Taxing Corporate or Shareholder Income: The Role of Capital Market Openness*

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Abstract

As corporate income tax rates have fallen across the world, other capital taxes become more important. This paper studies the choice between income taxation at the corporate (source) and shareholder (residence) level depending on capital market openness. I develop a model of capital markets and sufficient-statistics framework to determine optimal tax reforms. The main result is that in open capital markets, corporate income taxes typically creates higher incidence on workers than shareholder income taxes do, such that lowering the former and increasing the latter may be optimal. In a policy application, I derive optimal reform directions for corporate and shareholder income taxes for a large and a small economy.

JEL: F21, H21, H22. Keywords: capital market openness, corporate income tax, dividend taxes, sufficient statistics

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1 Introduction

Over the last decades, a wide range of countries have reduced their corporate income tax rates (de Mooij et al., 2021). A prominent alternative to corporate income taxation is to tax shareholders on their income (dividends and capital gains) deriving from corporate profits. This paper evaluates the choice between taxing income at the corporate versus shareholder level. In fully open capital markets, residence-based shareholder taxation is targeted at resident shareholders. In less open capital markets, shareholder taxation reduces domestic capital supply and wages. Conversely, corporate taxation can tax foreign investors, but can reduce wages through domestic capital demand. I develop a sufficient-statistics model to study the trade-off between corporate and shareholder income taxation, allowing for tax base spillovers, before analysing the relationship between sufficient statistics and the optimal reform direction.

To explain why there is a trade-off between corporate and shareholder taxation, consider what an investor's after-tax income c is from an investment x. Denote by r the return rate, τ^b as the corporate income tax rate, τ^r as the shareholder income tax rate (on dividends or capital gains), and τ^p as the total tax rate on investment. After-tax income is

$$c = (1 - \tau^r)(1 - \tau^b)rx = (1 - \tau^p)rx.$$

Hence, the *total statutory marginal tax rate on investment* is the combination of taxes at the corporate and shareholder level

$$\tau^p = \tau^r + \tau^b - \tau^r\tau^b.$$

A key difference between the two taxes is to which groups they apply. Taxes on corporate income are typically applied on a *source basis*, in the country where operation takes place, such that there is a statutory corporate income tax payment by all investors in the company. Taxes on shareholder income are instead typically applied on a *residence basis*, such that they apply only to resident investors' global investments.[1] From the national government's point

[1] A notable counterexample is dividend withholding taxes, which apply to certain foreign investors depending on bilateral tax agreements, see Casi et al. (2026).

of view, one benefit of a corporate income tax is therefore to partly tax foreign shareholders. However, growing empirical evidence indicates that corporate income taxes affect investment and other tax bases more than shareholder income taxes do (including Chetty and Saez (2005) and Yagan (2015) on dividend taxation and Suárez Serrato and Zidar (2016) and Fuest et al. (2018) on corporate income taxation). The trade-off between these two effects is the basis for this paper.

The main contribution of the paper is to develop a tractable and applicable framework for studying the optimal taxation of corporate and shareholder income under a fixed labour income tax. The approach here is based on sufficient statistics, which involves making few assumptions about the structure of the economy and connecting the welfare analysis of tax reforms to empirical estimates of tax base elasticities (Chetty, 2009b). A key point is that taxes are in the end borne by individuals, and the model therefore accounts for incidence in an optimal tax sufficient statistic framework. Incidence matters both because of fiscal externalities on other tax bases and because governments may attach different weights to workers, resident shareholders and foreign shareholders. To determine incidence, two empirical features are accounted for. First, it matters who owns corporations. Whether owners are foreigners or residents and whether they are rich or poor may affect the weights governments attach to them and thereby optimal tax policy. Second, taxes are not necessarily paid by the groups that face the statutory incidence. The extent of economic incidence on each group is determined by the elasticity of each tax base with respect to each tax rate.

The framework is used to study optimal policy under different assumptions about the relationship between tax rates on the corporate and shareholder level. Using this model and its sufficient statistics, I evaluate the optimal corporate and shareholder income tax mix. The sufficient statistics required for this analysis are the elasticities for the two tax bases in question (shareholder and corporate), four elasticities describing cross-tax base effects (on labour, shareholders and corporations) of corporate and shareholder income taxes, two own-price elasticities of "effort" (labour supply for workers and investment for shareholders), three tax rates (on average labour income, on shareholder income, and on corporate income), and marginal welfare weights on each of the three groups of individuals (foreign investors, resident investors and resident workers). While this may appear to be too many

sufficient statistics to estimate for the framework to be practical, I show how the optimal reform direction can be derived by making assumptions about capital market openness. One benefit of the sufficient statistics approach is that it requires few assumptions about the structure of the economy, such that the framework is applicable to economies with different characteristics.

I apply the framework to a large economy, the United States, and a small open economy, Norway. One result is that if all own- and cross-base elasticities are the same for the corporate and shareholder income tax, a higher corporate income tax is typically optimal, as it raises some revenue from taxing foreign investors. Another result is that the incidence on workers is a key determinant of the optimal policy mix. This is partly driven by the high relative welfare weight on workers compared to investors derived from how the current progressive labour income tax distributes from high to low earners. If corporate income taxation affects investment more than shareholder income taxation does, which is more likely in a more open economy, more of the incidence of corporate income taxes typically falls on workers. This makes a reform towards lower corporate income tax and higher shareholder income tax more attractive.

Related literature

First, the paper connects the choice of corporate and shareholder taxation to capital market openness and home bias in portfolio allocation. Empirically, investors exhibit a strong preference for domestic assets relative to the predictions of models with frictionless capital markets (French and Poterba, 1991, Tesar and Werner, 1995, Lewis, 1999, Coeurdacier and Rey, 2013). This literature highlights that international capital mobility is limited in practice, due to factors such as information frictions, transaction costs, institutional barriers, and risk. On the theoretical side, a number of contributions model deviations from perfect capital mobility through portfolio frictions or preferences over domestic and foreign assets (Stulz, 1981, Gordon, 1986, Razin and Sadka, 1991, Brennan and Cao, 1997). In these models, the allocation of capital across countries depends on return differentials, but is dampened by frictions, generating an endogenous degree of home bias. The contribution to this literature is to incorporate such a mechanism into a sufficient-statistics framework for tax incidence.

A second literature connection is to a broad theoretical literature on effects and incidence of capital income taxation (Harberger, 1962, Diamond and Mirrlees, 1971, Atkinson and Stiglitz, 1976, Judd, 1985, Chamley, 1986, Nielsen and Sørensen, 1997 and Straub and Werning, 2020). The famous Atkinson-Stiglitz result of zero capital income taxation at the optimum does not apply in the setting here, since preferences are not assumed to be homogeneous and separable (Saez, 2002), investors may earn income above the normal rate of return, and there are foreign investors.

A third contribution of the paper is to apply the sufficient statistic framework for tax analysis (Feldstein, 1999, Saez, 2001, Chetty, 2009a, Saez and Stantcheva, 2018, Piketty et al., 2023 and Zoutman, 2025) to corporate income taxation and incidence analysis. Saez and Zucman (2023) challenge the standard approach to tax incidence. Using a neoclassical model with taxation of capital and labour, they show that supply elasticities of capital and labour are the only necessary parameters for the optimal tax problem, and that cross-base effects are irrelevant for optimal policy. Some of the reasons why results here differ are that the sufficient-statistics model allows for: non-neoclassical effects (such as super-normal returns to capital investment), tax evasion responses of corporate income to taxation that do not affect investment, and rent-sharing with workers within the firm. Lehmann and Zanoutene (2026) also study the choice between taxation of shareholders versus corporations. Their focus is on the choice between dividend and corporate income taxation in a closed economy where investors may avoid dividend taxation. Contrary to the results in this paper, Lehmann and Zanoutene derive an optimal dividend tax equal to zero. The key reason for the difference in results is that in their framework, there is no additional distortion from the corporate income tax relative to the dividend tax, such as less foreign investment or a lack of equity relief in the corporate income tax base.

A fourth literature connection is to specific theoretical work on corporate income taxes, dividend taxes and capital gains taxes (Feldstein and Hartman, 1979, Korinek and Stiglitz, 2009, Gourio and Miao, 2010, Auerbach and Devereux, 2018 and Bjerksund and Schjelderup, 2022). The contribution to this strand of literature is to show how aspects of these different taxes can be brought together to derive the optimal reform in a sufficient statistic framework. Most relevant, Bucovetsky and Wilson (1991) and Huizinga and Nielsen (1997) study

the trade-off between taxing income at source and at residence, but limit their analysis to qualitative insights based on representative agents. Related, Chang (1988) and Dávila and Hébert (2023) study the trade-off between taxing corporate income and corporate payouts with a focus on corporate financing. None of these contributions include effects on workers or overall welfare. Kohl and Richter (2023) show how optimal redistributive tax policy depends on whether the economy is open, but does not distinguish between corporate and shareholder taxation.

The paper proceeds as follows. Section 2 describes a specific model of capital market openness. Section 3 presents the general model and derives the main theoretical optimal tax results. Section 4 describes the relationship between sufficient statistics and optimal reform directions. Section 5 concludes.

2 A model of capital market openness

2.1 Description

In this section, I introduce a simple model of investment behaviour and capital market openness. The purpose of the model is to provide a microfoundation for the sufficient statistics used in the next section. In particular, the model shows how the incidence of corporate and shareholder income taxation depends on whether domestic firms can access international capital markets or rely on resident investors.

There are two types of resident firms, $b = 1, 2$, and foreign firms, $b = f$. Type-1 resident firms can access international capital markets. Type-2 resident firms rely on resident investors. Let $\phi \in [0, 1]$ denote the share of the domestic corporate sector accounted for by type-2 firms. Hence, ϕ measures the extent to which domestic production relies on resident capital. When $\phi = 0$, capital markets are fully open. When $\phi = 1$, capital markets are closed.

After-tax profits of resident firm type b are

$$\pi_b(k_b, l_b) = (1 - \tau^b) f(k_b, l_b) - (1 - \theta\tau^b)\tilde{w}_b^k k_b - (1 - \tau^b) w_b^l l_b, \tag{1}$$

where $\tau^b > 0$ denotes the corporate income tax rate, $\theta \in (0, 1)$ is the extent to which capital costs are tax deductible, $k_b > 0$ denotes capital, $\tilde{w}_b^k > 0$ denotes the cost of capital, $w_b^l > 0$

denotes wages, and $l_b > 0$ denotes labour. For simplicity, the production function is

$$f(k_b, l_b) = k_b^{\alpha} l_b^{\beta}, \tag{2}$$

with $\alpha, \beta > 0$ and $\alpha + \beta < 1$. Capital and labour are therefore complements in production. Wages are determined by the marginal product of labour in each type of firm in the short run. Capital demand is denoted by k_b^d and labour demand by l_b^d.

There are two types of investors, resident investors $i = r$ and foreign investors $i = f$. Resident investors allocate savings between domestic type-2 firms and foreign firms, $k^r = k_2^r + k_f^r$. Their preferences depend on the return to investment, $c^r(k^r)$, which is increasing and concave, the opportunity cost of investment, $o(k^r)$, which is increasing and convex, and a friction from investing abroad, $h(k_f^r)$, which is increasing and convex

$$u^r(k^r) = c^r(k^r) - o(k^r) - h(k_f^r).$$

The friction in foreign investment generates home bias. Resident investors invest abroad until the additional return to foreign investment compensates them for the marginal friction

$$(1 - \tau^r)(w_f^r - w_2^r) = h'(k_f^r). \tag{3}$$

Thus, resident investors may be willing to hold domestic assets even when the domestic return is below the foreign return.

Investors' returns can be decomposed into a normal return and a share of excess profits. Let $\tilde{w}_b^i$ denote the normal return for investor type i in firm type b, and let s_b^i denote investor type i's ownership share of profits in firm type b. Resident shareholder income from domestic type-2 firms is then $\tilde{w}_2^r k_2^r + s_2^r \pi_2(k_2, l_2)$. Resident investors maximize utility subject to the budget constraint

$$c^r = (1 - \tau^r) \left[\gamma \left(\tilde{w}_2^r k_2^r + s_2^r \pi_2(k_2, l_2) \right) + (1 - \gamma) w_f^r k_f^r \right], \tag{4}$$

where τ^r denotes the shareholder income tax rate and γ is the share of resident investors' portfolios invested at home. Foreign investors face a fixed normal return, $\tilde{w}^f$, and may

invest in type-1 firms in the domestic economy.

