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Reforming Dutch capital taxation: An analysis of incentives to save and invest

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1. Introduction

An important component of the recent plans to reform the Dutch tax system in 2001 is the modification in the taxation of capital. This paper explores how these plans affect effective tax wedges on saving and investment. It distinguishes between various forms of saving and investment and covers the entire tax wedge between the pre-tax return and the posttax return. This paper deals only with incentives on saving and investment decisions that originate in the tax system. Other factors that affect these decisions will be ignored.

Section 2 explains the methodology. Subsequently, section 3 assesses the impact of the present Dutch system of capital taxation on saving and investment incentives. The tax reform, as decided upon by the government that took office in August 1998, is discussed in section 4 and section 5 evaluates the effects of this reform. Section 6 summarizes the main conclusions.

2. Methodology

2.1 The forms of savings and investments

King and Fullerton (KF) calculated the tax wedge on corporate investments. In doing so, they distinguished three sub-categories for each of four characteristics, thereby identifying eighty-one (3^4) combinations of hypothetical projects. The characteristics were the assets in which the corporation invests (machinery, buildings or inventories), the relevant industry (manufacturing, other industry or commerce), the way the project is financed (debt, new share issues or retained earnings) and the ultimate saver or supplier of capital (households, tax exempt institutions or insurance companies). Household savings include also indirect household ownership through financial intermediaries like banks and mutual funds. Tax-exempt institutions comprise mainly pension funds and the pension business of life insurance companies. The third category principally consists of life insurance policies that are taxed at special rates.

This paper diverges from KF by both adding and omitting combinations explored by KF. Table 1 displays the various categories we distinguish. In particular, the calculations are not restricted to corporations but apply also to investments by unincorporated businesses (the self-employed) and investments in owner-occupied dwellings. Furthermore, it accounts for the special tax treatment of manager/shareholders, who are managing directors of a corporation in which they own a stake of 5 % or more of the

equity.[1] Finally, unlike KF, we include investments in intangible assets, like research and development, marketing and company training. These expenditures typically benefit from immediate depreciation.

Table 1 Relevant distinctions

Assets	*Legal form*	*Source of finance*	*Ownership*
Machinery and equipment	*Corporations* *- conventional shareholders* *- manager/ shareholders*	*Debt*	*Households* *- traditional strategy (3 types)* *- innovative strategy (3 types)*
Buildings	*Unincorporated businesses (self-employed)*	*Equity (for corporations to be divided in new share issues and retained earnings)*	*Tax-exempt institutions* *- life insurance policies* *- pension savings*
Intangible assets	*Owner-occupied dwellings*		

The Dutch tax system does not discriminate between industries. Accordingly, we diverge from KF by not differentiating between industries. We exclude also inventory investments. A final difference with KF involves the classification of ownership. The third category of KF (life insurance policies that are taxed at special rates) will not be considered because this legal structure does not exist in the Netherlands. However, we will differentiate between two kinds of saving within the tax exempt category because the Dutch tax system allows for two distinct types of tax favored saving. The first type is saving in the legal form of a life insurance policy. In this form, both the returns to the tax-exempt institution and the ultimate payment to the household are untaxed. The second form applies to pension saving: pension contributions are deductible from the personal income tax, the returns are not taxed immediately, while the resulting pension

[1] To distinguish other shareholders from manager/shareholders, we call the first group *conventional* shareholders.

benefits are subject to income tax. Unlike KF, we will distinguish between six types of households. In particular, we separately analyze households subject to low, average and high marginal rates for income and wealth taxation. Within each of these three categories, we distinguish between households with two investment strategies: those who invest in traditional ways and those who invest in innovative ways. Traditional investors invest directly in debt claims and thus pay the personal tax rate over interest income.[2] Innovative investors, in contrast, let interest income accrue to a so-called capital growth fund, in which they hold shares. In this way, these investors transform interest income into capital gains, which are untaxed at the personal level. With the capital growth fund being subject to the corporate tax rate, the innovative investors reduce the effective tax rate on interest income from the personal tax rate to the corporate tax rate.

2.2 An outline of the methodology

Like KF's method, our methodology focuses on *marginal* investment projects. The taxation of marginal projects offers the best indication of the impact of the tax system on saving and investment incentives.

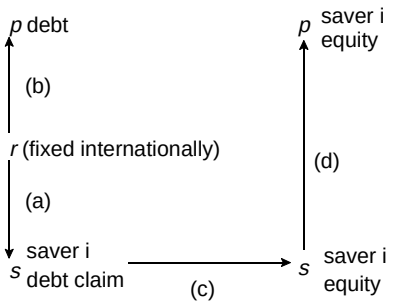
Our methodology, which KF call the fixed-*r* approach, is based on two further major assumptions, viz., first, a fixed and exogenous real interest rate and, second, arbitrage between various assets on the level of the saver (i.e. the capital supplier). Table 2 summarizes the methodology, which is explained in the rest of this subsection.

A fixed real interest rate

The first main assumption is that the real interest rate in the small and open Dutch economy is fully determined by the international capital market. Accordingly, the real interest rate on all interest bearing assets and liabilities is fixed and is thus not affected by the Dutch tax system. The calculations in this paper assume a real interest rate (r) of 4% and an inflation rate of 2%. The nominal interest rate (i) is thus fixed at 6%.

[2] *Traditional* investors are thus a different category than *conventional* investors. In particular, traditional (versus innovative) investors are distinguished by whether they invest directly in debt claims or indirectly through the intermediation of capital growth funds. Conventional investors (versus manager/shareholders) are classified by their ownership stake in a corporation.

Table 2 The basic methodology



(a): depends on the tax treatment of the saver

(b): depends on the tax treatment of the borrower and the asset involved

(c): involves an equality due to arbitrage

(d): depends on the tax treatment of the saver, the source of finance and the asset involved

For *debt financed investments*, the required pre-tax real rate of return on a marginal project (p) must equal its tax-inclusive financing costs (i.e. the cost of capital). The cost of capital depends on the fixed real interest rate, the marginal tax rate of the borrower and the type of asset (because tax depreciation and other tax allowances can differ across assets). The fixed-r assumption implies that the taxation of Dutch capital suppliers does not affect the cost of capital for debt financed investments.

Interest payments are tax deductible at the level of the borrower. The legal form of the borrower determines the tax rate at which these interest payments can be deducted. In case of corporate investments, this rate is the corporate tax rate (35%). In case of investments by the self-employed or in owner-occupied dwellings, it is the marginal personal income tax rate of the borrowing individual. This tax rate would not affect the cost of capital if inflation would be zero and tax depreciation would correspond to economic depreciation. In that case, the cost of capital would equal the real interest rate on world capital markets. However, in the presence of inflation, the nominal (rather than real) deductibility of interest payments implies a subsidy for the borrower so that the cost of capital is below the real interest rate. This subsidy increases with inflation and the tax rate at which the nominal interest payments can be deducted.

Another factor that causes the cost of capital to deviate from the world real interest rate is a difference between tax depreciation and economic depreciation. Tax law generally allows assets to be depreciated more quickly than economic depreciation. This raises the present value of the project and pushes the cost of capital below the real interest rate. Other tax allowances would increase this effective subsidy further. However, tax depreciation allowances are generally defined in nominal terms, causing inflation to erode their real present value. This latter factor raises the cost of capital.

