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Toshiki Tamai*

Abstract

This paper develops a two-country majority-voting model to examine how tax competition interacts with wealth distribution. We incorporate a triangular distribution of human wealth and allow it to correlate with financial wealth. The analysis shows that capital tax rates and redistribution depend on the median voter's wealth position and the cross-country endowment structure. An improvement in the median's wealth position in the home country exacerbates post-tax income inequality by lowering the capital tax rate. Tax competition raises national income in the home country—driven by higher income of the capital-rich—but reduces that of the foreign country. As a result, only the wealthy benefit, while the poor are worse off, thereby deepening both international and domestic inequality.

Keywords: Capital mobility; Inequality; Tax competition; Wealth distribution
JEL Classifications: F21; H25; H71; H73

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1. Introduction

Capital market integration worldwide has been rapidly developed over the last two decades. In the integrated economy, countries and regions naturally compete for capital to increase their net income by decreasing tax on capital.[1] The mobility of tax base backgrounds the mechanism of tax competition, as discussed by Wilson (1986) and Zodrow and Mieszkowski (1986). In reality, along with capital market integration, the statutory corporate tax rates are on the decline in developed countries. From a perspective of effective tax rates, they have also continued to decline. The effective average tax rate has decreased modestly from 21.6% in 2017 to 20.2% in 2023 (OECD, 2024).

The inequalities in income and wealth have also risen among not only individuals but also countries and regions under capital market integration, as documented by Piketty and Zucman (2014) and Saez and Zucman (2016, 2020). Atkinson et al. (2011) and Piketty et al. (2018) suggest that the rise in US top income inequality is primarily attributed to a rise in "labor income inequality," encompassing profits from sole proprietorships, partnerships, and S corporations. The return on wealth is a determinant of the rise in inequality (Piketty, 2014; Jones, 2015).

The tax on capital to finance lump-sum transfers has a redistributive effect, shifting wealth from the capital-rich to the capital-poor. Essentially, the capital-poor group craves raising the capital tax and its transfer, while the capital-rich group does not. On the other hand, the increased tax may decrease labor income and lead to higher interest rates through capital flight. These secondary effects likely benefit the capital-rich but harm the capital-poor, who rely mainly on labor income. Consequently, wealth distribution significantly affects the determination of capital tax rates through democracy, and the capital tax also influences post-tax wealth distribution. Tax competition and wealth distribution are mutually linked. This paper aims to clarify the endogenous relationship between tax competition and wealth distribution.

Novel features of our study include the explicit incorporation of wealth distribution, specified as a tractable Triangular distribution, and consideration of the relationship between financial and human wealth, as established by empirical evidence. The former characteristic enables us to examine the relationship between tax competition and inequality, as quantified by the Gini coefficient, and to consider the cumulative effects of capital market integration or inequality rise on different wealth classes. By the latter one, the residents can be treated continuously rather than discretely.

The main theoretical findings of this paper are summarized as follows: The tax difference depends on both the factor endowment distribution between countries and the distribution of wealth. In the aspect of human wealth, a smaller country (i.e., a less-human-wealth country) necessarily does not set a lower tax rate than the larger country. In contrast, the equilibrium tax rate decreases as the share of human wealth endowment decreases. With perfect mobility of physical capital, the tax on capital affects net income through wage and redistributive effects. Then, a larger country always has a larger net average

[1] Devereux et al. (2008) empirically support the presence of tax competition. Moretti and Wilson (2017) also found that taxes affect firms' geographical allocation of scientists. See Zodrow (2010) for a general review of the literature on tax competition.

income than a smaller country. Within the country, the Gini coefficient of post-tax income is lower than the Gini coefficient of pre-tax income due to the redistributive effect of the capital tax.

If the residents are divided into laborers and capitalists, the capitalists living in a larger country obtain a larger net income than those living in a smaller country. In contrast, when financial wealth is positively associated with human wealth, the between-country characteristic of net income is complicated by the presence of international capital payments. Assuming that the between-country factor endowment is identically distributed, the country with a larger median human wealth sets a lower tax rate on capital than the country with a smaller median human wealth. Since larger median human wealth increases the efficiency cost of capital taxation and decreases the redistribution effect, the country with larger median human wealth lowers the tax rate to attract more capital. As a result, the country with smaller human wealth suffers from asymmetric tax competition.

Within the country, an exogenous increase in median human wealth increases pre-tax income inequality if the initial median human wealth is sufficiently small. Since larger median human wealth lowers the equilibrium tax rate on capital, the rise in pre-tax inequality intensifies tax competition. However, if the initial median human wealth is sufficiently large, the interaction is reversed: a decrease in the pre-tax inequality increases tax competition. Within the country, the poor lose much, while the rich benefit from the tax competition. Therefore, tax competition expands post-tax inequality through decreased tax rates, especially leading to a widening of the gap between the capital-poor and the rich.

To empirically assess these theoretical implications, we further examine how statutory corporate income tax rates respond to changes in the median's income position using panel data for OECD and EU countries over the period 2000–2024. We find that a higher mean-to-median income ratio is associated with lower statutory corporate income tax rates. Moreover, international tax competition, captured by the weighted average of foreign tax rates, exerts strong downward pressure on domestic tax rates. These results are robust across various specifications and alternative institutional measures, suggesting that the theoretical channel is relevant, although the institutional context and redistributive policies partly modify the relationship.

The remainder of this paper is organized as follows: The next section reviews the related literature. Section 3 develops the basic model. Section 4 characterizes the asymmetric tax competition equilibrium under majority voting from perspectives of tax difference, within-country inequality, and between-country inequality. Section 4 also extends the basic model and examines the properties of the politico-economic tax competition equilibrium using numerical analysis. Section 5 estimates the relationship between tax rates and wealth inequality using OECD panel data. Finally, Section 6 concludes this paper.

2. Literature review

Several studies inevitably analyze the relationship between tax competition and inequality by considering the asymmetricity of factor endowments (i.e., population and capital) or the politico-economic mechanisms or both. Bucovetsky (1991) considered a tax competition model with two countries differing in population. In equilibrium, the smaller country sets a lower tax rate. Then, the residents in the smaller country are better off than those in the larger country under the asymmetric tax competition. The result is known as a small country advantage.[2]

Haufler (1997) examined the optimal mix of capital and wage taxation in a politico-economic model by extending Bucovetsky (1991). In the model, capital market integration increases the efficiency costs of capital taxation and generates distributional effects that are opposed in the capital-importing and capital-exporting countries. The distributional effect in the capital-importing country decreases the capital tax rate. However, the tax rate in the exporting country will increase if the redistribution is not sufficiently supported. Therefore, the effect of capital market integration under democracy is associated with the capital distribution that is the determinant of which country becomes a capital exporter or importer.

Fuest and Huber (2001) demonstrated that factor income distribution implies a tax difference in equilibrium using a majority voting model of tax competition, where residents have different factor incomes. Borck (2003) analyzed the choice of tax structure using a majority voting model of tax competition. The paper demonstrated that the equilibrium capital tax is positive if the median capital endowment is smaller than its average level. Since capital tax has redistributive effects from the rich to the poor through its transfer to residents in a lump-sum fashion, the politico-economic mechanism works to increase capital tax if the redistributive effects outweigh the efficiency cost of capital tax.

Recently, by unifying these two features, Traub and Yang (2020) investigated the interaction between tax competition and income inequality in a majority voting model with two differently populated countries and two classes, composed of the poor and the rich.[3] They show that tax competition benefits the poor living in the small country because of capital inflow from the large country. The poor in the small country embrace reduced redistribution of income within the country to receive the benefits of capital inflow. Therefore, tax competition expands income inequality between countries.

This paper examines the relationship between tax competition and wealth inequality, whereas previous studies have mainly focused on income inequality. Chancel et al. (2022) found that the concentration of wealth in the wealthy class generates income inequality, as early suggested by Atkinson et al. (2011) and Piketty et al. (2018). This empirical evidence implies the importance of considering wealth distribution rather than income distribution exogenously given. Hence, following Traub and Yang (2020), we develop a majority voting model of tax competition between two countries, where human and financial wealth are distributed differently.

[2] Wilson (1991) showed similar results to Bucovetsky (1991), even if both capital and labor are taxed. Bucovetsky (2009) examines the effect of the size distribution of the population on the equilibrium tax rates. In the model, the population-weighted tax rate increases as the population distribution becomes more concentrated.

[3] Bulmkin et al. (2015) reexamine the zero tax at the top result in the case of unbounded skill distributions under international labor mobility and tax competition. They demonstrate that the optimal marginal income tax rate converges to zero as the income level approaches infinity. Yang (2015) shows that a larger capital mobility lowers the capital tax rate (its redistributive effects), and therefore, a shift from capital taxation to labor taxation is needed under capital market integrations.

This paper contributes to the literature on tax competition by providing both a theoretical framework and empirical evidence on the interaction between inequality and statutory corporate income tax rates. Our theoretical model highlights that greater income inequality strengthens the incentive to reduce corporate taxation, while stronger democratic institutions counterbalance this tendency by amplifying redistributive preferences.

Our findings complement earlier empirical work that documents corporate tax competition among OECD countries (Clausing, 2007; Devereux et al., 2008) and extend the literature by linking inequality to tax-setting behavior in an international context. They also relate to studies on how tax policy responds to the mobility of capital and high-income earners (Klemm and Van Parys, 2012; Moretti and Wilson, 2017). By integrating theory and empirics, the paper contributes to understanding how globalization and inequality jointly shape the evolution of corporate taxation.

3. The model

We consider a two-country economy in which physical capital is freely mobile between the two countries.[4] The countries are labeled by $i \in \{H, F\}$, where H and F stand for home country and foreign country, respectively. The production function of each country is specified as

$$Q_i = Q(K_i, H_i), \tag{1}$$

where Q_i is the output produced in country i, K_i is the physical capital input employed in country i, and H_i is the human capital input employed in country i.

The production function (1) is assumed to be a constant-returns-to-scale and concave with respect to each input. We specify the production function as

$$q(\kappa_i) = (a - b\kappa_i)\kappa_i, \tag{2}$$

where $q(\kappa_i) \equiv Q(\kappa_i, 1)$ and $\kappa_i \equiv K_i/H_i$. Let r_i and w_i be the interest and wage rates in country i, respectively. The profit maximization of a representative firm in country i yields

$$r_i = q'(\kappa_i) = a - 2b\kappa_i, \tag{3a}$$

$$w_i = q(\kappa_i) - r_i\kappa_i = b\kappa_i^2. \tag{3b}$$

Eq. (3a) implies that the interest rate decreases with κ_i because of the concavity of the production function. Eq. (3b) shows that the wage rate increases with κ_i.

Each country has the heterogeneous residents with a population of N_i. They supply physical and human wealth in factor markets and earn the factor incomes as their rewards. In addition to factor income, they also receive income transfers financed by the capital tax from their own country's government. For analytical simplicity, the population of each country is normalized to unity ($N_H = N_F = 1$). The heterogeneity of financial and human wealth inheritance results in heterogeneity among residents.

[4] The setup of our model is based on Bucovetsky (1991) and Traub and Yang (2020), except for the human wealth distribution.

