Does the EU-membership cause tax competition?

A panel data study on 21 EU countries

Johan Leymann
Abstract
This is an empirical paper on tax competition using panel data from 21 countries between 1981-2011. The study looks at the causes of tax competition and especially whether or not the entry into the European Union (EU) cause tax competition in corporate income tax rates (CIT). The increased openness in economies is often described as a continuous process. This paper will however seek an answer to how and if the entry into the European Union affects countries corporate tax rates. The year of entry into the European Union will be regarded as an “openness shock” that policymakers face. The entry into the EU in this paper regarded as a proxy or trigger for relaxed capital controls.

The model data show a negative effect of -3,375 % of EU-membership with respect to CIT. There are also significant results of a strong negative trend in CIT; the average decrease over time is 0,759 % every year between 1981 and 2011.

Acknowledgements
Special thanks to my supervisor David Granlund and main opponent Carl Larsson.
Background

Introduction
The European Union has over the years implemented several reforms to promote free mobility of goods, services, people and capital. Neither the European Union nor the European Monetary Union are fiscal unions and countries are free to set tax rates as they please. However, this does not imply that legislators in the different countries decide the tax rates independently. One important reason for this is a phenomena often referred to as tax competition or strategic interaction between countries.

The objective of this thesis is to evaluate the causes of tax competition, especially if countries that are members to the European Union are more likely than non-members to engage in competitive interaction with other countries. The fact that politicians could be bound by tax policy decisions in other countries is perhaps not known by the broad public. Nevertheless, an understanding of these mechanisms is essential in trying to understand why taxes are set the way they are. If you want to analyze fiscal policy decisions, tax competition could be an important part of the puzzle. By simply looking at political parameters like which political party that controls parliament, researchers and voters could be in the risk zone of not seeing the whole picture.

Overview
Looking at the EU-zone, we see that more and more countries abolish tax on wealth. According to Gorter and de Mooij (2001) there has been a significant decline in tax rates on interest, dividend and retained profit the last decades. The downward trend in capital, or wealth tax as it sometimes is called, has happened simultaneously with a decrease in corporate income taxation in the EU-countries.
The average corporate income tax rate in Europe has seen a downward trend the last 20 years. In the early eighties, corporations in Europe had to pay an average of approximately 48 % in income tax. In 2011, that figure had dropped to 24.5 %.

The most frequently mentioned example in the debate over tax competition is probably Ireland. Ireland has traditionally had a very low taxation on corporate income, just 12.5 % from 2003 until present day, and is often accused of aggressive tax competition by other European countries. Ireland experienced a rapid economic growth from the mid 90s up until the finance crises in 2008/2009. During that period, the Irish economy had an annual growth rate of well over seven percent, which is a high number for such a cohesive and long period (The World Bank, 2012). The Irish government was often criticized by other European countries for their aggressive low-tax policy. They thought Ireland competed in an unjust way by using low corporate income taxes to attract foreign direct investment.

The Swedish Experience

Looking closer at the Swedish experience of capital taxation, the development resembles that of the rest of Europe. The Swedish government today is clearly less willing to tax capital than just a few decades ago. Taxes on inheritance were abolished in January 2005 (and retroactive from December 17, 2004). When the inheritance tax was abolished, the Swedish government dropped the gift taxes as well, a tax that in many ways resembles inheritance tax. The next capital tax to be abolished was wealth tax, which happened in January 2007. The formal reason for the Swedish government to give
up these taxes was in all three cases that the taxes gave little revenue in relationship to the cost to administrate them. Some also viewed these taxes as unjust since they taxed the already taxed income. Sweden is also an interesting country to look closer at since Sweden are said to be using interest deductions to compensate for higher-than-average corporate income taxes.

Another reason for the reluctance of taxing wealth mentioned above was that the taxes were believed to cause capital flight and tax planning. The Swedish Tax Agency (Skatteverket) estimate that at least 46 billion SEK every is being hidden from taxation in various tax heavens around the world (Skatteverket, 2012).

European View on Tax Competition
In 1 of December 1997, just a few years after Sweden’s, Denmark’s and Austria’s entry into the European Union, the Council of Economics and Finance Ministers (ECOFIN) agreed to a non-binding code of conduct to prevent harmful tax competition. The purpose of the code was to “roll back existing tax measures that constitute harmful tax competition and refrain from introducing any such measures in the future” (ECOFIN, 1997).

