



Their hands untied but still imprisoned?

National tax policy under the automatic exchange of information

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Executive Summary

Capital income taxes around the world have been in decline since the 1980s due to tax competition. Since 2009, however, the average tax rates on dividends, interests and capital gains in OECD countries have increased again in an attempt to realign the taxation of personal capital income with the taxation of income from labor. While the trend is broad, it is not uniform, some countries have not increased taxes, and others even further lowered their tax rates. What explains the variance? Why do some governments increase taxes, while others stick to flat taxes on capital? We argue that increased tax transparency is an important causal factor of increasing tax rates. Progress on tax information exchange and thus increased transparency is an *enabling* condition for higher tax rates on portfolio capital because it makes it more difficult for taxpayers to evade taxes by shifting their portfolios to nontransparent tax havens. Transparency thus curbs tax competition among states for portfolio capital. We hypothesize that in combination with domestic *driving* factors like left party government, functional pressures in the form of public debt levels and demands for compensatory fairness increased transparency should lead to higher tax rates. On the basis of panel regressions and event history analyses on dividend tax rates and reform events in all OECD countries in the period 2008 to 2017 we find that increased transparency in interaction with compensatory fairness demands increased the likelihood of tax increases substantially and significantly. Functional pressures in terms of public debt lead to higher tax rates even irrespective of transparency.

1. Introduction

Policymakers around the world have cut taxes on capital income since the 1980s, arguing that persistently high rates increased the risk of capital flight to tax havens that provide financial secrecy. Since the G20 put financial transparency on its agenda in 2009, however, the average tax rates on dividends, interest, and top incomes in OECD countries have increased again in an attempt to realign the taxation of personal capital income with the taxation of income from labor. And indeed, previous research shows that international tax cooperation like the automatic exchange of information provide national governments with additional leeway in their tax policy decisions and lead on average to higher personal capital income taxes (Hakelberg and Rixen 2017). While the trend is broad, it is not uniform, some countries have not increased taxes, others even further lowered their tax rates. For example, while Canada raised its dividend taxes from 24% in 2008 to 39% in 2017, Hungary lowered it from 35% to 15% and Sweden kept it constant at 30%. What explains the variance? Why do some governments increase taxes, while others stick to flat taxes on capital? And what role does improved transparency through effective international tax cooperation play in countries' decisions to raise or not raise taxes? How important is it relative to domestic factors for tax policy choices like the ideological leanings of governing parties, functional pressures caused by budget constraints (especially after the financial crisis 2007-09) or fairness norms prevalent in society?

To test the explanatory power of these different factors, we perform panel regressions and event history analyses on dividend tax rates and reform events in all OECD countries in the period 2008 to 2017, linking increases in tax rates on capital income to prior changes in the level of secrecy in a country's immediate investment environment, government ideology, public debt levels and demands for compensatory fairness.

Our findings contribute to three different strands of literature in comparative and international economy. First, our study contributes to an emerging literature investigating the causes and dynamics of post-crisis tax policy (Lierse and Seelkopf 2016; Limberg 2018). This literature investigates the conditions of tax increases. Second, our study relates to work that assesses the (lack of) effectiveness of various measures of international tax cooperation, like information exchange on request or on a routine, automatic basis (Johannesen and Zucman 2014; Rixen and Schwarz 2012; Hakelberg and Schaub forthcoming). Third, our results shed new light on the big debate of the 1990s and early 2000s about the role that globalization (in the form of tax competition) played vis-à-vis domestic factors in countries' tax policy choices (Garrett and Mitchell 2001; Swank and Steinmo 2002; Ganghof 2006). While at the time the relative impact of the various factors was hard to untangle, because tax competition was a universal phenomenon affecting all countries, the uneven progress of transparency provides us with variance to better assess how intense the constraints of unregulated globalization are.

The rest of this article is structured as follows: In section 2, we briefly sketch recent developments in international tax cooperation that have increased financial transparency and thus decreased governments' vulnerability to capital flight. After that, we discuss theories of (capital) tax policy making and derive a set of hypotheses (section 3). We explain our method and data in section 4 and present and discuss our empirical results in section 5. Section 6 concludes, discusses the broader implications of our study and outlines opportunities for further research.

2. Capital Taxation, International Tax Competition and Cooperation

Tax competition for portfolio capital relies on tax evasion, which occurs when a household conceals financial wealth and related capital income from the tax office. The crucial prerequisite for this concealment is the provision of financial secrecy by tax havens (e.g. Palan, et al. 2010; Johannesen and Zucman 2014). Under full transparency, i.e. effective exchange of tax relevant information between national tax authorities, a taxpayer could not realize tax advantages by shifting his or her portfolio to a tax haven because he or she is liable to tax on worldwide income in the country of residence. The availability of international tax evasion

has in the past served as justification for competitive cuts to taxes imposed on capital. Policymakers considered lowering their capital taxes a necessary response to the looming threat of capital flight (e.g. Dehejia and Genschel 1999; Rixen 2008).

Policymakers have always been aware of these possibilities for tax evasion, but before financial globalization was fully developed, the issue did not have high priority for them. Traditionally, the only instrument of information exchange that existed was information exchange based on bilateral double taxation treaties. Apart from the fact that tax havens only entered into such treaties with industrialized countries on a very selective basis, the clauses themselves were very narrowly designed. Information could only be exchanged upon specific request. The requesting country had to present profound initial evidence of tax evasion in individual cases. Given the secrecy supplied by tax havens it was next to impossible for taxpayers' residence countries to obtain sufficient initial evidence. Moreover, any domestic secrecy provisions such as tax and bank secrecy rules prevailed over treaty provisions (cf. e.g. Rixen 2008, chapter 6).

