Tax havens under international pressure: How do they react?

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March, 2015

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Tax havens under international pressure: How do they react? *

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Abstract

This paper contributes to the literature about tax havens by providing a more comprehensive analysis of their role. The aim is to analyze how low-tax jurisdictions can react to growing international pressure exerted, by high-tax countries, to enforce compliance with anti aggressive tax planning standards. To this end, we model how a small tax haven tries to be attractive to multinationals located in a high-tax region by providing aggressive tax planning services and/or a favorable environment for local activities. The model demonstrates that under realistic conditions it is optimal to stigmatize a non-compliant low-tax jurisdiction, even if its reputation for being attractive to real foreign investments is thereby affected. Another result is that a welfarist government could, under certain circumstances, optimally tolerate some aggressive tax planning. Finally, the paper shows that the threat of political pressure against uncooperative tax havens can induce, under specific conditions, voluntary compliance.


Keywords: Aggressive tax planning, Tax havens, Multinational firms, Value driven FDIs, Political pressure.

*We would like to thank Arnaud Bourgain, Andreas Hauffe, Andreas Irmen, Skerdilajda Zanaj and Benteng Zou for helpful comments and suggestions.

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1 Introduction

This paper contributes to the literature about tax havens by providing a more comprehensive analysis of their role. The aim is to study how low-tax jurisdictions can react to growing international pressure exerted by high-tax countries and international organizations. We partly follow the usual interpretation that tax havens specialize in providing complex structures and legal fictions that allow, in particular, multinational corporations (MNCs) to shift profits offshore. The OECD defines aggressive tax planning as the exploitation of “gaps in the architecture of the international tax system to artificially shift profits to places where there is little or no economic activity or taxation”. However, we argue that in addition to aggressive tax planning, tax havens offer favorable tax regimes to foreign multinationals achieving a real local activity. In fact, Hines (2005) clearly states that one of the circumstances in which foreign investors can benefit from the low taxation offered by tax havens is when they earn direct profits on their real activities in their territories. Hines (2014) further notes (page 445) that “the evidence consistently indicates that multinational firms tend to locate greater real business activity in countries with low tax rates than would otherwise be expected ” in order to benefit from favorable tax regimes. Notwithstanding this, aggressive tax planning is often the mainstream explanation for which foreign investments flow to tax havens but Hines (2005) notices that there are countries with extremely low-tax rates that nonetheless are not able to attract significant foreign investments. In other words all the tax havens are not equally able to attract real economic activity.

To illustrate the physical presence of foreign multinationals in tax havens, we show in table 1 the number of jobs that have been created by operations of U.S. multinational companies in common tax havens up to 2013. Many of these jobs are related to manufacturing such as chemicals, machinery, electronic products and transportation equipment. It cannot be denied that these activities have been
developed for tax reasons. However, in addition to low tax rates, tax havens have to provide costly infrastructure to be attractive to foreign direct investment from multinationals. A recent survey by Ernst & Young (2011) highlights the major factors that are kept into consideration when companies decide where to set up new affiliates. It appears that, beside corporate taxation companies seem to be also concerned about infrastructure such as telecommunications, transport and logistic infrastructure. Consequently, as we show in our paper, tax havens that are not able to provide the infrastructure necessary to host real activities, mostly focus on aggressive tax planning.

<table>
<thead>
<tr>
<th>Country</th>
<th>Total assets</th>
<th>Sales</th>
<th>Net Income</th>
<th>Value added</th>
<th>Compensation</th>
<th>Thousands of employees</th>
<th>average compensation $</th>
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<tr>
<td>Bahamas</td>
<td>222,515</td>
<td>6,317</td>
<td>2,234</td>
<td>1,116</td>
<td>123</td>
<td>1.8</td>
<td>68,333.33</td>
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<td>Barbados</td>
<td>52,142</td>
<td>8,427</td>
<td>2,053</td>
<td>1,266</td>
<td>31</td>
<td>1.1</td>
<td>28,181.81</td>
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<td>Bermuda</td>
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<td>76,474</td>
<td>10,524</td>
<td>805</td>
<td>7.6</td>
<td>105,921.05</td>
</tr>
<tr>
<td>Costa Rica</td>
<td>32,930</td>
<td>10,982</td>
<td>540</td>
<td>2,118</td>
<td>1,118</td>
<td>60.8</td>
<td>18,388.15</td>
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<td>540</td>
<td>93</td>
<td>1.5</td>
<td>62,000</td>
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<td>Gibraltar</td>
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<td>1,549</td>
<td>1,876</td>
<td>535</td>
<td>n.a.</td>
<td>1 – 2.5</td>
<td>n.a.</td>
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<tr>
<td>Hong Kong</td>
<td>290,423</td>
<td>119,691</td>
<td>13,872</td>
<td>16,727</td>
<td>8,408</td>
<td>110.9</td>
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<td>76,164</td>
<td>8,361</td>
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<td>24</td>
<td>29</td>
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<td>Liberia</td>
<td>2,680</td>
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<td>94</td>
<td>187</td>
<td>10.5</td>
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<td>Luxembourg</td>
<td>1,920,056</td>
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<td>6,518</td>
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<td>13,532</td>
<td>1,474</td>
<td>43.5</td>
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<td>35,424</td>
<td>883</td>
<td>1,216</td>
<td>–358</td>
<td>25</td>
<td>1 – 2.5</td>
<td>14,285.71</td>
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<td>11,469</td>
<td>11,349</td>
<td>–50</td>
<td>594</td>
<td>544</td>
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<td>568,465</td>
<td>405,341</td>
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<td>37,547</td>
<td>11,538</td>
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<td>Switzerland</td>
<td>696,148</td>
<td>286,773</td>
<td>63,982</td>
<td>47,680</td>
<td>11,077</td>
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<td>UK islands, Caribbean</td>
<td>1,031,285</td>
<td>55,871</td>
<td>57,108</td>
<td>9,716</td>
<td>380</td>
<td>5.3</td>
<td>71,698.11</td>
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</tbody>
</table>

Source: BEA Annual Survey of U.S. Direct Investment Abroad in 2013

Table 1: Selected U.S. Direct Investment for Majority-Owned Foreign Affiliates by Country.

For some time now, tax havens have been under growing scrutiny from gov-

1see also Hines (2010).
ernments and international organizations. Besides the fact that they favor tax sheltering, the existing literature has focused on their involvement in facilitating criminal behavior like money laundering (see Masciandaro, 2005a, Masciandaro, 2005b and Krautheim & Schmidt-Eisenlohr, 2011). In recent years, tax avoidance practices that involve declaring profits in a country other than where they were really earned, have been blamed. These attacks culminated in 2013, when OECD and G20 countries released a 15-point Action Plan to solve the problem of base erosion and profit shifting (BEPS). Clearly, this initiative “aims to ensure that profits are taxed where economic activities generating the profits are performed and where value is created” (OECD, 2014) and not to eliminate tax competition. It follows that the main driver of the new standards is the realignment of taxation and relevant economic “substance”. In other words, a multinational affiliate should be subject to corporate taxation in the jurisdiction where it is based when the economic substance is generated there.

Consequently, low-tax countries offering opportunities for aggressive tax planning will be exhorted to comply with the new international standards. Low-tax countries can find it appropriate to comply with these new rules. However, the OECD has no coercive power of enforcement. The released rules are rather recommendations that may not be adopted at the country level. Moreover, “the increase in

\footnote{In this context, Slemrod & Wilson (2009) consider tax havens as economic parasites.}

\footnote{For example, multinationals such as Amazon, Google and Starbucks, have recently come under heavy criticism in the media.}

\footnote{In an interview with Fairfax Media in Brisbane, Saint-Amans, who is the OECD tax policy head, said “BEPS puts an end to harmful tax competition, but not tax competition. Some countries might move to be more attractive by reducing their rates. We think that’s fine.”}

\footnote{One key initiative of the BEPS is to establish a system of country-by-country (CbC) reporting. Accordingly, the involved countries will have to implement an information system (CBC template) whereby MNCs report to tax administrations exhaustive details of how they allocate their income, taxes and business activities on a country-by-country basis.}
ing utilization of tax havens by major emergent economies significantly undermines
the ability of the EU to exert influence over these jurisdictions” (European Parlia-
ment, 2013).