In particular, we assume that the human wealth distribution follows the triangular distribution with the following probability density function:[5]

$$f(h_i) = \begin{cases} \dfrac{2(h_i - \alpha_i)}{(\beta_i - \alpha_i)(\gamma_i - \alpha_i)} & \text{for } \alpha_i \leq h_i \leq \gamma_i. \\ \dfrac{2(\beta_i - h)}{(\beta_i - \alpha_i)(\beta_i - \gamma_i)} & \text{for } \gamma_i < h_i \leq \beta_i. \end{cases} \tag{3}$$

Note that γ_i is the mode. Based on Eq. (3), we have the following probability distribution function:

$$F(h_i) = \begin{cases} \dfrac{(h_i - \alpha_i)^2}{(\beta_i - \alpha_i)(\gamma_i - \alpha_i)} & \text{for } \alpha_i \leq h_i \leq \gamma_i. \\ 1 - \dfrac{(\beta_i - h_i)^2}{(\beta_i - \alpha_i)(\beta_i - \gamma_i)} & \text{for } \gamma_i < h_i \leq \beta_i. \end{cases} \tag{4}$$

Empirical evidence supports that the median income dominates the mode. Without loss of generality, we can set $\alpha_i = 0$. Hence, we impose the following assumption:

Assumption 1. $\alpha_i = 0$ *and* $2\gamma_i < \beta_i$.

Assumption 1 ensures that h_{iM} is less than $E(h_i)$. Under Assumption 1, the median and mean values are calculated as

$$h_{iM} = \beta_i - \sqrt{\frac{\beta_i(\beta_i - \gamma_i)}{2}}, \tag{5a}$$

$$E(h_i) = \frac{\beta_i + \gamma_i}{3}. \tag{5b}$$

Note that $\bar{H}_i = E(h_i)$ holds by normalization of population.

In the integrated capital market, net interest rate must be equalized as

$$\rho \equiv r_H - t_H = r_F - t_F, \tag{6}$$

where ρ is the net interest rate and t_i is the capital tax rate of country i. The market clearing condition of the integrated capital market is

$$K_H + K_F = \bar{K}_H + \bar{K}_F. \tag{7}$$

Using Eqs. (3a), (6), and (7), we obtain

$$\kappa_i = \bar{\kappa} + \frac{(t_j - t_i)\theta_j}{2b}, \tag{8}$$

where $i, j = H, F$ $(i \neq j)$,

$$\bar{\kappa} \equiv \frac{\bar{K}_H + \bar{K}_F}{\bar{H}_H + \bar{H}_F}, \bar{\kappa}_i \equiv \frac{\bar{K}_H}{\bar{H}_H}, \theta_i \equiv \frac{\bar{H}_i}{\bar{H}_H + \bar{H}_F}.$$

Note that we have $\bar{\kappa} = \bar{\kappa}_H\theta_H + \bar{\kappa}_F\theta_F$, satisfying $\bar{\kappa}_H \gtreqless \bar{\kappa}_F \Leftrightarrow \theta_H \lesseqgtr \theta_F$. If the home country has a

[5] A triangular distribution is a simple distribution that is easy to understand and highly versatile for characterizing a skewed distribution. We may consider a more general distribution to replicate a realistic distribution. However, such a model is more complicated than our basic model; it becomes difficult to understand the interaction between tax competition and wealth distribution.

larger human wealth (effective labor unit) than the foreign country, the home country must have a smaller physical-to-human wealth ratio than the foreign country. In contrast, if the home country has smaller human wealth than the foreign country, the home country must have a larger physical-to-human capital ratio than the foreign country. We focus on the following situation:

Assumption 2. $\theta_H \geq \theta_F$.

Under Assumption 2, the home country becomes a larger country in terms of human wealth, while the foreign country becomes a smaller country. At the same time, $\bar{\kappa}_H < \bar{\kappa}_F$ holds. If the economy is closed, the home country is more labor-intensive than the foreign country.

The government of each country allocates tax revenue to income transfers. Hence, the government's budget constraint is

$$T_i = t_i K_i = t_i \kappa_i \overline{H}_i. \tag{9}$$

Receiving the income transfer from the government, each resident's income is given by

$$y_{ih} = w_i h + (r_i - t_i) k_{ih} + T_i, \tag{10}$$

where k_{ih} is the physical capital held by the resident with human wealth h in country i.

4. Equilibrium analysis

This section characterizes the politico-economic equilibrium through majority voting. Each country is composed of a small number of super-rich residents (capitalists) and a large mass of working people. In the latter case, the super-rich solely possess financial assets, while the other mass of people have no financial assets. In each case, the financial asset distribution (i.e., the distribution of physical capital) does not affect the median position of the voters. However, the financial asset distribution and the total endowment influence the equilibrium tax rates because they determine the capital income.

We impose the following assumption of normalization to eliminate the scale effect of financial assets:

Assumption 3. $\overline{K}_i = 1$ *and* $\overline{H}_H + \overline{H}_F = 2$.

Hence, under Assumption 3, each country has the same capital endowment, while they have different human wealth endowments.

4.1. Tax competition equilibrium with mass workers and one capitalist

We now consider the determination of the equilibrium tax rate in the politico-economic equilibrium. Except for the capitalist, the utility function for the resident who has human wealth h depends on net income:

$$y_{ih} = w_i h + t_i \kappa_i \overline{H}_i. \tag{11}$$

The median in country i $(i = H, F)$ chooses the tax rate t_i to maximize Eq. (11) subject to Eq. (8) for given t_j $(j = H, F;\ j \neq i)$. Integrating Eq. (11) over the human wealth distribution, the aggregate (average) net income is

$$Y_i \equiv \int_0^{\beta_i} y_i f(h) dh = (w_i + t_i \kappa_i)\overline{H}_i.$$

For the median in each country, the first-order condition for the utility maximization with respect to the tax rate is

$$\frac{\partial y_{iM}}{\partial t_i} = \left[\frac{\partial w_i}{\partial \kappa_i}\frac{\partial \kappa_i}{\partial t_i}\sigma_{iM} + \kappa_i + t_i \frac{\partial \kappa_i}{\partial t_i}\right]\overline{H}_i = 0, \tag{12}$$

where $\sigma_{iM} \equiv h_{iM}/\overline{H}_i$ is the ratio of median human wealth to aggregate (average) human wealth. Eq. (12) implies that the effect of a rise in the tax rate on net income consists of three effects: the wage, fiscal, and tax base effects (the first, second, and third terms on the right-hand side (RHS)), respectively.[6] The sum of fiscal and tax base effects yields the income transfer effect.

A rise in the tax rate t_i decreases the wage and tax base through capital flight from country i to country j (wage and tax base effects), leading to the negative effects on net income. In contrast, a rise in the tax rate t_i increases fiscal revenue for a fixed capital base (fiscal effect), leading to a positive effect on net income. Hence, Eq. (12) provides the country i's (i.e., the median in country i) best response to the country j's tax rate.

Eq. (12) can be rewritten as

$$\left(1 - \theta_j \sigma_{iM}\right)\left[1 + \frac{\left(t_j - t_i\right)\theta_j}{2b}\right] - \frac{t_i \theta_j}{2b} = 0. \tag{13}$$

Eq. (13) shows that each country's best response curve has an upward slope, leading to strategic complements. Solving the simultaneous equations of (13) with respect to the tax rates, we obtain

$$t_i^* = \frac{2b(1 - \theta_j \sigma_{iM})\left[1 + \left(1 - \sigma_{jM}\right)\theta_i\right]}{\theta_i \theta_j (3 - \theta_i \sigma_{jM} - \theta_j \sigma_{iM})}. \tag{14}$$

Inserting Eq. (14) into Eq. (8) yields

$$\kappa_i^* = \frac{1 + \left(1 - \sigma_{jM}\right)\theta_i}{\theta_i (3 - \theta_i \sigma_{jM} - \theta_j \sigma_{iM})}. \tag{15}$$

Using Eqs. (14) and (15), we obtain the aggregate net income for the workers and the net income for the capitalist:

$$Y_i^* = \frac{2b\left[\theta_j + 2\left(1 - \theta_j \sigma_{iM}\right)\right]\left[1 + \theta_i\left(1 - \sigma_{jM}\right)\right]^2}{\theta_i \theta_j \left(3 - \theta_j \sigma_{iM} - \theta_i \sigma_{jM}\right)^2}, \tag{16a}$$

$$y_{iC}^* = 2\theta_i (r_i^* - t_i^*). \tag{16b}$$

Therefore, the aggregate net income in country i is equal to Y_i^* if there is an absentee owner of

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[6] This terminology is based on Traub and Yang (2020).

physical capital. In contrast, the aggregate net income becomes $NI_i = Y_i^* + y_{iC}$ if there is a capitalist in country i.

To ensure positive tax rates and physical-to-human capital ratios, we need to impose the following assumption:

Assumption 4. $\theta_H \sigma_{FM} + \theta_F \sigma_{HM} < 3$ and $\rho > 0$.

This assumption means that the median human wealth should be sufficiently smaller than its average for positive tax rates, and that a is sufficiently larger than b to be $\rho > 0$.

Regarding the existence and uniqueness of a politico-economic equilibrium, we have the following proposition (see Appendix A for the proof of Proposition 1):

Proposition 1. *There exists a unique politico-economic equilibrium with* $t_i^* > 0$, $\kappa_i^* > 0$ *and* $Y_i^* > 0$, *satisfying*

$$t_H^* \gtreqless t_F^* \Leftrightarrow \kappa_H^* \lesseqgtr \kappa_F^* \Leftrightarrow \frac{(1-\theta_F\sigma_{HM})\theta_H}{(1-\theta_H\sigma_{FM})\theta_F} \gtreqless 1,$$

$$Y_H^* \lesseqgtr Y_F^* \Leftrightarrow \frac{[\theta_H + 2(1-\theta_H\sigma_{FM})][1+\theta_F(1-\sigma_{HM})]^2}{[\theta_F + 2(1-\theta_F\sigma_{HM})][1+\theta_H(1-\sigma_{FM})]^2} \gtreqless 1,$$

$$y_{HC}^* \geq y_{FC}^* > 0.$$

The equilibrium values of the tax rates and physical-to-human capital ratios are a function of the median's positions and each country's human capital share. Since the parametric conditions are a combination of θ_i and σ_{iM}, the analysis becomes complicated in this case. However, by considering the symmetric countries except for (i) the median's position or (ii) human wealth share as an example, we have the following simplified result (see Appendix A for the proof of Proposition 2):

Proposition 2. *(i) If* $\theta_H = \theta_F$ *and* $\sigma_{HM} \neq \sigma_{FM}$, *then* $t_H^* < t_F^*$, $\kappa_H^* > \bar{\kappa}_H = \bar{\kappa}_F > \kappa_F^*$, $Y_H^* > Y_F^*$, $y_{HC}^* = y_{FC}^*$, *and therefore* $NI_H^* > NI_F^*$ *for* $\sigma_{HM} > \sigma_{FM}$, *while* $t_H^* > t_F^*$, $\kappa_H^* < \bar{\kappa}_H = \bar{\kappa}_F < \kappa_F^*$, $Y_H^* < Y_F^*$, $y_{HC}^* = y_{FC}^*$, *and therefore* $NI_H^* < NI_F^*$ *for* $\sigma_{HM} < \sigma_{FM}$. *(ii) If* $\sigma_{HM} = \sigma_{FM}$, *then* $t_H^* > t_F^*$, $\kappa_H^* < \kappa_F^*$, $Y_H^* > Y_F^*$, $y_{HC}^* \geq y_{FC}^*$, *and therefore* $NI_H^* > NI_F^*$ *with* $\bar{\kappa}_H < \bar{\kappa}_F$ *for* $\theta_H > \theta_F$.

