Summary:

Tax competition, tax reforms, government spending, income redistribution and income inequality are mutually dependent. Yet, most empirical tests of the globalization hypotheses have mostly studied relatively simple causal mechanisms without paying full attention to the complexities of the underlying globalization theories and the mutual causal links which the early globalization literature – plausibly, we believe – has predicted. Applying a simultaneous instrumental equation approach, this paper is (to our knowledge) the first which analyzes the globalization theory rather than single causal mechanism. We find that …

As a consequence, there is some support for the causal mechanisms suggested by the Dani Rodrik, Fritz Scharpf and other proponents of the early globalization literature. Yet, we also show that the effects remain relatively weak. Doom consequences such as increasing social conflict, political instability, and the reemergence of protectionism are thus not very likely.
Tax Competition and the Welfare State: A Simultaneous Equation Model Approach

1. Introduction

The international integration of financial market and the abolition of capital controls conflict with governments’ ability to tax mobile capital. If governments do not offer competitively low effective tax rates, corporations flee the country and settle in a low tax haven. As a consequence, governments suffer from declining revenues and a growing inability to provide public goods sought after by the voters. If, to the contrary, the government lowers capital taxation to competitively low levels other countries will enter into an undercutting competition. Eventually, capital taxation proves to become impossible and governments partly lose their ability to use taxation as an instrument to redistribute income and to provide a dense net of social security transfers. Income inequality grows and social tensions arise which jeopardize political stability in the long run (Rodrik 1997; Scharpf 1991). These, in a nutshell, are the main predictions of the early globalization literature.

We argue that capital mobility and tax competition do not cause a convergence of economic policies. Thus, the political and social consequences of capital taxation are less severe than aforementioned predictions suggest. In slightly more technical terms: tax competition gives rise to a separating equilibrium – a situation in which different actors choose different strategies. Small open economies with low levels of government spending and the option to finance government spending through deficits were likely to win tax competition. Adjustment strategies are largely determined by the a priori probability of winning tax competition and thus the political and socio-economic status quo ante. Accordingly, not all governments participate in tax competition. A significant number of governments just deal with the adverse consequences of losing tax competition: the severe reduction in revenues from capital taxation.
Our theory is much more in line with the empirical evidence of globalization and tax competition than the doom scenarios scholars boldly painted less than ten years ago. On the one hand, researchers found support for tax competition (literature), reduction in capital tax rates\(^1\) and increases in labor taxation,\(^2\) spending cuts,\(^3\) declining income redistribution,\(^4\) and rising income inequality.\(^5\) On the other hand, however, the social welfare state persists,\(^6\) governments still tax capital owners and corporations, and while redistribution has declined and income inequality has risen in some countries, this trend was by no means common to all OECD countries and it definitively has not yet brought about a serious upsurge in political instability.

Our contribution to this literature is at least twofold: First, we suggest an integrated explanation for a) the absence of a race to the bottom in capital taxation, b) the increase in labor taxation, c) the diverse fiscal consequences of tax competition, and d) the conditional social consequences of tax competition and welfare state reforms. Second, we test our explanation in a simultaneous equation model, which accounts for the difficult endogeneity and simultaneity problems caused by the interdependence of tax competition, tax reforms, government spending, income redistribution and income inequality. We therefore analyze tax competition, government spending, redistribution and income inequality in perspective. We use a simultaneous equation modeling approach to analyze how governments adjust effective

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\(^2\) Plümper et al. (2007).

\(^3\) See Garrett and Mitchell (200x,). However, some authors argue that government spending remained by-and-large unaffected by globalization (Tytell and Wei 2004; Plümper, Troeger and Manow 2005).

\(^4\) While Mahler (2004) finds only „scattered relationshipss“ between international economic integration and income redistribution, Ganghof and Genschel (2008: 58) maintain that “tax competition (…) has important indirect effects” and “can constrain national redistribution in a major way”.

\(^5\) Goesling (2001), Kentor (2001), Alderson and Nielson (2002), and Lee et al. (2007).

capital and labor tax rates in response to intensified capital mobility and how changes in the countries' tax systems affect income redistribution and income inequality.

Our findings suggest tax competition leads to a shift in government revenues from capital to labor taxation. The political response to tax competition varies with the level of government spending and social transfers, with debt and with the electoral system. Social welfare states prefer to maintain taxation high to keep government consumption and social transfers stable. Liberal market economies hold effective capital tax rates about constant, moderately move labor taxes upwards, and keep spending either stable or reduce social transfers moderately. These adjustments isolate income inequality in coordinated market economies from the pressures of tax competition. However, inequality grows when liberal market economies reduce capital tax rates or increase labor tax rates.

2. Tax Competition, Government Spending and Income Redistribution

The abolition of capital controls and the liberalization of trade initiated tax competition. Facing lesser and lesser barriers to capital flows and trade, corporations sliced-up the value chain (Krugman 1996) and diversified production locations. Exploiting differences in productivity and production costs and engaging in tax arbitrage, corporations could improve their profitability and competitiveness. To understand the logic of tax competition, however, it is important to note that corporations do not have to shift production facilities to gain from effective tax rate differences across countries. It is sufficient to establish a holding in a low tax country. Along similar lines, capital-owners do not necessarily need to travel to low-tax countries to hide income from tax revenue authorities. Accordingly, countries may attract some capital inflow if they offer competitively low tax levels. Yet, if a single country significantly reduces its relevant tax rates to attract mobile foreign capital stocks, it inevitably creates the potential for a chain reaction, because governments at least seek to prevent capital from herding out of their country. According to Altshuler and Goodspeed (2002: 9), the US tax reform act of 1986, which significantly lowered the US statutory tax rate, triggered the era of corporate tax competition. Since then,
corporations became ever more sensitive to differences in corporate taxes (Altshuler et al. 2001).