One way to enforce compliance is to exert political pressure against uncoop-
erative jurisdictions. Pressure comprises a wide range of measures that affect the
reputation of uncooperative jurisdictions like blaming and shaming or inflicting
sanctions. The aim is to hurt the reputation of non-compliant tax havens and
the agents who make use of them.

In this paper, we want to analyze the reaction of a low-tax jurisdiction to
international policies aimed at enforcing compliance with standards designed to
eliminate profit shifting adopted by MNCs for tax reasons. To this end, we model
how a small tax haven offers tax advantages to foreign multinationals by providing
aggressive tax planning services and/or an attractive environment for local activ-
ities that requires appropriate public infrastructure (e.g. transport and telecom-
munication infrastructure, a favorable legal environment). In both cases, a zero
tax rate is offered to foreign multinationals but a tax haven could not be efficient
enough at providing attractive infrastructure. In this case, only aggressive tax
planning will be offered. If the low-tax jurisdiction does not comply with the new
standards, the high-tax world possibly represented through an international body,
pressures on the tax haven to lower or eliminate aggressive tax planning.

The first objective of the paper is to highlight the effect of international pressure
on the behavior of a tax haven. In particular, we address the question whether

\footnote{For example, the Financial Action Task Force (FATF) established in 1999 issues peri-
dically since 2000 (black) lists of uncooperative countries and territories (NCCTs), which include
jurisdictions that are believed non-compliant with the international best practices. The aim is
to put these so-called blacklisted countries (BLC) under severe international pressure (i.e. using
“name and shame” approaches), which eventually results in reduced capital flows to the pressured
jurisdictions. Picard & Pieretti (2011) show how this international pressure can be successful.}
international campaigns against low-tax jurisdictions are able to shift their policy choices in favor of substance-based FDIs, away from the provision of aggressive tax planning schemes.

Our second objective is to gauge the overall welfare implications resulting from pressure campaigns designed to enforce compliance with anti-profit shifting rules. In this context, we try to understand what should an efficient pressure policy look like, given that it hurts the reputation of the targeted jurisdiction and its users, included those who contemplate investing in substance-based businesses. However, such a policy depends crucially on the aim the onshore region wishes to pursue. Accordingly, two different objectives are considered. The first is the pursuit of tax justice and the second is social welfare maximization of the onshore region. Note that welfare can include income of MNCs originating from real offshore activities.

A third objective is to analyze under which circumstances a low-tax jurisdiction ought to comply with anti-profit shifting standards given the reputation damage international political pressure can cause.

Our main results may be summarized as follows.

A first result is that, political pressure is effective in combating aggressive tax planning and may encourage MNCs to develop new substance-based offshore activities. Pressure also increases the share of substance-based foreign direct investments relative to international profit shifting.

A second result is that the intensity of the pressure policy depends on the underlying objective that is pursued. Not surprisingly, the pursuit of a strict justice objective should involve a campaign aimed a completely eliminating aggressive tax planning. However, a welfarist onshore jurisdiction could, under certain circumstances, optimally tolerate some aggressive tax planning. It is clearly the case when political pressure is very costly to implement. Even if pressure is easy to achieve, tolerating aggressive tax planning is an optimal solution when international in-
egration is relatively low. This results from the fact that higher mobility costs encourage the onshore jurisdiction to tax more and thus to increase its tax revenue on the less mobile firms. As a result, exerting pressure becomes less relevant.

Finally, we analyze conditions under which a tax haven can voluntarily cease to offer aggressive tax planning services that contravene international standards when international bodies announce to exert political pressure against non-compliant territories. We demonstrate that such threats are necessary but not sufficient at inducing compliance. Interestingly, international campaigns against uncooperative jurisdictions that are motivated by justice considerations will induce voluntary abandonment of tax malpractices. It also appears that this result can be achieved by a welfare-maximizing onshore region when exerting pressure is relatively easy and the level of international integration is relatively high.

1.1 Related literature

Our paper is related to the general tax haven literature. The focus is traditionally on the role of tax havens in facilitating tax concealment and money laundering (see Masciandaro, 2005a, Masciandaro, 2005b, Coates & Rafferty, 2007, Bucovetsky & Haufler, 2008, Slemrod & Wilson, 2009, Picard & Pieretti, 2011, Krautheim & Schmidt-Eisenlohr, 2011 and Bucovetsky, 2014) and the resulting effect on overall welfare. By contrast to Slemrod & Wilson (2009) and Bucovetsky (2014), we do not assume that tax havens are only specialized in providing aggressive tax planning services to multinational companies. As we already said, there is evidence that multinationals locate real business activities in tax havens. For that

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reason, they also have to offer complementary advantages such as strong governance institutions and sophisticated communication infrastructure (Dharmapala, 2008). Similar to Masciandaro (2005a), Masciandaro (2008), Picard & Pieretti (2011), and Konrad & Stolper (2015), we assume that the high-tax (onshore) region can pressure tax havens by stigmatizing them when they do not comply with international standards. In this context, Picard & Pieretti (2011) focus on the fight against money laundering. Our paper tries to tackle, in a similar framework of spatial competition, the effectiveness of political pressure in the fight against aggressive tax planning.

Possible effects of political pressure on tax havens are also considered by Elsayyad & Konrad (2012) and Konrad & Stolper (2015). Elsayyad & Konrad (2012) analyze the fight against several tax havens. They note that the sequential closing down of tax haven activity increases the market power of those havens which remain active and makes them more resistant to political pressure.

Konrad & Stolper (2015) address the choice of tax havens to abandon tax sheltering practices when exposed to international pressure. Their focus is on the role of expectations that potential investors have on the credibility of tax havens to keep on providing concealment services. Our paper also deals with political pressure on tax havens. However, tax havens can, in addition to providing aggressive tax planning, also attract real business activities for tax reasons. Contrary to Konrad & Stolper (2015), we treat political pressure as an endogenous variable that allows analyzing the optimal pressure policy of the onshore region.

The present paper is organized as follows. Section 2 presents the model. Section 3 characterizes the sub-game equilibrium for a given pressure intensity. Section 4 presents the optimal pressure policies. Section 5 analyzes the voluntary removal of aggressive tax planning while Section 6 concludes and briefly discusses some policy issues.
2 The model

A small tax haven $F$ tries to attract multinationals from an onshore region $H$ by providing two different types of services.

First, the low-tax jurisdiction can enable aggressive tax planning by multinational corporations. This practice that follows the usual interpretation of Slemrod & Wilson (2009) and Bucovetsky (2014) can be achieved in a number of ways. For instance, by transferring the ownership of patents or borrowing from affiliates located in low-tax countries. It is generally not costly for the tax haven to provide aggressive tax planning services but it involves setting up conduit companies in the low-tax country that do not involve actual production.

Second, the tax haven can also encourage real multinational activity on its territory. The tax motive is still the driver but the tax haven has to provide, in addition to very low corporate taxation, an attractive environment for local activities that requires an amount $\beta \in \mathbb{R}^+$ of public infrastructure to promote inward foreign investments (FDIs). Public infrastructure can take various forms like telecommunications and transportation infrastructures, universities and public R&D investment but also governance infrastructure like property rights enforcement, capital market regulations and more generally attractive laws and regulations. According to Dharmapala (2008), havens tend to have a relatively sophisticated communications infrastructure. Dharmapala & Hines (2009) also observe that tax havens tend to have good governance institutions. Furthermore, providing infrastructure is costly. We assume that the cost of infrastructure provision increases at an increasing rate due to diminishing returns to scale. For sake of simplification we introduce a quadratic function $(\beta - \varepsilon)^2/2$, where $\varepsilon \in (0, \beta)$ measures the efficiency of the tax haven in providing attractive infrastructure. A higher value of $\varepsilon$ indicates a higher efficiency in infrastructure provision. Note that for a sufficiently low value of $\varepsilon$, the tax haven is not attractive for local real activities as we show later. In
this case, the tax haven is only able to provide aggressive tax planning.

