

A political economy of tax havens

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Abstract The welfare effect of the existence of tax havens on high-tax countries has not been conclusive in the theoretical literature. Some papers show that the existence of tax havens is harmful to high-tax countries, while other studies argue that the opposite could occur. We aim to address a question: Do these welfare-reducing or welfare-enhancing properties still hold in the presence of lobbying? We find that the welfare-enhancing property does not hold, provided that the policy-maker attaches a sufficiently large weight to the political contribution received. Moreover, we point out that the cooperation among high-tax countries in restricting the international tax planning activity can lead to a lower level of social welfare in all high-tax countries.

Keywords Capital mobility · Interest groups · Lobbying · Tax havens · Tax competition

JEL Classification F21 · H41 · H73

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1 Introduction

International tax avoidance through tax havens has become the focus of much attention and debate. The term “harmful tax havens” usually refers to jurisdictions that impose no or low taxation, along with other features, including non-transparency and the ring-fencing of mobile activities (Nicodème 2009). Since 1998, the OECD has advocated campaigning against harmful tax havens (OECD 1998, 2000). In 2013, the G8 Lough Erne Declaration indicated that fair taxes and promoting transparency are critical for growth, prosperity, and economic development across the world. The G8 leaders agreed to ensure that international tax rules do not allow or encourage multinational enterprises to reduce overall taxes paid by artificially shifting profits to low-tax jurisdictions.

Despite their undesirability in practice, the welfare impacts of tax havens on high-tax countries have not been conclusive in the theoretical literature. Some studies show that the existence of tax havens is harmful to the high-tax countries (e.g., Slemrod and Wilson 2009; Krautheim and Schmidt-Eisenlohr 2011; Haufler and Runkel 2012), while other papers argue that the opposite could happen (e.g., Hong and Smart 2010; Johannesen 2010). However, these papers are based on the assumption that the policy-makers are benevolent. It is well known that special interest groups play a significant role in the process of policy-making (Hillman 1982, 1989; Poterba 1998; Grossman and Helpman 2002). Then, a natural question arises: Do the welfare-enhancing or welfare-reducing properties of tax havens still hold in the presence of lobbying? We aim to address this question. Since the influence of interest groups seems inevitable in policy-making, our analysis appears to be necessary.

We construct a standard tax competition model incorporating tax havens and interest groups. There are a large number of (high tax) countries that compete for mobile capital by setting their capital taxes. There are two types of capital, mobile and immobile. The two types of capital are perfect substitutes in production. Each country levies a uniform tax on the two types of capital. The tax revenues are distributed to poor residents (pensioners). In addition to the high-tax countries, there also exist some jurisdictions that are referred to as tax havens. The tax havens levy no tax, and they simply provide firms located in the high-tax countries with opportunities to reduce tax burdens on mobile capital through international tax planning. In each high-tax country, the owners of capital organize themselves into a lobbying group, and they offer political contributions to their policy-maker in order to lower capital taxes.¹

Within this framework, we examine the effects of the international tax planning activity on the capital tax rates and on the social welfare of the high-tax countries. We first find that an increase in the tax planning activity can induce the capitalists to exert greater political pressure to reduce the capital taxes. The reasoning underlying this result is that an increase in the capital tax rate results in the outflow of the mobile

¹ In the USA, several organized groups have been actively lobbying for lower corporate taxes. For example, the Alliance for Competitive Taxation asserts that its mission is to support comprehensive tax reform that lowers the corporate tax rate to 25 %. One of the main objectives of the Tax Innovation Equality is to press the US Congress to lower the corporate tax rate, so that it is competitive with the corresponding tax rates of other developed nations.

capital, which in turn increases the marginal productivity of the immobile capital, and partly offsets the increased tax burden. A higher level of tax planning gives rise to a smaller outflow of the mobile capital, resulting in an increase in the marginal productivity of immobile capital to a lesser extent. This implies that a higher level of tax planning leads the immobile capital to bear a greater tax burden, which induces the capitalists to exert greater pressure to reduce the tax rate.

A major finding of this present paper is that a high-tax country's social welfare can either increase or decrease with the level of the international tax planning activity, depending on the weight that a high-tax country attaches to the political contribution. This is different from the result of [Hong and Smart \(2010\)](#), who find that a unilateral increase in the international tax planning activity enhances the high-tax country's welfare.

The intuition underlying this result is as follows. The optimal taxation rule requires different tax rates to be imposed on the mobile capital and the immobile capital. As indicated by [Hong and Smart \(2010\)](#), such a differential tax treatment is generally prohibited for some practical reasons. The international tax planning activity provides an opportunity for a desirable differential tax treatment, and thus enhances the high-tax country's efficiency. This present paper departs from [Hong and Smart \(2010\)](#) in that, in addition to the efficiency consideration, there arises a political effect. As demonstrated below, an increase in the tax planning activity can induce the capitalists to exert greater political pressure to reduce the capital tax rate. This political effect drives the already sub-optimally low tax rate further below the efficient level. If the welfare-reducing political effect outweighs the enhancement in welfare due to the differential tax treatment, then a higher level of tax planning activity reduces the high-tax country's social welfare.

Another finding of this present paper concerns the effects of international cooperation in reducing the tax planning activity. The previous literature has pointed out that such international cooperation is beneficial to the high-tax countries (e.g., [Slemrod and Wilson 2009](#); [Haufler and Runkel 2012](#)). However, we demonstrate that, in the presence of lobbying, the cooperation to reduce the tax planning activity can decrease the high-tax countries' welfare. The reason for this result is based on two findings. First, the equilibrium capital tax rate has been set sub-optimally low before the international cooperation. Secondly, a coordinated reduction in the tax planning activity can lead to a lower tax rate. Combining these two outcomes shows that the cooperation to reduce international tax planning activity can cause an already sub-optimally low tax rate to deviate further below the efficient level, and thus reduce the social welfare of all the non-haven countries.

This present paper complements the previous literature. Although our results seem to lead the effects of tax havens to being further away from being conclusive, this present paper may contribute to the literature by highlighting the role of political factors in the welfare implications of international tax planning.