Yet, when capital is mobile, tax systems in different jurisdictions are not independent of one another. If one country is better off if it lowers corporate tax rates, other countries may follow suit. Eventually an undercutting competition emerges, and effective capital tax rates are spiraling down to ever lower levels until they approach zero.

However, the often times predicted ‘race to the bottom’ has not yet emerged and it is also not very likely to emerge any time soon. The recent literature on tax competition explains the apparent gap between prediction and observation by domestic political constraints. Implicitly, the assumption is that all governments want to enter into tax competition and compete for mobile tax bases, but some governments are less constraint than others. These explanations usually assert that governments do not necessarily have full policy autonomy. To the contrary, some governments are more constraint than others. Constitutional courts, state autonomy and second chambers may also restrict the governments’ ability to fully participate in tax competition. These ‘veto players’ may thus reduce the overall competitive pressure and keep tax rates in countries with autonomous governments higher than they otherwise would be (Hallerberg and Basinger 1998). In addition, a country’s electoral system also influences its tax mix. Consensus democracies seem to have having lower capital tax rates than majoritarian democracies because their political institutions “constrain political majorities from choosing transfer maximizing capital tax rates” (Hays 2008: 136). Finally, the absence of full capital mobility, size differences across open nations, and budget constraints also prevent governments from competitively reducing capital tax rates (Plümper et al. 2007).

Perhaps even more importantly, the race to the bottom argument in international tax competition depends on a set of largely implausible assumptions. If capital is not fully mobile, the equilibrium outcome of tax competition may deviate from zero capital taxation. If countries are not homogeneous, the countries’ optimal response strategies will not be identical in equilibrium. Most importantly, changing these assumptions – which we will do in a few
simple steps – not only changes the predictions on optimal political responses, but also on the prospects for a survival of the welfare state, the future of the interventionist and redistributive government, and the prediction on the development of income inequality.

2.1. Imperfectly Mobile Capital and the Political Menu of Choice for Revenue-dependent Governments

The more corporations and capital respond to differences in effective tax rates by shifting assets, the larger the incentive for governments to compete for the internationally mobile capital base. In the late 1980s and early 90s more and more governments engaged in international tax competition, which drove up revenue losses from capital taxation in countries maintaining relatively high tax rates. In response, tax competition became fiercer since governments had to respond to declining tax revenues. At latest at the end of the 80s, governments had to find a political answer to the budgetary pressures imposed by international tax competition.

Contrary to common perceptions, not all governments responded by lowering capital tax rates. Since countries differ in size, the share of mobile tax bases to total tax bases, government’s dependence on revenues from capital taxation, the voters’ position towards distributive justice, and broadly defined their socio-economic and political conditions, the response of governments varied remarkably. Given this large heterogeneity of countries, tax competition would have caused a race to the bottom if but only if capital would be fully mobile. Under this condition a country implementing an effective tax rate higher than the lowest available effective tax rate suffered a complete loss of capital. Revenues from capital taxation rapidly approached zero.

Yet, capital is not fully mobile – not even if capital controls are absent. Some corporations operate in sectors that produce non-tradable goods and services, other corporations are too small to establish a holding in a low tax country such as Ireland or to outsource parts of the production to low tax countries. Therefore, countries will maintain a taxable capital stock even if they implement higher effective capital tax rates than other countries.
Assuming imperfectly mobile capital bases changes the theoretical logic of tax competition. Rather than having to implement competitively low tax rates governments can now stabilize revenues from capital taxation by raising effective capital tax rates. If they do so, the capital base declines, but higher tax rates may compensate for the loss in the country’s capital base. Thus, tax competition does not necessarily bring about a downward spiral in government spending. Indeed, the tax competition and globalization literatures have more or less implicitly argued that all domestic factors which gave rise to the sharp increase in government spending and explain the huge variation in spending levels – left governments, the aging of the society, trade openness and a proportional electoral system to mention just a few – lost importance, because capital mobility and tax competition coerce governments to compete for mobile capital by offering competitively low capital tax rates (LITERATURE).

The contrary should be the case when our assumptions hold and capital remains imperfectly mobile and some governments are more constraint than others. Our argument suggests that factors driving the rise of the welfare state – alongside country size – will also influence the governments’ choice of the best response to other countries reducing effective capital tax rates. In fact, high levels of government spending provide a crucial obstacle to participating in tax competition. Everything else being equal, countries with a large share of government consumption and social security transfers are least likely to be able to reduce tax rates to competitively low levels.

Countries being unable to attract internationally mobile capital bases to raise revenues, have at least four alternatives to lowering effective capital tax rates and government spending:

− an increase in the effective capital tax rates to stabilize revenue from capital taxation despite a declining domestic tax base,

− an increase in the effective labor taxation to compensate for the declining revenue from capital taxation, and

− growing deficits to finance public budgets, and

− higher consumption taxes (VAT).
Governments will thus implement competitively low effective capital tax rates when their country has a fair chance of becoming one of the winners of tax competition – because under this condition the tax base effect may dominate the tax rate effect so that revenue from capital taxation increases – or when the consequences of reducing government spending are less harmful than the consequences of higher tax rates or deficits. With the possible exception of these winners, governments are likely to choose a combination of rising effective tax rates on immobile tax bases, deficit spending and budget cuts.