With financial globalization gaining scope and depth since the 1980s, the issue slowly gained salience and, beginning in the mid-1990s, a range of regional and global policy initiatives emerged to fight for cross-border tax transparency. The most important steps in this development were the following: Mandated by the G-7, the OECD launched its project against harmful tax competition (HTC) (OECD 1998). With respect to tax evasion of portfolio capital, the project resulted in several recommendations to improve transparency in tax havens and implement somewhat stricter bilateral exchange of information agreements. To put pressure on tax havens the OECD drew up blacklists of non-cooperative jurisdictions. However, the credibility and effectiveness of the blacklists was compromised by the fact that OECD members Switzerland and Luxembourg, two notorious tax havens, were not included so that no real progress was achieved.

At around the same time, a domestic law in the United States introduced some withholding and reporting requirements for foreign banks to limit tax evasion by U.S. taxpayers with foreign accounts. The so-called Qualified Intermediary (QI) regime were developed between 1997 and 2000 and entered into force on 1 January 2001 (Government Accountability Office 2007). Foreign Financial Intermediaries are encouraged to become Qualified Intermediaries (QIs) by signing a contract with the US Internal Revenue Service (IRS). They are then required to report income beneficially owned by their US clients, and withhold taxes on that income (Levin and Coleman 2008). Even though the QI agreement obviously has a very limited geographical scope it is relevant in that it is the first agreement that goes beyond exchanging information on request.

Similarly, on the regional level, the European Union also made some progress. In 2003 it passed the Savings Tax Directive (STD) (European Community 2003). While the STD had significant loopholes (Rixen and Schwarz 2012), its passage was an important milestone, being the first agreement with automatic exchange of information (Palan, et al. 2010).

After the financial crisis, with governments starved off cash and shadow banking in off-shore financial centers playing an important role in the crisis, the efforts were intensified and the OECD published new blacklists. This time the conditions for being removed were stricter, and the list included Switzerland and Luxembourg (OECD 2009). The OECD promoted so-called Tax Information Exchange Agreements (TIEAs) that promised a stricter standard. Most importantly, the new TIEAs would override any domestic laws that prevented the exchange of information. But the agreements still were limited to information exchange upon request. Since 2009 many of these TIEAs were signed. In 2008/09 the European Union also began to reform the STD with the aim of making it more effective (Hakelberg 2014). Overall, the issue has also become more politically salient as the public became increasingly aware of international tax evasion. High-profile tax scandals ensued after tax authorities in a number of countries were offered confidential bank data from Swiss and Liechtenstein banks and began to recoup some of the tax revenues lost. Switzerland and other tax havens came under public scrutiny and were subjected to immense political pressure (Emmenegger 2017).

The decisive breakthrough was initiated by unilateral action of the US. Since 2008 and throughout 2009 the incoming Obama administration used the UBS scandal to pressure Switzerland to share information on US resident clients of Swiss Banks. In 2010, it passed FATCA, which required foreign banks to automatically

report information on their US clients. Banks that did not comply faced a 25% withholding tax on payments received from the US. In reaction to this law, and since many governments did not want their banks to exchange information directly with the US government, countries around the world started to conclude FATCA agreements with the US in 2011. In these intergovernmental agreements (FATCA IGAs) treaty partners agree to AEI. Using this momentum, the OECD and its member states endorsed AEI and developed the so-called common reporting standard (CRS) (OECD 2017c). In October 2014 the new standard was signed and is now being accepted by 90 jurisdictions worldwide, including all major offshore centers (Hakelberg 2016). Likewise, Austria and Luxembourg's acceptance of AEI with the US has made it possible for the EU to break their opposition to a modernization of the STD and introduce AEI on all forms of capital income among member states (Hakelberg 2014).

In our empirical analysis we will use the variation over time, regional scope and stringency of these various legal instruments to construct a transparency indicator that varies over time and across different countries in our data set (see section 4).

3. Theories of Tax Policy-Making

What explains changes in capital tax rates? How can we explain the occurrence of capital tax increases? The literature in international and comparative political economy contains a variety of theories to explain tax policy making. We can distinguish between domestic factors and international factors.

On the domestic level, established theories of policymaking serve as a good starting point. First, according to partisan theory the preferences of governing parties explain policy outcomes. Left-of-center parties cater to the working and dependently employed middle classes. They prefer a state providing good social infrastructure and services, more redistribution and consequently higher and more progressive taxes. They will be in favor of tax increases for (mostly wealthy) capital owners. In contrast, right-of-center governments catering to wealthy individuals among their core constituency of employers, upper-middle class and self-employed voters, can be expected to oppose capital tax increases (cf. Ganghof 2006; Cusack 1999). Second, tax reforms may be caused by functional pressures, such as economic stress or budget constraints. To explain tax increases the latter would appear to be particularly relevant. Since many countries had to provide stabilization to their faltering banks and economies after the financial crisis of 2007-09 they experienced or imbalanced budgets and steeply increasing levels of public debt. Given rigidity on the expenditure side, unsustainable levels of public debt may force governments to raise taxes rather than taking on additional debt (Swank and Steinmo 2002; Lierse and Seelkopf 2016). Third, demands of compensatory fairness in the electorate may explain increases in capital tax rates. For the time period under investigation in this article, many voters may be of the opinion that capital owners profiting from deregulated financial markets before the financial crisis should be made to share in the costs of crisis cleanup. If such reasoning gains political salience in a country it may lead to higher capital taxes (Scheve and Stasavage 2016). Note that both the second and third explanation establish a causal link between the financial crisis and capital tax increases, but of a different kind, either functional via budgetary pressures or motivational via voters' values and beliefs.