The fixed real interest rate assumption implies also that the *after-tax real rate of return* (*s*) on interest bearing assets depends solely on the taxation of the saver. In the present tax system, households pay income and wealth taxes. In most cases, therefore, the after-tax yield is lower than the interest rate. This is not the case, however, if household savings are deposited at tax exempt institutions, such as pension funds and insurance companies.

Two types of tax favored savings exist in the Netherlands. In the first type, the contributions are not deductible from the income tax while withdrawals are not taxed. Moreover, the returns are tax exempt. Accordingly, the return to the saver equals the return on the capital market. In the second variant, (pension) contributions are deductible from the personal income tax while the resulting withdrawals (the pension benefits) are subject to the personal income tax. As people aged over 65 are exempt from contributing to the old-age social security scheme and generally feature lower incomes, the tax rates applied to pension incomes are generally lower than the tax rates against which the pension contributions can be deducted. The gap between the two tax rates implies that the household in effect benefits from higher after-tax rates of return on saving than the returns collected by the pension fund or life insurance company on their investments. Hence, the after-tax return on saving exceeds the rate of return on the capital market. This implies an effective subsidy on saving.

Arbitrage at the level of the saver

The second main assumption underlying our analysis is that the saver (households and tax exempt institutions) requires an after-tax real rate of return (*s*) on their equity-investments that equals that on a debt claim. Each saver thus earns the same after-tax yield on all investments. From this net yield and the taxation of equity financed investments, we derive the required pre-tax real return (i.e. the cost of capital) on equity financed investments.

These required pre-tax returns on equity financed investments depend not only on the legal form in which the investment takes place but also on the tax treatment of the saver (i.e. the person who supplies the capital). This contrasts with the case of debt financed investments where the pre-tax yield, as outlined above, does not depend on the

taxation of the supplier of debt. The fact that the cost of capital on debt financed investments does not depend on the taxation of domestic suppliers of debt is due to the assumption that the real interest rate is determined on the international capital market. This implies that foreign investors are effectively the marginal suppliers of debt. The international capital market for equity, however, is less internationally integrated because equity financed investments require more knowledge of local circumstances.

Hence, the cost of equity capital for local Dutch firms may depend on the tax treatment of Dutch shareholders. This is especially so for small corporations, which typically do not have easy access to the international capital market. The easier shares are traded internationally, however, the less the cost of equity capital depends on the tax treatment of Dutch shareholders. Shares of large corporations are traded internationally. The return requirements on its equity, therefore, depend to only a very limited extent on the tax treatment and return requirements of domestic shareholders; changes in the Dutch tax treatments of domestic shareholders result mainly in changes in the portfolios of domestic and foreign shareholders as Dutch shares are traded between domestic and foreign investors.

2.3 The methodology in formulas

The after-tax real rates of return

In the present tax system, households pay a marginal income tax rate *m* over their nominal income from capital[3] as well as a wealth tax on their personal wealth at rate *w*. The real value of their assets decreases with the inflation rate π. Equation (1) expresses the real after-tax rate of return, *s*, for direct household savings (i.e. savings that are not intermediated by tax-exempt institutions):

$$s = \frac{1 + (1 - m)i}{1 + \pi} - 1 - w \qquad (1)$$

where *i* denotes the nominal interest rate.

Savings in the form of the legal structure of a life insurance policy are taxed at neither the household level nor the level of the tax exempt institution. Therefore, the after-tax real rate of return for the household can be expressed as the real interest rate:

$$s = \frac{1 + i}{1 + \pi} - 1 = r \qquad (2)$$

[3] For traditional investors, *m* is de marginal personal income tax rate. Innovative investors reduce this tax rate to the corporate tax rate by letting capital income accumulate in so-called capital growth funds (see subsection 2.1).

Modelling the second form of tax exempt saving (i.e. contractual savings through pension funds and the pension business of life insurance companies) demands taking account of the tax rate at which pension contributions can be deducted (m_c) as well as the tax rate at which pension benefits are taxed (m_p). Generally m_p is lower than m_c, thereby raising the after-tax return above the real interest rate. The specific way in which this affects the after-tax return can be explained by first considering the hypothetical case in which saving is held for only one year. The total return to the household would involve not only the return *r* to the institution, but also the benefit to the household of getting more of the initial capital returned (in after-tax terms) than it had initially set aside (in after-tax terms). If m_c equals 50% and m_p is 25%, this additional return would amount to [(1 - .25)/(1 - .50) - 1] 100% = 50%. However, the longer the holding period is, the smaller this effect becomes on an annual basis. Equation (3) reveals how the impact of the gap between m_c and m_p on the after-tax return depends on the holding period, *dur*:

$$s = \left\{\frac{1-m_p}{1-m_c}\right\}^{1/dur}(1+r)-1 \qquad (3)$$

Equation (3) enables us to compute also the after-tax return on a special form of tax-favored direct household saving (the so-called 'spaarloonregeling'), which is explained in section 3.

The pre-tax real rates of return of corporations

Consider an investment project with an initial cost of one unit. Let *MRR* denote the pre-tax gross (i.e. before netting out depreciation) marginal rate of return of this increment to the capital stock and assume that the asset depreciates at a constant exponential rate δ. The pre-tax rate of return (net of depreciation) or the cost of capital amounts to:

$$p = MRR - \delta \qquad (4)$$

For convenience, we assume that economic depreciation is exponential. Tax depreciation, however, is not necessarily exponential. This disparity requires a separate computation of these two depreciation concepts. In particular, the calculation is carried out in two stages. The first stage derives an expression for the present discounted value, net of corporate taxes, of a project with a cost of one guilder, ignoring tax depreciation and other allowances. If the corporate tax rate is τ, the firm's wealth tax is w_c, and the rate at which the company discounts its cash flow in nominal terms is ρ, this value is

$$V=((1-\tau)MRR-w_c)\int_0^{\infty} e^{-(\rho+\delta-\pi)u}du=\frac{(1-\tau)MRR-w_c}{\rho+\delta-\pi} \tag{5}$$

Nominal profits increase at the rate of inflation, fall at the rate of economic depreciation, and are discounted at the rate ρ. The determination of ρ will be explained below.

In the next stage, we add to V the present value to the firm of tax depreciation and other allowances A. This results in the net present value of the project for the firm. By equating the net present value of the project to unity, the cost of the investment, we can derive the pre-tax return *MRR* the project must earn in order to break even:

$$V + A = 1 \tag{6}$$

Substituting (4) into (5) to eliminate *MRR* and the result into (6), we arrive at the cost of capital, i.e. the required pre-tax rate of return (net of depreciation) on a marginal project:

$$p=(1-A)\frac{\rho+\delta-\pi}{1-\tau}+\frac{w_c}{1-\tau}-\delta \tag{7}$$

In the present Dutch tax system, the allowances *A* take two main forms: first, standard depreciation allowances[4], of which the present value is denoted by *SD*, and second, a form of immediate expensing that allows a percentage *f* of the cost of the asset to be immediately deducted from taxable income[5]. Both apply to the full cost of the asset. A third, minor, form of tax allowances are investment subsidies *g*. This yields the following expression for *A*[6]:

$$A = \tau (SD + f) + g \tag{8}$$

[4] The present value of these standard depreciation allowances are derived in appendix 2.

[5] This expensing is in addition to regular depreciation allowances. Hence, immediate expensing does not affect the basis for regular depreciation allowances.