If two countries are symmetric in all aspects, then there is no wage effect, no tax base effect, and a fiscal effect, as there is no international capital flow. Both countries set identical tax rates, which are lower than under autarky, through voting (Traub and Yang, 2020). As shown in Proposition 2 (i), a country with a richer median sets a lower tax rate than its neighbor with a poorer median and attracts more capital than its neighbor, even if the countries are symmetric with respect to their human wealth size. Tax competition increases the net income in the country with a richer median. Moreover, the aggregate net income in the country with a richer median is larger than that of the other.

Proposition 2 (ii) implies that the small country with respect to human wealth disadvantages for the identical position of the median in each country: The smaller country sets a smaller tax rate due to its higher tax elasticity of capital intensity (e.g., Bucovetsky, 1991). Therefore, comparing the situation before and after tax competition, the smaller country sacrifices to gain for the larger country. The aggregate net income in the larger country is larger than that of the smaller country.

These results of Proposition 2 demonstrate that the distribution of pre-tax income, rather than country size alone, is significant in considering the outcome under tax competition. On the other hand, it is challenging to analyze the equilibrium outcome under different distributions without imposing additional restrictions, as the parametric relationships are complex. We focus on the scenario where the pre-tax inequality is increased by a rise in the upper tier's pre-tax income and a decline in the middle tier's pre-tax income.

We consider a change in the median's position resulting from a change in one of the key parameters, while maintaining each country's average human wealth level. Then, we have the following result (see Appendix B for the proof of Lemmas 1 and 2):

Lemma 1. *Considering a change in β_i with fixed $\overline{H}_i$ (i.e., $d\beta_i = -d\gamma_i$), it affects the median's position as*

$$\frac{d\sigma_{iM}}{d\beta_i} = -\frac{d\sigma_{iM}}{d\gamma_i} < 0.$$

Hereafter, we examine the effects of a change in the median's position, σ_{iM}, on the equilibrium outcome under tax competition. Based on Lemma 1, a change in σ_{iM} originates in a change in β_i. Under Lemma 1, the following proposition characterizes the properties of t_i^* and κ_i^* with respect to σ_{iM} $(i = H, F)$ for given $\overline{H}_i$ (see Appendix C for the proof of Proposition 3):

Proposition 3. *A rise in σ_{iM} has the following effects on equilibrium tax rate and physical-to-human capital ratio for each country:*

$$\frac{\partial t_i^*}{\partial \sigma_{iM}} < \frac{\partial t_j^*}{\partial \sigma_{iM}} < 0,$$

$$\frac{\partial \kappa_j^*}{\partial \sigma_{iM}} < 0 < \frac{\partial \kappa_i^*}{\partial \sigma_{iM}}.$$

For example, we consider that σ_{HM} is increased. A larger σ_{HM} leads to a larger wage effect. It increases the cost of a distortionary tax for the home country. Hence, the home country reduces the tax rate on capital by an increase in σ_{HM} (e.g., Fuest and Huber, 2001). With strategic complements, the foreign country also decreases its capital tax rate in response to the decrease in the tax rate by the home country. The capital tax rate in the home country decreases more than that in the foreign country. Therefore, capital inflow to the home country occurs due to the tax rate gap.

Figure 1 illustrates the relationships between equilibrium tax rates, capital ratios, and σ_{HM} under specified parameter values shown in Table 1. We focus on a change in σ_{HM} by β_H, starting from $\beta_H =$

β_F and $\gamma_H = \gamma_F$ under $\beta_H + \gamma_H = 3$; we consider a specialized case where $\theta_H = \theta_F$. The solid and dashed lines indicate the home country and the foreign country, respectively. $\sigma_{HM} = \sigma_{FM}$ holds if $\sigma_{HM} = 0.919$. Then, as shown in Figure 1, we have $t_H^* > t_F^*$ and $\kappa_H^* < \kappa_F^*$ for $\sigma_{HM} < 0.919$, while $t_H^* < t_F^*$ and $\kappa_H^* > \kappa_F^*$ for $\sigma_{HM} > 0.919$ (Proposition 1). Moreover, the tax curves for both countries have a negative slope, and the gradient of the tax curve for the home country is steeper than that of the foreign country in Panel (a) of Figure 1 (Proposition 3).

We now arrive at the effects of a change in the median's position on net income for given human capital h. The partial derivative of Eq. (11) with respect to σ_{iM} for each country is

$$\frac{\partial y_{ih}^*}{\partial \sigma_{iM}} = 2\theta_i \left[\frac{\partial w_i^*}{\partial \kappa_i^*}\frac{\partial \kappa_i^*}{\partial \sigma_{iM}}\sigma_{ih} + \left(\kappa_i^* \frac{\partial t_i^*}{\partial \sigma_{iM}} + t_i^* \frac{\partial \kappa_i^*}{\partial \sigma_{iM}}\right)\right], \tag{17a}$$

$$\frac{\partial y_{jh}^*}{\partial \sigma_{iM}} = 2\theta_j \left[\frac{\partial w_j^*}{\partial \kappa_j^*}\frac{\partial \kappa_j^*}{\partial \sigma_{iM}}\sigma_{jh} + \left(\kappa_j^* \frac{\partial t_j^*}{\partial \sigma_{iM}} + t_j^* \frac{\partial \kappa_j^*}{\partial \sigma_{jM}}\right)\right], \tag{17b}$$

$$\frac{\partial y_{iC}^*}{\partial \sigma_{iM}} = 2\theta_i \left[\frac{\partial r_i^*}{\partial \kappa_i^*}\frac{\partial \kappa_i^*}{\partial \sigma_{iM}} - \frac{\partial t_i^*}{\partial \sigma_{iM}}\right], \tag{17c}$$

$$\frac{\partial y_{jC}^*}{\partial \sigma_{iM}} = 2\theta_j \left[\frac{\partial r_j^*}{\partial \kappa_j^*}\frac{\partial \kappa_j^*}{\partial \sigma_{iM}} - \frac{\partial t_j^*}{\partial \sigma_{iM}}\right], \tag{17d}$$

where $\sigma_{ih} \equiv h_i/\bar{H}_i$ is the human wealth share for the resident who has the human wealth h in country i.

Considering σ_{HM}, in Eqs. (17a) and (17b), the effect of a change in σ_{HM} on each country's net income is composed of the wage effect (first term on the RHS) and income transfer effect (the sum of the second and third terms), which is decomposed into fiscal and tax base effects (the second term and third one), respectively. The wage effect of a rise in σ_{HM} for the home country is positive, and therefore the one for the foreign country is negative because of $\kappa_H\theta_H + \kappa_F\theta_F = \bar{\kappa}$. For both countries, fiscal effects are negative due to decreases in equilibrium tax rates resulting from tax competition. In contrast, the tax base effect is positive for the home country, while it is negative for the foreign country. As a result, a rise in σ_{HM} decreases a foreign country's net income but ambiguously affects the home country's net income because of the opposite effects.

Eqs. (17c) and (17d) show the net capital income effect, which is equal to the net capital price effect. In each equation, the first and the second terms in the square brackets are the capital price and capital tax effects. If σ_{HM} increases, the net capital income effect is positive for the foreign country's capitalist, while it is ambiguous for the home country's capitalist. For the home country, decreased capital tax gains the capitalist by decreasing tax payment. At the same time, the decreased tax attracts more capital than before, and therefore, the capital price decreases. In contrast, the capitalist in the foreign country benefits from both decreased capital tax and increased capital price.

National income depends on the net income of workers and capitalists. Hence, the effects of a rise in σ_{HM} on the national income for two countries are the weighted sum of Eqs. (17a)–(17d) by population. If the country has a large pool of people who benefit from a rise in σ_{HM}, the national income is increased under the tax competition caused by a rise in σ_{HM}.

Eqs. (17a)–(17d), Lemma 1, and Proposition 2 lead to the following result (see Appendix D for the proof of Proposition 3):

Proposition 4. *An increase in* σ_{HM} *has the following effects on net income for given* h*:*

$$\frac{\partial y_{Hh}^*}{\partial \sigma_{HM}} \gtreqless 0 \Leftrightarrow \sigma_{Hh} - \sigma_{HM} \gtreqless \frac{1-\theta_H \sigma_{FM}}{1-\theta_H}, \frac{\partial y_{Fh}^*}{\partial \sigma_{HM}} < 0,$$

$$\frac{\partial Y_F^*}{\partial \sigma_{HM}} < \frac{\partial Y_H^*}{\partial \sigma_{HM}} < 0, \frac{\partial y_{HC}^*}{\partial \sigma_{HM}} > \frac{\partial y_{FC}^*}{\partial \sigma_{HM}} > 0, \frac{\partial NI_H^*}{\partial \sigma_{HM}} > 0 > \frac{\partial NI_F^*}{\partial \sigma_{HM}}.$$

Proposition 4 implies that residents who possess human wealth at a level sufficiently larger than the median in their home country benefit from a decreased tax caused by a rise in σ_{HM} under tax competition. In contrast, the median and residents who possess a human wealth level smaller than the median suffer a net income loss because the positive effect of a rise in σ_{HM} on net income, due to the wage effect, increases with human wealth level. Moreover, the occurrence of capital inflow depends on the foreign country's reaction.

For average human wealth, $\sigma_{Hh} = 1$ holds. Then, a rise in σ_{HM} decreases the net income of average residents. Tax competition sacrifices the poor in the home country if some rich people and capitalists benefit. In total, tax competition increases the national income of the home country, while it decreases the national income of the foreign country. Traub and Yang (2020) demonstrated that the foreign poor benefit from tax competition through a compensation of the wage and tax base effects that exceeds the fiscal effect if there is a sufficiently large difference in population size. However, without a difference in size, the difference in human wealth distribution reduces the net aggregate (average) income in both countries.

Figure 2 illustrates the relationships between net income and σ_{HM} under baseline parameters, providing graphical representations of Propositions 2 and 4. Panel (a) implies that the poorest worker without human wealth (i.e., wage effect) suffers a decrease in redistributive transfer by tax competition, while panel (c) shows that the capitalists benefit from decreased tax burden.[7] In total, the average worker loses their net income as illustrated in panel (b). However, at the country level, the national income in the home country is increased by tax competition, as shown in panel (d). In relation to Proposition 2, recall the critical value of σ_{HM} is 0.919. Then, Figure 2 graphically characterizes net income for the workers and capitalists, shown in the result (i) of Proposition 2.

