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THE INTERNATIONAL CORPORATE TAX COMPETITION: HOW DO COUNTRIES INTERACT WITH EACH OTHER

A DISSERTATION APPROVED FOR THE
DEPARTMENT OF ECONOMICS

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Abstract

Corporate tax rates have been significantly decreased, especially in the OECD countries in the past thirty years. In 1980, the average federal level corporate top statutory tax rate in the OECD countries was 42.35%, and in 1990, this number was 36.35%. In 2010, this number has been decreased to less than 25%. Many economists (Slemrod, 2004; Winner, 2005; Schwarz, 2007; Devereux et al., 2008; Bellak and Leibrecht, 2009) investigate the causes, as well as the consequences of the decreasing corporate tax rate trend. The purpose of this paper is to provide a comprehensive study of the causes of corporate tax rate changes by investigating the OECD countries first, and then extending to other developing countries.

This dissertation contains three chapters. Chapter I documents the evolution of corporate tax policies in OECD countries. Chapter II studies international corporate tax competition within OECD countries. It focuses on controlling the effects of common shocks on strategic interactions with respect to corporate tax policies. Chapter III includes corporate tax policies of developing countries and investigates two questions. First, how do neighboring countries interact with each other regarding corporate top statutory tax rate (TSR)? Second, which countries are more likely to be leaders and which countries are more likely to be followers in international corporate tax competition setting?

The first chapter evaluates various aspects of corporate tax evolution in OECD countries. Corporate tax policy changes not only include changes in corporate tax rates, but also changes in corporate tax bases, as well as the changes in corporate tax structures. These changes differ across countries as well as through time. Despite the differences, however, there are several common features in OECD countries' corporate tax policy changes.

First of all, corporate tax rates in all OECD counties have been reduced. In contrast, the corporate tax bases have been broadened. The countries, such as Portugal, Finland, and Greece, had higher corporate tax rates than the other OECD countries at the beginning of the sample period, 1981, and also experienced larger corporate tax rate reductions. Second, most of the OECD countries impose a straight-forward corporate tax structure. More than half of the OECD countries do not collect local corporate tax. Also, most of the OECD countries implement a flat instead of progressive corporate tax rate structure. Third, in all OECD countries, corporate tax revenues only account for a small fraction of the total tax revenues, as well as GDP.

The second chapter uses panel spatial analysis to study strategic interactions in OECD countries with respect to corporate tax rates. The data includes 21 developed countries which joined the OECD before 1980, for the period from 1981 to 2011. The main contribution of this chapter is analyzing the importance of accounting for common shocks which may have differential impacts on countries. To do this, I adopt the double

clustering method proposed by Thompson (2011), account for the effects of common shocks on the corporate tax competition via reaction functions, which represent how a country responds to other countries' corporate tax rates. Both geometric and economic weighting matrixes are adopted to build the reaction functions.

These findings demonstrate that an OECD country's corporate tax rates are positively and significantly correlated with other OECD countries' corporate tax rates. Generally, a country's corporate tax rates fall by around 0.7 percentage points when the weighted average corporate tax rates in other OECD countries fall by 1 percentage point. This positive correlation is robust under various empirical specifications. As the 1998 OECD report mentioned, corporate tax competition in OECD countries has been more intense since the early 1990s.The findings also indicate that corporate tax rates in developing countries significantly affect OECD countries' corporate tax rates. This suggests that international corporate tax competition among OECD countries is also influenced by developing countries.

The third chapter contributes to the existing literature about international corporate tax competition in three ways. First, it adopts a larger sample than previous research which allows for a more comprehensive investigation on international corporate tax changes. The data includes 139 countries from 1981 to 2011. Second, instead of corporate tax rate levels, this chapter focuses on the observed corporate TSR changes and investigates corporate TSR change interactions among neighboring countries. Third,

this chapter sheds light on the leader follower problem in international corporate tax competition by investigating dynamic aspects of corporate TSR change interactions.

The results of the third chapter are quite interesting. First, neighboring countries' corporate TSR changes are found to interact with each other. Moreover, neighboring countries' corporate TSR increases and decreases have opposite effects on home countries' corporate TSR policies. Second, the structure of corporate TSR change interactions is complicated. Countries interact with each other contemporaneously, as well as dynamically with respect to corporate TSR changes. Third, this chapter finds that developed countries and tax havens are more likely to be leaders than developing and non-tax haven countries in corporate TSR change interactions. Regarding contemporaneous interactions, corporate TSR changes in emerging market countries are found to be significantly related to developed countries' corporate TSR policies.

From a policy perspective, attempts to regulate corporate tax competition in OECD and European Union (EU) countries which focus on cooperation among member countries alone are not sufficient. It is necessary to include developing countries, at least some of the emerging market countries, into international tax coordination. Moreover, since a country's corporate tax policies not only depends on the interactions with other countries, but also on its own economic and political characteristics, it is difficult to enforce the same corporate tax rates and bases on all countries. However, countries may

agree to enhance the stability of corporate tax policies. By reducing the incentives to decrease corporate tax rates, international corporate tax competition can be attenuated.

Overall, this dissertation investigates countries' strategic interactions regarding corporate tax policies. The results provide some evidence to help policymakers, particularly those in OECD countries, understand the nature of corporate tax policy interactions. In doing so, it provides guidance to policymakers regarding policies aimed at curbing international corporate tax competition.

Chapter I: The Evolution of Corporate Tax in OECD Countries

In the past thirty years, OECD[1] countries have significantly reduced their corporate tax rates. Several papers document the decreasing trend of different types of corporate tax rates, namely, corporate top statutory tax rate (TSR)[2], corporate effective average tax rate (EATR)[3], and corporate effective marginal tax rate (EMTR)[4]. Some papers specifically discuss the evolution of corporate tax (Devereux et al., 2002; Devereux and Sørensen, 2006; Abbas et al, 2012), both corporate tax rates and bases. Other papers that investigate the international tax competition, as well as the relationship between corporate tax rate and foreign direct investment (FDI)[5], also briefly introduce the trend of corporate tax rates (Devereux et al., 2008; Rincke and Overesch, 2009; Devereux and Freeman, 1995; Bellak and Leibrecht, 2009).

The previous literature all focuses on showing that the average corporate tax rate is decreasing and/or the overall corporate tax base is broadening. Devereux et al. (2002) use data from 16 OECD countries from 1982 to 2001, and Devereux and Sørensen (2006) cover 19 OECD countries from 1982 to 2004. These two papers also show that for each country the corporate tax rate at the end of the sample period

[1] In the rest of the paper, OECD is the abbreviation for *Organization for Economic Cooperation and Development*.
[2] In the rest of the paper, TSR is the abbreviation for top statutory tax rate.
[3] In the rest of the paper, EATR is the abbreviation for corporate effective average tax rate.
[4] In the rest of the paper, EMTR is the abbreviation for effective marginal tax rate.
[5] In the rest of this paper, FDI is the abbreviation for foreign direct investment.

is lower than that at the beginning of the period, and the corporate tax base changes in the opposite direction. The paper by Abbas et al. (2012), which is to my knowledge, the only paper studying corporate tax rate in developing countries, includes 50 developing countries from 1996 to 2007. However, the evolution of corporate taxation is a more complex problem, which incorporates more than just the overall decreasing corporate tax rate and the broadening corporate tax base.

The purpose of this chapter is to provide a comprehensive study of corporate tax evolution in OECD countries, more specifically, corporate tax evolution in countries that joined OECD before 1980. The main reason for focusing on these 24 countries[6] is that they are usually considered to be developed countries. Having similar economic and social development, it is reasonable to believe that the mechanism determining the corporate taxation system is comparable across these 24 OECD countries. Moreover, the *OECD Tax Database* and the *AEI International Tax Database* all provide high quality data about corporate tax in these OECD countries.

Overall, this chapter not only investigates the trend of corporate tax rate, base, and revenues, but also includes some detailed information about corporate tax changes, such as the changes of corporate tax structure. The rest of this chapter is arranged as follows: Section 1.1 compares corporate tax structure across the 24 OECD countries; Section 1.2 investigates the evolution of corporate tax rates,

[6] The 24 countries that joined OECD before 1980 are Australia, Austria, Belgium, Canada, Switzerland, Denmark, Spain, Finland, France, United Kingdom, Germany, Greece, Ireland, Iceland, Italy, Japan, Luxembourg, Netherlands, Norway, New Zealand, Portugal, Sweden, Turkey, United States

especially the evolution of corporate TSR; Section 1.3 studies the overall trend of corporate tax base; Section 1.4 briefly discusses corporate tax revenues; and Section 1.5 provides detailed information and time series graphs of corporate tax rate changes in each OECD country. Finally, Section 1.6 is the conclusion part.

1.1 Corporate Tax Structure

The corporate tax structure in the 24 OECD countries is relatively stable. There are, however, differences across countries. For example, some countries only impose corporate taxes at the central level and not the local level, while other countries adopt both. Also, some countries have only one corporate tax bracket, e.g., a flat tax, while other countries use a progressive tax structure where the corporate tax rate increases as the corporate taxable income increases over multiple corporate tax brackets.

1.1.1 Sub-national Corporate Tax vs. National Corporate Tax

Figure 1.1.1 (a) reports the fraction of OECD countries that adopt sub-national and national corporate taxes. In the 24 OECD countries, more than half of the countries only collect corporate taxes on the central government level. The 15 OECD countries that always only adopt central government corporate taxes in the sample period are Australia, Austria, Belgium, Denmark, Finland, France, Greece, Iceland, Ireland, Italy, Netherlands, New Zealand, Spain, Turkey, and the United Kingdom.

Also, there are 7 OECD countries that have always collected both central and sub-national corporate taxes from 1981 to 2012, and they are Canada, Germany, Japan, Luxembourg, Portugal, Switzerland, and the United States. No OECD countries switched from the group, in which countries have no local corporate tax to the group that collects sub-national corporate taxes. Only 2 OECD countries, Norway and Sweden, stopped collecting sub-national corporate taxes at 1998 and 1991, respectively.

Figure 1.1.1 (b) summarizes the time trend of OECD countries' sub-national corporate tax rate, if applicable. Compared to the central government corporate TSRs, the sub-national corporate tax rates are relatively stable. Among the 7 OECD countries that adopt a sub-national corporate tax, only Switzerland significantly reduced its sub-national corporate tax rate in the past 30 years, from 26.5% in 1981 to 14.5% in 2012. The sub-national corporate tax rate in Germany even slightly increased, from 9.1% in 1981 to 14.4% in 2012. The other countries' sub-national corporate tax rates are either quite stable (Canada, Japan, and the United States), or slightly decreased (Luxembourg and Portugal). Moreover, except Switzerland, all the other 6 OECD countries' average sub-national corporate tax rates stayed low, at less than 15%.

1.1.2 Progressive Tax vs. Flat Corporate Tax

Figure 1.1.2 uses a Venn diagram to report the OECD countries that adopt a progressive and/or flat corporate tax from 1981 to 2011. Most of the 24 OECD

countries use flat corporate tax and have only one corporate tax bracket. In these countries, the corporate tax rate does not increase when the taxable corporate income increases. There are 15 OECD countries that always impose a flat corporate tax during the sample period: Australia, Canada, Denmark, Finland, France, Germany, Greece, Iceland, Italy, Norway, New Zealand, Spain, Sweden, Turkey, and the United Kingdom. Moreover, 2 OECD countries, Austria and Switzerland, changed their corporate tax structure from progressive to a flat rate in 1989 and 1998, respectively.

Of the remaining 7 OECD countries, Belgium and the United States are the only countries that stuck to a progressive corporate tax, and only Japan changed from using flat to progressive corporate tax, which happened in 2011. The other 4 countries, Ireland, Luxembourg, Netherlands, and Portugal, have changed their number of corporate tax brackets more than once, and switched between progressive and flat corporate tax structures. Moreover, since 1993, the United States has had eight corporate tax brackets, which is the largest number in all OECD countries. Also, Netherlands changes 3 times between progressive and a flat corporate tax, which is the highest frequency among the 24 OECD countries.

Table 1.1.2 groups and compares 24 OECD countries' corporate tax structures in 1981 and 2011, according to whether the country had a sub-national corporate tax and whether it adopted a progressive corporate tax. The number of countries in each group is relatively stable. Also, the number of countries that adopted a flat corporate

tax and had only a national corporate tax increased slightly, from 12 to 15. Most of the 24 OECD countries prefer a simple corporate tax structure, as the number of countries that adopt a flat corporate tax is larger than that adopt a progressive corporate tax, and the number of countries that have only a national corporate tax is larger than the number that have a sub-national corporate tax.

1.2 The Evolution of Corporate Tax Rates[7]

Compared to corporate tax structures, changes in corporate tax rates are more frequent and have a clear decreasing trend over time. In the past thirty years, OECD countries have significantly reduced their corporate income tax rates, from over 40% to less than 25%. To measure corporate tax rates, economists adopt three different methods: corporate TSR, corporate EATR, and corporate EMTR. The corporate TSR is the top corporate tax rate explicitly determined by legislations, while corporate EATR and EMTR are implicit tax rates, incorporating both tax rate and base. The corporate effective tax rates are calculated under the same assumptions as used by Devereux and Griffith (2003), and are based on a hypothetical investment, which is financed by equity, on plant and machinery.

Besides the overall decreasing trend, this section also discusses other characteristics of corporate tax rate evolution in OECD countries. First of all, not

[7] Unless specifically mentioned, the corporate tax rate discussed in this paper is the corporate income tax rate. Other than income, a firm can also be taxed on its assets, such as real estate, by different tax rates. Appendix II provides detailed discussions about corporate EATR and EMTR, including how these effective rates are calculated and the advantages of using these rates to measure corporate tax policy changes.

only the average but also the standard deviation of corporate tax rate has been significantly reduced over time. However, the coefficient of variation (CV)[8], which represents the dispersion of the data relative to the sample mean, has been increasing since 2000. Second, the frequency and magnitude of corporate tax rate changes differ across countries and over time, and exhibit certain patterns that are worth noticing. Third, although corporate tax cuts dominates corporate tax changes in OECD countries, there were quite a few corporate tax rate increases in the sample period. In general, the evolution of corporate tax rate is a complicated issue.

1.2.1 Corporate Top Statutory Tax Rate

The corporate TSR is the most basic and widely used measurement of corporate tax rate. The corporate TSR studied in this chapter is the central government corporate tax rate, and is adjusted for sub-central deductions, if applicable. The data of corporate TSR is from the *AEI international database* and *OECD Tax Database*, and covers 24 OECD countries from 1981 to 2012. In the 1980s, the 24 OECD countries' average central government corporate TSR was more than 42%, and in 2012, it was less than 25%. Also, the standard deviation of corporate TSR across countries decreased from over 11% in the early 1980s to 6.79% in 2012.

As Figure 1.2.1 (a) shows, the trends of the mean and the standard deviation of corporate TSR are both decreasing. However, the CV of corporate TSR, which

[8] In the rest of the paper, CV is the abbreviation for coefficient of variation.

measures the dispersion relative to the mean, was slightly reduced from 1981 to 1999, but then, increased after 2000. Figure 1.2.1 (a) indicates that in the past thirty years, the average corporate TSR and the variance of corporate TSR in OECD countries have decreased, but since 2000, the variation, conditional on the mean, of corporate TSR in OECD countries has increased.

Moreover, the distribution of corporate tax rate changes varies significantly across both country and time. Table 1.2.1 reports the central government corporate TSR changes in 24 OECD countries from 1981 to 2012. In this thirty-two year period, the 24 OECD countries had in total 185 central government corporate TSR changes. While 140 of the corporate TSR changes were tax decreases, only 45 of the changes were tax increases. The number of corporate tax cuts is more than three times that of corporate tax rate increases.

The five countries that have the highest frequency of corporate TSR changes are Canada, France, Luxembourg, United Kingdom, and Germany[9]. Meanwhile, the five countries that have the lowest number of corporate TSR changes are Switzerland, Austria, Norway, Spain, and United States. Also, the five countries that have the highest frequency of corporate TSR cuts are Canada, France, United Kingdom, Ireland, and Luxembourg. On average, each country had over 7 corporate TSR changes in the past thirty-two years.

[7] Germany, Iceland, Ireland, and Turkey have the same number of corporate tax changes.

Among these 185 corporate TSR changes, the largest corporate TSR cut happened in Austria in 1989, where the Austrian government reduced the central government corporate TSR by 25%, from 55% to 30%, and this reduction lasted for five years. The largest corporate TSR increase happened in Sweden in 1985, where the central government corporate TSR increased by 20%, from 32% to 52%, and this corporate tax increase also lasted for five years, from 1985 to 1989. The average magnitude of the largest corporate TSR cuts in each OECD country was 9.28%, which is larger than that of corporate TSR increases, which was 3.94%.

Figure 1.2.1 (b) shows the distribution of the federal level corporate TSR changes at five-year intervals in 24 OECD countries from 1981 to 2012. The frequency of corporate TSR cuts peaked twice, both in the late 1980s and the early 2000s. Meanwhile, the frequency of corporate TSR increases has significantly decreased since the late 1990s. The total number of corporate TSR increases in 24 OECD countries from 1996 to 2012 was merely 9, only one fourth of that in the first 15 years of the sample.

In addition, the countries that have a large number of corporate TSR changes, such as Canada, France, and Luxembourg, usually have a low average magnitude of corporate TSR changes. Figure 1.2.1 (c) demonstrates the scatter distribution of the average magnitude and the frequency of corporate TSR changes. The graph shows that the variation of the average magnitude of corporate TSR changes decreases when the frequency of corporate TSR increases. In other words, for OECD countries

that have a large number of corporate TSR changes, the average magnitude of corporate TSR changes is relatively small. But, for OECD countries that have a small number of corporate TSR changes, the average magnitude of corporate TSR changes is uncertain, and can be small or large.

Although the central government corporate TSR reflects the tax policy of central government regarding corporate taxation, it does not incorporate aspects of the corporate tax base. Accordingly, it cannot represent the actual corporate tax burden that fell on firms. Corporate EATR and EMTR, on the other hand, are direct measurements of corporate taxation which take aspects of the corporate tax base into consideration. Also, these two measurements are forward-looking, and have the advantage that they are not influenced by the changes of total corporate revenues. Corporate EATR and EMTR can be calculated by the method developed by Devereux and Griffith (2003), and are widely used in the papers investigating the relationship between corporate tax rate and investment decisions.

1.2.2 Corporate Effective Average Tax Rate

According to Hassett and Mathur (2011), the corporate EATR "measures the average rate a firm might expect to face on an investment project over the possible distribution of profitability. The EATR informs location choices." (2). Devereux and Griffith (2003) show that when the profitability for an investment is increasing, the corporate EATR approaches the corporate TSR. Figure 1.2.2 (a) shows the average, standard deviation, and coefficient of variation (CV) of corporate EATR. The

average and standard deviation of corporate EATR are both decreasing over time. Unlike the CV of corporate TSR, the CV of corporate EATR is relatively stable and only slightly increases after 2000.

Figure 1.2.2 (b) compares the corporate EATRs in 1981 to those is 2011 for 21 OECD countries. It is obvious that every OECD country cut its corporate EATR. Moreover, the OECD countries that had higher corporate EATRs at the beginning of the sample period, such as Portugal, Finland, and Germany, reduced their corporate EATRs to a greater extent. Figure 1.2.2 (c) shows that there is a positive relationship between the magnitude of corporate EATR reduction and the original level of corporate EATR in OECD countries. Overall, like corporate TSR, the corporate EATR also has decreased in OECD countries from 1981 to 2011.

1.2.3 Corporate Effective Marginal Tax Rate

Hassett and Mathur (2011) "The effective marginal tax rate measures the tax liability incurred on an additional dollar of investment. The EMTR informs scaling choices, conditional on the location." (2). A higher corporate EMTR indicates a higher pre-tax rate of return for a particular investment. Thus, the main difference between corporate EATR and EMTR is that the former allows the profitability of an investment to change, while the latter does not and sets the post-tax return rate of an investment to be the minimum required level--just enough to offset the cost of that investment.

Figure 1.2.3 (a) shows the average, standard deviation, and CV of corporate

EMTR in 21 OECD countries from 1981 to 2011, and has the similar pattern as Figure 1.2.2 (a). The average and standard deviation, as well as the CV of corporate EMTR, are all dramatically decreasing over time. The trend of corporate EMTR indicates that, in the past thirty years, OECD countries not only have reduced average corporate EMTRs, and the difference of corporate EMTR has narrowed among countries.

Figure 1.2.3 (b) compares the corporate EMTR of each OECD country in 1981 to the number in 2011. Except Canada, Ireland, and the United Kingdom, all the other 18 OECD countries have decreased their corporate EMTRs since 1981. For the OECD countries that reduced their corporate EMTRs, the countries with higher original EMTR level had a larger corporate EMTR reduction by 2011. Figure 1.2.3 (c) demonstrates that there also exists a positive relationship between the magnitude of corporate EMTR reduction and the original level of corporate EMTR. Moreover, the scatter pattern of Figure 1.2.3 (c) is very similar to that of Figure 1.2.2 (c).

1.3 The Evolution of Corporate Tax Base

In OECD countries, the corporate tax base is extremely complex and differs across countries. The corporate tax base not only includes a firm's current profits, but also includes various other sectors, such as a firm's previous investments on properties/assets, dividend-paid and interest deductions, and capital repatriation, if applicable. Moreover, corporate tax rates differ even within the same country. For example, in the United States, corporate assets are unevenly taxed, with a higher rate

for inventories and a relatively lower rate for communication structures and aircraft. Also, the tax base for multinational companies is more complicated and difficult to measure, because it depends on both home and host countries' tax legislation, including various bilateral tax agreements, such as double taxation treaties and exemptions. In general, it is impossible to accurately depict or summarize tax bases in OECD countries.

1.3.1 The Present Discounted Value of Depreciation Allowances

Although it is difficult to find a common ground to accurately describe and compare OECD countries' corporate tax bases, economists employ some methods/variables to represent changes in corporate tax bases. One of the methods that are widely used in previous literature is the present discounted value (PDV)[10] of depreciation allowance, which measures a firm's allowance for loss due to depreciation of capital expenditure and is adjusted for current inflation and real interest rate.

There are two methods to calculate depreciation allowance, one is the straight line method, and the other is the reducing balance method. The former equally spreads the costs of an asset across its useful life, while the latter charges more depreciation at the first year, and then the depreciation rate gradually declines over time. Most of OECD countries adopt both methods, and allow firms to choose the depreciation method that they prefer. In some OECD countries, such as Canada,

[10] In the rest paper, PDV is the abbreviation for present discounted value.

Spain, and Finland, the depreciation allowance rates vary across different types of assets. In order to keep PDV of depreciation allowance comparable, my analysis in this chapter follows Devereux et al. (2002) and Devereux and Sørensen (2006), and focuses on the depreciation allowance on investments in plant and machinery.

The PDV of depreciation allowance is inversely related to the corporate tax base, that is, the decreasing PDV of depreciation allowance indicates that the corporate tax base is increasing. Figure 1.3.1 presents the average PDV of depreciation allowance of 21 OECD countries from 1981 to 2011. On average, the PDV of depreciation allowance is a decreasing trend over time. Especially, in the 1980s, the average PDV of depreciation allowance fell from over 77% to around 73%, and it also experienced a slight decrease at the beginning of 2000. Overall, the corporate tax base has been broadening in OECD countries in the past thirty years.

1.3.2 Other Measurements of Corporate Tax Base

Kawano and Slemrod (2012) provide new measures describing the corporate tax base, which are more comprehensive and cover a wider range than the PDV of depreciation allowance. Their data is collected from the International Bureau of Fiscal Documentation's (IBFD) *Annual Report*, and contains 12 sub-sections of corporate tax base in OECD countries from 1980 to 2004. Although they do not have data on the magnitude of corporate tax base changes, they provide data about the frequency of corporate tax base changes, including changes in both base broadening and narrowing. They find that in OECD countries, most of corporate tax

base changes broaden the tax base, however, the frequency of corporate base narrowing is not rare, and is around three fourths of that of corporate tax broadening. Moreover, they point out that in contrast to the conventional knowledge, the corporate tax rate reductions are not always accompanied with corporate tax base broadening.

1.4 Corporate Tax Revenue

Devereux et al. (2002) point out corporate tax revenue does not provide a good measure of corporate tax policies, mainly because the companies' profit does not equal the true corporate tax base set by legislation. With increasing capital mobility, it is easier for multi-national companies to transfer their profits from countries having high corporate tax rates to those having low corporate tax rates, in order to avoid high level taxation. Moreover, a company's profit can be influenced by various macro and micro economic factors, such as wages, technology, and management skills.

In OECD countries, corporate tax revenue is not the main tax revenue income resource. On average, corporate tax revenue only counts for less than 10% of total tax revenue. However, the combination of governments' tax revenue income, as well as the fraction of corporate tax revenue changed significantly during the sample period, from 1965 to 2011. Corporate tax revenue not only varies across time, but also differs across countries. To comprehensively investigate corporate tax, and the impact of corporate tax policy changes, it is important to incorporate the influence of

corporate tax revenue.

1.4.1 Corporate Tax Revenue and the Growth Rate of Corporate Tax Revenue

Figure 1.4.1 shows the average corporate tax revenue and the growth rate of average corporate tax revenue in 24 OECD countries from 1965 to 2011. The trend shows the average corporate tax revenue increasing over time from 11.7 billion US dollars in 1965 to around 42 billion US dollars in 2006 and 2007, just before the 2008 economic crisis. The growth rate of the average corporate tax revenue is more volatile, and exhibits a cyclical pattern.

Moreover, economic crises have notable impact on both average corporate tax revenue and the growth rate of average corporate tax revenue. The shadow areas indicate the economic crisis periods. From 1960 to 2011, the significant global economic crisis/recession periods are 1971, 1974-1975, 1981-1982, 1990-1991, 2001, and 2008. These six economic crisis periods are accompanied with large corporate tax revenue reduction and negative growth rate of average corporate tax revenue.

1.4.2 Corporate Tax Revenue (%GDP) and Corporate Tax Revenue (%Total Tax Revenue)

Compared to the average corporate tax revenue (constant at 2000 $US dollars) and the growth rate of average corporate tax revenue, the time trends of average corporate tax revenue (%GDP) and average corporate tax revenue (%total tax

revenue) are relatively stable and are not negatively and significantly affected by global economic crises/recessions. Figure 1.4.2 (a) shows the average and the median of corporate tax revenue (%GDP) and corporate tax revenue (%total tax revenue) of 24 OECD countries from 1965 to 2011. The average corporate tax revenue (%GDP) varies between 2% to 4%, and the average corporate tax revenue takes 8% to 11% of total tax revenue. Moreover, both trends slightly increased after the mid-1990s.

Even though each OECD country's corporate tax revenue (%GDP) and corporate tax revenue (%total tax revenue) are stable over time, there is cross-section difference in these two variables. Figure 1.4.2 (b) and (c) show the average and standard deviation of corporate tax revenue (%GDP) and corporate tax revenue (%total tax revenue) of each OECD country from 1965 to 2011, respectively. Except Norway, the standard deviations of each OECD country are small, which indicates that corporate tax revenue as a fraction of GDP and/or total tax revenue does not change dramatically over time. However, in some OECD countries, such as Japan, Luxembourg, and Australia, corporate tax revenue assumes/comprises a larger share of GDP and total tax revenue than in some other OECD countries, such as Iceland and Austria.

Figure 1.4.2 (d) categorizes OECD countries into different groups, according to their average corporate tax revenue (%total tax revenue). For half of the 24 OECD countries, corporate tax revenue is 5% to 10% of total tax revenue. This share of

total tax revenues is very low, less than 5%, in four countries, namely, Austria, Denmark, Germany, and Iceland. Also, in Japan and Luxembourg, corporate tax revenue amounts to 19% and 16% of total tax revenue, respectively. With the exception of Australia, at 14.5%, the remaining four OECD countries', Australia, Canada, New Zealand, Norway, and the United States, average corporate tax revenue (%total tax revenue) is around 11%.