Workers follow the standard labour supply model, $u^l(l) = c(l) - v(l)$, where $c(l) = (1-\tau^l)w^l l$, and $v(\cdot)$ is increasing and convex.

Using the model, the elasticity of after-tax profits with respect to the net-of-corporate income tax rate, ε^{bb}, is

$$\varepsilon^{bb} = \frac{1 - \dfrac{\theta\alpha(1-\tau^b)}{1-\theta\tau^b} - \beta - \alpha\tilde{\varepsilon}_w^{kb} - \beta\varepsilon_w^{lb}}{1-\alpha-\beta}, \tag{5}$$

where $\tilde{\varepsilon}_w^{kb}$ is the elasticity of $\tilde{w}_b^k$ and ε_w^{lb} is the elasticity of w_b^l, both with respect to $1-\tau^b$. The first term in the numerator is the mechanical effect on profits. The next two terms hold factor prices fixed and account for the effect of the tax change on the tax-distorted cost of capital and on labour costs. The final two terms capture changes in factor prices. Hence, after-tax profits increase only if the mechanical effect of the tax cut is larger than the increase in factor costs.

For either tax instrument $j \in \{b, r\}$, define the incidence elasticities of wages and shareholder returns with respect to the relevant net-of-tax rate by

$$\varepsilon_w^{lj} \equiv \frac{\partial w^l}{\partial(1-\tau^j)}\frac{1-\tau^j}{w^l}, \qquad \varepsilon_w^{rj} \equiv \frac{\partial w^r}{\partial(1-\tau^j)}\frac{1-\tau^j}{w^r}. \tag{6}$$

The wage effect is determined by the effects of the tax change on labour and capital

$$\varepsilon_w^{lj} = \alpha\varepsilon^{kj} + (\beta-1)\varepsilon^{lj}. \tag{7}$$

Because $\alpha > 0$, an increase in capital raises wages, holding labour fixed. The extent of this wage effect depends on capital market openness.

I define incidence as the effect of tax changes on the utility of workers and shareholders. Appendix A defines specific incidence measures. The next subsection shows how capital market openness maps into the sufficient statistics used in Section 3.

2.2 Partially open capital markets

In the partially open economy, a share $1-\phi$ of the domestic corporate sector consists of type-1 firms with access to international capital markets, while a share ϕ consists of type-2 firms that rely on resident investors. Type-1 firms face a cost of capital determined in international markets. Type-2 firms face a cost of capital determined by resident capital supply.

For type-2 firms, capital demand is

$$k_2^d = \left(\frac{(1-\tau^b)\alpha l_2^\beta}{(1-\theta\tau^b)\tilde{w}_2^k} \right)^{\frac{1}{1-\alpha}}.$$

Resident capital supply to type-2 firms is total resident saving net of foreign investment

$$k_2^r = (o')^{-1}\left((1-\tau^r)w_2^r\right) - (h')^{-1}\left((1-\tau^r)(w_f^r - w_2^r)\right).$$

In equilibrium, $k_2^d = k_2^r$.

A reduction in the shareholder income tax therefore increases capital supplied by resident investors and may increase capital used by type-2 firms. Because capital and labour are complements, this can raise wages in type-2 firms.

By contrast, type-1 firms can access international capital markets. In a small open economy, their required normal return is fixed by the world market. A shareholder tax on resident investors therefore changes the after-tax return to resident shareholders, but does not change the cost of capital faced by type-1 firms. Hence, shareholder income taxation does not affect investment or wages in type-1 firms $\varepsilon_{w,1}^{lr} = 0$ and $\varepsilon_1^{br} = 0$. The subscript $b = 1, 2$ on elasticities denotes the firm type.

The aggregate effects of shareholder taxation on domestic investment, corporate income, and wages are therefore increasing in the share of the economy that relies on resident capital. Suppressing differences between firm-size, employment, and tax-base weights, the aggregate wage and corporate-base effects of shareholder taxation can be written as

$$\bar{\varepsilon}_w^{lr}(\phi) = \phi\varepsilon_{w,2}^{lr} \quad \text{and} \quad \bar{\varepsilon}^{br}(\phi) = \phi\varepsilon_2^{br}. \tag{8}$$

More generally, ϕ should be interpreted as the relevant income-weighted share for the tax

base under consideration.

Corporate income taxation affects both types of firms, but potentially through different mechanisms. For type-1 firms, the normal return is fixed internationally. For type-2 firms, the cost of capital also depends on resident capital supply. Aggregate wage and corporate-base effects of corporate taxation can therefore be written as weighted averages

$$\bar{\varepsilon}_w^{lb}(\phi) = (1-\phi)\varepsilon_{w,1}^{lb} + \phi\varepsilon_{w,2}^{lb}, \tag{9}$$

and

$$\bar{\varepsilon}^{bb}(\phi) = (1-\phi)\varepsilon_1^{bb} + \phi\varepsilon_2^{bb}. \tag{10}$$

Similarly, the effect of corporate taxation on resident shareholder returns is

$$\bar{\varepsilon}_w^{rb}(\phi) = (1-\phi)\varepsilon_{w,1}^{rb} + \phi\varepsilon_{w,2}^{rb}. \tag{11}$$

These relationships show how capital market openness maps into the sufficient statistics used below. Openness does not by itself determine optimal tax policy. Instead, it changes the relevant incidence and fiscal elasticities. The partially open capital markets nest the open and closed cases: When $\phi = 0$, shareholder taxation has no effect on domestic investment, corporate income, or wages. When $\phi = 1$, the economy is closed in the sense that domestic firms rely on resident capital.

Proposition 1 (Openness and the targeting of shareholder taxation)**.** *Suppose that a reduction in the shareholder income tax increases capital supplied to resident-financed firms and raises wages in those firms, so that* $\varepsilon_{w,2}^{lr} > 0$*. Then* $\frac{\partial \bar{\varepsilon}_w^{lr}(\phi)}{\partial \phi} = \varepsilon_{w,2}^{lr} > 0$*. Hence, shareholder income taxation is more targeted at resident shareholders when capital markets are more open.*

Proof. The result follows immediately from Equation (8). As ϕ increases, a larger share of domestic firms relies on resident capital. Shareholder taxation then has larger effects on domestic capital accumulation and wages. □

The proposition highlights the main role of openness for shareholder taxation. In a fully open economy, a residence-based shareholder tax affects resident shareholders' after-tax income, but not domestic firms' cost of capital. In a closed economy, the same tax also affects

domestic capital supply and therefore wages. Shareholder taxation is therefore less targeted when domestic firms rely more heavily on resident investors.

Proposition 2 (Corporate-tax wage incidence in an open economy)**.** *Suppose type-*1 *firms face a fixed required normal return in international capital markets, so that* $\tilde{\varepsilon}^{kb}_{w,1} = 0$*. If capital costs are not fully deductible,* $\theta < 1$*, and capital and labour are complements,* $\alpha > 0$*, then a reduction in the corporate income tax increases capital demand in type-*1 *firms. If labour supply does not fully offset this increase in capital demand, wages in type-*1 *firms increase.*

Proof. The direct effect of an increase in $1 - \tau^b$ on capital demand is positive when $\theta < 1$

$$\frac{\partial \log k_1^d}{\partial \log(1-\tau^b)} = \frac{1}{1-\alpha}\left(1 - \frac{\theta(1-\tau^b)}{1-\theta\tau^b}\right) + \frac{\beta}{1-\alpha}\varepsilon_1^{lb} = \frac{1}{1-\alpha}\frac{1-\theta}{1-\theta\tau^b} + \frac{\beta}{1-\alpha}\varepsilon_1^{lb}. \tag{12}$$

The first term is strictly positive when $\theta < 1$. Since capital and labour are complements, an increase in capital raises the marginal product of labour. Using Equation (7), this raises wages whenever the labour response does not fully offset the effect of higher capital. □

This proposition clarifies why corporate income taxation can affect wages even in an open economy. A fixed world return does not mean that domestic capital demand is fixed. It means that the required normal return is fixed. If the corporate income tax raises the user cost of domestic capital, then a corporate tax cut can increase domestic capital intensity and wages.

2.3 Closed capital markets

The closed-economy case corresponds to $\phi = 1$. There are only firms financed by resident investors, $b = 2$, and resident investors invest only at home. Hence, $\gamma = 1$, $k_1^f = 0$, and $k_1 = 0$.

Capital demand is

$$k_2 = \left(\frac{(1-\tau^b)\alpha l_2^\beta}{(1-\theta\tau^b)\tilde{w}_2^k}\right)^{\frac{1}{1-\alpha}},$$

and capital supply is

$$k_2^r = (o')^{-1}\left((1-\tau^r)w_2^r\right),$$

such that in equilibrium $k_2 = k_2^r$.

Define the labour and capital effort supply elasticities as

$$\sigma_l \equiv \frac{v'(l)}{lv''(l)} \qquad \text{and} \qquad \sigma_k \equiv \frac{o'(k)}{ko''(k)}. \tag{13}$$

Let the share of normal returns in total shareholder returns be

$$\omega \equiv \frac{\tilde{w}^k}{w^r}. \tag{14}$$

For a change in the net-of-corporate income tax rate, the Cobb–Douglas structure implies

$$\varepsilon_w^{lb} = \alpha\varepsilon^{kb} + (\beta - 1)\varepsilon^{lb}, \tag{15}$$

and

$$\varepsilon_w^{rb} = \left(1 - \omega + \omega\frac{1-\theta}{1-\theta\tau^b}\right) + (\alpha - \omega)\varepsilon^{kb} + \beta\varepsilon^{lb}. \tag{16}$$

Using

$$\varepsilon^{lb} = \sigma_l\varepsilon_w^{lb}, \qquad \varepsilon^{kb} = \sigma_k\varepsilon_w^{rb},$$

it follows that

$$\varepsilon^{lb} = \frac{\sigma_l\alpha}{1 + \sigma_l(1-\beta)}\varepsilon^{kb}, \tag{17}$$

and

$$\varepsilon^{kb} = \frac{\sigma_k\left(1 - \omega + \omega\frac{1-\theta}{1-\theta\tau^b}\right)}{1 - \sigma_k\left(\alpha - \omega + \dfrac{\beta\sigma_l\alpha}{1 + \sigma_l(1-\beta)}\right)}. \tag{18}$$

Hence,

$$\varepsilon^{lb} = \frac{\sigma_l\alpha}{1 + \sigma_l(1-\beta)} \cdot \frac{\sigma_k\left(1 - \omega + \omega\frac{1-\theta}{1-\theta\tau^b}\right)}{1 - \sigma_k\left(\alpha - \omega + \dfrac{\beta\sigma_l\alpha}{1 + \sigma_l(1-\beta)}\right)}. \tag{19}$$

For a change in the net-of-shareholder income tax rate, the structure implies

$$\varepsilon_w^{lr} = \alpha\varepsilon^{kr} + (\beta - 1)\varepsilon^{lr}, \tag{20}$$

and

$$\varepsilon_w^{rr} = (\alpha - \omega)\varepsilon^{kr} + \beta\varepsilon^{lr}. \tag{21}$$

Using

$$\varepsilon^{lr} = \sigma_l \varepsilon_w^{lr}, \qquad \varepsilon^{kr} = \sigma_k(1 + \varepsilon_w^{rr}),$$

it follows that

$$\varepsilon^{lr} = \frac{\sigma_l \alpha}{1 + \sigma_l(1-\beta)} \varepsilon^{kr}, \tag{22}$$

and

$$\varepsilon^{kr} = \frac{\sigma_k}{1 - \sigma_k \left(\alpha - \omega + \dfrac{\beta \sigma_l \alpha}{1 + \sigma_l(1-\beta)} \right)}. \tag{23}$$

Hence,

$$\varepsilon^{lr} = \frac{\sigma_l \alpha}{1 + \sigma_l(1-\beta)} \cdot \frac{\sigma_k}{1 - \sigma_k \left(\alpha - \omega + \dfrac{\beta \sigma_l \alpha}{1 + \sigma_l(1-\beta)} \right)}. \tag{24}$$

In the closed economy, both corporate and shareholder income taxation affect domestic capital accumulation. A reduction in the corporate income tax increases capital demand. A reduction in the shareholder income tax increases capital supply. Because capital and labour are complements, both tax changes may raise wages. The key difference is that the corporate income tax directly distorts firms' use of capital, whereas the shareholder income tax affects workers only indirectly through resident capital supply.