Accordingly, governments facing tax competition will not respond identical and probably not even similar. Rather, a country’s ability to compete for mobile capital determine political responses to tax competition. This ability is not identical across OECD countries and varies with the socio-economic and the institutional conditions prevalent in the countries when the abolition of capital controls and tax reforms in the US triggered the first round of tax competition in the mid 1980s.

2.2. Separating Equilibria in International Tax Competition: A Typology

Small liberal market economies had all advantages on their side: they could reduce effective capital tax rates to competitively low levels without having to muster unbearable adjustment costs. On the other hand, large welfare states would have had to reduce government spending significantly or drastically raise VAT and labor tax rates in order to be able to implement similarly low capital tax rates. Facing an unleveled competition, governments in large welfare states were better off if they did not compete with more competitive countries. Accordingly, their governments sought more suitable strategies. When unequal countries compete for mobile tax bases, the emergence of different adjustment strategies becomes likely.

Looking at the politics of tax competition from an empirical angle, we broadly distinguish three adjustment strategies:

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Note that Plümper et al. (2007) have shown that separating equilibria emerge even when countries are identical.
The most competitive countries – small *liberal market economies* with a lean public sector – reduce marginal corporate tax rates, stabilize effective capital taxation at low levels, and eventually become capital importers. Revenues from the taxation of capital increase despite lower capital tax rates. Governments win some degrees of freedom to either reduce labor taxes or to boost government spending. This category includes Ireland, Switzerland and Luxemburg. For these small countries, the tax base effect is larger than the tax rate effect so that governments in these countries could stabilize government consumption and social security transfers at low levels and significantly reduce public debt.

Larger *liberal market economies* with low social security transfers such as the USA, Canada, and the UK repeatedly enter into tax competition but fail to reduce effective capital tax rates to competitively low levels. Governments in these countries largely reduce marginal tax rates on capital, hold effective capital tax rates stable at relatively high levels and manage to keep labor taxes relatively low. Yet, these countries do not import enough capital to keep revenue stable. Governments therefore cut spending and social transfers (despite initially low levels) and allow for higher deficits and public debt.

Governments in *coordinated market economies* are not able to aggressively enter into international tax competition. They cannot credibly lower capital tax rates to a level which other governments are unable to undercut. Lacking an alternative, governments significantly raise both effective capital tax rates and effective labor taxation. By doing so, the coordinated market economies stabilize or even increase government consumption and social security transfers. This partly becomes necessary to deal with rising labor costs caused by higher labor taxes and social security transfers. In many countries, the policy of using the welfare state as band-aid for the welfare state’s lack of competitiveness in international tax competition was

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8 Among these larger liberal market economies, the UK had the worst initial conditions. Yet, the first Thatcher government brought the country closer in line with the other Anglo-Saxon liberal market economies.
deficit-financed. Table 1 summarizes tax and fiscal policies for the three ideal-type country groups in the first half of the 1980s and the second half of the 1990s.

<table>
<thead>
<tr>
<th></th>
<th>small liberal market economies</th>
<th>large liberal market economies</th>
<th>coordinated market economies</th>
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<td></td>
<td>80-85</td>
<td>95-99</td>
<td>80-85</td>
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<tr>
<td>effective capital taxation</td>
<td>15.8</td>
<td>18.7</td>
<td>33.6</td>
</tr>
<tr>
<td>marginal corporate tax rate</td>
<td>29.5</td>
<td>22.7</td>
<td>45.0</td>
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<tr>
<td>effective labor tax rate</td>
<td>28.0</td>
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<td>31.1</td>
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<td>government consumption</td>
<td>15.4</td>
<td>13.2</td>
<td>20.1</td>
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<tr>
<td>social security transfers</td>
<td>14.2</td>
<td>11.2</td>
<td>11.8</td>
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<tr>
<td>Debt</td>
<td>50.9</td>
<td>41.1</td>
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Table 1: Tax and Fiscal Policies: A Comparison over Time and Across Country Groups

We find that effective capital taxation continued to grow despite the emergence of large-scale capital mobility and the reduction in marginal tax rates in all country groups. However, proponents of tax competition tend to state that tax competition capped the upward trend in government spending. In their view, tax rates and spending levels would be much higher today without tax competition. This argument, of course, transmogrifies tax competition from reality into a mere counterfactual.

Nevertheless, with different adjustment strategies determined by largely differing initial conditions, a race to the bottom in capital taxation never became likely. Why should the government of a country which is unlikely to win tax competition reduce effective capital taxation to levels which are suitable for Ireland and Switzerland? Why should Scandinavian countries that already have high labor costs raise labor taxes even further to gain leverage for reducing capital taxation, which historically has been relatively moderate without leading to much capital inflows?

2.3. Determinants of the Variation in Adjustment Strategies

We argue that governments respond in various different ways to tax competition. The countries’ institutional status quo ex ante and its socio-economic initial conditions determined the political adjustment to tax competition. We suggest the following major determinants of adjustment strategies:
First, governments’ responses to tax competition depend on the size of the country. Governments in small countries can lower capital tax rates more aggressively because the taxation of capital inflow will compensate for the reduction in revenues from taxing domestic capital bases. Thus, while small liberal countries can reduce effective tax rates and enjoy a significant growth of capital tax revenues, large liberal economies and corporatist economies do not have this option – at least not unless they completely abandon the dense net of social welfare and reduce government consumption.