There are a number of papers on the political economy of tax policy in a tax competition setting. [Persson and Tabellini \(1992\)](#) and [Lockwood and Makris \(2006\)](#) investigate how capital mobility affects capital taxes, which are determined by majority voting. [Fuest and Huber \(2001\)](#) use majority voting theory to explain why it is difficult to agree on capital tax coordination among EU countries. Focusing on the political

pressure of interest groups, [Lai \(2010\)](#) argues that capital market integration will reduce the capitalists' lobbying incentives to decrease the tax rate; as a consequence, it may result in a higher capital tax rate even if all countries are symmetric. Using a setting with two kinds of capital and focusing on the political effect of utilizing tax havens distinguish this present paper from [Lai \(2010\)](#).

The remainder of this paper proceeds as follows. Section 1 describes the basic tax competition model with tax havens. Section 3 introduces the capitalists' lobbying and obtains the political equilibrium capital tax rate. Sections 4 and 5 examine, in the presence of political power, how international planning affects the equilibrium capital tax rate and social welfare. Section 6 considers some possible extensions. The last section concludes.

2 The model

Our basic model builds on the works of [Zodrow and Mieszkowski \(1986\)](#) and [Haufler and Runkel \(2012\)](#). We consider a large number of identical (high tax) countries. Each country contains three types of residents: capitalists, workers, and pensioners. All residents are immobile across countries, and the residents of the same type are identical. We normalize the number of the pensioners to unity, and let n^k and n^l be the numbers of capitalists and workers, respectively.

Each capitalist possesses h units of immobile capital, k^n , and one unit of internationally mobile capital, k^m .² Each worker is endowed with one unit of labor and inelastically supplies labor to firms. Finally, pensioners, defined as those who are endowed with nothing, receive transfer payments from the government.

Suppose that each country contains a firm, which is a price taker in the international market. Each firm hires immobile capital, mobile capital, and labor to produce an output. The two types of capital are perfect substitutes in producing the output.

In addition to the high-tax countries, there also exist several countries or jurisdictions levying no taxation on capital³ to which we refer as tax havens. The existence of the tax havens enables the firms to engage in international tax planning. For example, a firm can set up a financial subsidiary in a tax haven. The subsidiary does not produce output;⁴ it only makes an intracompany loan (usually merely paperwork) to its parent company. The home country of the parent company allows the deduction of an interest payment for this loan. The firm is able to reduce the overall tax burden by using internal debt financing.

In reality, international tax planning activities are often constrained by a number of factors, including transaction costs, agency problems, the long-term nature of tax codes, and the numbers of available tax havens. Most of these factors are beyond

² We can also specify that there are two types of capitalists: the owners of immobile capital and the owners of mobile capital. This setting will not alter the results that follow.

³ Allowing tax havens to impose a positive tax rate on capital income does not alter the results that follow.

⁴ According to the empirical evidence, tax havens are usually very small jurisdictions ([Hines and Rice 1994](#); [Dharmapala and Hines 2009](#)). Without loss of generality, we neglect productive activities in tax havens.

the control of the firms.⁵ To characterize the tax planning activity, we follow the specification of [Hong and Smart \(2010\)](#) by assuming that a firm's internal debt to its subsidiary is bounded by an exogenous proportion, $\psi \in [0, 1]$. The level of ψ is determined by the factors mentioned above. In addition, by following [Hong and Smart \(2010\)](#), we assume that the firms will issue the debt up to the upper bound.

Accordingly, the profit function of the firm is expressed as:

$$\pi = f(k) - k^n(r^n + t) - k^m[r^m + (1 - \psi)t] - n^l w, \quad (1)$$

where k is the total capital employed, which is equal to $k^n + k^m$. The production function $f(k)$ has the standard properties $f'(k) > 0$ and $f''(k) < 0$.⁶ For analytical simplicity, we also assume that $f'''(k)$ is small. The wage rate is denoted by w , and the variables r^n and r^m are the net returns on immobile capital and mobile capital, respectively. The government imposes a source-based tax at the rate t on each unit of capital. The capital tax rate is assumed to be non-negative and has an upper bound \bar{t} . All the capital tax revenues are distributed to the pensioners in the form of lump-sum transfers. We note that the international tax planning reduces the effective tax rate on the mobile capital to $(1 - \psi)t$.

We also note that the tax saving coming from ψ is confined only to mobile capital. There are some reasons why the immobile capital cannot benefit from international tax planning. First, one can think of mobile capital as physical capital, and immobile capital as entrepreneurial capital ([Hong and Smart 2010](#); [Johannessen 2014](#)).⁷ The identity of the entrepreneur is relatively easy to recognize, and thus, it is hard for the entrepreneurial capital to use the service of tax havens. Second, some kinds of capital are prohibitively costly to relocate to another country, perhaps due to previous sunk investments in the host country ([Marceau et al. 2010](#)). Third, in a broader sense, immobile capital could be referred to as agriculture, land, or natural resources ([Anand and Sansing 2000](#)). Accordingly, these kinds of capital by nature are hardly accessible to international tax planning. Indeed, the setting which provides preferential tax treatment on mobile capital can be found in several papers (see, e.g., [Bucovetsky and Haufler 2008](#); [Hong and Smart 2010](#); [Haufler and Runkel 2012](#)), and we follow this approach.

The firm chooses k^n and k^m to maximize (1). The first-order conditions for profit maximization are:

$$r^n = f'(k) - t, \quad (2)$$

$$r^m = f'(k) - t(1 - \psi). \quad (3)$$

Since the mobile capital encounters a lower effective tax rate, its net return is higher than that of the immobile capital. In addition, we assume that $r^n < f'(k^n) - \bar{t}$, which prevents a corner solution with a complete outflow of mobile capital.

⁵ See [Desai et al. \(2007\)](#) and [Hong and Smart \(2010\)](#) for more discussion.

⁶ For notational simplicity, the fixed labor input is omitted in the production function.

⁷ One may consult [Audretsch \(2007\)](#) for a detailed discussion on entrepreneurial capital.

