds were to receive a refund for the corporate tax paid on interest payments. 1/

Table 11. Revenue Implications of Taxing Both Dividends and Interest Once at the Corporate Level and Pension Funds are Reimbursed 1/

(Billion dollars)

	1990	Integration	"Dynamic"
Dividends paid out	100.00	100.00	150.00
Interest payments	150.00	150.00	100.00
Corporate tax rate (percent)	34	34	34
Individual tax rate on			
dividends (percent)	28	28	28
interest (percent)	15	15	15
Dividend taxes:			
Profits before dividends	151.52	151.52	227.27
Taxes on dividends (corporate)	51.52	51.52	77.27
Taxes on dividends (personal)	28.00	--	--
Total tax revenues	79.52	51.52	77.27
Change in revenue from dividends		-28.00	-2.24
Taxes on interest:			
Profits before interest	150.00	150.00	100.00
Taxes on interest (corporate)	--	51.00	34.00
Taxes on interest (personal)	22.50	-17.00	11.33
Total tax revenues	22.50	34.00	22.67
Change in revenue from interest		11.50	0.67
Total change in revenue		-16.50	-1.57

1/ Federal tax.

With this kind of refund policy, integration of both interest payments and dividend payments would result in a revenue loss of up to \$20 billion. However, if the elimination of double taxation of dividends were to result in more dividend payments and less interest payments, the

1/ It is assumed that approximately one third of all interest payments is received by pension funds or institutions which may be eligible for a tax refund.

change in revenue could be very small. As with all changes of the tax code, the immediate revenue impact is important but the overall effect on the efficiency of the economy may be more important.

### 3. Effects on savings and international allocation of capital

Given that there are several possible alternatives for integrating corporate and individual taxes, the effect on private savings is uncertain. Those in favor of integration argue that the economy would benefit in several ways if corporate and individual taxes were integrated: 1/ the allocation of resources between the corporate and non-corporate sectors would improve, tax induced distortions in savings would, to the extent the rate of return on capital decreased, be reduced and the bias toward debt financing would be reduced.

To evaluate the effects on savings and international capital flows, quantitative methods like computable general equilibrium models are helpful tools. Fullerton *et al.* present estimates of static and dynamic general equilibrium resource allocation effects of four alternative plans for corporate and personal income tax integration in the United States. 2/ They found that total integration of personal and corporate taxes would yield an annual static gain in 1973 dollars of around \$6 billion. The dynamic effects are larger and the present value of the efficiency gain could be as high as \$500 billion or about 1.0 percent of the discounted present value of the GNP stream to the U.S. economy.

It is sometimes argued that since full integration would lower the effective tax rate on equity capital, it would lead to more saving. From a theoretical point of view, the volume of saving may increase, decrease, or stay the same when the tax on capital decreases. Even if the total volume of savings would stay the same, there would be a reallocation between debt and equity instruments as well as between dividends and retained earnings. If debt no longer receives preferential tax treatment, more investments will be financed through equity capital. The incentives to retain earnings would decrease but since the dividend-payout ratio already is very high in a historical perspective, the effect is likely to be relatively small. Corporate savings in the form of retained earnings may however decrease. The overall effect on personal and corporate savings is uncertain. Provided that several distortions in the corporate financing decision would be reduced, integration of corporate and individual taxes could have a positive effect on the U.S. saving-investment balance. Other distortions, like the favorable tax treatment of investment in housing, are however likely to remain and even with integration, there would be a need for further adjustments of the tax code.

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1/ See for instance Feldstein and Frisch (1977).

2/ See Fullerton *et al.* (1981).

Since the final effect of integration on the tax situation for foreigners depends on the chosen integration scheme, it is impossible to draw a general conclusion about the impact of integration on foreign investment in the United States. However, given that a foreign portfolio investor has a relatively favorable source tax situation today in the United States, it is possible that foreigners would face higher taxes. The tax distortion between different domestic and foreign investors may therefore decrease.

The international implications of eliminating the deductibility of interest payments for the corporate tax could be far-reaching. Multi-national corporations may seek to reallocate the debt portfolio to other countries where interest payments are still deductible. This could affect the tax base of other countries and could call for closer international cooperation and tax coordination. <sup>1/</sup> The whole area of withholding taxes on foreign investments and the tax treatment of cross-border investments is receiving more and more attention. The renewed debate on tax integration in the United States could be seen as a part of a more general revision in many countries of their tax treatment of different sources of finance, including foreign sources.