Since tax competition is pushing down tax rates, critiques fear that strategic interaction between countries will cause a race to the bottom that undermines the tax base. Others encourage what they call tax-harmonization in the EU-zone as a mean of protecting against tax competition. Many advocates of tax-harmonization are also pushing for a complete fiscal integration in areas like capital taxation and corporate income taxation.

Tax competition or tax harmonization?
It is important to be clear about the distinction between tax competition and tax harmonization. Before Sweden entered into the EU, there was a public discussion on whether or not the EU would cause countries to harmonize their taxes. Tax harmonization implies that relative open countries, such as the EU-countries, will converge towards similar levels in their tax rates. This could happen in two ways, for instance, a group of countries (such as the EU) might decide on a minimum rate of taxation or taxes could converge without such a joint decision.
On the discussion on tax harmonization versus tax competition, could the negative trend in corporate income taxes be an indication of tax harmonization rather than tax competition? When looking at the corporate income tax data in a scatter diagram, one can easily detect a downward sloping trend.

Graph 2

However, the different tax rates does not seem to converge towards a certain level which supports the notion that countries are competing rather than harmonizing their corporate income tax rates.
Theories on Tax Competition

What is Tax Competition?

The economic intuition to why tax competition occurs is fairly obvious and straightforward. Countries or local decision makers are dependent on income from their tax base to fund its spending. The tax base could be considered as an increasing function of the country's aggregated capital stock. If the tax base would decrease, so would the amount of goods and services that the country could provide for its citizens. Given that the amount of public spending is optimal before the tax competition starts, the country would no longer be able to provide an optimal or reasonable amount of public services back to its citizens. The result of this kind of tax competition is that the marginal benefit of an additional unit of public service is higher than its marginal cost, which is not an optimal provision of the good. However, policymakers are not able to increase the revenues by raising the taxes since that will cause an outflow of capital. In other words, they are stuck with a non-optimal tax rate.

Since capital and corporations have a higher mobility and are able to reallocate more easily than individuals from one country to another, we are more likely to observe tax competition in capital and corporate taxes. From this intuitive line of reasoning we can form a basic rule; the more mobile the tax base is, the larger the incentives for countries to engage in a competitive game with other countries to attract capital and preserve or increase their current tax base. This leads to a game where countries are forced to lower their taxes if another country lowers theirs, making it a race to the bottom. Looking on graph 2 it is hard to get the feeling that this “race to the bottom” is not already happening.

Tax Competition in Economic Literature

The increased openness in economies is often described as a continuous process. This paper will however seek an answer to how and if the entry into the European Union affects countries corporate tax rates. The year of entry into the European Union will be regarded as an “openness shock” that policymakers face. This approach is also supported by Deveroux at al. (2008) who find that the relaxation of capital controls is responsible for pushing down the average Nash equilibrium corporate tax rate. In that
context, we can look at the entry into the EU as a proxy or trigger for relaxed capital controls.

Tax competition has been studied from many different angels and perspectives. Although the driving forces behind tax competition has been known for some time, as shown below, there is an ongoing debate about the causes and implications of tax competition.

One theoretical method of evaluating if countries or other agents make use of this kind of strategic behavior is by looking at the reaction function of country A when country B decide to increase or decrease a certain tax. If country A has a non-zero reaction function, it is strategically interacting with country B. The theory could then be empirically tested on a null hypothesis of a non-sloping reaction function versus a research hypothesis of a non-zero reaction function (Brueckner & Saavedra, 2000).

In a study by Overesch & Rincke (2011), the authors estimate that tax competition is responsible for a drop in the average corporate income tax by 12,5 percentage points between 1983 and 2006, compared with an hypothetical no-competition example. This implies that tax competition is a significant force to be reckoned with.

The causes of tax competition are a more concrete way of looking at the problem. Here, scholars simply take a variable and compare how much it explains the observed changes in tax rates. The empirical works starts from a pre-tax competition position and looks at how much a certain tax rate drops or increase over time.