In addition, the wage rate is adjusted to the point where it is optimal for the firm to employ all labor supply. Inserting (2) and (3) into (1) gives the wage rate as follows:

$$w(k) = [f(k) - kf'(k)]/n^l. \quad (4)$$

Since there are a large number of identical countries, an individual country regards the net rate of return of the mobile capital as given. Given this fact, it follows from (3) that:

$$\frac{\partial k}{\partial t} = \frac{1}{f''}(1 - \psi) < 0, \quad (5)$$

$$\frac{\partial k}{\partial \psi} = -\frac{1}{f''}t > 0. \quad (6)$$

Equation (5) states that the firm's capital demand decreases with t . We note that the adverse effect of t on the capital demand decreases with ψ . This is because, with a larger ψ , the increase in the user cost of mobile capital due to an increase in t is lower. Hence, the reduction in the firm's capital demand is smaller with a higher level of tax planning. Equation (6) indicates that a rise in international tax planning reduces the user costs of mobile capital, and therefore increases the capital demand.

Although an individual country's policy cannot change the net return on the mobile capital, it affects the net return on the immobile capital, r^n . The effect of t on r^n is given by:⁸

$$\frac{dr^n}{dt} = -\psi. \quad (7)$$

Equation (7) shows that the effect of t on r^n depends on the level of tax planning; the larger that ψ is, the larger that the adverse effect of t on r^n will be. According to (2), the total amount of capital employed and the tax rate jointly determine r^n . The (mobile) capital outflow due to an increase in t raises the marginal product of capital, which in turn mitigates the adverse impact of t on r^n . However, with a larger ψ , an increase in t causes less capital outflow, leading to a greater negative impact on r^n . If $\psi = 0$, then r^n does not change with t .

We also derive the effect of a rise in ψ on the net return on the immobile capital, which is

$$\frac{dr^n}{d\psi} = -t.$$

An increase in ψ attracts (mobile) capital inflows, which reduce the marginal product of capital, and thus decrease r^n .

⁸ Differentiating r^n with respect to t gives $\partial r^n / \partial t = f'' \cdot \partial k / \partial t - 1$. Then, inserting (5) into this equation gives rise to (7).

A representative capitalist's preference is given by:

$$u^k = hr^n + r^m.$$

A representative worker's preference is described by:

$$u^l = w = [f(k) - kf'(k)]/n^l.$$

Finally, the utility function of a representative pensioner is given by (recall that the number of pensioners is normalized to unity):

$$u^p = t[(1 - \psi)k + n^k h \psi].$$

The right-hand side of the above equation is the total capital tax revenues.

The social welfare function W is defined as a weighted utilitarian function:

$$W = W^k + W^l + (1 + \beta)W^p, \quad (8)$$

where W^k , W^l and W^p denote the aggregate welfare of capitalists, workers, and pensioners, respectively. An equity concern leads the government to attach a weight, $1 + \beta$ ($\beta \geq 0$), to the pensioners' welfare.

Each type of residents' aggregate welfare is given as follows:

$$W^k = n^k u^k = n^k (hr^n + r^m),$$

$$W^l = n^l u^l = n^l w,$$

$$W^p = u^p = t[(1 - \psi)k + n^k h \psi],$$

It would be helpful for future use to derive the effects of t and ψ on the welfare of each type of residents:

$$\frac{\partial W^k}{\partial t} = -n^k h \psi, \quad (9a)$$

$$\frac{\partial W^k}{\partial \psi} = -n^k h t, \quad (9b)$$

$$\frac{\partial W^l}{\partial t} = -n^k (1 + h)(1 - \psi), \quad (9c)$$

$$\frac{\partial W^l}{\partial \psi} = n^k (1 + h)t, \quad (9d)$$

$$\frac{\partial W^p}{\partial t} = n^k (1 - \psi + h) + (1 - \psi)^2 \frac{1}{f''} t, \quad (9e)$$

$$\frac{\partial W^p}{\partial \psi} = \left[-(1 - \psi) \frac{1}{f''} t - n^k \right] t. \quad (9f)$$

Equation (9a) denotes the effect of t on the capitalists' welfare. If $\psi = 0$, then the capitalists' welfare is independent of the capital tax rate. From (7), a change in t does not affect r^n , as long as $\psi = 0$. This result, along with the fact that r^m is independent of a change in t , ensures that welfare of capitalists does not change with t in the case where $\psi = 0$. However, as long as tax planning is possible, i.e., $\psi > 0$, the capitalists' welfare decreases with t (by reducing r^n). One point we should notice is that the adverse impact of t on the capitalists' welfare increases with ψ . Equation (9b) refers to the adverse effect of ψ on the capitalists' welfare. This is because a higher ψ attracts capital inflows, which in turn reduces the net return on the immobile capital (note that $dr^n/d\psi < 0$). Equation (9c) indicates that the workers' welfare decreases with t , because a lower tax rate will increase the capital employed, which in turn enlarges their wage rate. An increase in ψ has a similar effect on the workers' welfare to a reduction in the tax rate.

Finally, (9e) and (9f) state the effects of both the tax rate and the level of tax planning on the welfare of the pensioners. These two effects are generally ambiguous because a reduction in t or a higher ψ directly decreases the tax revenues, but on the other hand it also attracts capital inflows and thus enlarges the tax base. The two opposite forces lead to the ambiguity. However, we can show that in equilibrium (9e) is positive, indicating that the government will not set a tax rate above the revenue-maximizing level.⁹

3 Political equilibrium

Since the capitalists' welfare depends on the capital tax rate, we assume that the capitalists organize themselves into a lobbying group and offer political contributions to the policy-maker to influence the capital tax rate. The access to international tax planning activities, by contrast, is assumed not to be subject to the influence of lobbying. As discussed previously, the level of ψ depends on various factors, such as operating costs, agency costs, accounting fees needed to research the relevant tax laws, the tax policies of tax havens, and other factors. Some of them are not related to politics. Because of this, we assume that lobbying can only affect the capital tax rate and leave the access to tax havens to be exogenously determined.¹⁰ Doing so can also help us focus on the welfare effect of an exogenous change in international tax planning.

For the time being, we assume that only the capitalists are active in lobbying. We will introduce the possibility of lobbying by other groups in Sect. 6.