2.4 Open capital markets

The open-economy case corresponds to $\phi = 0$. Domestic firms can access international capital markets and receive both foreign and resident investment. Return differences are driven away, and in a small open economy the required normal return is fixed: $\tilde{w}^k = \bar{w}^k$. This implies

$$\tilde{\varepsilon}_w^{kb} = 0. \tag{25}$$

Corporate income taxation does not affect the required normal return for investors. Investors can reallocate their portfolios across countries if after-tax returns differ. However, corporate income taxation may still affect domestic investment, profits, and wages. The rea-

son is that the tax can change the user cost of capital faced by domestic firms. If capital costs are not fully deductible, a higher corporate income tax reduces domestic capital demand. With capital–labour complementarity, lower capital demand reduces wages.

Corporate income taxation also affects shareholders through their ownership of domestic profits. Even when normal returns are fixed internationally, shareholders bear incidence through the effect of the tax on after-tax profits. In the notation of the sufficient-statistics model below, this effect is captured by the incidence elasticity ε_w^{rb} for resident shareholders and the corresponding ownership-weighted incidence on foreign shareholders.

By contrast, shareholder income taxation has no effect on domestic firms in the fully open case. The shareholder tax is residence-based and applies to resident investors' global shareholder income. If domestic firms can access international capital at the world return, changes in the resident shareholder tax do not change the marginal cost of capital for domestic firms. Hence,

$$\varepsilon_w^{lr} = 0, \qquad \varepsilon^{br} = 0. \tag{26}$$

For resident shareholders, the incidence of a change in the shareholder income tax is therefore the mechanical effect on their after-tax income, together with any effect on their own saving that is welfare irrelevant on the margin by the envelope theorem

$$t^{rr} = z^r. \tag{27}$$

With open capital markets, shareholder taxation is targeted at resident shareholders, while corporate taxation remains a source-based instrument that can tax foreign owners and domestic profits but also reduces domestic wages through its effect on capital demand.

3 A sufficient statistics model

3.1 Description

3.1.1 Individuals and tax bases

I now present a sufficient statistics model building on 2 to derive optimal tax reforms.

Labour income earners have income z^l, resident shareholders have income z^r, and for-

eign shareholders have income z^f.[2] In addition, corporations, b, produce corporate income, z^b, which is taxable profits for each corporation. Individuals cannot relabel their income from one type to another. Each income type $k = l, b, r, f$ is distributed according to $h^k(z^k)$, total incomes of each type are denoted by Z^k, and $\bar{x}$ denotes income-weighted averages of variables x. The model allows for heterogeneous individuals and firms, but subscripts indicating specific individuals and firms are omitted for readability.

Individual utility functions for both workers and shareholders are denoted by $u^k(c^k(w^k), e^k(w^k))$, where $c^k = z^k(w^k, e^k) - T^k(z^k(w^k, e^k)$ is consumption, z^k is the individual's taxable income, $z^k(w^k, e^k) = w^k e^k(w^k)$, w^k is the price (wages or rental rates), e^k is effort exerted (labour hours or investment) in attaining z^k for each individual, $T^k(.)$ is the income tax for each income type. Utility functions are concave in c^k and strictly convex in e^k.

The key factor is that prices are endogenous, such that returns for shareholders and wages for labour income earners depend on total corporate and shareholder income while corporate income depends on shareholder income. To ease the notation, $w^l(Z^b, Z^r, Z^f)$ is abbreviated by w^l, $w^r(Z^r, Z^f, Z^b)$ is abbreviated by w^r, $w^f(Z^f, Z^r, Z^b)$ is abbreviated by w^f, $z^b(Z^r, Z^f)$ is abbreviated by z^b, $u^k(c^k(w^k), e^k(w^k))$ is abbreviated by u^k, $\partial u^k/\partial c^k$ is abbreviated by u^k_c, $\partial u^k/\partial e^k$ is abbreviated by u^k_e and $e^k(w^k)$ is abbreviated by e^k.[3]

The shareholder income tax is based on residence (applies only to resident investors) while the corporate income tax is based on source (may apply to all investments). Shareholder and corporate income taxes are flat and denoted by τ^r and τ^b, respectively, whereas $\bar{\tau}^l$ denotes the income-weighted average labour income tax.

Individuals maximize utility given their budget constraint, $c^k = w^k e^k - T(w^k e^k)$, such that their marginal utility gain from exerting effort is equal to the marginal utility cost,

$$\left(1 - \tau(z^k)\right) u^k_c \frac{\partial z^k}{\partial e^k} = -u^k_e.$$

[2]To fix ideas, shareholder income can be the sum of dividends and capital gains at realisation. The model extends to capital gains taxed and measured at accrual. It can in principle also account for the long-run effects of dynamic considerations, such as incentives to delay realisation through the elasticities.

[3]The model allows for shareholder income tax avoidance by not specifying the relationship between corporate and shareholder income such that not all after-corporate income tax corporate income increases may lead to an equivalent increase in the shareholder income tax base.

This is the standard trade-off between leisure and consumption for labour income earners, while for shareholders the left hand side represents the value of investing one dollar into stocks and the right hand side represents the (net-of-tax) opportunity cost of investment.

The effect on a labour income earner's utility for marginal change in the net-of-tax rate change applied to labour income is

$$\frac{\partial u^l}{\partial(1-\tau^l(z^l))} = u_c^l z^l,$$

which is a result of the envelope theorem.

Remember that w^l is a function of Z^b and Z^r. Hence, the effect on workers from a net-of-tax rate change for corporate or shareholder income is

$$\frac{\partial u^l}{\partial(1-\tau^j)} = (1-\tau^l(z^l))u_c^l e^l \frac{\partial w^l}{\partial(1-\tau^j)}, j = r, b,$$

such that the spillover on wages determines the utility change for workers.

Similarly, the effect on resident shareholders from a tax change on corporate income is

$$\frac{\partial u^r}{\partial(1-\tau^b)} = (1-\tau^r)u_c^r e^r \frac{\partial w^r}{\partial(1-\tau^b)}.$$

Hence, the pass-through of corporate income taxes to shareholders' utility is determined by the effect on the return to their investment.

For resident shareholders the effect of a net-of-tax rate change applied to shareholder income consists of an additional effect, as total shareholder income may affect their returns ($w^r(Z^r, Z^f, Z^b)$), such that the extent of behavioural response of other investors to the tax change affects their returns. Hence,

$$\frac{\partial u^r}{\partial(1-\tau^r)} = u_c^r z^r + (1-\tau^r)u_c^r e^r \frac{\partial w^r}{\partial(1-\tau^r)}.$$

The total effect is a combination of the mechanical change in their consumption from a higher net-of-tax rate and the spillover from increased shareholder income of other shareholders.

Since effort changes due to price changes are welfare irrelevant on the margin (due to the

envelope theorem), I define a taxable income elasticity that only accounts for price effects.[4] The *incidence elasticity of taxable income* (through effects on prices) on income type k for a tax change on base j is

$$\varepsilon_w^{kj} = e^k \frac{\partial w^k}{\partial(1-\tau^j)} \frac{1-\tau^j}{z^k}, \; k = l, r, f \text{ and } j = l, b, r. \tag{28}$$

Using this, the effects of changes to the two net-of-tax rates on resident individuals' utility are as follows

$$\frac{\partial u^r}{\partial(1-\tau^b)} = u_c^r \frac{1-\tau^r}{1-\tau^b} \varepsilon_w^{rb} z^r, \tag{29}$$

$$\frac{\partial u^l}{\partial(1-\tau^b)} = u_c^l \frac{1-\tau^l(z^l)}{1-\tau^b} \varepsilon_w^{lb} z^l, \tag{30}$$

$$\frac{\partial u^r}{\partial(1-\tau^r)} = u_c^r (1+\varepsilon_w^{rr}) z^r \text{ and} \tag{31}$$

$$\frac{\partial u^l}{\partial(1-\tau^r)} = u_c^l \frac{1-\tau^l(z^l)}{1-\tau^r} \varepsilon_w^{lr} z^l. \tag{32}$$

3.1.2 Government

The government chooses its taxes on corporate income, τ^b, and shareholder income, τ^r, subject to a fixed labour income tax, $T^l(z^l)$, to maximize national welfare.[5] Welfare consists of a concave transformation of residents' utilities, $g^k(u^k)$, which is integrated over residents' income distributions,

$$W = \int_{z^l} G^l(u^l(c^l, e^l)) h^l(z^l) dz^l + \int_{z^r} G^r(u^r(c^r, e^r)) h^r(z^r) dz^r.$$

It is maximized subject to the revenue requirement

$$\int_{z^b} \tau^b z^b h^b(z^b) dz^b + \int_{z^r} \tau^r z^r h^r(z^r) dz^r \geq R - \int_{z^l} T^l(z^l) h^l(z^l) dz^l,$$

where $R \geq 0$ is the exogenous revenue the government needs to raise after the revenue raised from the labour income tax. Define marginal welfare weights on the different groups

[4] Appendix A.3 derives the relationship between standard incidence measures and taxable income elasticities.

[5] The objective is national: the government places no welfare weight on foreign shareholders. A global planner would attach positive weight to foreign shareholders, which would reduce the attractiveness of source-based corporate taxation as a way of taxing foreigners.

by $g^k = \partial W/\partial c^k = u_c^k \times G_u^k \geq 0$, where $G_u^k = \partial G^k(u^k)/\partial u^k$. These marginal welfare weights are the marginal welfare gain from providing one more unit of consumption to the group relative to the welfare value of one unit of revenue to the government.

Define the *fiscal elasticity of taxable income*,[6] where effort changes are accounted for as they matter for revenue effects, on income type k for a tax change on base j by

$$\varepsilon^{kj} = \frac{\partial z^k}{\partial(1-\tau^j)} \frac{1-\tau^j}{z^k}, \; k = l, b, r, f \text{ and } j = l, b, r. \tag{33}$$

Since $z^k = w^k e^k$ and e^k is a function of w^k, the fiscal elasticity of taxable income has the following relationship to the incidence elasticity of taxable income

$$\varepsilon^{kj} = \varepsilon_w^{kj} \left(1 + \varepsilon_e^{kk}\right), \; k = l, r, f \text{ and } j = l, b, r, \tag{34}$$

where $\varepsilon_e^{kk} = w^k/e^k \times \partial e^k/\partial w^k$ is defined as the elasticity of effort with respect to the price. For workers, this has a natural interpretation as the labour supply elasticity with respect to the wage, while for shareholders, it may be interpreted as the elasticity of investment with respect to the rate of return.

I study marginal tax reforms and use these to derive optimal tax rates and optimal reform directions. Optimal tax rate formulas depend on sufficient statistics *at the optimum allocation and tax system*, whereas optimal reform directions depend on sufficient statistics *at the initial allocation and tax system*. I denote by $\Delta_j X$ the change in variable X due to the tax change on base j. Effects of marginal tax reforms are first order and are assumed to be smooth.

3.2 A simplified example

To illustrate the framework, ignore shareholders, such that $z^r = z^f = 0$. The reform is an increase in the net-of-corporate income tax rate, $1 - \tau^b$. The effects are:

1. Mechanically (all is fixed except the tax rate), such that the tax change leads to less revenue being raised,

$$M^b = -Z^b < 0.$$

[6] Despite not being explicitly modeled, tax competition through the response of other governments to tax changes may be reflected in the elasticities of each tax base.

2. Corporate income may increase from higher investment, which would increase revenue,

$$B^b = \frac{\tau^b \bar{\varepsilon}^{bb}}{1-\tau^b} Z^b \geq 0.$$

This revenue effect is determined by the tax rate, $\tau^b/(1-\tau^b)$, the average effect on the tax base, $\bar{\varepsilon}^{bb}$ and the size of the tax base, Z^b.

3. Wages may go up from higher investment, which would increase revenue through the labour income tax,

$$B^l = \frac{\bar{\tau}^l \bar{\varepsilon}^{lb}}{1-\tau^b} Z^l \geq 0.$$

This revenue effect is determined by the tax rate on labour relative to that on corporate income, $\tau^l/(1-\tau^b)$, the average effect on the tax base, $\bar{\varepsilon}^{lb}$ and the size of the tax base, Z^l.

