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The case of Norway

TALL SOM FORTELLER
DISCUSSION PAPERS
1001

Geir H. M. Bjertnæs

Discussion Papers No. 1001, May 2023
Statistics Norway, Research Department

Geir H. M. Bjertnæs

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Abstract:
Taxation of capital income and wealth redistributes from the rich but may harm the Norwegian economy as business investments is distorted. This study shows how to redistribute from the richest without distorting investment decisions of foreign and domestic investors within a simplified model framework designed for modest levels of taxes on capital income and wealth. A wealth tax without a discount for working capital combined with a tax rate on ordinary income equal to the corporate tax rate abroad achieves these goals. This tax proposal is assessed based on previous results on taxation.

Keywords: Taxation, capital income, wealth

JEL classification: H2, H21, F21

Acknowledgements: Thanks to Erling Holmøy, Linda Nøstbakken, Erlend Eide Bø and Thomas Von Brasch for excellent comments.

Address: Geir H. M. Bjertnæs, P. B. 2633, St. Hanshaugen 0131 Oslo, Norway, Statistics Norway, Research Department. E-mail: ghb@ssb.no

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ISSN 1892-753X (electronic)

Sammendrag

I forsknings- og fagøkonomisk litteratur finner jeg ikke en beskrivelse av hvordan det norske skattesystemet, med selskapsskatt og formuesskatt med verdsettelsesrabatt for arbeidende kapital, kan tilpasses for å omfordele fra de rike uten å påvirke insentiver til å investere i næringslivet. Denne artikkelen analyserer hvordan man kan omfordele fra de rike uten at disse skattene påvirker utenlandske og norske investorers insentiv til å investere. En slik løsning krever at skatt på alminnelig inntekt settes lik den skatten utenlandske investorer må betale på avkastning av investert kapital i andre land. Løsningen krever også en formuesskatt, som bare betales av norske innbyggere, basert på markedsverdier uten verdsettelsesrabatter på arbeidende kapital. Formuesskatt på egen bolig basert på markedsverdier må samtidig være høyere enn formuesskatten på annen formue for å forhindre overinvestering i bolig. Skatt på fordel av egen bolig er et alternativ. Disse resultatene kombinert med innsikt fra empiriske studier gir støtte for å beholde dagens formuesskatt, men uten verdsettelsesrabatt på arbeidende kapital. Skatteutvalget anbefalte på sin side at deler av formuesskatten erstattes med skatt på arv.

Artikkelen viser også at selskapsskatten reduserer utenlandske investorers insentiv til å investere i Norge når beskattningen i utlandet er lavere enn i Norge. Selskapsskatten reduserer ikke norske investorers insentiv til å investere siden avkastningen av alternativ plassering, som f.eks. renteinntekter, skattes med samme sats som overskudd. Verdsettelsesrabatten på arbeidende kapital i beregning av formuesskatten gir insentiver til overinvesteringer i arbeidende kapital siden alternativ plassering gir en høyere formuesskatt. Artikkelen viser dessuten at investeringer i sekundærbolig er tilnærmet nøytralt beskattet, men at rabatter i beregning av formuesskatt for primærboliger samt fraværet av skatt på fordel av egen bolig gir insentiver til overinvestering i bolig.

Resultatene i denne studien er utledet i et enkelt modellrammeverk designet for moderate skattesateser på kapitalinntekter og formue. Rammeverket utelukker skatteomgåelse ved at investorer flytter til utlandet, eller skatteunndragelse ved at formue overføres til skatteparadiser. Rammeverket utelukker også at en kraftig økning av formuesskatten vil svekke vernet om privat eiendomsrett. Erfaringer med ulike styresett tilsier at en slik svekkelse vil være destruktivt for samfunnet. Disse momenter inngår i drøftingen av skattesystemets utforming.

1. Introduction

Piketty (2013) shows that the richest are getting richer in many countries. The concentration of wealth is also increasing, see Saez and Zucman (2016). Increased concentration of wealth is reinforced by higher returns for those with large fortunes, see Fagereng et al. (2016). However, the percentage of income paid in taxes is larger for ordinary people than for rich in Norway when income is broadly defined, see Aaberge et al. (2021). One important justification for such lenient taxation of the rich is that such taxation can distort business investments in a globalized capital market by increasing rate of return requirements, see Devereux et al. (2008) and de Mooij and Ederveen (2008). Previous studies have explored how taxation of capital income and wealth affects business investments by altering rate of return requirements within the Norwegian economy. However, how to design tax systems which redistributes from the rich without increasing rate of return requirements for foreign and/or domestic investors is an underexplored topic.

This study contributes by analysing how to design tax systems which redistribute from the rich without increasing rate of return requirements for foreign and domestic investors. The study shows that such rate of return requirements requires a tax rate on corporate profit, which is aligned with the tax rate on capital income, equal to the tax rate foreign investors have to pay on returns on investments abroad. Such rate of return requirements also requires a uniform wealth tax, which is only paid by Norwegian residents, based on market values without discounts on working capital. The study does not quantify redistributional impacts of such taxation. However, the Norwegian wealth tax is mainly paid by the richest, see Thoresen et al. (2022) and Aaberge et al. (2021), hence a rise in the wealth tax rate redistributes from the rich. An equal effective tax rate on all investment alternatives implies that only socially profitable business investments are realised. The design of this proposed tax system is assessed based on previous results on taxation.