The timing of events is as follows. First, the lobbying group offers a contribution schedule to the policy-maker in its country and takes as given the schedules of all other lobbies in other countries. The contribution schedule is contingent upon the capital tax rate chosen. Then, all the policy-makers simultaneously set their capital tax rates

⁹ We can see this by inserting the equilibrium tax rate (derived later in (12)) into (9e) to derive that, in equilibrium, the tax revenues increase with a higher tax rate. We thank a reviewer for pointing this out.

¹⁰ In settings without political concern, Bucovetsky and Haufler (2008) and Johannesen (2012) endogenize the access to international tax planning.

and collect political contributions. Finally, given the capital tax rates, the firms decide the demand for capital and labor.

We solve the game backwards. The firms' decisions on the input demand have been discussed in the previous section. We now move on to the second stage of the game.

Following [Grossman and Helpman \(1994\)](#), the objective function of the policy-maker is assumed to be the weighted average of the political contributions received and social welfare, which is given by:

$$\theta m^k(t) + W(t)$$

where $m^k(t)$ is the amount of political contributions provided by the capitalists, which depends on t ; $\theta \geq 0$ denotes the weight the policy-maker attaches to the political contributions. We assume that, for ease of exposition, the lobbying groups' contribution schedules are "globally truthful".¹¹ This assumption generally means that a lobby will capture all of the surplus from the contributor's political relationship with the government. To be more specific, each lobby's contribution schedule everywhere reflects its true welfare.¹² That is, given the global-truthfulness assumption, $\theta \partial m^k / \partial t$ will be equal to $\theta \partial W^k / \partial t$. Accordingly, the equilibrium tax rate can be characterized by solving the following equation:

$$\max_t G = \theta W^k + W = (1 + \theta)W^k + W^l + (1 + \beta)W^p. \quad (10)$$

The first-order condition for t is given by:

$$\theta \frac{\partial W^k}{\partial t} + \frac{\partial W}{\partial t} = 0, \quad (11)$$

where the first term $\theta \cdot \partial W^k / \partial t$ reflects the political pressure of the capitalists. From the above equation and (9a)–(9f), we can obtain the equilibrium capital tax rate, denoted by t^e , as follows:

$$t^e = \frac{-n^k f''}{(1 + \beta)(1 - \psi)^2} [(1 - \psi + h)\beta - h\psi\theta]. \quad (12)$$

We are concerned with whether the equilibrium capital tax rate is efficient. Thus, we need the capital tax rate that maximizes social welfare, which is denoted by t^* , to serve as a benchmark. Our setting enables us to obtain t^* by substituting $\theta = 0$ into (12). It follows that if $\beta = 0$, then $t^* = 0$, indicating that when the government has no equity concern, the optimal capital tax rate of a small open economy should be equal to zero ([Gordon 1986](#); [Bucovetsky and Wilson 1991](#)).

¹¹ The derivation of the first-order condition without the global-truthfulness assumption can be found in Appendix 1.

¹² [Bernheim and Whinston \(1986\)](#) show that a truthful schedule is a best response to any strategy of the opponent, even if it is not the only best response. Therefore, they argue that truthful Nash equilibria may be focal among the set of Nash equilibria. See also [Grossman and Helpman \(1994\)](#) for a related discussion on the global-truthfulness assumption.

The government's equity concern ($\beta > 0$) will lead the optimal capital tax rate to be positive. Moreover, we can verify that if $\theta > 0$, then $t^e < t^*$. Equation (9a) shows that the capitalists' welfare decreases with t , and thus, they have an incentive to lobby for a lower tax rate, resulting in $t^e < t^*$. We summarize this finding in the following lemma:

Lemma 1 *The capitalists' lobbying gives rise to a sub-optimally low capital tax rate.*

4 Effects of international tax planning

According to (12), the equilibrium tax rate depends on the degree of the international tax planning ψ . A change in ψ alters the marginal impact of the tax rate on the capitalists' welfare, which in turn affects their political pressure on t . Such a political effect of ψ appears to be ignored in the literature, whereas it is our main focus. As shown in Sect. 5, overlooking the political effect of ψ can lead to misguidance in policy-making.

Differentiating (12) with respect to ψ gives the effect of ψ on t^e as follows:

$$\frac{dt^e}{d\psi} = \frac{-n^k f''}{(1+\beta)(1-\psi)^3} (\beta - \psi\beta + 2h\beta - h\theta - h\psi\theta) \quad (13)$$

Immediately, we have the following result:

Proposition 1 *An increase in the international tax planning activity (ψ) reduces (increases) the equilibrium capital tax, if $\theta > \bar{\theta}_t$ ($\theta < \bar{\theta}_t$), where $\bar{\theta}_t = [(1-\psi)\beta + 2h\beta]/h(1+\psi)$.*

As ψ increases, the equity concern induces the policy-maker to raise t to restore the reduced tax revenues.¹³ On the other hand, according to (9a), a larger ψ aggravates the adverse impact of the tax on the capitalists' welfare, leading them to exert greater political pressure to reduce t . The net effect of an increase in ψ depends on these two opposite forces. If θ is sufficiently large, then the political effect outweighs the equity concern effect, so that the tax rate decreases with ψ . Otherwise, the tax rate will increase with ψ .

5 Welfare implications

5.1 A unilateral increase in international tax planning

A surprising result in Hong and Smart (2010) is that the international tax planning activity unambiguously improves the welfare of high-tax countries. The intuition underlying their result is as follows: Practical reasons generally restrict the implementation of

¹³ This can be seen by inserting $\theta = 0$, indicating that the policy-maker is benevolent, into (13), which gives $\frac{\partial t^*}{\partial \psi} = \frac{-n^k f''}{(1+\beta)(1-\psi)^3} (\beta - \psi\beta + 2h\beta)$. This equation shows that t^* does not change with ψ , when β (equity concern) is equal to zero, while t^* increases with ψ , when β is positive.

the optimal tax rule, which requires differential tax rates on the different types of capital. However, the international tax planning activity provides a desirable differential tax treatment, and thus enhances efficiency. In what follows, we demonstrate that this efficiency improvement due to tax planning does not necessarily occur in the presence of lobbying.