4. If wages go up, this also increases the individual welfare of workers,

$$I^l = \bar{g}^l \frac{(1-\bar{\tau}^l)}{1-\tau^b} \frac{\bar{\varepsilon}^{lb}}{1+\bar{\varepsilon}_e^{ll}} Z^l \geq 0.$$

This individual welfare effect is determined by the difference in net-of-tax rates on labour and corporate income, $(1-\tau^l)/(1-\tau^b)$, the average incidence effect on the workers, $\bar{\varepsilon}_w^{lb} = \bar{\varepsilon}^{lb}/\left(1+\bar{\varepsilon}_e^{ll}\right)$, the size of the tax base, Z^l, and the average weight on workers, $\bar{g}^l$.

The net change in welfare from this reform is given by adding up these four effects. The next step is to answer: What is the optimal reform direction for corporate and shareholder income tax rates when the total tax rate on investment of resident investors (inclusive of the corporate income tax) is fixed? Appendix A.1 and A.2 derive unrestricted optimal corporate and shareholder income taxes.

3.3 Optimal shareholder and corporate income tax reform

I now assume that the *total statutory* marginal tax rate on a resident shareholder's investment in a company is fixed and equal to $1-\hat{\tau}$.[7] The constraint is that the government must combine taxes on shareholders and corporations to abide by

$$1-\hat{\tau}=(1-\tau^r)(1-\tau^b). \tag{35}$$

I consider the following tax reform: a small decrease in $1-\tau^r$ combined with a small increase in $1-\tau^b$ (to abide by the constraint), such that the change in the net of corporate tax rate keeps the top total marginal tax rate for resident shareholder income constant,

$$\Delta\left(1-\tau^b\right)=\frac{(1-\hat{\tau})-(1-\tau^r)\left(1-\tau^b\right)}{1-\tau^r}-\frac{\left(1-\tau^b\right)}{1-\tau^r}\Delta\left(1-\tau^r\right). \tag{36}$$

I assume that the constraint, $1-\hat{\tau}=(1-\tau^r)(1-\tau^b)$ holds initially, such that $\Delta\left(1-\tau^b\right)=-\left(\left(1-\tau^b\right)/\left(1-\tau^r\right)\right)\Delta\left(1-\tau^r\right)$. Hence, the change in welfare from the tax reform is

$$\Delta W=\Delta_b W+\Delta_r W=\Delta_b R+\Delta_r R+\Delta_b V+\Delta_r V,$$

where, again, $\Delta_b R$ is the change in revenue due to the corporate income tax change, $\Delta_r R$ is the change in revenue due to the shareholder income tax change, $\Delta_b V$ is the change in welfare for those affected from the reduction in the corporate income tax rate, and $\Delta_r V$ is the change in welfare for those affected from the increase in the personal capital tax.

The optimal reform direction is derived from calculating the total welfare change, ΔW, such that the welfare change from increasing the net-of-tax rate on corporate income must be equal to the welfare change from reducing the net-of-tax rate on shareholder income. The four key equations are, in order, the revenue change from changes to the corporate income tax,

$$\frac{\Delta_b R^b}{\Delta(1-\tau^b)}=-Z^b+\bar{\varepsilon}^{bb}\frac{\tau^b}{1-\tau^b}Z^b+\bar{\varepsilon}^{rb}\frac{\tau^r}{1-\tau^b}Z^r+\bar{\varepsilon}^{lb}\frac{\bar{\tau}^l}{1-\tau^b}Z^l, \tag{37}$$

[7] The rate $\hat{\tau}$ could for example be the same as the top labour income tax rate. This could be due to income shifting becoming too large of a problem if tax rates are different, such that corporate and shareholder income taxation act as a backstop for the labour income tax. Another constraint could have been to revenue raised constant, but as the labour income tax is kept fixed, it is not clear why tax revenue from corporations and shareholders should be kept constant.

the revenue change for changes to the shareholder income tax,

$$\frac{\Delta_r R^r}{\Delta(1-\tau^r)} = \bar{\varepsilon}^{br}\frac{\tau^b}{1-\tau^r}Z^b - Z^r + \bar{\varepsilon}^{rr}\frac{\tau^r}{1-\tau^r}Z^r + \bar{\varepsilon}^{lr}\frac{\bar{\tau}^l}{1-\tau^r}Z^l, \tag{38}$$

the welfare change for those that are affected by the change to the corporate income tax,

$$\frac{\Delta_b V}{\Delta(1-\tau^b)} = \bar{g}^r\bar{\varepsilon}_w^{rb}\frac{(1-\tau^r)}{1-\tau^b}Z^r + \bar{g}^l\bar{\varepsilon}_w^{lb}\frac{(1-\bar{\tau}^l)}{1-\tau^b}Z^l, \tag{39}$$

and the welfare change for those that are affected by the change to the shareholder income tax,

$$\frac{\Delta_r V}{\Delta(1-\tau^r)} = \bar{g}^r\left(1+\bar{\varepsilon}_w^{rr}\right)Z^r + \bar{g}^l\bar{\varepsilon}_w^{lr}\frac{(1-\bar{\tau}^l)}{1-\tau^r}Z^l. \tag{40}$$

Proposition 3. *When the initial tax system abides by the constraint* $1-\hat{\tau} = (1-\tau^r)(1-\tau^b)$*, the total welfare change from an increase in the net-of-corporate income tax rate and a reduction in the net-of-shareholder income tax rate is*

$$\Delta W = M + B^b + B^r + I^r + B^l + I^l,$$

where

$$\begin{aligned}
M &= \frac{(1-\tau^b)\,(1-\bar{g}^r)}{1-\tau^r}Z^r - Z^b,\\
B^b &= \tau^b\left(\frac{\bar{\varepsilon}^{bb}}{1-\tau^b} - \frac{(1-\tau^b)\bar{\varepsilon}^{br}}{(1-\tau^r)^2}\right)Z^b,\\
B^r + I^r &= \left(\tau^r + \frac{(1-\tau^r)\bar{g}^r}{1+\bar{\varepsilon}_e^{rr}}\right)\left(\frac{\bar{\varepsilon}^{rb}}{1-\tau^b} - \frac{(1-\tau^b)\bar{\varepsilon}^{rr}}{(1-\tau^r)^2}\right)Z^r,\\
B^l + I^l &= \left(\bar{\tau}^l + \frac{(1-\bar{\tau}^l)\bar{g}^l}{1+\bar{\varepsilon}_e^{ll}}\right)\left(\frac{\bar{\varepsilon}^{lb}}{1-\tau^b} - \frac{(1-\tau^b)\bar{\varepsilon}^{lr}}{(1-\tau^r)^2}\right)Z^l.
\end{aligned}$$

Proposition 3 shows how the optimal reform direction depends on sufficient statistics. The proposition follows from Equations 37–40, from that when the initial system respects the constraint (Equation 35), and from $\varepsilon^{kj} = \varepsilon_w^{kj}\left(1+\varepsilon_e^{kk}\right)$, where $k = l, r$ and $j = b, r$. M is the mechanical effects on shareholder and corporate income, B^b is the behavioural effect from corporate income, $B^r + I^r$ is the behavioural and incidence effects on shareholders, and $B^l + I^l$ is the behavioural and incidence effects on workers.

With estimates of sufficient statistics at the initial allocation, the result can be used to evaluate both ex ante and ex post tax reforms with minimal assumptions on the behaviour of firms, shareholders and workers. Welfare gains from the increase in shareholder income taxation and reduction in corporate income taxation are derived by inserting for current tax rates, marginal welfare weights, elasticities and income levels. If $\Delta W > 0$, increasing shareholder income tax rates while reducing corporate income tax rates creates a welfare gain. The opposite holds if $\Delta W < 0$.

The optimal combination of the corporate income tax and the shareholder income tax such that the top tax rate on resident investors is fixed, is found when the welfare change is zero, $\Delta W = 0$. Remember the constraint $1 - \hat{\tau} = (1 - \tau^r)(1 - \tau^b)$. Inserting for the constraint and setting the welfare change equal to zero implicitly defines the optimal combination of τ^b and τ^r for given labour income tax, $\bar{\tau}^l$, and total tax rate on resident investment, $\hat{\tau}$. To solve for the optimal tax, insert for the relative tax rates and $1 - \tau^r = (1 - \hat{\tau})/(1 - \tau^b)$, and solve for $1 - \tau^b$. The resulting equation defines the optimal corporate income tax rate, τ^b given the constraint on the relationship with changes in the shareholder income tax, τ^r, and the fixed tax rates, $\bar{\tau}^l$ and $\hat{\tau}$. The resulting equation for optimal tax rates is a third order polynomial in tax rates (and is therefore not included). Since the objective is to derive optimal reform directions rather than optimal tax rates, Proposition 3 provides the necessary result.

To prepare the optimal reform direction framework for application, it is useful to introduce some further theoretical assumptions. I introduce a structure to the relationship between corporate and shareholder income

$$z^r = s^r(1 - \tau^b)z^b + f(z^b, z^{rf}), \tag{41}$$

which implies that

$$\varepsilon^{rb} = s^r \left(1 - \tau^b\right) \frac{z^b}{z^r} + \left(s^r \left(1 - \tau^b\right) + f_{z^b})\right) \varepsilon^{bb} \frac{z^b}{z^r}. \tag{42}$$

The assumptions and implications involved in this are further discussed in Appendix A.4.

4 Sufficient statistics and optimal reform directions

4.1 Setup

To pin down tax policy implications from the model, I proceed to derive optimal reform directions depending on the signs and sizes of the sufficient statistics. As a reminder, the sufficient statistics are the following:

1. Tax rates: $\bar{\tau}^l$, τ^r and τ^b.
2. Tax bases: Z^l, Z^b and Z^r.
3. Tax base and effort elasticities: $\bar{\varepsilon}^{lr}$, $\bar{\varepsilon}^{rr}$, $\bar{\varepsilon}^{br}$, $\bar{\varepsilon}^{lb}$, $\bar{\varepsilon}^{rb}$, $\bar{\varepsilon}^{bb}$, $\bar{\varepsilon}_e^{ll}$ and $\bar{\varepsilon}_e^{rr}$.
4. Marginal welfare weights: $\bar{g}^r/\bar{g}^l$.

In the case where all elasticities are zero, it is optimal to move in the direction of higher corporate and lower shareholder income taxation, as the corporate income tax raises revenue from foreign shareholders without affecting resident shareholders or workers.

Using the framework, I describe how current global developments may affect the different sufficient statistics. Second, I show how certain special cases can assist in narrowing down the optimal reform direction. Third, I analyse the optimal reform direction depending on capital market openness and different values of the sufficient statistics. Fourth, I apply the framework to optimal reform directions in United States and Norway.

4.2 International tax developments and sufficient statistics

I now discuss how the framework can incorporate and shed light on some recent international developments. Importantly, these developments can shift the sufficient statistics and thereby which reforms are optimal.

One recent development in taxation of corporations is the reforms initiated by the OECD, in particular on the Global Minimum Tax (Pillar 2) (Hebous and Keen, 2023 and OECD, 2023a). If successful, it is plausible that it could reduce the elasticity of corporate income with respect to the corporate income tax rate, as profit shifting opportunities may become more limited. The minimum tax also places a further restriction on the optimal combination

of shareholder and corporate income tax rates, such that a successful minimum tax introduces two main effects. First, a lower elasticity of corporate income is beneficial for most countries, as it reduces the negative effect taxation has on revenue and the likelihood of spillovers on workers. This would make a reform towards lower corporate income taxation and higher shareholder income taxation less appealing. Second, if the optimal corporate income tax from the national perspective is below the minimum tax rate even at lower elasticities, the minimum tax imposes a loss by restricting the country from setting its optimal tax rates. If the total tax rate on resident shareholders' investment is fixed, this means that a reform towards lower corporate income taxation and higher shareholder income taxation may have been optimal, but the country is constrained from benefiting from such a tax change.[8] These effects depend on how low the optimal corporate income tax rate is, and more extensive simulation work is necessary to produce credible estimates of corporate income elasticities with a broad adoption of the global minimum tax.