2. The literature

Equity income from the corporate sector is subject to both corporate tax and to personal taxes on dividends and capital gains. Advocates of the 'old view' have stressed the need to relieve such double taxation to avoid distortions in corporate investments, see Harberger (1962). Advocates of the 'new view' have pointed out that retained earnings are the main source of equity finance, and that double taxation is not a serious problem when effective tax rates on capital gains on shares are modest, see King (1974). Sandmo (1974) shows that taxation of corporate profit does not distort investment decisions when all costs are deducted from the tax base. Such costs include interest on both equity and dept, as well as depreciation allowances which correspond to true depreciation. He also shows that such taxation distorts investment decisions when a share of the capital is financed with equity and returns on equity is non-deductible, as in the current Norwegian tax system.

International integration of capital markets has popularized the view that personal taxes on capital does not distort corporate investments significantly within a small open economy as investment incentive is determined by foreign investors' required return on shares, see e.g. Boadway and Bruce (1992). Recent studies on the other hand show that the design of personal taxes is crucial for the required returns on shares which are only traded domestically. Sørensen (2005b) shows that a personal tax on equity income in an open economy will distort the required returns on shares which are not traded in the international stock market. However, if shareholders are granted a deduction for a riskfree rate of return, like the Norway shareholder tax, the tax will be neutral with respect to real investment when investors are well diversified, see also Sørensen (2005a). Lindhe and Södersten (2012) however shows that the Norwegian shareholder tax is likely to leave the distortions caused by the corporate income tax unaffected, and to add new distortions to shareholders' portfolio decisions. Sørensen (2022) on the other hand argues that distortions caused by the corporate income tax is approximately neutralized by the Norwegian shareholder tax provided investors are well-diversified. He also shows that the shareholder tax will reduce the required rate of return if shareholders in small companies are not well diversified, and that this non-neutrality is likely to be socially desirable.

The present study analyses rate of return requirements for foreign investors that does not pay personal taxes in Norway, and for domestic investors that are investing in domestic shares and bank deposits/bonds. It is assumed that returns on shares are risk-free due to the results by

Sørensen, 2005b and 2022. Risk-free returns are as mentioned exempt from the Norwegian shareholder tax[1]. The study contributes to the literature on corporate taxation and investments in Norway by showing that a corporate tax cut within the Norwegian economy stimulates foreign direct investments (FDI) by lowering the rate of return requirement for foreign investors. The study also shows that the rate of return requirement for domestic investors is not lowered by a tax cut on corporate and capital income. The explanation is that the stimulating impact of the corporate tax cut is neutralized by the capital income tax cut which stimulates financial investments. Hence, the incentive to allocate capital towards business investment is unchanged. Brasch et al. (2022) on the other hand shows that a corporate tax cut in Norway is self-financing as both foreign extensive margin and domestic intensive margin investments are stimulated. The study further shows that a uniform tax cut on all types of domestic wealth does not stimulate domestic investments for the same reason. These results are found in various forms in previous studies as well, see e.g. Holmøy et al. (1993), Bjertnæs (2018) and Bjerksund and Schjelderup (2022b). A wealth tax with a discount on working capital leads to overinvestments, however, see Bjerksund and Schjelderup (2022b).

It is well known that tax benefits due to deductions for interest payments on loans distorts the equity to debt ratios of firms. However, equity is favoured by the Norwegian tax system when returns are transferred to domestic investors. Dividend payments below the normal rate of return is exempt from taxation, while interest payments on loans are taxed as capital income. The present study shows that the distortion in favour of debt financing is removed as benefits of deductions for interest payments are neutralized by tax exemptions for dividend payments to domestic investors. These exemptions were designed to achieve this outcome, see NoU 2014:13

[1] The Norwegian dividend tax is designed so that investment decisions and choice of financing are not distorted, see Sørensen (2005a). Domestic investors must pay dividend tax on dividends that exceed the shielding deduction, which is set equal to the normal rate of return. Shield deductions that are not exploited, due to dividends below the normal rate of return, will reduce taxable dividends that exceeds the normal rate of return in future periods. Hence, deductions are designed so that investments with an uncertain return is not distorted by the dividend tax. Several studies find conditions which imply that the dividend taxation has a neutral effect on investment behavior, see e.g. Sandvik (2022), and Bjerksund and Schjelderup (2022a) for the case with a wealth tax. However, other studies, such as Bjerksund and Schjelderup (2021a) and Bjerksund and Schjelderup (2021b), demonstrate challenges with asymmetry in the taxation of capital gains and losses as well as tax avoidance. Excluding uncertainty and the dividend tax will not affect rate of return requirements in cases where the dividend taxation has a neutral effect on investment behavior. This combined with the desire to simplify is the reason why uncertainty and the dividend tax are omitted from this analysis.

(2014) and NoU 2022:20 (2022). The loan bias is present for foreign investors however as profit is shifted to low-tax countries by financing investments with loans.