The reasons that the corporate tax revenue has not been decreasing with falling corporate tax rates since the 1980s are twofold. First of all, although corporate tax rates have been decreasing, the corporate tax base has been broadening in the past 30 years. For example, the present discounted value of depreciation allowances was reduced in most OECD countries. Second, the lower corporate tax rates in OECD countries, such as Ireland and Canada, could stimulate both domestic investment and FDI. Thus, higher investment leads to higher economic output, which means larger taxable corporate income. Overall, as Devereux et al. (2002) argue, corporate tax revenue (%GDP) and corporate tax revenue (%total tax revenue) are improper measurements of corporate tax policies.

1.5 Corporate Tax Rate Graphs for Each OECD Country and Brief Discussions

Figure 1.5.1 summarizes the time trends of 24 OECD countries' corporate tax rates, and both corporate TSR and effective tax rates have decreasing trends in each

country[11]. In general, corporate TSR and effective tax rates move closely with each other, especially in Greece, Japan, and New Zealand. Most countries' corporate tax policy changes are in corporate tax rates. However, in several countries, such as Norway, Portugal, Spain, and Switzerland, the corporate TSR is relatively stable while the effective tax rates are relative volatile, which suggests these countries' corporate tax policy changes are more targeted toward corporate tax bases rather than rates.

Moreover, in nine OECD countries[12], the corporate TSR is always higher than effective tax rates. In some other countries, such as Finland, Germany, Italy, Norway, Portugal, and Spain, the corporate TSR is higher than effective tax rates at first, then abruptly lower than effective rates. The cross points of the corporate TSR and effective tax rates time trends essentially point out the year that a central governments broadened its corporate tax base, holding the corporate tax rate constant. Also, most of the corporate tax base broadening policies are adopted in the 1990s.

Overall, in the 24 OECD countries, the changes in corporate tax rates are more frequent than the changes in bases. This situation is probably due to the fact that corporate tax rate changes are more explicit signals of central governments corporate tax policies, and corporate tax rate cuts are more politically favored by both

[11] The effective tax rates data is not available for Iceland, Luxembourg, and Turkey.
[12] These nine countries are Australia, Austria, Belgium, Denmark, France, Netherlands, Switzerland, the United Kingdom, and the United States.

domestic firms and multinational companies.

1.6 Conclusions

This chapter documents, demonstrates, and compares the corporate tax changes in the 24 OECD countries in the past thirty years. Corporate tax changes not only include the basic corporate tax rates and bases changes, but also include corporate tax structures and revenue changes. Besides the common rate reducing and base broadening processes in OECD countries, the magnitude and frequency of corporate tax rate changes differ across time and country. Overall, there are several characteristics of OECD countries' corporate tax changes that are interesting and worth studying.

First of all, most OECD countries prefer simpler corporate tax structures. The number of OECD countries that do not adopt sub-national/local corporate tax is larger than those that do. Also, more than half of the OECD countries use a flat, instead of progressive corporate tax structure. Second, the relationship between corporate tax rate change frequency and magnitude is quite intriguing. Generally, the OECD countries have a higher frequency of corporate tax rate changes and have a lower average magnitude of change. However, things are more complicated when countries have a low frequency of corporate tax rate changes. The average magnitude of change can be both small and large.

Third, the OECD countries that had higher corporate effective tax rates at the beginning of the sample period, also experience larger corporate effective tax rate

reductions. This positive relationship can be found in both corporate EATRs and EMTRs. Fourth, the frequency of corporate TSR changes is higher than that of corporate base changes. This situation indicates that governments in OECD countries prefer to adjust corporate tax policies through rates, not bases. Also, corporate tax rate reductions are more favored by both domestic and multinational firms. Last but not least, in the OECD countries, although the corporate tax revenues only count for a small proportion of GDP and total tax revenues and are very stable across time, the absolute value of corporate tax revenues are increasing and reflect the macroeconomic environment.

In addition, each of these 24 OECD countries exhibits notable decreasing corporate tax rate trends, but none of them have the same pattern. Some economic papers point to economic integration and international corporate tax competition as causes of decreasing corporate tax rates. However, the decreasing corporate tax rates may also be driven by common shocks. Moreover, some papers argue that the international corporate tax competition is so intense that it distorts capital investments, and thus harms the overall welfare. As a result, OECD countries need to set harmonize corporate tax policies.

Whether it is necessary to regulate OECD countries' corporate tax policies is an important issue. Addressing this requires convincing empirical evidence concerning how the corporate tax rates are set, as well as identifying international and domestic factors that influence corporate tax policy choices. The next chapter provides an

empirical approach to investigate why corporate tax rates are decreasing and whether international corporate tax competition exists.

Table 1.1.2 Corporate Tax Structure in 24 OECD Countries, 1981 and 2011

1981	Progressive	Flat	2011	Progressive	Flat
Sub-national	Luxembourg, Portugal, Switzerland, the United States (4)	Canada, Germany, Japan, Norway, Sweden (5)	Sub-national	Japan, Luxembourg, Portugal, the United States (4)	Canada, Germany, Switzerland (3)
National	Austria, Belgium, Ireland (3)	Australia, Denmark, Finland, France, Greece, Iceland, Italy, Netherlands, New Zealand, Spain, Turkey, the United Kingdom (12)	National	Belgium, Netherlands (2)	Australia, Austria, Denmark, Finland, France, Greece, Iceland, Ireland, Italy, New Zealand, Norway, Spain, Sweden, Turkey, the United Kingdom (15)

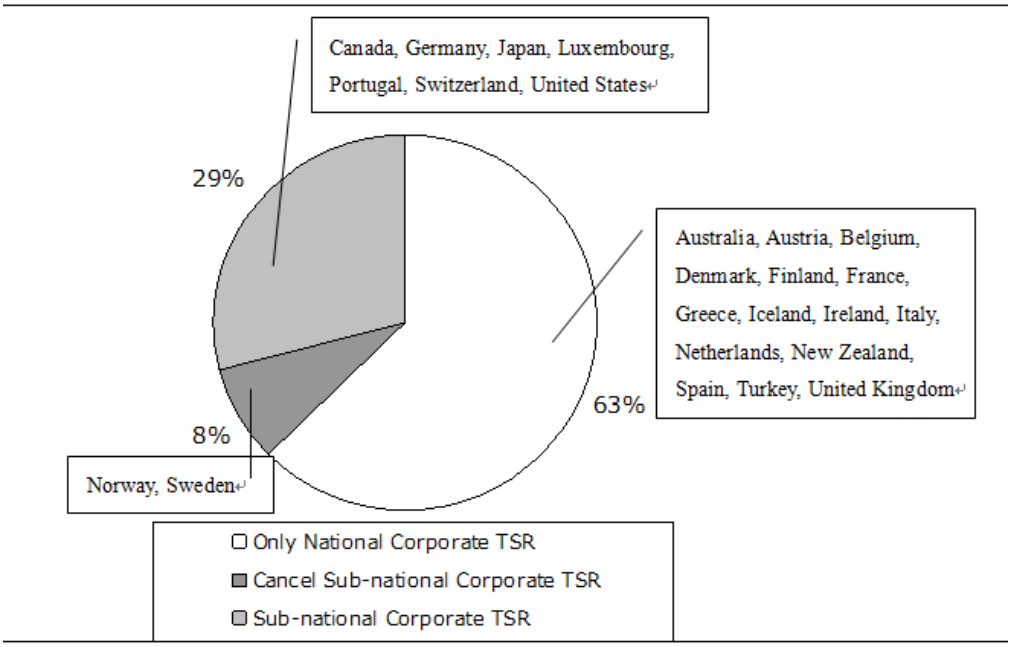
Data Source: the *AEI International Tax Database* and the *OECD Tax Database* (contains data up to and including 2012). For Luxembourg and Turkey, the data of sub-national corporate tax is not available until 2000.

Table 1.2.1 Corporate TSR Changes (Central Government) in 24 OECD Countries from 1981 to 2012

Country	Corporate Tax Cuts	Corporate Tax Increases	Total Changes	Max Tax Increase Value (%)	Max Tax Cut Value (%)
Australia	4	2	6	3	-10
Austria	2	1	3	4	-25
Belgium	5	1	6	1.17	-6.18
Canada	13	3	16	1.8	-7.21
Denmark	7	1	8	10	-10
Finland	6	3	9	6	-10
France	11	3	14	5	-5
Germany	8	2	10	3.375	-15.825
Greece	6	2	8	5.1	-11
Iceland	7	3	10	3	-14
Ireland	9	1	10	5	-8
Italy	4	3	7	6	-5.5
Japan	6	2	8	1.3	-4.5
Luxembourg	9	4	13	1.05	-8.32
Netherlands	8	0	8	0	-7
New Zealand	3	2	5	5	-20
Norway	1	2	3	1	-1
Portugal	6	1	7	1.5	-5
Spain	2	1	3	2	-2.5
Sweden	5	1	6	20	-12
Switzerland	1	0	1	0	-1.3
Turkey	4	6	10	8.3	-22.47
United Kingdom	11	0	11	0	-5
United States	2	1	3	1	-6
Total	140	45	185	20	-25
Mean	5.83	1.88	7.71	3.94	-9.28
Std. dev	3.28	1.39	3.74	4.32	6.31

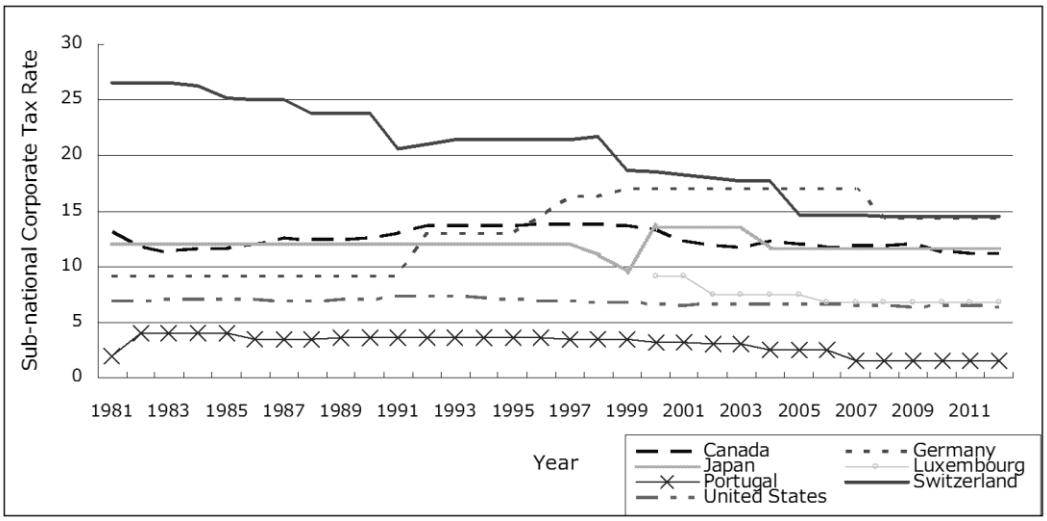
Data Source: the data of central government corporate TSRs from 1981 to 2011 is from the *AEI International Tax Database* and in 2012 is from the *OECD Tax Database* (contains data up to and including 2012).

Figure 1.1.1 (a) Corporate Tax Structure in 24 OECD Countries: Sub-national vs. National Corporate Tax



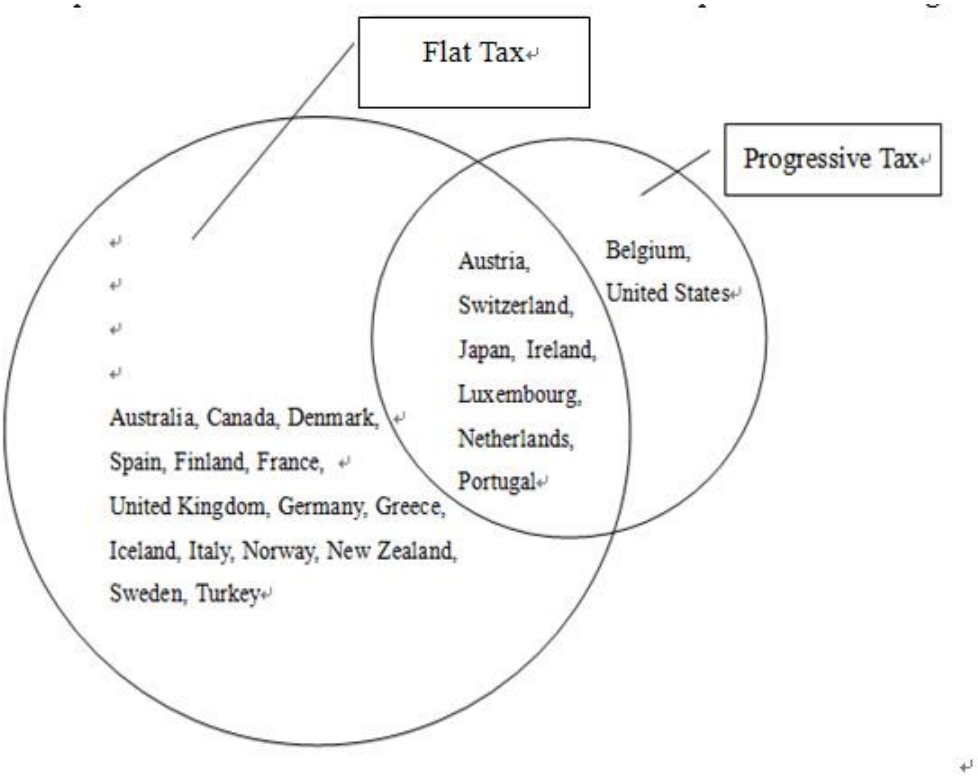
Data Source: The *OECD Tax Database* (contains data up to and including 2012).
Note: Sweden and Norway no longer collect sub-national corporate tax since 1991 and 1998, respectively. Moreover, the data of Luxembourg and Turkey is not available until 2000. From the available data, Luxembourg collects sub-national/local corporate tax, while Turkey does not.

Figure 1.1.1 (b) Sub-national Corporate Tax Rate in 7 OECD Countries* from 1981 to 2012



Data Source: The *OECD Tax Database* (contains data up to and including 2012).
**Note: In the sample period 1981- 2012, the 7 OECD countries that always adopt sub-national corporate tax are Canada, Germany, Japan, Luxembourg, Portugal, Switzerland, and the United States. The data from Luxembourg is not available until 2000.

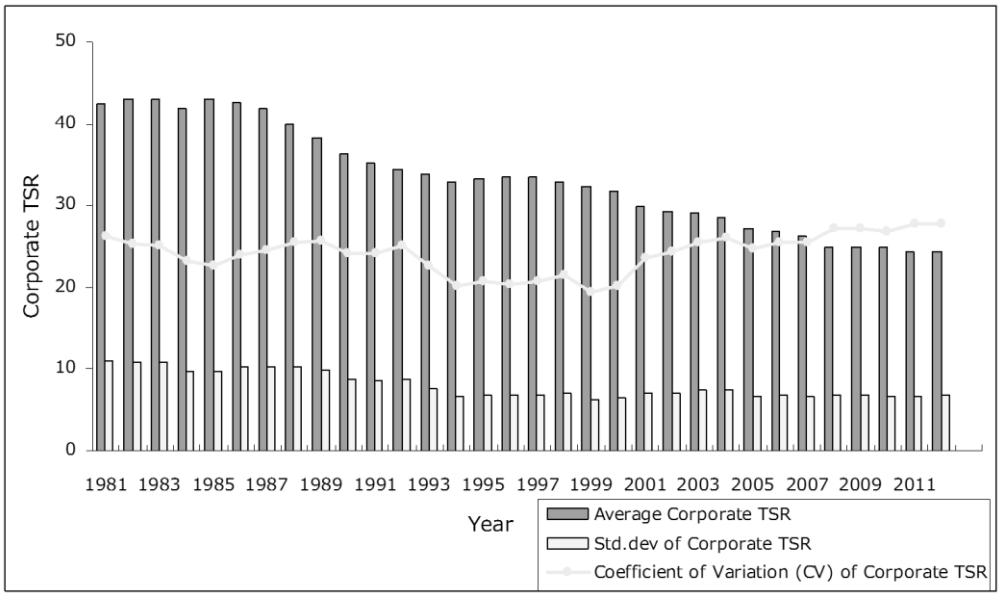
Figure 1.1.2 Corporate Tax Structure in 24 OECD Countries: Flat Tax vs. Progressive Tax



Data Source: the *OECD Tax Database* (contains data up to and including 2012).

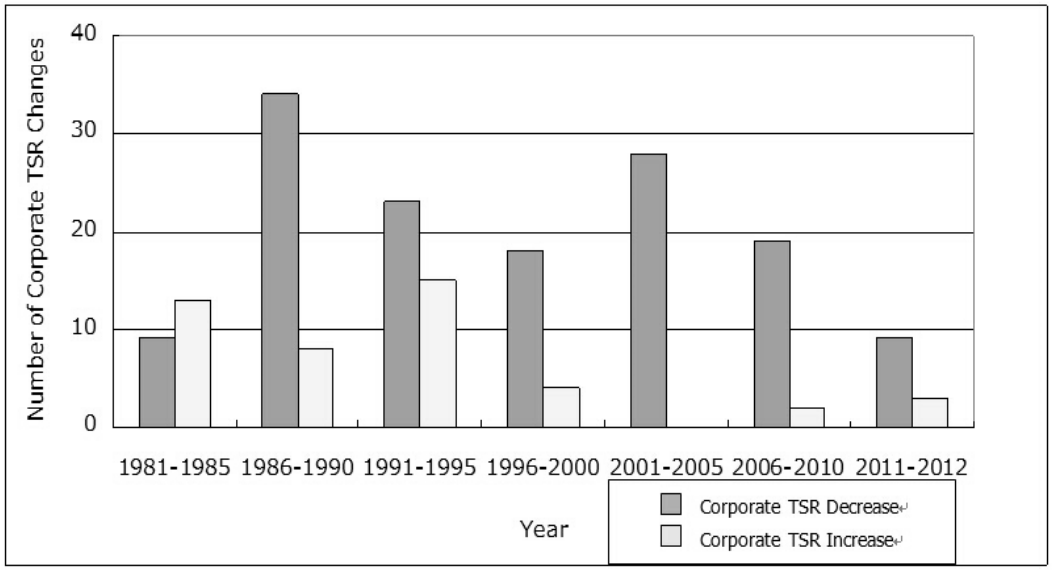
* Note: There are seven OECD countries switching between flat and progressive corporate tax: Austria, Switzerland, Japan, Ireland, Luxembourg, Netherlands, and Portugal. Austria and Switzerland changed from progressive to flat corporate tax at 1989 and 1998, respectively. Japan changed from flat to progressive corporate tax at 2011. Ireland, Luxembourg, Netherlands, and Portugal changed more than once. At first, Ireland adopted flat corporate tax, and then it switched to progressive corporate tax at 1996. After four years, 2000, Ireland changed back to flat corporate tax again. Luxembourg changed from progressive to flat corporate tax at 2002, and then switched back to progressive corporate tax at 2011. The situation is very similar in Portugal. At 1989, Portugal changed from progressive to flat corporate tax, and then at 2008, it changed back to progressive corporate tax. Netherlands is the OECD country that switched between flat and progressive corporate tax most frequently. At 1989, Netherlands changed from flat to progressive corporate tax, and then at 1998, it changed back to flat corporate tax. Eventually, at 2001, Netherlands adopted progressive corporate tax again.

Figure 1.2.1 (a) the Average, Standard Deviation, and Coefficient of Variation (CV) of Corporate TSR in 24 OECD Countries from 1981 to 2012



Data Source: the data of central government corporate TSRs from 1981 to 2011 is from the *AEI International Tax Database* and in 2012 is from the *OECD Tax Database* (contains data up to and including 2012).

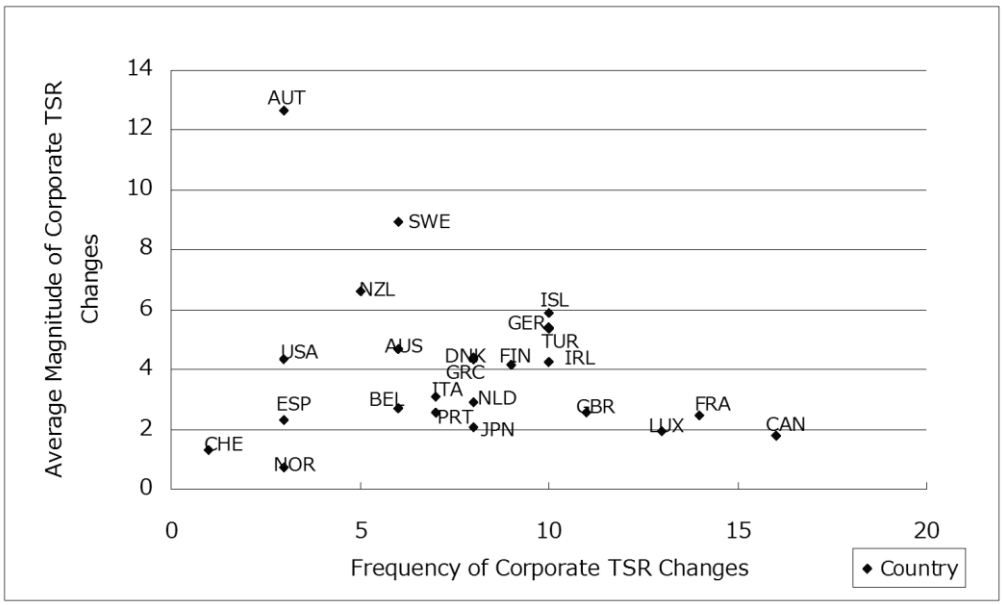
Figure 1.2.1 (b) Central Government Corporate TSR Changes in 24 OECD Countries from 1981 to 2012



** Note: The data is from 1981 to 2012, in total 32 years. So, when grouping the data every five years, there are seven intervals, which are 1981-1985, 1986-1990, 1991-1995, 1996-2000, 2001-2005, and 2006-2010. The last two years, 2011 and 2012, are left behind. To have a complete observation, the last two years are grouped as one interval and reported as the previous intervals.

Data Source: the data of central government corporate TSRs from 1981 to 2011 is from the *AEI International Tax Database* and in 2012 is from the *OECD Tax Database* (contains data up to and including 2012).

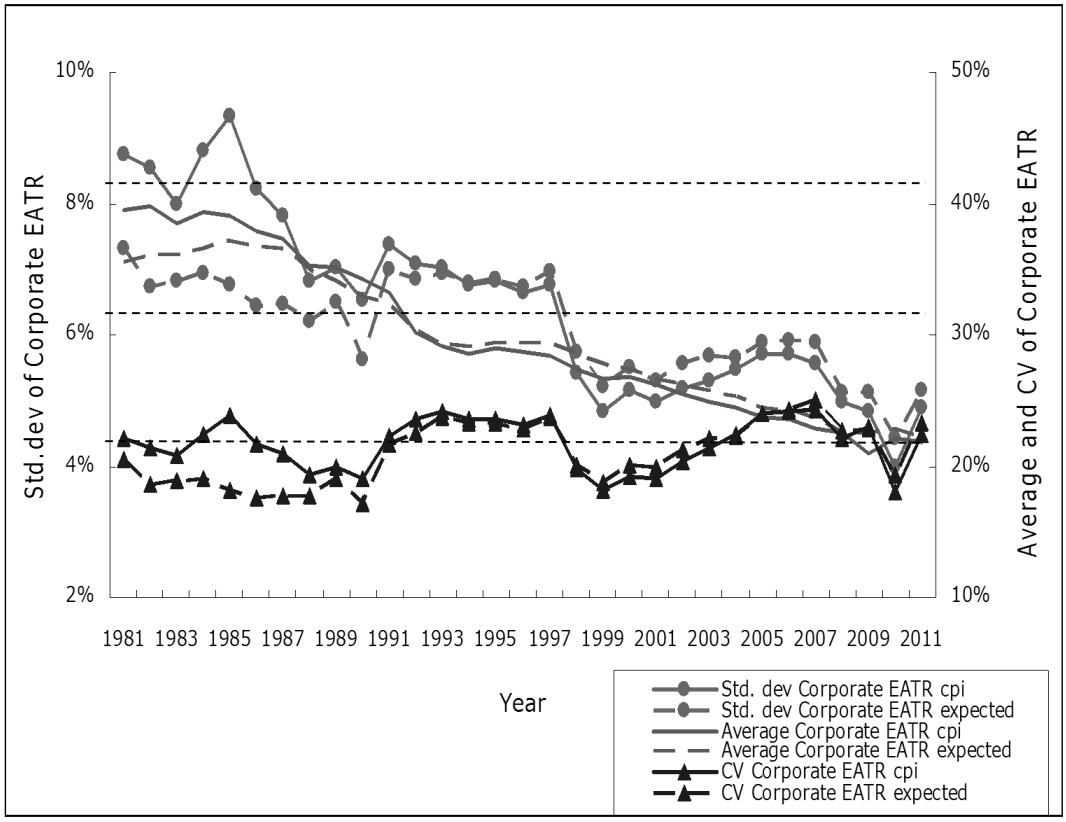
Figure 1.2.1 (c) the Average Magnitude and the Frequency of Corporate TSR Changes in 24 OECD Countries



Data Source: the average magnitude and frequency of corporate TSR changes is based on the authors' calculation. The original data is central government corporate TSRs, and is from the *AEI International Tax Database* and the *OECD Tax Database* (contains data up to and including 2012).

**Note: The OECD countries names and corresponding IOC codes are in Appendix I.

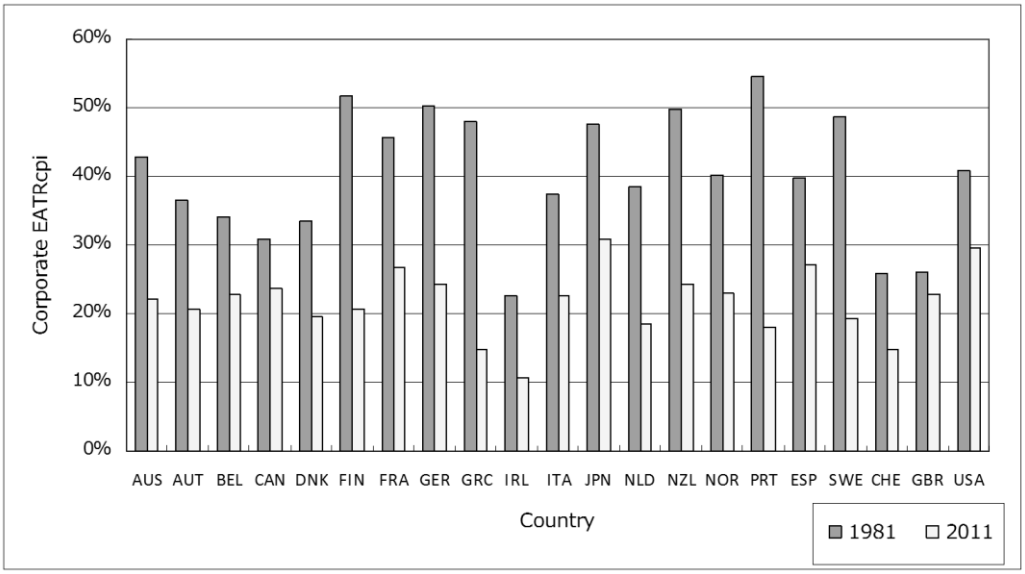
Figure 1.2.2 (a) the Average, Standard Deviation, and CV of Corporate EATR in 21 OECD Countries* from 1981 to 2011



Data source: Calculated using the method provided by Devereux and Griffith (2003). The depreciation rates are from the *AEI international tax database*. *EATRcpi* denotes the corporate EATRs that are calculated using the actual Consumer Price Index (CPI) as the inflation rate. *EATRex* denotes the corporate EATRs that are calculated using the expected 3.5% inflation rate. Appendix III contains detailed information about how corporate EATRs are calculated and the differences between *EATRcpi* and *EATRex*.