Another relevant international reform is the automatic exchange of information (AEOI) (Boas et al., 2024). These reforms involve increasing the information available to governments on shares held abroad by resident shareholders. This could imply that the shareholder income tax base increases and that the elasticity of shareholder income with respect to shareholder income taxation decreases, as there are fewer avoidance and evasion opportunities. All in all, these reforms can make shareholder income taxation more effective and thereby more appealing relative to corporate income taxation.

The mobility of high-wealth individuals may have increased over time (Kleven et al., 2020). If shareholders are becoming more mobile, this may increase $\bar{\varepsilon}^{rr}$ and reduce Z^r in countries with high taxation of shareholders. As long as shareholders also hold shares abroad, this makes the joint reform of lower corporate income taxation and higher shareholder taxation less attractive. This is because shareholders are more affected by an equivalent increase in the shareholder tax, which they pay depending on their residency, relative to the corporate tax, which they pay depending on where they invest. Taxation of individuals' unrealised capital gains when emigrating may mitigate some of this effect.

Related, capital gains taxation at realisation may incentivize delayed realisation. In

[8] Even if this may be optimal from the national perspective, it may not be optimal from the global perspective.

many cases, such delayed realisation is tax-favoured, either explicitly with lower capital gains tax rates on shares held for longer periods or from returns made on the tax payment shareholders would have faced, had they realised the gain. Lower taxation of long-term gains reduces the tax base, such that tax increases that lead to delayed realisation may also reduce the long-term tax base. If such base-erosion is becoming larger over time, ε^{rr} may increase and Z^r decrease, which makes a reform towards higher shareholder income taxation and lower corporate income taxation less attractive.

4.3 Special cases

Section 2 shows how capital-market openness maps into the sufficient statistics. Here, I present three special cases: $\phi = 1$, $\phi \in (0, 1)$ and $\phi = 0$. Three additional cases (The new view, Open economy, and Resident investors only invest abroad) are presented in Appendix A.5.

Case 1. Closed capital markets

As in Section 2.3, all corporations in the country rely on financing from resident investors and resident investors can only invest in these firms. Taxation of corporations affects investment through capital demand such that $\bar{\varepsilon}^{rb} > 0$ and $\bar{\varepsilon}^{lb} > 0$. Taxation of resident shareholders affect investment of all firms through lower capital supply, such that $\bar{\varepsilon}^{br} > 0$ and $\bar{\varepsilon}^{lr} > 0$. Taxation of shareholder income shifts capital supply whereas taxation of corporate income shifts capital demand, such that effects depend on the shape of these curves at the initial allocation.

Case 2. Separated capital markets

Now, some firms rely on financing from resident investors and resident investors have a home bias such that they invest in some local firms even at lower rates of return. Taxation of corporations affects investment and rate of returns in corporations that rely only on financing by resident investors such that $\bar{\varepsilon}^{rb} > 0$ and $\bar{\varepsilon}^{lb} > 0$. Taxation of resident shareholders may affect investment in firms that rely on financing from these investors such that $\bar{\varepsilon}^{br} > 0$ and $\bar{\varepsilon}^{lr} > 0$. First, corporate income taxes raise some revenue from foreign shareholders,

making the joint reform more attractive. Second, shareholder income taxes affect a smaller section of firms than in the closed capital markets case, as firms can also rely on funding from foreign investors. Hence, starting from the same tax rates, the joint reform with higher shareholder income taxation and lower corporate income taxation is more attractive in a separated compared to in Case 1. However, if the resident ownership share is lower in Case 2, the relationship between the two is not clear since resident shareholders benefit differentially from the joint reform in the two cases. If shareholders have no weight, the joint reform is more attractive in Case 2.

Case 3. Open capital markets

As in Section 2.4, investment can always be financed from foreign investors. Shareholder taxation does not affect investment, as resident shareholders do not affect the level of investment. Hence, there are no spillovers from shareholder taxation, $\bar{\varepsilon}^{br} = \bar{\varepsilon}^{lr} = 0$. There is still a mechanical effect on resident shareholders from corporate income tax changes depending on initial ownership shares, $\bar{\varepsilon}^{rb} \neq 0$. By Proposition 3, the optimal reform direction is towards higher shareholder taxation and lower corporate taxation whenever

$$\Delta W = \frac{(1-\tau^b)(1-\bar{g}^r)}{1-\tau^r} Z^r - Z^b + \tau^b \frac{\bar{\varepsilon}^{bb}}{1-\tau^b} Z^b + \left(\tau^r + \frac{(1-\tau^r)\bar{g}^r}{1+\bar{\varepsilon}_e^{rr}}\right)\left(\frac{\bar{\varepsilon}^{rb}}{1-\tau^b} - \frac{(1-\tau^b)\bar{\varepsilon}^{rr}}{(1-\tau^r)^2}\right) Z^r + \left(\bar{\tau}^l + \frac{(1-\bar{\tau}^l)\bar{g}^l}{1+\bar{\varepsilon}_e^{ll}}\right)\frac{\bar{\varepsilon}^{lb}}{1-\tau^b} Z^l > 0.$$

There is no longer a negative spillover on corporations or workers from shareholder taxation, such that in this case, the joint reform towards higher shareholder income tax rates relative to corporate income tax rates is more appealing than if $\bar{\varepsilon}^{br} > 0$ or $\bar{\varepsilon}^{lr} > 0$. Hence, starting from the same tax system, the joint reform is more attractive than in the separated economy case (Case 2).

4.4 Comparative sufficient statistics in open and closed capital markets

Appendix A.6 presents an example of comparative sufficient statistics. Figures A1a, A1b, A2a and A2b display the net welfare effect of increasing the corporate income net-of-tax rate while decreasing the shareholder income net-of-tax rate. When the net effect is positive,

a reform towards higher shareholder income taxation and lower corporate income taxation is optimal. Along a curve, only the tax or tax base in question changes, whereas all else is constant.

Returning to capital market openness, I adapt the baseline values in A1 to illustrate optimal tax reforms. In the open capital markets case, shareholder taxes have no behavioural effects whereas corporate taxation affects workers and revenue and the resident ownership share is low, $s^r = 0.1$. In the separated capital market case, shareholder income is responsive to shareholder taxation, but there are limited effects on workers or corporate income, whereas the corporate income tax affects workers and shareholders (mechanically) and is somewhat less elastic than in the open capital markets case. The closed capital markets case is the same as the initial values in Table A1 except that resident shareholders own all shares in corporations subject to the corporate income tax in the country, $s^r = 1$.

Table 1: Parameter values for different cases

Case	ε^{lr}	ε^{rr}	ε^{br}	ε^{lb}	ε^{bb}	s^r
Open capital markets	0.00	0.00	0.00	0.50	1.00	0.10
Separated capital markets	0.10	0.20	0.10	0.25	0.5	0.50
Closed capital markets	0.25	0.25	0.25	0.25	0.25	1.00

Figure 1 shows the net welfare effect of a reform towards higher net-of-tax rate on corporate income and a lower net-of-tax rate on shareholder income for different marginal welfare weights on shareholders. This shows that, for these parameters, in all market types, moving towards more shareholder rather than corporate taxation is optimal independently of how much lower weights are on shareholders compared to workers. The social welfare gains from the reform are largest in an open capital market and smaller in a separated or closed capital market. In the closed capital markets case with these parameters, a higher weight on shareholders increases the welfare gain of the reform. This is because there is no foreign ownership, such that resident shareholders reap all the mechanical gains from lower corporate income taxation. With the low resident ownership share in the open capital market case, the relationship is downward sloping. Interestingly, the joint reform is more attractive in the closed capital market case when $\bar{g}^r > 0.6$. Of course, the economy may be smaller or larger in the open capital market case and complementarities between foreign and domestic

investment are not accounted for (Desai et al., 2005).

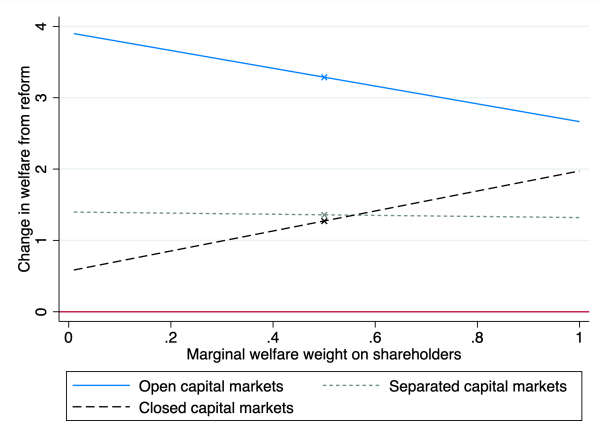


Figure 1: Welfare change for each case depending on shareholder weight.

Notes: The figure displays the net effect of a reform towards higher net-of-tax rate on corporate income and a lower net-of-tax rate on shareholder income for different marginal welfare weights on shareholders, keeping everything else constant. When the effect is positive (negative) a reform towards a higher (lower) shareholder income tax rate and a lower (higher) corporate income tax rate is optimal. The y-axis is measured in terms of the monetary value of welfare per revenue from the corporate income tax and shareholder income tax. Crosses indicate baseline values.

4.5 Country applications

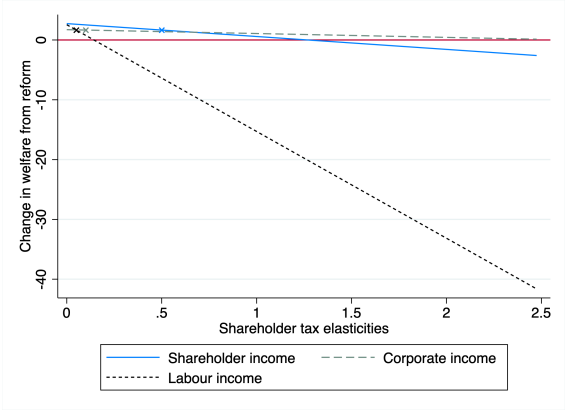
Next, I apply the framework to find the optimal reform direction for the US, a large partially open economy, and Norway, a smaller and more open economy. Whereas tax rates and tax bases can be measured directly based on aggregate data, I rely on the empirical literature to select tax base elasticities and effort elasticities. Benchmark numbers for the U.S. and Norway are provided in Table 2. Details about the choice of these values are presented in Appendix A.7.

Table 2: Initial Values for U.S. and Norway in 2022

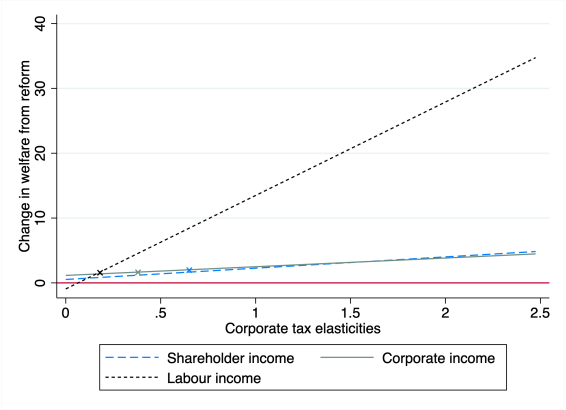
Category	U.S.	Norway
Tax rates		
Average marginal labor tax rate ($\bar{\tau}^l$)	30%	35%
Shareholder income tax rate (τ^r)	29%	37.84%
Corporate income tax rate (τ^b)	21%	22%
Tax bases (bn. currency)		
Labour income (Z^l)	USD 2,300	NOK 1,750
Resident shareholder income (Z^r)	USD 384	NOK 202
Corporate income (Z^b)	USD 370	NOK 478
Share of non-foreign ownership (s^r)	62%	56%
Elasticities		
$\bar{\varepsilon}^{lr}$	0.05	0.02
$\bar{\varepsilon}^{rr}$	0.50	0.25
$\bar{\varepsilon}^{br}$	0.10	0.03
$\bar{\varepsilon}^{lb}$	0.18	0.25
$\bar{\varepsilon}^{bb}$	0.38	0.275
$\bar{\varepsilon}_e^{ll}$	0.10	0.05
$\bar{\varepsilon}_e^{rr}$	0.10	0.05
f_{z^b}	0	0
Implied $\bar{\varepsilon}^{rb}$	0.65	1.32
Marginal welfare weights		
$\bar{g}^l$	1	1
$\bar{g}^r$	0.6	0.4

Notes: U.S. tax rates are from the Tax Foundation (2025), and tax bases are from the OECD (2023b) and the Luxembourg Income Study (2025). Norwegian tax rates are from the Norwegian Tax Authority (2025), and tax bases are from Statistics Norway (2025), excluding the petroleum sector. U.S. elasticities are based on Yagan (2015) and Kennedy et al. (2022).