On the international level, the factor that has received most attention in the explanation of tax policy making is international tax competition induced by globalization. The liberalization of capital controls and deep economic integration since the early 1980s have induced competition among states (Lee and McKenzie 1989). As mobile capital is sensitive to tax rate differentials (de Mooij and Ederveen 2008; Feld, et al. 2013), governments react to tax cuts elsewhere by lowering taxes themselves (e.g. Wilson and Wildasin 2004). There is consensus in the literature that international tax competition was the most important driver behind declining statutory corporate and personal capital income tax rates in all developed countries (e.g. Swank

2006; Genschel and Schwarz 2011).¹ The theory of tax competition and the empirical findings in its support lead to the converse argument that effective international tax cooperation may play an important role in explaining tax increases on portfolio capital. As explained above, increasing transparency curbs or at least dampens tax competition. Note however that – at least according to theories that accord an important role to (political) agency – increased transparency cannot cause tax increases on its own. Only if a national legislature, which is accountable to its domestic electorate and has the prerogative over the national budget, ceases the opportunity of increased transparency will there be capital tax increases. For example, there may not be a tax increase under high transparency if a right of center governments is in power. According to our preferred theoretical specification, we can conceive of transparency as an *enabling* and of the domestic factors as *driving* factors of tax increases. The domestic factors are the motives for tax increases, whereas transparency makes it possible to pursue the motives. But, one can also conceive of an alternative theoretical specification that is more functional in scope. According to this logic, one could conjecture that increased transparency may well lead to tax increases irrespective of any domestic driving factors. For example, governments of any political stripe would increase taxes on portfolio capital simply because – under conditions of transparency – they can. Intuitively, this would make sense if tax competition were such a strong constraint that taxes were far below the level preferred by any party.

However, there is disagreement in the literature on just how much weight the pressures of tax competition have vis-à-vis the domestic factors discussed above. While all participants to this debate, which took place before the current period of improved transparency, have nuanced positions, we can identify two camps.² One camp believes that tax competition swamps domestic factors in tax policy making. For example, Ganghof (2006) has shown that governing parties and veto players have no explanatory power for capital tax rates. Likewise, Wagschal (Wagschal 2001, 154) finds no impact of parties on tax reforms in the era of globalization. The other side argues that while tax competition clearly exerts pressure to lower tax rates, domestic factors can act as countervailing pressures that mitigate the race to the bottom. For example, Swank (2002) and Garrett (Garrett 1998) argue this with respect to parties, Hallerberg and Basinger (2004) for veto players and Plümper et al (2009) for voters' fairness considerations.³

While both positions agree that curbing tax competition would be an important causal factor for higher tax rates, the first position suggests that tax increases will only be possible, if tax competition is curbed. According to the second position, tax increases may be possible even under tax competition – at least if countervailing factors (i.e. the domestic driving factors) are sufficiently strong.

¹ While statutory rates were cut, tax base definitions have been broadened. This “tax cut cum base broadening” strategy has been pursued by basically all developed countries over the last three decades.

² While statutory rates were cut, tax base definitions have been broadened. This “tax cut cum base broadening” strategy has been pursued by basically all developed countries over the last three decades.

³ It has analogously been argued for different variants of democracies (Hays 2003) and capitalisms (Swank 2006).

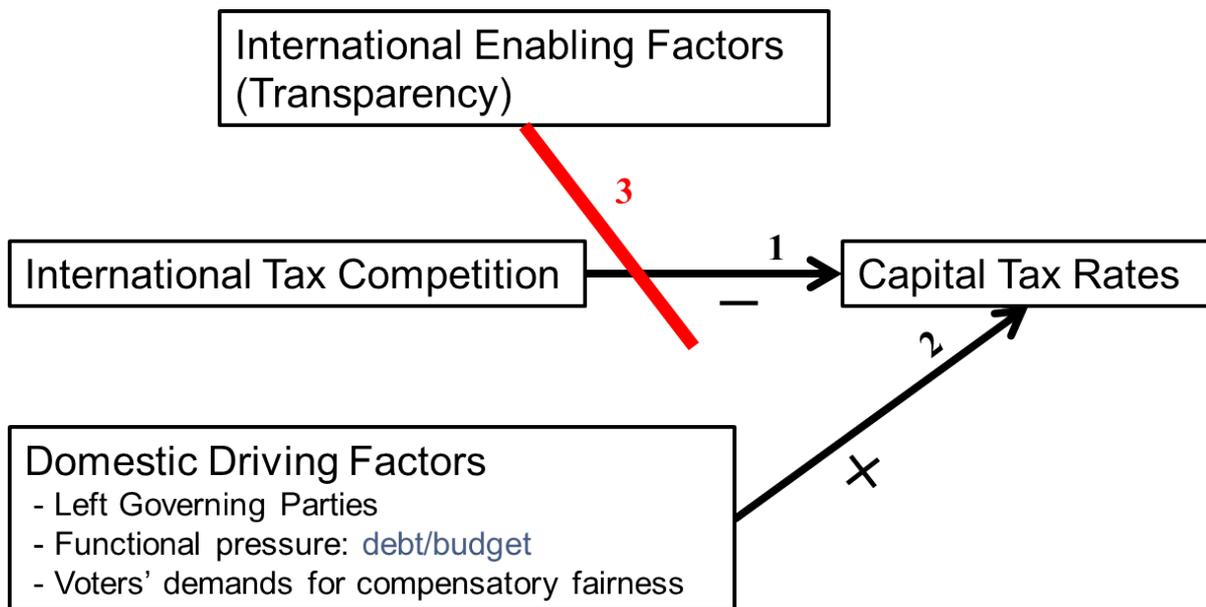
Figure 1: Determinants of Capital Taxation