4.2. Income inequality and tax competition

We now consider the relationship between income inequality and tax competition caused by increased σ_{iM}. To measure the inequality, we define the ratio of personal net income to aggregate (average) net

[7] In numerical analysis, the net income of capitalists in both countries is identical under perfect mobility of physical capital. Hence, the solid-line curve for the home country represents the (dashed-line) curve for the foreign country.

income as follows:

$$x_i \equiv \frac{y_i}{Y_i} = \frac{w_i h_i + t_i \kappa_i \overline{H}_i}{Y_i}. \tag{18}$$

Without the redistribution tax, x_i is a linear function of human wealth. The pre-tax income distribution is identical to the human wealth distribution for any level of w_i. Therefore, we obtain the following result about the inequality measure of the pre-tax distribution (see Appendix E for the proof of Lemma 2):

Lemma 2. *For given w_i (and except for the capitalist), the Gini coefficient of pre-tax income $\bar{G}_i$ is given by*

$$\bar{G}_i = \frac{2\beta_i^2 - \beta_i \gamma_i + \gamma_i^2}{5\beta_i(\beta_i + \gamma_i)}.$$

Keeping $d\beta_i = -d\gamma_i$, a rise in β_i affects $\bar{G}_i$ as

$$\frac{d\bar{G}_i}{d\beta_i} \gtreqless 0 \Leftrightarrow \beta_i \gtreqless \hat{\beta}_i,$$

where $\hat{\beta}_i \equiv (1 + \sqrt{2})\gamma_i > 2\gamma_i$. Hence, it holds

$$\frac{d\bar{G}_i}{d\sigma_{iM}} \gtreqless 0 \Leftrightarrow \sigma_{iM} \lesseqgtr \hat{\sigma}_{iM},$$

where

$$\hat{\sigma}_{iM} = \frac{2}{\theta_i}\left[\hat{\beta}_i - \sqrt{\frac{\hat{\beta}_i(\hat{\beta}_i - \gamma_i)}{2}}\right].$$

Lemma 2 shows that an increase in β_i means declining (expanding) pre-tax income inequality for workers if $\beta_i < \hat{\beta}_i$ ($\beta_i > \hat{\beta}_i$). Hence, an increase in σ_{iM} involves a pre-tax inequality rise if $\sigma_{iM} < \hat{\sigma}_{iM}$, while it decreases the pre-tax inequality if $\sigma_{iM} > \hat{\sigma}_{iM}$. However, if σ_{jM} is large and $\sigma_{iM} < \hat{\sigma}_{iM}$, a wider inequality in pre-tax income for the workers by a rise in σ_{iM} improves welfare for the wealthy residents through tax competition, while it hurts the poor residents (Proposition 4).

Regarding the post-tax income distribution for the workers, we have the following lemma (see Appendix F for the proof of Lemma 3):

Lemma 3. *The Gini coefficient of the post-tax income distribution for the workers is given by*

$$G_i = \frac{2\beta_i^2 - \beta_i \gamma_i + \gamma_i^2}{15\beta_i \phi_i} < \bar{G}_i,$$

with

$$\phi_i \equiv 2\theta_i \left[1 + \frac{2(1 - \theta_j \sigma_{iM})}{\theta_j}\right], \frac{d}{d\sigma_{iM}}\left(\frac{G_i}{\bar{G}_i}\right) > 0.$$

Lemma 3 shows that the post-tax income is more equally distributed than the pre-tax income because of the redistributive effects of capital tax and transfers (i.e., $G_i < \bar{G}_i$). Moreover, a rise in σ_{iM} increases the post-tax income inequality relative to the pre-tax income inequality. A rise in σ_{iM} intensifies tax competition, leading to a decline in the capital tax rates (Proposition 2). Therefore, the redistributive effects of the capital tax are weakened under tax competition.

Indeed, Propositions 3 and 4 with Lemmas 2 and 3 reveal the relationship between the inequality and the outcome of asymmetric tax competition:

Proposition 5. *Suppose that σ_{HM} is increased. If $\sigma_{HM} < \hat{\sigma}_{HM}$, decreasing pre-tax inequality results in increasing tax competition. In contrast, if $\sigma_{HM} > \hat{\sigma}_{HM}$ holds, rising inequality in pre-tax income for working residents in the home country increases tax competition between countries. In both cases, the net income of the rich in the home country increases, while net income of working residents in a foreign country, that of the poor in the home country, and the aggregate net income for workers in the home country decrease. In total, home and foreign countries are winners and losers, respectively, with respect to changes in national income under asymmetric tax competition. Moreover, tax competition caused by a rise in σ_{HM} worsens post-tax inequality compared to pre-tax inequality and increases the inequality between workers and capitalists.*

Traub and Yang (2020) demonstrated that asymmetric competition leads to increased income inequality between countries. Furthermore, they revealed that income inequality in the home country is larger than that of the foreign country under tax competition. Our study partially supports these findings. However, the implications of asymmetric tax competition on income inequality are more complicated. The economy comprises people with diverse human wealth. Hence, it is essential to consider the inequality, taking into account the density of the people affected by tax competition.

In the home country, tax competition benefits some individuals who possess substantial human wealth, while it harms many people who do not have much human wealth. In a foreign country, all people lose net income due to tax competition, depending on their human wealth levels. Based on these modified results, our contribution is that the tax competition worsens post-tax income inequality in both countries.

4.3. Financial wealth distribution

Regarding the distribution of financial wealth (i.e., physical capital), we consider the extension of the basic case developed in the previous sections. Let k_{ih} be the financial wealth held by the resident who has human wealth h. The budget constraint for the resident with human wealth h is

$$y_{ih} = w_i h + (r_i - t_i)k_{ih} + t_i \kappa_i \bar{H}_i. \tag{19}$$

The median residents in country i $(i = H, F)$ wish to set the tax rate t_i for maximizing their utility function Eq. (19) subject to Eq. (8) for given t_j $(j = H, F;\ j \neq i)$. The optimality condition for the median residents is

$$\frac{\partial y_{iM}}{\partial t_i} = \left[\frac{\partial w_i}{\partial \kappa_i}\frac{\partial \kappa_i}{\partial t_i}\sigma_{iM} + \left(\frac{\partial r_i}{\partial \kappa_i}\frac{\partial \kappa_i}{\partial t_i} - 1\right)\omega_{iM} + \left(\kappa_i + t_i\frac{\partial \kappa_i}{\partial t_i}\right)\right]\overline{H}_i = 0, \tag{20}$$

where $\omega_{iM} \equiv k_{iM}/\overline{H}_i$. Compared with Eq. (12), Eq. (20) shows that a rise in t_i causes a *net interest effect* (the second term related to k_{iM}) in addition to the wage, fiscal, and tax base effects. Note that the net interest effect is negative:

$$\frac{\partial r_i}{\partial \kappa_i}\frac{\partial \kappa_i}{\partial t_i} - 1 = -(1-\theta_i) < 0.$$

Therefore, the median residents with some financial assets wish to set lower tax rates than those without financial assets, as derived in Section 3.

Eq. (20) becomes

$$\left(1-\theta_j\sigma_{iM}\right)\left[1 + \frac{(t_j - t_i)\theta_j}{2b}\right] - \omega_{iM} - \frac{t_i\theta_j}{2b} = 0, \tag{21}$$

Compared Eq. (21) with Eq. (13), an increase in ω_{iM} raises the tax burden, leading to lower tax rates.

Using Eq. (22), we obtain

$$t_i^* = \frac{2b\left[\theta_i\left(2-\theta_i\sigma_{jM}\right)\left(1-\theta_j\sigma_{iM}-\omega_{iM}\right) + \theta_j\left(1-\theta_j\sigma_{iM}\right)\left(1-\theta_i\sigma_{jM}-\omega_{jM}\right)\right]}{\theta_i\theta_j\left(3-\theta_i\sigma_{jM}-\theta_j\sigma_{iM}\right)}. \tag{22}$$

Inserting Eqs. (22) into Eq. (8) yield

$$\kappa_i^* = \frac{1 + \left(1-\sigma_{jM}\right)\theta_i + \theta_i\omega_{iM} - \theta_j\omega_{jM}}{\theta_i(3-\theta_i\sigma_{jM}-\theta_j\sigma_{iM})}. \tag{23}$$

Therefore, Eqs. (19)–(23) provide

$$Y_i^* = 2\theta_i[w_i^* + t_i^*\kappa_i^* + (r_i^* - t_i^*)\omega_i], \tag{24}$$

where ω_i is the average ratio of physical capital to human capital in country i.

To ensure $t_i^* > 0$ and $\kappa_i^* > 0$, we impose the following assumption: $\theta_H\sigma_{FM} + \omega_{FM} < 1$ and $\theta_H\sigma_{HM} + \omega_{HM} < 1$. This assumption is a natural extension of Assumption 3. Then, there exists a unique politico-economic equilibrium with $t_i^* > 0$ and $\kappa_i^* > 0$, satisfying the following condition (see Appendix G for the proof):

$$t_H^* \gtreqless t_F^* \Leftrightarrow \kappa_H^* \lesseqgtr \kappa_F^* \Leftrightarrow \theta_H(1-\theta_F\sigma_{HM}-\omega_{HM}) \gtreqless \theta_F(1-\theta_H\sigma_{FM}-\omega_{FM}).$$

This statement is a simple extension of Proposition 1. However, we cannot determine the magnitude of the relationship between the aggregate net income. If $\omega_{HM} = \omega_{FM} = 0$, this economy goes back to that of Proposition 1. For a rise in σ_{iM}, Proposition 2 still holds if $\omega_{HM} \neq \omega_{FM} \neq 0$ and ω_{iM} is not decreasing in σ_{iM} (i.e., $\partial\omega_{iM}/\partial\sigma_{iM} \geq 0$).[8] We assume $\partial\omega_{iM}/\partial\sigma_{iM} = 0$ for analytical simplicity.

Using Eq. (24), the effects of an increase in σ_{iM} on the net income are calculated as follows:

$$\frac{\partial y_{ih}^*}{\partial \sigma_{iM}} = \left\{\frac{\partial w_i^*}{\partial \kappa_i^*}\frac{\partial \kappa_i^*}{\partial \sigma_{iM}}\sigma_{ih} + \left[\frac{\partial r_i^*}{\partial \kappa_i^*}\frac{\partial \kappa_i^*}{\partial \sigma_{iM}} - \frac{\partial t_i^*}{\partial \sigma_{iM}}\right]\omega_{ih} + \left[\kappa_i^*\frac{\partial t_i^*}{\partial \sigma_{iM}} + t_i^*\frac{\partial \kappa_i^*}{\partial \sigma_{iM}}\right]\right\}\overline{H}_i, \tag{25a}$$

$$\frac{\partial y_{jh}^*}{\partial \sigma_{iM}} = \left\{\frac{\partial w_j^*}{\partial \kappa_j^*}\frac{\partial \kappa_j^*}{\partial \sigma_{iM}}\sigma_{jh} + \left[\frac{\partial r_j^*}{\partial \kappa_j^*}\frac{\partial \kappa_j^*}{\partial \sigma_{iM}} - \frac{\partial t_j^*}{\partial \sigma_{iM}}\right]\omega_{jh} + \left[\kappa_j^*\frac{\partial t_j^*}{\partial \sigma_{iM}} + t_j^*\frac{\partial \kappa_j^*}{\partial \sigma_{iM}}\right]\right\}\overline{H}_j. \tag{25b}$$

The comparison of Eqs. (25a) and (25b) with Eqs. (17a) and (17b) indicates that the presence of the

[8] See the Appendix H for the formal proof.

terms related to capital income differs from Eqs. (17a) and (17b). For a rise in σ_{iM}, the capital income effect for country i involves net capital price and financial wealth distribution effects. In contrast, the capital income effect for country j corresponds to the net capital price effect.