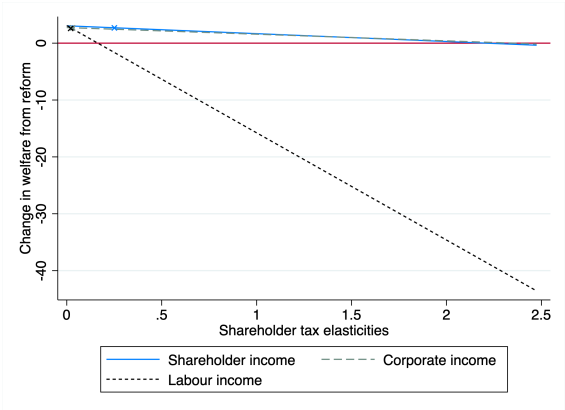
Using the formulas for the relationship between elasticities and incidence derived in the Appendix (Equation A.6), elasticity numbers for the U.S. imply that 56 percent and 16 percent of the incidence on residents falls on workers for corporate and shareholder income tax changes, respectively. For Norway, elasticities imply that 74 percent and 0 percent of the incidence on residents falls on workers for corporate and shareholder income tax changes, respectively.



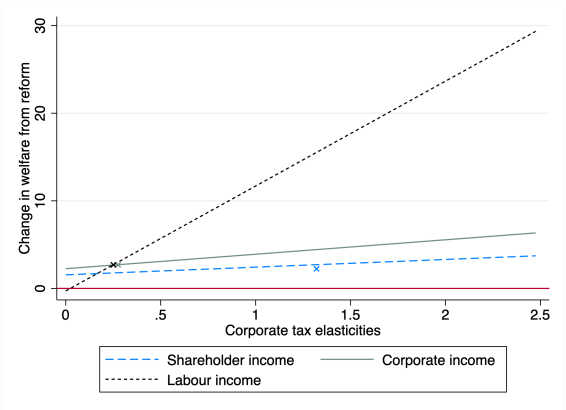
(a) U.S.: Shareholder tax elasticities.



(b) U.S.: Corporate tax elasticities.



(c) Norway: Shareholder tax elasticities.



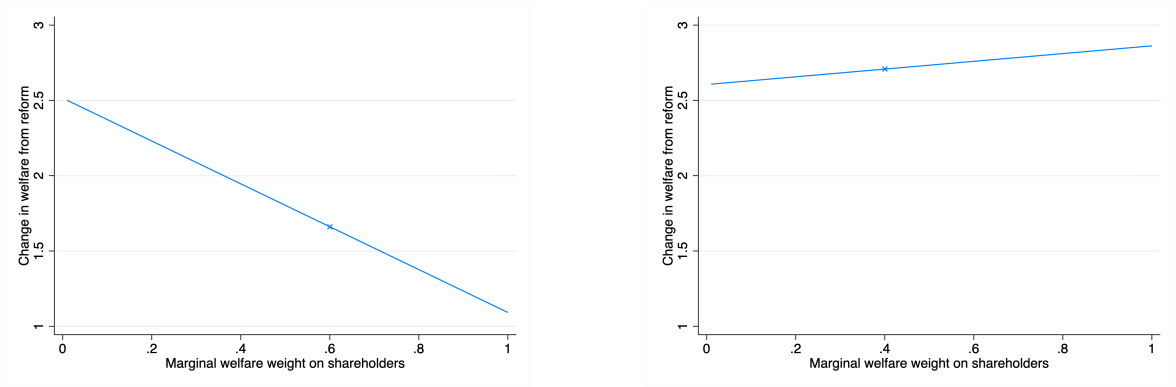
(d) Norway: Corporate tax elasticities.

Figure 2: Welfare change as a function of elasticities: U.S. and Norway.

Notes: Each panel shows the net welfare effect of a reform that raises the net-of-tax rate on corporate income while lowering the net-of-tax rate on shareholder income (holding other parameters constant). Panels (a)–(b) report U.S. results; panels (c)–(d) report Norway. Positive (negative) values imply that a higher (lower) shareholder income tax rate combined with a lower (higher) corporate income tax rate is optimal. The y-axis is the monetary value of welfare per unit of revenue from the corporate income tax and shareholder income tax. Crosses indicate baseline values.

The baseline numbers imply that it is optimal for the U.S. to reduce the corporate income tax and increase the shareholder income tax. Figures 2a and 2b show results of different elasticities on the welfare change depending on the reform direction for the U.S. If shareholder tax elasticities are high, it is optimal to replace shareholder income taxes with corporate income taxes, whereas the opposite holds for corporate income tax elasticities. The figures illustrate that the effect on workers is particularly important for the optimal reform direction, and the baseline assumes that the corporate income tax affects workers more than the shareholder income tax does.

Similarly, the baseline numbers imply that it is also optimal for Norway to reduce the corporate income tax and increase the shareholder income tax. Figures 2c and 2d show results of different elasticities on the welfare change depending on the reform direction. If shareholder tax elasticities are high, it is optimal to replace shareholder income taxes with corporate income taxes, whereas the opposite holds for corporate income tax elasticities. Compared to the U.S. case, more elasticity numbers imply that it is optimal to reduce the corporate income tax and increase the shareholder income tax. This makes sense, given that Norway has more features of a small open economy than the U.S. has. While only one elasticity changes along a curve, Figure 2c suggests that a spillover on workers may be necessary for the opposite reform direction to be optimal for Norway.



(a) U.S. (b) Norway.

Figure 3: Welfare change depending on resident shareholder weights: U.S. and Norway.

Notes: The figure displays the net effect of a reform towards higher net-of-tax rate on corporate income and a lower net-of-tax rate on shareholder income in the U.S. and Norway for different marginal welfare weights on shareholders, keeping everything else constant. When the effect is positive (negative) a reform towards a higher (lower) shareholder income tax rate and a lower (higher) corporate income tax rate is optimal. The y-axis is measured in terms of the monetary value of welfare per revenue from the corporate income tax and shareholder income tax. Crosses indicate baseline values.

Last, Figure 3 shows the effects of different marginal welfare weights on resident shareholders on the optimal reform direction. Whereas for the U.S., the higher the weight on shareholders, the smaller is the gain of replacing corporate with shareholder income taxation, the case for Norway is the opposite. The slope of the line depends on the ownership share and the effect that shareholder and corporate income taxes have on shareholders. If the resident ownership share in Norway were 45 percent, the line would be flat.

5 Conclusion

This paper has presented a general sufficient statistic framework for studying the trade-off between taxing income at the corporate and the shareholder level.[9] The main trade-off is between the taxation of the more elastic corporate income tax base partly paid by foreign investors and a less elastic shareholder income tax base for which foreign investors are exempt. One result is that the incidence on workers is a key sufficient statistic, since it is a large tax base and it is plausible that the government attaches higher marginal welfare weights to workers than to resident investors. A key insight is that capital market openness determines the difference in incidence across tax instruments.

The framework of this paper relies on a national perspective, where effects on other countries are not accounted for. This means that when a country lowers its corporate income tax, it only considers the effects on its own residents. An alternative framework with a different social welfare evaluation is required to study optimal tax policy from the perspective of the world rather than for each individual country.

Importantly, the optimal policy analysis here is based on local analysis of reforms using estimates of effects in actual tax systems. Even though local formulas for optimal tax rates display the policy trade-offs involved, it is unlikely that sufficient statistics would stay constant under a different tax system. This means that the framework cannot be straightforwardly applied to simulate optimal tax rates that are not in the vicinity of the initial tax system. Hence, the objective has instead been to present results on the optimal reform direction given the initial tax system. Local estimates of effects for the initial tax system are then exactly the relevant sufficient statistics for this reform analysis. An implication of this is that the framework presented here is not an alternative but rather a complement to more structural analysis of tax policy (such as Suárez Serrato and Zidar, 2016). In any case, given estimates of effects in different tax systems from such structural approaches, the framework in this paper provides a guide to optimal policy implications.

[9] There are other alternatives to taxing income from corporate profits, such as taxing pure profits at final sales through a destination-based cash-flow-tax (Devereux et al., 2020). To include destination-based taxation in the model presented here would be an interesting extension, which I leave to future work.

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A Appendix

A.1 Optimal corporate income tax with a fixed shareholder income tax

The corporate income tax is set by trading off revenue against the spillover on workers and shareholders. The tax reform is to marginally increase the net-of-tax on corporate income and any revenue change is paid lump sum by all residents. Hence, the change in welfare from the tax reform is

$$\Delta_b W = \Delta_b R + \Delta_b V,$$

where $\Delta_b R$ is the change in revenue due to the corporate income tax change and $\Delta_b V$ is the change in welfare for those affected from the reduction in the corporate income tax rate. Revenue effects can be decomposed into the mechanical and behavioural effect, such that

$$\Delta_b R = \Delta_b M + \Delta_b B.$$

Mechanical effects are simply the effect of the tax change on the tax base itself (holding all else constant)

$$\Delta_b M = -\Delta_b (1 - \tau^b) Z^b.$$

To account for behavioural effects, responses on other tax bases must also be included. Denote by $\bar{\varepsilon}^{kj}$ the elasticity of average taxable income of type k for a tax change on base j, such that

$$\Delta_b B = \tau^b \bar{\varepsilon}^{bb} \frac{\Delta\left(1-\tau^b\right)}{1-\tau^b} Z^b + \tau^r \bar{\varepsilon}^{rb} \frac{\Delta\left(1-\tau^b\right)}{1-\tau^b} Z^r + \bar{\tau}^l \bar{\varepsilon}^{lb} \frac{\Delta\left(1-\tau^b\right)}{1-\tau^b} Z^l.$$

$\Delta_b V$ consists of the welfare of groups affected by the corporate income tax which the government places nonzero weights on: resident shareholders and workers. Welfare effects on each group depend on the effect on that group, their total income, and the social value of that utility. Hence,

$$\Delta_b V = n^r \bar{G}_u^r \Delta_b u^r + n^l \bar{G}_u^l \Delta_b u^l.$$

The utility loss to resident shareholders is determined by the pass-through of net-of-tax corporate income to returns on their investment, while for workers, changes in corporate income taxation affects them through the wages they receive.

Hence, the two key equations are the revenue change from changes to the corporate income tax are

$$\frac{\Delta_b R^b}{\Delta(1-\tau^b)} = -Z^b + \bar{\varepsilon}^{bb}\frac{\tau^b}{1-\tau^b}Z^b + \bar{\varepsilon}^{rb}\frac{\tau^r}{1-\tau^b}Z^r + \bar{\varepsilon}^{lb}\frac{\bar{\tau}^l}{1-\tau^b}Z^l, \tag{A.1}$$

and the welfare changes,

$$\frac{\Delta_b V}{\Delta(1-\tau^b)} = \bar{g}^r\bar{\varepsilon}^{rb}_w\frac{(1-\tau^r)}{1-\tau^b}Z^r + \bar{g}^l\bar{\varepsilon}^{lb}_w\frac{(1-\bar{\tau}^l)}{1-\tau^b}Z^l. \tag{A.2}$$

Proposition A.1. *The optimal corporate income tax for a fixed labour and shareholder income tax is given by*

$$\tau^b = \frac{1}{1+\bar{\varepsilon}^{bb}} - \frac{\left(\bar{g}^r(1-\tau^r)\bar{\varepsilon}^{rb}_w + \tau^r\bar{\varepsilon}^{rb}\right)}{1+\bar{\varepsilon}^{bb}}\frac{Z^r}{Z^b} - \frac{\left(\bar{g}^l(1-\bar{\tau}^l)\bar{\varepsilon}^{lb}_w + \bar{\tau}^l\bar{\varepsilon}^{lb}\right)}{1+\bar{\varepsilon}^{bb}}\frac{Z^l}{Z^b}.$$

This follows from that at the optimum, the optimal corporate income tax is characterised by equality between the revenue gain from a tax change with the welfare loss to those who pay more tax ($\Delta_b V/\Delta(1-\tau^b) + \Delta_b R^b/\Delta(1-\tau^b) = 0$).