The Overesch & Rincke (2011) study find evidence of tax competition in both relatively open and relative closed economy whilst Deveroux at al. (2008) only can confirm tax competition between open economies. However, Overesch & Rincke (2011) does not find any evidence that countries that become more open lower their corporate tax rate significantly more than others. Openness here is defined as the export share of GDP. Chatelais & Peyrat (2008) investigates if small countries are more likely to engage in tax competition and finds that so is the case. Since Sweden is a small country, one can assume that we are more likely to engage in tax competition than larger countries.

In “Winners and losers of tax competition in the European Union” (Mendoza & Tesar, 2003) the authors use a two-country neoclassical dynamic general equilibrium model to
evaluate capital income tax competition. Interestingly, they find that when countries increase the tax on labor to maintain fiscal solvency, there is no race to the bottom. This is interesting because it gives governments a tool of managing tax competition. Given this, tax competition could, at least to some degree, be transformed to an endogenous effect as trade-off between tax on businesses and labor.

Economic research on tax competition between countries has two main focuses, the interaction between countries described above but also between local and regional agents like counties and municipalities. These agents could interact with each other but also with the federal government. These mechanism are thoroughly dealt with in the fairly well known work Fiscal Federalism (Oates, 1972). The tax competition on local and regional levels are being enacted on fields were the local decision makers have jurisdiction over, like income taxes and to some extent property taxes (in some countries). The driving force behind this competition is to attract more citizens to move in to their cities and communities. Brueckner & Saavedra (2000) deals with this kind of local tax competition in their study on tax competition in property taxes in the Boston Metropolitan area. In their study, they find evidence of a non-zero reaction function from property tax reductions between neighboring municipalities that spreads across the whole metropolitan area.
Data

Tax Data Regressions

Comparing tax data between countries is not an easy thing to do, especially not in a consistent way. Some countries offer discounts and other benefits that are hard to account for in econometric regressions. These benefits could have a large impact on allocation decisions but the effects are difficult to quantify. In other countries like Germany, the corporations pay part of its tax to the federal government and part to the state it is active in. To correct for this, I have added an average of state taxes in order to get a fairer estimate of the tax actually paid by the corporations. In cases where the tax rate has changed in the middle of a year, I have calculated the average tax on that specific year.

To complicate even further, in Portugal, part of the federal corporation tax is deductible if the corporations also have to pay corporate taxes in the counties they are operating in. However, in the data from Portugal, I have not taken the deductible part into account since not all Portuguese counties have a sub central tax on corporations.

About the Data

The tax data used here on corporate income tax rates (OECD, 2012) covers 21 European countries, both from Eastern and Western Europe (attachment 1). The data is unfortunately unbalanced since some variables have missing observations. The main reason for the missing observations is political. Most of the missing data are from former Soviet states before the year of 1991. Corporate Income taxes did not function in the same way in the Soviet planned economy as in the western systems so that’s why they are missing from the OECD data. As far as I can tell: there is no other underlying factor to the missing observations that could affect the model. Therefore, the risk of selection bias (Verbeek, 2008, p. 400) should be avoided. However, the fact that some parts of the data is missing and that the missing data is not randomly distributed is problematic.

One concrete effect of unbalanced data is that STATA removes all variables from an observation (year) where one of the variables is missing. This produce less efficient estimates but if there is no selection bias, we could still expect valid results.
Membership to the European Union is included in the data model below as a dummy variable (EU). Here a zero means not being a member and a one denotes being a member. Observe that the shift from zero to one happens when the country enters the union and not when a referendum or parliamentary vote is cast. The membership variable therefore has a forward lead on two years since it is likely that it would take some time before the effects of being a member become visible.

The year of entry into the European Union will be regarded as a “openness shock” that policymakers face. The entry into the EU in this paper regarded as a proxy or trigger for relaxed capital controls. Looking at graph 3 and 4, there is no obvious or univocal impression that countries change their taxes in close proximity to the EU-entry. However, in the groups entering in 1995 and 2004, the average tax levels for new countries were higher than average initially and has dropped below EU-average.

Graph 3
Graph 4

Regardless of tax competition, politicians are the ones that in the end set the tax rates. Therefore, I have added a political perspective in the model consisting of a right-left scale. The scale consists of three dummies representing leftist, centrist and right wing governments. All 21 countries are then categorized into these this rough scale depending on which political party that dominates the executive branch of government.