Using Eqs. (25a) and (25b), we establish the following proposition (see Appendix H for the proof of Proposition 6):

Proposition 6. *Suppose that a change in* ω_{ih} *is independent of a change in* σ_{iM}. *In country* i, *a rise in* σ_{iM} *may increase net income for individuals who possess substantial financial and human wealth, while it decreases the net income for those who do not have such wealth. In country* j, *a rise in* σ_{iM} *decreases the poor's net income. However, the rich in country* j *may benefit from tax competition due to the presence of a capital income effect if they have sufficient financial wealth to compensate negative welfare effects caused by wage, tax base, and fiscal effects.*

The presence of financial assets significantly affects the tax competition equilibrium through the wealth distribution. When a positive correlation exists between financial and human wealth, only the rich, including those in foreign countries, may benefit from tax competition, while others, especially the poor, suffer a loss of net income. These results suggest that tax competition may exacerbate the inequality between pre-tax and post-tax income.

5. Estimation

5.1. Empirical strategy and data

In this section, we estimate panel regressions of statutory corporate income tax rates (SCIT) on measures of income inequality. The estimation equation is formulated as follows:

$$SCIT_{it} = \alpha + \beta_1 MMRATIO_{it} + \beta_2 EDI_{it} + \beta_3 (MMRATIO_{it} \times EDI_{it}) + \gamma X_{it} + \delta_i + \lambda_t + \varepsilon_{it},$$

where i and t denote countries and years, respectively, MMRATIO is the ratio of median to mean household income from OECD Income Distribution Database (IDD), and EDI is the Electoral Democracy Index from V-Dem. Their interaction term captures how the effect of inequality on corporate taxation depends on the degree of democratic institutions.

X_{it} is a vector of control variables including leave-one-out mean of SCIT (MCIT) weighted by GDP share, log population (LPOP), trade openness defined as the ratio of exports plus imports to GDP (TROPEN), Chinn-Ito index as capital account openness (KAOPEN), government expenditure measured as a share of GDP (GEXP), and the ratio of public debt to GDP (DEBT).[9] δ_i and λ_t denote country fixed and year fixed effects, respectively. Standard errors are clustered at the country level. The

[9] Following prior work documenting strong tax interdependence across European countries (Overesch and Rincke, 2011), we control for common shocks and average tax rates (MCIT) to capture competitive pressures, while focusing on how inequality modifies this relationship.

precise definitions, units, and data sources of all variables used in the analysis are summarized in Table 2.

The estimation covers OECD and EU countries over the period 2000–2024, using an unbalanced panel due to missing observations in some variables. The dependent variable, SCIT, is drawn from the OECD Corporate Income Tax Rates Database (CITRD). The key explanatory variable, MMRATIO, is constructed from OECD IDD as the ratio of median disposable national income to its mean (based on the income definition since 2012). Additional control variables are derived from or constructed using OECD National Accounts and the IMF's World Economic Outlook (WEO). Table 3 reports summary statistics (overall variation) for the estimation sample.

5.2. Estimation results

Table 4 reports the baseline and extended panel regressions of statutory corporate income tax rates (SCIT) on measures of median income and democracy. Based on the estimation results, we find that the coefficient on the mean-to-median income ratio (MMRATIO) is negative and significant, indicating that a higher income position of the median voter is associated with lower statutory tax rates. Similarly, the democracy index (EDI) has a negative sign. This result suggests that stronger democratic institutions are correlated with lower corporate tax rates, consistent with intensified responsiveness to global tax competition.

The interaction term between MMRATIO and EDI implies a threshold of about 0.6 in the democracy index. Below this level, an increase in MMRATIO reduces statutory corporate tax rates, while above it the effect turns positive. At the sample mean of EDI (=0.82), the marginal effect turns out to be slightly positive. The negative effect of inequality is substantially weaker in countries with higher democratic quality. While the marginal effect appears positive at higher levels of democracy, this should not be interpreted as contradicting the theoretical prediction.

Several further considerations can reconcile this issue. Most importantly, our measure of the median position (MMRATIO) serves as a proxy for human wealth and is based on disposable household income, which already reflects redistribution through taxes and transfers. In democratic countries with stronger welfare states, observed inequality therefore understates pre-tax disparities, potentially biasing the estimated effect upward.

Among the control variables, the average tax rate of other countries (MCIT) exhibits a strong and negative effect, confirming the presence of international tax competition. Trade openness (TROPEN) is positively correlated with SCIT. In contrast, capital account openness (KAOPEN), government spending (GEXP), and public debt (DEBT) show little systematic effect. Overall, the results provide strong empirical support for our theoretical prediction that the median wealth position is associated with lower corporate tax rates.

We performed a series of robustness checks to ensure that the main results are not driven by modeling choices or data limitations. Replacing country–year fixed effects with region–year fixed effects leaves the signs of key coefficients unchanged. Substituting the EDI with the LDI also provides consistent results. Furthermore, employing an expanded dataset for the mean-to-median income ratio (CMMRATIO) shows the same results. Across all specifications, the signs and significance of the main variables remain stable, reinforcing the robustness of our baseline findings.

5.3. Discussion

A key limitation of our empirical analysis concerns data availability. While statutory corporate income tax rates can be traced back further using other datasets, such as the CBT tax database, the number of countries covered becomes substantially smaller. This reduction in coverage increases the volatility of the constructed MCIT variable, as it is computed as the weighted average across available countries. Consequently, extending the sample period backward would generate inconsistent time-series variation in MCIT, potentially biasing the estimation results. For this reason, we restrict our baseline analysis to the post-2000 period, where both coverage and comparability across countries are more reliable.

A further limitation relates to the median-mean human wealth measures. The OECD database provides consistent series for the median and mean income, allowing for the calculation of the mean-to-median income ratio (MMRATIO). However, the data coverage is limited in earlier years, making it difficult to extend the sample period backward. As an alternative, the World Inequality Database (WID) offers longer historical series, but these allow us to construct only percentile ratios such as P90/P50 rather than MMRATIO. Since our theoretical framework requires a proxy for the distribution of human capital, MMRATIO is already an imperfect indicator, and the P90/P50 ratio cannot be regarded as a useful substitute. For this reason, our empirical strategy focuses on the OECD data despite its limited time coverage.

For the reason explained above, our sample is limited to OECD and EU countries, where democratic institutions and redistributive policies are relatively strong. In such contexts, the political demand for redistribution may dominate the competitive pressure emphasized in the theoretical model. Notably, the social preference for inequality avoidance may influence the empirical results because we implicitly assume that residents have inequality-neutral preferences. Moreover, since the early 2000s, international coordination efforts (e.g., the OECD/G20 BEPS process) have constrained pure tax competition, further reducing the scope for inequality-driven tax cuts. Taken together, these factors suggest that our estimates should not be interpreted as contradicting the theory, but rather as reflecting the interplay between redistribution, institutional context, and global policy changes.

6. Conclusion

This paper examined the relationship between capital tax competition and income inequalities in a majority-voting model of two countries with different wealth distributions. A specified distribution of human wealth is linked to income and wealth inequalities. Then, the equilibrium tax rates depend on the median position of human wealth. Capital taxes affect the post-tax income distribution through their redistribution effects. Therefore, the pre-tax wealth distribution and the capital tax interact mutually under democracy.

Tax differences arise from both the distribution of factor endowments between countries and the domestic distribution of wealth. A smaller country with less human wealth does not always choose a lower capital tax rate than a larger one. As the share of human wealth declines, the equilibrium tax rate tends to fall. With perfect mobility of physical capital, capital taxes influence net income through changes in wages and redistribution. Under these conditions, smaller countries consistently achieve higher net average incomes than larger ones. Within a country, capital taxes reduce income inequality, as the Gini coefficient for post-tax income falls below that of pre-tax income.

Focusing on a two-class economy, capitalists in larger countries earn more net income than their counterparts in smaller ones. If financial wealth aligns positively with human wealth, international capital payments complicate the pattern of net income between countries. When countries share identical factor endowment distributions, the one with a higher median level of human wealth sets a lower capital tax rate. This is because greater human wealth raises the efficiency cost of taxation while reducing its redistributive effect, prompting the country to lower tax rates and attract capital. Consequently, countries with less human wealth suffer from asymmetric tax competition.

Within a country, if the initial median human wealth is low, increasing it raises pre-tax inequality and intensifies tax competition. However, when the median human wealth is already high, lower pre-tax inequality strengthens competition instead. In either case, the poor lose more than the rich gain, and tax competition widens the post-tax income gap between individuals who are capital-poor and those who are capital-rich. Our estimation confirms the negative relationship between the statutory corporate income tax rates and the income ratio of median to mean, supporting our main theoretical findings.

Finally, we would like to mention the future direction of this research. In this paper, we implicitly consider a stationary distribution of wealth and a linear relationship between financial and human wealth. However, wealth distribution has evolved, and the fluctuation of financial wealth is nonlinearly affected by human wealth dynamics in reality. Therefore, future studies should conduct dynamic analyses of tax competition and wealth distribution.

Appendix

A. Proof of Propositions 1 and 2

Proof of Proposition 1: Eqs. (14)–(16) show the existence of the equilibrium. Assumption 4 ensure that the equilibrium values are positive. Taking the difference in t_i^*, κ_i^*, and Y_i^*, we have

$$t_H^* - t_F^* = \frac{2b[(1-\theta_F\sigma_{HM})\theta_H - (1-\theta_H\sigma_{FM})\theta_F]}{\theta_F\theta_H(3-\theta_H\sigma_{FM}-\theta_F\sigma_{HM})} \gtreqless 0 \Leftrightarrow (1-\theta_F\sigma_{HM})\theta_H \gtreqless (1-\theta_H\sigma_{FM})\theta_F,$$

$$\kappa_H^* - \kappa_F^* = \frac{(1-\theta_H\sigma_{FM})\theta_F - (1-\theta_F\sigma_{HM})\theta_H}{\theta_F\theta_H(3-\theta_H\sigma_{FM}-\theta_F\sigma_{HM})} \gtreqless 0 \Leftrightarrow (1-\theta_H\sigma_{FM})\theta_F \gtreqless (1-\theta_F\sigma_{HM})\theta_H,$$

$$\frac{Y_H^*}{Y_F^*} - 1 = \frac{[\theta_F + 2(1-\theta_F\sigma_{HM})][1+\theta_H(1-\sigma_{FM})]^2}{[\theta_H + 2(1-\theta_H\sigma_{FM})][1+\theta_F(1-\sigma_{HM})]^2} - 1 \gtreqless 0$$

$$\Leftrightarrow \frac{[\theta_F + 2(1-\theta_F\sigma_{HM})][1+\theta_H(1-\sigma_{FM})]^2}{[\theta_H + 2(1-\theta_H\sigma_{FM})][1+\theta_F(1-\sigma_{HM})]^2} \gtreqless 1. \qquad \text{(A1)}$$

Proof of Proposition 2: Regarding the magnitude relationship between tax rates or physical to human capital ratios, we can directly derive the result from Proposition 1. We now consider the magnitude relationship of the aggregate net income.