** Note: The data of these 21 OECD countries does not include Iceland, Turkey, and Luxembourg. The data of Iceland is missing because the *AEI international tax database* does not provide information on the Iceland's depreciation rates, which are the key variables to calculate corporate EATRs. The data of Turkey and Luxembourg is not provided because the *AEI International Tax Database* and the *OECD Tax Database* (contains data up to and including 2012) do not have these two countries' combined corporate tax rate until 2000. So, there are too many missing values for Turkey and Luxembourg. Also, the sample ends in 2011 because the *AEI international tax database* does not have data on depreciation rates in 2012.

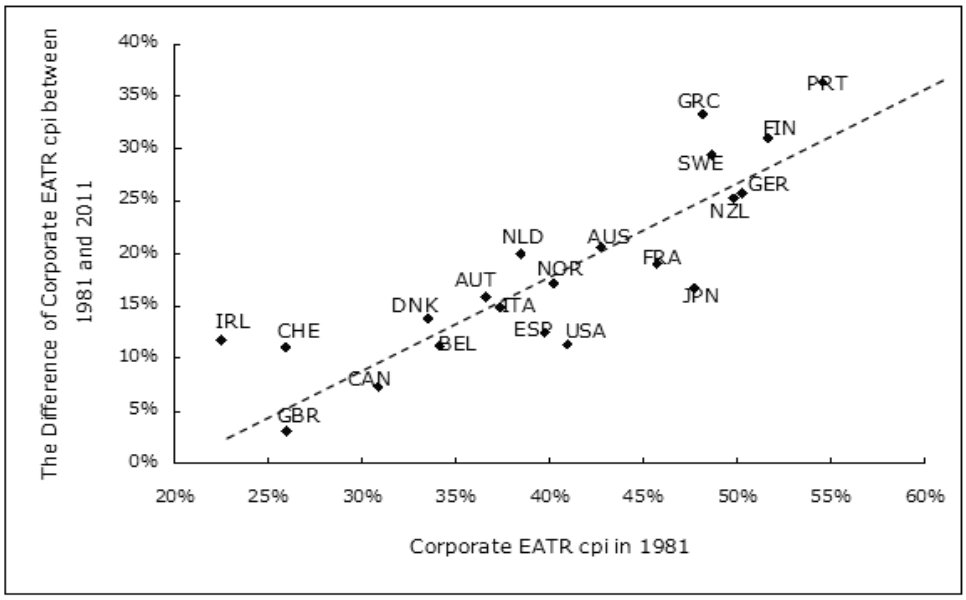
Figure 1.2.2 (b) the Corporate EATR in 21 OECD Countries, 1981 vs. 2011



Data source: Calculated using the method provided by Devereux and Griffith (2003). The depreciation rates are from the *AEI international tax database*. *EATRcpi* denotes the corporate EATRs that are calculated using the actual Consumer Price Index (CPI) as the inflation rate. *EATRex*, which is calculated using the expected 3.5% inflation rate, is not reported but has the same pattern.

**Note: The OECD countries names and corresponding IOC codes are in Appendix I.

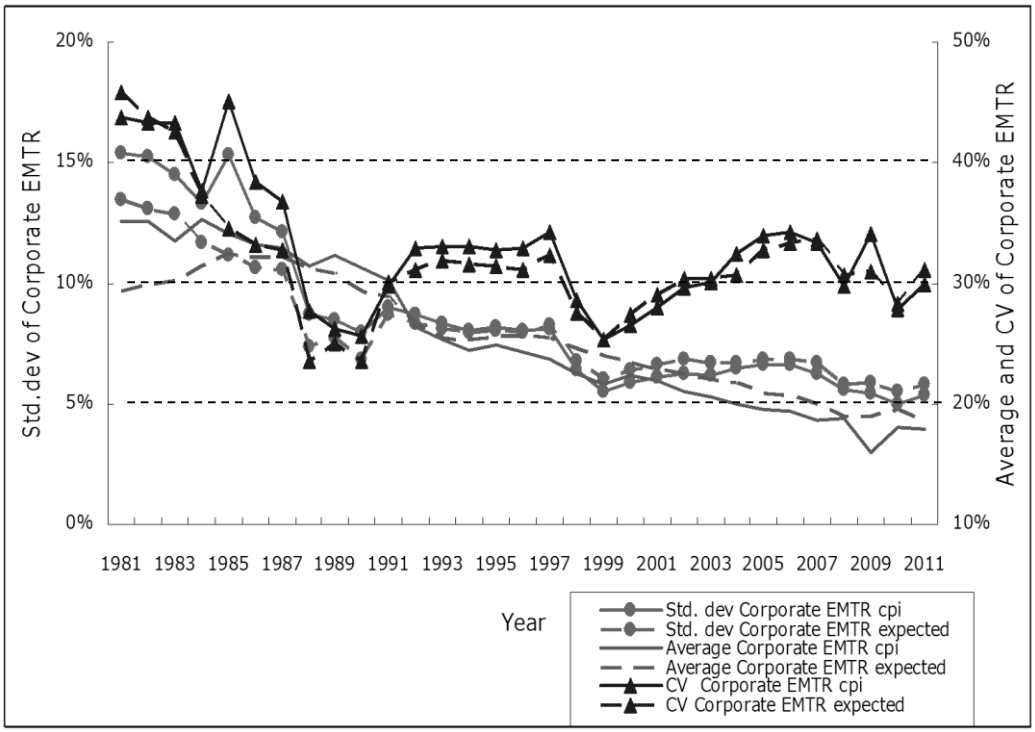
Figure 1.2.2 (c) the Relationship between Original Corporate EATRs and the Magnitude of Corporate EATR Reductions in OECD Countries



Data source: Calculated using the method provided by Devereux and Griffith (2003). The depreciation rates are from the *AEI international tax database*. *EATRcpi* denotes the corporate EATRs that are calculated using the actual Consumer Price Index (CPI) as the inflation rate. *EATRex*, which is calculated using the expected 3.5% inflation rate, is not reported but has the same pattern.

**Note: The OECD countries names and corresponding IOC codes are in Appendix I.

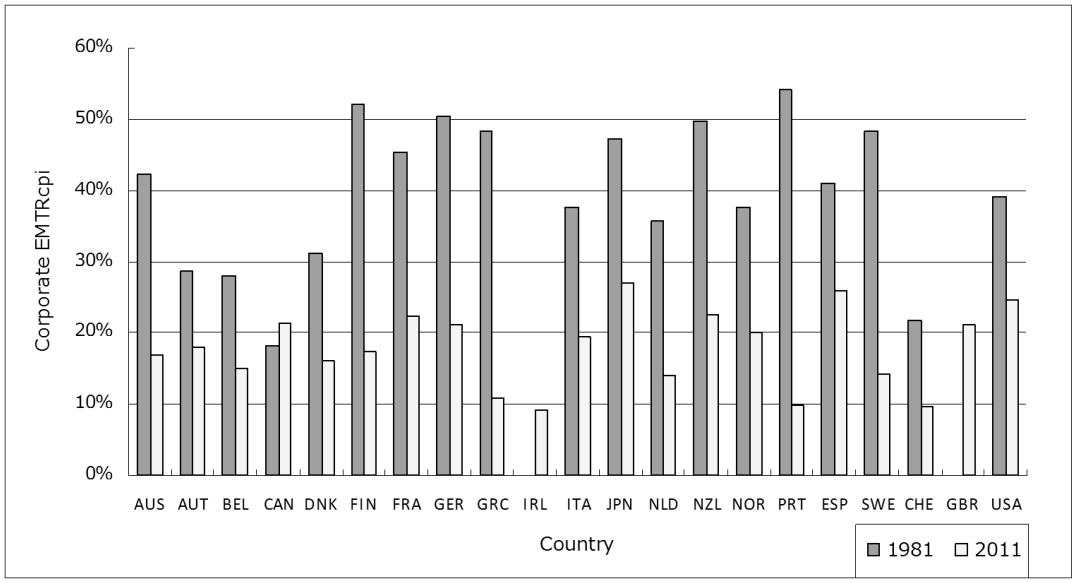
Figure 1.2.3 (a) the Average, Standard Deviation, and CV of Corporate EMTR in 21 OECD Countries* from 1981 to 2011



Data source: Calculated using the method provided by Devereux and Griffith (2003). The depreciation rates are from the *AEI international tax database*. *EMTRcpi* denotes the corporate EMTRs that are calculated using the actual Consumer Price Index (CPI) as the inflation rate. *EMTRex* denotes the corporate EMTRs that are calculated using the expected 3.5% inflation rate. Appendix III contains detailed information about how corporate EMTRs are calculated and the differences between *EMTRcpi* and *EMTRex.*

** Note: The data of these 21 OECD countries does not include Iceland, Turkey, and Luxembourg. The data of Iceland is missing because the *AEI international tax database* does not provide information on the Iceland's depreciation rates, which are the key variables to calculate corporate EMTRs. The data of Turkey and Luxembourg is not provided because the *AEI International Tax Database* and the *OECD Tax Database* (contains data up to and including 2012) do not have these two countries' combined corporate tax rate until 2000. So, there are too many missing values for Turkey and Luxembourg. Also, the sample ends in 2011, because the *AEI International Tax Database* does not have data on depreciation rates in 2012.

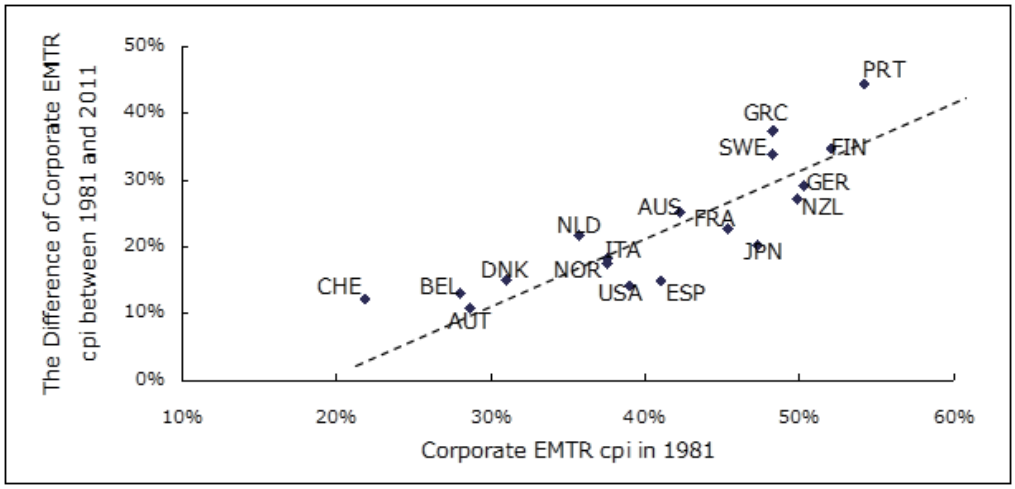
Figure 1.2.3 (b) the Corporate EMTR in 21 OECD Countries, 1981 vs. 2011



Data source: Calculated using the method provided by Devereux and Griffith (2003). The depreciation rates are from the *AEI international tax database*. *EMTRcpi* denotes the corporate EMTRs that are calculated using the actual Consumer Price Index (CPI) as the inflation rate. *EMTRex*, which is calculated using the expected 3.5% inflation rate, is not reported but has the same pattern.

**Note: The OECD countries names and corresponding IOC codes are in Appendix I.

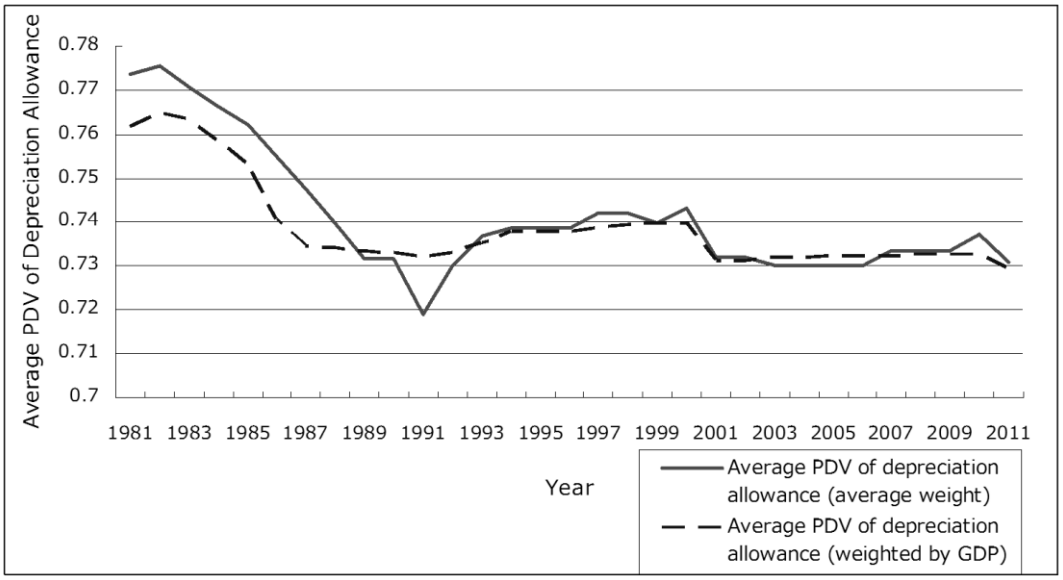
Figure 1.2.3 (c) the Relationship between Original Corporate EMTRs and the Magnitude of Corporate EMTR Reductions in OECD Countries



Data source: Calculated using the method provided by Devereux and Griffith (2003). The depreciation rates are from the *AEI international tax database*. *EMTRcpi* denotes the corporate EMTRs that are calculated using the actual Consumer Price Index (CPI) as the inflation rate. *EMTRex*, which is calculated using the expected 3.5% inflation rate, is not reported but has the same pattern.

**Note: The OECD countries names and corresponding IOC codes are in Appendix I.

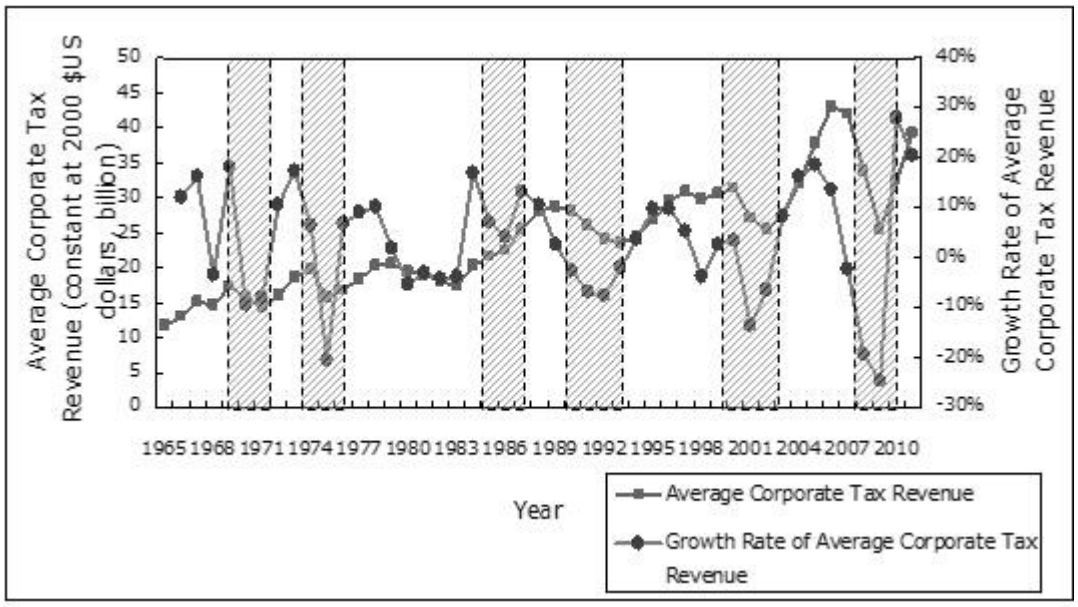
Figure 1.3.1 Average PDV of Depreciation Allowance in 21 OECD Countries* from 1981 to 2011



Data Source: The *AEI International Tax Database*. The PDV of depreciation allowance is calculated under the same assumption as Devereux et al. (2002). The inflation rate is assumed to be 3.5%, and the real discount rate is assumed to be 10%. Also, the firms are allowed to switch between straight line method and reduced balance method, based on their preference.

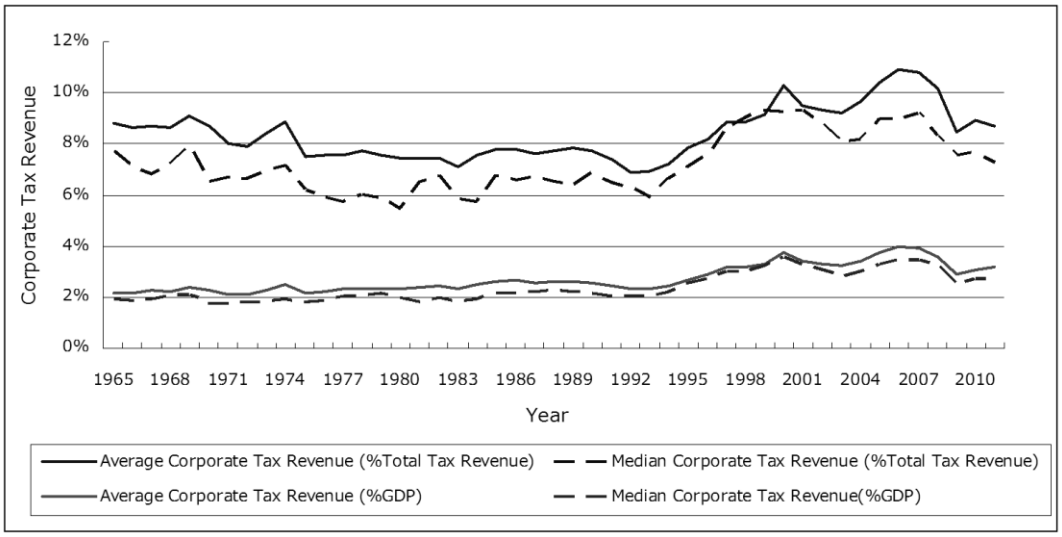
**Note: The 21 OECD countries studied in this sector are Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Japan, Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, Switzerland, United Kingdom, and the United States.

Figure 1.4.1 Average Corporate Tax Revenue (constant at 2000 $US dollars, billion) and the Growth Rate of Average Corporate Tax Revenue in 24 OECD Countries, from 1965 to 2011



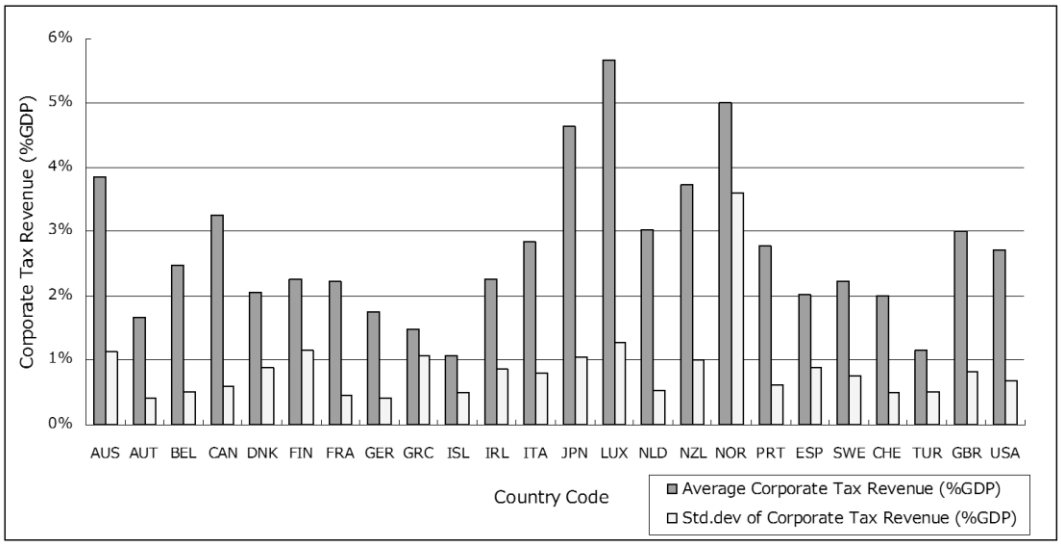
Data Source: the data of corporate tax revenue (constant at 2000 $US dollars, billion) is calculated based on the data of corporate tax revenue (%GDP) and the data of GDP (constant at 2000 $US dollars). The data of corporate tax revenue (%GDP) is from the OECD. StatExtracts, and the data of GDP (constant at 2000 $US dollars) is from the World Bank. The growth rate of average corporate tax revenue is calculated by using the equation $G_t = \frac{(\bar{R}_t - \bar{R}_{t-1})}{\bar{R}_{t-1}} \times 100\%$, where G_t is the growth rate of average corporate tax revenue at year *t*, and the $\bar{R}_t$ is the average corporate tax revenue at year *t*.

Figure 1.4.2 (a) the Average and Median Corporate Tax Revenue (%GDP) and the Average and Median Corporate Tax Revenue (%Total Tax Revenue) of 24 OECD Countries, 1965-2011



Data Source: the OECD. StatExtracts.

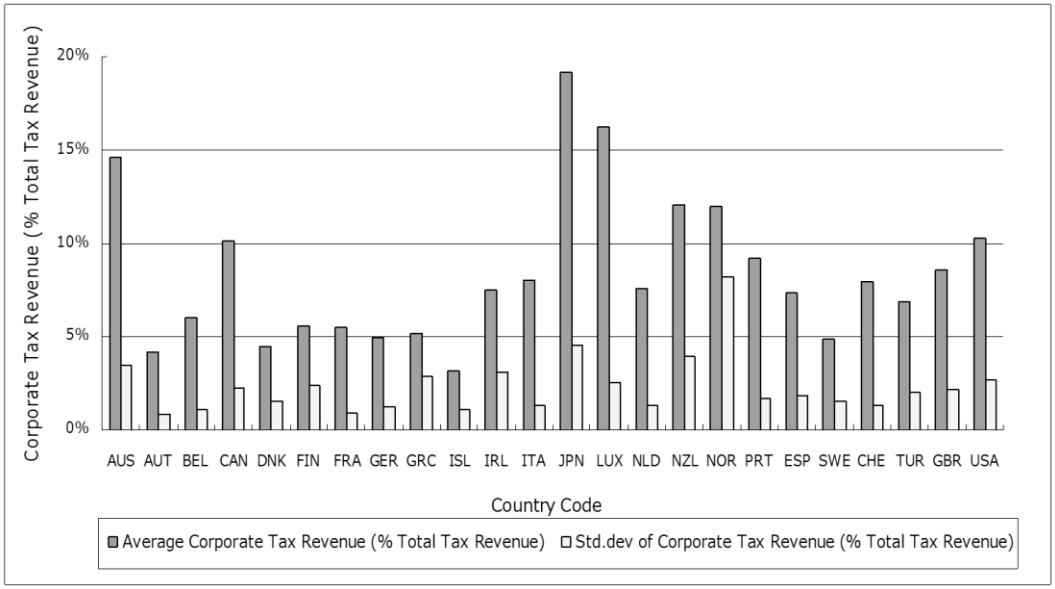
Figure 1.4.2 (b) the Average and Std. dev of Corporate Tax Revenue (%GDP) of 24 OECD Countries, 1965-2011



Data Source: the OECD. StatExtracts.

**Note: The OECD countries names and corresponding IOC codes are in Appendix I.

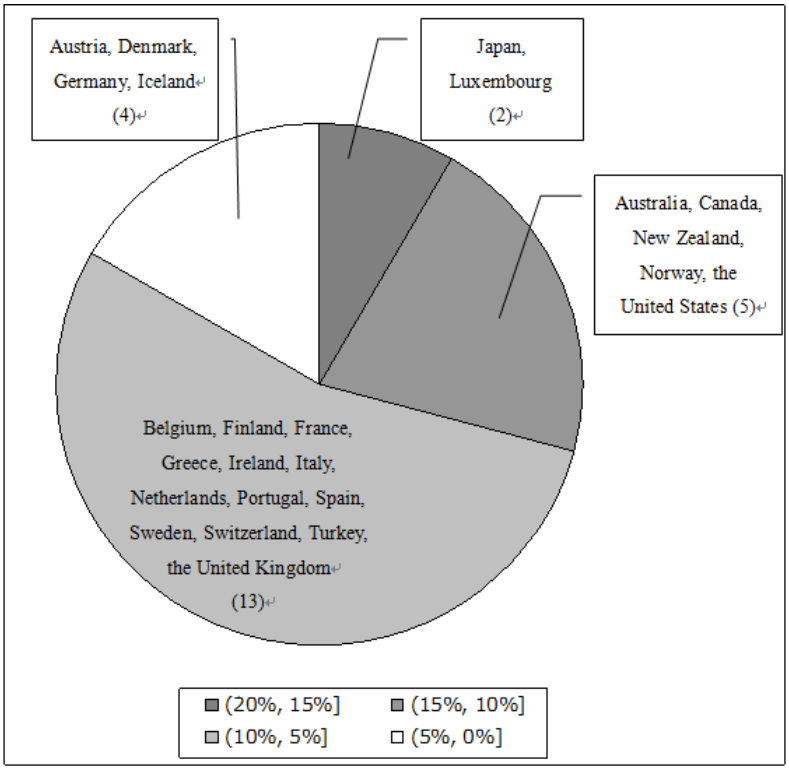
Figure 1.4.2 (c) the Average and Std. dev of Corporate Tax Revenue (% Total Tax Revenue) of 24 OECD Countries, 1965-2011



Data Source: the OECD. StatExtracts.