The study also shows that an efficient level of secondary housing capital is achieved within the present Norwegian tax system when document fee and local property tax are omitted. Discounts in the wealth tax for primary housing as well as the absence of tax on the benefit of own housing provide incentives for overinvestment in housing, see also Bye and Aavitsland (2003) and Bø (2019) who in addition finds favourable distributional effects of taxation of housing. A wealth tax on own housing which exceeds the wealth tax on other assets prevent overinvestment in housing. A tax on the benefit of own housing is an alternative. Taxation of housing does not affect business investment when investors can finance investments with loans at a given interest rate, however.

The study assumes perfect competition with perfectly mobile capital and a perfectly functioning capital market with equal investors who can borrow/save at a given interest rate. The chosen analytical approach excludes arguments that are crucial for the design of the tax system, however. It neglects that an increased wealth tax can lead to more rich people avoiding taxes by moving abroad, see Fasting (2016) and Egbele et al. (2021), as well as investing in tax havens. Several of those who avoid or evade tax in this way continue their business domestically, however. Distortions connected to the allocation of consumption over time is not incorporated into the model framework of the present study[2]. The analysis does not consider that a sharp increase in the wealth tax will weaken the protection of private property rights. Experience with different governance systems indicates that such a weakening will be destructive for society, see Acemoglu and Robinson (2012) and Hall and Jones (1999). Hence one may argue that the analytical approach is designed for modest levels of taxes on capital income and wealth. Even though the points above are not included in the analytical framework, they are included in the discussion of the design of the tax system.

[2] Chamley (1986) and Judd (1985) find that tax revenue should be raised exclusively by taxing labor income, and that capital income should therefore not be taxed. A tax on capital income implies an exponentially growing tax burden on consumption in future periods. This is not compatible with the standard Ramsey principle of smoothing out distortions in consumption due to taxation, see also Judd (1999). Jacobs and Rusu (2018) finds that a tax on capital income is redundant for the same reason that differentiated taxes on consumer goods is redundant within optimized tax systems. Atkinson and Sandmo (1980) and Andersen (2020), on the other hand, show cases where a tax on capital income increases welfare in overlapping generation models.

3. Rate of return requirements for Norwegian investors

An optimal allocation of capital from the perspective of an investor emerges when the after-tax cash flow from a marginal equity investment equals the opportunity cost, i.e. the after-tax cash flow from the most profitable and equally large financial investment. This equality determines the investor's rate of return requirement for business investments. The point of departure is that Norwegian companies are mainly owned by different types of rich investors who are taxed differently. Certain industries are characterized by companies with Norwegian owners, while other industries are characterized by companies with foreign owners. This distinction is important because a Norwegian investor pays residence-based wealth and capital income tax on financial and business investments, while a foreign investor pays Norwegian source-based tax on corporate profits. The state also owns a significant share of the companies in Norway, but often takes a passive role. These different owners will have different pre-tax rate of return requirements for their investments. The analysis also distinguishes between Norwegian investors who are in a wealth tax position and Norwegian investors who are not in a wealth tax position. In this section, the rate of return requirement/ user cost of capital is derived for Norwegian investors.

It is assumed that a given amount, q_0, is invested in all the alternatives. Capital units are chosen so that the price per capital unit is equal to this amount. Each investment option provides an after-tax cash flow a period later when the investment is liquidated. The after-tax cash flow for each of these investment options are equalized when investors have optimized their investment decisions. This method provides a clear and intuitive description of how taxation affects rate of return requirements. It is assumed that companies optimize the investor's cash flow after tax when the companies invest in real capital. Simplifying assumptions are introduced where this is appropriate.

A Norwegian investor who invests an amount q_0 financially in his home country, and who liquidate the investment the following period, will receive a payment, F_1, of

(1) $F_1 = q_0\big(1 + r(1 - t_r)\big)\big(1 - t_f^k\big)$.

t_r is the tax rate on ordinary income. t_f^k is the wealth tax rate on financial capital, and r is a nominal interest rate given in the international capital market. The before-tax return therefore equals the interest rate.

The investor can alternatively invest in real capital by buying shares. It is assumed that the investment in shares is incorporated as equity, which is invested in real capital. The rate of return requirement of such real capital investments is determined by optimizing the after-tax cash flow to the investor as well as by the return on financial investments. There are no set-up costs or uncertainty associated with the rate of return on investments in shares. The value of the shares consequently equals the value of the real capital, i.e. Tobin's q is thus equal to one. The analysis is confined to the case of normal rates of return, and rate of returns in excess of normal rate of returns as a result of a risk premium or random variations are excluded from the model framework. Hence, the approach also excludes dividends above the normal rate of return and the dividend tax on dividends above normal rate of return.