We assume that $\beta$ units of infrastructure enable an affiliate to generate $\beta$ units of output net of production costs. It follows that $\beta$ stands for the amount of infrastructure provision and the output it contributes to generate. Accordingly, multinationals headquartered in country $H$ can set up a subsidiary for the unique aim of tax concealment and/or with the intention to benefit from the low taxation by developing a real local business.

Moreover, we assume that the tax haven charges a fee for aggressive tax planning services and levies a fee $f_e$ for the use its infrastructure services. Hence, the tax haven sets two distinct fees for the services it provides: $f_t \in \mathbb{R}^+$ for tax concealment services and $f_e \in \mathbb{R}^+$ to establish a real content activity.

The onshore economy $H$ sets a corporate tax rate $t \in [0, 1]$ and pressures the tax haven $F$ to comply with international regulations and possibly to pursue ethical principles in the area of taxation. The level of political pressure exerted on tax havens equals $\alpha \in \mathbb{R}^+$.

We consider that a continuum of firms are located in the onshore country $H$ and decide whether to create affiliates in the tax haven $F$. As we just highlighted, multinationals can benefit from low taxation in two distinct ways. Therefore, we assume that potential MNCs are heterogeneous regarding the way they offshore part of their activities. Accordingly, we introduce the vector $\zeta_i = (x_i, y_i)$, where $x_i$ and $y_i$ represent firm’s $i$ characteristics, regarding respectively aggressive tax planning ($x_i$) and local activity ($y_i$). We assume that the variables $x_i$ and $y_i$ are uniformly distributed on the support $(0, 1) \times (0, 1)$ with a marginal density $dF$.

Higher values of $x_i$ and/or $y_i$ indicate a lower propensity for using a tax haven

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8This fee can be viewed as a tax raised on the business realized by foreign affiliates. In Luxemburg for instance, funds have to pay a taxe d’abonnement (capital duty). The Cayman Islands established the Small Business Development Unit (SBDU) that provides help to develop new local activities against the payment of a fee.
and therefore a higher attachment to the home country. It follows that a firm \( i \) characterized by the vector \( \zeta_i \) incurs transaction costs, which have the nature of “transportation costs” \( k z_i \) (with \( z_i \in \{x_i, y_i\} \)) à la Hotelling (1929). The parameter \( k \in R^+ \) is inversely correlated with the degree of international integration. In other words, the lower \( k \), the higher the degree of integration.

As in Picard & Pieretti (2011), we consider that each firm that uses the tax haven for aggressive tax planning endures a premium that increases with the loss of reputation of the tax haven in which it invests. The resulting “moral ” cost is incurred independently of the type of service provided by the tax haven. This is due to the fact that international campaigns against tax havens hit their reputation and make firms more reluctant to use their services, even if a part of them are legal. 9 Indeed, Sharman (2004) observes that “investors tend to avoid or leave jurisdictions with bad reputations not only out of concern that their money will be misappropriated, but also because firms risk harming their own reputations, as reflected in their share prices ”. It follows that the return a MNC can achieve in a tax haven will be diminished by a reputation harm \( \alpha \) (Picard & Pieretti, 2011).

Before considering how a MNC can benefit from a tax haven, we assume that each firm generates in its home country a total gross income \( \Pi = \pi_x + \pi_H \). The component \( \pi_x \) is the amount that can be shifted to the tax haven for tax purposes and \( \pi_H \) is the minimum amount that is taxable onshore.

The various options, available to a firm of type \( \zeta_i \), yield the following net benefits. First, a firm \( i \) pursuing aggressive tax planning obtains a net gain

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9Hanlon & Slemrod (2009) note that a company’s stock price declines when news about its involvement in tax planning are available. Moreover they noted that the reputation effect is arguably lower when they are labeled as as paying low taxes rather than being involved in tax sheltering.
$V^F_x = \pi_x - f_t - kx_i - \alpha$ and $V^H_x = \pi_x(1- t)$ if it does not offshore taxable income. For simplicity, and without loss of generality we set $\pi_x = \pi_H = 1$. Moreover, the same firm $i$ could also decide to develop an offshore activity with economic substance. This choice is driven by tax advantages but requires specific infrastructure investments provided in the tax haven. The income $\beta$ generated by the offshore activity is taxed at a zero rate in the jurisdiction $F$. Moreover, establishing an affiliate requires, in addition to the fee $f_e$, a set up cost $s \in R^+$ that includes the cost of building or renting the business premises as well as moving the starting material, etc.. The charge $s$ can be viewed as a sunk cost. Consequently, the net gain earned by the firm is $V^F_y = \beta - f_e - ky_i - b\alpha - s$ if it establishes an affiliate in country $F$, where $b \in [0, 1]$ accounts for the intensity of reputation harm bearing on substance-based offshore activities. Note that the onshore economy can also provide an attractive level of infrastructure for doing real business. Accordingly, multinational corporations can generate an alternative income $V^H_y$ at home. To avoid unnecessary complications we set $V^H_y = 0$. However, in Appendix C we extend the model assuming that MNCs can alternatively benefit from productive infrastructure ($V^H_y > 0$) provided in their home country. We then demonstrate that the simplifying assumption we just mentioned does not alter the basic conclusions of the paper. 

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10 We only consider the net of production costs.

11 More generally, we could assume that the tax rate in jurisdiction $F$ is non-zero, but very low.

12 This follows the territorial taxation system, which is currently used by most OECD countries. While the world wide system taxes firms on their global earnings, the territorial taxation system does not tax overseas income. Although the U.S. use a hybrid system, allowing firms to defer federal tax on their foreign earnings as far as they are repatriated, the passage towards a full territorial system is under debate.

13 In particular, we demonstrate that MNCs have still an incentive to set up affiliates with substance in the offshore jurisdiction even if they can achieve the same in their home country.
Because a MNC can decide on aggressive tax planning or not and on setting up a substance-based affiliate or not, the following cases can occur:

1. **Home firm** \( (H) \): no use of the tax haven.

2. **Aggressive tax planning** \( (T) \): profit shifting but no real content affiliate.

3. **Substance-based activity** \( (R) \): favorable taxation with the establishment of a real content affiliate.

4. **Aggressive tax planning along with substance-based activity** \( (TR) \): profit shifting and set up of a real content affiliate.

We assume that firms’ preferences are additively separable on these choices. Therefore, we can write the profit function of firm \( i \) in the following way:

\[
\pi_i(\zeta) = 1_x V_x^F + (1 - 1_x) V_x^H + 1_y V_y^F + (1 - t) \pi_H,
\]

where \( 1_x \) and \( 1_y \) are indicator functions that respectively control for the firm’s choices about tax planning and the setting up of a substance-based affiliate.

We consider the following game (see figure 1). After the high-tax world sets forth new standards regarding international taxation, the low-tax jurisdictions decides on complying or not. If it does not comply, we define a sub-game hereafter called *pressure game* that unfolds as follows. In a first stage, the onshore region commits on a level \( \alpha \) of pressure on the tax haven. Second, the onshore government chooses a corporate tax rate \( t \) and the haven decides on the public infrastructure level \( \beta \) and the access fees \( f_t \) and \( f_e \). The onshore region commits to pressure before taxation is decided because generally campaigning against non-compliant countries requires a certain level of international cooperation that takes time to be implemented whereas taxation occurs at country level. All these decisions are

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The reason is that they obtain tax advantages by offshoring real activity.
common knowledge. Finally, firms decide. We solve the game backwardly and show that a unique sub-game perfect equilibrium will result.

3 Equilibrium for a given level of pressure

In this section we characterize the equilibrium of the game for a given pressure intensity. In other words, we solve the second and the third stages of the pressure game.

In the third stage of the game, firms allocate their investments to maximize
their after-tax profit $\pi_i(\zeta)$. They can choose among four alternatives; staying onshore, moving offshore for aggressive tax planning only, moving offshore to establish a real content affiliate and finally, moving offshore for aggressive tax planning along with the establishment of a substance-based activity. To this end, we first determine the thresholds of $x$ and $y$, for which the marginal firm is indifferent between staying at home and moving offshore respectively for tax planning and for substance-based activity. These threshold values are respectively

$$\bar{x} = \frac{t - f_t - \alpha}{k},$$

$$\bar{y} = \frac{\beta - f_e - s - b\alpha}{k}.$$

It follows that the firms whose types belong to the set $[0, \bar{x}] \cap [0, \bar{y}]$ opt for aggressive tax planning and set up a substance-based foreign affiliate, whereas those which belong to the set $[\bar{x}, 1] \cap [\bar{y}, 1]$ make no use of the tax haven. In between, we have those firms that only do aggressive tax planning ($[0, \bar{x}] \cap [\bar{y}, 1]$) and those that only decide to set up a substance-based foreign activity ($[\bar{x}, 1] \cap [0, \bar{y}]$). These cases are illustrated in figure 2.