(i) When $\theta_H = \theta_F = 0.5$, from (A1), we have

$$\frac{Y_H^*}{Y_F^*} - 1 = \frac{(5-2\sigma_{HM})(3-\sigma_{FM})^2}{(3-\sigma_{HM})^2(5-2\sigma_{FM})},$$

with

$$\frac{\partial}{\partial\sigma_{iM}}\left(\frac{Y_i^*}{Y_j^*}\right) = \frac{2(2-\sigma_{iM})(3-\sigma_{jM})^2}{(5-2\sigma_{jM})(3-\sigma_{iM})^3} > 0, \frac{Y_H^*}{Y_F^*} - 1 = 0 \Leftrightarrow \sigma_{HM} = \sigma_{FM}.$$

Therefore, we obtain

$$\frac{Y_H^*}{Y_F^*} - 1 \gtreqless 0 \Leftrightarrow Y_H^* \gtreqless Y_F^* \Leftrightarrow \sigma_{HM} \gtreqless \sigma_{FM}.$$

(ii) When $\sigma_{iM} = \sigma_{jM}$, Eq. (A1) becomes

$$\frac{Y_H^*}{Y_F^*} - 1 = \frac{[1+\theta_H(1-\sigma_{HM})]^2[\theta_F + 2(1-\theta_F\sigma_{HM})]}{[1+\theta_F(1-\sigma_{HM})]^2[\theta_H + 2(1-\theta_H\sigma_{HM})]} - 1,$$

with

$$\frac{\partial}{\partial\theta_i}\left(\frac{Y_i^*}{Y_j^*}\right) = \frac{[1+\theta_i(1-\sigma_{jM})][2+\theta_j(1-2\sigma_{jM})]\left[3-(2+\theta_i)\sigma_{jM} + \theta_i\sigma_{jM}^2 + \theta_i(1-\sigma_{jM})^2\right]}{[1+\theta_j(1-\sigma_{jM})]^2[2+\theta_i(1-2\sigma_{jM})]^2} > 0,$$

$$\frac{Y_H^*}{Y_F^*} - 1 = 0 \Leftrightarrow \theta_H = \theta_F.$$

Thus, we arrive at

$$\frac{Y_H^*}{Y_F^*} - 1 \gtreqless 0 \Leftrightarrow Y_H^* \gtreqless Y_F^* \Leftrightarrow \theta_H \gtreqless \theta_F.$$

B. Proof of Lemma 1

Eq. (5b) and $d\overline{H}_i = 0$ lead to

$$d\beta_i = -d\gamma_i. \tag{B1}$$

Total differentiation of (5a) gives

$$dh_{iM} = d\beta_i - \frac{1}{2\sqrt{\frac{\beta_i(\beta_i - \gamma_i)}{2}}}\left[\frac{2\beta_i d\beta_i - \gamma_i d\beta_i - \beta_i d\gamma_i}{2}\right]. \tag{B2}$$

Using Eqs. (B1) and (B2), we obtain

$$\frac{d\sigma_{iM}}{d\beta_i} = 2\theta_i\left[1 - \frac{1}{2(\beta_i - h_{iM})}\left(\frac{3\beta_i - \gamma_i}{2}\right)\right].$$

We have

$$\left(\frac{3\beta_i - \gamma_i}{4}\right)^2 - (\beta_i - h_{iM})^2 = \left(\frac{3\beta_i - \gamma_i}{4}\right)^2 - \frac{\beta_i(\beta_i - \gamma_i)}{2} = \frac{(\beta_i + \gamma_i)^2}{16} > 0. \tag{B3}$$

With Eq. (B3), it holds

$$\frac{1}{2(\beta_i - h_{iM})}\left(\frac{3\beta_i - \gamma_i}{2}\right) > 1 \Leftrightarrow \frac{d\sigma_{iM}}{d\beta_i} < 0.$$

C. Proof of Proposition 3

The partial derivatives of σ_{iM} on t_i^* are

$$\frac{\partial t_i^*}{\partial \sigma_{iM}} = -\frac{2b(2 - \theta_i\sigma_{jM})\left[1 + (1 - \sigma_{jM})\theta_i\right]}{\theta_i(3 - \theta_H\sigma_{FM} - \theta_F\sigma_{HM})^2} < 0,$$

$$\frac{\partial t_j^*}{\partial \sigma_{iM}} = -\frac{2b(1 - \theta_i\sigma_{jM})\left[1 + (1 - \sigma_{jM})\theta_i\right]}{\theta_i(3 - \theta_H\sigma_{FM} - \theta_F\sigma_{HM})^2} < 0,$$

Similarly, we have

$$\frac{\partial \kappa_i^*}{\partial \sigma_{iM}} = \frac{\theta_j\left[1 + (1 - \sigma_{jM})\theta_i\right]}{\theta_i(3 - \theta_H\sigma_{FM} - \theta_F\sigma_{HM})^2} > 0,$$

$$\frac{\partial \kappa_j^*}{\partial \sigma_{iM}} = -\frac{1 + (1 - \sigma_{jM})\theta_i}{(3 - \theta_H\sigma_{FM} - \theta_F\sigma_{HM})^2} < 0.$$

D. Proof of Proposition 4

Regarding Eq. (17b), we have

$$\overline{H}_F^{-1}\frac{\partial y_{Fh}^*}{\partial \sigma_{HM}} = \underbrace{\frac{\partial w_F^*}{\partial \kappa_F^*}}_{+}\underbrace{\frac{\partial \kappa_F^*}{\partial \sigma_{HM}}}_{-}\sigma_{Fh} + \kappa_F^*\underbrace{\frac{\partial t_F^*}{\partial \sigma_{HM}}}_{-} + t_F^*\underbrace{\frac{\partial \kappa_F^*}{\partial \sigma_{HM}}}_{-} < 0,$$

Eq. (17a) can be rewritten as

$$\frac{\partial y_{Hh}^*}{\partial \sigma_{HM}} = \frac{4b\,[\theta_F(\sigma_{Hh} - \sigma_{HM}) - (1 - \theta_H\sigma_{FM})][1 + (1 - \sigma_{FM})\theta_H]^2}{\theta_H(3 - \theta_H\sigma_{FM} - \theta_F\sigma_{HM})^3}, \tag{D1}$$

Focusing on the numerator of each equation of (D1) and (D2), we obtain

$$\frac{\partial y_{Hh}^*}{\partial \sigma_{HM}} \gtreqless 0 \Leftrightarrow (1 - \theta_H)(\sigma_{Hh} - \sigma_{HM}) - (1 - \theta_H\sigma_{FM}) \gtreqless 0 \Leftrightarrow \sigma_{Hh} - \sigma_{HM} \gtreqless \frac{1 - \theta_H\sigma_{FM}}{1 - \theta_H},$$

Partial differentiation of Eq. (16a) leads to

$$\frac{\partial Y_H^*}{\partial \sigma_{HM}} = -\frac{4b[1 + \theta_H(1 - \sigma_{FM})]^2[(1 - \theta_i)\sigma_{HM} + (1 - \sigma_{FM})]}{\theta_H(3 - \theta_F\sigma_{HM} - \theta_H\sigma_{FM})^3} < 0, \tag{D3}$$

$$\frac{\partial Y_F^*}{\partial \sigma_{HM}} = -\frac{4b[1 + \theta_H(1 - \sigma_{FM})][1 + \theta_F(1 - \sigma_{HM})][\theta_H + 2(1 - \theta_H\sigma_{FM})]}{\theta_H(3 - \theta_F\sigma_{HM} - \theta_H\sigma_{FM})^3} < 0. \tag{D4}$$

Using Eqs. (D3) and (D4), we have

$$\frac{\partial Y_H^*}{\partial \sigma_{HM}} - \frac{\partial Y_F^*}{\partial \sigma_{HM}} = \frac{4b[1 + \theta_H(1 - \sigma_{FM})]}{\theta_H(3 - \theta_H\sigma_{FM} - \theta_F\sigma_{HM})^3}\{(1 - \theta_H\sigma_{FM})[1 + \theta_F(1 - \sigma_{HM})] + [1 + \theta_H(1 - \sigma_{FM})][2\theta_F(1 - \sigma_{HM}) + \theta_H\sigma_{FM}]\} > 0.$$

Hence, we obtain

$$\frac{\partial Y_F^*}{\partial \sigma_{HM}} < \frac{\partial Y_H^*}{\partial \sigma_{HM}} < 0.$$

Eqs. (17c) and (17d) become

$$\frac{\partial y_{HC}^*}{\partial \sigma_{HM}} = \frac{2b[1 + \theta_H(1 - \sigma_{FM})]^2}{(3 - \theta_F\sigma_{HM} - \theta_H\sigma_{FM})^2} > 0, \tag{D5}$$

$$\frac{\partial y_{FC}^*}{\partial \sigma_{HM}} = \frac{\theta_F}{\theta_H}\frac{\partial y_{HC}^*}{\partial \sigma_{HM}} > 0. \tag{D6}$$

Under Assumption 2, Eq. (D6) leads to

$$\frac{\partial y_{HC}^*}{\partial \sigma_{HM}} > \frac{\partial y_{FC}^*}{\partial \sigma_{HM}} > 0.$$

Finally, using Eqs. (D3)–(D6), we obtain

$$\frac{\partial NI_H^*}{\partial \sigma_{HM}} = \frac{4b\theta_F(1 + \theta_H)[1 + \theta_H(1 - \sigma_{FM})]^2}{\theta_H(3 - \theta_H\sigma_{FM} - \theta_F\sigma_{HM})^3}\left[\frac{2\theta_H}{\theta_F(1 + \theta_H)} + \frac{\theta_H}{1 + \theta_H}\sigma_{FM} - \sigma_{HM}\right] > 0,$$

$$\frac{\partial NI_F^*}{\partial \sigma_{HM}} = -\frac{4b(\theta_F + \theta_H\sigma_{FM})\{1 - \sigma_{HM}(1 - \theta_H\sigma_{FM}) + \theta_H^2(1 - \sigma_{FM})[2 + \theta_F\sigma_{FM} + \theta_H\sigma_{HM}]\}}{\theta_H(3 - \theta_H\sigma_{FM} - \theta_F\sigma_{HM})^3} < 0.$$

E. Proof of Lemma 2

By the definition of Gini index, we have

$$\bar{G}_i = \frac{1}{E(h_i)}\int_0^{\beta_i} F(h_i)[1 - F(h_i)]dh_i = \frac{2\beta_i^2 - \beta_i\gamma_i + \gamma_i^2}{5\beta_i(\beta_i + \gamma_i)}. \tag{E1}$$

Then, we obtain

$$\frac{d\bar{G}_i}{d\beta_i} = \frac{(\beta_i - \hat{\beta}_i)(\beta_i + \hat{\beta}_i)}{5\beta_i^2(\beta_i + \gamma_i)}.$$