The share value of the company in period zero equals the value of invested capital in the company, q_0K. The value of the company a period after, A_1, will be equal to the potential payout the period after

(2) $A_1 = [f(L,K) - wL + q_1(1-\delta)K] - [f(L,K) - wL - q_0\delta K + q_1(1-\delta)K - q_0(1-\delta)K]t_r,$

where r is the interest rate and t_r is the tax rate on profits, which is identical to the tax rate on interest income, as this income is taxed as ordinary income. The depreciation rate, δ, equals tax deductions due to depreciation allowances. The Norwegian tax system is designed so that this tax principle is largely followed. The parentheses that make up the first paragraph on the right-hand side of equation (2) represent the company's pre-tax cash flow. It consists of sales revenue from the production of a product that is sold at a normalized price of NOK 1. The production in expression (2) is assumed to be given by a constant return to scale production function, $f(L,K)$, with the arguments labour, L, and capital, K. The company pays a wage rate, w, per unit of labor. The last term in the first square bracket represents income from the sale of all the remaining real capital in the period after the investment. The expected price of capital in the period after investment is given by q_1. The second square bracket on the right-hand side of (2) represents tax payments as a result of tax on profits. The tax base consists of sales revenue, $f(L,K)$, minus labor

costs, wL, minus deductions due to depreciation, $q_0\delta K$, plus book-value profit on the sale of real capital, $q_1(1-\delta)K - q_0(1-\delta)K$. The tax base is multiplied by the tax rate, t_r.

It is assumed that the company maximizes the investor's after-tax cash flow. The investor must pay wealth tax on working capital, i.e. on shars. As mentioned, it is assumed that the investment is included as equity invested directly in real capital, which costs q_0 per unit. The investment in K units of capital give the investor a potential cash flow in the period after equal to $\hat{\pi}$, given by

(3) $\hat{\pi} = A_1[1 - t_a^k]$.

Cash flow from the firm, A_1, is multiplied by one minus the wealth tax rate on working capital, $1 - t_a^k$, to deduct the wealth tax. The calculations below show that the rate of return requirement does not exceed the normal rate of return.

The company is a price taker and maximizes the investor's potential after-tax cash flow, $\hat{\pi}$, with respect to labor, L. The first-order condition for optimal input of labor is

(4) $f'_L(L,K) = f'_L\left(\frac{L}{K},1\right) = w$.

Equation (4) implies that the marginal product of labor equals the wage rate.

Euler's theorem for homogeneous product functions combined with equations (4) and (2), which is then implemented into equation (3) gives an expression for the cash flow the following period, π, provided that the profit-maximizing workforce has been chosen.

(5) $\pi = \left[\left[f'_K\left(\frac{L}{K},1\right)K + q_1(1-\delta)K\right](1-t_r) + q_0 K t_r\right][1 - t_a^k]$

The change in cash flow due to a marginal increase in capital, given that the input of labor is chosen optimally according to equation (4), is found by taking the derivative of π in equation (5) with respect to K.

(6) $\frac{\partial \pi}{\partial K} = \left[\left[f'_K\left(\frac{L}{K},1\right) + q_1(1-\delta)\right](1-t_r) + q_0 t_r\right][1 - t_a^k]$

An equilibrium condition for capital investments is that the after-tax cash flow from investments in stocks equals the after-tax cash flow from financial investments. Investments in stocks/ real capital result in a cash flow corresponding to the expression in (6). The corresponding cash flow from financial investments is given by equation (1). These conditions imply that

$$(7)\ q_0\big(1+r(1-t_r)\big)(1-t_f^k) = \left[\left[f'_K\left(\frac{L}{K},1\right)+q_1(1-\delta)\right](1-t_r)+q_0 t_r\right][1-t_a^k].$$

Equation (7) can be transformed into equation (8).

$$(8)\ [1+r(1-t_r)]\frac{\left[1-t_f^k\right]}{[1-t_a^k](1-t_r)}-\frac{t_r}{(1-t_r)}+\frac{q_1}{q_0}\delta-\frac{(q_1-q_0)}{q_0}-1=\frac{f'_K\left(\frac{L}{K},1\right)}{q_0}.$$

The left-hand side of equation (8) equals the user cost of capital per krone invested when investors pay wealth tax, and the right-hand side equals the marginal return on capital per krone invested. This user cost of capital determines the ratio between labor and capital, and this ratio between labor and capital determines the equilibrium wage rate[3]. Net profit, i.e. return in excess of normal rate of return, equals zero in this case. There are no limits to how much capital the investor wants to invest if the marginal return on capital exceeds the user cost of capital. The investor does not want to invest any capital if the marginal return on capital is below the user cost of capital. It follows from the expression in equation (8) that a wealth tax on working capital that is lower than the wealth tax on financial capital implies a lower user cost of capital. When $t_f^k = t_a^k$, taxation is neutral, and equation (8) transforms to the text-book formula, see e.g. Hall and Jorgenson (1967) for other cases,

$$(9)\ r+\frac{q_1}{q_0}\delta-\frac{(q_1-q_0)}{q_0}=\frac{f'_K\left(\frac{L}{K},1\right)}{q_0}.$$

[3] Assuming such wage determination within the traded-goods sector of a small open economy is common practice. It is also consistent with the wage bargaining design within the Norwegian economy. Such wage determination also implies that the price of non-traded goods is determined so that rate of return requirements is satisfied within these sectors aswell, see Bjertnæs (2023) for a detaljed approach.