Figure 1 visualizes the theorized causal relations. International tax competition leads to lower capital tax rates (arrow 1). Domestic factors may lead to higher or lower taxes, depending on which party governs, whether there are budget pressures or not, or in how far voters demand fairness. Since our focus is on the (non-)occurrence of tax increases we formulate conjectures that would lead to higher rates (arrow 2). The arrow 2 effects may or may not depend on whether effective international cooperation intervenes into arrow 1 (arrow 3). According to the first position, international enabling factors are a necessary condition for tax increases and in combination domestic driving factors also sufficient. Only the interaction of favorable domestic factors and transparency will lead to higher tax rates. According to the second position, domestic driving factors on their own may be sufficient conditions. Favorable domestic factors may lead to higher taxes irrespective of whether there is transparency.

On the basis of the previous discussion, we can formulate a set of hypotheses. First, our preferred theoretical specification is that transparency is an important causal factor that plays an enabling role, but needs to be combined with (driving) domestic factors. Tax increases only follow if the two operate in conjunction. Our *interaction-hypotheses* are:

H1: Tax increases on portfolio capital income are more likely under favorable domestic factors but contingent on higher transparency.

H1.1: Tax increases on portfolio capital income are more likely under more leftist government but contingent on higher transparency.

H1.2: Tax increases on portfolio capital income are more likely under higher public debt but contingent on higher transparency.

H1.3: Tax increases on portfolio capital income are more likely under more intense demands of compensatory fairness but contingent on higher transparency.

Second, according to the alternative position, we can formulate the following “*domestic alone*”-hypotheses.

H2: Tax increases on portfolio capital income are more likely under favorable domestic factors.

H2.1: Tax increases on portfolio capital income are more likely under more left government.

H2.2: Tax increases on portfolio capital income are more likely under higher public debt.

H2.3: Tax increases on portfolio capital income are more likely under more intense demands of compensatory fairness.

And finally, to complete the set of hypotheses we formulate the idea that on its own, transparency does not have any effect on tax policy making. This idea is in line with our preferred specification of the interaction-hypotheses. (But keep in mind that one could also formulate the opposite conjecture on other theoretical grounds).

H3: Transparency on its own does not increase the likelihood of higher taxes on portfolio capital income.

Note that the interaction-hypotheses are not necessarily pitted against the “domestic alone”-hypotheses across the board. It may well be the case that individual (sub-)hypotheses of the first and second set are true. For example, it may be the case that parties can only make a difference if transparency is given (i.e. party differences were swamped by globalization, but matter, once tax competition is curbed), all the while budget pressure may have an impact even irrespective of increased transparency. In seeking to explain the observed variance in terms of tax changes we are particularly interested in assessing the relative weight of the explanatory factors. We turn to the empirical test in the next two sections.

4. Method and Data

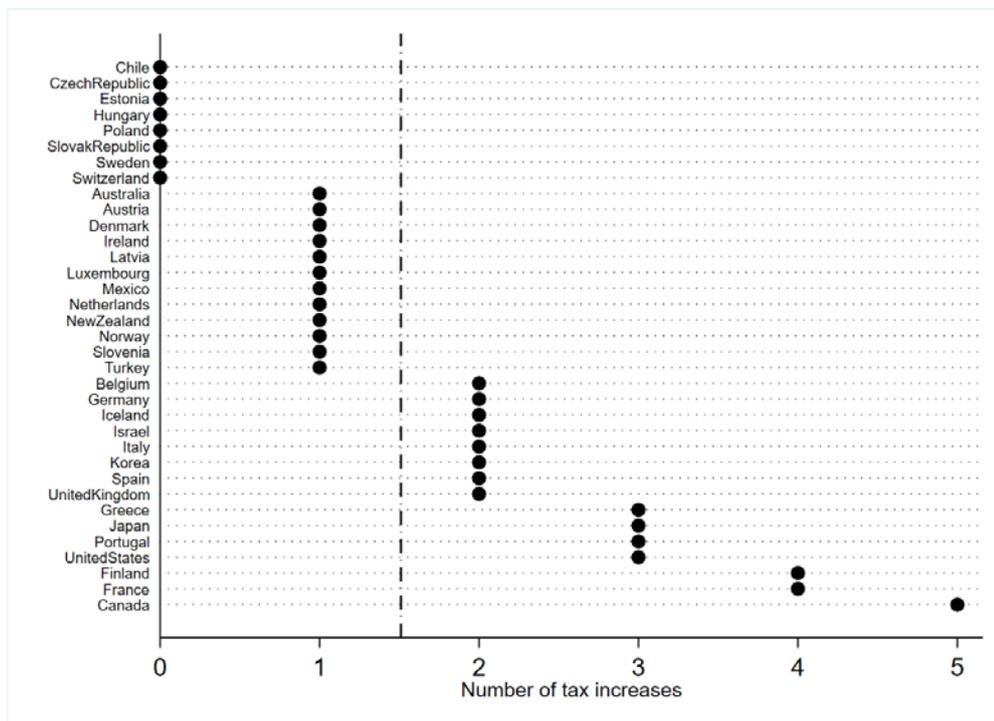
To test our hypotheses about tax policy making, we focus on two different but related kinds of dependent variables. First, we use dividend tax rates as the dependent variable. The explanatory factors discussed above should relate to the level of tax rates across countries and time. For the analysis, we use time-series-cross-section (TSCS) regression analysis. Since, TSCS regression analysis is an established method in our discipline, we abstain from introducing it further.