The optimal corporate income tax in this case is characterised by the inverse elasticity rule minus the spillover on other tax bases both through the fiscal externality and incidences on shareholders and workers. Since the government is assumed to place no weight on firms or foreigners, the inverse elasticity rule is the optimal tax in the absence of spillovers on workers or resident shareholders, as it maximizes revenue from corporate earnings accruing to foreign investors.

A.2 Optimal unrestricted shareholder and corporate income taxes

Now, there are no constraints on the relationship between corporate and shareholder income taxes, while the labour income tax is still assumed to be fixed. The reforms consist in increasing the net-of-tax rate for shareholder income given the corporate income tax and increasing the net-of-tax rate for corporate income for a given shareholder income tax, while revenue gains or losses are distributed lump sum.

The optimal shareholder income tax for a given corporate income tax rate is found by

equalizing the revenue gain from a tax change with the welfare loss to those who pay more tax,

$$\Delta_r W = \Delta_r R + \Delta_r V.$$

Again, the revenue effect consists of the mechanical and behavioural effects, where

$$\Delta_r M = -\Delta_r (1-\tau^r) Z^r$$

and

$$\Delta_r B = \tau^b \bar{\varepsilon}^{br} \frac{\Delta\left(1-\tau^r\right)}{1-\tau^r} Z^b + \tau^r \bar{\varepsilon}^{rr} \frac{\Delta\left(1-\tau^r\right)}{1-\tau^r} Z^r + \bar{\tau}^l \bar{\varepsilon}^{lr} \frac{\Delta\left(1-\tau^r\right)}{1-\tau^r} Z^l.$$

The behavioural effect consists in the fiscal spillover on each of the tax bases (corporate, shareholder and labour income). Hence,

$$\frac{\Delta_r R^r}{\Delta(1-\tau^r)} = \bar{\varepsilon}^{br} \frac{\tau^b}{1-\tau^r} Z^b - Z^r + \bar{\varepsilon}^{rr} \frac{\tau^r}{1-\tau^r} Z^r + \bar{\varepsilon}^{lr} \frac{\bar{\tau}^l}{1-\tau^r} Z^l. \tag{A.3}$$

$\Delta_r V$ consists of the welfare of the groups who may bear the incidence of lower shareholder income tax, which are resident shareholders and workers,

$$\Delta_r V = n^r \bar{G}_u^r \Delta_r u^r + n^l \bar{G}_u^l \Delta_r u^l.$$

Hence,

$$\frac{\Delta_r V}{\Delta(1-\tau^r)} = \bar{g}^r \left(1+\bar{\varepsilon}_w^{rr}\right) Z^r + \bar{g}^l \bar{\varepsilon}_w^{lr} \frac{(1-\bar{\tau}^l)}{1-\tau^r} Z^l, \tag{A.4}$$

such that the utility change for the resident shareholders is their mechanical change in after-tax income and the spillover from other investors changing their investment level, while for workers, the effect is determined by the spillover on wages.

Proposition A.2. *The optimal tax rate on shareholder income for a fixed corporate and labour income tax is given by*

$$\tau^r = \frac{1-\bar{g}^r\left(1+\bar{\varepsilon}_w^{rr}\right)}{1+\bar{\varepsilon}^{rr}-\bar{g}^r\left(1+\bar{\varepsilon}_w^{rr}\right)} - \left(\frac{\bar{\varepsilon}^{lr}\bar{\tau}^l + \bar{\varepsilon}_w^{lr}\bar{g}^l(1-\bar{\tau}^l)}{1+\bar{\varepsilon}^{rr}-\bar{g}^r\left(1+\bar{\varepsilon}_w^{rr}\right)}\right)\frac{Z^l}{Z^r} - \frac{\tau^b\bar{\varepsilon}^{br}}{1+\bar{\varepsilon}^{rr}-\bar{g}^r\left(1+\bar{\varepsilon}_w^{rr}\right)}\frac{Z^b}{Z^r}.$$

This follows from the fact that optimum is reached when the sum of the revenue and

welfare effect for the affected groups is zero, ($\Delta_r V/\Delta(1-\tau^r) + \Delta_r R^r/\Delta(1-\tau^r) = 0$).

The optimal tax in this case consists of three terms: 1) the optimal shareholder income tax when accounting for the spillover between shareholder incomes and ignoring other groups, 2) the welfare value of the spillover on the labour income tax base, accounting both for the fiscal externality and the incidence on workers and 3) the fiscal externality on the corporate income tax base.

The expression for the optimal corporate income tax rate is the same as in Proposition A.1. The jointly optimal corporate and shareholder income taxes are found by solving the Equations from Proposition A.1 and from Proposition A.2 simultaneously. It is important to keep in mind that even though the formulas present the main trade-offs involved, they rely on sufficient statistics *at the optimum*, which may differ from sufficient statistics at the actual tax system (since sufficient statistics are endogenous to the allocation).

A.3 The relationship between incidence and elasticities

Empirical estimates are sometimes defined in terms of marginal incidence. I first define marginal incidence, t^{kj}, as what ends up being paid by the monetary value of a utility change for each group ($\Delta_j u^k/u_c^k$) as a share of after-tax income on the taxed tax base ($(1-\tau^j)Z^j$).[10] The role of u_c^k is to define incidence in terms of monetary rather than utility. Marginal welfare weights translate incidence measures into social welfare measures.

For a tax change on a (potentially) different base,

$$t^{kj} = \frac{(1-\tau^k)}{1-\tau^j}\varepsilon_w^{kj}\frac{Z^k}{Z^j}\ \forall k,j. \tag{A.5}$$

This highlights that if the incidence elasticity is zero, $\varepsilon_w^{kj} = 0$, there is no incidence on this group for a tax change on a different tax base. When $k = j$ and $\varepsilon_w^{kj} = 1$, the expression becomes the mechanical effect.

A refined definition of incidence, $\hat{t}^{kj}$, ensures that the total incidence on residents sums to 1,

$$\hat{t}^{kj} = \frac{(1-\tau^k)\varepsilon_w^{kj}Z^k}{\sum_K (1-\tau^K)\varepsilon_w^{Kj}Z^K}\forall k,j. \tag{A.6}$$

[10] An alternative measure of incidence is to account for the elasticity of the tax base on which the tax is levied in the denominator, such that incidence is measured as a share of new revenue raised on that tax base.

This is more line in with the definition of incidence in Fuest et al. (2018), where they explain their incidence measure as follows: "We do so by relating the welfare change of workers induced by a marginal change in the net-of-tax rate to the sum of the welfare changes of workers and firm owners" (Fuest et al., 2018, p. 403).

If all elasticities are zero, incidence is fully borne by the base on which the tax applies and mechanical effects determine incidence.[11]

A.4 The relationship between corporate and shareholder income

To prepare the optimal reform direction framework for application, it is useful to introduce some further theoretical assumptions. Hence, I introduce a structure to the relationship between corporate and shareholder income.

I divide spillovers on shareholders from changes in corporate income tax rates into two parts, the "mechanical spillover" and "behavioural spillover" effect. If the corporate income tax is reduced, shareholders benefit mechanically by paying less tax on their investments at the corporate level such that shareholder income increases. This simultaneously mechanically increases revenue from the shareholder income tax, such that the government recoups some of the lost revenue by the reduction in the corporate income tax. Shareholders may also be affected from behavioural changes in corporate investment due to the tax change.

Specifically, I model (long-run discounted) shareholder income as a function of after-tax corporate income, $(1-\tau^b)z^b$ depending on the resident ownership share of corporate income, s^r, and shareholder income from shares abroad and other ways shareholder income is created as a function of corporate income (such as tax benefits from delayed realisation and tax evasion at the shareholder level), $f(z^b, z^{rf})$. The derivative of the latter with respect to corporate income is denoted by f_{z^b}. Hence,

$$z^r = s^r(1-\tau^b)z^b + f(z^b, z^{rf}). \tag{A.7}$$

This means that the elasticity of shareholder income with respect to the net-of-corporate

[11] The approach focuses on residents and incidence on foreigners is not accounted for, as they are assumed to have no weight. This is why Equation A.6 measures incidence as a share of incidence on residents.

income tax is given by

$$\varepsilon^{rb} = s^r \left(1 - \tau^b\right) \frac{z^b}{z^r} + \left(s^r \left(1 - \tau^b\right) + f_{z^b})\right) \varepsilon^{bb} \frac{z^b}{z^r}, \tag{A.8}$$

where $s^r(1-\tau^b)z^b/z^r$ is the mechanical component while the rest is the behavioural component. Using this, the change in welfare is given by

$$\Delta W = MR + MI^r + B^b + BB^r + BI^r + B^l + I^l, \tag{A.9}$$

where

$$\begin{aligned}
MR &= \frac{(1-\tau^b)}{1-\tau^r} Z^r - \left(1 - \tau^r s^r\right) Z^b, \\
MI^r &= \frac{(1-\tau^r)\bar{g}^r s^r}{1+\bar{\varepsilon}_e^{rr}} Z^b - \frac{(1-\tau^b)\bar{g}^r}{1-\tau^r} Z^r, \\
BB^r + BI^r &= \left(\tau^r + \frac{(1-\tau^r)\bar{g}^r}{1+\bar{\varepsilon}_e^{rr}}\right) \left(\frac{\left(s^r\left(1-\tau^b\right) + f_{z^b}\right)\bar{\varepsilon}^{bb}}{(1-\tau^b)} \frac{Z^b}{Z^r} - \frac{(1-\tau^b)\bar{\varepsilon}^{rr}}{(1-\tau^r)^2}\right) Z^r.
\end{aligned}$$

Now, MR is the mechanical revenue effect, MI^r is the mechanical incidence on shareholders, and BB^r and IB^r are the revenue and incidence on shareholders, respectively, due to behavioural changes in tax bases. The other effects (B^b, B^l and I^l) are the same as in Proposition 3. From MR and MI^r it is clear that lowering of the corporate income tax mechanically increases shareholder income as there is more after tax profit. This has a revenue effect, $\tau^r s^r Z^b$, depending on the share of income from national corporations owned by residents, and an incidence effect on shareholders, $(1-\tau^r)\bar{g}^r s^r Z^b/(1+\varepsilon^{rr})$.[12]

The benefit of this formulation is that it is easier to measure mechanical compared to behavioural effects. An alternative way to relate mechanical effects on shareholders to corporate income tax changes is to measure effects of corporate income tax changes on the value of investors' portfolios.

[12]The mechanical incidence depends on the effort elasticity for shareholders, ε_e^{rr}, because the utility relevant incidence has to account for the difference between the fiscal spillover on shareholder income and the incidence spillover, where the latter only accounts for the effect on returns, and not for the effect on effort, as it has no effect on utility due to the envelope condition. In one sense, dividing by $1+\varepsilon_e^{rr}$ neutralises the effect that return changes has on effort, such that the utility-relevant spillover is obtained.

A.5 Additional cases

Case 4. The "new view"

According to the new view, marginal capital is raised from retained earnings such that dividend taxation does not affect the price of capital for the firm (Zodrow, 1991). When retained earnings is the marginal source of finance, capital gains taxation also does not affect the cost of financing, such that the outcome is the same as in Case 3. In the long-run, corporations may require capital from other sources than retained earnings, and shareholder taxes may raise the cost of other sources of capital for investment. The importance of the new view depends on how many firms that require financing with new equity. There may be some overlap in which firms rely on new equity for financing of investment with firms that rely on resident investors, such that this case is similar to Case 2.

Case 5. Open economy

Similarly to Case 3, there is a fixed rate of return, such that corporate and shareholder taxation has no effect on rates of return. Since corporate income may be partly created by location-specific factors, it may still not be infinitely elastic despite capital being so, $\bar{\varepsilon}^{bb} \leq \infty$. However, the responsiveness of corporate income with respect to the corporate income tax is likely to increase with the openness of the economy, as capital becomes more elastic. Since the elasticity of corporate income is likely higher for a small open economy, given initial tax rates, the joint reform is more attractive than in the open capital markets case (Case 3).