The user cost of capital is not affected by taxation since the return on the real investment is taxed at the same rate as the return on the financial investment in this case.

A company can also finance investments with loans. Interest payments associated with such loans are deductible when the tax on profits is calculated. However, payment of interest income to the investor that has lent to the company is taxed as capital income. Suppose an investor provides a loan, q_0, to the company. The company must repay the loan and interest payments the following period. For the investor, this becomes an ordinary financial investment, and cash flow after tax is given by equation (1).

The marginal change in after-tax cash flow to the owner of the firm due to a marginal increase in capital financed with a loan is found from a modified equation (6) which accounts for investments being financed with loan. The condition becomes

$$(10)\ \frac{\partial \pi'}{\partial K} = \left\{-q_0(1+r) + \left[f'_K\left(\frac{L}{K},1\right) + q_1(1-\delta)\right] - \left[f'_K\left(\frac{L}{K},1\right) - q_0\delta - q_0 r + q_1(1-\delta) - q_0(1-\delta)\right]t_r\right\}[1-t_a^k]$$

Repayment of loans with interest is included as the first term in the first bracket. Interest expenses, $q_0 r$, are also deducted in the calculation of corporate tax payment. Assuming that the rate of return requirement is determined by the rate of return requirement with equity financing and a wealth tax rate on financial capital equal to the wealth tax rate on working capital, equation (9), implies that

$$(11)\ \frac{\partial \pi'}{\partial K} = 0$$

The owners could have earned extra profit by financing investments with loans if the additional cash flow was positive. It could then be argued that the rate of return requirement had to be lower than when the capital was equity financed. That is not the case, and hence, one can argue that the rate of return requirement for debt financing is identical to the rate of return requirement for equity financing.

The explanation is that the company receives a deduction for debt interest payments when the corporate tax is calculated. However, the return is taxed at the investor's hand as interest income. There is no deduction for return on investments financed with equity when the tax on profits is calculated. Hence, the return on equity is taxed as corporate profit. Dividend payments plus capital gains paid to the investor is not taxed when such payments do not exceed the normal rate of return, however. Hence, returns on equity is taxed as firm profit but exempt from taxation when transferred to the investor. Returns which cover interest payments are exempt from profit taxation but such return is taxed as capital income when transferred to the investor. The return on both types of investments is consequently taxed as ordinary income within the Norwegian tax system. Hence, the tax system does not favour investments financed by debt for such investors.

Loans will be unprofitable for the company with a rate of return lower than the interest rate. This is the case when the wealth tax on working capital is lower than the wealth tax on financial capital. An investor will place the wealth in shares in this case to pay less wealth tax. It would also be profitable to invest wealth as equity, which is then invested financially by the firm.

4. The rate of return requirement for foreign investors

Several industries are characterized by companies with foreign owners, often multinational companies, which do not pay wealth tax in Norway. Such owners will also be able to invest abroad, and in this way avoid Norwegian taxation. It is therefore appropriate to analyse how the tax system affects the investment behaviour of companies with such foreign owners.

It is also well known that companies owned by foreign investors can avoid tax by shifting taxable profits to low-tax countries. Multinational companies that invest in a country such as Norway may shift profits abroad by giving loans to a subsidiary that invests. This form of profit shifting is limited by interest rate limitation rules, however. Transfer of profits also takes place via transfer pricing, strategic placement of patent ownership as well as with franchise agreements. There are some examples of multinational companies moving their entire profits abroad. The Norwegian corporate tax will not affect investment decisions in cases where the entire profit is moved abroad, see Bjertnæs (2018). Balsvik etc. (2009), however, estimate that multinational companies operating in Norway transfer approximately 1/3 of their profit abroad, and that the remaining

profit are taxed in Norway. Calculations below assume that the foreign investor finances the entire investment with equity, and that profit shifting is not possible.

Suppose a foreign investor invests in one unit of capital as equity. The company must pay corporate tax on profit in Norway. The investor is however exempt from wealth tax and dividend tax to Norway. Simple modifications of equation (6) shows that the after-tax cash flow the following period from this investment is expressed as

$$(12)\ \frac{\partial \pi}{\partial K} = \left[f'_K\left(\frac{L}{K}, 1\right) + q_1(1-\delta)\right](1-t_r) + q_0 t_r.$$

It is assumed that the foreign investor's rate of return requirement equals the return he gets by investing abroad, which for the sake of simplicity is set equal to the after-tax interest rate abroad, $r(1-t_u)$. Setting the cash flow from additional investments abroad equal to the after-tax cash flow from additional real investments in Norway implies that

$$(13)\ q_0(1+r(1-t_u)) = \left[f'_K\left(\frac{L}{K}, 1\right) + q_1(1-\delta)\right](1-t_r) + q_0 t_r.$$

Equation (13) can be transformed into equation (14).

$$(14)\ \frac{r(1-t_u)}{(1-t_r)} + \frac{q_1}{q_0}\delta - \frac{(q_1-q_0)}{q_0} = \frac{f'_K\left(\frac{L}{K},1\right)}{q_0}$$