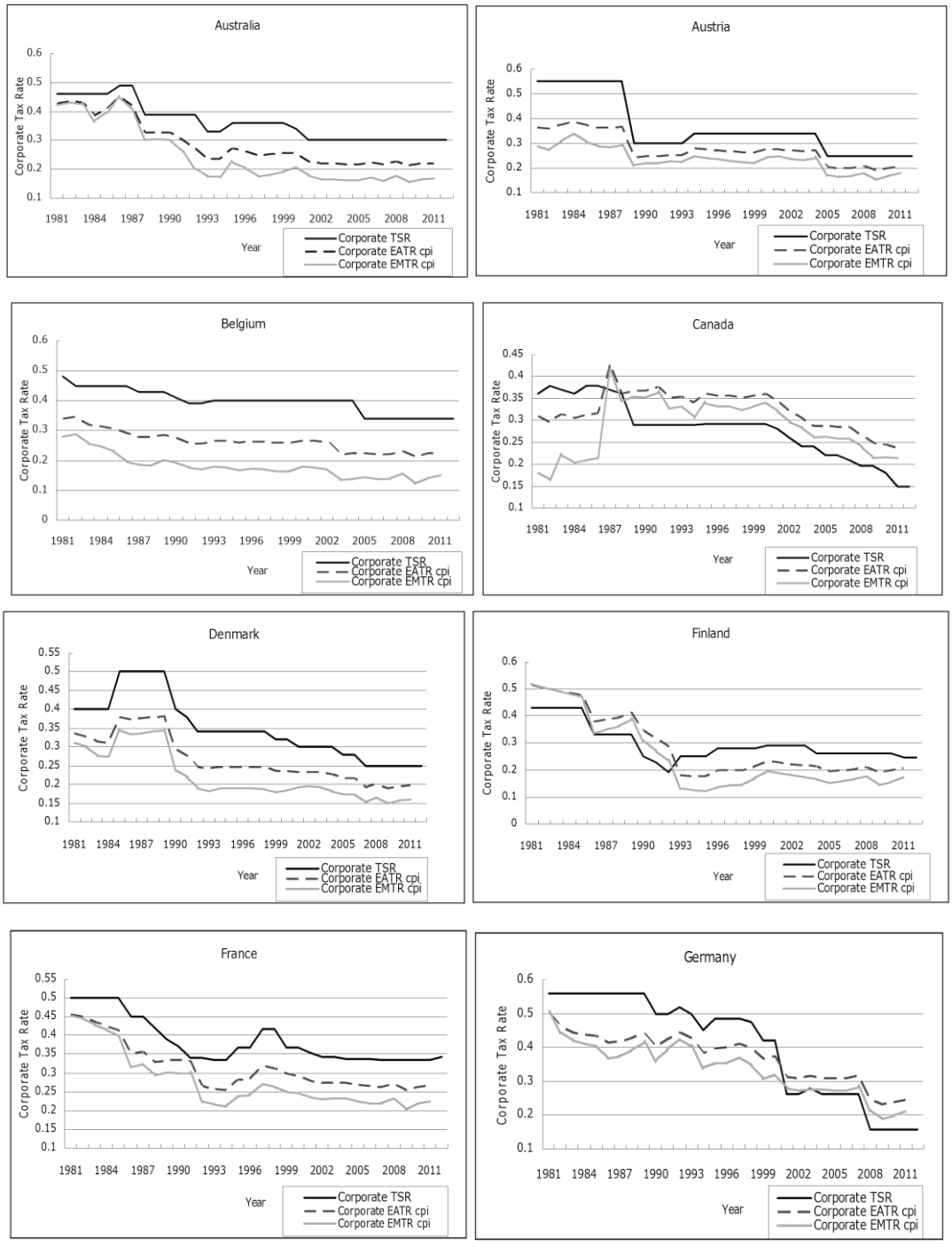
**Note: The OECD countries names and corresponding IOC codes are in Appendix I.

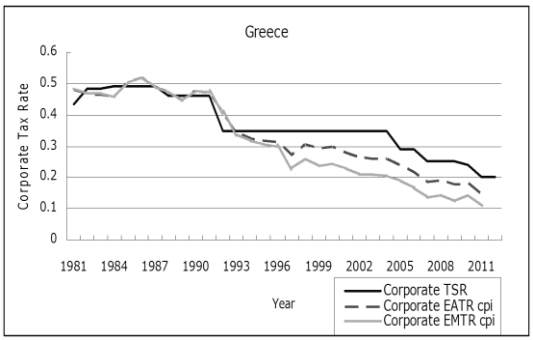
Figure 1.4.2 (d) Average Corporate Tax Revenue (%Total Tax Revenue) of Each OECD Country from 1965 to 2011

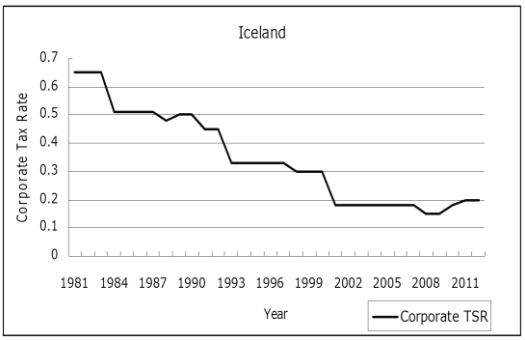


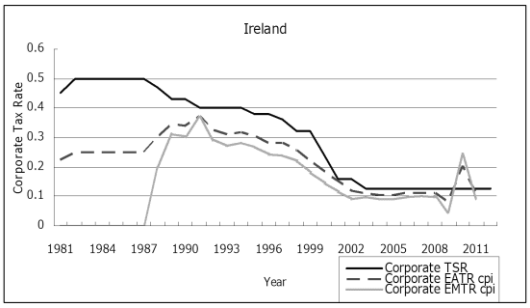
Data Source: the OECD. StatExtracts.

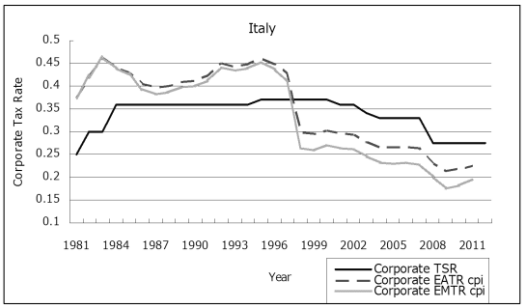
Figure 1.5.1 Corporate TSR, EATR, and EMTR of Each OECD Country from 1981 to 2011

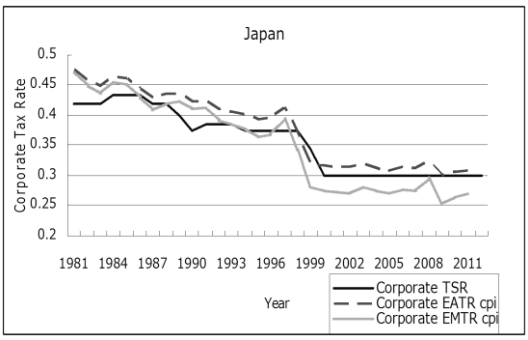


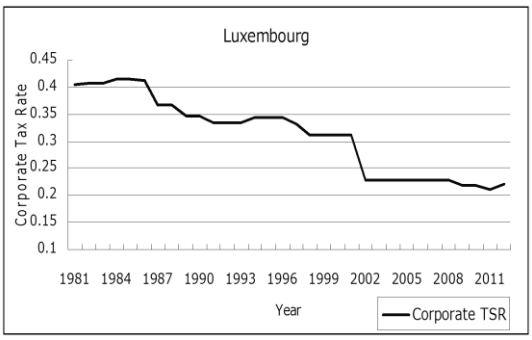

Greece
Corporate Tax Rate
0.6
0.5
0.4
0.3
0.2
0.1
0
1981 1984 1987 1990 1993 1996 1999 2002 2005 2008 2011
Year
Corporate TSR
Corporate EATR cpi
Corporate EMTR cpi

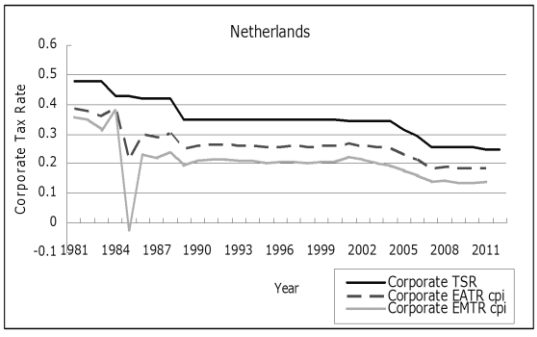

Iceland
Corporate Tax Rate
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
1981 1984 1987 1990 1993 1996 1999 2002 2005 2008 2011
Year
Corporate TSR

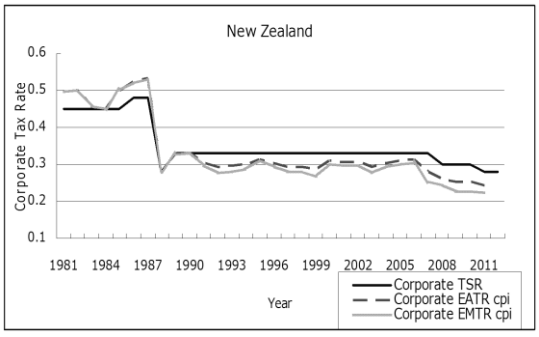

Ireland
Corporate Tax Rate
0.6
0.5
0.4
0.3
0.2
0.1
0
1981 1984 1987 1990 1993 1996 1999 2002 2005 2008 2011
Year
Corporate TSR
Corporate EATR cpi
Corporate EMTR cpi

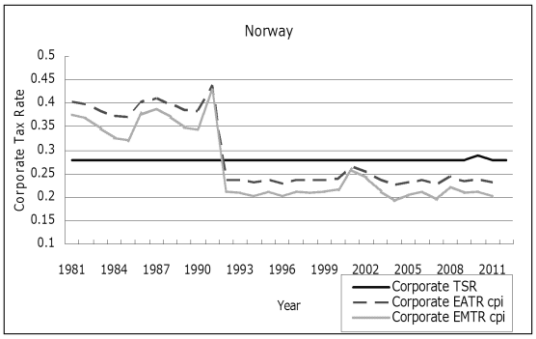

Italy
Corporate Tax Rate
0.5
0.45
0.4
0.35
0.3
0.25
0.2
0.15
0.1
1981 1984 1987 1990 1993 1996 1999 2002 2005 2008 2011
Year
Corporate TSR
Corporate EATR cpi
Corporate EMTR cpi


Japan
Corporate Tax Rate
0.5
0.45
0.4
0.35
0.3
0.25
0.2
1981 1984 1987 1990 1993 1996 1999 2002 2005 2008 2011
Year
Corporate TSR
Corporate EATR cpi
Corporate EMTR cpi


Luxembourg
Corporate Tax Rate
0.45
0.4
0.35
0.3
0.25
0.2
0.15
0.1
1981 1984 1987 1990 1993 1996 1999 2002 2005 2008 2011
Year
Corporate TSR


Netherlands
Corporate Tax Rate
0.6
0.5
0.4
0.3
0.2
0.1
0
-0.1
1981 1984 1987 1990 1993 1996 1999 2002 2005 2008 2011
Year
Corporate TSR
Corporate EATR cpi
Corporate EMTR cpi


New Zealand
Corporate Tax Rate
0.6
0.5
0.4
0.3
0.2
0.1
1981 1984 1987 1990 1993 1996 1999 2002 2005 2008 2011
Year
Corporate TSR
Corporate EATR cpi
Corporate EMTR cpi


Norway
Corporate Tax Rate
0.5
0.45
0.4
0.35
0.3
0.25
0.2
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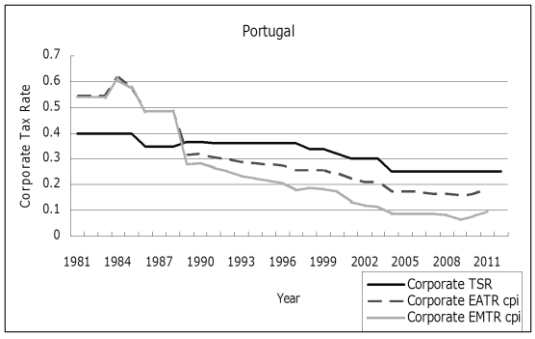
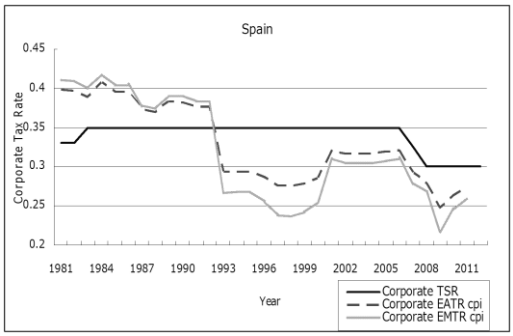
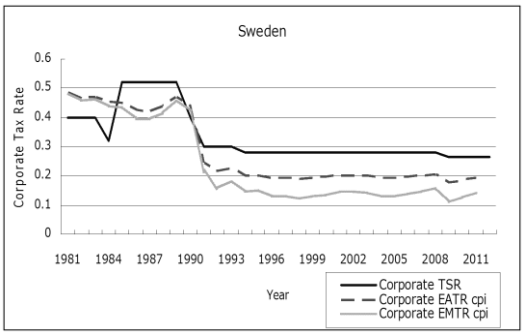
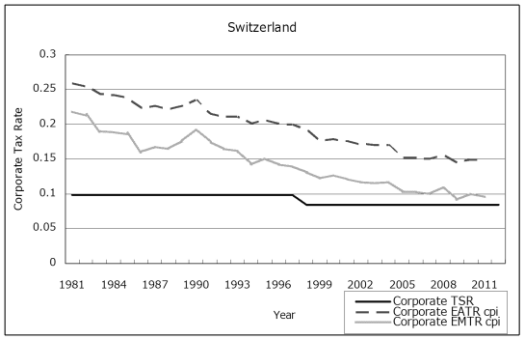
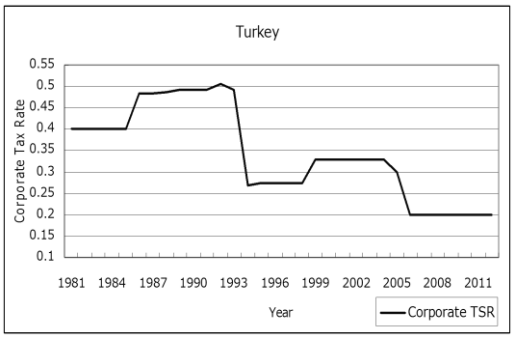
1981 1984 1987 1990 1993 1996 1999 2002 2005 2008 2011
Year
Corporate TSR
Corporate EATR cpi
Corporate EMTR cpi

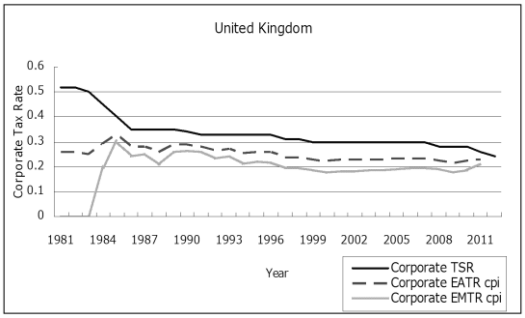

Portugal
Corporate Tax Rate
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
1981 1984 1987 1990 1993 1996 1999 2002 2005 2008 2011
Year
Corporate TSR
Corporate EATR cpi
Corporate EMTR cpi

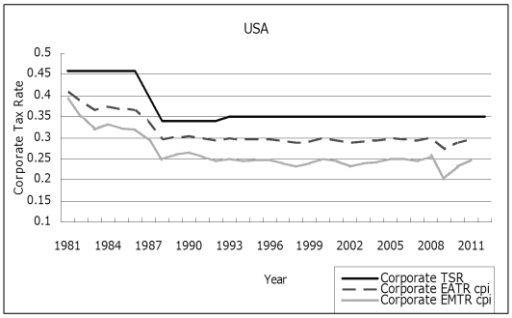

Spain
Corporate Tax Rate
0.45
0.4
0.35
0.3
0.25
0.2
1981 1984 1987 1990 1993 1996 1999 2002 2005 2008 2011
Year
Corporate TSR
Corporate EATR cpi
Corporate EMTR cpi


Sweden
Corporate Tax Rate
0.6
0.5
0.4
0.3
0.2
0.1
0
1981 1984 1987 1990 1993 1996 1999 2002 2005 2008 2011
Year
Corporate TSR
Corporate EATR cpi
Corporate EMTR cpi


Switzerland
Corporate Tax Rate
0.3
0.25
0.2
0.15
0.1
0.05
0
1981 1984 1987 1990 1993 1996 1999 2002 2005 2008 2011
Year
Corporate TSR
Corporate EATR cpi
Corporate EMTR cpi


Turkey
Corporate Tax Rate
0.55
0.5
0.45
0.4
0.35
0.3
0.25
0.2
0.15
0.1
1981 1984 1987 1990 1993 1996 1999 2002 2005 2008 2011
Year
Corporate TSR


United Kingdom
Corporate Tax Rate
0.6
0.5
0.4
0.3
0.2
0.1
0
1981 1984 1987 1990 1993 1996 1999 2002 2005 2008 2011
Year
Corporate TSR
Corporate EATR cpi
Corporate EMTR cpi


USA
Corporate Tax Rate
0.5
0.45
0.4
0.35
0.3
0.25
0.2
0.15
0.1
1981 1984 1987 1990 1993 1996 1999 2002 2005 2008 2011
Year
Corporate TSR
Corporate EATR cpi
Corporate EMTR cpi

Chapter II: Corporate Tax Competition in OECD Countries: Evidence from a Panel Spatial Approach

This paper investigates international corporate tax competition in Organization for Economic Cooperation and Development (OECD). The key focus is the extent of strategic interaction with respect to corporate tax rates among OECD countries. The investigation also sheds light on several aspects of corporate taxation. First, has international corporate tax competition become more intense in the recent years, as the 1998 OECD report suggests? Second, compared to the OECD countries that adopt a flat corporate tax rate, do the countries with progressive corporate tax rates respond differently to other countries' corporate tax rate changes? Third, is strategic interaction asymmetric regarding the direction of corporate tax rate changes? That is, are countries more sensitive to the other countries' corporate tax rate decreases than increases? Finally, do the lower corporate tax rates in developing countries also impose downward pressure on developed countries' corporate tax rates? Overall, this paper comprehensively investigates the characteristics of corporate tax strategic interactions in OECD countries.

The main contribution of this paper is that it specifically controls for the effects of common shocks, which can be both idiosyncratic and persistent over time, by using the double clustering method (Thompson, 2011). Thus, the empirical results are robust to shocks that may cause countries' corporate tax policies to move in the

same direction. The empirical specification uses a panel spatial analysis for 21 OECD countries from 1981 to 2011. Following Devereux et al. (2008), I assume that a country can correctly predict the other countries' corporate tax policies, and then adjust its own corporate tax policy accordingly. In other words, the countries' corporate tax rates are always at the Nash equilibrium. Also, both geographic and economic distances are adopted to build the inverse distance weighting matrix.

The empirical results from the panel spatial lag model suggest that corporate tax competition does exist in OECD countries. On average, a country's corporate tax rates fall around 0.7 percentage points, when the weighted average of other countries' corporate tax rates fall by one percentage point. I also find that the OECD countries' corporate tax strategic interaction has been more intense since the early 1990s. Meanwhile, the developing countries significantly reduce their corporate tax rates and affect the corporate tax policy changes in the developed OECD countries. Interestingly, OECD countries are more responsive to each other's corporate tax rate increases than decreases. The OECD countries with a progressive corporate tax rate react less to other countries' corporate tax rates than countries with a flat tax rate, although this conclusion only holds in the geographic weighting specification.

In addition, OECD countries corporate tax rates are affected by countries' own characteristics. Generally speaking, OECD countries that have higher levels of trade and capital openness are associated with lower corporate tax rates. However, OECD countries with a larger government deficit to GDP ratio, a higher top statutory

personal income tax rates and a change in government are usually associated with higher corporate tax rates. So, a country's corporate tax rates are jointly determined by not only the strategic interactions with the other countries but also its own economic and political characteristics.

Recently, policymakers in OECD countries, especially those in the European Union (EU), have discussed how to structure tax policies to enhance tax harmonization, so as to increase the overall welfare of all member countries. However, some economists argue that tax competition is necessary and beneficial to individual country's economic growth. This paper sheds light on the fundamental questions in this current tax debate, that is, how OECD countries compete with each other over corporate tax rates. Furthermore, this paper provides some evidence regarding whether governments should regulate international corporate tax competition, and whether tax harmonization can be achieved by cooperation within OECD countries.

2.1 Literature Review

Since the 1980s, corporate tax rates in countries have decreased from over 40% to less than 25%. This decreasing corporate tax trend, according to many economists, is caused increased integration of the world's economy and increased capital mobility. In order to attract more FDI which can create more job opportunities and stimulate economic growth, OECD countries have reduced their corporate tax rates and built an environment that is more benevolent to business and

investment. Some economists point out that there is strategic interaction among OECD countries regarding corporate tax policies. That is, corporate tax rate policy choices respond the other countries' corporate tax rate policies. The economic intuition behind such corporate tax competition is quite straightforward. Because economic resources are limited, OECD countries try to undercut neighboring and competing countries corporate tax rates in order to attract more capital inflows into their own country and to discourage capital outflows.

2.1.1 Previous Literature about Why Corporate Tax Rates have been Decreased

The previous literature studying the decreasing trend of corporate tax rates generally focuses on two factors: the relationship between FDI and corporate tax rates, and the effect of openness on corporate tax rates (Devereux and Griffith, 1998; Bellak and Leibrecht, 2009; Slemrod, 2004; Winner, 2005; Schwarz, 2007). Many papers find that countries with lower corporate tax rates attract more FDI inflows (Bellak and Leibrecht, 2009; Egger et al. 2009; Djankov et al. 2010). Theoretical research shows that corporate tax rates can be one of the determinants of international capital allocation (Devereux and Griffith, 2003).

The papers that study the effect of economic openness on corporate tax rates usually use two methods to measure economic openness: capital openness and trade openness. The empirical evidence of the relationship between economic openness and corporate tax rates is mixed. Some papers (Bretschger and Hettich, 2002; Slemrod, 2004; Winner, 2005; Schwarz, 2007) find a negative and significant

relationship between capital and/or trade openness and corporate tax rates. Others (Davies and Voget, 2008, Gomes and Pouget, 2008) find this relationship to be insignificant and/or are not robust under different specifications. All of these papers take the assumption that OECD countries compete over corporate tax rates as a given. The very first paper that provides empirical evidence about international corporate tax competition is Devereux et al. (2008).

2.1.2 International Corporate Tax Competition: the Strategic Interaction among OECD Countries

The theoretical and empirical research argues that attracting more FDI is the key motivation for countries to reduce corporate tax rates (Janeba, 1995; Devereux and Griffith, 2003; Devereux et al., 2008). Intense corporate tax competition, however, may lead to inefficient capital allocation and reduce government revenue and/or investment (Janeba, 1995; Gomes and Pouget, 2008). For good surveys of the theoretical literature about tax competition, see Wilson (1999) and Fuest et al. (2005).

A fundamental concern in the empirical literature on international corporate tax competition is how to control for common shocks. More specifically, global shocks can cause corporate tax rates move to the same direction, and produce correlations that can be falsely captured by the reaction function as strategic interactions. The previous international tax competition literature does not specifically discuss the effects of common shocks. Most of the papers either use a time trend (Devereux et

al., 2008; Davies and Voget, 2008; Redoano, 2007) or selected year dummies (Rincke and Overesch, 2009) to control for common shocks[13].

Some papers studying the tax competition within the U.S. States do consider the possibility of idiosyncratic common shocks. However, these papers either use the spatial error model, which imposes spatial dependence on error terms (Saavedra and Wilson, 2007) or model the heterogeneous state responses to time specific shocks (Chirinko and Wilson, 2011). Both methods require impose some strict assumptions on how each state responds differently to the same common shock.

The main contribution of this chapter is that it estimates the level of international corporate tax competition, which is robust to the effects of common shocks. In fact, this chapter not only controls for heterogeneous common shocks, but also controls for shocks that are both idiosyncratic and persistent over time. Figure.2.1.2 shows how common shocks can affect corporate tax rates in different countries, as well as how the effects of corporate tax strategic interaction can be overestimated when common shocks are omitted. The double clustering method used in this chapter to control for common shocks is proposed by Thompson (2011). Thompson estimates a firm-level financial panel regression with the standard errors

[13] No previous international tax competition literature use year dummies to control for homogeneous common shocks. Partly because once including year dummies in the regressions, the results change dramatically. Such huge estimation differences, as Devereux et al. (2008) mentioned, is because the nature of the data, that is, the effects of weighted average of other countries' corporate tax rates can be not separated estimated from a time dummy. In fact, the corporate tax rate data varies significant across time, but not across country. So, the time dummies are highly correlated with the weighted average corporate tax rates, and significantly increase the standard deviations of the coefficients.

of the coefficients robust to heterogeneous and persistent market-wide common shocks.

Some empirical papers (Devereux et al., 2008; Davies and Voget, 2008) find that international corporate tax competition does exist. However, the magnitude of competition varies from 3.993 to 0.232. Such huge differences in the estimated level of corporate tax competition arise for many reasons. Two factors are critical for understanding the variation in the estimated strategic interaction. First, the method used to construct the reaction functions, which capture how a country responds to other countries' corporate tax rate changes. Second, the weighting variables that are used to build the reaction functions. Many papers point out that in the spatial analysis, the regression results can be significantly influenced by the choice of weighting methods (Arbia and Fingleton, 2008; LeSage and Pace, 2012).

Research such as Devereux et al. (2008), Davies and Voget (2008), and Redoano (2007) use the simple weighting method to construct the reaction function. This method directly uses countries' economic and/or demographic characteristics, such as GDP, FDI, and population as weighting variables, and does not calculate the geometric, economic, or demographic distance between each pair of countries. The advantage of this method is that it allows the weighting matrix to vary across time. However, this method suffers from at least two problems.

First, the key motivation for the spatial analysis is that "everything is related to everything else, but near things are more related than distant things" (Waldo R.

Tobler, 1970). In the strategic interaction case, one important assumption to construct the reaction function is that a country should have stronger responses to the changes of closer neighboring countries. In econometric analysis, the "closer" countries refer to not only geographically but also economically closer countries. That is, a country's corporate tax policy should be more sensitive to the corporate tax policy changes in the countries in closer geographic proximities or more similar economic circumstances.

The simple weighting method does not account for geographic factors and simply assigns higher weights to the countries that have larger GDP or FDI or population. For example, if the FDI is used as the weighting variable to construct the reaction function, under the spatial analysis assumptions, the Greek corporate tax policy should be more sensitive to the corporate tax changes in New Zealand, because these two countries have closer amount of net FDI inflows. But, under the simple weighting method, the corporate tax policy in Greece is more responsive to the American corporate tax policy changes, because the U.S. has higher net FDI inflows, and thus receives higher weights in the reaction function.

Second, endogeneity is also a concern when economic and/or demographic characteristics are chosen as the weighting variables. Many papers point out that the endogenous weighting matrix can lead to biased and inconsistent estimators, because it is correlated with the error terms (Pinkse and Slade, 2009; Anselin, 2010; Qu and Lee, 2012). Domestic factors, such as, population, and GDP size, can impact

a country's corporate tax policy (Slemrod, 2004; Schwarz, 2007; Rincke and Overesch, 2009). International factors, such as FDI and trade openness, can also influence a country's corporate tax policy (Devereux and Griffith, 1998; Bellak and Leibrecht, 2009; Winner et al., 2009). So, directly using economic and/or demographic characteristics, such as GDP, FDI, and population, as weighting variables can induce correlations between explanatory variables and error terms, and thus bias the results.

Some papers use a geographic spatial weighting matrix to specify reaction functions. For example, Crabbe and Vandenbussche (2007) use panel data from 1993 to 2006 to study corporate tax competition between 10 new EU countries and 15 former EU countries. They find that the corporate tax competition is more significant among countries closer to new EU countries. Also, Davies and Voget (2008) use panel data of 35 countries from 1980 to 2005 to study the effects of EU expansion on international corporate competition. They find that EU expansion intensifies corporate tax competition. Overesch and Rincke (2008) use a time-space recursive model to study the dynamic interaction of 32 European countries' corporate tax rates from 1980 to 2007. They build the reaction function using the other countries' one-year lagged corporate tax rates. According to their model specification, they estimate how one country responds to other countries' corporate tax policies at the previous year rather than the contemporaneous corporate tax

competition. Overall, no convincing empirical evidence about the contemporaneous corporate tax competition within OECD countries has been provided.