F. Proof of Lemma 3

By the definition of x_i, the corresponding human wealth for given x_i is

$$h_i = x_i \frac{Y_i}{w_i} - \frac{t_i \kappa_i \overline{H}_i}{w_i} = x_i \phi_i - \psi_i, \tag{F1}$$

where

$$\phi_i \equiv 2\theta_i \left[1 + \frac{2(1 - \theta_j \sigma_{iM})}{\theta_j}\right], \psi_i \equiv \frac{4\theta_i(1 - \theta_j \sigma_{iM})}{\theta_j}.$$

Using Eq. (F1), the probabilistic density function of x_i follows

$$f_X(x_i) = f(h_i)\frac{dh_i}{dx_i} = \phi_i f(\phi_i x_i - \psi_i). \tag{F2}$$

Eqs. (3) and (F2) lead to

$$f_X(x) = \begin{cases} \dfrac{2\phi_i(\phi_i x_i - \psi_i)}{\beta_i \gamma_i} \text{ for } \dfrac{\psi_i}{\phi_i} \le x_i \le \dfrac{\psi_i + \gamma_i}{\phi_i}. \\ \dfrac{2\phi_i(\beta_i + \psi_i - \phi_i x_i)}{\beta_i(\beta_i - \gamma_i)} \text{ for } \dfrac{\psi_i + \gamma_i}{\phi_i} < x_i \le \dfrac{\psi_i + \beta_i}{\phi_i}. \end{cases} \tag{F3}$$

Integrating Eq. (F3) over its domain, we obtain

$$F_X(x) = \begin{cases} \dfrac{(\phi_i x_i - \psi_i)^2}{\beta_i \gamma_i} \text{ for } \dfrac{\psi_i}{\phi_i} \le x_i < \dfrac{\psi_i + \gamma_i}{\phi_i}. \\ 1 - \dfrac{(\beta_i + \psi_i - \phi_i x_i)^2}{\beta_i(\beta_i - \gamma_i)} \text{ for } \dfrac{\psi_i + \gamma_i}{\phi_i} < x_i \le \dfrac{\psi_i + \beta_i}{\phi_i}. \end{cases} \tag{F4}$$

Using Eq. (F4), we can derive the Gini coefficient of the post-tax income distribution as

$$G_i = \frac{2\beta_i^2 - \beta_i \gamma_i + \gamma_i^2}{15\beta_i \phi_i}. \tag{F5}$$

Eqs. (E1) and (F5) provide

$$\frac{G_i}{\bar{G}_i} = \frac{\beta_i + \gamma_i}{3\phi_i} = \frac{\overline{H}_i}{2\theta_i + \dfrac{4\theta_i(1 - \theta_j \sigma_{iM})}{\theta_j}} = \frac{\theta_j}{2(1 - \theta_j \sigma_{iM}) + \theta_j} < 1. \tag{F6}$$

Therefore, we have $G_i > \bar{G}_i$. Differentiating Eq. (F6) with respect to σ_{iM} yields

$$\frac{d}{d\sigma_{iM}}\left(\frac{G_i}{\bar{G}_i}\right) = \frac{2\theta_j^2}{[2(1 - \theta_j \sigma_{iM}) + \theta_j]^2} > 0.$$

G. Proof of the extended version of Proposition 1

Using Eqs. (22) and (23), we obtain

$$t_H^* - t_F^* = \frac{2b[\theta_H(1-\theta_F\sigma_{HM}-\omega_{HM}) - \theta_F(1-\theta_H\sigma_{FM}-\omega_{FM})]}{\theta_F\theta_H(3-\theta_H\sigma_{FM}-\theta_F\sigma_{HM})} \gtreqless 0 \Leftrightarrow \theta_H(1-\theta_F\sigma_{HM}-\omega_{HM}) \gtreqless \theta_F(1-\theta_H\sigma_{FM}-\omega_{FM}),$$

$$\kappa_H^* - \kappa_F^* = \frac{(1-\theta_H\sigma_{FM}-\omega_{FM})\theta_F - (1-\theta_F\sigma_{HM}-\omega_{HM})\theta_H}{\theta_F\theta_H(3-\theta_H\sigma_{FM}-\theta_F\sigma_{HM})} \Leftrightarrow \theta_H(1-\theta_F\sigma_{HM}-\omega_{HM}) \lesseqgtr \theta_F(1-\theta_H\sigma_{FM}-\omega_{FM}).$$

H. Proof of Proposition 2 when $\boldsymbol{\omega_{HM} \neq \omega_{FM} \neq 0}$ and Proposition 6

Proof of Proposition 2 when $\omega_{HM} \neq \omega_{FM} \neq 0$: Comparative statistics give

$$\frac{\partial\kappa_i^*}{\partial\sigma_{iM}} = \frac{1}{3-\theta_i\sigma_{jM}-\theta_j\sigma_{iM}}\left\{\frac{\theta_j\left[\theta_j\left(1-\theta_i\sigma_{jM}-\omega_{jM}\right)+\theta_i\left(2-\theta_i\sigma_{jM}+\omega_{iM}\right)\right]}{\theta_i\left(3-\theta_i\sigma_{jM}-\theta_j\sigma_{iM}\right)} + \frac{\partial\omega_{iM}}{\partial\sigma_{iM}}\right\} > 0,$$

$$\frac{\partial\kappa_j^*}{\partial\sigma_{iM}} = -\frac{1}{3-\theta_i\sigma_{jM}-\theta_j\sigma_{iM}}\left[\frac{\theta_j\left(1-\theta_i\sigma_{jM}-\omega_{jM}\right)+\theta_i\left(2-\theta_i\sigma_{jM}+\omega_{iM}\right)}{3-\theta_i\sigma_{jM}-\theta_j\sigma_{iM}} + \frac{\theta_i}{\theta_j}\frac{\partial\omega_{iM}}{\partial\sigma_{iM}}\right] < 0,$$

$$\frac{\partial t_i^*}{\partial\sigma_{iM}} = -\frac{2b\left(2-\theta_i\sigma_{jM}\right)}{\theta_j}\frac{\partial\kappa_i^*}{\partial\sigma_{iM}} < 0,$$

$$\frac{\partial t_j^*}{\partial\sigma_{iM}} = \frac{2b\left(1-\theta_i\sigma_{jM}\right)}{\theta_i}\frac{\partial\kappa_j^*}{\partial\sigma_{iM}} < 0.$$

Proof of Proposition 6: Eqs. (25a) and (25b) are

$$\bar{H}_i^{-1}\frac{\partial y_{ih}^*}{\partial\sigma_{iM}} = \underbrace{\frac{\partial w_i^*}{\partial\kappa_i^*}\frac{\partial\kappa_i^*}{\partial\sigma_{iM}}\sigma_{ih}}_{+} + \underbrace{\left[\frac{\partial r_i^*}{\partial\kappa_i^*}\frac{\partial\kappa_i^*}{\partial\sigma_{iM}} - \frac{\partial t_i^*}{\partial\sigma_{iM}}\right]\omega_{ih}}_{+} + \underbrace{\left[\kappa_i^*\frac{\partial t_i^*}{\partial\sigma_{iM}} + t_i^*\frac{\partial\kappa_i^*}{\partial\sigma_{iM}}\right]}_{-},$$

$$\bar{H}_j^{-1}\frac{\partial y_{jh}^*}{\partial\sigma_{iM}} = \underbrace{\frac{\partial w_j^*}{\partial\kappa_j^*}\frac{\partial\kappa_j^*}{\partial\sigma_{iM}}\sigma_{jh}}_{-} + \underbrace{\left[\frac{\partial r_j^*}{\partial\kappa_j^*}\frac{\partial\kappa_j^*}{\partial\sigma_{iM}} - \frac{\partial t_j^*}{\partial\sigma_{iM}}\right]\omega_{jh}}_{+} + \underbrace{\left[\kappa_j^*\frac{\partial t_j^*}{\partial\sigma_{iM}} + t_j^*\frac{\partial\kappa_j^*}{\partial\sigma_{iM}}\right]}_{-},$$

where

$$\frac{\partial r_i^*}{\partial\kappa_i^*}\frac{\partial\kappa_i^*}{\partial\sigma_{iM}} - \frac{\partial t_i^*}{\partial\sigma_{iM}} = \frac{2b\left(1-\theta_i\sigma_{jM}+\theta_i\right)}{\theta_j}\frac{\partial\kappa_i^*}{\partial\sigma_{iM}} > 0.$$

Eq. (25a) is positive (negative) if σ_{ih} and ω_{ih} are sufficiently large (small). Similarly, Eq. (25b) is positive (negative) if ω_{ih} is sufficiently large (small). In particular, the result is same as that of Proposition 4 if $\omega_{ih} = \omega_{jh} = 0$.

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Table

Table 1. Baseline parameters

Parameter	Value
a	20
b	2
β_F	2.5
γ_F	0.5

Table 2. Variable definitions and data sources in estimations

Variable	Definition	Unit	Source	Notes
SCIT	Statutory corporate income tax rate	Decimal (e.g., 0.30=30%)	OECD CITRD	Dependent variable
MMRATIO	Median-to-mean household income ratio (income definition since 2012)	Ratio	Author's calculation based on OECD IDD	Median position
CMMRATIO	Median-to-mean household income ratio combined income definition since 2012 with by 2011	Ratio	Author's calculation based on OECD IDD	Robustness check
EDI	Electoral Democracy Index	0–1	V-Dem v15	Political institution measure
LDI	Liberal Democracy Index	0–1	V-Dem v15	Robustness check
MCIT	GDP share weighted average SCIT of other countries	Decimal	Author's calculation	Tax competition control
LPOP	Log of population (annual population, thousands)	Natural log	OECD National Accounts	Control variable
TROPEN	(Exports+Imports)/GDP	Ratio	Author's calculation based on OECD National Accounts	Control variable
KAOPEN	Capital account openness	Index	Chinn-Ito Index	Control variable
GEXP	General government expenditure (% of GDP)	Decimal	IMF WEO	Control variable
DEBT	General government gross debt (% of GDP)	Decimal	IMF WEO	Control variable

Comments: CMMRATIO is a combined series of the median-to-mean household income ratio constructed from two different income definitions. If the average difference between the two ratios is less than 10^{-2} in each year, or the two- to five-year average difference is less than 10^{-1}, the missing values of MMRATIO are supplemented by the median-to-mean income ratio based on the 2011 income definition.

Table 3. Summary statistics

Variable	Mean	Std. dev.	Min	Max	Obs.
SCIT	0.257	0.072	0.090	0.5161	1050
MMRATIO	0.861	0.059	0.618	0.966	573
CMMRATIO	0.863	0.057	0.618	0.966	646
EDI	0.825	0.103	0.285	0.923	1050
LDI	0.743	0.136	0.104	0.897	1050
MCIT	0.315	0.039	0.253	0.386	1048
LPOP	9.349	1.534	5.639	12.737	1048
TROPEN	0.996	0.618	0.196	4.122	1041
KAOPEN	1.734	0.957	-1.248	2.290	943
GEXP	0.409	0.093	0.146	0.649	1049
DEBT	0.606	0.406	0.038	2.583	1049

Notes: Summary statistics are computed on the estimation sample. Tax rates and % of GDP variables are reported in decimals (0.30 = 30%). No weights are applied. Observations follow listwise deletion.