Assuming that the conditional density distributions of $x$ and $y$ are uniform, there will be $\bar{x} \int_0^x dF(x) = \bar{x}$ corporations that opt for profit shifting and $\bar{y} \int_0^y dF(y) = \bar{y}$ corporations that set up a substance-based affiliate in the low-tax jurisdiction.

We see that the number of offshoring companies is increasing with international integration (when $k$ decreases). When firms are perfectly mobile ($k = 0$), all the firms use the tax haven for aggressive tax planning and for establishing a real business activity ($x, y = 1$) if $t - f_t - \alpha > 0$ and $\beta - f_e - s - b\alpha > 0$. If these inequalities are jointly reversed, firms do not use the tax haven ($x, y = 0$). Small changes in the tax gain and offshore income may thus lead to mass displacements. To avoid such extreme cases, we assume that $k$ has a lower positive bound.
3.1 Second Stage of the pressure game

In the second stage of the pressure game, governments simultaneously maximize their objective function by choosing the tax rate $t$, the market fees $f_t$, $f_e$ and the infrastructure level $\beta$, taking into account the distribution of firms and anticipating firms’ organizational strategies.

3.1.1 The onshore country’s welfare

In the following, we assume that the onshore country’s welfare consists of tax revenues net of the cost of political pressure and aggregate net income generated by the home firms. Tax revenue depends on the income generated in the onshore country minus the offshored profit for tax purposes.

Firms’ total income originates from onshore and offshore production. Consequently, the onshore country selects the tax rate $t$ that maximizes the following

Figure 2: Firms’ organizational form
The objective function:  

\[ W_H = (1 - \lambda) \left[ 1 + \int_{\bar{x}}^{1} dF(x) \right] + \lambda \left[ 2 + \int_{0}^{\bar{y}} (\beta - f_c - s) dF(y) \right] - \frac{g^2 \alpha^2}{2} \]  

(2)

The share \( \lambda \in [0, 1] \) reflects the preference of jurisdiction \( H \) for income generated by home corporations and their affiliates. \( 1 - \lambda \) is the weight of tax revenue in the onshore country’s objective function. We introduce a convex cost function of exerting pressure in order to reflect the difficulties of achieving general consensus against non-compliant jurisdictions. The parameter \( g \in R^+ \) reflects the difficulty with which the onshore region can exert pressure and impose sanctions to the tax haven \( F \).

**Proposition 1** The onshore country’s best tax response is (i) increasing in the tax planning fee \( (f_t) \), (ii) increasing in the pressure variable \( (\alpha) \) and (iii) decreasing in the degree of international integration (increasing in \( k \)). Formally:

\[ (i) \frac{\partial br}{\partial f_t} > 0 , \quad (ii) \frac{\partial br}{\partial \alpha} > 0 , \quad (iii) \frac{\partial br}{\partial k} > 0 . \]

\(^{14}\)The objective function is equivalent to \( W_H = T + \lambda \left[ 2 + \int_{0}^{\bar{y}} (\beta - f_c - s) dF(y) - T \right] - \frac{g^2 \alpha^2}{2} \), where \( T = t \left[ 1 + \int_{\bar{x}}^{1} dF(x) \right] \).

\(^{15}\)For example, we can assume that earnings of foreign affiliates accrue to the home country. Remember that according to the territorial tax system, which is adopted by most high-income countries (except the United States), these earnings are not taxed in the home country of the multinationals.
Proof. Taking the first order condition of equation 2, we get the following best response:

$$\frac{\partial W_H}{\partial t} = 0 \rightarrow t^{br} = \frac{1}{2}(f_t + 2k + \alpha) . \quad (3)$$

The rest of the proof is derived by direct inspection of equation 3. ■

Intuitively, the onshore country has an incentive to increase the tax rate because firms are less inclined to become multinationals when the fee for aggressive tax planning ($f_t$) and/or the stigma effect induced by political pressure increase or when the international economy is less integrated (higher $k$).

3.1.2 The tax haven’s welfare

We assume that the tax haven’s source of revenue is only derived from foreign affiliates. It follows that the welfare of the low-tax jurisdiction should be gauged by the collected fees on the foreign affiliates that pursue aggressive tax planning and/or perform real local business. The tax haven’s objective function can be written as follows:

$$W_F = f_t \int_0^\pi dF(x) + f_e \int_0^7 dF(y) - (\beta - \epsilon)^2. \quad (4)$$

The first and second terms of the objective function are fees paid by multinationals respectively for aggressive tax planning and for doing real business in the offshore country. The third terms stands for the cost of infrastructure provision. The following first order conditions yield the tax haven’s best responses
\[
\frac{\partial W_F}{\partial f_t} = 0 \rightarrow f_t^{br} = \frac{1}{2}(t - \alpha), \tag{5}
\]

\[
\frac{\partial W_F}{\partial f_e} = 0 \rightarrow f_e^{br} = \frac{1}{2}(\beta - b\alpha - s), \tag{6}
\]

\[
\frac{\partial W_F}{\partial \beta} = 0 \rightarrow \beta^{br} = \frac{f_e}{k} + \epsilon. \tag{7}
\]

We see that the fees decrease with \(\alpha\). The reason is that pressure creates a disincentive to undertake profit shifting. Moreover, the fee for aggressive tax planning services \(f_t\) increases with the onshore corporate tax rate \(t\). In other words, a higher tax rate increases on one side firms’ incentive for aggressive tax planning and on the other side encourages the tax haven to raise its fees in order to appropriate a part of firms’ tax gains.

### 3.2 Second stage equilibrium and stigma effect

Solving the system of best response functions relative to the endogenous variables \((t, f_t, f_e, \text{ and } \beta)\) of the model yields the following results:
\[ t^* = \frac{4k + \alpha}{3}, \]  
\[ f_t^* = \frac{2k - \alpha}{3}, \]  
\[ f_e^* = \frac{k}{2k - 1}(\varepsilon - s - b\alpha), \]  
\[ \beta^* = \frac{1}{2k - 1}(2k\varepsilon - s - b\alpha). \]

The non-negativity of \( f_t^* \), \( f_e^* \) and \( \beta^* \) requires that \( \alpha \leq 2k \), \( k > \frac{1}{2} \) and \( \varepsilon \geq s + b\alpha \). It follows from the above results that increasing political pressure on the tax haven increases the onshore corporate tax rate \( t \). Moreover, pressure decreases the level of infrastructure provision \( \beta \) and the corresponding user fee \( f_e \). Additionally, an increase in \( \alpha \) has a negative effect on \( f_t \), the fee for aggressive tax planning services.

The equilibrium number \( x^* \) of conduit companies only designed for aggressive tax planning purposes and the equilibrium number of subsidiaries \( y^* \) carrying out local activities, are given as follows

\[ x^* = \frac{2}{3} - \frac{\alpha}{3k}, \]  
\[ y^* = \frac{\varepsilon - s - b\alpha}{2k - 1}. \]

Note that there exists a level of political pressure for which aggressive tax planning incentives cease. Indeed, we see that \( x^* = 0 \) when \( \alpha \geq \tilde{\alpha} = 2k \). Note that the tax haven is not able to host real businesses \( (y^* = 0) \) if it is not efficient.
enough in providing attractive infrastructure (i.e. \( \varepsilon \leq s + b\alpha \)).\(^{16}\) In this case, the tax haven can only provide tax concealment services.