Second, governments in welfare states face intense public opposition to severe cuts in government spending in general and social security transfers in particular. In addition, in order to be able to compete with small liberal countries these countries would have to drastically reduce effective capital tax rates. Insignificant welfare state reforms were not enough to allow implementing competitively low tax rates. In social welfare states, retrenchment either would have had to be drastic or would have remained almost irrelevant.

Third, countries with more flexible labor markets and with lower levels of income redistribution could cut capital taxes more aggressively once capital controls and barriers to trade were abandoned. Adjustment strategies depend on labor market institutions and unemployment. Countries in which either labor market institutions are weak (USA, UK, Ireland) or unemployment absent (Switzerland, Japan) found it comparably easy to cope with the pressures of tax competition on public households. These countries could actually shift a larger share of revenues to the taxation of labor and consumption. Countries with less flexible labor markets could not easily increase labor taxes because social security transfers (Continental Europe) or high labor taxes (Scandinavia) already made labor expensive. Further hikes in labor costs threatened to further reduce the demand for labor, thereby possible giving rise to higher unemployment. In this respect, union density not only contributed to a large welfare state, union density also provided an important obstacle to welfare state retrenchment. Not all governments (to say the least) would go as far as the Tory government in the UK to
reduce the power of unions and in turn to win political autonomy for less and more efficient taxation and government spending.

Fourth, governments which were able to compensate losses in capital tax revenues by allowing more deficit spending could more easily reduce effective capital tax rates, thereby competing more aggressively for mobile tax bases. Already highly indebted countries which could not use deficits to compensate for declining capital tax revenues (such as Belgium and Italy) came under pressure. In these countries, both capital and labor already had to carry high tax burdens. Further increases were costly.⁹

Fifth, parties have different voter clienteles. Since parties seek to satisfy the preferences of their main clientele, different parties implement different tax policies (Basinger and Hallerberg 2004; Oatley 1999). Left governments respond more strongly to wage earners’ preferences and try to maintain a large welfare state (Garrett 1995, Garrett and Mitchell 2001). Thus, left governments should prefer relatively high capital tax rates.

Sixth, while the influence of majoritarian systems on capital tax rates remains contested (Hays 2008), we argue that proportional systems bring about coalition governments which spend significantly more than their counterparts in majoritarian systems. Therefore, the need to raise large revenues is politically more pressing in proportional systems, which ceteris paribus leads to higher effective capital and labor tax rates. Critics of this hypothesis doubt the validity of the ceteris paribus assumption. They argue that the median-voter, who is a wage earner, has an interest in shifting the tax burden needed to maintain government revenues to capital. At the same time, the median-voter is more important in majoritarian systems and thus the capital tax-rate in these systems is higher. However, this argument remains

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⁹ At the same time, the European monetary integration and the Maastricht criteria added pressure on these governments. Seeing the necessity to be not left behind, they had to reduce budget deficits and public debts. For these countries, the consolidation of public households became arguably more important than to enter into a competition with low tax countries that they would almost certainly lose.
unconvincing, because the pivotal in proportional systems will also be a wage-earner and will therefore prefer capital to labor taxes.

2.4. Rethinking the Fiscal Consequences of Tax Competition

Ceteris paribus, capital mobility renders capital taxation more costly – especially in relation to labor taxation (Plümper et al. 2007). Thus, when capital mobility grows faster than labor mobility, capital taxation declines and labor taxation increases for any given level of government spending and capital endowment. Since governments have (at least) two sources of revenue, spending does not need to decline if one source of revenue becomes less attractive. Thus, the global integration of capital markets does not necessarily cause the convergence of government spending and social security transfers to the low ‘Anglo-Saxony’ standard.

Pressure on governments to cut capital tax rates and reduce spending becomes even weaker when capital mobility remains imperfect. If this holds, governments may even lift capital tax rates to compensate for revenue losses caused by capital outflows. Indeed and even in the absence of capital controls: relatively high capital tax rates may easily generate larger revenues than relatively low capital taxes. This holds unless the country is small and able to reduce capital tax rates to competitively low levels.

These options suggest that governments do not necessarily respond to tax competition by simply reducing capital taxation and government spending. In other words, the political and socio-economic consequences of tax competition are not as straightforward as the majority of observers have argued. Economic internationalization may favor ‘market solutions’ (Stephens, Huber and Ray 1999: 164), but this does not imply that all governments are coerced to implement liberal policies, because they otherwise face prohibitively large capital outflows and a severe decline in tax revenues.

Globalization does not inevitably cause policy convergence to the liberal ideal-type policy. The opposite may happen: Since international market integration reduces political autonomy,
countries may actually become less similar because competing governments will choose
different best response strategies.\(^\text{10}\)

For the sake of argument, let us distinguish only three responses:

The winners of tax competition – small liberal market economies – keep social security
transfers constant, because their economy is booming due to significant capital inflows.
Accordingly, an increase of social transfers could be financed easily but does not become a
political necessity. Ireland significantly reduced the unemployment rate and social security
transfers during the economic boom years.

Large liberal market economies keep social security transfers low to be able to maintain low
effective capital and labor tax rates. Alternatively, these countries could have lifted taxation
alongside social security transfers, but the majoritarian electoral system in these countries
allowed governments to focus on international economic competitiveness. Accordingly, most
liberal market economies favored low levels of government spending over low and stable
income inequality.

Under proportional electoral rules, (coalition) governments are more likely to accommodate
income inequalities. Entering with a more generous welfare state into the era of international
tax competition provides governments still with an incentive to reduce effective capital
taxation at the cost of labor taxation. At the same time these governments maintain
government consumption and even increase social security transfers to account for growing
unemployment caused by rising labor costs. When labor taxes go up, labor becomes more
expensive and demand declines. Government in countries with high government spending
levels faced similar trade-offs when tax competition was triggered off. Governments used
higher effective capital and labor taxation to keep public debt under control. Again, labor
becomes more expensive and these countries’ international competitiveness declines.