Since a newly elected government most often assumes office in the middle of a calendar year, the dummy should be interpreted as the political party that dominates the executive branch of government that year. If a left-wing government assumes office in November from a right wing government, the dummy would regard that year as being governed by a right wing regime. The categorization I have used is based on data and definitions from Armingeon et al. (2010).

Policy changes take time to analyze and are also likely to be delayed before it is implemented due to practical reasons. Hence, I have added a forward lead to the political dummy variables with one year. The political variables are called gov_right, gov_centre and gov_left. These describe how much the dependent variable change compared to a centrist government.

Two variables are added to compute the effect of how open the different countries are to the surrounding world. First I have added the export of goods and services as a percentage of the gross domestic product (GDP), referred to as X below. The second
variable is foreign direct investment (FDI), also as a share of GDP. Both variables (OECD, 2012) are proportional (share of GDP) since the countries in the data come in different size. By using proportional data there is no point, from an economic perspective, of scaling these two variables. Foreign direct investment is however in the risk zone of being endogenous to the dependent variable. The intuition behind this is that foreign direct investment is likely to increase if the taxes are low since low taxes attract investors. At the same time, the taxes are likely to decrease if foreign investments increase since politicians would have incentives to take advantage of the relationship between FDI and corporate income taxes. The result of this two-way relationship is that we have to calculate on an endogenous effect between these two variables. To account for this I have lagged the FDI by one year, making it less dependent on corporate income tax.

The data stretches from 1981 to 2011. During this period there have been three major expansions of the European Union. First in 1986 when Spain and Portugal entered, in 1995 when Sweden, Finland and Austria joined and finally the large expansion in 2004 and 2007 when nine former Soviet countries became members of the EU. The data is chosen so that there are at least five observations both before the entries and after.

Table 1

<table>
<thead>
<tr>
<th>Variable</th>
<th>Obs</th>
<th>Mean</th>
<th>Std. Dev.</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>CIT</td>
<td>539</td>
<td>34,92</td>
<td>10,52</td>
<td>2</td>
<td>60</td>
</tr>
<tr>
<td>FDI</td>
<td>548</td>
<td>12,79</td>
<td>57,19</td>
<td>-32,87</td>
<td>564,92</td>
</tr>
<tr>
<td>X</td>
<td>586</td>
<td>46,87</td>
<td>27,24</td>
<td>16,13</td>
<td>175,93</td>
</tr>
<tr>
<td>Year</td>
<td>651</td>
<td>1996</td>
<td>8,95</td>
<td>1981</td>
<td>2011</td>
</tr>
<tr>
<td>Gov_right</td>
<td>581</td>
<td>0,34</td>
<td>0,47</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Gov_center</td>
<td>581</td>
<td>0,27</td>
<td>0,44</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Gov_left</td>
<td>581</td>
<td>0,4</td>
<td>0,49</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>EU</td>
<td>651</td>
<td>0,71</td>
<td>0,45</td>
<td>0</td>
<td>1</td>
</tr>
</tbody>
</table>
Setting up an Empirical Model

Choosing a Consistent Estimator

One model often used when analyzing panel data is the fixed effect model, also known as the within effect model. To be sure that the fixed effect model also applies on the data used in this paper, I conducted a Hausman test on the error terms from a fixed effect estimate and a random effect estimate. The reason for conducting a Hausman test is to check whether the country specific error terms are correlated with the variables, in other words; if the variables are exogenous (Verbeek, 2008, p. 357). If the error terms are correlated, we can not use the random effect estimator since this is a critical assumption behind the random effect model (Kennedy, 1998, p. 227).

Under the null hypothesis, both the random effect estimator and the fixed effect estimator provide consistent estimates (but only the random effect estimator provide effective estimates). Under the alternative hypothesis, only the fixed effect estimator provides consistent estimates (Greene, 2012, p. 419). If the different estimators produce different result, the country specific error terms are correlated with the variables. What the Hausman test basically does is testing if the differences between the coefficients generated by the different models are significantly different. If they are not significantly different, the null hypothesis could not be dismissed and the random effect model should be used since it produces both efficient and consistent estimates.

The result from the Hausman test gives a chi-square ($\chi^2$) probability of 0.0037. Since $0.0037 < 0.05$ it allows us to reject the null hypothesis at a 95 % significance level and use the fixed effect estimator.