Let us now highlight the results we just established. A direct consequence of increased political campaigning against the tax haven is to refrain firms from becoming multinational because of resulting reputation losses (i.e. stigma effect). To counter this effect, the tax haven’s best policy is to decrease the fee \( f_t \) required for aggressive tax planning services and the fee \( f_e \) of infrastructure provision \( \beta \). However, as we see above, these reactions are not able to avoid a decline in profit shifting (\( \frac{\partial x^*}{\partial \alpha} < 0 \)). We also see that pressure decreases substance-based offshore activities (\( \frac{\partial y^*}{\partial \alpha} < 0 \)). However, this result is contingent to the assumption that multinational corporations do not contemplate onshore alternatives. If this assumption is relaxed, we demonstrate (see Appendix C) that political pressure can encourage multinationals to set up substance-based affiliates in the tax haven if the intensity of the reputation effect \( b \) is not too strong. To understand the intuition behind this result, note that opening at home a new real activity as an alternative to producing offshore creates new tax liabilities that increase with pressure. Consequently, the incentive to produce offshore may increase with pressure.

Finally, note that political pressure increases the number of substance-based foreign direct investments relative to international profit shifting. Indeed, it is easy to demonstrate that \( \frac{\partial (y^*/x^*)}{\partial \alpha} > 0 \).

The just highlighted results are summarized in the following proposition.

**Proposition 2** (i) Increased political pressure \( \alpha \) exerted by the onshore region pushes up the equilibrium corporate tax rate and decreases the fees \( f_t^* \) and \( f_e^* \) that are respectively associated with aggressive tax planning and infrastructure provision.\(^{16}\)

\(^{16}\)When \( \varepsilon = s + b\alpha \), infrastructure provision is positive and equals \( \beta = s + b\alpha > 0 \), while the user fee is \( f_e = 0 \). Nonetheless, the tax haven is not able to attract business activities (\( y^* = 0 \)) because the infrastructure provision is too low.
sion. Nonetheless, the low-tax jurisdiction is not able to prevent a decline in profit shifting. (ii) Pressure may encourage MNCs to develop new substance-based off-shore activities. (iii) The ratio of real based FDIs relative to profit shifting increases in response to political pressure.

Proof. Part (i) and (iii) follow from a direct inspection of the second stage equilibrium while the proof of part (ii) is provided in Appendix C. ■

Let us ask now how international integration affects multinational decisions? It appears (see equations 12 and 13) that increasing mobility (lower $k$) reduces the number of devices for aggressive tax planning ($x^*$) but increases real content activities ($y^*$). Which are the underlying intuitions?

Aggressive tax avoidance decreases ($x^*$ decreases) because higher mobility encourages the onshore jurisdiction to lower its tax rate and consequently, less firms find it advantageous to opt for international profit shifting. Note that this effect dominates the increased incentive to shift profit abroad resulting from higher mobility (lower $k$) that facilitates aggressive tax planning. This is the case because the effect of higher mobility on the tax rate is equally experienced by all the firms, while the impact on moving costs is firm specific. 17 The positive impact of higher integration (lower $k$) on substance-based activities ($y^*$ increases) is clearly due to lower mobility costs.

The above results are summarized in the following proposition.

Proposition 3 For a given level of pressure, an increase in international integration (decline of $k$) decreases aggressive tax planning but augments the use of tax

17Note that the total moving cost $kx_i$ differs across MNCs. Those firms that are less attached to their home country (lower $x_i$) will benefit less from a lower $k$ than the more attached ones (higher $x_i$).
havens for substance-based activities. Formally,

\[ \frac{\partial x^*}{\partial k} = \frac{\alpha}{3k^3} > 0 \quad \text{and} \quad \frac{\partial y^*}{\partial k} = \frac{2(s - \varepsilon + b\alpha)}{(2k - 1)^2} < 0. \]

Consequently, integration (lower k) will always increase substance-based FDIs relative to tax planning.

**Proof.** In the text. ■

## 4 Optimal pressure policy

In the first stage of the pressure game, the onshore region has to commit to a pressure level exerted against the tax haven. The best policy to choose depends on the underlying aim the onshore region wants to pursue. In the following we successively consider two different objectives:

**a) Tax justice (J)**

First, we assume that the onshore world favors tax justice. Thus, the aim is to eliminate the use of havens for pure profit shifting purposes. In other words, the number of aggressive tax planning structures \( x^* \) should ideally be 0, which occurs when the pressure level \( \alpha \) equals (see equation 12) \( \tilde{\alpha} = 2k \). It appears then that the intensity of optimal pressure decreases with the level of international integration (lower \( k \)). This results from the fact that higher mobility (lower \( k \)) decreases tax revenue and thus there is less to be gained by aggressive tax planning. Consequently, political pressure towards the low-tax country becomes less relevant.

**Proposition 4** If tax justice is the aim of the onshore region, optimal pressure is achieved by the elimination of aggressive tax planning. In this case, the optimal pressure level decreases with international integration (lower \( k \)). Formally:

\[ (i) \quad \alpha^J = \tilde{\alpha}, \quad (ii) \quad \frac{\partial \alpha^J}{\partial k} > 0. \]
**Proof.** A level less than $\bar{\alpha}$ means that some aggressive tax planning is tolerated. This is suboptimal given the aim to promote tax justice. A pressure level exceeding $\bar{\alpha}$ eliminates international profit shifting but at a higher cost than necessary. The sign of the above derivatives is obtained by direct inspection of equation (i).

\[\text{b) Welfare maximization (W)}\]

Now, we assume that the onshore region wants to maximize social welfare. Considering equation 2 and the equilibrium values $t^*, f^*_t, f^*_e$ and $\beta^*$, the onshore welfare function becomes

\[W_H(\cdot) = \left(\frac{(1-\lambda)}{9k} + \frac{(1-k)}{(2k-1)^2}b^2\lambda - \frac{\alpha}{a}\right)\alpha^2 + \left(\frac{(1-\lambda)}{9k} - \frac{\beta}{a}\right)\frac{(2\beta k - 1)}{\lambda} + \left(\frac{8\beta k (1-\lambda)}{9k} + \frac{(2\beta k - 1)}{(2k-1)^2}b^2\lambda\right). \tag{14}\]

It follows that the optimal pressure level should maximize 14 subject to the following conditions

1. $0 \leq x^* \leq 1$
2. $0 \leq y^* \leq 1$

We obtain an interior solution ($0 < x^* < 1$ and $0 < y^* < 1$) if the cost of exerting political pressure is high enough:\n
\[g > g^{soc} = 2\left(\frac{1}{9k} (1-\lambda) + \frac{(1-k)}{(2k-1)^2}b^2\lambda\right). \tag{15}\]

The interior solution becomes

\[\bar{\alpha} = \frac{1}{\Delta g} \left[\frac{8}{9} (1-\lambda) - \frac{b}{\gamma^2} (\varepsilon - s)\right], \tag{16}\]

with

\[\gamma = (2k-1) > 0 \quad \text{and} \quad \Delta g = (g - g^{soc}) > 0 .\]

\[\text{In other words, when } g \text{ exceeds the threshold-value } g^{soc}, \text{ the second order condition (SOC) of the maximization problem is verified.}\]
The existence of a positive interior solution requires that \( \lambda < \bar{\lambda} = \frac{8\gamma^2}{8\gamma^2 + 9b(e-s)} < 1 \).

Hence, if the onshore region sufficiently takes account of tax revenue \((1-\lambda > 1-\bar{\lambda})\) as a source of welfare, it will always be efficient to pressure the tax haven.

Now, we consider the existence of corner solution(s) \((g < g^{soc})\).

First, from (12) and (13) it follows that the pressure variable \(\alpha\) can attain either the upper boundary \(\tilde{\alpha} = 2k\) or \(\alpha^y = \frac{\varepsilon-s}{b}\) (see Appendix A). In other words, we have \(x^* = 0\) when \(\alpha = \tilde{\alpha}\), and \(y^* = 0\) when \(\alpha = \alpha^y\).

Consequently, we need to assess whether \(W_H(\alpha = \min\{\tilde{\alpha}, \alpha^y\}) \geq W_H(\alpha = 0)\).

Note that the answer depends on the significance of tax revenue in the welfare function of the high-tax economy. Indeed, if the onshore region puts a high weight on tax revenue \((\lambda \leq \lambda^c)\) then \(W_H(\alpha = \min\{\tilde{\alpha}, \alpha^y\}) > W_H(\alpha = 0)\). On the contrary, if the high-tax jurisdiction values offshore production enough \((\lambda > \lambda^c)\), then \(W_H(\alpha = 0) > W_H(\alpha = \min\{\tilde{\alpha}, \alpha^y\})\) (see Appendix A).