[6] In case of new share issues, an additional tax is levied on 1% of the acquired equity. This tax will be accounted for in the expression for *A*. Therefore, for new share issues, (8) is written as $A = \tau (SD + f) + g - kpb$, where *kpb* is the perunage of the tax.

determining the discount factor of corporations

The next step is to relate the firm's discount factor ρ to the market interest rate. In the absence of taxes these two would coincide. In a world with distortionary taxes, however, the discount factor differs from the market interest rate and depends on the source of finance. The firm's discount factor represents the required nominal rate of return after corporate taxes but before personal income taxes. For debt finance, since nominal interest payments are deductible from the corporate tax, the firm's discount rate is the net of corporate tax interest rate. Hence, for the case of *debt finance*, the discount rate can be written as:

$$\rho = i\,(1 - \tau) \tag{9}$$

Consider now the required rate of return for a firm that finances its marginal investment by new share issues. The Netherlands features a classical system of corporate taxation. Dividends can thus not be deducted from corporate tax. As explained in sub-section 2.2, investors require the same after-tax yield on equity as on a debt claim. If the tax rate on dividend income is denoted by m_e and the wealth tax on equity by w_e, the arbitrage equation between debt and equity can be written as: $\rho\,(1 - m_e) - w_e = i\,(1 - m) - w$. For conventional shareholders w_e equals w. Therefore, for the case of *new share issues* to conventional shareholders, we can write the discount rate as:

$$\rho = \frac{i(1-m)}{1-m_e} \tag{10a}$$

Under the present tax system as well as under the tax system proposed by the government, m_e generally equals m[7].

In case of a manager/shareholder, dividends are taxed at a special rate of 25% and corporation wealth is partially exempt from wealth taxation at the personal level[8]. Therefore, m_e and w_e deviate from m an w, respectively. This yields for the discount rate:

$$\rho = \frac{i(1-m)-w+w_e}{1-m_e} \tag{10b}$$

[7] In fact, both income tax variables equal zero under the system proposed by the government (see below).

[8] This exemption of company wealth of manager/shareholders under personal wealth taxation equals ƒ 211 000 plus 68% of the surplus in excess of ƒ 211 000. The self-employed benefit from the same arrangement.

The derivation of the firm's required rate of return is more complicated if the marginal investment is financed by *retained earnings.* We will first consider the case of conventional shareholders, who are not subject to capital gains taxes. The shareholder requires an after-tax yield that equals that on a debt claim. The difference with new share financing involves the initial cost to the investor. In case of retained earnings, the initial costs of an investment of one guilder are the after-tax dividends foregone. These are not unity but only 1 - m_e because the investor has to pay dividend taxes if the firm does not retain the earnings within the firm. The value of the firm does not increase by unity, the amount of the retained earnings, but by 1 - m_e , because the personal income tax on dividends is capitalized in the value of the equity[9]. This lower market value of the equity reduces wealth tax. The following expression equates the after-tax yield to that on a debt claim:

$$\frac{\rho(1-m_e)-w_e(1-m_e)}{1-m_e}=i(1-m)-w \qquad (11a)$$

For conventional shareholders, for whom w equals w_e, this leads to:

$$\rho = i\,(1 - m) \qquad (11b)$$

Equation (11a) shows that the taxation of dividends (at rate m_e) does not affect the required rate of return on retained earnings because a tax on dividends reduces both after-tax returns and after-tax initial costs in the same fashion.

In case of a manager/shareholder, capital gains are taxed. Capital gains are taxed on realization rather than accrual. Hence, the statutory tax rate z_s needs to be transformed into an effective tax rate z. This transformation is performed in appendix 2. Compared to the situation without a capital gains tax, the initial net of tax cost of the project to the shareholder is different. As the shareholder pays an effective tax rate z over the capital gain that results from retaining one guilder in the firm, this initial after-tax cost can be computed as $(1 - m_e)/(1 - z)$. A further difference with the conventional shareholder is that the equity is taxed favorably under personal wealth taxation. Sinn (1991) shows that the asset price rises with $(1 - m_e)/(1 - z)$ guilders as a result of retaining one guilder into the firms. This yields the following expression for ρ:

$$\rho=\frac{i(1-m)-w+w_e}{1-z} \qquad (11c)$$

[9] This approach is consistent with the so-called new view on dividend taxation (see e.g. Sinn (1991)).

If $z = m_e$, retained earnings and new share issues are effectively taxed equally (compare (10b) and (11c)). However, m_e will typically exceed z because the tax on capital gains can be deferred until realization.

The pre-tax real rates of return for the self-employed

In case of investments by the self-employed, the derivations of the equations for the cost of capital and the discount rate are analogous to the corresponding equations for investments of corporations. The difference lies in the absence of an institutional body, the corporation, that is taxed separately. All profits of the self- employed are taxed under the personal income tax and the distinction between retained earnings and distributed profits is not relevant. The after-tax present value of the project for the self-employed, ignoring tax depreciation, can then be derived by replacing the corporate tax rate τ in equation (5) by the marginal personal income tax rate of the self-employed m_s. The same applies to equation (8), the expression for the present value of tax allowances and grants. This results in the following expressions for the cost of capital and for the present value of tax allowances and immediate expensing:

$$p = (1 - A)\frac{\rho + \delta - \pi}{1 - m_s} + \frac{w_c}{1 - m_s} - \delta \qquad (12)$$

and

$$A = m_s (SD + f) + g \qquad (13)$$

determining the discount factor of the self-employed

Also the equations for the self-employed's discount factor are analogous to those of corporations. A *debt* financed investment must yield a nominal return net of personal income tax that equals the after-tax costs of financing the investment. As interest payments are deductible, this requirement is

$$\rho = i\,(1 - m_s) \qquad (14)$$

For an *equity* financed investment, the net of tax yield for the self-employed must equal that on a debt claim. Therefore, if we denote the personal wealth tax on the equity of the self-employed by w_s, this equation becomes $\rho - w_s = i\,(1 - m) - w$, which results in:

$$\rho = i\,(1 - m) - (w - w_s) \qquad (15)$$

The second term at the right hand side adjusts for the difference in wealth taxation between debt claims, which are taxed under the general wealth taxation regulations, and company wealth of the self-employed, which benefits from a lower rate of wealth taxation (see footnote 8)

The pre-tax real rate of return on owner-occupied dwellings

Interest payments on mortgage debt to finance an investment in a owner-occupied dwelling are fully deductible from the personal income tax. An imputed rent on owner-occupied housing is subject to personal income tax at a tax rate denoted by m_r. This imputed rent *hwf* equals 1.25% of the market value of the property. This rate of 1.25% is generally lower than the rate of return on alternative investments. Furthermore, owner-occupied dwellings are treated favorably under wealth taxation because these dwellings are valued at only 60% of their market value. Mortgage debt, in contrast, is fully deductible for the wealth tax. Owner-occupiers do, however, face a local property tax, which is denoted by w_{im}. This tax, which depends on the particular local jurisdiction, averages 0.3% of the value of the property.

No tax depreciation is allowed for owner-occupied dwellings. This simplifies the computation. We define the real rate of return *p* as the before-tax return on a marginal unit of investment in owner-occupied housing net of economic depreciation and maintenance costs. If the investment is financed by *debt*, this return must equal the after-tax costs involved in owning the house plus the after-tax costs of financing the mortgage debt. This yields the following equation:

$$p = m_r\, hwf + 0.6\, w + w_{im} + i\,(1 - m) - \pi - w \qquad (16a)$$

The first three terms at the right-hand side of (16a) represent the after-tax costs of owning the house. The first term stands for the additional personal income tax liability due to the personal income taxes on the imputed rent, the second term represents the personal wealth tax on the value of the house while the third term denotes the local property tax. The fourth term represents the after-tax nominal costs of the interest payments on the mortgage and the fifth term adjusts for the erosion of the real value of the mortgage due to inflation. The final term accounts for the deductibility of mortgage debt for the purpose of personal wealth taxation.