Case 6. Resident shareholders only invest abroad

If resident shareholders hold only foreign shares, there are no spillovers on workers or corporations in the residence country from a shareholder income tax and resident shareholders are unaffected by the corporate income tax rate in their country. Hence, $\bar{\varepsilon}^{br} = \bar{\varepsilon}^{lr} = \bar{\varepsilon}^{rb} = 0$. By Proposition 3, a move towards higher shareholder taxation and lower corporate income

taxation is optimal whenever

$$\Delta W = \frac{(1-\tau^b)(1-\bar{g}^r)}{1-\tau^r} Z^r - Z^b + \tau^b \frac{\bar{\varepsilon}^{bb}}{1-\tau^b} Z^b - \left(\tau^r + \frac{(1-\tau^r)\bar{g}^r}{1+\bar{\varepsilon}_e^{rr}}\right) \frac{(1-\tau^b)\bar{\varepsilon}^{rr}}{(1-\tau^r)^2} Z^r + \left(\bar{\tau}^l + \frac{(1-\bar{\tau}^l)\bar{g}^l}{1+\bar{\varepsilon}_e^{ll}}\right) \frac{\bar{\varepsilon}^{lb}}{1-\tau^b} Z^l > 0.$$

On the one hand, resident shareholders no longer benefit from lower corporate income taxes, such that the joint reform is less attractive. On the other hand, shareholder taxes create no negative spillovers on the corporate tax base or on workers, which makes the reform more attractive. If the welfare weight on shareholders, $\bar{g}^r$, is low, the latter is likely to dominate, such that the reform is more attractive than in the closed capital markets case (Case 1). Whether the joint reform is more attractive than in the other cases depends on the size of the two effects. Even if $\bar{g}^r = 0$ and this is an open economy with resident shareholder that only invest abroad, the reform is less attractive than in the open economy case, since no revenue from a lower corporate income tax is recouped by the taxation of resident shareholders.

A.6 Comparative sufficient statistics

To illustrate the relationship between the optimal reform direction and the size of the different sufficient statistics, I exploit Equation A.9 to simulate optimal reform directions for different values of sufficient statistics[13]

$$\Delta W = MR + MI^r + B^b + BB^r + BI^r + B^l + I^l.$$

This setup ensures that welfare changes are measured in monetary units. In all simulations, I divide ΔW with revenue from the two taxes, such that the welfare change is $\Delta W / \left(\tau^r Z^r + \tau^b Z^b\right)$.

As a baseline, I set the specific values, see Table A1. These values are selected to make corporate and shareholder income taxes similar. Labour income is 2.5 times as large as

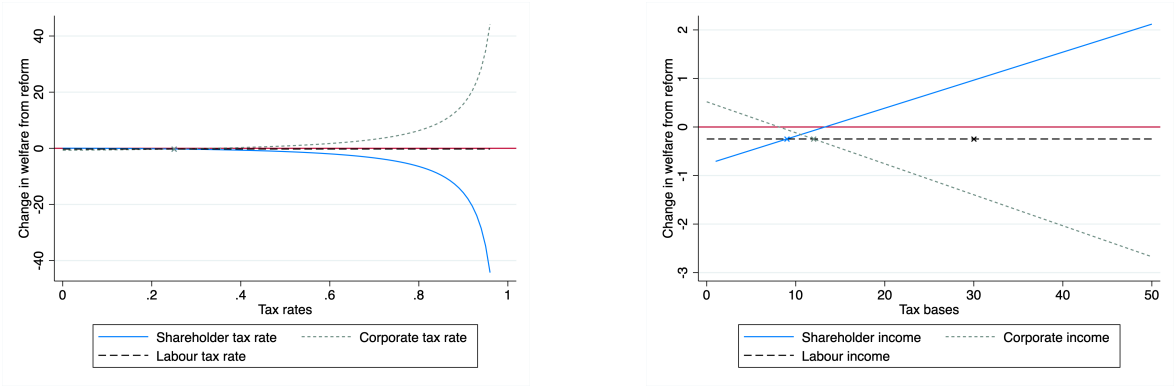
[13] While the exercise illustrates the importance of each sufficient statistic, changing one of them while keeping others fixed is not necessarily providing an accurate description of what the economy would be like were one of the statistics different, as they are all endogenous to the allocation. Hence, the exercise can more accurately illustrate the role of parameter uncertainty for a given economy, such that if everything else stays the same, it describes what happens if, for example, one tax base is more elastic than empirical estimates suggest.

corporate income and shareholder income is the same size as after-tax corporate income ($Z^l = 2.5Z^b$ and $Z^b = Z^r/(1-\tau^b)$). Resident investors own half of all shares in corporations with corporate income subject to the corporate income tax in the country ($s^r = 0.5$). There is no indirect effect of corporate income on shareholder income, $f_{z^b} = 0$. All tax rates are 25 percent ($\tau^r = \tau^b = \bar{\tau}^l = 0.25$). The relative weight on shareholders is 0.5 ($\bar{g}^r/\bar{g}^l = 0.5$). All fiscal elasticities are set to 0.25 whereas effort elasticities are set to 0.1 ($\bar{e}^{lr} = \bar{e}^{br} = \bar{e}^{ll} = \bar{e}^{rr} = \bar{e}^{lb} = \bar{e}^{bb} = 0.25$ and $\bar{e}^{rr}_e = \bar{e}^{ll}_e = 0.1$) except for $\bar{e}^{rb} = 0.625$ due to the mechanical effect corporate income has on shareholder income (reflecting $s^r = 0.5$).

Table A1: Initial values of variables

Variable	**Initial value**
Z^r	9
Z^b	12
Z^l	30
$\tau^r = \tau^b = \bar{\tau}^l$	0.25
$\bar{g}^r/\bar{g}^l$	0.5
$\bar{\varepsilon}^{lr} = \bar{\varepsilon}^{rr} = \bar{\varepsilon}^{br} = \bar{\varepsilon}^{lb} = \bar{\varepsilon}^{bb}$	0.25
$\bar{\varepsilon}^{rr}_e = \bar{\varepsilon}^{ll}_e$	0.1
s^r	0.5
f_{z^b}	0
Implied $\bar{\varepsilon}^{rb}$	0.625

In Figure A1a, tax rates on the different tax bases are on the x-axis. This shows that the higher is the tax on the base, the higher is the welfare gain of reducing the tax rate. This is due to the traditional "Laffer-effect": when the tax rate is higher, less revenue is raised from increasing it further. Effects are fairly symmetric, since elasticities are assumed to be quite similar for shareholder and corporate income. Figure A1b shows the effect of the different tax base sizes. The larger is a tax base, the more social gain is there in increasing the tax rate on it, as the tax rate increase raises more revenue and all other effects are kept constant. When all tax bases are as in Table A1, it is optimal to replace shareholder income taxation with corporate income taxation.



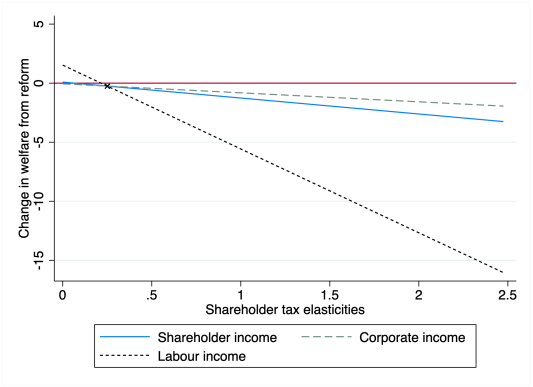
(a) Tax rates.

(b) Tax bases.

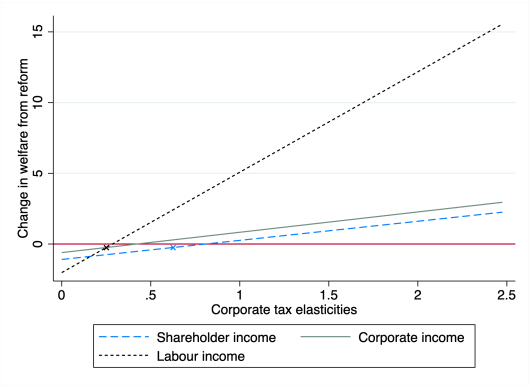
Figure A1: Welfare change depending on initial tax rates and tax bases.

Notes: The figure displays the net effect of a reform towards higher net-of-tax rate on corporate income and a lower net-of-tax rate on shareholder income for different tax rates in a) and for different sizes of tax bases in b), keeping everything else constant. When the effect is positive (negative) a reform towards a higher (lower) shareholder income tax rate and a lower (higher) corporate income tax rate is optimal. The y-axis is measured in terms of the monetary value of welfare per revenue from the corporate income tax and shareholder income tax. Crosses indicate baseline values.

In Figure A2a, elasticities of shareholder taxation are on the x-axis while in A2b elasticities of corporate taxation are on the x-axis. This shows that the higher is the tax on the base, the higher is the welfare gain of reducing the tax rate. Both graphs show that the larger are elasticities with respect to the tax, the larger is the social welfare gain from reducing the tax rate. In addition, both graphs show that the impact on workers is particular important. This is because the labour income tax base is assumed to be five times larger than the other tax bases and that workers are assumed to have twice the welfare weight of shareholders.



(a) Shareholder tax elasticities.



(b) Corporate tax elasticities.

Figure A2: Welfare change depending on fiscal taxable income elasticities.

Notes: The figure displays the net effect of a reform towards higher net-of-tax rate on corporate income and a lower net-of-tax rate on shareholder income for different shareholder tax elasticities a) and for different corporate tax elasticities in b), keeping everything else constant. When the effect is positive (negative) a reform towards a higher (lower) shareholder income tax rate and a lower (higher) corporate income tax rate is optimal. The y-axis is measured in terms of the monetary value of welfare per revenue from the corporate income tax and shareholder income tax. Crosses indicate baseline values.

A.7 Application sufficient statistics

For marginal welfare weights on workers, I assume that the value of revenue is equal to the value of providing one more unit of consumption for workers, such that $\bar{g}^l = 1$. For shareholders, I exploit that the reforms considered keep the labour income tax schedule fixed, such that one can use the design of the labour income tax to assign marginal welfare weights to investors. The idea is to assume that high income earners are assigned with the same weight irrespective of whether their income derives from labour or from investment. I follow Bourguignon and Spadaro (2012) to reveal marginal welfare weights on high labour income earners. I assign $\bar{g}^r$ by assuming that $g^l(z^l) = \bar{g}^r(z^r)$, where z^l is some high income level with a flat top income tax rate. I infer $g^l(z^l)$ from high income wage earners by using estimates of the labour income distribution Pareto parameter and the top tax rate. Solving this for the average marginal welfare weight $g(z^l)$ leads to

$$\hat{g}(z^l) = 1 - \frac{\tau^l}{1-\tau^l} \frac{\bar{\varepsilon}^l \hat{z}^l / z^l - \hat{\eta}^l}{\hat{z}^l / z^l - 1}, \tag{A.10}$$

where $\hat{z}^l$ is the average income, $\bar{\varepsilon}^l$ is the average (uncompensated) elasticity, $\hat{\eta}^l$ is the average income effect, all among labour income earners in the top tax bracket.

Corporations are also owned by governments and institutions. As state ownership may involve different objectives and a different tax treatment, I exclude firms completely owned by the government. The taxation of institutional owners vary and pension funds are typically exempted from paying shareholder taxes. However, taxation may be paid when individuals receive their pensions. Hence, I assume that institutional owners are taxed at the same rate as individual investors.

The Norwegian tax rates are sourced from the Norwegian Tax Authority (2025), while the corresponding tax bases are derived from Statistics Norway (2025), excluding the petroleum sector due to its unique tax regime. I assume Norway has the features of a small economy with open capital markets, such that the shareholder income tax has small spillovers. For the U.S., tax rates are obtained from the Tax Foundation (2025), with shareholder tax rates calculated as a weighted average of dividend and capital gains tax rates, where the weights reflect the relative importance of dividends and capital gains. The U.S. tax bases are sourced from the OECD (2023b), whereas resident shareholder income and the split into dividend and capital gains for the purpose of calculating the average tax rate is gathered from the Luxembourg Income Study (2025). According to Yagan (2015), dividend tax changes did not affect investment in the U.S., such that I assume that the spillover from shareholder income taxation on workers and corporations is small. The other elasticities for the U.S. build on those in Kennedy et al. (2022). The foreign ownership shares of corporate value for the U.S. are taken from Tax Policy Center (2022) whereas for Norway, I calculate the share of direct investment as a share of total investment using Statistics Norway (2025). Marginal welfare weights rely on Hendren (2020) for the U.S. and Berg (2025) for Norway. The implied $\bar{\varepsilon}^{rb}$ follows from applying Equation A.8.