Note that the absence of pressure \((\alpha = 0)\) will never be optimal if tax revenue plays a significant role in the welfare function \((i.e. \lambda \leq \lambda^c)\).

Consequently, the corner solution \(\alpha^c\) is characterized as follows

\[
\alpha^c = \begin{cases} 
\min\{\tilde{\alpha}, \alpha^y\} & \text{if } \lambda \leq \lambda^c, \\
0 & \text{otherwise}.
\end{cases}
\]

More generally, efficient pressure \(\alpha^W\) is characterized as follows

\[
\alpha^W = \begin{cases} 
\min\{\tilde{\alpha}, \alpha^y\} & \text{if } k \leq \hat{k} \text{ and } \lambda \leq \lambda^c, \\
\min\{\tilde{\alpha}, \alpha^y\} & \text{if } k > \hat{k} \text{ and } \lambda \leq \lambda^c, \\
0 & \text{otherwise and } g < g^{soc}.
\end{cases}
\]

It follows from the above characterization that an efficient pressure policy can be consistent with the existence of some aggressive tax planning \((x^* > 0)\). In this context, three cases can be distinguished.

\textbf{a) Exerting pressure is relatively difficult} \((g > g^{soc})\)
We know that in this case the optimal decision will be the interior solution $\alpha_W = \bar{\alpha}$. It is then easy to demonstrate that pressure is lower than what is needed to eliminate aggressive tax planning. Indeed, if $k \leq \hat{k}$, we have $\bar{\alpha} < \tilde{\alpha}$ and if $k > \hat{k}$, it follows that $\tilde{\alpha} < \alpha^y < \bar{\alpha}$.

b) Exerting pressure is relatively easy ($0 < g < g^{soc}$), and tax revenue is given a sufficiently high weight in the welfare function (i.e. $\lambda \leq \lambda^c$).

Now, the optimal pressure policy is one of the two (strictly positive) corner solutions highlighted above. In this context, aggressive tax planning is tolerated if international integration is low enough ($k > \hat{k}$) because $\alpha_W = \alpha^y < \bar{\alpha}$. The toleration of aggressive tax planning is obviously intuitive in the case before, but as we just highlighted partial pressure can also be efficient when political pressure is easy to exert. For this to happen, international integration has to be relatively low. The underlying intuition is that high mobility costs ($k > \hat{k}$) increase the power to tax in the home country. Consequently, lower mobility encourages the onshore country to increase its tax revenue on the less mobile firms, thus making pressure less relevant. Note that it may be efficient not to pressure at all ($\alpha = 0$) if $0 < g < g^{soc}$ and tax revenue plays a small role in the onshore welfare function (i.e. $\lambda > \lambda^c$). For sake of realism we shall disregard this case by assuming that $1 - \lambda > 1 - \lambda^c$.

The following proposition summarizes the previous results.

**Proposition 5** When the aim of onshore region is to maximize social welfare, there may be either an interior or a corner sub-game perfect equilibrium (SPE). Note that both cases can be consistent with tolerating some aggressive tax planning. This will always be the case, when international integration is relatively low (i.e. $k > \hat{k} = \frac{c-\lambda}{2\lambda}$).

**Proof.** In the text ■
Let us now focus on the interior solution $\alpha$ and analyze how a change in the parameter values of the model impact optimal pressure.

First, it appears that the sign of the partial derivative of $\alpha$ relative to the stigma effect $b$ is ambiguous. Indeed, if $\lambda$ exceeds a threshold-value $\lambda^b$ (see Appendix B) it follows that $\frac{\partial \alpha}{\partial b} < 0$ and $\frac{\partial \alpha}{\partial b} \geq 0$ otherwise. The underlying intuition can be explained as follows. A relatively high value of $\lambda$ (i.e., $\lambda > \lambda^b$) means that offshore production by home MNCs is given a relatively high weight in the onshore welfare function. Consequently, when the degree of the stigma effect $b$ increases there is an incentive to decrease political pressure in order to encourage MNCs to increase substance-based foreign activity.

Furthermore, it is easy to show that $\frac{\partial \alpha}{\partial \varepsilon} < 0$, $\frac{\partial \alpha}{\partial s} > 0$ and $\frac{\partial \alpha}{\partial \lambda} < 0$. The underlying intuitions can be explained as follows. First, note that higher efficiency $\varepsilon$ encourages the tax haven to provide more attractive infrastructure to foreign MNCs. Accordingly, the onshore region will have an incentive to pressure less in order to foster offshore production through affiliates. On the contrary, higher sunk costs for setting up affiliates make the tax haven less attractive for substance-based businesses. This encourages the onshore region to pressure more. Finally, when the weight put on tax revenues decreases (higher $\lambda$), the onshore region will have less incentive to exert pressure with the intention to discourage aggressive tax planning.

Note that the impact of mobility costs on optimal pressure is also ambiguous. To understand why, observe that a higher value of $k$ has two main effects. First, it allows the onshore country to increase its tax revenue. Second, high mobility costs hamper substance-based investments in the tax haven, which reduces the ratio of substance-based FDIs relative to aggressive tax planning (see proposition 3). While the latter effect encourages pressure, the former makes it less relevant.

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19As a response, the onshore region increases pressure to counterbalance this effect. This
Therefore, if the high-tax country puts a high weight on tax revenue \((\lambda \to 0)\), pressure decreases with \(k\), while pressure increases with \(k\) if the onshore government highly values offshore income \((\lambda \geq \hat{\lambda})\).

The results are summarized in the following proposition (calculations are provided in the Appendix B).

**Proposition 6** Higher mobility costs (higher \(k\)) induce less pressure \((\frac{\partial \bar{\alpha}}{\partial k} < 0)\) against tax havens if the onshore country mainly cares about tax revenue. However, if the preference for total output is high enough \((\lambda > \hat{\lambda})\), the onshore region will be more inclined to pressure \((\frac{\partial \bar{\alpha}}{\partial k} > 0)\) as a result of higher mobility costs.

5 Voluntary removal of tax planning

Until now, we analyzed the pressure game representing a sub-game of the more general framework (figure 1). In other words, we implicitly assumed that tax haven did not comply at the outset with international standards regarding corporate taxation. Let us now analyze under which conditions a tax haven voluntarily ceases to offer tax planning services that contravene international standards (see BEPS action plan). We examine the compliance choice given that the tax haven anticipates the outcome of the pressure game.

When the onshore region campaigns against non-compliant jurisdictions with the aim to pursue tax justice, the tax haven abandons voluntarily the provision of aggressive tax shelters that induce profit shifting. To see why, note that welfare in the tax haven equals \(W_F^c = \frac{(e-s)^2}{2\gamma}\) if there is compliance and \(W_F^l = \frac{(e-s-bk)^2}{2\gamma}\) if not. It is then easy to prove that \(W_F^c > W_F^l\).

When the onshore region pursues a welfare-maximizing objective, different reactions can occur. If exerting pressure is relatively easy \((g < g^{soc})\) and the level of...
international integration is high \((k \leq \hat{k})\), efficient pressure is such that tax planning will be eliminated, as in the case of tax justice. However, compliance is not necessarily guaranteed even if exerting pressure is easy. Indeed, when mobility costs are high \((k > \hat{k})\), the welfare in the tax haven equals \(W_F^t = \frac{(2bk-(\varepsilon-s))^2}{9b^2k}\). It follows that \(W_F^t > W_F^c\) since \(\varepsilon < \hat{\varepsilon}\). \(^{20}\) To understand the underlying intuition, first note that the tax haven accepts to abandon aggressive tax planning if in turn its attractiveness for substance-based FDIs sufficiently increases. This is not the case when \(k > \hat{k}\) because offshore production is discouraged by high mobility costs, while aggressive tax planning is encouraged by high capital taxation.

Finally, when exerting political pressure is relatively difficult \((g \geq g_{soc})\), the tax haven can comply or not depending on the parameters configuration.

The following proposition summarizes the previous results.