To elaborate on the effect of a unilateral increase in ψ , we totally differentiate (8), the social welfare function of a high-tax country, with respect to ψ :

$$\frac{dW}{d\psi} = \frac{\partial W}{\partial \psi} + \frac{\partial W}{\partial t} \frac{dt}{d\psi}. \quad (14)$$

Rearranging (14) gives the effect of international tax planning on a high-tax country's social welfare as follows.¹⁴

$$\frac{dW}{d\psi} = \frac{-n^{k2}hf''[-\psi h\theta^2 + (1 - \psi + h)\beta^2]}{(1 + \beta)(1 - \psi)^3}. \quad (15)$$

Let us first consider a special case where the international tax planning is initially prohibited, such that ψ is equal to zero. In this case, (15) reduces to

$$\frac{dW}{d\psi} = \frac{-n^{k2}hf''(1 + h)\beta^2}{(1 + \beta)} > 0. \quad (16)$$

Hence, we have the following proposition:

Proposition 2 *Suppose that the international tax planning activity is prohibited initially. A unilateral increase in the international tax planning activity in a high-tax country will improve its social welfare, regardless of the magnitude of θ .*

As indicated in (9a), the adverse effect of t on the capitalists' welfare depends on ψ . If the initial ψ equals zero, then the capitalists' welfare is independent of t . This means that the capitalists will not provide money to the policy-maker. In this case, as in Hong and Smart (2010), an increase in ψ enables the high-tax country to implement a differential tax treatment for the two kinds of capital, and thus enhances efficiency.

However, if the initial international tax planning activity is positive, then a unilateral increase in ψ is not necessarily efficiency enhancing, as shown in the following proposition:

Proposition 3 *If the initial level of international tax planning is positive, then a unilateral increase in the international tax planning activity in a high-tax country will either increase or reduce the high-tax country's social welfare. Specifically, a unilateral increase in ψ will reduce (increase) the high-country's social welfare, if $\theta > \bar{\theta}_u$ ($\theta < \bar{\theta}_u$) where $\bar{\theta}_u = \beta\sqrt{(1 - \psi + h)/h\psi}$.*

Proof See Appendix 3. □

¹⁴ See Appendix 2 for the derivation of (15).

With a positive ψ , the political effect emerges. As indicated in (9a), a larger ψ leads the capitalists to exert a stronger downward pressure on the tax rate. Combining this result with Lemma 1, which shows that the equilibrium tax rate has been set below the efficient level, indicates that this political effect drives t^e further below t^* and reduces the high-tax country's social welfare.

Let us summarize what we have obtained. When the initial tax planning is positive, an increase in ψ brings about two effects: One is a welfare-enhancing effect due to enforcing the differential tax treatment, and the other is a welfare-reducing effect arising from lobbying. If θ is sufficiently large, then the latter effect will outweigh the former one, so that the high-tax country's social welfare decreases with ψ .

5.2 Multilateral reduction in tax planning

Thus far, we have discussed the effect of a unilateral change in tax planning activity in an individual high-tax country. In this subsection, we turn to investigate the effect of international cooperation in terms of reducing the tax planning activity. We characterize this scenario by assuming that all countries cooperatively reduce the tax planning activity by the same magnitude.

Before the OECD issued its report in 1998, actions against tax havens were mostly unilateral. Since then, the anti-tax-haven actions had become more universal. For instance, OECD (1998) provides a list of tax haven countries, so that the non-haven countries are able to coordinate their anti-tax-haven policy. Until 2005, almost all of the “non-cooperating tax havens” named in OECD (2000) had signed a memorandum agreeing to enhance transparency and the exchange of information. These ongoing actions provide evidence that the coordination among countries against tax havens is feasible.

In order to distinguish the notation from the previous analysis, we refer to $\hat{\psi}$ as the multilateral agreement on tax planning. Unlike in the case of the unilateral change in the tax planning activity, international cooperation in reducing the tax planning activity will not reallocate capital, meaning that $\partial k / \partial \hat{\psi} = 0$. The reason for this is that $\hat{\psi}$ is changed simultaneously across countries, so that the capitalists are unable to reduce tax burdens by reallocating mobile capital. Accordingly, the net return on the immobile capital does not alter with $\hat{\psi}$, i.e., $\partial r^n / \partial \hat{\psi} = 0$. By contrast, the net return on the mobile capital will decrease with $\hat{\psi}$. This can be seen by using (3) and $\partial k / \partial \hat{\psi} = 0$ to obtain $\partial r^m / \partial \hat{\psi} = t$. By using this fact, (9b), (9d), and (9f) become:¹⁵

$$\frac{\partial W^k}{\partial \hat{\psi}} = n^k t, \quad (9b')$$

$$\frac{\partial W^l}{\partial \hat{\psi}} = 0, \quad (9d')$$

¹⁵ The welfare effects of a change in the tax rate are still captured by (9a), (9c), and (9e), because countries take ψ as given when choosing t .

$$\frac{\partial W^p}{\partial \hat{\psi}} = -n^k t. \quad (9f')$$

As a result, the effect of $\hat{\psi}$ on each country's welfare is expressed as:¹⁶

$$\frac{dW}{d\hat{\psi}} = \frac{-n^{k2} f'' [-h^2 \psi (1 + \psi) \theta^2 + 2h\beta\theta(1 - \psi + h) - \beta^2(1 - \psi + h)(1 - \psi)]}{(1 + \beta)(1 - \psi)^3}. \quad (17)$$

To clearly illustrate the effect of the multilateral reduction in the international tax planning activity, we first consider the case where all the governments are benevolent, i.e., $\theta = 0$. We have the following proposition:

Proposition 4 *When all the governments are benevolent, i.e., $\theta = 0$, international cooperation to reduce the international tax planning activities (a lower $\hat{\psi}$) will improve the welfare of all high-tax countries.*

Proof The denominator of (17) is positive, and by inserting $\theta = 0$ into (17), the numerator reduces to $n^{k2} f'' \beta^2 (1 - \psi + h)(1 - \psi)$, which is less than zero. As a result, $dW/d\hat{\psi}$ is less than zero, indicating that a multilateral reduction in ψ will enhance the welfare of all high-tax countries. \square