\(^{10}\) In technical terms, globalization brings about a separating equilibrium, in which governments in
competitive and uncompetitive countries respond differently to intensifying competition.
Thus, the fiscal consequences of tax competition depend on the adjustment strategy which is influenced by the initial conditions. At the same time, the responses and their consequences feed back on the macroeconomic positions of countries. Therefore, the fiscal outcomes of tax competition reinforce the competitive position of its winners.

2.5. *The Social Consequences of Tax Competition*

With intensifying tax competition and lower capital tax rates in some countries, the chosen adjustment strategies have different effects on the fabric of social justice in all countries. In principle, governments in the winner countries can become more generous. They could have made social security systems more generous, thereby boosting the rate of income redistribution and becoming more egalitarian. Yet, capital imports and low capital tax rates not only contributed to government revenues but also generated fast economic growths and a rapidly growing welfare for all or at least almost all income groups. Therefore, the winners of tax competition could remain fairly liberal without suffering from a severe increase in income inequality.

In contrast, large liberal market economies which tried to keep labor taxes relatively low had to reduce the generosity of the social welfare system to be able to compete with the smaller and more competitive countries for mobile capital. New Zealand may serve as the best example but we observe similar patterns in the UK and – though starting from low levels – in the United States as well.

Governments in coordinated market economies tried to defend the size of the welfare state. However, this strategy came at the cost of high and rising effective capital and labor taxes and burgeoning public debts. By shifting adjustment costs into the future governments may have turned to the right strategy to win elections, but eventually public finances need to be consolidated.

We argue that tax competition influences income redistribution and inequality via two main channels. First, the growing mobility of capital provides an incentive for governments to shift revenue from the taxation of capital to the taxation of labor and consumption. Most capital
income earners are relatively wealthy so that tax competition shifts redistribution patterns. Income redistribution from top income earners to low income earners will become smaller (but does not vanish) and income redistribution from middle income earners to low income earners becomes more significant for all countries with the possible exception of the winners of tax competition. Whether these changes exert an influence on income inequality remains unclear. Redistribution from middle to low incomes may actually reduce income inequality less than redistribution from top earners to middle and low income earners.

Second and more importantly, the influence of tax competition on redistribution depends on government spending. If government consumption is low, a cut in capital tax rates – caused by international competition – leads to a decline in redistribution. Income inequality increases in large liberal market economies, but not in small liberal market economies because capital inflows not only stabilize government revenues but also create additional demand for labor.

2.6. Tax Competition and the Welfare State: Overview and Hypotheses

If above arguments hold, the predictions of a convergence of tax systems and social security systems to the Anglo Saxon standard stand on shaky grounds as does the prediction of zero effective capital tax rates in equilibrium. Rather, our theory leads us to expect a complicated, scattered picture, in which some countries lower effective capital and labor tax rates while others raise both tax rates or hold capital tax rates constant and raise effective labor taxation. Though the effect of tax competition on social security transfers and government consumption remains relatively small (and may well be caused by domestic developments rather than by the irrevocable dynamics of liberalized global capital markets), tax competition may affect income redistribution from capital to labor.

Our theory of tax competition, then allows the derivation of multiple hypotheses on capital (and labor) taxation.

1. Higher effective capital tax rates in other countries lead to higher capital tax rates and lower labor tax rates in country i (tax competition hypothesis).

2. Large countries have higher capital tax rates.
3. Initial government consumption and social security transfers reduce the governments’ ability to competitively reduce capital tax rates (*initial conditions hypothesis*).

4. High initial debt levels reduce the governments’ ability to reduce capital tax rates.

5. Majoritarian systems have lower capital tax rates.

6. Countries with strong unions and left governments have higher capital tax rates.

We then turn to examining the predicted consequences of deviations from average tax rates.

7. Countries with above average effective capital tax rates will run higher deficits, but are able to maintain relatively high levels of government spending and social security transfers (*welfare state in tax competition hypothesis*).

8. Trade openness reduces government consumption, social security transfer and debt (*efficiency hypothesis*).

Finally, our theory suggests that

9. Higher capital taxation increases income redistribution and reduces income inequality if government consumptions is low.

10. Higher labor taxation reduces income redistribution and raises income inequality if government consumption is low.

11. If government consumption is high, tax policy does not exert a redistributive effect.

3. **Research Design**

This section tests the multiple hypotheses derived in the theoretical section. We employ an instrumental variable simultaneous equation model (ivse model) to deal with estimation problems posed by simultaneity and endogeneity. We analyze time-series cross-sectional data which covers 21 countries over up to 26 years (due to missings we analyze only 511 out of 546 possible observations). In addition, we are interested in adjustment and therefore estimate models including temporal lags and accounting for unit fixed effects. Elsewhere (Plümper et al. 2005, Plümper and Troeger 2007) we have discussed the problems of this estimation procedure in greater detail. For our purposes here, the sometimes unwelcome features of the
estimators – elimination of serial correlation of errors and between variance – allow for a precise estimation of our hypotheses.