In additional to the two reasons mentioned above, the differences in the estimated level of corporate competition may be caused by differences in empirical specifications. First, sets of control variables differ across analyses. For example, some research (Devereux et al., 2008; Rincke and Overesch, 2011) include trade or capital openness as an explanatory variable, while others (Hines, 2005; Crabbe and Vandenbussche, 2009) do not. Second, investigations adopt different datasets, which cover different countries and time frames. For example, Chatelais and Peyrat (2008), Crabbe and Vandenbussche (2009), and Rincke and Overesch (2011) study corporate tax competition within European countries, while others, Egger et al. (2007) and Devereux et al. (2008), include OECD countries.

Table 2.1.2 summarizes and compares the previous literature about the international corporate tax competition. No previous paper in the international corporate tax competition literature specifically discusses and controls for heterogeneous and persistent common shocks. This paper imposes assumptions on error terms to control the effect of common shocks on international corporate tax competition. The spatial analysis is adopted to specify reaction functions, which incorporate both geographic and economic distances in the weighting matrix. This paper not only studies the characteristics of corporate tax strategic interaction in OECD countries, but also extends the investigation to developing countries, and

studies how developing and developed OECD interact with each other regarding corporate tax rates.

The following paper is arranged into five sections. Section 2.2 discusses the empirical model, particularly how to control for the effects of different types of shocks on strategic interaction. There are two specific types of shocks: isolated country shocks and common shocks. The former generate country specific shocks that are correlated over time but uncorrelated across countries. The latter could cause global reactions at different speeds and magnitudes, and are persistent over certain periods. Section 2.3 briefly introduces the data used in this paper and its sources. Also, this section discusses different types of corporate tax rates. Section 2.4 shows the basic regression results and explanations. Section 2.5 provides some extensions and robustness checks. Finally, Section 2.6 is conclusions with policy implications.

2.2 Model

This paper uses spatial analysis to investigate the contemporaneous corporate tax competition in 21 OECD countries[14]. The inverse distance weighting matrix, as well as both geographic and economic distances, are used to construct the reaction functions. Because this paper adopts panel data from 21 countries and over a 31-year

[14] The 21 OECD countries are Australia, Austria, Belgium, Canada, Switzerland, Denmark, Spain, Finland, France, the United Kingdom, Germany, Greece, Ireland, Italy, Japan, Netherlands, Norway, New Zealand, Portugal, Sweden, and the United States. These 21 OECD countries all joined OECD before 1980, and are classified as developed countries. Iceland, Luxembourg, and Turkey, who also joined OECD before 1980, are not included in the sample, because these three countries' corporate tax rate data, especially corporate EATRs and EMTRs, has too many missing values.

period, the country heterogeneity can be controlled by both random effects and fixed effects. I employ the double clustering method, which essentially allows error terms to be clustered on both country and time dimensions and to control the idiosyncratic effects of common shocks on the strategic interaction (Thompson, 2011).

2.2.1 The Advantages of Using Spatial Analysis to Build the Reaction Function

To empirically study the strategic interactions among countries, many papers use spatial analytic techniques, which allow observations to be spatially dependent to each other. The reaction function with the spatial autoregressive parameter shows how changes in "neighboring" countries may affect the home country. The basic reaction function of country *i* at time *t* takes the form:

$$R(y_{it}) = \rho \sum_{j=1}^{N} w_{ij} \cdot y_{jt} \qquad \text{(2.2.1.a)},$$

and

$$w_{ij} = \begin{cases} \dfrac{1/d_{ij}}{\sum_{i=1}^{N} 1/d_{ij}} & , \text{if } i \neq j \\ 0 & , \text{if } i = j \end{cases} \qquad \text{(2.2.1.b)},$$

where ρ is the autoregressive parameter, which represents the level of corporate tax competition in this paper; w_{ij} is the weight assigned to country *j*, when the home/reacting country is country *i*; d_{ij} can be either the geographic or economic distance between country *i* and *j*. The inverse distance weighting matrix ensures that the geographically closer or economically more similar country receives higher weights.

If the data generating process in the model has some cross-sectional spatial dependence, failing to control for such dependence would cause error terms to correlate with each other. In such cases, still using the assumption that error terms are identically and independently distributed to estimate the coefficient variances would lead to smaller standard errors (Petersen, 2009; Thompson, 2011). Thus, the t-statistics will be larger and falsely cause the insignificant coefficients to be statistically significant.

2.2.2 The Basic Empirical Model: Panel Spatial Lag Model

This paper uses panel spatial analysis to study the strategic interaction of corporate tax competition in OECD countries. The dependent variable is the corporate tax rate. The basic model is a spatial lag model, which includes a spatially lagged dependent variable on the RHS of the regression (Anselin, 1988a).

$$y_{it} = \rho(I_T \otimes W_N) y_{it} + X_{i,t-1}\beta + \varepsilon_{it} \qquad \text{(2.2.2.a)},$$

where y_{it} is the corporate tax rate in country i at year t. ρ is the spatial autoregressive parameter and also known as the coefficient of the reaction function. The implication when ρ is positive and significant is that corporate tax competition does exist, and a country will reduce its corporate tax rates when its "neighboring" countries do so.

W_N is an $N \times N$ cross-sectional time-constant weighting matrix with zeros in the diagonal and w_{ij} at *ith* row and *jth* column. $X_{i,t-1}$ includes all the other explanatory variables in country *i* year *t-1*, such as top statutory personal income tax

rate, unemployment rate, *GDP* growth rate, and openness. All the explanatory variables in *X* are one-year lagged in order to avoid the potential endogeneity problem between the dependent and explanatory variables, as well as to allow the potential time lag between the decision and the implementation of corporate tax rate changes (Gomes and Pouget, 2008, Crabbe and Vandenbussche, 2009; Rincke and Overesch, 2011). ε_{it} denotes the error terms. This paper assumes that $\varepsilon_{it} \sim i.i.d.$ $N(0,\sigma_{\varepsilon}^2)$, when the error terms satisfy the assumption of homogenous and independent across both time and section.

Because this paper uses panel data, potential country heterogeneity can be controlled for by imposing some assumptions on the error terms: $\varepsilon_{it} = \mu_i + \nu_{it}$, ε_{it} contains two parts: country specific effect μ_i, which is time-invariant but different across countries, and $\upsilon_{it} \sim N(0,\sigma_{\upsilon}^2)$, which is uncorrelated with both explanatory variables and μ_i.

Country heterogeneity is captured by μ_i, which has mean zero and variance σ_{μ}^2. If μ_i is uncorrelated with other explanatory variables, the random effect specification is sufficient to identify the model. However, if μ_i is correlated with other explanatory variables, fixed effect is required to control for the endogeneneity between the explanatory variables and ε_{it}. Also, υ_{it} may not be independently distributed. That is, υ_{it} can be either correlated across time within each country, or correlated across countries in each year, or both. To get the efficient estimators, either clustered or robust standard errors are needed in the regressions.

One identification issue related to the spatial lag model is that the spatial lag term $(I_T \otimes W_N) y_{it}$ is endogenous. In order to obtain unbiased estimators, this paper adopts two-stage least square (2SLS). Following Kelejian and Robinson (1993) and Kelejian and Prucha (1998): the spatial lagged exogenous explanatory variables, $(I_T \otimes W_N) X$, are adopted as instrument variables (IVs) for the spatial lagged dependent variable.

Another important issue related to the spatial analysis is choosing a proper weighting matrix: W_N. This paper adopts two types of weighting matrix to build reaction functions, one is purely geographic, and the other is economic. W_{NG} denotes the geographic weighting matrix, which uses the distance between capital cities in kilometers for each pair of countries. W_{NE} denotes the weighting matrix using economic "distance", which measures the overall differences in two countries' economic characteristics, such as FDI and GDP size. According to Devereux et al. (2008), the main motivation for reducing corporate tax rates is to attract more FDI. Some papers (Devereux et al., 2008) directly use FDI and/or GDP size as the weighting variables. As discussed above in Section 2.1.2, such simple weighting method can cause biased and inconsistent estimators.

This paper measures the economic distance by using the Euclidean distance of the economic weighting variable between each pair of countries. The formula is:

$$d_{ij} = \sqrt{(m_i - m_j) \cdot (m_i - m_j)'} \qquad \text{(2.2.2.b)},$$

where m_i and m_j are two row vectors, which contain either FDI or GDP of country *i* and *j* from 1981 to 2011, respectively. The Euclidean distance measures the overall economic distance between each pair of countries across the sample period. Compared with the simple weighting method, the Euclidean distances mitigate the correlation between the dependent variable and the weighting variables, and thus, guarantee the exogenous of the weighting matrix. Moreover, the time invariant economic distance weighting matrix, which is constructed by using the Euclidean distances, provides simple and clear marginal effects, as well as easily computable and interpretable spillover effects of the explanatory variables.

2.2.3 Strategic Interaction vs. Common Shocks

Previous papers (Devereux et al., 2008; Gomes and Pouget, 2008; Davies and Voget, 2008; Overesch and Rincke, 2009) interpret the positive and significant spatial autoregressive parameter ρ as the evidence that the corporate tax competition does exist among OECD countries. However, the possibility that this positive parameter ρ is caused by common shocks, which simultaneously drive OECD countries' corporate tax rates in the same direction, cannot be ruled out. To obtain robust evidence about the strategic interaction, the effects of common shocks must be controlled for the international corporate tax competition.

The international tax competition literature does not specifically discuss common shocks. Some papers studying tax competition within the U.S. States do discuss how to control the idiosyncratic common shocks. However, these papers

either use the spatial error model, which imposes spatial dependence on error terms (Saavedra and Wilson, 2007), or try to model the heterogeneous state responses to time specific shocks (Chirinko and Wilson, 2011).

However, neither of these two methods fundamentally captures the effects of the common shocks. The problems associated with spatial error model and the method by Chirinko and Wilson (2011) are similar. First, these two methods all impose very strict assumptions on error terms. The spatial error model assumes that the common shocks can generate spatially dependent error terms. The method proposed by Chirinko and Wilson (2011) estimates the common shocks by obtaining the residuals of average cross-sectional regressions. Second, both methods only control for the contemporaneous common shocks, and do not allow the idiosyncratic common shocks to be persistent over time.

Thompson (2011) introduces the double clustering method that has a general form for the persistent market-wide common shocks, that is, it does not impose a specific model on common shocks. The double clustering method also allows heterogeneous firm responses and induces correlations across both firms and time. This paper implements the double clustering method on the country level, in order to simultaneously handle the country effects and the persistent heterogeneous common shocks. Following Thompson (2011), I assume:

$\varepsilon_{it} = \mu_i' \cdot \delta_t + \gamma_{it} + \upsilon_{it}$, and

$\gamma_{it} = \alpha\gamma_{it-1} + \omega_{it}$, $\gamma_{i0} = 0$, where ε_{it} has mean zero, υ_{it} and ω_{it} are independently and identically distributed error terms with mean zero.

γ_{it} and μ_i are two vectors. δ_t are random time effects, which can be considered as some global shocks that can affect OECD countries' corporate tax policies and are common to all countries in each time period. μ_i are country specific effects determined by each country's underlying time-invariant characteristics, which are constant across time but differs across country. As a result, $\mu_i' \cdot \delta_t$ gives idiosyncratic country responses to time specific global shocks. In other words, this term allows countries' corporate tax rates to exhibit heterogeneous adjustments with respect to the same shock in a year.

Country specific shocks, γ_{it}, are assumed to be an AR(1) process, which gradually die out over time. γ_{it} allows the corporate tax rates to be consistently affected by some unobservable country characteristics. Unlike the unobservable country specific characteristics controlled by fixed effects in panel data, the unobservable country specific shocks, γ_{it}, are uncorrelated with other explanatory variables and vary over time.

To control for the persistent common shocks, δ_t, the random time effects that influence all countries' corporate tax rates at the same time, are assumed to be correlated over time. The autocorrelation of δ_t is assumed to be disappear after *L* periods. In this case, $\mu_i' \cdot \delta_t$ loads heterogeneous country responses to persistent common shocks, and the effects of common shocks on countries' corporate tax rates

die out after L periods. To get the robust estimators with respect to persistent common shocks, this paper assumes that L=2[15]. That is, the persistent common shocks, which influence countries' corporate tax rates, disappear after 2 periods.

The double clustering method is easy to compute. Following the method proposed by Thompson (2011), this paper calculates the variance of the estimated coefficients, which is double clustering robust using the formula:

$$\Omega_{double} = \Omega_{country} + \Omega_{t,0} - \Omega_{white,0} + \sum_{l=1}^{L}(\Omega_{t,l} + \Omega_{t,l}') - \sum_{l=1}^{L}(\Omega_{white,l} + \Omega_{white,l}'),$$

where $\Omega_{country}$ is the matrix with the standard errors clustered by country, $\Omega_{t,0}$ is the matrix with the standard errors clustered by time, and $\Omega_{white,0}$ is the ordinary least squares error (OLS)[16] variance and covariance (VCV) matrix, which is robust to hetersoskedasticity. The formula for $\Omega_{t,l}$ and $\Omega_{white,l}$ are also straight-forward.

$$\Omega_{t,l} = (X'X)^{-1}\sum_{t}\hat{s}_t\hat{s}_{t+l}'(X'X)^{-1}$$

$\Omega_{white,l} = (X'X)^{-1}\sum_{t}\sum_{i}u_{it}u_{i,t+l}'(X'X)^{-1}$, with $u_{it} = x_{it}\varepsilon_{it}$, and $\hat{s}_t = \sum_{i}u_{it}$, which is the summation of u_{it} for time t.

2.3 Data

The data used in this paper covers 21 developed countries from 1981 to 2011, and these countries all joined the OECD before 1980. The main reason to include

[15] Thompson (2011) also assumes L=2 for the robust estimation of the persistent and idiosyncratic common shocks.

[16] In the rest of the paper, OLS stands for the ordinary least square.

these 21 OECD countries in the sample is that these countries are usually classified as developed countries, and have similar economic and political background. So, it is reasonable to believe that the mechanism for determining corporate tax policies is similar and comparable among OECD countries. Moreover, the *OECD Tax Database* and the *AEI International Tax Database* all provide high quality data of corporate taxation in these OECD countries. The data is available from 1981 through 2011.

2.3.1 The Dependent Variables: Different Measurements of Corporate Tax Rates

The dependent variable used in this paper is the corporate tax rate. The previous literature uses three different measurements of corporate tax rates, namely, corporate TSR, EATR and EMTR. Each of these three measurements has its pros and cons. The corporate TSR is the statutory rate imposed on taxable corporate income. In order to truly reflect the central governments' corporate tax policies, this paper uses the central/federal level corporate TSR, which is adjusted for sub-national deductions if applicable. Changes in corporate TSR can be viewed as the central governments' corporate tax policy changes with respect to rates, but not changes with respect to corporate tax bases or structures.

In contrast, the corporate EATR and EMTR incorporate changes in both corporate tax rates and bases. These two types of corporate effective tax rates are proposed by Devereux and Griffith (1999). The corporate EATR measures the average tax rate a firm may face on a hypothetical investment, which is financed by

equity, on plant and machinery. Many papers argue that corporate EATR comprehensively measures corporate tax policies (Devereux and Griffith 2003; Hassett and Mathur, 2011) and is one of the determinants of the location choice of FDI. The corporate EATR is widely used in the literature analyzing the relationship between FDI and corporate tax rates (Devereux and Griffith 1999 and 2003; Bellak et al. 2007; Bellak and Markus Leibrecht, 2009).

The corporate EMTR is also calculated under the assumption of a hypothetical investment, where the post-tax return just equals to the capital cost. The main difference between corporate EATR and EMTR is that the former is adjusted for the distribution of the investment's profitability, while the latter assumes that the post-tax return just offsets the capital cost. Essentially, Devereux and Griffith (1999) show that the corporate EATR is a weighted average of corporate TSR and EMTR, and when an investment's profitability increases, the corporate EATR approaches the corporate TSR. Consequently, the corporate EMTR is related to the scale of investment, and is conditional on the location choice/country.

Another advantage of corporate EATR and EMTR is that they are forward-looking measurements, and they are not directly influenced by taxable corporate income. One the other hand, the backward-looking corporate tax measurement, which is calculated by *Total Revenue/Total Taxable Income*, not only incorporates the changes in corporate tax policies but also incorporates changes in

corporate taxable incomes.[17] This paper uses all three types of corporate tax measurements as robustness checks.

2.3.2 The Control Variables: Openness, Government Fiscal Conditions, and Other Macro Variables

This paper uses three categories of control variables: openness, government fiscal conditions, and other macroeconomic variables that indicate the general economic activities. The previous literature finds mixed evidence about the effects of openness on corporate tax rates. In contrast to the existing literature which usually only includes either trade openness or capital openness, this chapter includes both types of openness. Trade openness is calculated using the equation (export+import)/GDP. Capital openness is an indicator provided by Chinn and Ito (2008) which is constructed based on the IMF's *Annual Report on Exchange Arrangements and Exchange Restrictions (AREAER).*

Government fiscal conditions include four variables: top personal income tax rate (PTSR), government consumption, gross government debt, and annual government deficit. The latter three variables are included to control for the government's financial situation and are all weighted by GDP. The PTSR is included because some researchers argue that the corporate tax is the backstop of

[17] Reed and Rogers (2006) demonstrate, at least half of the variation of de facto tax burden, which is calculated by using the state tax revenue divided by personal income, is contributed by the changes of incomes. So, it is reasonable to believe that changes of de facto corporate tax burden, which is calculated by using tax revenue divided by taxable corporate income, also suffers the similar problem.

personal income tax (Slemrod, 2004; Overesch and Rincke, 2008). That is, if corporate tax was abandoned, people would transfer their personal capital income into the retention of corporate income in order to avoid personal income tax. Thus, there may be a positive relationship between corporate and personal income tax rates.

This paper also includes two macroeconomic variables and a variable that measures domestic political changes. The two macroeconomic variables that capture the general economic activity level are unemployment and GDP growth rate. Some papers argue that the central government may adopt aggressive corporate tax policies, i.e. lower corporate tax rate, to stimulate economy, when the country has a low economic growth rate and/or a high unemployment rate. The *Gov_chan* measures the number of government changes, such as election, resignation of the Prime Minister, per year. The coefficient of *Gov_chan* captures the potential correlation between corporate tax policy changes and political changes.

2.3.3 Data Summarization: Data Sources and Statistics

Table 2.3.3 summarizes the basic statistics, definitions and sources of the variables used in this paper. The dependent variables are the corporate *TSR*, which is directly provided by *OECD Tax Database*, and the corporate *EATR* and *EMTR*, which are estimated using the method proposed by Devereux and Griffith (1999). The subscript *cpi* denotes that the variables are calculated using the actual CPI as the inflation rate, and the subscript *expected* denotes that the variables are calculated

using the expected annual inflation rate 3.5%, which is also used in Devereux et al. (2002). The *PTSR* and trade openness are provided by *OECD Tax Database* and *World Development Indicators*, respectively. All the other explanatory variables are all from *Comparative Political Data Set I.*

2.4 Basic Regression Results and Explanations:

The basic regression model is

$$y_{it} = \rho(I_T \otimes W_N)y_{it} + X_{i,t-1}\beta + \varepsilon_{it} \qquad (2.4.1)$$

This section reports the regression results from using different corporate tax rate measurements, and compares the results from different regression methods. Table 2.4 (a) to (e) summarizes the results of regressions that use corporate T*SR, EATRcpi, EATRexpected, EMTRcpi, EMTRexpected* as dependent variables, respectively. The first column in each table reports the estimates using the average weighting matrix and the other columns report the results using the inverse distance weighting matrix.

In addition, columns (1) to (6) in each table reports the results of regressions, which adopt different assumptions on the error terms. The regression in column (1) uses the simplest assumption that the error terms are homoskedasticity and independently identically distributed. The regression in column (2) uses the panel random effects and assumes the error terms contain a country specific component, which is uncorrelated with the other explanatory variables. The regressions in columns (3) and (4) use the pooled ordinary least square (OLS), and the regressions

in columns (5) and (6) adopt the panel fixed effects. The standard deviations of the coefficients in columns (3) and (5) are robust to arbitrary heteroskedasticity. The standard deviations in columns (4) and (6) are adjusted for heterogeneous and persistent common shocks.

The problems with the regressions in columns (1) (2) (3) (5) are similar, that is, they do not control for the heterogeneous country responses to common shocks, as well as the potential persistence of common shocks. The regressions in columns (4) and (6) use the double clustering method, which adjusts for idiosyncratic responses to common shocks, also assume that the common correlated disturbances is up to 2 periods. Comparing the results of column (3) to column (4), as well as column (5) to (6), the standard deviations increase when the heteroskedasticity and autocorrelation are controlled as Thompson (2011) points out.

2.4.1 Does Corporate Tax Competition Exist in OECD Countries and to What Extent?

In the spatial lag model, the autoregressive parameter ρ, which captures the spatial correlation of the dependent variable, measures the level of corporate tax strategic interactions in OECD countries. In all regressions, autoregressive parameter, ρs, are positive and significant, even after controlling for persistent common shocks. This suggests that the international corporate tax competition does exist: an OECD country does cut its own corporate tax rates when other OECD countries do so.

When the inverse distance weighting matrix is used, there is evidence that OECD countries compete over all types of corporate tax rates, corporate TSR, EATR, and EMTR. Using the regression results from Table 2.4 (a) to (e), the size of ρ varies from 0.481 to 0.814, which means when there is one percentage reduction in the weighted average corporate tax rate in other OECD countries, the home country's corporate tax rate will decrease 0.481 to 0.814 percentage points, simultaneously. These findings are in line with, but slightly larger than the results in Devereux et al. (2008), who suggest that a country cuts corporate tax rates by 0.34 to 0.67 percentage points, when the weighted average corporate tax rates in its "neighboring" countries decrease by one percentage point.

2.4.2 The Effects of Other Control Variables on Corporate Tax Rates

The main objective of this chapter is to investigate whether international corporate tax competition exists, and if so, to what extent. The direct and indirect effects, as LeSage and Pace (2009) defined, are difficult to calculate and hard to interpret. Since the spill-over effects of the other exogenous control variables are not the main concern of this chapter, I focus on the marginal effects of a country's control variables on its own dependent variable. Such marginal effects can be directly interpreted by the coefficients of other explanatory variables.

The relationships between other explanatory variables and the dependent variable need to be carefully explained. Because the corporate tax policies are relatively independent and set by governments, the coefficients of the other

explanatory variables may simply represent correlations instead of causalities. Some findings are quite robust to different specifications, while others are not. This section mainly discusses the regression results showed in columns (4) and (6), which are robust to common shocks.

Consistent with the previous literature, this chapter finds strong evidence that the corporate taxation serves as the "backstop" of personal income tax[18]. There is a positive and significant relationship between a country's corporate tax rates and personal top income tax rate. That is, if a country has a higher (lower) top personal income tax rate, it also tends to have a higher (lower) corporate tax rate. Government changes, such as election and prime minister resignation, are positively correlated with corporate tax rates, as well. These two findings are robust under different specification.

Regarding the three variables that control for the central government fiscal condition, the government deficit to GDP ratio is positively and significantly correlated with corporate tax rates under different specifications. The coefficients of the debt to GDP ratio are positive, but significant only when pooled OLS is used. The evidence about how government consumption affects corporate tax rates is quite

[18] Winner et al. (2007) indicate that OECD countries also compete with each other regarding personal income tax rates. It is possible that including the personal income tax rate as an explanatory variable may cause underestimation of the magnitude of corporate tax strategic interactions. Accordingly, I exclude $PTSR_{t-1}$ as a robustness check. The results show that the autoregressive parameters ρs are positive and significant and increase by around 0.12, when $PTSR_{t-1}$ is excluded. The larger ρs suggest that the intense level of corporate tax strategic interactions may be underestimated in the baseline model.

mixed. I find government consumption to GDP ratio is positively correlated with corporate TSR, but negatively correlated with corporate EMTR.

Generally speaking, an OECD country with a higher level of economic openness has lower corporate tax rates. Trade openness and capital openness are both negatively correlated with corporate tax rates, but the results vary under different specification. Comparing Table 2.4 (a) to (e) column (5) to (6), some estimated coefficients, such as the unemployment rate, are not robust to using the double clustering method to control for the effects of common shocks. The coefficients of unemployment and GDP growth rate are consistently insignificant, using double clustering method and inverse geographic distance matrix to estimate to basic regression equation (2.4.1).

Overall, from the basic regression results, I find that an OECD country's corporate tax rates are also correlated with its own economic and political characteristics. This conclusion indicates that when governments set their corporate tax rates, they not only compete with "neighboring" countries, but also need to consider domestic factors, such as government revenues, expenditure.

2.5 Robustness Checks and Some Extensions

This section includes some robustness checks and extensions. First, this section adopts economic inverse distance weighting matrix, which are constructed by FDI and GDP size, to investigate whether the effects of strategic interactions on corporate tax rates are significant and robust. Second, this section investigates four

novel questions, which provide more information about the characteristics of corporate tax strategic interactions in OECD countries, as well as, how the developed OECD countries interact with developing countries with respect to corporate tax rates.

2.5.1 Different Weighting Matrix: FDI and Economic Size

I still use the basic regression model

$$y_{it} = \rho(I_T \otimes W_N) y_{it} + X_{i,t-1}\beta + \varepsilon_{it} \qquad (2.5.1),$$

but adopt economic distance to construct the weighting matrix, W_N. Table 2.5.1 (a) and (b) report the regression results using net FDI inflow and GDP as weighting variables, respectively. Both corporate TSR and effective tax rates are adopted as dependent variables. I only report the regressions results using both double clustering method and country fixed effect. In order to show the differences between double clustering method and robust standard errors, I also use italic and underscore numbers to report the standard deviations robust to arbitrary heteroskedasticity in Table 2.5.1 (a) and (b).

Compared to results using the geographic distance, the economic weighting matrix yields similar autoregressive parameters, ρs. The positive and significant parameter estimate suggests that the OECD countries' corporate strategic interactions are robust to economic weighting matrix. The magnitude of ρ is around 0.6, which indicates that an OECD country decreases (increases) it corporate tax

rates by 0.6 percentage points, when the other OECD countries' weighted average corporate tax rates reduce (increase) by 1 percentage points.

The regression results of other coefficients estimated by using economic weighting matrix are also similar to those using geographic weighting matrix. I find that the corporate tax rate and top personal income tax rate, as well as government deficit to GDP ratio are positively correlated with each other. Higher trade and capital openness are associated with lower corporate tax rates. Interestingly, effective corporate tax rates are positively affected by government changes[19].

2.5.2 Has International Corporate Tax Competition Become More Intense in the Recent Years?

The 1998 OECD report *Harmful Tax Competition: An Emerging Global Issue* and several theoretical papers argue that corporate tax competition has been more intense in recent years, and thus is harmful to the overall welfare of OECD countries. However, no empirical evidence about more intense international corporate tax competition has been provided to support this argument. My research addresses this hole in the empirical literature.

[19] Different political parties may have different corporate tax policies. It is possible that the positive correlation between government changes and corporate tax rates are driven by the cabinet composition of political parties, left, right and central, in governments. Replacing Gov_chan_{t-1} with the cabinet composition of political parties as a robustness test, I find that the composition of political parties does not significantly affect corporate tax rates. In other words, corporate tax rates are significantly influenced by government changes, such as elections, instead of the dispersion of political parties.

Since my data covers 31 years, it is natural to break it into ten-year periods to see whether the strategic interaction in OECD countries with regard to corporate tax rates significantly differs across periods. Table 2.5.2 (a) and (b) summarize the regression results of the autoregressive parameters ρs, which are estimated by adopting both geographic and economic weighting matrix, in each period. The results show the evidence of corporate tax competition in OECD countries in each period, but are stronger after 1990.