Second, we are interested in explaining the occurrence of reforms of portfolio capital taxes. To this end, we use dummy variables to indicate tax increases or decreases in a particular year and relate them to our explanatory factors by help of event history models for repeated events. Event-History is often used in medicine for dichotomous data like the occurrence of deaths, but has also been applied in political science or sociology, e.g. to study military coups or the adoption of climate mitigation laws (e.g. Wenzelburger *et al.*, 2014, pp. 164–177). Unlike other statistical methods event history models are well suited to handle right-censored data because they use the non-occurrence of an event as information (e.g. Wenzelburger *et al.*, 2014, pp. 167–169). The aim is to estimate the influence of independent variables on the probability that an event occurs in the identified period (e.g. Cleves *et al.*, 2016). This suits our analysis because we are interested in the occurrence or non-occurrence of tax increases. There are three different event history models- non-parametric, semi-parametric and parametric - which differ in their assumptions on the survival function (e.g. Cleves *et al.*, 2016, p. 91). Non-parametric models do not make any assumptions. Semi-parametric models like the Cox-model parametrize the baseline hazard rate, i.e. the risk of an event occurring (e.g. Cleves *et al.*, 2016, p. 131). Parametric models specify a particular form of the survival function and therefore the hazard-rate (Cleves *et al.*, 2016). For our purposes the semi-parametric model is the right choice. Moreover, Event-History can be divided in models for non-repeating events, like the death of a patient, and repeating events (“multiple failure-time data”), like the adoption of a law or, our case, a tax increase. Previous literature suggests several approaches to analyze repeating events. In choosing the appropriate modeling technique, we have to assess whether the events are equal/unequal and ordered/unordered (e.g. Cleves, 2000). In our case, we have equal and ordered events. They are equal in the

sense that any tax increase or decrease is coded as 1 irrespective of the magnitude of the increase or decrease. They are ordered because the second tax increase cannot occur before the first one. The Anders-Gill-Model is the best approach to analyze such data and thus our model of choice. *“The basic assumption is that all failure types are equal or indistinguishable. The problem then reduces to the analysis of time to first event, time to second event, and so on. Thus, the risk set at time t for event k is all subjects under observation at time t. A major limitation of this approach is that it does not allow more than one event to occur at a given time”* (Cleves, 2000, p. 34). The limitation of the model is not a problem for our data because we measure tax increases or decreases on an annual basis, so that no more than one event can occur each year.

We use a sample of 35 OECD countries from 2008 until 2016 for a total of 314 observations. To proxy increasing taxes on portfolio capital we employ the item “net personal tax” (table II.4) from the OECD tax database (OECD 2017a), which “shows the net top statutory rate to be paid at the shareholder level, taking account of all types of reliefs and gross-up provisions at the shareholder level”. This is a good proxy for the broader category of portfolio capital in our case because the large majority of dividend income is received by sophisticated investors we can expect to closely observe market developments. Such investors are more likely to seize opportunities for tax arbitrage than ordinary savers receiving interest income. Tax competition for dividends should therefore be particularly pronounced and tax increases should prima facie be less likely. For the TSCS regressions we use the rates; and for the event history analysis we construct two binary variables, one for tax increases, which tells us whether a country has raised taxes compared to the previous year (1) or not (0), and one for tax decreases, which tells us whether a country has decreased taxes compared to the previous year (1) or not (0). In total, 27 out of 35 countries have raised their taxes on dividends in the given period. Figure 2 depicts the number of tax increases per country. Chile, Czech Republic, Estonia, Hungary, Poland, Slovak Republic, Sweden and Switzerland did not increase their taxes. In contrast Finland and France have increased dividend taxes four times, Canada even five times. In total 53, tax increases occur in the given period. On average, countries raised their taxes 1.5 times.