3.1. Simultaneity and Endogeneity

The theory above tells a simplified story – a story that draws a direct line between countries’ constitutional and institutional variation in the era of tax competition to tax policies to government spending and redistribution and finally to socio-economic outcomes. We do not claim that this is a simple story. However, reality is even more complicated. In reality, there are multiple and interdependent causal mechanisms and effects that feed back to the reasons which gave rise to their existence. Our empirical research design has to cope with these complications. We thus need a design that accounts for both endogeneity and simultaneity at the same time.

Before we start discussing what we consider to be exogenous and how we specify the simultaneous equations model, let us briefly explain how we believe ‘tax competition’ should be modeled. As Franzese and Hays (Franzese and Hays 2007) have forcefully argued, the modeling strategy of the early globalization research remains unsatisfactory. This literature has modeled tax competition based on Quinn’s measure (Quinn 1997) of ‘capital account openness’. In other words, the effects of tax competition are a linear additive function of legal capital account openness. This, however, remains unconvincing because capital account openness may be a necessary condition for tax competition, but it is definitely not a sufficient condition.

We therefore augment this research design in two dimensions: First, we use the value-added of multinational corporations as measure of de facto capital openness (see Troeger 2007 for a detailed discussion). And second and following Hallerberg and Basinger (1995) and Franzese and Hays (2007) we assume that tax competition is the dependence of tax policy in country $i$ on tax policies in all other countries $j \neq i$.

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11 See, for example Garrett 1995.
As many have suggested, tax competition thus constitutes a classical, textbook example of endogeneity because tax policy in country $i$ does not only depend on tax policy in country $j$, country $j$’s tax policy also depends on country $i$’s effective capital tax rate. Endogeneity is always at stake in the social sciences. For the purpose of our study, we assume that constitutional and institutional factors as well as country size are exogenous and we follow Franzese and Hays (2007) who argue that the domestic socio-economic and political conditions are good instruments for the endogeneous effective capital tax rate. Moreover, we assume that the labor tax rate in country $i$ depends on de facto capital mobility and the (instrumentalized) effective capital tax rate in country $j$, but not on the capital tax rate in country $i$ – an assumption which would give rise to an additional form of endogeneity.

3.2 Estimation Procedure and Variable Operationalization

As the theoretical discussion reveals, the effect of globalization and market integration on taxation, government spending and redistribution cannot be examined independently. When estimating these effects we are faced with different kinds of co-determination, simultaneity and endogeneity. Governments decide simultaneously about revenue and expenditure and therefore about tax rates, transfers and public good provision. Yet, taxation is not only contingent on domestic factors but also on decisions of policy makers in other countries. To solve these problems and avoid biased estimation results we employ a simultaneous equation approach, which allows tackling the problem of simultaneity in policy decisions. We use an instrumental variable approach to overcome the endogeneity of the spatial capital tax lag and account for the two-stage nature where redistribution and income inequality depend on decisions about taxation and spending.

To ensure the identification of parameters in the estimated system of equations the exclusion restrictions have to be carefully determined. We do that mostly theoretical by identifying different sets of theoretically interesting variables for each equation. We estimate seven equations, whereby the first five are treated as simultaneous because they describe the co-determination of revenue (tax rates on labor and capital as well as debt) and
expenditure side (government consumption and social security transfers) of the government budget. Consequently, the error terms of these five equations are correlated. The last two equations present the second stage of government decisions (fiscal redistribution) and the consequence thereof (disposable income inequality). These two equations use the endogenous variables of the first five equations as explanatory variables. These variables are instrumented by the exogenous variables of the first stage equations.

In addition, we include a spatial capital tax lag in order to account for the tax competition arguments. This spatial lag is weighted substantively by FDI inflows and instrumented by the equally weighted spatial lags of domestic variables (see Plümper et al. 2007, Troeger 2008 and Franzese and Hays 2007). We thus estimate the system of equations by a combination of three stage least squares and two stage least squares (for the spatial tax lag) procedures.

We operationalize and compute the average effective tax rates according to the proposal of Mendoza et al. (1994), which has been augmented by Volkerink and De Haan (2001). The latter authors also provide a method to calculate effective tax rates on labor (see Troeger 2008 for a detailed discussion). We use the OECD’s ‘Revenue and National Account Statistics’ as data source. We calculate the spatial lags using FDI-inflows as weight (Worldbank: World Development Indicators).

Information on the value-added of international corporations was provided by the OECD ‘Globalization Statistics’ dataset. Others than this, we employ widely used data sources. With the exception of social security transfers and debt (which are from the OECD’s Main Economic Indicators), economic variables come from the Worldbank’s World Development Indicators. Political variables are from OECD (union density), Swank 2002 (left cabinet portfolio), and Beck et al. 2005 (majoritarian electoral system). The dataset and do-files are available upon request.

4. Analysis

In this section, we test the main hypotheses derived in section 2. We only present the results of a single ivse model in three levels: the first stage estimates tax policies, were effective
capital and labor taxation of country \( i \) depends, *inter alia*, on a weighted average of capital taxation in other countries. In other words, we argue that both capital and labor tax rates are influenced by capital tax rates in countries \( j \) \((j \neq i)\).

In the second stage, we estimate the effect of the difference in country \( i \)'s effective capital tax rate and the weighted mean of \( j \)'s (instrumentalized) capital tax rates on fiscal policy. According to our argument, countries could abstain from cutting government consumption and social security transfer if they allowed for higher capital tax rates than neighboring countries. This policy, however, should inevitably lead to higher deficits and thus rising debt rates.