The user cost of capital for foreign investors is given by the left-hand side of equation (14). Equation (14) shows that the corporate tax increases the rate of return requirement, and that the rate of return before compensation for depreciation and capital gains exceeds the interest rate when the tax rate in Norway is higher than the tax rate abroad. The foreign investor requires a higher return on capital invested in Norway for the after-tax return to be equal to the after-tax return on his alternative investment. By comparing equation (14) with equation (9), we see that a foreign investor has a higher rate of return requirement than a Norwegian investor who does not pay wealth tax when the corporate tax in Norway is higher than abroad. The explanation is that the foreign investor pays a lower tax on his alternative investment. The foreign investor therefore demands a higher rate of return before tax to compensate for this. A Norwegian investor who pays wealth tax has a lower rate of return requirement than a Norwegian investor who does not

pay wealth tax if the wealth tax on working capital is lower than on financial capital. Thus, the difference between the before tax rate of return required by a foreign investor and a Norwegian investor who pays such wealth taxes in even higher.

The rate of return requirements above can be exploited to uncover tax systems which implements production efficient investments. The point of departure for such an analysis is that taxes should be designed so that production efficiency is achieved, see Diamond and Mirrlees (1971). It is also assumed that pre-tax product prices equal the social benefit per product. Savings abroad reprecents an investment where income today can be exchanged for income a period later with a factor of $1 + r$. Efficiency in production is achieved when other forms of investments generate the same rate of return as savings abroad. Consumption opportunities can be increased the period following an investment without reducing consumption today if other forms of investment provide a higher return on the margin. This is achieved by reallocating investments from foreign savings to the alternative with a higher return. The same type of gain is achieved by doing the opposite if the return on alternative investments provides a lower return.

The rate of return requirement for foreign investors, equation (14), implies that efficiency is achieved by setting the tax rate on ordinary income equal to the tax rate foreign investors must pay on returns on investments abroad. This will implement efficient levels of investments made by foreign investors. Reasons for deviating from this solution is discussed in sections below. The rate of return requirement for Norwegian investors who are not in a wealth tax position, equation (9), implies that the rate of return requirement is not affected by the tax on ordinary income. Setting the wealth tax on working capital equal to the wealth tax on financial capital in equation (8) implement efficient levels of investments made by Norwegian investors. A wealth tax with deductions and a step-by-step increase in the tax rate can thus be designed to redistribute from the richest without distorting investments by foreign and domestic investors. The after-tax return on savings/invested capital is reduced by such taxes, however.

5. The rate of return requirements for housing capital

A Norwegian investor can choose to invest assets in housing capital. Such investments provide a benefit from living. The after-tax benefit the following period associated with investing in B units of housing capital, which for simplicity is assumed to cost $b_0 = q_0$ per unit, is given as

$$(15)\ H = b_1(1-\delta_b)B + u(B) - b_1(1-\delta_b)Bt_b^k$$

The first expression on the right-hand side of equation (15), $b_1(1-\delta_b)B$, equals the value of the sale of B units of housing, where δ_b denotes the rate of depreciation. Note that capital gains from the sale of a primary residence which has been inhabited by the owner are exempt from taxation. The second term, $u(B)$, is the utility of living in B housing units. The last term is property tax on housing capital, where t_b^k is the wealth tax rate for housing. The document fee and local property tax are omitted. A marginal increase in housing capital results in a payment the following period

$$(16)\ \frac{\partial H}{\partial B} = u'(B) + b_1(1-\delta_b)\left[1-t_b^k\right]$$

The wealth tax is levied on after-tax cash flows in calculations of user costs in the sections above. Hence, these calculations assume that the entire after-tax wealth is saved. The entire after-tax wealth is not saved when investing in housing as part of the return consists of the benefit of living in your house. When investment alternatives are compared, however, the extent of savings in each of the investment alternatives should be the same so that the wealth tax bases are comparable. It is therefore assumed that an amount corresponding to the utility from owning your own home is consumed when the investor invests financially. This consumption is deducted when wealth tax payments on financial capital are calculated. The after-tax cash flow the following period from housing investments plus the utility from owning housing capital equals the after-tax cash flow for financial investments plus financial wealth that is consumed. Equation (16) and equation (1) corrected for the fact that some of the cash flow, $u'(B)$, goes to consumption implies that

$$(17)\ u'(B) + \left[q_0\left(1+r(1-t_r)\right) - u'(B)\right]\left[1-t_f^k\right] = u'(B) + b_1(1-\delta_b)\left[1-t_b^k\right]$$

Equation (17) can be transformed into equation (18).

$$(18)\ \left(1+r(1-t_r)\right) - \left[\frac{(b_1-b_0)}{b_0} + 1 - \frac{b_1}{b_0}\delta_b\right]\frac{\left[1-t_b^k\right]}{\left[1-t_f^k\right]} = \frac{u\prime(B)}{b_0}$$

The user cost of primary housing per krone invested, the left-hand side of equation (17) equals, equals the marginal utility of living in housing per krone invested, the right-hand side. Housing investment, B, is determined by i.a. the tax on rent, wealth tax on financial capital and wealth tax on housing capital. A higher tax on interest income and/ or financial wealth results in a lower user cost for housing capital. A higher wealth tax on housing capital results in a higher user cost for housing capital.