Proposition 4 echoes the results in Slemrod and Wilson (2009) and Haufler and Runkel (2012), who demonstrate that the multilateral elimination of tax havens increases the welfare of the high-tax countries. However, the presence of lobbying can reverse the above welfare effect of the international cooperation in terms of reducing the tax planning activity, which is shown in the following proposition:

Proposition 5 *In the case where $\theta > 0$ and under the condition that $\psi > [1/(1 + h)]$, there exists an interval of θ , $(\underline{\theta}_g, \bar{\theta}_g)$. If $\theta \in (\underline{\theta}_g, \bar{\theta}_g)$, then the international cooperation to reduce the tax planning activity (i.e., a reduction in $\hat{\psi}$) will reduce the welfare of all high-tax countries.*

Proof See Appendix 5. \square

To interpret the intuition underlying Propositions 4 and 5, it is useful to divide the effect of a change in $\hat{\psi}$ on the social welfare into two parts, the direct effect and the indirect effect, as follows:

$$\frac{dW}{d\hat{\psi}} = \underbrace{\frac{\partial W}{\partial \hat{\psi}}}_{\text{direct effect}} + \underbrace{\frac{\partial W}{\partial t} \frac{dt}{d\hat{\psi}}}_{\text{indirect effect}}. \quad (18)$$

The direct effect $dW/d\hat{\psi}$ is unambiguously negative [by utilizing (9b'), (9d'), and (9f')], meaning that, for a given t , a multilateral reduction in $\hat{\psi}$ tends to improve a representative high-tax country's welfare. This is because, given t , a multilateral reduction

¹⁶ See Appendix 4 for the derivation of (17).

in $\hat{\psi}$ increases the effective tax burden on mobile capital and reduces its net return. Although the cooperation worsens the welfare of the capitalists, the governments can collect more tax revenues and allocate them to the pensioners. Since the pensioners receive a larger welfare weight, the direct effect of the cooperation is an improvement in social welfare.

Now we turn to the indirect effect. Let us first consider the case of benevolent governments, i.e., $\theta = 0$. Since the benevolent government will choose the tax rate to maximize the social welfare, that is, $\partial W / \partial t = 0$, the indirect effect vanishes. Therefore, without the political effect, a multilateral decrease in $\hat{\psi}$ will enhance the high-tax countries' welfare. This is the point of Proposition 4.

Perhaps interestingly, Proposition 5 suggests that the existence of the political effect can lead the international cooperation to be undesirable. With the presence of lobbying ($\theta > 0$), $\partial W / \partial t$ is no longer zero, which gives rise to the indirect effect. Lemma 1 has shown that the capitalists' lobbying leads to a sub-optimally low tax rate, implying that $\partial W / \partial t$ is positive.

Moreover, as indicated by Proposition 1, the term $dt/d\hat{\psi}$ can be either positive or negative, which depends on the value of θ . In the case where $dt/d\hat{\psi}$ is positive, the indirect effect is also positive. This positive indirect effect works against the direct effect. More specifically, given that both $\partial W / \partial t$ and $dt/d\hat{\psi}$ are positive, a multilateral reduction in $\hat{\psi}$ reduces the equilibrium capital tax, and thus drives the equilibrium tax rate further below the efficient level. If the indirect effect dominates the direct effect, then the international cooperation to restrict $\hat{\psi}$ will reduce the welfare of the high-tax countries.

On the other hand, in the case where $dt/d\hat{\psi}$ is negative, both the direct and indirect effects are negative. Therefore, cooperation to tighten the international tax planning activity will unambiguously improve the high-tax countries' welfare.

6 Extensions and discussions

In this section, we provide discussions on the more general cases, in which other groups can also engage in lobbying, and in which other tax instruments are available. We discuss the implications of these extensions for our main results.

6.1 Workers' lobbying

We now consider that both the capitalists and the workers engage into lobbying. We note that the workers also prefer a lower capital tax rate, because a lower tax rate attracts capital inflows, which in turn enhance the workers' income. Equation (9c) can reflect this result.

We let δ represent the weight that the policy-maker attaches to the workers' political contributions. Then, the equilibrium tax rate is the solution to the following equation:

$$\max_t J = (1 + \Theta)W^k + W^l + (1 + B)W^p, \quad (19)$$

where $\Theta = (\theta - \delta)/(1 + \delta)$ and $B = (\beta - \delta)/(1 + \delta)$.

We first consider the case where the policy-maker attaches the same weight to the two groups' contributions ($\theta = \delta$). If $\beta = \theta = \delta$, then $\Theta = B = 0$. Substituting this result into (19) reveals that the objective function becomes an unweighted social welfare function. As indicated in Sect. 3, the tax rate that maximizes the unweighted social welfare function is equal to zero.

If $\beta > \theta = \delta$,¹⁷ (19) reduces to $J = W^k + W^l + (1 + B)W^p$, where $B > 0$. The maximum of J will be the same as that of (10) with $\theta = 0$. Therefore, it is straightforward to see that in this case, the direction of the effect of ψ on the social welfare (unilateral or multilateral) is the same as that in the previous case where $\theta = 0$ and the workers do not lobby.

A more complicated case is that where the policy-maker attaches different weights to the two groups' political contributions ($\theta \neq \delta$). Although various possibilities emerge, the main results derived in Sects. 4 and 5 still hold, at least in quality. The intuition is as follows. Although the two lobbying groups prefer a lower capital tax rate, a change in ψ generates opposite impacts on the two groups' political pressure. Specifically, an increase in ψ will strengthen the capitalists' downward pressure, while it will weaken the workers' downward pressure.¹⁸ Since a change in ψ gives rise to opposite effects on the two groups' political pressure, the net political effect depends on the difference between the two groups' weights (i.e., $|\theta - \delta|$). If the difference between the two weights is small, then the net political effect is trivial, and thus, the conventional results (the case with $\theta = 0$) hold. By contrast, if the difference between the two weights is sufficiently large, then the political effect is significant, and the results derived in the previous sections are sustained. Appendix 6 provides the conditions under which the previous main results hold.