In the final third stage we estimate the joint effect of tax and fiscal policies (government spending) on income redistribution and income inequality. Consistent with our theoretical expectations we find that higher capital tax rates and lower labor tax rates allow for more income redistribution and thus lower income inequality. However, this redistributive effect of tax policies depends on the level of government consumption. While the effect is significant in low spending countries, higher capital and lower labor taxation does not lead to more redistribution and less income inequality when government consumption is high. This suggests that governments which maintain relatively high capital tax rates to finance government consumption cannot use tax policies as a redistributive instrument. Rather, they have to use revenues from capital taxation to provide benefits for capital owners and corporations to prevent large scale outflows of capital.

All stages are connected by assuming that error terms are not independent of each other. Table 1 presents the estimation results. We report results from one simultaneous equation model. Note, however, that we have carried out extensive robustness tests and that we found the majority of results to be largely robust.
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<td></td>
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<tr>
<td></td>
<td>(0.0002)</td>
<td>(0.002)**</td>
<td>(0.0004)</td>
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<td>Diff. to mean Capital Tax Rate (dom. Captax-SL captax)</td>
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<tr>
<td></td>
<td>(0.0000)*</td>
<td>(0.003)***</td>
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<td></td>
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<td>Country Size (GDP in bn of US$)</td>
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<td>Government Consumption in 1980</td>
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<tr>
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<td>Social Security Transfers in 1980</td>
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<td>Debt div. by GDP in 1980</td>
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<td></td>
<td>(0.003)</td>
<td>(0.001)</td>
<td>(0.005)**</td>
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<td>Union Density</td>
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<td>Electoral System (majoritarian=1)</td>
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<td></td>
<td>(0.473)*</td>
<td>(0.088)***</td>
<td>(0.601)</td>
<td>(0.138)***</td>
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<td>Member of EMU</td>
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<td>0.254</td>
<td>0.318</td>
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<td></td>
<td>(0.365)**</td>
<td>(0.118)**</td>
<td>(0.488)</td>
<td>(0.109)***</td>
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<tr>
<td>Unemployment</td>
<td>-0.022***</td>
<td>0.168***</td>
<td>-0.009</td>
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<td>(0.008)</td>
<td>(0.059)</td>
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<td>Share of Elderly Population</td>
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<td>(0.003)***</td>
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Table 1: A Simultaneous Equation Estimate for Tax Competition and its Fiscal and Social Consequences

<table>
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<tr>
<th>Metric</th>
<th>Estimate 1</th>
<th>Estimate 2</th>
<th>Standard Error 1</th>
<th>Standard Error 2</th>
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<tr>
<td>Capital Tax (endogenous)</td>
<td>0.003</td>
<td>-0.001</td>
<td>0.002</td>
<td>0.001</td>
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<td>Labor Tax (endogenous)</td>
<td>-0.015</td>
<td>0.007</td>
<td>0.005***</td>
<td>0.002***</td>
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<td>Govcon/GDP (endogenous)</td>
<td>-0.008</td>
<td>0.004</td>
<td>0.009</td>
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<td>IA: Capital Tax*Govcon</td>
<td>-0.0002</td>
<td>0.0001</td>
<td>0.0001*</td>
<td>0.0000*</td>
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<td>IA: Labour Tax*Govcon</td>
<td>0.0006</td>
<td>-0.0003</td>
<td>0.0002**</td>
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<td>Debt per GDP (endogenous)</td>
<td>0.0007</td>
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<td>0.0003**</td>
<td>0.0001**</td>
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<td>Soc.Sec.Trans. (endogenous)</td>
<td>0.0006</td>
<td>-0.0000</td>
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<td>Pre-tax Gini</td>
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<td>0.523</td>
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<tr>
<td>Intercept</td>
<td>0.848</td>
<td>1.021</td>
<td>(0.231)***</td>
<td>(0.208)***</td>
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<td>3.924</td>
<td>1.549</td>
<td>(0.919)***</td>
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<td>6.82</td>
<td>-0.096</td>
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<td>Nobs</td>
<td>511</td>
<td>511</td>
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<tr>
<td>R²</td>
<td>.94</td>
<td>.98</td>
<td>.97</td>
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We obtain the following main results:

First, effective capital tax rates of one country become lower, if other countries reduce their capital tax rate \((\text{tax competition effect})\). At the same time, effective labor tax rates increase \((\text{tax compensation effect})\). However, the tax rate remains relatively high in countries in which the initial fiscal conditions were not very favorable to tax competition. High levels of government consumption, an extensive welfare state financed by social security transfers and a high level of public debt all reduce a government’s ability to aggressively reduce capital taxes in order to attract foreign capital \((\text{initial conditions effect})\). Similarly and regardless of the initial fiscal conditions, large countries find it difficult to fully compete with small countries for internationally mobile capital stocks. Therefore, large countries generate more revenue from capital taxation than smaller countries \((\text{country size effect})\).

These changes in the tax policies of OECD countries influence their fiscal policies. However, the effect of tax competition on fiscal policies is much more moderate and conditional than suggested by the globalization literature. Most importantly, countries that maintained relatively high capital tax rates were able to continue high levels of government consumption and social security transfers. At the same time, these countries apparently had to increase public debts, which may reduce the sustainability of ignoring tax competition. Despite these doubts, we find large support for our hypotheses that governments have alternatives to competitively reduce effective capital taxation to compete for mobile capital. Governments may also maintain or even increase effective capital and labor taxes and run deficits to sustain large public budgets \((\text{separating equilibria hypothesis})\). In respect to the ‘old’ discussion between the different camps of the compensation and the efficiency hypotheses, our results lend support to the latter. Trade openness reduces government spending, social security transfers and deficits \((\text{efficiency hypothesis})\). We also confirm previous findings according to which majoritarian electoral systems lead to lower government consumption and smaller welfare states \((\text{Persson and Tabellini 1999, Ferretti and Perotti 2002})\). We have used membership in the European Monetary Union as control variable throughout the fiscal policy
estimates. Our results imply that – contrary to expectations – EMU membership does not seem to systematically reduce debt rates and spending levels.