In the case of a mortgage financed investment, under both the present tax system and the cabinet proposals for tax reform, m_r equals *m*. By rearranging (16a), we can more clearly identify the tax preferences for owner-occupied housing:

$$p = (i - \pi) + m\,(hwf - i) + (0.6 - 1)\, w + w_{im} \qquad (16b)$$

The first term represents the real interest rate, which would be the required real return in the absence of taxes. However, both the income tax and the wealth tax reduce the cost of capital below the real interest rate. In particular, the imputed income *hwf* of 1.25% of the value of the property is typically substantially lower than the (tax deductible) nominal interest rate (i.e. $hwf < i$). The resulting subsidy, expressed by the second term at the right hand side of (16b), rises with the marginal income tax rate *m* and therefore benefits the higher income brackets most. Inflation generally increases this subsidy because the tax system allows *nominal* rather than *real* interest payments to be deducted. The third term at the right-hand side represents the net benefit of valuing the house for wealth taxation at only 60% of its value while allowing the mortgage debt to be deducted fully. These two subsidies are mitigated by the local property tax, which is represented by the last term at the right-hand side of (16b).

If the owner-occupied dwelling is financed by *equity*, the rate of return of a marginal investment, after deduction of all tax liabilities on the house, must equal the real after-tax return on a debt claim, which is $i\,(1 - m) - \pi - w$. The income tax rate on interest income, *m*, may differ from the income tax rate on the imputed rent, m_r [10]. This yields the following equation:

$$p - m_r\, hwf - 0.6\, w - w_{im} = i\,(1 - m) - \pi - w. \qquad (17)$$

In case $m_r = m$, this equation can be rewritten as (16b). Accordingly, if *m* equals m_r, an equity financed house benefits from the same tax preferences as a debt-financed dwelling. Accordingly, the tax system does not affect the way an owner-occupied dwelling is financed.

3. The present tax system[11]

Real after-tax returns

The marginal tax wedge on the supplier of capital (i.e. the saver) is the difference between the real interest rate and the real after-tax return *s* for the saver (see table 3). This marginal tax wedge depends on the marginal rates at which the saver is taxed under income and wealth taxes. The real after-tax return for a traditionally investing household

[10] The possible differences between *m* and m_r under the present system will be discussed in section 3. Section 4 will discuss these differences under the system proposed by the government.

[11] Appendix 3 contains the parameter values representing both the present tax system and the tax system proposed by the government.

(i.e. a household investing in a debt claim) with high marginal tax rates can even be negative (see the third column of table 3), because the income tax taxes *nominal* returns (at a marginal rate of 60% the income tax reduces the real after-tax return by 3.6%-points (by 60% of 6%-points)). The wealth tax reduces the after-tax return further by 0.7%-point if households wealth exceeds the exemption for the wealth tax[12].

Innovative investors can reduce the tax burden by letting interest income accumulate in a so-called capital growth fund in which they hold shares. The interest income accruing to these funds results in a capital gain for the household which is exempt from personal income taxation. The capital growth funds themselves are subject to the corporate tax. In this way, the marginal tax burden is reduced from the rate of personal income tax to the corporate income tax rate of 35%.

Table 3 illustrates the difference in after-tax returns between direct household savings and tax favored forms of saving. Up to a ceiling of ƒ 1670 per year,[13] the tax law allows a special form of direct household savings (the so-called 'spaarloonregeling'). The contributions to this type of saving can be deducted from taxable income. After four years, the savings can be withdrawn by the household without being taxed. A further advantage of this saving is that the returns are tax exempt. The real after-tax return can therefore be calculated by setting m_p equal to zero in equation (3) and setting the holding period to four years. This results in a high after-tax return of over 20% (see the fourth column of table 3). Life insurance policies are untaxed and therefore yield a return that equals the real interest rate (see the fifth column of table 3). Also marginal investments of some of the individuals who fall under the so-called 68%-arrangement are untaxed[14].

For tax-favored forms of pension saving (see the sixth column of table 3), the real after-tax return exceeds the real interest rate. However, a ceiling applies to these tax favored forms. Their effect on marginal savings incentives might therefore be limited. Furthermore, these savings suffer from the disadvantage that they cannot be withdrawn at will but can be used only during retirement.

[12] This tax exemption is ƒ 193 000 for singles and ƒ 241 000 for married couples.

[13] This ceiling is indexated.

[14] The same holds for those who evade taxation, for instance by not declaring income from foreign investments. The 68%-arrangement maximizes the sum of the income tax and wealth tax obligation to 68% of taxable income.

Table 3 Real after-tax returns under present system

Households[a]				Life insurance policies	Pension savings[d]
low marginal tax rates	average marginal tax rates	high marginal tax rates	Tax-favored form[b] ('spaarloon-regeling')		
traditional/ innovative	traditional/ innovative	traditional/ innovative			
in %					
1.8/1.9[c]	1.2/1.5	– 0.3/1.2	20.8	4.0	5.3

[a] The low and high marginal income tax rates are respectively 36.4% and 60%. The average rate is 41%, which is calculated from an average marginal rate for labor income of 45% and the observation that 9% of marginal income from interest falls within the tax exemption. The innovative investor allows interest to accumulate within a capital growth fund, where the interest is effectively taxed at the corporate tax rate of 35%. The wealth tax rates for low, average and high are 0%, 0.4% and 0.7%, respectively.

[b] The tax favored form of household saving is calculated with income tax rates at which contributions are deducted and benefits are taxed of respectively 45% and 0%. The holding period is 4 years (see equation (3)).

[c] Households falling within the tax exemption for interest payments of the income tax as well as the tax exemption of the wealth tax and some households that benefit from the 68%-arrangement feature a real after-tax return of 4%.

[d] The rate at which the contributions are deducted is 45% and the rate at which pension benefits are taxed is 25%. The period between paying the pension contribution and collecting the pension income is assumed to be 25 years (see equation (3)).

Debt-financed investments

Table 4 displays the cost of capital for debt financed investments. It reveals that the cost of capital is lower than the real interest rate of 4%. The reasons for this implicit subsidy are, first, nominal (as opposed to real) deductibility of interest payments, second, accelerated tax depreciation (relative to economic depreciation) and, third, the additional tax deduction on account of immediate expensing of investment.

The cost of capital for debt financed investments of the self-employed is lower than that for the corresponding investments of corporations for two reasons. First, the self-employed generally benefit more from immediate expensing because immediate

expensing is aimed at enhancing small investments[15]. Second, the benefit of accelerated depreciation and nominal deductibility of interest payments rises with the tax rate against which these allowances can be deducted. The relevant tax rate for the self-employed (the marginal personal income tax rate) exceeds that of corporations (the corporate tax rate). The difference in the cost of capital between corporations with a manager/shareholder and other corporations is explained by the higher average rate of immediate expensing for the former corporations because of lower investment levels (see footnote 15).

Table 4 shows that the cost of capital is below the real interest rate also for debt financed investments in owner-occupied dwellings. The reasons for this implicit tax subsidy are discussed at the end of section 2 following expression (16b).