6.2 Pensioners' lobbying

In this subsection, we introduce the lobbying by the pensioners, whose welfare conflicts with the capitalists' interests. To focus on the competition between these two groups, we abstract from workers' lobbying.

Let γ denote the weight that the policy-maker attaches to the pensioners' political contributions. The objective function of the policy-maker is thus:

$$\max_t H = \theta W^k + \gamma W^p + W. \quad (20)$$

The above equation can then be written as:

$$\max_t H = (1 + \theta)W^k + W^l + (1 + \beta + \gamma)W^p. \quad (21)$$

¹⁷ Note that since we restrict t^e to be non-negative, we rule out the case where $\beta < \theta = \delta$, which leads to a negative equilibrium tax rate.

¹⁸ This can be seen from (9a) and (9c). When ψ rises, the adverse welfare effect of the capital tax on the capitalists increases, and the effect on the workers decreases.

Comparing (21) with (10) reveals that the presence of the pensioners' lobbying increases the pensioners' welfare weight from $1 + \beta$ to $1 + \beta + \gamma$. Thus, given the modified objective function (21), our previous results remain the same, except that the weight β is replaced by $\beta + \gamma$. This implies that, in the presence of pensioners' lobbying, the threshold value for θ to reverse the welfare consequences proposed by the existing literature becomes higher. When the pensioners' welfare weight becomes larger, the capitalists need a larger weight to outweigh the pensioners' political influence.

6.3 Other tax instruments

Our present model assumes that the capital taxation is the only available policy instrument. In reality, however, there are other instruments. For example, the government can levy another tax on wage income. Since the workers are immobile, they bear all the labor taxes. This implies that the returns on the two kinds of capital are independent of the labor tax, and thus, the capitalists have no incentives to influence the labor tax rate. As a consequence, the previous results remain the same.

It is also possible that the government can choose both the tax rate and tax base.¹⁹ If so, then the policy-maker is able to discriminate between the mobile capital and the immobile capital, and thus implements different effective tax rates between them. The efficiency concern will lead the policy-maker to choose a very high level of ψ (i.e., a low or even zero tax on the mobile capital in order to attract capital inflows). However, within our sequential setting, the analysis will become considerably more complicated when both t and ψ are subject to the influence of the interest groups. Such a modification turns the model into a dynamic common-agency game (Bergemann and Valimaki 2003), in which the interest groups' lobbying decisions regarding ψ depend on their decisions on lobbying t . This game is beyond the concern of the present paper, given that our primary focus is on the welfare impacts of an exogenous increase in international tax planning. We would like to leave it to future studies.

7 Conclusion

In this paper, we investigate the welfare effects of international tax planning activities from a perspective of political economy. We focus on the situation where the determination of the capital tax is subject to the influence of interest groups. The previous literature highlights two important results. First, benevolent policy-makers have the incentive to unilaterally loosen the regulations on the international tax planning activity (e.g., Hong and Smart 2010). Second, multilateral cooperation to restrict the utilization of tax havens can enhance the welfare of all countries (e.g., Slemrod and Wilson 2009; Haufler and Runkel 2012). These results are based on the assumption that the policy-makers are benevolent. Since the influence of special interest groups

¹⁹ For example, Bucovetsky and Haufler (2008) develop a model where the government sequentially sets the tax base and the tax rate.

appears to be prevalent, we are concerned with whether these results still hold in the presence of lobbying.

This present paper shows that, in the presence of lobbying, (i) a unilateral increase in the international tax planning activity can reduce the high-tax country's welfare, and (ii) the cooperation among high-tax countries in restricting the utilization of tax havens can hurt the high-tax countries' welfare. Our results contribute to the literature by highlighting the role of political factors in the welfare implications of international tax planning.

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Appendix 1: Derivation of (11) without the global-truthfulness assumption

According to Grossman and Helpman (1994), t^e is a sub-game-perfect Nash equilibrium of the lobbying game, if (i) t^e maximizes $\theta m^k(t) + W(t)$ and (ii) t^e maximizes $W^k(t) - m^k(t) + [\theta m^k(t) + W(t)]$. Condition (i) stipulates that, given the contribution schedule provided by the lobbyists, the policy-maker chooses t to maximize his own welfare. Condition (ii) states that the equilibrium tax rate should maximize the joint welfare of the lobbyists and the policy-maker. If this condition is violated, then the lobbyists could reformulate the political contribution schedule to induce the policy-maker to choose the jointly optimal policy.

Condition (i) implies that

$$\theta \frac{\partial m^k(t^e)}{\partial t} + \frac{\partial W(t^e)}{\partial t} = 0 \quad (22)$$

and condition (ii) implies that

$$\frac{\partial W^k(t^e)}{\partial t} - \frac{\partial m^k(t^e)}{\partial t} + \left[\theta \frac{\partial m^k(t^e)}{\partial t} + \frac{\partial W(t^e)}{\partial t} \right] = 0 \quad (23)$$

Taken together, the two conditions ensure that

$$\frac{\partial m^k(t^e)}{\partial t} = \frac{\partial W^k(t^e)}{\partial t} \quad (24)$$

This condition shows that the contribution schedule is locally truthful around the equilibrium t ; i.e., the lobbying group sets its contribution schedule so that the marginal change in the contribution for a small change in the tax rate fits the effect of the change in t on the lobbying group's gross welfare.

Then by inserting (24) into (22), we obtain (11), which is the same as the first-order condition with the global-truthfulness assumption. Thus, the equilibrium policy under the global-truthfulness assumption is the same as that without the assumption. The

workers' and pensioners' lobbying can be obtained by a similar approach, and so we do not repeat it here.