Figure 2: Tax increases per country



As discussed in the theory part, there are three main factors on the domestic level which influence tax policy choices. To cover the partisan effect, we use cabinet composition of a country as a categorical variable (from 1 until 5). While the value 1 indicates that there is a dominance of a right party, the value 5 indicates a left party dominance in the cabinet. This indicator is taken from the Comparative Political Data Set (CPDS) (Armingeon, et al. 2017). As CPDS is only available until 2015, we supplemented the coding for the year 2016 and 2017. The functional pressure argument is operationalized by the general government gross financial liabilities as a percentage of a country's GDP, or in short, the level of debt. Data source is OECD (2017b). The last domestic factor is the effect of compensatory fairness, or more precisely, voters' demands for compensatory fairness. Like others we assume that in our period of investigation compensatory arguments are linked with the occurrence of financial crises (see e.g. Limberg 2018). We thus use the binary indicator by Laeven and Valencia (2013). The indicator takes on the value 1 if at least two of the following six criteria are met: Extensive liquidity support, bank restructuring gross costs, significant bank nationalizations, significant guarantees, significant asset purchases and deposit freezes or bank holidays. Otherwise it is 0.

One may question that the financial crisis indicator is a good proxy for compensatory fairness demands. Is it not more likely that financial crises cause tax increases through other channels than voters' demands for fairness, i.e. an increased burden on capital owners as the perceived beneficiaries of unregulated markets? In particular, as briefly discussed in the theory part, financial crises may create functional pressures for more tax revenue, e.g. if the crisis forced governments to spend public funds on the recapitalization of failing banks or for economic policies to fight the recession following a financial crisis. We agree that this is plausible. However, since our model includes public debt, this variable should pick up any functional pressure caused by financial crises. We are thus confident that the crisis indicator can pick up the effect of compensatory fairness in response to financial crises.

Our first set of hypotheses conjectures that the effects of the domestic factors are conditioned by the level of international financial transparency. To cover the influence of transparency on domestic tax reforms, we first identify the immediate investment environment of our OECD countries by means of a network analysis. We construct a valued diagraph of portfolio capital flows. Within this diagraph, we separate the ego-networks of the 35 OECD countries and perform a core-periphery model for each. We can thus identify strong ties between actors within these networks, and therefore the immediate investment environment of each OECD country (a more detailed description of the network analysis can be found in the online appendix). All our countries have an investment environment of between 5 to 8 countries. Second, we construct an indicator to capture the financial transparency of the respective investment environments. For this, we look at different kinds of agreements that provide for exchange of financial account information. We classified them by constructing a four-step-scale (from 0 to 1) to measure their effectiveness. We rated agreements on three dimensions: (a) rules of information exchange: automatic vs. on request (or none at all), (b) how easily the agreement can be bypassed by simply shifting to other kinds of portfolio capital; (c) how easily it can be bypassed by intermitting a corporate veil vs. rules that have look-through provisions. The absence of any agreement or information on request only is coded 0. Automatic exchange, but with both exclusions of income types and no look through provisions, like in the EU STD until 2014 is coded 0.33. The US QI program, which lacks look-through provisions but features a broad definition of portfolio income covered, is coded 0.66. And finally, automatic exchange and a broad definition of incomes covered, like in the AEI CRS, is coded 1. The value for each country's investment environment is the average of these values. We encoded all countries within the investment environments whether they are part of such an agreement or not. The transparency of an investment environment is calculated as the mean of all countries within this environment. Thus, we have a metric indicator of the transparency of the investment environment of all 35 OECD countries.

In addition to these variables, we include the total population of a country as well as GDP-growth as control variables. For both the data source is OECD (2017b). A summary of the dependent and independent variables is given in table 1.

Table 1: Our Variables

Theoretical Construct	Indicator	Source
Tax increases on portfolio	Overall statutory tax rate on dividend income	OECD 2017a
Compensatory fairness	Financial Crisis	Laeven and Valencia, 2013; IMF, 2018c, 2018b
Financial Transparency	Financial Transparency (own calculation)	IMF, 2018a
Partisan Effect	Government Composition	Armingeon, et al. 2017
Government gross financial liabilities	Level of Debt as percent of GDP	OECD 2017b
Total Population	Total Population in millions	OECD 2017b
Economic growth	GDP growth	OECD 2017b

5. Results and Discussion

5.1 Panel Regressions

We first estimate a time-series cross-section (TSCS) regression model dividend tax rates as dependent variable. Table 2 shows the results of several fixed effects TSCS models. The dependent variable is the dividend tax rate. All independent variables are lagged by one year. We do not estimate panel-corrected standard errors (PCSE) with a lagged dependent variable because our panels are relatively short (9 years per country, on average). PCSE were developed for samples with a longer T-dimension (Beck and Katz 1995) and including both a lag of the dependent variable and fixed effects biases the estimation of the coefficients when the panels are short (Kiviet 1995). Thus, we estimate cluster-robust standard errors, which are robust to serially correlated residuals.

Table 2: Time-series cross-section models

	(1)	(2)	(3)
Financial crisis	-0.44 (0.74)	0.53 (1.82)	0.04 (1.68)
Financial transparency	1.10 (1.01)	3.62 (2.80)	2.01 (2.41)
Debt	0.11*** (0.02)	0.11*** (0.02)	0.10*** (0.02)
Government composition			
2	-1.40** (0.65)	-0.98 (0.77)	-0.97 (0.84)
3	0.95 (0.72)	2.59*** (0.91)	2.60*** (0.92)
4	4.56** (2.06)	7.04** (2.80)	6.82** (2.58)
5	2.28* (1.27)	3.21* (1.76)	3.43* (1.76)
GDP Growth			-9.17 (8.82)
Total population			28.49* (15.59)
Crisis * Transparency		-4.70 (7.10)	-3.40 (6.59)
Debt * Transparency		-0.001 (0.02)	0.01 (0.02)
Government composition * Transparency			
2		-1.92 (1.91)	-1.65 (1.83)
3		-5.14** (1.92)	-5.39*** (1.82)
4		-9.15 (5.48)	-9.47* (5.01)
5		-2.40 (2.78)	-3.07 (2.72)
Constant	13.67*** (1.60)	12.97*** (1.67)	-452.53* (255.37)
Observations	313	313	313
R-squared	0.32	0.36	0.39
Fixed effects	Yes	Yes	Yes
Number of countries	35	35	35

Note: *** $p < .01$. ** $p < .05$. * $p < .1$. Standard errors in parantheses.