Finally, we find that tax competition exerts a small but perhaps not negligible effect on income redistribution and income inequality. However, this effect is contingent upon government consumption. In countries with high levels of government consumption, governments do not use tax policies to redistribute income and reduce income inequality. Therefore, the effect of capital and labor tax rates on income redistribution and inequality is not different from zero when government spending exceeds approximately 20 percent.

In Ireland, Luxembourg, Switzerland, Australia, Japan, and the United States tax systems are used to effectively redistribute income and reduce income inequality. If, in these countries, tax competition reduces capital taxation and increases labor taxation, income redistribution declines while income inequality increases. In all other countries, tax competition has no direct social consequences and may only affect income inequality indirectly by increasing public debt.

Figures 1-4 display the conditional marginal effect of capital and labor taxation on income redistribution and inequality for varying levels of government consumption.

Figure 1: Marginal Effect of Capital Taxation (AETR) on Income Redistribution as a Function of Government Spending
As our theory predicts, the effect of capital taxation on income redistribution declines when government spending increases. This effect, however, is never significant so that we have no evidence that tax competition reduces income redistribution by forcing governments to reduce capital taxation.

If, however, tax competition pushes labor taxes upwards in countries with low government consumption levels, the ability of governments to redistribute income becomes significantly smaller.

Figure 2: Marginal Effect of Labor Taxation (AETR) on Income Redistribution as a Function of Government Spending

The effects of capital and labor tax rates on income inequality are inverse to the effect on income inequality. Again, we find that capital taxation has no significant effect on income inequality but labor taxation has.
Figure 3: Marginal Effect of Capital Taxation (AETR) on Income Inequality (GINI) as a Function of Government Spending

Higher capital taxes (insignificantly) reduce income inequality.

Figure 3: Marginal Effect of Labor Taxation (AETR) on Income Inequality (GINI) as a Function of Government Spending

5. Conclusion

Tax competition has never been as intense and devastating for public budgets as the early globalization literature has suggested. We have argued that the relatively moderate influence of tax competition on government spending, social welfare systems, income redistribution and income inequality results from two factors: First, de facto capital mobility remains
incomplete. And second, the countries’ ability to credibly and aggressively participate in international tax competition varies largely.

We have shown that small liberal economies had all advantages on their side. These countries could expect capital inflows which were important relative to their own capital stock. Though larger liberal economies could possibly expect larger capital inflows, these inflows remained relatively unimportant in relation to their own domestic capital stock. Governments in welfare states with high levels of government spending and large social security system were unlikely winners of tax competition. In order to become competitive, governments must have reduced spending levels and cut redistribution. As a consequence, countries which could not expect to become large-scale capital importers did not (most welfare states) or at least not fully (large liberal economies) participate in international tax competition.

Accordingly, the political adjustment strategies to tax competition co-varied with country size, constitutional and institutional conditions and the socio-economic performance of countries. It remained a politically plausible response strategy to simultaneously raise capital and labor taxation to maintain a high level of public spending and a generous social welfare system.

Perhaps most interestingly, we find that tax policy reforms affect income inequality only in liberal market economies where government spending remains low. In these countries, higher labor taxes leads to a decline in income redistribution and less income equality. In social welfare states income redistribution is largely determined by spending and not by tax policies. The impact of tax competition on the welfare states therefore remained indirect: Higher labor taxes cause a significant upward shift in labor costs which caused labor market problems. Our findings shed light on some lasting discussions among globalization scholars. For example, proponents of the ‘compensation’ hypothesis claimed that international market integration causes labor market uncertainty which in turn fuels popular demand for redistribution and labor market restrictions (LITERATURE). In contrast, proponents of ‘efficiency’ hypothesis argued that redistribution imposes inefficient costs on corporations.
which make them less competitive, less profitable, and finally urges them to either cut employment or the leave the country altogether (LITERATURE). We have shown that government responses to tax competition do not fit perfectly to either of these theories. First, governments do not necessarily attempt to improve the competitiveness of domestic corporations by effectively cutting capital taxation. And second, the decline in revenues raised from the taxation of capital does not necessarily bring about a decline in total government spending.

At least at the surface our finding support an argument put forward by Huber and Stephens (1993). In their view, social welfare policies and income redistribution, once implemented, log in by creating their own support bases: “Once institutionalized, social policies develop support bases in addition to those groups their original enactment.” (Stephens et al. 1999: 167) Broad social coalitions prevent governments from implementing significant cuts in entitlements. In other words: the welfare state creates conditions in which a growing number of individuals depend on the social transfers. Reducing these transfers may perhaps eventually lead to a more efficient outcome. However, the recipients of these transfers neither know the distribution of welfare gains not do they know whether they will profit from market liberalization, tax cuts, and a decline in the size of the welfare state (Fernandez and Rodrik XXXX).

Our findings are consistent with Stephens et al.’s explanation of the survival of the welfare state – but it is not identical. We argue that unsustainable public debt, high unemployment rates and a large welfare state prevent governments from actively competing in tax competition. Hence, not only distributive coalitions of groups profiting from redistribution stabilize the welfare state, but also the grim expectations of entering into a competition with small liberal economies – into a competition that the welfare state cannot win.
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