Table 4 Cost of capital[a] with debt financing

	in %		
Corporation (conventional shareholders)		3.0	
Corporation (manager/shareholders)		2.9	
	marginal tax rate of household[b]		
	low	average	high
Unincorporated business (self-employed)	2.7	2.2	1.4
Owner-occupied dwellings	2.6	2.0	1.2

[a] The assets consist of first, machinery, equipment and transport means, second, buildings and third, intangible assets. The weights of these three categories, which are derived from CPB (1996), are respectively 47%, 31% and 22%. The immediate expensing allowances of corporations with conventional shareholders, corporations with a manager/shareholder and the self-employed are respectively 0.5%, 4% and 7%.

[b] The marginal rates for income tax and wealth tax for the low variant are respectively 36.4% and 0%, for the average variant 45% and 0.4% and for the high variant 60% and 0.7%.

[15] The immediate expensing decreases with the size of the annual investment. Up to an annual investment of ƒ 60 000, the tax deduction amounts to 24% of the cost of the investment. For larger annual investment levels, this percentage drops and reaches zero at an annual investment level of more than ƒ 527 000.

Equity-financed investments

Table 5 contains the required real pre-tax returns (i.e. the cost of capital) for equity financed investments. Traditional investors settle for a relatively low pre-tax return on retained earnings by corporations. If their marginal personal income tax rate is 60%, traditional shareholders require a return of only 1.1% on retained earnings if the investor is not a manager/shareholder and 0.9% if the investor is a manager/shareholder. The reason for these low required returns is that an alternative investment, a debt claim yielding a nominal interest rate of 6%, is subject to a high personal income tax rate of 60%. Retained earnings, however, which are taxed under corporate taxation, yield a capital gain. This capital gain escapes income taxation at the personal level if the investor is not a manager/shareholder. If the investor is a manager/shareholder, the capital gain is taxed only at realization at a rate of 25%.

If the personal income tax rate of the marginal traditional investor exceeds the corporate tax rate [16], the cost of capital of retained earnings is below that of debt. On the one hand, the return on retained earnings are taxed at the corporate level at the corporate tax rate while interest payments are deductible from the corporate tax. On the other hand, unlike the return on debt, retained earnings are effectively exempt from personal income taxation because of the absence of a capital gains tax for conventional shareholders. By retaining earnings within the firm, the household can effectively reduce the tax rate on its savings from the marginal personal income tax rate to the corporate tax rate.

The higher the personal income tax rate of the traditional investor is, the larger the tax advantage of retained earnings. Pension funds and life insurance companies require a higher return on profits retained by corporations than on debt because these institutions do not pay any personal income taxes on alternative investments.

The innovative investor who lets interest income accumulate in a capital growth fund effectively reduces the tax rate on debt financed investments to the corporate tax rate. For an innovative, conventional investor, therefore, the required yield on debt equals that on retained earnings. More generally, the return requirements on equity by a innovative investor are higher than the return requirements on equity by a similar traditional investor because an innovative investor has more attractive alternative investments.

[16] In that case, the discount rate on debt-financed investments (see equation (9)) exceeds the discount rate on retained earnings (see equation (11b)).

Table 5 Cost of capital under present tax system

	Equity[a]	of which: new shares	retained earnings	Debt
Traditional investor with average marginal tax rates[b]				
Corporation				
- conventional shareholders	2.9	6.1	2.6	3.0
- manager/shareholder	3.1	3.9	3.0	2.9
Unincorporated businesses (self-employed)	2.2	-	-	2.2
Owner-occupied dwellings	2.3	-	-	2.0
Traditional investor with high marginal tax rates[c]				
Corporations				
- conventional shareholders	1.6	6.1	1.1	3.0
- manager/shareholders	1.0	1.3	0.9	2.9
Unincorporated businesses (self-employed)	0.6	-	-	1.4
Owner-occupied dwellings	1.2	-	-	1.2
Innovative investor with high marginal tax rates[d]				
Corporations				
- conventional shareholders	3.3	6.1	3.0	3.0
- manager/shareholders	3.2	3.9	3.1	2.9
Unincorporated businesses (self-employed)	3.1	-	-	1.4
Owner-occupied dwellings	2.7	-	-	1.2
Institutional investor				
Corporation with conventional shareholders	5.9	6.1	5.9	3.0

[a] Equity-financed investments of corporations are assumed to consist of 90% retained earnings and 10% new shares.

[b] The average marginal tax rate for interest- and dividend incomes is 41%. This is calculated from a marginal tax rate for labor income of 45% and the observation that 9% of marginal interest- and dividend incomes falls within the tax exemption. The average marginal rate of wealth tax is 0.4%. For debt investments of unincorporated businesses and of owner-occupied dwellings, the average marginal rate at which debt can be deducted is 45%.

[c] The marginal rates for income tax and wealth tax are respectively 60% and 0.7%. These rates refer to the capital supplier in case of equity financed investments and refer to the borrower in case of debt financed investments.

[d] The marginal tax rates for income tax and wealth tax on the alternative allocation of equity are respectively 35% and 0.7%. The tax rate at which interest payments are deducted on debt-financed investments of unincorporated businesses and on owner-occupied dwellings is 60%.

Wealth taxation does not affect the cost of capital for most shareholders because it taxes equity investments at the same rate as debt claims. However, as pointed out in sub-

section 2.3, it does impact the required returns for manager/shareholders, the self-employed and owner-occupied dwellings because these categories benefit from lower rates of wealth taxation.

The second and third columns of Table 5 show the relevance of the distinction between retained earnings and new share issues for investments by corporations. Investments financed with retained earnings feature a lower cost of capital than new equity. This reflects the lower initial after-tax cost of the investment to the saver. In case of retained earnings, the initial cost amounts to the after-tax dividends foregone. This is lower than the gross cost of the investment because dividends are subject to the personal income tax. Investments with new shares require a higher return because the initial after-tax cost equals the gross cost of the investment.

The lower costs of retained earnings imply that the cost of capital for equity of mature firms that generate sufficient retained earnings are relatively low compared to that of young, fast growing firms that require external equity to finance their equity financed investments because they do not generate sufficient internal means. This hampers the transfer of capital between old and new firms and thereby the dynamics on the equity capital market.

A comparison between the second and third columns shows that the difference in required return between new shares and retained earnings is largest for investors featuring a high marginal rate of personal income tax. For these shareholders, the high personal income tax substantially reduces the after-tax costs of the investment.

Whereas conventional shareholders pay a progressive personal income tax on dividends, manager/shareholders pay only a proportional rate of 25%. This explains the low return requirements on investments of manager/shareholders financed with new shares in comparison to the corresponding return requirements of conventional shareholders. Another explanation for the small difference between the cost of externally and internally financed investments by manager/shareholders is that these shareholders, in contrast to conventional shareholders, pay a 25% tax on realized capital gains. This capital gains tax raises the required yield on retained earnings.

Tax-exempt institutions require almost the same yield on both new shares and retained earnings. The reason is that the personal income taxation of dividends plays no role here. The slightly higher cost of new share issues is due to a minor tax on assembling new capital (see footnote 6).

The distinction between external and internal equity is not relevant for the self-employed and owner-occupied housing. Table 5 reveals that the present tax system hardly affects the way a traditional investor finances a marginal investment in owner-occupied housing. The reason is that the after-tax costs of debt are close to the after-tax

return on an alternative investment of the equity. The interest on mortgage debt can be deducted at almost the same tax rate as the rate at which the interest on an alternative investment of the equity is taxed[17].

For the self-employed who invests in a traditional way, an equity financed investment is slightly more attractive than a debt financed one. This is due to the low rate of personal wealth taxation on company wealth compared to that on personal wealth outside the company.