Model 1 is our baseline model. Neither financial crises nor financial transparency have a significant effect on the dividend tax rate in the following year. Debt is highly significant. A 1 percentage point increase in debt is associated with a 0.11 percentage point higher dividend tax rate. Furthermore, the model shows that the governmental composition is influential. Left-wing governments are associated with higher dividend tax rates in comparison to right-wing governments. (Because the effect is not linear, we use dummies of the variable's five categories in the regressions).

Models 2 and 3 confirm these results. In line with our preferred specification, both models introduce interaction effects between financial transparency and debt, financial crisis and government composition.

Only two interaction effects of the governmental composition dummies are significant. This indicates a substantive difference in the effect of transparency for different governments, but a calculation of marginal effects shows that the financial transparency variable is not significant for any of the five categories of government composition.

Model 3 introduces lagged GDP growth and total population as covariates. The results do not change.

5.2 Event History Analyses

We look at tax increases and decreases in separate sets of event history analyses. First, tables 3 to 5 show the results of different cox-models for the event of a tax increase. As suggested by Cleves (2000) we include robust standard errors for the models.

Table 3: Cox-Model

Outcome Tax increase	Cox-Model			
	Haz. Ratio Est.	<i>RB SE</i>	<i>Z</i>	<i>P> z </i>
Financial Crisis	1.511	0.76	-0.82	0.411
Financial Transparency	0.665	0.65	-0.41	0.679
Debt	1.011	0.00	5.05***	0.000
Government Composition				
2	0.375	0.19	-1.92*	0.055
3	1.150	0.36	0.44	0.657
4	0.590	0.30	-1.04	0.296
5	0.917	0.48	-0.17	0.868

Note. Haz. Ratio = Hazard Ratio from Event History Model. Est. = Estimate. *** $p < .01$. ** $p < .05$. * $p < .1$.

Table 4: Cox-Model with interaction effects

Outcome Tax increase	Cox-Model			
	Haz. Ratio Est.	<i>RB SE</i>	<i>Z</i>	<i>P> z </i>
Financial Crisis	0.832	0.46	-0.33	0.740
Financial Transparency	0.295	0.41	-0.88	0.381
Debt	1.011	0.00	3.28***	0.001
Government Composition				
2	0.435	0.40	-0.90	0.367
3	1.501	0.91	0.67	0.503
4	1.504	1.25	0.49	0.623
5	1.361	1.08	0.39	0.697
Financial Crisis* Financial Transparency	16.252	18.22	2.49**	0.013
Financial Transparency* Debt	1.004	0.01	0.60	0.547
Financial Transparency* Government Composition				
2	0.943	2.11	-0.03	0.979
3	0.655	0.73	-0.38	0.705
4	0.062	0.1	-1.76**	0.079
5	0.450	0.88	-0.41	0.683

Note. Haz. Ratio = Hazard Ratio from Event History Model. Est. = Estimate. *** $p < .01$. ** $p < .05$. * $p < .1$.

Table 5: Cox-Model with control variables and interactions

Outcome Tax increase	Cox-Model			
	Haz. Ratio Est.	<i>RB SE</i>	<i>Z</i>	<i>P> z </i>
Financial Crisis	0.803	0.45	-0.39	0.695
Financial Transparency	0.266	0.34	-1.02	0.307
Debt	1.007	0.00	2.58**	0.010
GDP Growth	1.22*10 ⁻⁷	7.13*10 ⁻⁷	-2.72***	0.006
Total Population	1.083	0.08	1.04	0.298
Government Composition				
2	0.417	0.42	-0.87	0.385
3	1.337	0.83	0.47	0.640
4	1.104	0.96	0.11	0.909
5	1.050	0.98	0.05	0.958
Financial Crisis* Financial Transparency	9.047	11.28	1.77*	0.077
Financial Transparency* Debt	1.005	0.01	0.75	0.456
Financial Transparency* Government Composition				
2	1.141	2.79	0.05	0.957
3	0.700	0.77	-0.32	0.748
4	0.077	0.13	-1.57	0.115
5	0.518	0.98	0.30	0.767

Note. Haz. Ratio = Hazard Ratio from Event History Model. Est. = Estimate. *** $p < .01$. ** $p < .05$. * $p < .1$.

In addition to the given covariates of the first model - financial crisis, financial transparency, government composition and debt - we include interaction effects in the second model. According to our first set of hypotheses the effects of the domestic factors are contingent on the level of international financial transparency; thus, we include the interaction effects of financial transparency with the other domestic factors.