**Proposition 7** When the onshore region pursues tax justice, the announcement of political pressure induces the tax haven to comply voluntarily with international standards designed to eliminate aggressive tax shelters.

When the onshore region pursues a welfare-maximizing objective and pressure is relatively easy \((g < g^{soc})\), the announcement of political pressure induces the tax haven to comply if the level of international integration is high \((k \leq \hat{k})\). However, high mobility costs \((k > \hat{k})\) do not induce voluntary compliance.

6 Conclusions and policy issues

In this paper, we argue that aggressive tax planning is not the only reason for which tax havens can be attractive to multinationals. MNCs can benefit from the low taxes provided by offshore jurisdictions by setting up affiliate companies with

\(^{20}\)The upper-limit \(\hat{\varepsilon}\) is the efficiency threshold above which \(x^+\) become negative.
local substance. The reallocation of taxable income from high-tax jurisdictions to low-tax jurisdictions by multinationals is considered as morally questionable and recently OECD and G20 countries released an Action Plan to solve the problem of base erosion and profit shifting (BEPS). As a result, low-tax countries offering aggressive tax planning services will be under political pressure to comply with new international standards. Expectedly, actions will be taken to hurt the reputation of uncooperative havens and those who make use of them.

In order to highlight the effects of pressure policies, we analyze how a low tax jurisdiction, exposed to international campaigns designed to eliminate aggressive tax planning, strives to maintain its attractiveness to foreign companies. To this end, the tax haven tries to provide, in addition to aggressive tax planning services, a favorable environment to foreign affiliates pursuing real activities.

Since that pressure stigmatizes the targeted tax haven as a whole, it may also hurt the reputation of those multinationals that contemplate to set-up affiliates with a real business activity. Notwithstanding this, we demonstrate that denouncing uncooperative havens may increase their share of substance-based activities compared to aggressive tax planning. The reason is that political pressure decreases the net gain of aggressive tax planning more than it may discourage real offshore investments.

How to design optimal pressure policies towards uncooperative low-tax jurisdictions depends on the underlying objective of the policy makers in the onshore jurisdiction.

Surprisingly, a welfarist government may optimally tolerate some aggressive tax planning. This occurs in particular when exerting pressure is relatively costly, which is the case when collective action among onshore jurisdictions is difficult to implement. However, moderate pressure that does not involve elimination of aggressive tax planning can also be justified when the cost of pressuring is relatively
low. This is precisely the case when the degree of international integration is low (high $k$) and the onshore economy sufficiently accounts for tax revenue. The reason is that the power to tax in the onshore country can increase to such an extent that exerting pressure towards tax havens becomes less relevant. Note that the just mentioned policy implications are at odds with the recommendation resulting from pure justice considerations that would aim at completely eliminating aggressive tax planning.

Finally, the announcement of political pressure is a necessary but not a sufficient condition for inducing tax havens to comply voluntarily with international standards aiming at the elimination of aggressive tax practices. The paper demonstrates that pressure policies designed to realize tax justice are sufficient to induce compliance. However, this result can also be achieved by a welfarist onshore government when exerting pressure is relatively easy and the level of international integration is relatively high.

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Appendix A: Welfare maximization (W)

The problem of the onshore region is:

\[
\max_{\alpha} W_H(t^*, x^*, y^*, \alpha, b, s, k, g) \tag{17}
\]

subject to

\[
\begin{align*}
(1a) & \quad x^* \geq 0 \\
(2a) & \quad y^* \geq 0 \\
(3a) & \quad x^* \leq 1 \\
(4a) & \quad y^* \leq 1
\end{align*}
\]

Given that \( \alpha \geq 0 \), it follows from (12) and (13) that we have only to consider the constraints (1a) and (2a) in the above maximization problem. These two constraints give the two upper limits: \( \bar{\alpha} = 2k \) and \( \alpha^y = \frac{\varepsilon - \alpha}{\beta} \). The first is deduced from (1a) and corresponds to the no aggressive tax planning case \( (x^* = 0) \). The second is derived from (2a) and corresponds to \( y^* = 0 \). The upper bound of \( \alpha \) will be the lowest of the pair \( (\bar{\alpha}, \alpha^y) \). Moreover, we can show that
\[ \begin{align*} 
\tilde{\alpha} \leq \alpha^y & \quad \text{if } k \leq \hat{k} = \frac{\varepsilon - s}{2b} \\
\tilde{\alpha} > \alpha^y & \quad \text{otherwise} 
\end{align*} \]

(18)

If there is a high degree of international financial integration, i.e. \( k \leq \hat{k} \), \( \tilde{\alpha} \) will be the upper-bound to political pressure. Consequently, if the degree of international financial integration is low, the upper-bound value of \( \alpha \) is \( \alpha^y \).

Let us now analyze under which conditions one of the corner solution (\( \alpha = 0, \tilde{\alpha} \) or \( \alpha^y \)) will prevail. To this end we first evaluate the following welfare values:

\[ W_H(\alpha = 0) = \frac{16}{9} k(1 - \lambda) + \frac{2 + k(\varepsilon - s)^2 - 8(1 - k)\gamma}{\gamma^2} , \]

\[ W_H(\alpha = \tilde{\alpha}) = 4k(1 - \lambda) + \frac{2 + k((\varepsilon - s - 2b(1 - k)(\varepsilon - s - 2bk) - 8(1 - k))}{\gamma^2} \lambda - 2gk^2 , \]

\[ W_H(\alpha = \alpha^y) = \frac{(\varepsilon - s + 4bk)^2}{9b^2 k}(1 - \lambda) + 2\lambda - \frac{g(\varepsilon - s)^2}{2b^2} . \]

It follows that

\[ W_H(\alpha = 0) < \min \{ W_H(\alpha = \tilde{\alpha}), W_H(\alpha = \alpha^y) \} \quad \text{iff} \quad \lambda \leq \lambda^c , \]

where

\[ \lambda^c = \begin{cases} 
\frac{\gamma^2(10 - 9gk)}{10\gamma^2 + 9b(\varepsilon - s) - 18b^2 k(1 - k)} & \text{if } k \leq \hat{k} , \\
\frac{(16bk + (\varepsilon - s)(2 - 9gk))(\varepsilon - s)\gamma^2}{2(\varepsilon - s)^2 + 2db(4(\varepsilon - s) - 9b) + 18b^2 k(2 + k(4(\varepsilon - s)^2 - 8(1 - k))))} & \text{if } k > \hat{k} .
\end{cases} \]

Consequently, it is always optimal to exert pressure if the high-tax economy cares enough about tax revenue.
Appendix B: Comparative Static Analysis

(proposition 6)

Let us write the optimal pressure in the following way

\[ \bar{\alpha} = D \cdot L, \tag{19} \]

where

\[ D = (\Delta g)^{-1} > 0 \quad \text{and} \quad L = \frac{8}{9} \left[ \frac{8}{9} + \frac{b(\varepsilon - s)}{\gamma^2} \right] \lambda > 0 \quad \text{for} \quad \lambda < \bar{\lambda} = \frac{8\gamma^2}{8\gamma^2 + 9b(\varepsilon - s)}, \]

with

\[ \gamma = (2k - 1) > 0 \quad \text{and} \quad \Delta g = (g - g^{soc}) > 0. \]

We can then compute the following derivatives

\[ \frac{\partial \bar{\alpha}}{\partial \lambda} = \frac{\partial D}{\partial \lambda} \cdot L + \frac{\partial L}{\partial \lambda} \cdot D < 0, \tag{20} \]

\[ \frac{\partial \bar{\alpha}}{\partial b} = \frac{\partial D}{\partial b} \cdot L + \frac{\partial L}{\partial b} \cdot D = \frac{\lambda((32b(1 - k)k\gamma^2(1 - \lambda) - (\varepsilon - s)(\gamma^2(9gk - (1 - \lambda)) + 18b^2(1 - k)k\lambda)))}{36k(\gamma\Delta g)^2}. \]