The required return on owner-occupied housing and for the self-employed falls with higher rates of income and wealth taxation because the advantage of tax allowances is more substantial for individuals subject to high marginal tax rates[18].

Differences between assets

Table 6 compares the cost of capital of various corporate assets. Intangible assets are taxed favorably relative to machinery and buildings. This is due to immediate tax depreciation, which raises the (present) value of tax allowances. Buildings require a slightly higher return due to a property tax on buildings at the corporate level.

[17] For the average tax payer, a small difference exists between these tax rates because some savers do not exceed the tax exemption. These investors do not pay tax on their marginal interest income on alternative investments of the equity. The interest payments on mortgage debt, however are fully deductible. Hence, these taxpayers face lower after-tax costs on debt financing than on equity financing.

[18] In case of the owner-occupied housing, these allowances are the relatively low imputed rental value, the nominal (rather than real) deductibility of interest payments, and the favorable taxation of housing wealth. For the self-employed, these allowances are immediate expensing allowances, accelerated tax depreciation, nominal (rather than real) deductibility of interest payments, and the favorable wealth taxation of small-business equity.

Table 6 Cost of capital for various assets[a]

	Equity	of which: new shares	of which: retained earnings	Debt	Total[b]
	in %				
Machinery, equipment and means of transportation	3.0	6.3	2.6	3.1	3.0
Buildings	3.5	6.8	3.1	3.6	3.5
Intangible assets	2.0	4.6	1.7	2.1	2.0

[a] These calculations apply to the case of corporations and conventional shareholders.

[b] We assume that the company is financed with 50% equity and 50% debt.

Tax arbitrage

The difference between the required return by traditional investors on retained earnings and the real interest rate on the capital market measures the loss of tax revenue due to tax arbitrage. Individuals earning substantial labor incomes can borrow and deduct the associated nominal interest costs at the high tax rate of 60% and invest the funds in shares of which the returns are not subject to personal income taxation (if the firm retains its earnings). The (lower) 35% corporate tax rate only partially makes up for this.

In the absence of external effects, this gap between the cost of capital on retained earnings and the real interest rate measures the welfare loss due to these arbitrage transactions; the benefits to society of the additional investments (i.e. the pre-tax rate of return) falls short of its cost to society (i.e. the real interest rate on the international capital market).

4. The tax reform

The cabinet that took office in August 1998 has decided to implement a significant tax reform in 2001. The most important elements of this reform with regard to the taxation of capital are the elimination of the wealth tax and the introduction of a schedular approach to the personal income tax. This schedular approach involves separating sources of personal income into *three boxes*, which are taxed separately.

Box I includes labor income, pension benefits and annuities (deferred labor income), and income from the self-employed and owner-occupied housing. The sum of these incomes is taxed at progressive rates. Most tax rates are lower than under the present system. These tax cuts are financed in part by a shift to indirect taxes and some broadening of the personal income tax base.

Box II includes the profits of manager/shareholders of corporations. These profits will be taxed at the personal level at a proportional rate of 30%. Also realized capital gains will be taxed at this rate.

Personal incomes from capital that do not qualify for boxes I and II are taxed in Box III. The cabinet plans to tax these incomes at a proportional rate of 30%. This rate will be imposed on a presumptive return of 4% of the value of the qualifying components of personal wealth. The tax base of such a presumptive income tax is thus not the actual income from capital but rather the value of the household wealth. The rate of 30% on a presumptive return of 4% corresponds to an effective wealth tax of 1.2%. Some progressivity is introduced through a tax exemption of *f* 37 500 for singles and *f* 75 000 for a married couple. The presumptive return will be applied on the balance of assets and liabilities. It is a net return. Hence, actual costs (including the costs of financing) are no longer deductible.

Furthermore, a tax favored account is introduced in which all savings for retirement can be taken into account jointly by submitting them to an combined ceiling. The capital in this tax account is taxed on a cash-flow basis (i.e. paid in capital is tax deductible and withdrawals are taxed).

5. The incentive effects of the tax reform

The taxation of savings

The personal income tax on an investment under the new system effectively amounts to a personal wealth tax. Accordingly, the marginal income tax variables (i.e the *m*'s) in equations (1) through (17) are set at zero while wealth taxation (i.e. the *w*'s) capture the presumptive income tax.

The cabinet plans raise the after-tax yields for most suppliers of capital (compare table 7 to table 3). This is especially so for wealthy traditional savers with high incomes from capital. This is due to a substitution of the wealth tax and the progressive personal income tax by a proportional rate of 30% (with a relatively small personal exemption) on a presumptive return of 4%. The schedular approach that taxes labor income in a separate box implies that the after-tax yields of households with different labor incomes no longer diverge. Investors who currently benefit from the 68%-regulation collect a lower after-tax yield on a marginal investment than under the present system.

Table 7 Real after-tax returns in the new tax system

Households				Life insurance policies	Pension savings[b]
Under tax exemption	Average[a]	In excess of tax exemption	Tax-favored[c] form ('spaarloon-regeling')		
in %					
4.0	3.0	2.8	18.7	4.0	5.2

[a] 10% of household wealth is assumed to fall under the tax exemption at the margin.

[b] The rate at which contributions are deducted is set at 41% and the rate at which pension incomes are taxed is set at 22%. The assumed period between paying the contribution and receiving the pension income (i.e. the holding period) is 25 years.

[c] A deduction rate of 41% and a holding period of 4 years is assumed.

The higher after-tax yield from direct household savings implies that the relative tax advantages of tax-favored forms of saving are reduced. Moreover, the tax preferences for retirement saving will be tied less to products that are supplied by tax exempt institutions (such as life insurance policies and annuities) because also other saving products can qualify for a tax-favored status if they satisfy certain conditions. The tax system will thus become more neutral with respect to the form in which households save for retirement.

Debt-financed investments

The reform exerts only little impact on the cost of debt financed investments (compare the last columns of tables 8 and 5). The required return rises slightly for the self-employed and owner-occupied dwellings due to the somewhat lower personal income tax rates (in box I) at which various allowances can be deducted. In addition to this, the elimination of personal wealth taxation results in a small rise of the cost of capital for owner occupied housing because this investment no longer benefits from its favorable treatment under the wealth tax.

Investments with retained earnings

The tax reforms do not affect the required yields of tax exempt institutions because the reforms apply only to taxes these institutions do not pay, namely personal income taxation and wealth taxation.

Table 8 Cost of capital in the new tax system

	Equity[a]	of which: new shares	retained earnings	Debt
Average marginal rates[b]				
Corporation				
- conventional shareholders	5.9	6.1	5.9	3.0
- manager/shareholders	5.8	7.3	5.6	2.9
Unincorporated businesses (self-employed)	4.5	-	-	2.5
Owner-occupied dwellings	3.8	-	-	2.4
High marginal tax rates[c]				
Corporations				
- conventional shareholders	5.9	6.1	5.9	3.0
- manager/shareholder	5.5	6.9	5.3	2.9
Unincorporated businesses (self-employed)	5.0	-	-	1.8
Owner-occupied dwellings	3.8	-	-	1.8
Institutional investor				
Corporation with conventional shareholders	5.9	6.1	5.9	3.0

[a] Equity financed investments of corporations are assumed to be composed of 10% new shares and 90% retained earnings.

[b] For the determination of the after-tax returns of equity investments, we assumed that 10% of households wealth falls under the tax exemption. The average marginal income tax rate in box I is 41%.