#### IX. Conclusion

The separate federal taxation of corporations and individuals influences both corporate financial structure and investment decisions and leads to distortions and non-neutralities in several important respects. At the international level, U.S. investors may be placed at a disadvantage compared with those from other countries in which some of these non-neutralities are mitigated, and the significance of this disadvantage may be increasing over time both because of the trend toward internationalization of financial markets and because of recent financial innovations. The international aspects appear to be among the causes for the comprehensive study being undertaken by the U.S. Administration.

On the domestic side, separate taxation of personal and corporate income results in double taxation of equity income (both dividends and realized capital gains). Furthermore, the deductibility of interest payments and lack of deductibility of dividends imply that the tax system encourages debt financing. Combined with recent financial innovations, this phenomenon may have contributed to the rise in corporate leverage in the 1980s. Another important effect from separate tax treatment of corporate and personal income is on the choice of legal

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<sup>1/</sup> The United States and many other countries impose restrictions on the deductibility of "excess interest expenses." See Revenue Reconciliation Act of 1989 (H.R. 3299), Text of Conference Bill as released on November 21, 1989, pp. 63-71 and Section 163 of the Internal Revenue Code.

from of business organization (partnership versus corporation). In sum, this separate tax treatment potentially distorts decisions concerning debt versus equity financing, retention versus distribution of corporate profits, and legal form of business organization in addition to its effects in the international sphere.

Integration of corporate and individual taxation, by eliminating or ameliorating the various non-neutralities discussed above would lead to efficiency gains, the magnitude of which could be large according to some studies. Analysis of the possible effects of tax integration of course needs to consider various factors including capital gains taxation, personal and corporate taxation, the different tax treatment of corporate and noncorporate entities, and of different types of investment.

According to the results presented here, the total tax wedge for an equity financed investment could be reduced substantially (from over 3.3 percentage points in real terms today to 1.9 percentage points) if double taxation of dividends were eliminated. If the capital gains tax rate in addition were lowered to its pre-1986 tax reform level, the total tax wedge would decrease further (to 1.6 percentage points). However, in order to address the tax non-neutrality between debt and equity financed investments, interest payments and dividend payments would need to have a similar corporate tax treatment. By eliminating the deductibility of interest payments at the corporate level, the tax burden on debt and equity financed investment could be made more equal. The effects of the resulting increase in cost of capital on debt financed investment would have to be weighed against the efficiency gains arising from reducing the tax distortion of the financing decision in the corporate sector.

While integration is likely to lead to a decrease in tax revenues in the short run if the rate structure were left unchanged, the tax system's effect on revenue is but one aspect and issues of economic efficiency may be just as important. Moreover, there would be ways to structure tax integration that would mitigate the size of the revenue loss.

Two other issues to be taken into account in assessing proposals for tax integration are the desirability of maintaining stability in the tax code, and the desire for administrative simplicity. Given that the "rules of the game" were changed in a major way in the 1986 tax reform, careful consideration would need to be given before further substantial changes to the tax code are introduced. Finally, while it is not an issue addressed in this paper, the undoubted efficiency gains accruing from tax integration would also have to be weighed against possible administrative difficulties, which could be severe, depending on the chosen method of integration.

Different Corporate Tax Systems and Integration Schemes

The different corporate tax systems can be summarized by comparing the cash put to reserve, RE, after tax payment and dividend payments.

1. The classical system

$$RE = \pi - t\pi - DIV$$

where  $\pi$  is before tax profits,  $t$  the corporate tax rate and DIV equals dividends paid.

2. The two-rate system

$$RE = \pi - tr(\pi - DIV) - td \cdot DIV - DIV$$

where  $tr$  is the tax rate for undistributed profits and  $td$  is the tax rate for distributed profits.

3. The imputation system

$$RE = \pi - (t\pi - w \cdot DIV) - DIV$$

where  $t$  is the corporate tax rate and  $w \cdot DIV$  is advance corporation tax.

4. The dividend exclusion

$$RE = \pi - t\pi - DIV$$

i.e., the same as for the classical system but unlike the classical system, no further taxation takes place at the individual level.

5. The avoir fiscal system

$$RE = \pi - t\pi - (DIV - A)$$

where  $A$  is equal to a tax credit or avoir fiscal expressed as a fraction of the corporation tax which has been charged on the profits underlying the cash dividend.  $(DIV - A)$  is the cash dividend and  $(DIV - A)/(1-t)$  is the pre-tax underlying the cash dividend, so that the corporation tax incurred in respect to the dividend equals  $[(t/(1-t))[D-A]$ . A portion,  $\alpha$ , is credited to the personal shareholder, i.e the avoir fiscal,  $A$ , equals  $[\alpha t/(1-t)][D-A]$ . <sup>1/</sup>

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<sup>1/</sup> See Meade (1978).

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