The first Cox-model (table 3) shows that, except for debt, the effects of the domestic factors are not significant on their own. The estimated hazard ratio of debt is greater than 1, i.e. if debt increases by one unit the probability of a tax raise increases by 1.1 percent. However, demands for compensatory fairness (financial crises) or left government do not increase the probability of a tax increase. Likewise, and in line with our theoretical framework, the international factor financial transparency on its own does not have a significant effect on the probability of tax increases. The second model shows that the interaction term of financial crisis and financial transparency is significant at the 5% level. This means that demands of compensatory fairness increase the probability of tax increases the more transparent the investment environment is.

The second and third interaction terms are insignificant. Neither the composition of the government nor the debt level interacted with financial transparency have an effect on the probability for the occurrence of a tax increase

In order to assess the robustness of these results we employ two additional models (tables 4 and 5). The third cox-model includes the total population and the GDP growth as control variables. The model shows that the effect of debt is still significant. The same holds for the interaction term of transparency and compensatory fairness. Added to this we find a negative effect of GDP growth on the probability of a tax increase, which is significant at the 1% level. If there is GDP growth in a country a tax increase on portfolio capital is less likely.

Second, we estimate two cox-models for the occurrence of a tax decrease (table 6); the first one does not include control variables, while the second one does. Given the TSCS results and the results of the cox model for tax increases, one could expect that at least debt and government composition have an impact on the probability of a tax decrease. However both models shows that debt has not a significant impact, but if the government composition change from a right wing government to a more liberal government the probability of a tax decrease declining. The models show a similar but not significant effect for left wing governments. Additionally, the second model shows that population of a country has a positive impact, thus the larger countries has a higher chance to decrease their taxes on portfolio capital, nevertheless the effect is only significant at the 10% level. For the other factors - financial crisis, financial transparency and GDP growth - we could not find significant effects.

Table 6: Cox-Models - tax decrease

Outcome Tax increase	Cox-Model			
	Haz. Ratio Est.	<i>RB SE</i>	<i>Z</i>	<i>P> z </i>
Financial Crisis	1.093	0.70	0.14	0.889
Financial Transparency	2.970	4.55	0.71	0.477
Debt	0.998	0.06	-0.31	0.760
Government Composition				
2	0.228	0.17	-2.03**	0.042
3	0.093	0.09	-2.41**	0.016
4	0.312	0.31	-1.17	0.244
5	0.362	0.26	-1.43	0.153

Outcome Tax increase	Cox-Model			
	Haz. Ratio Est.	<i>RB SE</i>	<i>Z</i>	<i>P> z </i>
Financial Crisis	1.311	0.87	0.41	0.683
Financial Transparency	2.230	1.84	0.97	0.330
Debt	0.994	0.01	-0.81	0.418
GDP Growth	4.659	35.27	0.20	0.839
Total Population	1.381	0.25	1.78*	0.076
Government Composition				
2	0.322	0.23	-1.57	0.117
3	0.132	0.14	-1.97**	0.049
4	0.404	0.38	-0.96	0.335
5	0.412	0.29	-1.24	0.214

Overall, our empirical results suggest that, in line with our preferred conjecture, there is no effect of transparency on its own on either tax rates or the probability of tax increases, i.e. we find empirical evidence that supports H3. Likewise, there is empirical support for H2.2 according to which the functional pressures of high debt (on their own) lead to higher tax rates and increase the probability of tax reform events. With respect to the influence of governing parties on tax policies we can conclude that government composition on its own has a small effect in the expected direction.

With respect to our preferred interaction-hypotheses the results are mixed. In the panel regressions with tax rates as dependent variable, we do not obtain any significant effects, except for the interaction of governing party and transparency. Interestingly, the effect of government composition is weakened if interacted with transparency. This suggests that under increased transparency, while left parties are still more likely to raise taxes, even some right parties cease the opportunity to raise taxes. In the event history analyses, we find

support for a significant and very substantial effect of the interaction between transparency and financial crisis as conjectured in H1.3. This seems to lend support to the notion that demands for compensatory fairness in the form higher taxes on capital after the financial crisis drove tax increases.

6. Conclusion

In this paper, we have argued that increased tax transparency is an important causal factor of increasing tax rates. Progress on tax information exchange and thus increased transparency is an *enabling* condition for higher tax rates on portfolio capital because it curbs tax competition among states for portfolio capital. We hypothesize that in combination with domestic *driving* factors like left party government, functional pressures in the form of public debt levels and demands for compensatory fairness increased transparency should lead to higher tax rates. On the basis of panel regressions and event history analyses on dividend tax rates and reform events in all OECD countries in the period 2008 to 2017 we find some support for this. Increased transparency in interaction with compensatory fairness demands increased the likelihood of tax increases substantially and significantly. Functional pressures in terms of public debt lead to higher tax rates even irrespective of transparency.

While these results lend modest initial support to our central argument that transparency plays an important role in the observed increases of capital taxes in developed countries, we intend to refine the analysis further to increase the robustness of the findings. For the next iteration of the empirical analysis and further revision of the paper, we intend to introduce the following changes:

First, we aim to more directly test for the hypothesized effect of transparency to curb tax competition. If transparency has this effect then countries should be less sensitive in their own tax policy to tax policies in other countries. One idea is to introduce a variable that measures the tax level in other countries. Another idea is to introduce an interaction term between transparency and tax rates.

Second, we think that our indicator for transparency should be refined. The idea remains to qualitatively differentiate between automatic information exchange and exchange on request. But we will introduce a finer differentiation.

7. References

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