To get the conclusive evidence regarding whether corporate tax competition in OECD countries has been more intense in recent years, it is necessary to show that the autoregressive parameter ρ is significantly larger in later years than in the previous years. According to Figure 1.2.1 (a) in Chapter I, I find a clear corporate TSR structure break point at 1993. So I estimate the following equation:

$$y_{it} = \rho \sum_{j=1}^{N} w_{ij} \cdot y_{jt} + \phi \cdot D_{1993} \cdot \sum_{j=1}^{N} w_{ij} \cdot y_{jt} + X_{i,t-1}\beta + \varepsilon_{it} \qquad (2.5.2)$$

where D_{1993} is a dummy variable, which equals to 1, if t≥1993, equals to 0, otherwise. $D_{1993} \cdot \sum_{j=1}^{N} w_{ij} \cdot y_{jt}$ is a new interaction term. A positive and significant ϕ indicates that an OECD country is more responsive to other OECD countries' corporate tax changes after 1993, and can be viewed as evidence that OECD countries' corporate tax competition has become more intense in recent years.

Table 2.5.2 (c) shows the regression results by estimating equation (2.5.2). The autoregressive parameter ρ is still consistent and stays positive and significant in all

regressions, after including the interaction term. The coefficient ϕ is also positive and significant, when corporate TSR and EATR are used as dependent variables. However, at about 0.05, the magnitude of ϕ is not very large. The results suggest that OECD countries' corporate tax competition became more intense in recent years, but the level of increase is small. I also use 1994 and 1995 as the break point to estimate equation (2.5.2) as robustness checks. The regression results summarized in Table 2.5.2 (d) and (e) are similar to those in Table 2.5.2 (c). Indeed, the intense level of corporate tax competition in OECD countries appears to have increased.

The reason that the corporate tax competition in developed OECD countries has been more intense since the early 1990s is probably due to the expansion of OECD after 1993. Some emerging market countries, such as Mexico, South Korea, Hungary and Poland, became new OECD members and cut their corporate tax rates aggressively. For example, in 1990, the corporate TSR in South Korea was 37.5%, but in 1996, the year South Korea joined OECD, it was only 25%. The developed OECD countries which joined OECD before 1980 may face the competitive pressure from new member countries and become more responsive in corporate tax strategic interactions.

2.5.3 Do Countries with Progressive Corporate Tax Rates Respond Differently to Corporate Tax Competition?

Figure 1.1.2 shows that some OECD countries adopt flat corporate tax rates, while others adopt progressive corporate tax rates, which have more than one tax

bracket. As a part of corporate tax policy, corporate tax brackets may affect countries' strategic behavior regarding corporate tax competition. I incorporate corporate tax brackets into the regression and estimate the following equation:

$$y_{it} = \rho \sum_{j=1}^{N} w_{ij} \cdot y_{jt} + \varphi \cdot D_{progressive} \cdot \sum_{j=1}^{N} w_{ij} \cdot y_{jt} + D_{progressive} + X_{i,t-1}\beta + \varepsilon_{it} \qquad (2.5.3.a)$$

where $D_{progressive}$ is a dummy variable, which equals to 1, if an OECD country adopts progressive corporate tax at year t; equals to 0, otherwise.

Table 2.5.3(a) summarizes the regression results. I find that the OECD countries adopting progressive corporate tax rates have higher corporate TSRs than those with flat tax rates. This situation is probably because countries using progressive tax rates need higher corporate TSRs to raise sufficient corporate tax revenue to cover expenditures. Also, when the geographic distance is used as the weighing variable, I find that the OECD countries with progressive corporate tax rates are less responsive to the other countries' corporate TSR changes[20]. In other words, OECD countries with progressive corporate tax rates respond less aggressively to neighboring countries' corporate tax rate changes.

[20] I find the conclusion that OECD countries with progressive corporate tax rates are less responsive to the other OECD countries' corporate tax rate changes is robust to all three types of weighting matrix, namely, geographic, FDI and GDP, when I use the normal heteroscedasticity consistent standard deviations to do the t-test. However, when I use the double clustering method, the coefficient φ, which indicates the effects of progressive corporate tax on OECD countries' corporate tax strategic behavior, is not significant under the economic weighting matrix cases.

Also, some OECD countries adopt local corporate tax, while most of the OECD countries only collect corporate taxes at national level. It is plausible that OECD countries having local corporate tax behave differently. I estimate the equation:

$$y_{it} = \rho \sum_{j=1}^{N} w_{ij} \cdot y_{jt} + \kappa \cdot D_{local} \cdot \sum_{j=1}^{N} w_{ij} \cdot y_{jt} + D_{local} + X_{i,t-1}\beta + \varepsilon_{it} \qquad (2.5.3.b)$$

where D_{local} is a dummy variable, which equals to 1, if an OECD country adopts local corporate tax at year t; equals to 0, otherwise. However, when I use the double clustering method and country fixed effects to estimate the regression, I find that OECD countries with local corporate tax do not act differently regarding corporate tax strategic interactions. The results are summarized in Table 2.5.3 (b).

2.5.4 Are Countries More Responsive to the Other Countries' Corporate Tax Decreases than Increases?

Figure 1.2.1 (b) and Table 1.2.1 all show that although the corporate tax rates in OECD countries have decreased over time and corporate tax decreases dominate the OECD countries' corporate tax rate changes, there are still a considerable amount of corporate tax increases. Of the 185 central government corporate TSR changes in the past 31 years, 45 of them are corporate tax increases, which are concentrated in the 1980s.

It is plausible that OECD countries may have different sensitivity to other countries' corporate tax increases and decreases. To test this hypothesis, I create two dummy variables: $D_{increase}$ equals to one if the country has corporate tax increase at

year t, and equals to zero otherwise; $D_{decrease}$ equals to one if the country has corporate tax decreases at year t, and equals to zero otherwise. I multiply these two dummy variables with the dependent variables, and then weighted the interaction term by the same weighting matrix.

$$y_{it} = \rho \sum_{j=1}^{N} w_{ij} \cdot y_{jt} + \alpha \sum_{j=1}^{N} w_{ij} \cdot (y_{jt} \cdot D_{increase}) + X_{i,t-1}\beta + \varepsilon_{it} \quad (2.5.4.a)$$

$$y_{it} = \rho \sum_{j=1}^{N} w_{ij} \cdot y_{jt} + \beta \sum_{j=1}^{N} w_{ij} \cdot (y_{jt} \cdot D_{decrease}) + X_{i,t-1}\beta + \varepsilon_{it} \quad (2.5.4.b)$$

$$y_{it} = \rho \sum_{j=1}^{N} w_{ij} \cdot y_{jt} + \alpha \sum_{j=1}^{N} w_{ij} \cdot (y_{jt} \cdot D_{increase}) + \beta \sum_{j=1}^{N} w_{ij} \cdot (y_{jt} \cdot D_{decrease}) + X_{i,t-1}\beta + \varepsilon_{it} \quad (2.5.4.c)$$

The coefficients α and β are two indicators represent whether an OECD country is more responsive to other OECD countries' corporate tax increases or decreases, and cannot be interpreted as marginal effects.

Table 2.5.4 (a), (b) and (c) summarize the regression results associated with estimating equation 2.5.4 (a), (b) and (c), respectively. Overall, I find that the coefficient α stays positive and significant, meanwhile, the coefficient β is negative in most cases. When I estimate equation 2.5.4 (c), which includes both $D_{increase}$ and $D_{decrease}$ in the regression, α is still positive and significant and β becomes insignificant. These findings indicate that an OECD country is more responsive to other OECD countries' corporate tax increases than decreases.

2.5.5 Do Developing Countries also Strategically Interact with Developed OECD Countries Regarding Corporate Tax Rates?

The developing countries' corporate TSRs have been decreasing considerably in the past thirty years. Figure 2.5.5 shows that the average corporate TSRs in developed OECD countries and developing countries move downward together. The data of the developing countries' corporate TSR is from the *AEI International Tax Database*, and covers 50 developing countries from 1981 to 2011[21]. It is plausible that the developing countries' lower corporate tax rates also put some pressure on developed OECD countries' corporate tax rates, since the developing countries are all eager to attract more FDI. In other words, the developed OECD countries may not only contemporaneously compete with each other regarding corporate tax rates, but also simultaneously compete with developing countries.

I use a spatial Durbin model to study how developing countries' TSRs affect developed OECD countries' corporate tax rates:

$$y_{it} = \rho \sum_{j=1}^{N} w_{ij} \cdot y_{jt} + \varphi \cdot D_{progressive} \cdot \sum_{j=1}^{N} w_{ij} \cdot y_{jt} + D_{progressive} + \theta \sum_{q=1}^{Q} w_{iq} \cdot z_{qt} + X_{i,t-1}\beta + \varepsilon_{it} \quad (2.5.5)$$

where, z_{qt} is the developing country q's corporate TSR at year t, w_{iq} is the weight of developing country q corresponding to developed OECD country i. θ measures how the developed OECD countries respond to the corporate tax rate changes in

[21] I do not calculate the developing countries' effective tax rates, because the data of the present discounted value (PDV) of depreciation allowance for developing countries has too many missing values. Also, the capital returns for developing countries vary significantly across both time and country, and make it difficult to obtain a reasonable expected value for each developing country to calculate effective tax rates.

developing countries. Again, both geographic and economic distances are used to build the weighting matrix.

Table 2.5.5 reports the results when the developing countries are included in the regressions. The parameters, θs, are positive and significant, especially when the geographic distance and FDI are used to construct the weighting matrices. The positive θs indicate that when the developing countries' corporate tax rates decrease (increase) by 1 percentage point, the developed OECD countries decrease (increase) their average corporate tax rates by around 0.35 percentage point. The corporate tax strategic interactions exist between developing and developed countries, as well.

Moreover, compared to the basic regression results of equation 2.5.1, the ρs in Table 2.5.5 are much smaller, only around 0.45. The smaller ρs indicate that the intense level of OECD countries corporate tax competition may be overestimated in the previous literature. Since the reaction function in the spatial lag model essentially captures the variations within the group, it cannot distinguish whether such variations are caused by strategic interactions with each other or some other shocks from outside. In this case, even though the OECD countries' decreasing corporate tax rates are partially caused by the low corporate tax rates in developing countries, the reaction function in equation 2.5.1 can still capture the downward trend, thus, falsely indicate a higher level of corporate tax competition in OECD countries. In general, how both OECD and developing countries strategically

interact with each other regarding corporate tax rates is a complex question, which deserves further investigation.

2.5.6 Do OECD Countries Behave Differently in International Corporate Tax Competition?

Given similarities in economic and political backgrounds, I assume that OECD countries have similar reactions to other OECD countries' corporate tax rate changes. It is plausible that within OECD countries, the corporate tax strategic reactions can differ from each other. That is, some OECD countries may be more responsive, while others may be less responsive, perhaps even not responsive, to other countries' corporate tax changes. To address this issue, I run the regressions country by country, to obtain the autoregressive parameters of each country. These results are not adjusted to country fixed effects and common shocks, but can reflect how individual OECD country respond to others' corporate tax rate changes.

Table 2.5.6 summarizes the coefficients of the reaction function by estimating equation 2.5.1 for each country. I find that even with similar economic and political background, strategic interactions do differ in OECD countries. For example, Japan, Germany, Spain, Italy and Norway, are very insensitive, almost not responsive, to other countries' corporate tax rate changes. On the other hand, Austria, France, Sweden, Greece, and Canada are very sensitive to other countries' corporate tax rate changes, and have coefficients with magnitude above 1. These findings indicate that some OECD countries may not contemporaneously compete with each other

regarding corporate tax rates. There might be potential leader and follower relationship in OECD countries' corporate tax strategic interactions.

Also, different weighting variables affect regression results in each country. For example, when I use economic weighting variables, FDI and GDP size, to build the reaction function, the coefficients of the U.S. are more significant. In contrast, the coefficients for Finland are more significant when geographic distance is used as the weighting variable. These results indicate that with respect to corporate tax rates, some OECD countries may compete with geographic neighboring countries, while some others may compete with countries with similar economic characteristics. Overall, international corporate tax strategic interactions may be more nuanced than previous literature suggests. This opens the avenue for further study

2.6 Conclusions

Motivated by the current debate about whether OECD countries need to regulate corporate tax competition, this paper comprehensively studies how OECD countries strategically interact with each other regarding corporate tax rates. The empirical evidence strongly suggests that the corporate tax competition does exist in OECD countries. This result is robust after I control for heterogeneous and persistent common shocks and use different specifications. I find that the OECD countries are more responsive to each other's corporate tax rate increases than decreases. In addition, the empirical results suggest that the OECD countries with

progressive corporate tax rates are less aggressively engage in strategic interaction regarding corporate TSRs with neighboring countries.

I also find that the OECD countries corporate tax competition has intensified after 1993, but only a little bit. Corporate tax strategic interactions not only exist within developed OECD countries, but also exist between developing and developed OECD countries. Once developing countries are included in the regressions, I find the autoregressive parameters to be smaller, which indicates that the level of OECD countries' corporate tax strategic interaction may be overestimated in the previous literature. This suggests that the justification for regulating corporate tax competition within OECD countries may be over emphasized. More importantly, since the developing countries also strategically interact with OECD countries in corporate tax rates, cooperation would be needed not only from OECD countries but also from developing countries. Such cooperation between countries is hard to achieve.

OECD countries' corporate tax rates are determined by strategic interactions with other countries and are also correlated with countries' own economic characteristics, such as economic openness level, government deficit to GDP ratio. Attempts at tax harmonization would be hindered by unavoidable differences in domestic factors across OECD. Moreover, the corporate tax rate that maximizes the overall welfare of the OECD countries may not serve the best interest of each individual OECD country. Unless the fiscal and economic conditions become more

integrated and uniformed in OECD countries, governments will have an incentive to resist policies that enhance corporate tax harmonization

Table 2.4 (a) the Dependent Variable is the Corporate TSR, Inverse Distance between Capital Cities in Kilometers.

	(1)	(2)	(3)	(4)	(5)	(6)
	TSR	*TSR*	*TSR*	*TSR*	*TSR*	*TSR*
ρ	0.551***	0.675***	0.516***	0.516***	0.696***	0.696***
	(0.0531)	(0.0584)	(0.0577)	(0.126)	(0.0646)	(0.129)
$PTSR_{t-1}$	0.344***	0.182***	0.343***	0.343***	0.109***	0.109***
	(0.0183)	(0.0286)	(0.0192)	(0.0512)	(0.0319)	(0.0422)
$Trade/GDP_{t-1}$	-0.0884***	-0.125***	-0.0940***	-0.0940***	-0.156***	-0.156***
	(0.00747)	(0.0157)	(0.00713)	(0.0185)	(0.0233)	(0.0578)
$Kopen_{t-1}$	-0.0301	-0.281	-0.153	-0.153	-0.458	-0.458
	(0.267)	(0.293)	(0.333)	(0.708)	(0.298)	(0.633)
$Gconsump_{t-1}$	0.759***	1.168***	0.782***	0.782***	1.438***	1.438***
	(0.0627)	(0.127)	(0.0602)	(0.186)	(0.179)	(0.325)
UE_{t-1}	0.0280	-0.0250	0.0288	0.0288	-0.0161	-0.0161
	(0.0670)	(0.0946)	(0.0672)	(0.0947)	(0.102)	(0.181)
$Ggdp_{t-1}$	0.139	0.0843	0.158	0.158	0.109	0.109
	(0.110)	(0.100)	(0.113)	(0.111)	(0.0979)	(0.140)
$Debt/GDP_{t-1}$	0.0345***	0.0101	0.0353***	0.0353*	-0.0142	-0.0142
	(0.00835)	(0.0122)	(0.00671)	(0.0181)	(0.0135)	(0.0310)
Def/GDP_{t-1}	0.436***	0.554***	0.428***	0.428***	0.632***	0.632***
	(0.0673)	(0.0685)	(0.0661)	(0.0717)	(0.0734)	(0.118)
Gov_chan_{t-1}	-0.431	0.286	-0.445	-0.445	0.326	0.326**
	(0.385)	(0.339)	(0.406)	(0.346)	(0.326)	(0.163)
Cons	-11.92***	-12.18***	-10.64***	-10.64*		
	(2.430)	(3.536)	(2.590)	(5.698)		
Spatial	No	Yes	Yes	Yes	Yes	Yes
Country Effect	OLS	RE	Pooled	Pooled	FE	FE
Error Term	i.i.d.		Robust	DC	Robust	DC
N	630	630	630	630	630	630
adj. R2	0.660	0.552	0.647	0.647	0.607	0.607

Standard errors in parentheses, * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 2.4 (b) the Dependent Variable is the Corporate EATRcpi, Inverse Distance between Capital Cities in Kilometers.

	(1)	(2)	(3)	(4)	(5)	(6)
	EATRcpi	*EATRcpi*	*EATRcpi*	*EATRcpi*	*EATRcpi*	*EATRcpi*
ρ	0.606***	0.677***	0.677***	0.677***	0.731***	0.731***
	(0.0453)	(0.0549)	(0.0499)	(0.115)	(0.0601)	(0.0721)
$PTSR_{t-1}$	0.180***	0.175***	0.175***	0.175***	0.151***	0.151***
	(0.0168)	(0.0176)	(0.0169)	(0.0527)	(0.0288)	(0.0579)
$Trade/GDP_{t-1}$	-0.106***	-0.101***	-0.101***	-0.101***	-0.0246	-0.0246
	(0.00681)	(0.00677)	(0.00684)	(0.0131)	(0.0209)	(0.0203)
$Kopen_{t-1}$	-1.488***	-1.335***	-1.335***	-1.335**	-1.673***	-1.673***
	(0.247)	(0.300)	(0.251)	(0.638)	(0.272)	(0.381)
$Gconsump_{t-1}$	-0.0228	0.0422	0.0422	0.0422	-0.453***	-0.453
	(0.0572)	(0.0559)	(0.0571)	(0.0766)	(0.159)	(0.415)
UE_{t-1}	-0.235***	-0.186***	-0.186***	-0.186	-0.411***	-0.411
	(0.0612)	(0.0548)	(0.0613)	(0.152)	(0.0903)	(0.255)
$Ggdp_{t-1}$	-0.121	-0.135	-0.135	-0.135***	-0.169*	-0.169
	(0.100)	(0.101)	(0.100)	(0.0481)	(0.0867)	(0.106)
$Debt/GDP_{t-1}$	0.0360***	0.0349***	0.0349***	0.0349	0.0266**	0.0266
	(0.00765)	(0.00704)	(0.00761)	(0.0213)	(0.0120)	(0.0233)
Def/GDP_{t-1}	0.362***	0.365***	0.365***	0.365***	0.181***	0.181**
	(0.0615)	(0.0651)	(0.0614)	(0.0799)	(0.0654)	(0.0783)
Gov_chan_{t-1}	0.689**	0.778**	0.778**	0.778**	0.987***	0.987***
	(0.352)	(0.357)	(0.351)	(0.306)	(0.290)	(0.234)
Cons	13.23***	9.709***	9.709***	9.709**		
	(1.987)	(2.452)	(2.160)	(4.713)		
Spatial	No	Yes	Yes	Yes	Yes	Yes
Country Effect	OLS	RE	Pooled	Pooled	FE	FE
Error Term	i.i.d.		Robust	DC	Robust	DC
N	630	630	630	630	630	630
adj. R2	0.659	0.661	0.661	0.661	0.708	0.708

Standard errors in parentheses, * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 2.4 (c) the Dependent Variable is the Corporate *EATRex*, Inverse Distance between Capital Cities in Kilometers.

	(1)	(2)	(3)	(4)	(5)	(6)
	EATRex	*EATRex*	*EATRex*	*EATRex*	*EATRex*	*EATRex*
ρ	0.686***	0.706***	0.730***	0.730***	0.758***	0.758***
	(0.0514)	(0.0582)	(0.0564)	(0.114)	(0.0639)	(0.104)
$PTSR_{t-1}$	0.171***	0.130***	0.167***	0.167***	0.107***	0.107**
	(0.0156)	(0.0233)	(0.0157)	(0.0508)	(0.0255)	(0.0458)
$Trade/GDP_{t-1}$	-0.106***	-0.0694***	-0.103***	-0.103***	-0.0495**	-0.0495***
	(0.00636)	(0.0138)	(0.00639)	(0.0128)	(0.0191)	(0.0181)
$Kopen_{t-1}$	-0.218	-0.931***	-0.134	-0.134	-0.994***	-0.994***
	(0.230)	(0.237)	(0.265)	(0.641)	(0.242)	(0.302)
$Gconsump_{t-1}$	0.0423	-0.0986	0.0994**	0.0994	-0.192	-0.192
	(0.0534)	(0.108)	(0.0483)	(0.0774)	(0.143)	(0.309)
UE_{t-1}	-0.209***	-0.275***	-0.154***	-0.154	-0.269***	-0.269
	(0.0570)	(0.0756)	(0.0532)	(0.158)	(0.0809)	(0.251)
$Ggdp_{t-1}$	-0.0763	-0.0879	-0.0914	-0.0914	-0.118	-0.118
	(0.0939)	(0.0784)	(0.0911)	(0.0722)	(0.0783)	(0.0780)
$Debt/GDP_{t-1}$	0.0447***	0.0253**	0.0424***	0.0424**	0.0254**	0.0254
	(0.00711)	(0.00981)	(0.00692)	(0.0214)	(0.0107)	(0.0199)
Def/GDP_{t-1}	0.361***	0.265***	0.361***	0.361***	0.252***	0.252***
	(0.0573)	(0.0543)	(0.0604)	(0.0590)	(0.0585)	(0.0893)
Gov_chan_{t-1}	0.836**	0.858***	0.916***	0.916***	0.875***	0.875***
	(0.328)	(0.264)	(0.327)	(0.268)	(0.260)	(0.202)
Cons	6.715**	11.79***	4.291*	4.291		
	(2.047)	(3.116)	(2.301)	(4.130)		
Spatial	No	Yes	Yes	Yes	Yes	Yes
Country Effect	OLS	RE	Pooled	Pooled	FE	FE
Error Term	i.i.d.		Robust	DC	Robust	DC
N	630	630	630	630	630	630
adj. R2	0.614	0.571	0.606	0.606	0.658	0.658

Standard errors in parentheses, * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 2.4 (d) the Dependent Variable is the Corporate EMTRcpi, Inverse Distance between Capital Cities in Kilometers.

	(1)	(2)	(3)	(4)	(5)	(6)
	EMTRcpi	*EMTRcpi*	*EMTRcpi*	*EMTRcpi*	*EMTRcpi*	*EMTRcpi*
ρ	0.481***	0.621***	0.594***	0.594***	0.763***	0.763***
	(0.0639)	(0.0793)	(0.0844)	(0.176)	(0.0865)	(0.112)
$PTSR_{t-1}$	0.197***	0.194***	0.192***	0.192***	0.160***	0.160**
	(0.0239)	(0.0363)	(0.0226)	(0.0667)	(0.0398)	(0.0791)
$Trade/GDP_{t-1}$	-0.134***	-0.0297	-0.127***	-0.127***	0.0368	0.0368
	(0.00973)	(0.0212)	(0.0113)	(0.0242)	(0.0299)	(0.0297)
$Kopen_{t-1}$	-2.073***	-1.942***	-1.769***	-1.769**	-1.747***	-1.747***
	(0.355)	(0.383)	(0.432)	(0.814)	(0.387)	(0.264)
$Gconsump_{t-1}$	-0.102	-0.761***	-0.0335	-0.0335	-1.245***	-1.245*
	(0.0819)	(0.165)	(0.0748)	(0.118)	(0.224)	(0.640)
UE_{t-1}	-0.291***	-0.541***	-0.225***	-0.225	-0.568***	-0.568
	(0.0875)	(0.119)	(0.0857)	(0.251)	(0.127)	(0.345)
$Ggdp_{t-1}$	-0.0782	-0.109	-0.108	-0.108	-0.214*	-0.214***
	(0.144)	(0.124)	(0.153)	(0.0705)	(0.122)	(0.0698)
$Debt/GDP_{t-1}$	0.0172	0.000368	0.0162*	0.0162	0.0177	0.0177
	(0.0109)	(0.0154)	(0.00972)	(0.0315)	(0.0168)	(0.0283)
Def/GDP_{t-1}	0.416***	0.117	0.422***	0.422***	0.0184	0.0184
	(0.0879)	(0.0859)	(0.102)	(0.128)	(0.0921)	(0.0872)
Gov_chan_{t-1}	0.984**	1.189***	1.091**	1.091***	1.297***	1.297***
	(0.503)	(0.421)	(0.518)	(0.352)	(0.408)	(0.235)
Cons	19.92***	25.89***	15.13***	15.13**		
	(2.643)	(4.469)	(3.500)	(7.282)		
Spatial	No	Yes	Yes	Yes	Yes	Yes
Country Effect	OLS	RE	Pooled	Pooled	FE	FE
Error Term	i.i.d.		Robust	DC	Robust	DC
N	630	630	630	630	630	630
adj. R2	0.522	0.407	0.521	0.521	0.580	0.580

Standard errors in parentheses, * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 2.4 (e) the Dependent Variable is the Corporate EMTRex, Inverse Distance between Capital Cities in Kilometers.