The fixed effect estimator has the advantage that it can produce consistent estimates even if the country specific effects are correlated with the variables. The reason why the fixed effect model is less sensitive to this problem is that it only looks at the within effect (therefore called the within effect model). In other words, it only looks at how the explanatory variables explain the dependent variable for each specific entity. The entities here are the 21 different countries. Therefore, the error term could still be correlated with the regressor but the bias is smaller than if we would use a normal OLS-regression (Verbeek, 2008, p. 386).
Since the model only look at the within effect, the standard error tend to be higher in the fixed effect model than under the random effect model. By looking at the variance between the entities, the model would be more sensitive to biases. Hence, if there were correlation between the characteristics of two countries, the fixed effect model would not be able to detect that because the fixed model ignores the variation between countries and focuses only on the within effect.

One other disadvantage of using the fixed effect model is that it omits all time invariant variables. This has not been a problem in this paper since there are no time invariant factors in the model data.

In one aspect, the fixed effect model used in this study is inconclusive when applied to the problem with tax competition. When analyzing how being a member to the EU affects the likeliness to engage in tax competition over corporate income taxes, there are really two effects that should be accounted for. First, how countries that become new members are being affected by old members and secondly, how the old members are being affected by the new members. The model used here however, only looks at how new members are affected the old members, which of course is not an optimal way of analyzing the problem. The theoretical framework for tax competition does not make this kind of distinction. Countries with non-zero reaction functions should be sensitive to changes to other countries tax rates regardless of how long the other country has been a member to the EU.

Complications with Panel Data Models
Looking at the corporate income tax data, the taxes from one year to another either change or remain the same. Since the tax in most observations remains the same in t +1, the tax data autocorrelated, there is a lagged dependent variable among the dependent variables (Baltagi, 2001, p. 129).

Autocorrelation does not, in most cases, lead to biased results (Verbeek, 2008, p. 373). However, there are consequences of autocorrelation since it violates the assumption from the Gauss-Markov theorem of independent error terms. These consequences include wider confidence intervals, lower standard error on the coefficients, an artificially high R²-value and an increased risk of type 2 errors. So even if
autocorrelation does not cause any bias, it violates the assumption of minimum variance (Studenmund, 2010, p. 313).

To test for autocorrelation, I used the Wooldridge Lagrange Multiplier test for autocorrelation in panel data (Wooldridge, 2002). The test checks the null hypothesis of a model of no autocorrelation against an assumption of autocorrelation. The test was unable to reject the null hypothesis and a result of that is that we could expect autocorrelation in the model (Drukker, 2003).

Another problem that could affect the model is heteroskedasticity. When heteroskedasticity is present, the error terms shows signs on dependency to the time variable resulting in a non-constant variance. Heteroskedasticity is more likely to be present in panel data since the units have different size and therefore could have different variation (Baltagi, 2001 p.77). To test for heteroskedasticity I have used the Modified Wald test for group wise heteroskedasticity in fixed effect regression model. The test shows that we do have heteroskedasticity in the model data.

To correct for heteroskedasticity and autocorrelation, I have used robust standard errors when running the regression. Robust estimates are not as sensitive to violations on the basic assumptions behind linear regression models like autocorrelation and heteroskedasticity. By using non-robust estimations, I would underestimate the standard error because the fixed effect model assumes that all correlation is captured by the random term (Verbeek, 2008, p. 372). With robust estimates the t-values generated from standard errors are lower in absolute value but more reliable.

Observe that the Hausman test above was conducted on a non-robust regression since the Hausman test requires the random effect estimator to be efficient (Cameron & Trivedi, 2008, p. 216). As Greene (Greene, 2012, p. 420) points out, it is a common but not optimal approach.