Table 4. Determinants of statutory corporate income tax rates

Variable	(1) OLS	(2) FE baseline	(3)	(4)	(5)	(6)
MMRATIO	-1.343*** (0.256)	-0.862*** (0.290)	-0.934*** (0.252)	-0.959*** (0.285)	-0.992*** (0.261)	-0.999*** (0.271)
EDI	-0.881*** (0.248)	-1.170*** (0.315)	-1.249*** (0.293)	-1.284*** (0.339)	-1.307*** (0.320)	-1.334*** (0.326)
MMRATIO×EDI	1.367*** (0.305)	1.442*** (0.392)	1.553*** (0.360)	1.589*** (0.414)	1.624*** (0.385)	1.668*** (0.392)
MCIT	0.014 (0.072)	-3.659*** (0.454)	-3.532*** (0.441)	-3.656*** (0.453)	-3.550*** (0.442)	-3.467*** (0.436)
LPOP			-0.104** (0.049)	-0.117* (0.059)	-0.094* (0.484)	-0.094** (0.458)
TROPEN			0.044*** (0.014)		0.052*** (0.136)	0.056*** (0.160)
KAOPEN				0.001 (0.005)	0.002 (0.005)	0.000 (0.006)
GEXP						0.025 (0.047)
DEBT						-0.027* (0.156)
Country FE	No	Yes	Yes	Yes	Yes	Yes
Year FE	No	Yes	Yes	Yes	Yes	Yes
Observations	573	573	573	558	558	558
R^2 (within)	0.171	0.314	0.384	0.346	0.387	0.400

Notes: Robust standard errors clustered at the country level are in parentheses. Columns (1)–(6) correspond to increasingly saturated specifications: baseline OLS, fixed effects, controls for size and trade openness, capital account openness, extended openness, and the full specification including fiscal variables. * p < 0.10, ** p < 0.05, *** p < 0.01.

Table A1. Robustness check using region-by-year fixed effects (replacing common year effects)

Variable	(1) OLS	(2) FE baseline	(3)	(4)	(5)	(6)
MMRATIO	-1.343*** (0.256)	-0.919*** (0.312)	-0.931*** (0.294)	-0.976*** (0.316)	-1.008*** (0.305)	-1.008*** (0.316)
EDI	-0.881*** (0.248)	-1.231*** (0.349)	-1.245*** (0.342)	-1.298*** (0.373)	-1.321*** (0.371)	-1.334*** (0.376)
MMRATIO×EDI	1.367*** (0.305)	1.512*** (0.424)	1.550*** (0.409)	1.607*** (0.448)	1.642*** (0.437)	1.673*** (0.444)
MCIT	0.014 (0.072)	-3.935*** (0.468)	-3.800*** (0.434)	-3.893*** (0.429)	-3.750*** (0.420)	-3.676*** (0.418)
LPOP			-0.104** (0.050)	-0.116* (0.062)	-0.095* (0.498)	-0.095* (0.483)
TROPEN			0.044*** (0.015)		0.051*** (0.133)	0.054*** (0.157)
KAOPEN				0.001 (0.006)	0.003 (0.006)	0.001 (0.006)
GEXP						0.021 (0.049)
DEBT						-0.026 (0.160)
Country FE	No	Yes	Yes	Yes	Yes	Yes
Region–year FE	No	Yes	Yes	Yes	Yes	Yes
Observations	573	571	571	556	556	556
R^2 (within)	0.171	0.305	0.372	0.333	0.374	0.386

Notes: Robust standard errors clustered at the country level are in parentheses. Columns (1)–(6) correspond to increasingly saturated specifications: baseline OLS, fixed effects, controls for size and trade openness, capital account openness, extended openness, and the full specification including fiscal variables. * p < 0.10, ** p < 0.05, *** p < 0.01.

Table A2. Robustness check replacing EDI with LDI

Variable	(1) OLS	(2) FE baseline	(3)	(4)	(5)	(6)
MMRATIO	-1.003*** (0.179)	-0.516** (0.242)	-0.581*** (0.210)	-0.597** (0.225)	-0.630*** (0.208)	-0.632*** (0.217)
LDI	-0.695*** (0.190)	-0.928*** (0.296)	-1.017*** (0.278)	-1.041*** (0.313)	-1.070*** (0.297)	-1.099*** (0.302)
MMRATIO×LDI	1.068*** (0.233)	1.133*** (0.363)	1.251*** (0.338)	1.275*** (0.379)	1.315*** (0.458)	1.357*** (0.362)
MCIT	0.026 (0.072)	-3.688*** (0.466)	-3.567*** (0.454)	-3.692*** (0.468)	-3.550*** (0.442)	-3.508*** (0.451)
LPOP			-0.102** (0.050)	-0.115* (0.060)	-0.093* (0.050)	-0.092* (0.047)
TROPEN			0.044*** (0.015)		0.052*** (0.141)	0.056*** (0.168)
KAOPEN				0.001 (0.005)	0.002 (0.005)	0.001 (0.006)
GEXP						0.029 (0.048)
DEBT						-0.026 (0.154)
Country FE	No	Yes	Yes	Yes	Yes	Yes
Year FE	No	Yes	Yes	Yes	Yes	Yes
Observations	573	573	573	558	558	558
R^2 (within)	0.168	0.300	0.369	0.330	0.371	0.384

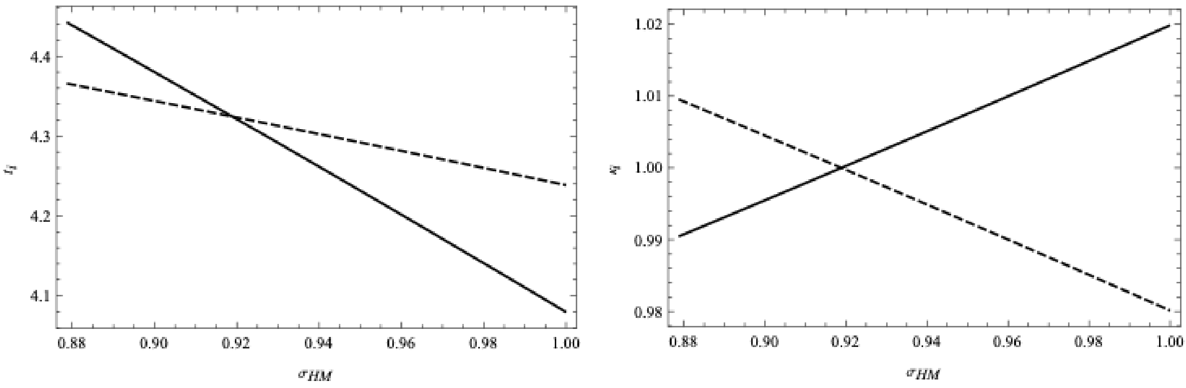
Notes: Robust standard errors clustered at the country level are in parentheses. Columns (1)–(6) correspond to increasingly saturated specifications: baseline OLS, fixed effects, controls for size and trade openness, capital account openness, extended openness, and the full specification including fiscal variables. * p < 0.10, ** p < 0.05, *** p < 0.01.

Table A3. Robustness check using extended MMRATIO series (CMMRATIO)

Variable	OLS	Full model
MMRATIO	-1.493*** (0.274)	-0.985*** (0.271)
LDI	-1.017*** (0.264)	-1.281*** (0.316)
MMRATIO×LDI	1.563*** (0.325)	1.579*** (0.386)
MCIT	0.232*** (0.072)	-3.801*** (0.744)
LPOP		-0.061 (0.054)
TROPEN		0.043** (0.166)
KAOPEN		0.002 (0.006)
GEXP		0.004 (0.048)
DEBT		-0.0176 (0.136)
Country FE	No	Yes
Year FE	No	Yes
Observations	646	617
R^2 (within)	0.184	0.367

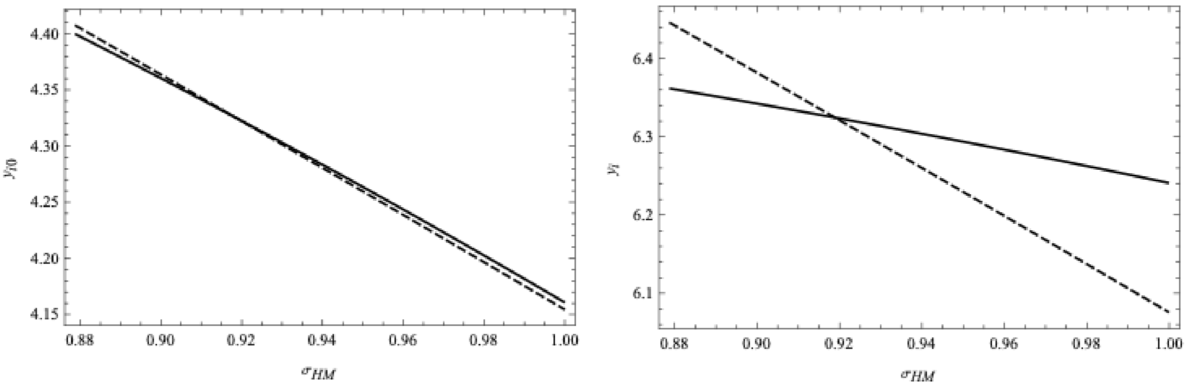
Notes: Robust standard errors clustered at the country level are in parentheses. * p < 0.10, ** p < 0.05, *** p < 0.01.

Figures

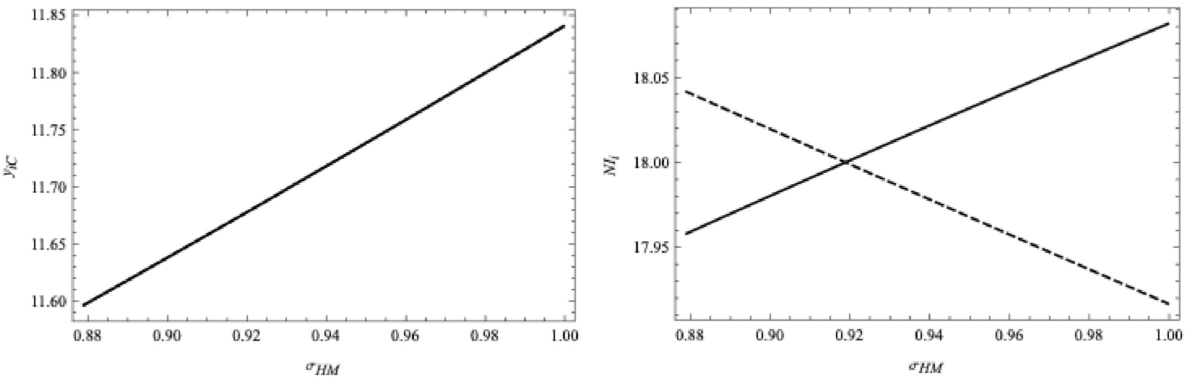


(a) Equilibrium tax rate (b) Physical capital

Figure 1. Equilibrium tax rates and physical capital inputs



(a) Net income for the poorest worker (b) Net average income for workers



(c) Net income for the capitalist (d) National income

Figure 2. Net income and median's position