The user cost of housing capital is given by the left-hand side of equation (19) when the wealth tax on financial capital equals the wealth tax on housing capital,

$$(19)\ r(1-t_r) - \frac{(b_1-b_0)}{b_0} + \frac{b_1}{b_0}\delta_b = \frac{u\prime(B)}{b_0}.$$

This expression for the user cost is identical to the expression for the user cost of housing in the literature, see Dougherty and Van Order (1982). The components in this user cost are, with one exception, equal to the user cost in equation (9). The user cost for housing capital includes the after-tax interest rate because there is no tax on the benefit of living in your own home. A higher tax on interest income results in a lower user cost for housing capital. A tax on interest income without a tax on the benefit of living in your own home thus leads to overinvestment in housing capital.

Note that the rate of return requirement of both housing investments and business investments are determined by the rate of return on financial investments. Hence, business investments will therefore not be affected by tax discounts on housing investments in the absence of liquidity constraints. With limited loan options, increased property tax on housing will create a need for liquidity which affects business investments in companies with limited liquidity according to Berzins et al. (2019).

Net income from renting out a secondary home is taxed as capital income in Norway. Profit from the sale of a secondary home is also taxed as capital income. The after-tax cash flow in the following period associated with investing in B units of secondary housing, which is rented out until it is sold is given as

(20) $H_s = [b_1(1-\delta_b)B + lq_0B - (lq_0B - \delta_b q_0 B + b_1(1-\delta_b)B - b_0(1-\delta_b)B)t_r](1-t_f^k)$,

where rental income is given as lq_0B.

The wealth tax rate on secondary housing equals the wealth tax rate on financial capital. Hence, the after-tax cash flow of investment in an additional house is given as

(21) $\frac{\partial H_s}{\partial B} = [b_1(1-\delta_b) + lq_0 - (lq_0 - \delta_b q_0 + b_1(1-\delta_b) - b_0(1-\delta_b))t_r](1-t_f^k)$.

Free entry into the rental market implies that the after-tax cash flow of investing in housing equals after-tax cash flow of financial investments, i.e.

(22) $q_0\big(1+r(1-t_r)\big)(1-t_f^k) = [b_1(1-\delta_b) + lq_0 - (lq_0 - \delta_b q_0 + b_1(1-\delta_b) - b_0(1-\delta_b))t_r](1-t_f^k)$.

Equation (22) can be transformed into equation (23).

(23) $r + \frac{b_1}{b_0}\delta_b - \frac{(b_1-b_0)}{b_0} = \frac{lq_0}{q_0}$.

The rental price of secondary housing per krone invested, $\frac{lq_0}{q_0}$, equals the well-known user cost of housing capital, the left-hand side of equation (23), i.e. the interest rate plus the depreciation rate minus a price change term. Neither wealth tax nor tax on ordinary income affects this user cost. The tax system will therefore not distort investments in secondary housing through the user cost.

Equation (19) implies that an efficient level of investments in primary housing is achieved when the tax on interest income equals zero. This is achieved by setting the tax rate on ordinary income equal to zero, or by removing interest deductions for mortgages. Equations (18) and (19) implies that the tax on ordinary income, which includes interest deductions for mortgages, reduces the user cost of primary housing capital. This tax therefore leads to overinvestment in housing capital, see Bø (2019) who also finds favourable distributional effects of taxation of housing. An efficient level of investments in primary housing capital when ordinary income is taxed implies that the wealth tax on primary housing must exceed the wealth tax on financial capital. A property tax and a tax on the benefit of owning your own home are alternatives. The

rate of return requirement for secondary housing investments, equation (23), implies that an efficient level of secondary housing capital is achieved within the present tax system when document fee and local property tax are omitted.

As mentioned, taxation of primary residences does not affect business investments via rate of return requirements when loans at a given interest rate are unlimited. Berzins et al. (2019), however, find that an increase in the wealth tax on housing creates a need for liquidity that affects business investments in companies with limited liquidity. Such problems can be reduced considerably by introducing deductions, however.

6. Discussion

The sections above show how to designe tax systems which redistributes from the rich without reducing incentives to invest in businesses within a simplified model framework designed for modest levels of taxes on capital income and wealth. A tax system with a wealth tax based on market values without discounts combined with a tax rate on capital income and corporate profit equal to the tax rate foreign investors must pay on returns on business investments abroad achieves these goals. This system redistributes from the rich as the Norwegian wealth tax is mainly paid by the richest, see Thoresen et al. (2022) and Aaberge et al. (2021). However, all relevant aspects of capital and wealth taxation are not incorporated into the model framework employed.