**Cross Sectional Time-Series Analyzes**

\[
\text{CIT}_{i,t} = \beta_1 \text{EU}_{i,t-2} + \beta_2 \text{FDI}_{i,t+1} + \beta_3 X_{i,t} + \beta_4 \text{gov} \_\text{right}_{i,t-1} + \beta_5 \text{gov} \_\text{left}_{i,t-1} + \beta_6 \text{NK}_i + \beta_7 \text{Year}_{i,t} + \varepsilon
\]

\[\beta = \text{Parameter estimates (coefficients)}\]

\[\text{CIT} = \text{Corporate income tax}\]

\[\text{EU} = \text{Member of the European Union (Dummy variable)}\]
FDI = Foreign Direct Investment as a percentage of GDP (lagged)

X = Export of goods and services as a percentage of GDP

Gov_right = Right wing government (Dummy variable, lagged)

Gov_left = Left Wing Government (Dummy Variable, lagged)

NK = Country Specific Dummy Variable

\( \beta_6 = N \times 1 \) vector

Year = Trend

\( \varepsilon = \text{Random term} \)
Result

The Fixed Effect OLS regression with robust standard error yields the following results:

Table 2

<table>
<thead>
<tr>
<th>Corporate income tax</th>
<th>Coefficient</th>
<th>Standard Error</th>
<th>p &gt; (t)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year</td>
<td>-0.759</td>
<td>0.077083333</td>
<td>0.000</td>
</tr>
<tr>
<td>Gov_right</td>
<td>-3.384</td>
<td>0.495138889</td>
<td>0.054</td>
</tr>
<tr>
<td>Gov_left</td>
<td>-2.814</td>
<td>0.244444444</td>
<td>0.042</td>
</tr>
<tr>
<td>FDI</td>
<td>-0.048</td>
<td>0.085</td>
<td>0.402083333</td>
</tr>
<tr>
<td>X</td>
<td>-0.048</td>
<td>0.085</td>
<td>0.402083333</td>
</tr>
<tr>
<td>EU</td>
<td>-3.375</td>
<td>0.424305556</td>
<td>0.042</td>
</tr>
</tbody>
</table>

The adjusted $R^2$ value show how much of the dependent variables variance that is explained by the explanatory variables with respect to the degrees of freedom. The model above was able to explain 57.23% of the variance.

The f-test, look at the overall significance of the models variables. The f-value is 22.05, which allow us to reject the null hypothesis at a very high significance level.

The p-values test the assumption that the coefficients in the model are different from zero. The lower the p-value is, the more certain we can be that the coefficients differ from zero. To reject $H_0$ (that the variable do not affect the dependent variable) on a 95% confidence the p-value should be under 0.05 in absolute value (Studenmund, 2010, Chapter 5).

The regression yields significant results in all parameter estimates except the two openness variables FDI and Export. The Gov_right parameter estimate is not significant on a 95%. However, it is very close since the probability is 0.054. The coefficients should be interpreted as the change of the dependent variable if the explanatory variable increases by one unit.
Discussion

The EU-membership coefficient is significant, meaning that, on average members of the EU decrease their corporate income tax rate by 3.375 percentage points more than a non-member. After joining the union countries are more sensitive to tax competition than they would otherwise have been. Redano (2007) found that EU-members are less likely to engage in strategic competition over corporate taxes than non-members like Switzerland and Norway because the EU-countries are protected by the EU-zone. These results contradict the outcome of the model data in this study since non-members are less likely to decrease their taxes. However, the two papers are different in many aspects and this study did not analyze the relationship between the EFTA and EU countries.

The most striking result of the Fixed Effect Robust OLS regression was how strong influence the trend variable (Year) has on the dependent variable (CIT). The significant parameter estimate is very high, 0,759, meaning that the tax rate drops by an average of 0,759 every year regardless of the other variables in the model. The result from my study is consistent with the results from (Overesch & Rincke, 2011) who found that the corporate income tax rate was very dependent on the time variable. Comparing the effect time trend has against EU-entry over time, the time trend have more bearing on the outcome. Since the time trend is as strong as has been shown in this study, future studies should perhaps look at how the trend variable changes over time. For instance, if the adjustments or competition could be described as a continuous process, a model that allows for a stepwise change to take place could be used.

The result from the political dummies could be traced by analyzing the data. In the regression we find that both a left wing government and a right wing government is likely to set the corporate income tax 2,814 and 3,384 percentage points lower than centrist governments. There is a small difference in the coefficients, which is reasonable since right wing governments are more likely to be tax averse than left wing governments. Although there is a small difference between left and right wing governments, they should be set in contrast to the zero dummy value which is a center government. It may seem unintuitive that a left wing government is more likely to decrease the corporate income tax than are the centrist government. However, looking at the data gives an explanation to these results. The centrist governments in the data
are more likely to be coalitions of many political parties where the respective parties could be very heterogeneous. Since politicians make tax decisions, it is possible that these broad coalitions would have a harder time to agree on a tax rate and get a majority to favor it in the parliament. The centrist government is also more likely to be a minority government and therefore have a weaker position toward the legislative branch of government. Hence, when the government is weak, the tax rates are less likely to shift.