[c] The top marginal income tax rate in box I is 52% and personal wealth exceeds the tax exemption of the presumptive capital income tax. In case of debt financed investments, these tax rates refer to the borrower of capital.

Individuals who are currently subject to income and wealth taxation will require a higher pre-tax return on retained earnings than under the present tax system. The required return on retained earnings exceeds that on debt for all investors. The yield on retained earnings required by individual investors rises because the taxation at the personal level that affects only the return on debt (i.e. the personal income tax) is replaced by a tax (i.e. the presumptive capital income tax) that taxes both retained earnings (and the capital gain generated by it) and the return on debt. Thus, the tax discrimination of equity at the level of the corporation (in contrast to interest payments, the normal return on equity is

not deductible from corporate tax) is no longer compensated by a tax advantage at the personal level (i.e. the tax exemption of capital gains for conventional shareholders). In contrast to debt, retained earnings are therefore taxed twice, viz. first at the corporate level by the corporate tax and subsequently by the presumptive income tax at the personal level.

The higher required yield on retained earnings results in tax discrimination of equity compared to debt. Accordingly, corporations that rely on Dutch shareholders for their equity capital are encouraged to increase their debt finance. Shares of firms that rely also on foreign shareholders and tax exempt institutions for their equity needs will in part be transferred to these latter investors.

The required returns on retained earnings no longer depends on the labor income of the investor. Hence, investors with high labor incomes no longer face an incentive to mainly invest in shares. Also the incentive to borrow and use the funds to invest in shares (tax arbitrage) disappears. These transactions no longer erode the tax base and on balance will even yield additional revenue (as the returns to equity are taxed at the corporate level). Indeed, also investors earning high labor incomes face an incentive to invest in debt rather than equity. In this way, they benefit from the lowest tax rate (30% on a presumptive return of 4%), while previously for investors with high labor incomes (and consequently high personal income tax rates on capital income) the lowest tax rate used to be the corporate tax rate. In view of these incentives to save directly rather than through corporations, more private savings will occur through households, rather than firms.

Investments with new shares

The required yield on new shares does not change because the effect of the lower taxation of the alternative allocation of the capital (a debt claim) is compensated by the elimination of the personal income tax on dividends. Dividends and capital gains will be taxed equally by the presumptive capital income tax. Hence, apart from the taxation on newly paid-in capital (see footnote 6), external equity is no longer taxed more heavily than internal equity is. This removes the tax barrier on the transfer of equity capital between firms, thereby enhancing both the dynamics of the capital market and an efficient allocation of capital.

Manager/shareholders will continue to require a higher return on external equity than on internal equity, because they can delay the tax on retained earnings (and the subsequent capital gain) until the shares are sold.

Owner-occupied housing and the self-employed

The proposals raise the costs of equity investments in owner occupied housing and of equity financed investments of the self-employed. There are two reasons for this. The first is the elimination of personal wealth taxation. This removes the tax advantages of the wealth-tax exemption on business equity for the self-employed and of the valuation of owner-occupied housing at only 60%.

The second reason is that owner-occupied housing and the self-employed are taxed in box I, whereas the alternative investment of the equity (an investment in debt) is taxed in box III. Hence, the costs of debt and equity are no longer treated symmetrically. In particular, the nominal costs of debt remain deductible at progressive tax rates (in box I). The alternative investment of the equity capital on the capital market, in contrast, is taxed at a proportional rate of only 30% over a presumptive return of 4%.

Financing owner-occupied dwellings and investments of self-employed with equity rather than debt is thus discouraged, as is the case with corporate investments. Especially households with high labor incomes face a substantial incentive to finance investments in owner-occupied housing and their own firm with debt and to invest their own equity in wealth components included in box III. These transactions result in a loss of tax revenues because taxable income is shifted from box I to box III (in which the tax rates are lower and income is taxed at a presumptive return of only 4%).

The sensitivity to inflation

Table 9 illustrates the sensitivity of the outcomes to changes in (expected) inflation. At a constant real interest rate of 4%, this table contains the after-tax real rates of return to investors and the required real pre-tax returns (i.e. the cost of capital) on investments at both an inflation rate of zero and 5%.

Under the present tax system, inflation reduces the after-tax return to an investor because the income tax is applied to nominal income from capital, including the premium for (expected) inflation. The lower return on a debt claim reduces the required returns on investments of which the nominal returns are not subject to the personal income tax, such as investments of corporations with retained earnings and investments in owner-occupied housing. Inflation raises the required return on equity investments that are financed with new shares. The reason is that inflation reduces the real value of tax depreciation allowances because these allowances are based on the nominal cost of the asset. In case of debt financed investments, this latter factor is outweighed by the advantage of the nominal deductibility of interest payments. Hence, the cost of capital decreases with inflation.

Table 9 The sensitivity to inflation[a]

	Required real pre-tax rates of return (user cost)							
	Debt		Equity		of which:			
					new shares		retained earnings	
	in %							
Inflation	0	5	0	5	0	5	0	5
In present system								
Corporations[b]	3.4	2.3	3.3	2.1	5.5	6.8	3.1	1.6
Unincorporated businesses (self employed)	2.8	1.3	2.6	1.4	-	-	-	-
Owner-occupied dwellings	2.9	0.7	2.7	0.8	-	-	-	-
In new system:								
Corporations	3.4	2.3	5.3	6.6	5.5	6.8	5.3	6.6
Unincorporated businesses (self employed)	2.9	1.6	3.8	5.4	-	-	-	-
Owner occupied dwellings	3.2	1.1	3.8	3.8	-	-	-	-

	Real after-tax yield of household	
	in %	
Inflation	0	5
In present system	2.0	0.0
In new system	3.0	3.0

[a] These calculations assume traditional investors with average marginal tax rates, as described under the previous tables.

[b] The shares are owned by conventional shareholders.

In the new system, the after-tax return to the investor no longer depends on inflation under the assumption that the presumptive return on capital remains equal to the real interest rate of 4% and is therefore not sensitive to inflation. On the one hand, inflation reduces the required return on debt financed investments because nominal interest payments (including the premium on expected inflation) continue to be deductible from the corporation tax (for corporations) and the personal income tax (in box I for the self-employed and owner-occupied dwellings). On the other hand, inflation increases the required return on equity financed investments because the real value of tax depreciation (which is based on nominal costs) is reduced. A higher (expected) inflation thus widens the cost of capital gap between debt- and equity-financed investments; the tax advantage of debt (the deductibility of *nominal* interest payments for corporate tax in case of

investments of corporations and the deductibility of the actual *nominal* yield for the personal income tax in case of investments in owner-occupied housing or by the self-employed) increases with inflation.

In the present system, higher inflation results in both an increasing tax advantage of debt at the corporate level and an increasing tax advantage of equity at the personal level (viz. the exemption of nominal capital gains for the personal income tax whereas nominal interest incomes are taxed). In the new system, equity and debt are taxed at the same rates at the personal level, independently of expected inflation. The tax advantage of debt for the capital user (the corporation, the self-employed or the owner of owner-occupied dwelling), however, will continue to increase with expected inflation because the inflation premium in the nominal interest rate remains tax deductible for the capital user.

6. Conclusions

The most fundamental tax reform proposed by the government is replacing the synthetic personal income tax on incomes from interest and dividends and the wealth tax by a schedular tax on a presumptive return on personal wealth. The tax of 30% on a presumptive return of 4% implies a tax of 1.2% on the value of personal wealth (in excess of an exemption). This reform increases the after-tax rate of return on debt claims for many investors, especially for traditional investors with high incomes from other sources. This raises the required yields on other investment options of these investors. Moreover, it reduces the relative tax advantage of institutional savings.