Appendix 2: Derivation of (15)

We first derive the effects of the capital tax and tax planning on the social welfare by using (8) and (9a)–(9f):

$$\frac{\partial W}{\partial t} = -n^k h \psi - n^k (1 + h)(1 - \psi) + (1 + \beta) \left[n^k (1 - \psi + h) + (1 - \psi)^2 \frac{t}{f''} \right] \quad (25)$$

$$\frac{\partial W}{\partial \psi} = -n^k h t + n^k (1 + h)t + (1 + \beta)t \left[-(1 - \psi) \frac{t}{f''} - n^k \right] \quad (26)$$

Supposing the economy is initially in equilibrium, we can then substitute (12) into (25) and (26), and further substitute them into (14), which gives:

$$\begin{aligned} \frac{dW}{d\psi} &= \frac{\partial W}{\partial t} \frac{dt}{d\psi} + \frac{\partial W}{\partial \psi} = \frac{-n^{k2} h \psi f'' \theta}{(1 + \beta)(1 - \psi)^3} (\beta - \beta \psi + 2\beta h - h \psi \theta - h \theta) \\ &\quad - \frac{n^{k2} f''}{(1 + \beta)(1 - \psi)^3} (\beta h - h \psi \theta) \beta (1 - \psi + h - h \psi \theta). \end{aligned}$$

By rearranging the above equation, we can obtain (15) in the main text.

Appendix 3: Proof of Proposition 3

From (14), we see that

$$\frac{dW}{d\psi} \begin{matrix} > \\ < \end{matrix} 0 \Leftrightarrow -\psi h \theta^2 + (1 - \psi + h) \beta^2 \begin{matrix} > \\ < \end{matrix} 0.$$

Rearranging the above equation yields

$$\frac{dW}{d\psi} \begin{matrix} > \\ < \end{matrix} 0 \Leftrightarrow \theta^2 \begin{matrix} < \\ > \end{matrix} \frac{(1 - \psi + h) \beta^2}{h \psi},$$

and since θ and β are non-negative, we have proved Proposition 3.

Appendix 4: Derivation of (17)

The change in each country's welfare in response to $\hat{\psi}$ can be expressed as:

$$\frac{dW}{d\hat{\psi}} = \frac{\partial W}{\partial t} \frac{dt}{d\hat{\psi}} + \frac{\partial W}{\partial \hat{\psi}}. \quad (27)$$

First, we use the conditions $\partial W^k / \partial \hat{\psi} = n^k t$, $\partial W^l / \partial \hat{\psi} = 0$ and $\partial W^p / \partial \hat{\psi} = -n^k t$ to obtain $\partial W / \partial \hat{\psi} = -\beta n^k t$. Substituting this condition and (25) into (27) gives:

$$\frac{dW}{d\hat{\psi}} = \frac{-n^{k2} h \psi f'' \theta}{(1 + \beta)(1 - \psi)^3} (\beta - \beta \psi + 2\beta h - h \psi \theta - h \theta) - \beta n^k t. \quad (28)$$

Now we insert the initial equilibrium tax rate (12) into (28):

$$\begin{aligned} \frac{dW}{d\hat{\psi}} &= \frac{-n^{k2} h \psi f'' \theta}{(1 + \beta)(1 - \psi)^3} (\beta - \beta \psi + 2\beta h - h \psi \theta - h \theta) \\ &\quad + \beta n^k \frac{n^k f''}{(1 + \beta)(1 - \psi)^2} [\beta(1 - \psi + h) - h \psi \theta] \\ &= \frac{n^{k2} f'' \{ \beta(1 - \psi) [\beta(1 - \psi + h) - h \psi \theta] - (\beta - \beta \psi + 2\beta h - h \psi \theta - h \theta) h \psi \theta \}}{(1 + \beta)(1 - \psi)^3} \end{aligned}$$

After some algebra we can obtain (17) in the main text.

Appendix 5: Proof of Proposition 5

Let us define the function

$$\Omega(\theta) = -h^2 \psi(1 + \psi)\theta^2 + 2h\beta\theta(1 - \psi + h) - \beta^2(1 - \psi + h)(1 - \psi),$$

and let D be the discriminant of $\Omega(\theta) = 0$. Thus, we have:

$$D = 4h^2\beta^2(1 - \psi + h)\psi(\psi + h\psi - 1).$$

From (17), it can obviously be seen that $\partial W / \partial \hat{\psi}$ and $\Omega(\theta)$ share the same sign. If $(\psi + h\psi - 1) < 0$, then $D < 0$, $\Omega(\theta) < 0$ so that $\partial W / \partial \hat{\psi} < 0$. However, if $(\psi + h\psi - 1) > 0$, $\Omega(\theta)$ can be rewritten as:

$$\begin{aligned} \Omega(\theta) &= \left[\theta - \frac{\psi(1 - \psi + h) + \sqrt{(1 - \psi + h)\psi(\psi + h\psi - 1)}}{(1 + \psi)h\psi} \beta \right] \\ &\quad \times \left[\theta - \frac{\psi(1 - \psi + h) - \sqrt{(1 - \psi + h)\psi(\psi + h\psi - 1)}}{(1 + \psi)h\psi} \beta \right]. \quad (29) \end{aligned}$$

Thus, we have proved that, under the condition $(\psi + h\psi - 1) > 0$, $\partial W / \partial \hat{\psi}$ is positive if θ lies within a positive interval.

Appendix 6: Worker's lobbying

We first replace (θ, β) in (15) by (Θ, B) to derive the condition:

$$\frac{dW}{d\psi} \begin{matrix} > \\ < \end{matrix} 0 \text{ if } \begin{bmatrix} -\psi h\Theta^2 + (1 - \psi + h)B^2 \end{bmatrix} \begin{matrix} > \\ < \end{matrix} 0.$$

Hence, we see that $dW/d\psi$ is more likely to be negative if $|\Theta|$ is larger, that is, if the difference between θ and δ is larger. Next, by replacing (θ, β) in (29) by (Θ, B) , we can show that, under the condition $(\psi + h\psi - 1) > 0$, $\partial W / \partial \hat{\psi}$ will be positive, if θ lies within the following interval:

$$\frac{\psi(1 - \psi + h) - \Gamma}{(1 + \psi)h\psi}(\beta - \delta) + \delta < \theta < \frac{\psi(1 - \psi + h) + \Gamma}{(1 + \psi)h\psi}(\beta - \delta) + \delta,$$

where $\Gamma = \sqrt{(1 - \psi + h)\psi(\psi + h\psi - 1)}$.

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