	(1)	(2)	(3)	(4)	(5)	(6)
	EMTRex	*EMTRex*	*EMTRex*	*EMTRex*	*EMTRex*	*EMTRex*
ρ	0.552***	0.674***	0.631***	0.631***	0.814***	0.814***
	(0.0781)	(0.0906)	(0.0886)	(0.172)	(0.0998)	(0.171)
$PTSR_{t-1}$	0.193***	0.148***	0.191***	0.191***	0.112***	0.112*
	(0.0220)	(0.0324)	(0.0208)	(0.0657)	(0.0352)	(0.0632)
$Trade/GDP_{t-1}$	-0.131***	-0.0426**	-0.126***	-0.126***	0.00983	0.00983
	(0.00904)	(0.0198)	(0.0103)	(0.0225)	(0.0278)	(0.0203)
$Kopen_{t-1}$	-0.293	-0.849**	-0.112	-0.112	-0.815**	-0.815***
	(0.326)	(0.341)	(0.378)	(0.715)	(0.345)	(0.133)
$Gconsump_{t-1}$	-0.0444	-0.629***	0.0183	0.0183	-0.994***	-0.994*
	(0.0759)	(0.153)	(0.0661)	(0.109)	(0.203)	(0.588)
UE_{t-1}	-0.243***	-0.342***	-0.177**	-0.177	-0.339***	-0.339
	(0.0810)	(0.108)	(0.0823)	(0.249)	(0.115)	(0.334)
$Ggdp_{t-1}$	-0.0580	-0.119	-0.0880	-0.0880	-0.212*	-0.212***
	(0.134)	(0.113)	(0.143)	(0.118)	(0.112)	(0.0781)
$Debt/GDP_{t-1}$	0.0303***	0.0113	0.0272***	0.0272	0.0204	0.0204
	(0.0101)	(0.0139)	(0.00962)	(0.0308)	(0.0151)	(0.0235)
Def/GDP_{t-1}	0.419***	0.178**	0.420***	0.420***	0.106	0.106
	(0.0814)	(0.0777)	(0.0951)	(0.0939)	(0.0829)	(0.105)
Gov_chan_{t-1}	1.200***	1.127***	1.325***	1.325***	1.205***	1.205***
	(0.466)	(0.379)	(0.476)	(0.305)	(0.370)	(0.221)
Cons	12.44***	20.66***	8.916***	8.916		
	(2.783)	(4.415)	(3.227)	(6.322)		
Spatial	No	Yes	Yes	Yes	Yes	Yes
Country Effect	OLS	RE	Pooled	Pooled	FE	FE
Error Term	i.i.d.		Robust	DC	Robust	DC
N	630	630	630	630	630	630
adj. R2	0.450	0.314	0.432	0.432	0.462	0.462

Standard errors in parentheses, * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 2.5.1 (a) Inverse Distance (Euclidean) of Net Inflow FDI

	(1)	(2)	(3)	(4)	(5)
	TSR	*EATRcpi*	*EMTRcpi*	*EATRex*	*EMTRex*
ρ	0.678***	0.571***	0.549***	0.628***	0.622***
	(0.137)	(0.0716)	(0.0875)	(0.0973)	(0.108)
	(0.0676)	*(0.0557)*	*(0.0713)*	*(0.0609)*	*(0.0841)*
$PTSR_{t-1}$	0.115***	0.158***	0.171**	0.115**	0.119*
	(0.0446)	(0.0596)	(0.0825)	(0.0507)	(0.0695)
	(0.0306)	*(0.0389)*	*(0.0484)*	*(0.0304)*	*(0.0407)*
$Trade/GDP_{t-1}$	-0.176***	-0.0497**	0.00256	-0.0658***	-0.0143
	(0.0579)	(0.0173)	(0.0282)	(0.0148)	(0.0130)
	(0.0269)	*(0.0204)*	*(0.0333)*	*(0.0204)*	*(0.0340)*
$Kopen_{t-1}$	-0.576	-1.691***	-1.767***	-1.057***	-0.841***
	(0.625)	(0.414)	(0.391)	(0.349)	(0.314)
	(0.301)	*(0.307)*	*(0.445)*	*(0.278)*	*(0.414)*
$Gconsump_{t-1}$	1.369***	-0.529	-1.356**	-0.246	-1.103*
	(0.334)	(0.377)	(0.631)	(0.275)	(0.586)
	(0.191)	*(0.197)*	*(0.304)*	*(0.160)*	*(0.272)*
UE_{t-1}	-0.0215	-0.429	-0.599*	-0.297	-0.363
	(0.178)	(0.268)	(0.363)	(0.266)	(0.350)
	(0.112)	*(0.102)*	*(0.151)*	*(0.0939)*	*(0.131)*
$Ggdp_{t-1}$	0.122	-0.152	-0.184***	-0.106*	-0.179***
	(0.145)	(0.0997)	(0.0428)	(0.0591)	(0.0173)
	(0.107)	*(0.104)*	*(0.154)*	*(0.0908)*	*(0.142)*
$Debt/GDP_{t-1}$	-0.0159	0.0241	0.0151	0.0267	0.0236
	(0.0319)	(0.0246)	(0.0284)	(0.0223)	(0.0258)
	(0.0137)	*(0.0120)*	*(0.0149)*	*(0.0106)*	*(0.0137)*
Def/GDP_{t-1}	0.621***	0.172**	-0.000822	0.254***	0.103
	(0.118)	(0.0720)	(0.0990)	(0.0886)	(0.115)
	(0.107)	*(0.0699)*	*(0.104)*	*(0.0688)*	*(0.100)*
Gov_chan_{t-1}	0.270	0.912***	1.178***	0.820***	1.070***
	(0.177)	(0.234)	(0.221)	(0.200)	(0.149)
	(0.311)	*(0.296)*	*(0.420)*	*(0.263)*	*(0.384)*
Spatial	Yes	Yes	Yes	Yes	Yes
Country Effect	FE	FE	FE	FE	FE
Error Term	DC	DC	DC	DC	DC
N	630	630	630	630	630
adj. R^2	0.620	0.711	0.583	0.658	0.466

Standard errors in parentheses, * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

**Note: The italic and underscore numbers in parenthesis are std. dev. calculated by adopting only country fixed effect and robust to arbitrary heteroskedasticity.

Table 2.5.1 (b) Inverse Distance (Euclidean) of GDP (Constant at 2000 US Dollars)

	(1)	(2)	(3)	(4)	(5)
	TSR	*EATRcpi*	*EMTRcpi*	*EATRex*	*EMTRex*
ρ	0.678***	0.547***	0.445***	0.576***	0.468***
	(0.149)	(0.0844)	(0.111)	(0.105)	(0.126)
	(0.0664)	*(0.0570)*	*(0.0795)*	*(0.0617)*	*(0.0868)*
$PTSR_{t-1}$	0.106**	0.178**	0.220**	0.132**	0.163**
	(0.0535)	(0.0715)	(0.0964)	(0.0603)	(0.0799)
	(0.0314)	*(0.0390)*	*(0.0486)*	*(0.0308)*	*(0.0395)*
$Trade/GDP_{t-1}$	-0.189***	-0.0526**	-0.0117	-0.0797***	-0.0394
	(0.0587)	(0.0264)	(0.0385)	(0.0199)	(0.0266)
	(0.0267)	*(0.0214)*	*(0.0346)*	*(0.0204)*	*(0.0331)*
$Kopen_{t-1}$	-0.345	-1.578***	-1.954***	-0.939***	-1.010***
	(0.609)	(0.331)	(0.261)	(0.281)	(0.187)
	(0.310)	*(0.316)*	*(0.453)*	*(0.286)*	*(0.412)*
$Gconsump_{t-1}$	1.450***	-0.557	-1.397**	-0.264	-1.146**
	(0.334)	(0.354)	(0.613)	(0.252)	(0.580)
	(0.190)	*(0.202)*	*(0.318)*	*(0.165)*	*(0.286)*
UE_{t-1}	-0.00228	-0.448	-0.650*	-0.301	-0.390
	(0.172)	(0.284)	(0.385)	(0.276)	(0.365)
	(0.114)	*(0.107)*	*(0.157)*	*(0.0963)*	*(0.134)*
$Ggdp_{t-1}$	0.152	-0.112	-0.119	-0.0594	-0.108
	(0.141)	(0.0873)	.	(0.0447)	.
	(0.108)	*(0.106)*	*(0.158)*	*(0.0909)*	*(0.144)*
$Debt/GDP_{t-1}$	-0.0151	0.0231	0.0140	0.0238	0.0209
	(0.0305)	(0.0226)	(0.0274)	(0.0200)	(0.0229)
	(0.0141)	*(0.0124)*	*(0.0157)*	*(0.0108)*	*(0.0142)*
Def/GDP_{t-1}	0.623***	0.147***	-0.0355	0.237***	0.0800
	(0.115)	(0.0554)	(0.0773)	(0.0756)	(0.0957)
	(0.111)	*(0.0724)*	*(0.109)*	*(0.0719)*	*(0.105)*
Gov_chan_{t-1}	0.211	0.903***	1.200***	0.792***	1.053***
	(0.190)	(0.221)	(0.217)	(0.187)	(0.124)
	(0.314)	*(0.299)*	*(0.435)*	*(0.264)*	*(0.392)*
Spatial	Yes	Yes	Yes	Yes	Yes
Country Effect	FE	FE	FE	FE	FE
Error Term	DC	DC	DC	DC	DC
N	630	630	630	630	630
adj. R^2	0.603	0.696	0.552	0.646	0.442

Standard errors in parentheses, * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

**Note: The italic and underscore numbers in parenthesis are std. dev. calculated by adopting only country fixed effect and robust to arbitrary heteroskedasticity.

Table 2.5.2 (a) OECD Countries' Corporate Tax Strategic Interactions in Three Ten-year Periods

	Distance			GDP			FDI		
	TSR	EATR expected	EMTR expected	TSR	EATR expected	EMTR expected	TSR	EATR expected	EMTR expected
1982-1991	1.129***	0.742*	0.500	1.132***	0.526	-0.0856	0.976***	0.574*	0.388
	(0.236)	(0.400)	(0.684)	(0.256)	(0.324)	(0.545)	(0.233)	(0.300)	(0.435)
N	210	210	210	210	210	210	210	210	210
adj. R^2	0.217	0.181	0.060	0.086	0.143	0.110	0.204	0.166	0.064
1992-2001	0.558***	1.155***	1.044***	0.161	0.868***	0.885***	0.332	0.571**	0.553***
	(0.197)	(0.426)	(0.342)	(0.264)	(0.293)	(0.259)	(0.233)	(0.246)	(0.182)
N	210	210	210	210	210	210	210	210	210
adj. R^2	0.109	0.131	0.191	0.182	0.155	0.176	0.171	0.214	0.229
2002-2011	0.873***	1.025***	1.118	0.792***	0.893***	0.952***	0.873***	0.943***	1.000***
	(0.182)	(0.133)	.	(0.195)	(0.166)	(0.102)	(0.192)	(0.142)	(0.106)
N	210	210	210	210	210	210	210	210	210
adj. R^2	0.353	0.261	0.175	0.336	0.239	0.156	0.350	0.311	0.239

Standard errors in parentheses, * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

**Note: The double clustering method and country fixed effect are used in estimating the results.

Table 2.5.2 (b) OECD Countries' Corporate Tax Strategic Interactions in Three Ten-year Periods

	Distance			GDP			FDI		
	TSR	EATRcpi	EMTRcpi	TSR	EATRcpi	EMTRcpi	TSR	EATRcpi	EMTRcpi
1982-1991	1.132***	0.432	-0.204	0.976***	0.504*	0.429	1.129***	0.667*	0.595
	(0.256)	(0.303)	(0.477)	(0.233)	(0.277)	(0.395)	(0.236)	(0.370)	(0.621)
N	210	210	210	210	210	210	210	210	210
adj. R^2	0.086	0.124	0.162	0.204	0.129	0.097	0.217	0.140	0.089
1992-2001	0.161	0.901***	0.977***	0.332	0.730**	0.681**	0.558***	1.259***	1.307***
	(0.264)	(0.318)	(0.333)	(0.233)	(0.320)	(0.320)	(0.197)	(0.425)	(0.460)
N	210	210	210	210	210	210	210	210	210
adj. R^2	0.182	0.112	0.079	0.171	0.172	0.142	0.109	0.050	0.018
2002-2011	0.792***	0.871***	0.896***	0.873***	0.911***	0.918***	0.873***	0.954***	0.969***
	(0.195)	(0.184)	(0.180)	(0.192)	(0.149)	(0.118)	(0.182)	(0.147)	(0.119)
N	210	210	210	210	210	210	210	210	210
adj. R^2	0.336	0.273	0.188	0.350	0.348	0.274	0.353	0.285	0.195

Standard errors in parentheses, * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

**Note: The double clustering method and country fixed effect are used in estimating the results.

Table 2.5.2 (c) More Intense, 1993

	(1) *TSR*	(2) *EATRcpi*	(3) *EMTRcpi*	(4) *EATRex*	(5) *EMTRex*
Distance					
ρ	0.741***	0.829***	0.854***	0.830***	0.853***
	(0.0992)	(0.125)	(0.184)	(0.133)	(0.204)
ϕ	0.0374**	0.0590	0.0638	0.0403	0.0334
	(0.0151)	(0.0367)	(0.0632)	(0.0291)	(0.0412)
N	630	630	630	630	630
adj. R^2	0.637	0.716	0.595	0.675	0.496
FDI					
ρ	0.704***	0.629***	0.604***	0.642***	0.630***
	(0.117)	(0.0681)	(0.102)	(0.0762)	(0.110)
ϕ	0.0319**	0.0662**	0.0764	0.0378*	0.0424
	(0.0163)	(0.0287)	(0.0579)	(0.0226)	(0.0402)
N	630	630	630	630	630
adj. R^2	0.632	0.720	0.595	0.671	0.489
GDP					
ρ	0.741***	0.618***	0.513***	0.636***	0.537***
	(0.130)	(0.0868)	(0.123)	(0.103)	(0.159)
ϕ	0.0679***	0.0794**	0.0606	0.0583*	0.0440
	(0.0234)	(0.0397)	(0.0719)	(0.0319)	(0.0593)
N	630	630	630	630	630
adj. R2	0.636	0.714	0.580	0.666	0.475

Standard errors in parentheses, * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

**Note: The double clustering method and country fixed effect are used in estimating the results.

Table 2.5.2 (d) More Intense, 1994

	(1) *TSR*	(2) *EATRcpi*	(3) *EMTRcpi*	(4) *EATRex*	(5) *EMTRex*
Distance					
ρ	0.751***	0.855***	0.846***	0.851***	0.847***
	(0.0991)	(0.112)	(0.185)	(0.119)	(0.201)
ϕ	0.0474	0.0729***	0.0585	0.0507***	0.0296
	.	(0.0266)	(0.0649)	(0.0197)	(0.0436)
N	630	630	630	630	630
adj. R^2	0.638	0.717	0.594	0.676	0.496
FDI					
ρ	0.719***	0.617***	0.563***	0.639***	0.600***
	(0.117)	(0.0614)	(0.0973)	(0.0661)	(0.0995)
ϕ	0.0438	0.0618***	0.0454	0.0383**	0.0247
	.	(0.0183)	(0.0500)	(0.0158)	(0.0397)
N	630	630	630	630	630
adj. R^2	0.634	0.720	0.594	0.671	0.488
GDP					
ρ	0.751***	0.596***	0.462***	0.617***	0.492***
	(0.133)	(0.0927)	(0.145)	(0.104)	(0.172)
ϕ	0.0794***	0.0699*	0.0189	0.0515	0.0159
	(0.0155)	(0.0381)	(0.0835)	(0.0324)	(0.0679)
N	630	630	630	630	630
adj. R2	0.638	0.713	0.579	0.665	0.474

Standard errors in parentheses, * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

**Note: The double clustering method and country fixed effect are used in estimating the results.

Table 2.5.2 (e) More Intense, 1995

	(1) *TSR*	(2) *EATRcpi*	(3) *EMTRcpi*	(4) *EATRex*	(5) *EMTRex*
Distance					
ρ	0.766***	0.802***	0.745***	0.829***	0.804***
	(0.103)	(0.113)	(0.181)	(0.118)	(0.200)
ϕ	0.0571	0.0493**	0.00174	0.0416**	0.00710
	.	(0.0237)	(0.0623)	(0.0181)	(0.0475)
N	630	630	630	630	630
adj. R^2	0.639	0.715	0.593	0.675	0.495
FDI					
ρ	0.733***	0.584***	0.501***	0.623***	0.560***
	(0.119)	(0.0599)	(0.0963)	(0.0609)	(0.0948)
ϕ	0.0539	0.0404**	-0.00831	0.0297**	-0.00115
	.	(0.0159)	(0.0520)	(0.0146)	(0.0455)
N	630	630	630	630	630
adj. R^2	0.635	0.718	0.593	0.670	0.487
GDP					
ρ	0.745***	0.543***	0.399***	0.578***	0.444**
	(0.136)	(0.0949)	(0.147)	(0.105)	(0.174)
ϕ	0.0802***	0.0344	-0.0421	0.0301	-0.0190
	(0.0140)	(0.0382)	(0.0863)	(0.0339)	(0.0740)
N	630	630	630	630	630
adj. R2	0.639	0.711	0.580	0.663	0.474

Standard errors in parentheses, * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

**Note: The double clustering method and country fixed effect are used in estimating the results.

Table 2.5.3 (a) Strategic Behavior, Progressive Tax Rates

	(1) *TSR*	(2) *EATRcpi*	(3) *EMTRcpi*	(4) *EATRex*	(5) *EMTRxpected*
Distance					
ρ	0.734***	0.732***	0.760***	0.776***	0.817***
	(0.0897)	(0.116)	(0.164)	(0.121)	(0.178)
ϕ	-0.287*	-0.151	-0.120	-0.195	-0.150
	(0.171)	(0.228)	(0.274)	(0.199)	(0.255)
$D_{progressive}$	11.02**	6.876	5.691	7.508	5.782
	(5.595)	(6.439)	(6.354)	(5.829)	(6.192)
N	630	630	630	630	630
adj. R^2	0.641	0.719	0.598	0.678	0.499
FDI					
ρ	0.703***	0.554***	0.522***	0.611***	0.583***
	(0.0936)	(0.0635)	(0.0873)	(0.0728)	(0.0915)
ϕ	-0.255	-0.144	-0.0967	-0.192	-0.128
	(0.191)	(0.167)	(0.194)	(0.152)	(0.197)
$D_{progressive}$	9.215	6.617	5.087	7.286	5.092
	(5.721)	(4.850)	(4.801)	(4.534)	(5.008)
N	630	630	630	630	630
adj. R^2	0.635	0.723	0.597	0.674	0.490
GDP					
ρ	0.669***	0.526***	0.450***	0.569***	0.482***
	(0.111)	(0.0726)	(0.105)	(0.0892)	(0.122)
ϕ	-0.250	-0.148	-0.0799	-0.184	-0.0890
	(0.163)	(0.178)	(0.212)	(0.151)	(0.211)
$D_{progressive}$	9.130*	6.585	4.524	6.783	3.902
	(4.829)	(4.924)	(4.813)	(4.221)	(4.705)
N	630	630	630	630	630
adj. R^2	0.636	0.716	0.583	0.668	0.476

Standard errors in parentheses, * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

**Note: The double clustering method and country fixed effect are used in estimating the results. Due to the limited space, I do not report the coefficients of other explanatory variables in Table 2.5.3(a), since these coefficients do not change significantly compared to the regression results of the basic equation 2.5.1.

Table 2.5.3 (b) Strategic Behavior, Local Tax Rates

	(1) *TSR*	(2) *EATRcpi*	(3) *EMTRcpi*	(4) *EATRex*	(5) *EMTRex*
Distance					
ρ	0.669***	0.606***	0.595***	0.609***	0.602**
	(0.120)	(0.139)	(0.207)	(0.164)	(0.245)
κ	0.0109	0.140	0.230	0.167	0.285
	(0.228)	(0.144)	(0.201)	(0.166)	(0.231)
D_{local}	-0.399	-0.112	-1.462	-0.179	-2.696
	(8.343)	(4.549)	(5.900)	(5.054)	(5.928)
N	630	630	630	630	630
adj. R2	0.634	0.721	0.601	0.686	0.507
FDI					
ρ	0.659***	0.465***	0.423***	0.481***	0.431**
	(0.138)	(0.0921)	(0.134)	(0.123)	(0.173)
κ	-0.0241	0.103	0.150	0.125	0.201
	(0.247)	(0.130)	(0.165)	(0.155)	(0.209)
D_{local}	0.864	1.111	0.723	1.229	-0.353
	(9.217)	(4.710)	(5.950)	(5.034)	(5.852)
N	630	630	630	630	630
adj. R2	0.631	0.725	0.601	0.684	0.501
GDP					
ρ	0.643***	0.457***	0.368***	0.476***	0.377**
	(0.157)	(0.0908)	(0.139)	(0.120)	(0.178)
κ	-0.0815	0.0691	0.133	0.0673	0.140
	(0.226)	(0.102)	(0.145)	(0.126)	(0.183)
D_{local}	3.634	3.493	2.858	4.181	2.881
	(7.845)	(3.793)	(5.273)	(4.060)	(4.848)
N	630	630	630	630	630
adj. R2	0.632	0.721	0.590	0.681	0.489

Standard errors in parentheses, * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

**Note: The double clustering method and country fixed effect are used in estimating the results. Due to the limited space, I do not report the coefficients of other explanatory variables in Table 2.5.3(b), since these coefficients do not change significantly compared to the regression results of the basic equation 2.5.1.

Table 2.5.4 (a) Corporate Tax Increases

	(1) *TSR*	(2) *EATRcpi*	(3) *EMTRcpi*	(4) *EATRex*	(5) *EMTRex*
Distance					
ρ	0.694***	0.701***	0.719***	0.741***	0.791***
	(0.132)	(0.0734)	(0.101)	(0.104)	(0.165)
α	0.00796	0.212***	0.356***	0.153**	0.287***
	(0.0671)	(0.0662)	(0.0486)	(0.0611)	(0.0686)
N	630	630	630	630	630
adj. R2	0.607	0.713	0.589	0.661	0.470
FDI					
ρ	0.656***	0.537***	0.517***	0.598***	0.594***
	(0.136)	(0.0655)	(0.0820)	(0.0910)	(0.0981)
α	0.0815**	0.166***	0.188***	0.145***	0.172
	(0.0399)	(0.0419)	(0.0631)	(0.00128)	.
N	630	630	630	630	630
adj. R2	0.621	0.714	0.586	0.661	0.469
GDP					
ρ	0.659***	0.516***	0.415***	0.550***	0.444***
	(0.151)	(0.0818)	(0.108)	(0.0994)	(0.123)
α	0.0559	0.180**	0.210*	0.174***	0.207**
	(0.0850)	(0.0837)	(0.125)	(0.0655)	(0.0958)
N	630	630	630	630	630
adj. R2	0.605	0.700	0.556	0.651	0.447

Standard errors in parentheses, * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

**Note: The double clustering method and country fixed effect are used in estimating the results. Due to the limited space, I do not report the coefficients of other explanatory variables in Table 2.5.4(a), since these coefficients do not change significantly compared to the regression results of the basic equation 2.5.1.

Table 2.5.4 (b) Corporate Tax Decreases

	(1) *TSR*	(2) *EATRcpi*	(3) *EMTRcpi*	(4) *EATRex*	(5) *EMTRex*
Distance					
ρ	0.683***	0.734***	0.778***	0.758***	0.820***
	(0.127)	(0.0695)	(0.107)	(0.102)	(0.167)
α	-0.0208**	-0.0327*	-0.0550	-0.0198	-0.0326***
	(0.00965)	(0.0197)	(0.0367)	(0.0128)	(0.00886)
N	630	630	630	630	630
adj. R2	0.608	0.708	0.580	0.657	0.461
FDI					
ρ	0.663***	0.574***	0.551***	0.630***	0.624***
	(0.132)	(0.0670)	(0.0859)	(0.0905)	(0.108)
α	-0.107	-0.0623***	-0.0202	-0.0613	-0.0208
	.	(0.0166)	(0.0495)	.	(0.0412)
N	630	630	630	630	630
adj. R2	0.623	0.711	0.583	0.658	0.465
GDP					
ρ	0.660***	0.548***	0.440***	0.578***	0.465***
	(0.145)	(0.0803)	(0.113)	(0.0986)	(0.131)
α	-0.0492***	-0.0262	0.0417	-0.0328	0.0206
	(0.00484)	(0.0403)	(0.0709)	(0.0352)	(0.0720)
N	630	630	630	630	630
adj. R2	0.605	0.695	0.552	0.645	0.442

Standard errors in parentheses, * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

**Note: The double clustering method and country fixed effect are used in estimating the results. Due to the limited space, I do not report the coefficients of other explanatory variables in Table 2.5.4(b), since these coefficients do not change significantly compared to the regression results of the basic equation 2.5.1.

Table 2.5.4 (c) Corporate Tax Increases and Decreases

	(1) *TSR*	(2) *EATRcpi*	(3) *EMTRcpi*	(4) *EATRex*	(5) *EMTRex*
Distance					
ρ	0.685***	0.699***	0.717***	0.736***	0.782***
	(0.129)	(0.0751)	(0.106)	(0.105)	(0.169)
α	-0.00285	0.222***	0.373***	0.163**	0.306***
	(0.0841)	(0.0775)	(0.0756)	(0.0776)	(0.106)
β	-0.0212	0.0151	0.0289	0.0140	0.0305
	(0.0261)	(0.0249)	(0.0456)	(0.0268)	(0.0412)
N	630	630	630	630	630
adj. R2	0.607	0.713	0.588	0.661	0.470
FDI					
ρ	0.653***	0.542***	0.516***	0.603***	0.594***
	(0.131)	(0.0617)	(0.0825)	(0.0865)	(0.102)
α	0.0452	0.152***	0.191***	0.130***	0.173***
	(0.0316)	(0.0383)	(0.0685)	(0.0146)	(0.0153)
β	-0.101	-0.0382	0.00883	-0.0411	0.00342
	.	.	(0.0467)	.	(0.0407)
N	630	630	630	630	630
adj. R2	0.623	0.714	0.585	0.661	0.469
GDP					
ρ	0.650***	0.514***	0.396***	0.549***	0.431***
	(0.148)	(0.0800)	(0.113)	(0.0966)	(0.134)
α	0.0394	0.183**	0.251*	0.172***	0.236**
	(0.0772)	(0.0832)	(0.129)	(0.0649)	(0.0929)
β	-0.0429	0.00609	0.0869	-0.00355	0.0595
	.	(0.0356)	(0.0692)	(0.0316)	(0.0698)
N	630	630	630	630	630
adj. R2	0.605	0.700	0.558	0.650	0.448

Standard errors in parentheses, * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

**Note: The double clustering method and country fixed effect are used in estimating the results. Due to the limited space, I do not report the coefficients of other explanatory variables in Table 2.5.4(c), since these coefficients do not change significantly compared to the regression results of the basic equation 2.5.1.

Table 2.5.5 Interactions between Developing and Developed OECD Countries

	(1) *TSR*	(2) *EATRcpi*	(3) *EMTRcpi*	(4) *EATRex*	(5) *EMTRex*
Distance					
ρ	0.548***	0.371**	0.465*	0.626***	0.885***
	(0.143)	(0.165)	(0.247)	(0.116)	(0.193)
φ	-0.305*	-0.179	-0.144	-0.210	-0.142
	(0.176)	(0.222)	(0.269)	(0.198)	(0.269)
$D_{progressive}$	11.64**	7.761	6.287	7.954	5.597
	(5.868)	(6.325)	(6.263)	(5.845)	(6.516)
θ	0.249*	0.429***	0.346*	0.154	-0.0656
	(0.140)	(0.0724)	(0.186)	.	(0.116)
N	630	630	630	630	630
adj. R^2	0.643	0.724	0.599	0.678	0.498
FDI					
ρ	0.514**	0.423***	0.501**	0.628***	0.981***
	(0.252)	(0.135)	(0.213)	(0.0163)	(0.155)
φ	-0.0582	0.0590	0.109	-0.0332	0.0797
	(0.286)	(0.202)	(0.218)	(0.178)	(0.223)
$D_{progressive}$	5.350	1.700	1.023	3.359	0.588
	(9.187)	(5.862)	(5.206)	(5.257)	(5.537)
θ	0.374	0.283**	0.153	0.0388	-0.374
	(0.342)	(0.145)	(0.301)	.	(0.230)
N	540	540	540	540	540
adj. R^2	0.667	0.728	0.583	0.675	0.481
GDP					
ρ	0.505***	0.321***	0.0858	0.452***	0.309**
	(0.169)	(0.110)	(0.185)	(0.103)	(0.153)
φ	-0.253	-0.150	-0.0826	-0.184	-0.0885
	(0.171)	(0.181)	(0.212)	(0.155)	(0.212)
$D_{progressive}$	9.286*	6.752	4.844	6.830	3.944
	(5.128)	(4.987)	(4.725)	(4.312)	(4.728)

θ	0.213	0.313***	0.564***	0.142***	0.197*
	(0.160)	(0.110)	(0.206)	(0.0497)	(0.119)
N	630	630	630	630	630
adj. R2	0.637	0.719	0.590	0.668	0.477

Standard errors in parentheses, * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

**Note: The double clustering method and country fixed effect are used in estimating the results. Due to the limited space, I do not report the coefficients of other explanatory variables in Table 2.5.5, since these coefficients do not change significantly compared to the regression results of the basic equation 2.5.1.