Unlike the present income tax, which does not tax capital gains, the tax on the presumptive return on capital applies the same effective tax rate on interest, dividends and capital gains. This eliminates the tax incentive for investors with high marginal personal tax rates to borrow and to invest the funds in shares that generate capital gains. Investors earning substantial labor incomes no longer face a stronger tax incentive than those earning lower labor incomes to invest in shares rather than debt claims. The equal taxation of dividends and capital gains at the personal level implies that externally raised equity of corporations is hardly discriminated any more relative to internal means. This facilitates the transfer of equity capital between companies and promotes dynamics on the capital market.

By taxing debt and equity equally in the same way at the personal level, the tax discrimination of equity relative to debt at the corporate level is intensified. The tax disadvantage of equity at the corporate level is no longer compensated by a tax advantage at the personal level (i.e. the exemption of capital gains). Shares of firms that can turn to foreign shareholders and institutional investors for their equity needs will partially be sold to these investors.

Corporations that depend primarily on small domestic investors, like many corporations with manager/shareholders, face a stronger tax incentive to finance their investments with debt. Indeed, it will become attractive for many manager/shareholders to invest a larger share of their equity capital outside the corporation. The cabinet proposes to contain arbitrage of manager/shareholders between debt and equity by thin capitalization-rules that limit debt financing.

Also those investing in unincorporated businesses and owner-occupied housing will find it less attractive to finance their investments with equity. This is especially so for those who are subject to high marginal tax rates in box I. Hence, labor income will continue to affect financial decisions. The tax incentive to finance with debt and invest equity elsewhere originates in the difference between the tax rate in box I (where actual nominal interest payments, including the inflation premium, are deductible) and the proportional tax rate in box III (where only the presumptive return of 4% is taxed).

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Appendix 1 The present value of standard depreciation allowances

The Netherlands features a system of straight-line depreciation. The present value of these depreciation allowances is given by

$$SD = (1/L)\int_0^L e^{-\rho u}\,du = \frac{1 - e^{-\rho L}}{\rho L}$$

where L = tax lifetime of the asset

To arrive at the present value of these allowances to the firm, *SD* has to be multiplied by the tax rate at which these allowances can be deducted. This is τ for corporations and m_s for unincorporated businesses.

Appendix 2 The effective tax rate on capital gains

Capital gains of manager/shareholders are taxed only at realization. This involves a deferral of the taxation. Hence, the effective tax rate on capital gains *z* is lower than the statutory rate z_s. For the derivation of *z*, we assume that a proportion λ of the accrued capital gains is realized by investors in each period. The unrealized capital gain is therefore $1 - \lambda$. In the second period realizations are equal to $\lambda (1 - \lambda)$. In the third period realizations are $\lambda (1 - \lambda)^2$ and so on. If we assume that λ is constant, the present discounted value of the stream of tax payments resulting from a unit of accrued capital gains (which equals retained earnings) is given by

$$z = \lambda z_s \sum_{j=0}^{\infty} \frac{(1-\lambda)}{(1+\rho_p)^j} = \frac{\lambda z_s}{\lambda + \rho_p}$$

where ρ_p is the investors nominal discount rate, which equals $s + \pi$.

Appendix 3 Parameter values

A. Parameters applying to personal taxation

Under present tax system

	Marginal income tax rates				Marginal wealth tax rates	
	relevant for financing costs			on business income ($m_e/m_s/m_r$)[2]	relevant for financing costs (w)	on business assets (w_s/w_r)[3]
	equity (m)		debt (m_s/m)			
	traditional	innovative[1]				
	in %					
Low tax rates						
conventional shareholder	36.4	35	-	36.4	0	0
manager/shareholder	36.4	35	-	25	0	0
owner-occ. dwelling	36.4	35	36.4	36.4	0	0
Average tax rates						
conventional shareholders	41	35	-	41	0.4	0.4
manager/shareholder	41	35	-	25	0.4	0.22
self-employed	41	35	45	45	0.4	0.22
owner-occ. dwelling	41	35	45	45	0.4	0.4
High tax rates						
conventional shareholder	60	35	-	60	0.7	0.7
manager/shareholder	60	35	-	25	0.7	0.7
self-employed	60	35	60	60	0.7	0.22
owner-occ. dwelling	60	35	60	60	0.7	0.7

Under the new tax system

	Marginal income tax rates			Marginal wealth tax rates	
	relevant for financing costs		on business income ($m_e/m_s/m_r$)[2]	relevant for financing costs (w)	on business assets (w_s/w_e)
	equity (m)	debt (m_s/m)			
	in %				
Low tax rates					
conventional shareholder	0	-	0	0	0
manager/shareholder	0	-	30	0	0
self-employed	0	32	32	0	0
owner-occ dwelling	0	32	32	0	0
Average tax rates					
conventional shareholders	0	-	0	1.0	0
manager/shareholder	0		30	1.0	0
self-employed	0	41	41	1.0	0
owner-occ. dwelling	0	41	41	1.0	0
High tax rates					
conventional shareholder	0	-	0	1.2	0
manager/shareholder	0	-	30	1.2	0
self-employed	0	52	52	1.2	0
owner-occ. dwelling	0	52	52	1.2	0

[1] In this case, m refers to the corporate tax rate applicable to capital growth funds.
[2] In case of owner-occupied dwellings, the tax rate applies to the imputed rent.
[3] In case of owner-occupied dwellings, this tax rate has to be multiplied by 60%.

Other parameters:

imputed rent on owner-occupied dwellings for tax purposes (hwf)	:	1.25%
capital gains tax on managers/shareholders (z_s) under present system, respectively under new system	:	25%, 30%
average yearly proportion of shares sold (λ)	:	0.05
local property tax on owner occupied housing (w_{im})	:	0.3%

B. Parameters applying to the firm

Corporation tax (τ): 35%

Firms wealth tax (w_c)

machinery	buildings	non-physical assets
0	0.3%	0

Tax depreciation in years (L)[1]

machinery	buildings	non-physical assets
9	25	1

Economic depreciation rate (δ)[2]

machinery	buildings	non-physical assets
0.125	0.041	0.125

[1] Straight-line depreciation. The figures for machinery and buildings are an estimated average.

[2] Exponential depreciation rates. They are an estimated average and derived from straight-line depreciation rates, set up by CBS.

	Immediate expensing allowances (f)			Investment subsidies (g)		
	machinery	buildings	non-physical assets	machinery	buildings	non-physical assets
conventional shareholder	0.005	0.005	0	0.001	0.001	0
manager/ shareholder	0.04	0.04	0	0.001	0.001	0
self-employed	0.07	0.07	0	0.001	0.001	0

Abstract

One of the main elements of the tax reform proposed by the Dutch government is replacing the comprehensive personal income tax on interest income and dividends and the wealth tax by a schedular tax on a presumptive return. This tax does not discriminate between the various types of incomes from capital at the personal level. This paper analyzes how these reform proposals affect the incentives to save and invest, employing the methodology developed by King and Fullerton. The reform eliminates tax arbitrage based on generating capital gains, which are tax exempt under personal income taxation. Moreover, the tax disadvantage of equity at the corporate level is no longer compensated by the tax advantage of untaxed capital gains at the personal level. Hence, corporations face stronger tax incentives to finance with debt. Debt finance becomes more attractive also for individuals investing in an unincorporated business and owner-occupied dwellings.