None of the openness variables Export and FDI were significant. A result that also is consistent with Overesch & Rincke (2011). Even though similar result has been computed earlier, it came as little surprise. Intuitively, the more open an economy is, the more it would depend on tax policy decisions abroad. One way of explaining the result could be that the countries in the study are dependent on how open they are to the surrounding world but Export and FDI are simply not good proxy variables of “Openness”. The levels of foreign direct investment and export as part of GDP might say more of the country's industrial structure than of how open the country is. For instance, an economy dominated by heavy industry would attract more capital than a service dominated economy.

As mentioned in the introduction, tax competition is looked at very differently in the economic debate. If tax competition in corporate income taxes is present, and causes a downward trend in overall taxation it transfer wealth to businesses from the public sector. Or as in the Mendoza and Tesar (2003) study, as a transfer of wealth in from the labor force to corporations. However, this is more of a political consideration than economical. What we can say from an economical point perspective is that the aggregated capital stock in the EU does not increase simply because corporations decide to move from one country to another. Here, the costs of reallocating businesses between countries could be seen as a cost of tax competition.

The political perspective is nevertheless interesting. Heinemann et al. (2010) discuss how the change from a political climate favoring high marginal taxes on labor to a low tax society has made it politically possible to also lower the tax on corporations.

The European Union is today an increasingly integrated economic zone. However, the countries are still pursuing an independent line of fiscal policy. The fact that European
tax systems are different gives corporations extra incentive for taking the tax regime into account when making allocation decisions.

It is difficult to estimate exactly how costly harmful tax competition is. But the citizens that experience a lower-than-optimal provision of public services caused by tax competition are carrying the cost of it.

While a tax competitive approach might seem rational for a country, the risk of ending up in a race-to-the-bottom result is significant. Persson (2003) points out that tax harmonization could work as a mean of combating tax competition. But during the current recession and a Europe with protectionist tendencies, it is hard to see that EU will be allowed legislative power over corporate income taxes or a scenario were the 27 member states with veto power could agree on a common tax rate.
References


OECD Tax Database. May 29, 2012, From: http://www.oecd.org/document/60/0,3746,en_2649_37427_1942460_1,1_1_37427,00.html#C_CorporateCaptial


Skatteverkets kontroller av transaktioner med skatteparadis och tidigare skatteparadis samt skatteupplägg med utländska bolag | Skatteverket. May 14 2012, From: http://www.skatteverket.se/omskatteverket/omoss/beskattningsverksamheten/specialgranskningar/utlandstransaktioner.4.58a1634211f85df4dce800011401.html


### Attachments

#### Countries in the study

<table>
<thead>
<tr>
<th>Country</th>
</tr>
</thead>
<tbody>
<tr>
<td>Austria</td>
</tr>
<tr>
<td>Belgium</td>
</tr>
<tr>
<td>Czech Republic</td>
</tr>
<tr>
<td>Denmark</td>
</tr>
<tr>
<td>Estonia</td>
</tr>
<tr>
<td>Finland</td>
</tr>
<tr>
<td>France</td>
</tr>
<tr>
<td>Germany</td>
</tr>
<tr>
<td>Greece</td>
</tr>
<tr>
<td>Hungary</td>
</tr>
<tr>
<td>Ireland</td>
</tr>
<tr>
<td>Italy</td>
</tr>
<tr>
<td>Luxembourg</td>
</tr>
<tr>
<td>Netherlands</td>
</tr>
<tr>
<td>Poland</td>
</tr>
<tr>
<td>Portugal</td>
</tr>
<tr>
<td>Slovak Republic</td>
</tr>
<tr>
<td>Slovenia</td>
</tr>
<tr>
<td>Spain</td>
</tr>
<tr>
<td>Sweden</td>
</tr>
<tr>
<td>United Kingdom</td>
</tr>
</tbody>
</table>

Attachment 1