Hence,

\[ \frac{\partial \bar{\alpha}}{\partial b} < 0 \quad \text{if} \quad \lambda > \lambda^b = \frac{(32b(1 - k)k - (\varepsilon - s)(9gk - 2))\gamma^2}{18b^2(\varepsilon - s)(1 - k)k + 2((\varepsilon - s) + 16b(1 - k)k)\gamma^2} < 1 \tag{21} \]

\[ \frac{\partial \bar{\alpha}}{\partial \varepsilon} = \frac{\partial D}{\partial \varepsilon} \cdot L + \frac{\partial L}{\partial \varepsilon} \cdot D < 0, \tag{22} \]
\[ \frac{\partial \bar{\alpha}}{\partial s} = \frac{\partial D}{\partial s} L + \frac{\partial L}{\partial s} D > 0 , \]  

(23)

\[ \frac{\partial \bar{\alpha}}{\partial g} = \frac{\partial D}{\partial g} L + \frac{\partial L}{\partial g} D > 0 \]  

(24)

The effect of a decrease in international integration (increasing \( k \)) is ambiguous:

\[ \frac{\partial \bar{\alpha}}{\partial k} = \frac{\partial D}{\partial k} L + \frac{\partial L}{\partial k} D , \]  

(25)

since

\[ \frac{\partial L}{\partial k} = \frac{\gamma ( \varepsilon - s )}{(1 - 2k)^3} = 4b(\varepsilon - s) \frac{\lambda}{\gamma} > 0 , \]  

(26)

and

\[ \frac{\partial}{\partial k} \left( \frac{1}{\Delta g} \right) = 2 \left( \frac{b^2}{\lambda \gamma^2} \left[ \frac{4(1 - k)}{\gamma} + 1 \right] - \frac{(1 - \lambda)}{9k^2} \right) , \]  

(27)

where

\[ \hat{\lambda} = \frac{\gamma^3}{\gamma^3 + 9b^2k^2(4(1 - k) + \gamma)} < \bar{\lambda} . \]  

(28)

Hence:

\[ \frac{\partial \bar{\alpha}}{\partial k} = \begin{cases} < 0 & \text{if } \lambda \to 0 , \\ > 0 & \text{if } \hat{\lambda} \leq \lambda \leq \bar{\lambda} . \end{cases} \]
Appendix C: Onshore alternatives for real investments

We now relax the assumption that multinational corporations (MNCs) can only invest in real foreign activity. More precisely, MNCs can alternatively benefit from productive infrastructure provided in their home country. In the following we demonstrate that this possibility does not qualitatively change the results presented in the main text. Intuitively, even if a MNC could produce at home the same real output as in the tax haven there would still remain an incentive to offshore productive activity because of tax purposes. This follows from the application of the territorial tax system and the low or zero tax rate in the tax haven.

We now assume that a MNC $i$ can decide whether to invest in a real activity offshore (thus obtaining $V^F_y$) or at home. The net gain of the latter alternative is:

$$V^H_y = \pi_y (1 - t),$$

where $\pi_y$ is the gross profit that firm $i$ would gain for a real investment at home. In the sequel, we set $\pi_y = 1$ without any loss of generality.

The profit function of firm $i$ now becomes:

$$\pi_i(\zeta_i) = \mathbb{1}_x V^F_x + (1 - \mathbb{1}_x)V^H_x + \mathbb{1}_y V^F_y + (1 - \mathbb{1}_y)V^H_y + (1 - t)\pi_H. \quad (29)$$

Consequently, the type of the “marginal” firm for which it is indifferent to set up an affiliate offshore or at home is given by

$$\bar{y} = \left[ \frac{\beta - f_x - s - b\alpha}{k} \right] \left( 1 - t \right).$$

Note that the decision of the “marginal” firm also depends on the onshore corporate tax rate $t$.

The welfare function in the onshore country now becomes
\[
W_H = (1 - \lambda) \left( 1 + \int_0^1 dF(x) + \int_0^1 dF(y) \right) + \lambda \left( 2 + \int_0^1 (\beta - f_e - s) dF(y) + \int_0^1 dF(y) \right) - \frac{\beta^2}{2}. \quad (30)
\]

Solving the sequential game leads to the following equilibrium solutions

\[
t^{**} = \frac{C + A\alpha}{Z}, \quad (31)
\]
\[
f_{t}^{**} = \frac{1}{2} \left( \frac{C}{Z} - \left( 1 - \frac{A}{Z} \right) \alpha \right) = \frac{1}{2} (t^{**} - \alpha), \quad (32)
\]
\[
f_{e}^{**} = k\beta^{**} - \varepsilon, \quad (33)
\]
\[
\beta^{**} = \frac{C + ZB + (A - bD)\alpha}{Z\gamma}. \quad (34)
\]

where:

\[
Z = \gamma(3 - \lambda) - \lambda 2k ,
\]
\[
A = \left( \gamma(1 - \lambda) + 2b\lambda(k - 1) \right) > 0 \quad \text{if } \lambda < \gamma,
\]
\[
B = 2k\varepsilon - 1 - s ,
\]
\[
C = 2k \left( \gamma(2 - \lambda) + \lambda(\varepsilon - s - 2k) \right) > 0 \quad \text{if } \varepsilon > 2k + s - \gamma(\frac{2}{\lambda} - 1) ,
\]
\[
\gamma = 2k - 1 > 0 .
\]

The non negativity of \( t^{**}, f_{t}^{**}, f_{e}^{**} \) and \( \beta^{**} \) require that

\[
k > \frac{3 - \lambda}{6 - 4\lambda},
\]
\[
\varepsilon > 2k + s - \gamma \left( \frac{2}{\lambda} - 1 \right).
\]

It follows from the above conditions that: \( bZ > A \) iff \( b < \frac{1}{3} \).
Hence we can conclude that:

\[
\frac{\partial t^{**}}{\partial \alpha} = \frac{A}{Z} > 0 \quad \text{iff} \quad \lambda < \frac{7}{\gamma + 2b(1 - k)} \cup b > \frac{1}{3} \text{ or } b < \frac{1}{3},
\]

\[
\frac{\partial f^*_t}{\partial \alpha} = -\frac{1}{2} \left(1 - \frac{A}{Z}\right) < 0 \quad \text{if } b > \frac{1}{3}, \text{ given that } Z > A \text{ if } b > \frac{1}{3},
\]

\[
\frac{\partial f^*_e}{\partial \alpha} = k \frac{\partial \beta^**}{\partial \alpha},
\]

\[
\frac{\partial \beta^**}{\partial \alpha} = \frac{A - bZ}{Z\gamma} > 0 \quad \text{iff } b < \frac{1}{3}.
\]

It follows that increased pressure induces the tax haven to invest more in infrastructure if the stigma effect on substance-based activities is not too strong (i.e. \( b < \frac{1}{3} \)).

In addition, notice that

\[
x^{**} = \frac{1}{2k}(t^{**} - \alpha) = \frac{1}{k} f^*_t,
\]

\[
y^{**} = \frac{(1 - k)\beta^{**} + \varepsilon - (1 - t^{**}) - s - b\alpha}{k} = \frac{kZL(\varepsilon - s - 1) + (k - 1)BZ + (2k^2 - 1)(C + (A - bZ))\alpha}{Z\gamma k^2}
\]

\[
> 0 \text{ when } \lambda < 1 + \frac{2(\varepsilon - 1 - s)}{\varepsilon - 1 - s + 4k + \alpha(1 - 3b)}. \tag{36}
\]

Because \( y^{**} > 0 \), MNCs have an incentive to set up substance-based affiliates in the offshore jurisdiction even if the same can be done in the home country. This is due to the tax advantage they obtain by offshoring real activity.

It is also easy to highlight that political pressure can encourage multinationals to set up substance-based affiliates in the tax haven if the associated stigma effect is not too strong (i.e. \( b < 1/3 \)). Indeed, we see that
\[
\frac{\partial y^{**}}{\partial \alpha} = (1 - 3b) \frac{(1 - \lambda)}{3\gamma - (4k - 1)\lambda} > 0 \quad \text{iff} \quad b < \frac{1}{3}.
\]

To understand the intuition behind this result, it is important to note that increased pressure, on the one side, increases the stigma effect on multinationals but, on the other side, augments capital taxation in the onshore jurisdiction. When the stigma effect is low enough (low \(b\)), the first impact that deters the use of tax havens is dominated by the second effect that encourages foreign investment with substance for tax purposes.