The analysis does not consider that increased wealth taxation may lead to more rich people avoiding or evading tax. Several rich people can avoid tax by moving abroad. Tax revenues can also be lost as fewer rich people move to Norway. A study of the Spanish wealth tax finds a certain mobility among the rich, see Agrawal et al. (2020). Many of the richest also avoid significant amounts of taxes by placing assets in tax havens, see Alstadsæter et al. (2019). Redistribution from the rich is reduced by such tax avoidance. Several wealthy investors moved abroad in 2022 when taxation of dividend and wealth increased slightly, however. Several of those who avoid or evade tax in this way continue to operate their business in Norway. These movers become foreign investors and their incentive to invest in Norway is as mentioned not distorted by the tax design in question. This will mitigate any negative effects on investments. Empirical studies found that the Norwegian wealth tax led to modest changes in taxable wealth,

see Bjørkli and Arntsen (2021) and Thoresen et al. (2022), or that it increased taxable wealth, see Ring (2020). Empirical studies of the wealth tax in Norway also reveal marginal positive effects on employment in companies with liquid owners, while the effects are negative in small companies with illiquid owners, see Bjørneby et al. (2022) and Berzins et al. (2019). Hence, adverse impacts seem to be modest when the wealth tax is modest. The present study compliments this literature by showing that incentives to investment in businesses are not distorted by the proposed tax system with a uniform wealth tax.

Capital income should not be taxed when capital is perfectly mobile even though other countries tax capital according to Gordon (1986). Harmonization of taxes between countries does not change this result, see Razin and Sadka (1991). A tax on immobile labor is more effective in such an economy. A source-based tax on capital income can on the other hand be justified by the occurrence of net profit accruing to foreign owners, see Huizinga and Nielsen (1997). The source-based tax implies that foreign owners contribute to the financing of the Norwegian welfare state. Taxation of capital income can also be justified by the desire to prevent tax evasion by reporting labour income as capital income, see Gordon and Mac Kie-Mason (1994). This form of tax avoidance can also be mitigated by increasing the tax rate on dividend payments to investors, as has been the case in Norway in recent years. The present study contributes by showing that a wealth tax combined with a capital income tax which is aligned with the corporate tax which is set equal to the corporate tax abroad does not reduce incentives to invest in businesses. An alternative is to implement capital income taxation combined with lenient rules which allow for profit shifting so that investment incentives of foreign investors are not distorted, see Hong and Smart (2010). However, such rules are to some extent prevented by international cooperation to abolish tax evasion.

Large gains are taxed by a tax on capital income, but not by a wealth tax, see Boadway and Pestieau (2019). Such differences can provide benefits for society as a wealth tax reallocates capital to more productive investors, see Guvenen et al. (2019). The model framework within the present study excludes such benefits, however. Nor do the framework consider the disadvantages of a wealth tax having to be paid in periods when the owner suffers large losses. However, this problem applies to a small number, see Bjørneby et al. (2022) and Thoresen et al. (2022), and can be reduced by including deductions. One may also construct scenarios where the

wealth tax distorts investment decisions when returns are uncertain. Such scenarios emerge when large gains are taxed by the wealth tax as gains accumulate while losses do not lower wealth tax payments as the wealth of investors is reduced below the wealth tax threshold. A wealth tax combined with other taxes on capital income can also result in a reallocation of ownership towards foreign investors which is not necessarily desirable. A reallocation towards foreign investors will on the other hand provide technology transfers that increase growth according to Keller (2004). Empirical knowledge about such long-term effects is limited, however.

A sharp increase in the wealth tax which combined with taxes on capital income and dividend payments gradually confiscates private wealth may lead to behaviour that is destructive for the society. A sharp tax increase gives investors incentives to hide wealth in tax havens, move abroad to avoid tax, or possibly spend the wealth on luxury consumption before the government confiscates the wealth. The economic incentive to innovate, improve products and production processes vanishes when the government decides to confiscate private wealth. Acemoglu and Robinson (2012) argue that economies with strong protection of private property rights have led to prosperity for nations, while nations with weak protection of property rights have failed, see also Hall and Jones (1999). Acemoglu and Robinson (2012) present several good examples where nations that were initially quite similar but chose different systems of government ended up with very different outcomes. A strong protection of private property rights is of course not the only relevant factor. Preventing power and resources from ending up within a limited elite is also important for society to succeed, see Acemoglu and Robinson (2012) and Alesina and Rodrik (1994). An attempt to solve such problems with a sharp increase in the wealth tax rate could be destructive for society, however.

7. Conclusion

This study contributes by analysing how to design tax systems which redistribute from the rich in Norway without increasing rate of return requirements for foreign and domestic investors. A tax system with a wealth tax based on market values without discounts combined with a tax rate on ordinary income equal to the tax rate foreign investors must pay on returns on business investments abroad achieves these goals. The analytical framework is designed for modest levels of taxes on capital income and wealth. The framework does not take into account that an increased wealth tax can lead to more rich people avoiding taxes by moving abroad. However,

those who move become foreign investors and their incentive to invest in Norway is as mentioned not distorted by the tax design in question. The analysis combined with insights from empirical studies of the Norwegian wealth tax lend support to a modest uniform wealth tax in Norway.

A strong protection of private property rights has led to prosperity for nations. Preventing power and resources from ending up with a limited elite is also important for society to succeed. Preventing power and resources from ending up with a limited elite by a sharp increase in the wealth tax could be destructive for society, however. A sharp increase in the wealth tax implies that the government confiscate private wealth, and hence, weakens the protection of private property rights.

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