Table 2.5.6 Corporate Tax Strategic Interaction (Country by Country)

Country	(1) *TSR*	(2) *EATRcpi*	(3) *EMTRcpi*	(4) *EATR expected*	(5) *EMTR expected*	Country	(1) *TSR*	(2) *EATRcpi*	(3) *EMTRcpi*	(4) *EATR expected*	(5) *EMTR expected*
Australia	0.598	0.684***	0.921***	0.389	0.421	Japan	0.154	0.118	0.168	-0.0344	0.0818
Distance	(0.370)	(0.216)	(0.198)	(0.325)	(0.325)	Distance	(0.255)	(0.161)	(0.175)	(0.228)	(0.254)
Australia	0.442**	0.548***	0.730***	0.376***	0.455***	Japan	0.333	0.136	0.138	0.0235	0.0299
FDI	(0.191)	(0.0950)	(0.0847)	(0.145)	(0.152)	FDI	(0.267)	(0.124)	(0.138)	(0.154)	(0.158)
Australia	0.235	0.556***	0.678***	0.339**	0.433**	Japan	0.159	0.139	0.215	0.0837	0.276
GDP	(0.195)	(0.117)	(0.149)	(0.161)	(0.172)	GDP	(0.220)	(0.168)	(0.187)	(0.249)	(0.296)
Austria	2.282**	1.315**	0.828**	1.295**	0.585	Netherlands	1.503***	1.972***	2.182**	1.677***	0.657
Distance	(1.138)	(0.594)	(0.348)	(0.651)	(0.463)	Distance	(0.183)	(0.539)	(0.900)	(0.277)	(0.439)
Austria	2.237**	1.223**	0.841**	1.309**	0.808*	Netherlands	1.478***	1.303***	1.295**	0.906***	0.274
FDI	(1.001)	(0.480)	(0.376)	(0.544)	(0.435)	FDI	(0.208)	(0.388)	(0.529)	(0.315)	(0.303)
Austria	2.341**	0.828**	0.466*	0.997**	0.709**	Netherlands	1.380***	1.037***	0.957**	0.846***	0.533**
GDP	(1.146)	(0.373)	(0.248)	(0.437)	(0.332)	GDP	(0.344)	(0.356)	(0.432)	(0.284)	(0.266)
Belgium	0.584***	0.191	0.215	0.00432	-0.192	New Zealand	1.031***	1.358*	0.782	1.361**	1.356*
Distance	(0.125)	(0.170)	(0.249)	(0.156)	(0.137)	Distance	(0.390)	(0.708)	(0.581)	(0.639)	(0.759)
Belgium	0.644***	-0.0813	-0.205	-0.159	-0.277***	New Zealand	0.0640	-0.555	-0.477	-0.329	-0.521
FDI	(0.194)	(0.143)	(0.184)	(0.127)	(0.0968)	FDI	(0.293)	(0.405)	(0.394)	(0.413)	(0.523)
Belgium	-0.0150	-0.273**	-0.232	-0.322***	-0.315***	New Zealand	0.557**	-0.617*	-0.754**	-0.224	-1.075**

GDP	(0.200)	(0.125)	(0.156)	(0.0976)	(0.0810)	GDP	(0.251)	(0.367)	(0.336)	(0.359)	(0.457)
Canada	1.208***	0.847***	0.619***	0.977***	1.133**	Norway	0.0105	0.0690	-0.203	0.146	-0.105
Distance	(0.189)	(0.120)	(0.226)	(0.210)	(0.487)	Distance	(0.0135)	(0.434)	(0.470)	(0.507)	(0.672)
Canada	1.073***	0.738***	0.599***	0.824***	0.915**	Norway	0.00751	0.154	-0.0823	0.225	-0.152
FDI	(0.134)	(0.117)	(0.155)	(0.210)	(0.413)	FDI	(0.0125)	(0.287)	(0.318)	(0.331)	(0.368)
Canada	1.156***	0.796***	0.745***	0.885***	1.041**	Norway	0.000221	0.355	0.129	0.478*	0.355
GDP	(0.134)	(0.141)	(0.212)	(0.238)	(0.475)	GDP	(0.0106)	(0.273)	(0.332)	(0.273)	(0.303)
Denmark	1.392**	0.736***	0.681**	0.838***	0.870***	Portugal	1.280***	-0.280	-0.524	-0.0233	-0.566
Distance	(0.654)	(0.262)	(0.268)	(0.291)	(0.305)	Distance	(0.354)	(0.603)	(0.490)	(0.441)	(0.413)
Denmark	1.038*	0.703***	0.648**	0.794***	0.759**	Portugal	-0.393	-1.650***	-1.404***	-0.511	-0.886*
FDI	(0.595)	(0.250)	(0.278)	(0.287)	(0.319)	FDI	(0.587)	(0.587)	(0.451)	(0.474)	(0.462)
Denmark	0.849	0.432**	0.391*	0.453**	0.412**	Portugal	-0.173	-0.985***	-0.790**	-0.746**	-1.090***
GDP	(0.607)	(0.188)	(0.205)	(0.194)	(0.208)	GDP	(0.390)	(0.367)	(0.355)	(0.327)	(0.310)
Finland	0.214	1.952***	1.976**	0.809	-0.746	Spain	0.119	-0.218	-0.576	-0.178	0.143
Distance	(0.556)	(0.658)	(0.915)	(0.645)	(0.664)	Distance	(0.366)	(0.533)	(0.749)	(0.578)	(0.543)
Finland	0.319	0.821	0.721	0.637	-0.0340	Spain	-0.216	-0.487	-0.125	-0.680	-0.220
FDI	(0.395)	(0.651)	(0.748)	(0.568)	(0.508)	FDI	(0.315)	(0.440)	(0.427)	(0.547)	(0.499)
Finland	0.147	0.369	0.0442	0.0707	-0.666**	Spain	-0.129	-0.859*	-0.481	-0.973	-0.763
GDP	(0.366)	(0.554)	(0.593)	(0.346)	(0.264)	GDP	(0.327)	(0.494)	(0.610)	(0.670)	(0.685)
France	1.186***	1.648***	1.005	1.323***	0.762	Sweden	1.686***	2.219***	2.473***	2.421***	3.005***
Distance	(0.198)	(0.371)	(0.622)	(0.368)	(0.547)	Distance	(0.485)	(0.429)	(0.469)	(0.523)	(0.714)
France	1.218***	1.418***	1.505***	1.214***	1.040***	Sweden	1.657***	2.584***	2.904***	3.024***	3.691***

FDI	(0.229)	(0.231)	(0.289)	(0.262)	(0.326)	FDI	(0.627)	(0.615)	(0.683)	(0.852)	(1.176)
France	1.729***	2.144***	-0.127	1.364**	-0.147	Sweden	2.333***	2.996***	3.112***	3.230***	3.874***
GDP	(0.256)	(0.564)	(0.489)	(0.549)	(0.327)	GDP	(0.775)	(0.589)	(0.563)	(0.776)	(0.981)
Germany	-1.109	-0.0295	0.412	0.281	0.763	Switzerland	0.0398	0.377***	0.402***	0.530***	0.351**
Distance	(1.137)	(0.486)	(0.541)	(0.543)	(0.473)	Distance	(0.0302)	(0.0940)	(0.0857)	(0.139)	(0.157)
Germany	0.327	-0.222	-0.194	0.301	0.459*	Switzerland	0.00673	0.237**	0.259**	0.349***	0.237*
FDI	(0.784)	(0.392)	(0.497)	(0.326)	(0.266)	FDI	(0.0324)	(0.0989)	(0.111)	(0.119)	(0.123)
Germany	-0.0485	-0.264	-0.404	0.473	0.457	Switzerland	0.00112	0.120	0.129*	0.180**	0.138*
GDP	(0.830)	(0.361)	(0.429)	(0.387)	(0.278)	GDP	(0.0194)	(0.0766)	(0.0721)	(0.0824)	(0.0742)
Greece	1.058*	1.157***	1.414***	1.255***	1.559***	United Kingdom	1.085***	0.617***	0.329	0.277***	0.201
Distance	(0.552)	(0.388)	(0.336)	(0.469)	(0.469)	Distance	(0.347)	(0.107)	(0.294)	(0.0961)	(0.271)
Greece	0.110	0.378	0.814***	-0.0311	0.212	United Kingdom	1.102***	0.603***	0.555***	0.246***	0.0802
FDI	(0.414)	(0.322)	(0.285)	(0.398)	(0.414)	FDI	(0.294)	(0.0706)	(0.214)	(0.0947)	(0.292)
Greece	0.617	1.129***	1.212***	1.124***	1.282***	United Kingdom	1.048***	0.602***	0.570**	0.234**	-0.0888
GDP	(0.446)	(0.371)	(0.380)	(0.351)	(0.366)	GDP	(0.301)	(0.0825)	(0.244)	(0.100)	(0.325)
Ireland	1.250***	-0.0157	-1.991	-1.344*	-4.481***	United States	0.573***	0.284	-0.180	0.231	-0.618*
Distance	(0.249)	(0.655)	(1.465)	(0.715)	(1.161)	Distance	(0.119)	(0.202)	(0.268)	(0.211)	(0.319)
Ireland	0.981***	-0.350	-1.371	-1.096*	-3.203***	United States	0.578***	0.403***	0.444***	0.357***	0.276*
FDI	(0.312)	(0.528)	(0.901)	(0.580)	(0.969)	FDI	(0.112)	(0.105)	(0.160)	(0.115)	(0.159)
Ireland	0.980***	-0.567	-1.763***	-1.035***	-2.618***	United States	0.601***	0.391***	0.424***	0.357***	0.278*

GDP	(0.305)	(0.387)	(0.684)	(0.389)	(0.636)	GDP	(0.105)	(0.101)	(0.149)	(0.107)	(0.146)
Italy	1.233***	0.741	1.178	-1.882	-2.350						
Distance	(0.421)	(0.915)	(0.806)	(1.735)	(1.949)						
Italy	0.452	0.413	0.601	-0.543	-1.165						
FDI	(0.314)	(1.382)	(1.206)	(1.732)	(1.729)						
Italy	1.048***	0.380	-0.225	-1.359	-2.484						
GDP	(0.315)	(1.219)	(1.315)	(1.634)	(1.536)						

Standard errors in parentheses, * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Figure 2.1.2 the Effects of Strategic Interaction vs. the Effects of Common Shocks (Hypothetical)

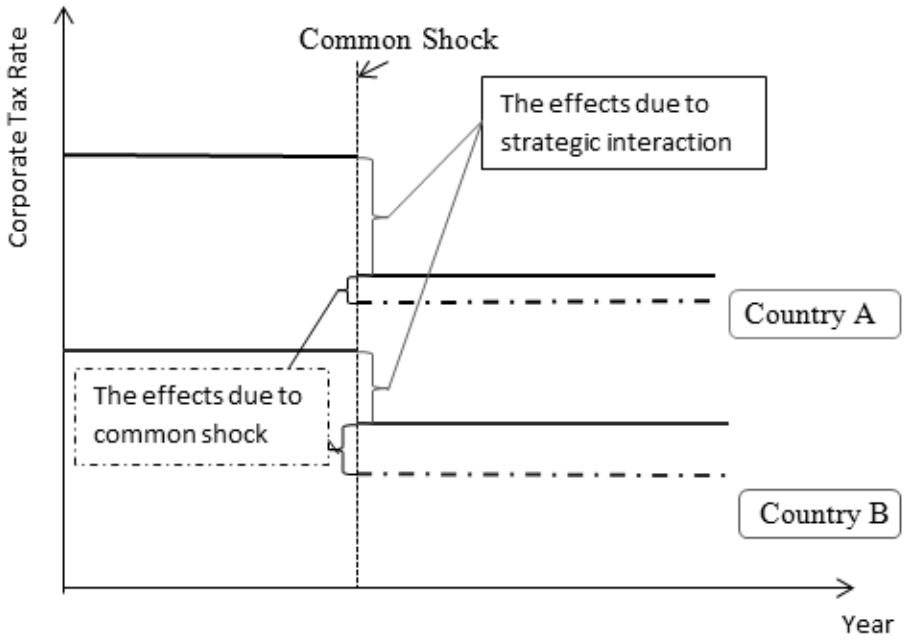
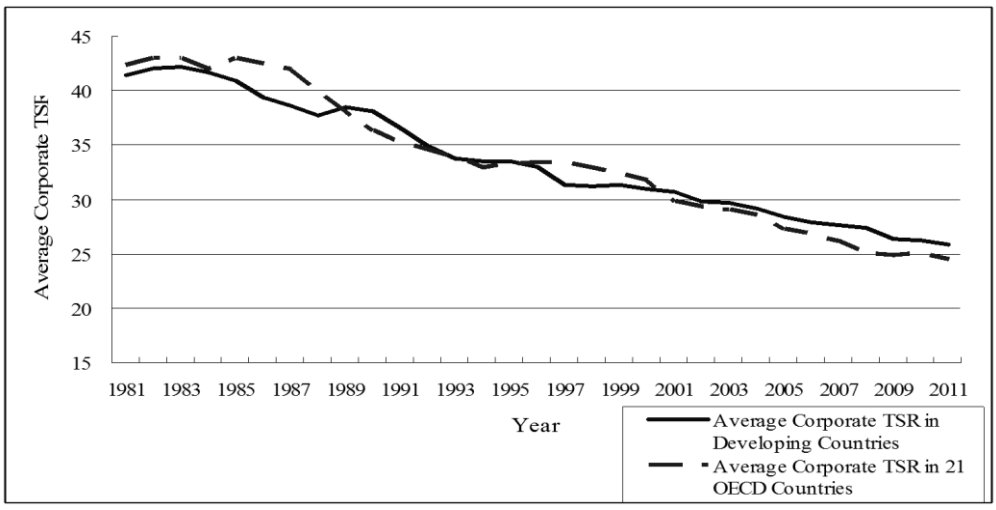


Figure.2.5.5 the Average Corporate TSRs in 21 Developed OECD Countries and 50 Developing Countries



Data Source: the *AEI International Tax Database* (contains data up to and including 2011).

Chapter III: Corporate Tax Policy Interactions: Keeping Up with the Neighbors?

3.1 Introduction

Corporate tax rates have been dramatically decreasing around the world over the last three decades. Economists employ both empirical and theoretical methods to explain the decreasing trend of corporate tax rates. Many empirical papers find OECD and European countries compete with each other regarding corporate tax rates. Meanwhile, theoretical papers provide different theories about the structure of international tax competition, specifically, how countries' corporate tax policies simultaneously and/or dynamically interact with each other.

This chapter contributes to the existing corporate tax competition literature in three ways. First, this chapter not only studies OECD and European countries, but also includes other developing countries. To the best of my knowledge, this research uses a larger sample than previously used in the international corporate competition literature. With 139 countries[22] from 1981 to 2011, the sample provides a more comprehensive picture about how corporate tax policies in different countries interact with each other. Second, compared to the previous empirical literature focusing on corporate tax rate levels, this chapter studies the actual corporate tax rate changes. That is, this chapter investigates the factors which influence

[22] The list of 139 countries included in the sample is reported in Appendix III.

governments to adopt corporate tax decreases, as well as increases. Third, this paper also sheds light on the dynamic nature of international corporate tax competition and provides some evidence about which countries are more likely to be leaders and which countries are more likely to be followers in the competition.

The following chapter includes six sections. Section 3.1 briefly summarizes the related literature and introduces some characteristics about the international corporate TSR changes. Section 3.2 discusses the models used in this chapter and compares the model with the standard model used in the previous research. Section 3.3 summarizes the statistics and sources of data. Section 3.4 shows the results of the baseline model, which answers two questions. First, do countries change their corporate tax policies in response to changes made by neighboring countries the previous year? Second, what factors drive governments to decrease and increase corporate TSRs? Section 3.5 provides some extensions and robustness checks, and identifies leaders and followers in international corporate tax competition. Section 3.6 provides conclusions and policy implications.

3.1.1 Literature Review: The Interactions of Corporate Tax Rate Changes

Many theoretical papers build sophisticated models to explain how countries engage in international corporate tax competition, which drives down corporate tax rates. Keen and Konrad (2012) provide a very good survey about the theoretical work regarding international tax competition and coordination. The early theoretical research, such as Zodrow and Mieszkowaski (1986), Wilson (1986) and Devereux et

al. (2008), models simultaneous reaction functions such that countries simultaneously respond to each other's corporate tax policies. Later theoretical research focuses on the asymmetric and dynamic structure of corporate tax competition and studies incentives to reduce corporate tax rates. These investigations are more interested in the leader and follower problem in international tax competition.

Some papers (Janeba and Peters ,1999; Marceau et.al, 2010) suggest that countries with a larger stock of old capital have higher opportunity costs associated with reducing corporate tax rates, and thus, act less aggressively in tax competition. Kempf and Rota Graziosi (2010) use an equilibrium selection model and argue that the countries with less capital productivity have more incentive to reduce corporate tax rates. Baldwin and Krugman (2004) show countries with agglomeration advantages are less likely to reduce their corporate tax rates. In other papers (Huizinga and Nielsen, 1997, 2002, 2008; Fuest 2005), a higher degree of international portfolio diversification and international firm ownership leads to fewer tax rate reductions and less severe tax competition. Notably, a shortcoming of most theoretical models is the lack of empirical support.

The previous empirical literature (Devereux et al., 2008; Davies and Voget, 2008) studying international corporate tax competition uses either OECD data or European countries' data for two reasons. First, international tax competition has been a hot topic in OECD and European Union (EU) since the OECD issued the

report *Harmful Tax Competition: An Emerging Global Issue* in 1998. For developing countries corporate tax competition and coordination is a less urgent problem compared to other economic issues. Accordingly, it is reasonable to focus on OECD and EU countries because international tax competition is very intense. Second, corporate tax policy data of OECD and EU countries is very detailed and includes both corporate tax rates and bases. In contrast, corporate tax policy data of most developing countries is difficult to obtain, especially data regarding corporate tax bases which is not readily available for most developing countries.

Previous empirical research finds some evidence suggesting that OECD/European countries either simultaneously or dynamically engage in international corporate tax competition. In terms of simultaneous tax competition, Winner et al. (2007) and Devereux et al. (2008) both find that OECD countries indeed change their corporate tax rates when the other OECD countries do so. Empirical research on dynamic corporate tax competition (Rincke and Overesch, 2011; Crabbe and Vandenbussche, 2009; Redoano, 2007), suggests that countries dynamically interact with each other with respect to corporate tax policies. However, no conclusive results about the structure of dynamic interactions have been established. Altshuler and Goodspeed (2002) suggest that America is the leader of international corporate tax competition, while Chatelais and Peyrat (2008) suggest that small European countries are the leaders. Rincke and Overesch (2011) indicate that each OECD country can be a leader, as well as a follower. Some

research (e.g., Redoano, 2007) suggests that the expansion of the EU membership intensifies corporate tax competition, and new and/or small EU countries act more aggressively.

3.1.2 Some Stylized Facts about the Corporate Top Statutory Tax Rates (TSR) around the World

The sample used in this paper covers 139 countries from 1981 to 2011. These countries not only include developed countries but developing and emerging market countries. As Figure 3.1.2 (a) shows, the average corporate TSRs in both developing and developed countries have decreased, from over 40% in 1981 to less than 25% in 2011. Before 1985, the average corporate TSR in emerging market countries was slightly higher than in developed countries. Also, the differences between developed and developing countries' average corporate TSRs in 1990s and early 2000s are notable. Over the last few years, the average corporate TSRs in developed, developing and emerging market countries have been converging, and the differences among these average tax rates are less than 1%.

Despite the converging average corporate TSRs in developed and developing countries, regional average corporate TSRs are notably different from each other. Figure 3.1.2 (b) shows the average corporate TSRs of seven regions in 1981, 1991, 2001 and 2011, respectively. All regional average corporate TSRs have been decreasing since 1981, but the magnitudes of corporate TSRs decreases are remarkably different. In 1981, the lowest average corporate TSR among seven

regions is in South America, but the average corporate TSRs in South America are relatively stable compared to other regions. On the other hand, European countries have experienced the most dramatic corporate TSR decrease, from 40.7% in 1981 to 18% in 2011. The average corporate TSRs in African and Caribbean countries are always relatively higher. In addition, the average corporate TSR decrease in African countries is the second largest, from the highest one among seven regions, 47.6% in 1981, to 27.9% in 2011. Overall, the corporate TSRs demonstrate strong regional patterns.

3.1.3 Some Stylized Facts about the Corporate TSR Changes around the World

From 1982 to 2011, the 139 countries studied in this chapter experiences a total of 675 corporate TSR changes. Not all corporate TSR changes involved decreases, almost a quarter of the changes (151) were corporate TSR increases. In other words, on average, every country has at least one corporate TSR increase in the past thirty years. This fact is never mentioned in the previous literature and has been ignored by researchers until now. Previous literature (Devereux et al., 2008; Rincke and Overesch, 2011; Crabbe and Vandenbussche, 2009; Redoano, 2007) focuses on the decreasing corporate tax rate trend, not the actual corporate TSR changes. The corporate TSR changes vary across time and country[23], and also exhibit very strong regional patterns.

[23]More detailed discussion about corporate TSR changes is presented in the first chapter of dissertation.

I equally divide the thirty years, from 1982 to 2011, into six 5-year periods. Figure 3.1.3 (a) shows the numbers of corporate TSR increases and decreases in each five-year period. Except for the first-five year period, the number of corporate TSR decreases is notably larger than the number of increases in each period. In the first five-year period, the number of corporate TSR decreases is only slightly larger than the number of increases, that is, 40 versus 36. In the last five-year period, the number of corporate TSR decreases is more than twelve times of the number of increases, that is, 113 versus 19. Moreover, the number of corporate TSR decreases has been increasing over time. The number of decreases in the second five-year period is more than doubled that of the first period. On the contrary, the number of corporate TSR increases is relatively stable and has been decreasing over time.

Similar to average corporate TSRs, the number of corporate TSR changes also exhibits strong regional patterns. Figure 3.1.3 (b) shows the numbers of corporate TSR changes across seven geographic regions in six sequential periods from 1982 to 2011. European countries have the largest number of corporate TSR changes in total, as well as in each period. The number of corporate TSR changes in Asia is the second largest. In addition, each region has its unique pattern of corporate TSR changes across time. For instance, only in Europe does, the number of corporate TSR changes exhibits a clear increasing trend over time. In Africa and Asia, the frequency of corporate TSR changes is higher during the 1990s. In North and South

America, the number of corporate TSR changes during the late 1990s is significantly lower than the other periods.

Table 3.1.3 (a) separately shows the number of corporate TSR decreases and increases across regions in each five-year period. The number of corporate TSR decreases and increases demonstrates strong regional patterns. However, there are still some common features of corporate TSR changes across regions. For example, the number of corporate TSR increases in the first fifteen years is larger than the number in the latter fifteen years in all regions, except Caribbean. Other than South America and Caribbean, which contain only a small fraction of countries in the sample, the overall number of corporate TSR decreases is almost four times larger than that of increases in each region.

Although European countries have changed their corporate TSRs more than other countries, it does not mean that the corporate tax change is more intense in European countries. The larger number of corporate TSR changes in a region is related to the larger number of countries in the corresponding region in the sample. After considering the number of countries in each region, the average numbers of corporate TSR changes in different regions are shown in the last column in Table 3.1.3 (b).

The average number of corporate TSR changes is the highest in Asia, followed by North America, and then Europe. From this aspect, it is plausible that

international corporate tax competition is not only intense in European countries but also in Asian and North American countries. It is also possible that the corporate TSR changes in different regions are not only driven by competitive forces but also underlying regional factors. To better understand the incentives of countries' corporate tax policy changes and how countries interact with each other, it is helpful to expand the sample size and include developing and/or non-European countries into the study.

3.2 Model

Weighting methods, spatial analysis and dynamic panels are widely adopted in the previous literature studying international corporate tax competition (Winner et al., 2007; Devereux et al., 2008; Rincke and Overesch, 2011; Crabbe and Vandenbussche, 2009; Redoano, 2007; Chatelais and Peyrat, 2008). All of these papers find that country level corporate tax rates are positively and significantly correlated with the weighted average of other countries' corporate tax rates, either contemporaneously or dynamically. The researchers argue that this positive correlation indicates countries that interact with each other regarding corporate tax rates, thus, provides evidence of international corporate tax competition. This standard interpretation, however, suffers from several problems discussed below.

3.2.1 The Problems with the Standard Models in the Previous Literature

Generally speaking, the standard spatial model and dynamic panel models commonly used in the previous literature (Devereux et al., 2008; Rincke and Overesch, 2011; Winner et al., 2007) have at least three problems. The first problem is associated with the nature of spatial analysis. The weighting matrix utilized in spatial models represents the spatial relationships among different units. Because the true corporate tax policy interactions among countries are unknown, there is no assurance that the weighting matrix used in the previous literature correctly captures how countries compete with each other. To the extent that the weighting matrix misspecifies true relationships, estimates could be misleading.

The second problem is that the previous literature studying international corporate tax competition uses corporate tax rates as dependent variables, and shows that a country's corporate tax rates are positively correlated with the weighted average of other countries' corporate tax rates. It is plausible that this positive correlation is due to global shocks that put downward pressure on all countries' corporate tax rates. In other words, the previous literature does not provide direct evidence that a country will decrease or increase its corporate tax rates in response to changes made by other countries.

Moreover, the previous papers do not distinguish corporate tax increases from decreases: other countries' corporate tax increases and decreases are assumed to have symmetric effects on home countries' corporate tax policy changes. As

mentioned in section 3.1, not all the corporate tax rate changes are tax decreases. Because a quarter of corporate tax changes involve increases, it is important to distinguish potential impacts of increases from decreases. It is logical to expect that the motivation driving tax rate changes is different for corporate TSR increases than for decreases.

The previous literature uses dynamic panels and includes the lagged value of weighted average of other countries' corporate tax rates to investigate how countries engage in the dynamic competition. However, countries' tax policies require complex political and legal processes to make changes and, consequently, tend to be relatively stable for several years. Thus, the lagged values included in the dynamic panel are strongly correlated with each other. Consequently, the coefficients of the lagged independent variables cannot be directly interpreted as the magnitudes of dynamic interactions among countries' corporate tax rates.

3.2.2 Basic Model: Multinomial Logit and Probit

To address the above three problems in the previous literature, this chapter abandons the commonly used spatial analysis and dynamic panels, and by doing so, does not impose assumptions on spatial relationships of corporate tax policies in the first place. Instead of the level of corporate tax rates, this chapter focuses on the changes of corporate TSRs. Also, this paper distinguishes corporate tax increases from decreases, in order to control for the possible asymmetric effects on corporate tax interactions. Moreover, this chapter includes the lagged numbers of other

countries' corporate tax increases and decreases as explanatory variables to capture the previous changes of other countries' corporate tax rates. In so doing, my analysis avoids the big problem, which is strong correlation of lagged explanatory variables in the dynamic panel.

The baseline model adopted in this paper is pooled multinomial logit and probit models:

$$\Pr(y_{it} = h | X_{i,t-1}) = p_{it,h}, \qquad \text{for } i = 1, 2, \ldots\ldots, n;\ t = 1, 2, \ldots\ldots, t;\ h = -1, 0, 1.$$

The explanatory variables included in the model are lagged by one year for two reasons. First, tax policies are usually designed from the previous economic conditions. Implementation of a fiscal policy change takes time. Second, the current economic characteristics, such as trade and capital openness, may be influenced by the current fiscal policies, especially corporate tax policies. Including one-year lagged explanatory variables can avoid potential endogeneity problems.

The advantages of using multinomial logit and probit models to study corporate TSR changes are threefold. First and most importantly, the dependent variable of multinomial logit and probit models is a categorical variable, which can clearly represent three different choices a country has with respect to corporate tax rate policies. In each year, a county can either increase or decrease its corporate TSR or make no change. Second, compared to the previous literature that only shows the correlations between home and neighboring countries' corporate tax rates, the multinomial logit and probit models can directly ascertain which countries are more

likely to increase or decrease corporate TSRs. Also, because corporate TSR increases and decreases are considered separately, it is easy to investigate that whether some explanatory variables have asymmetric, even opposite impacts on corporate TSR changes.

Third, multinomial logit and probit models can investigate the leader and follower dynamics much better than spatial models. As long as the assumption about leader and follower structure is imposed, the multinomial logit and probit models can show the extent to which the probability of follower countries' corporate TSR increases and decreases are indeed influenced by the leaders' tax policy changes. In addition, regarding simultaneous corporate TSR changes, countries can also be separated into two groups according to economic characteristics, such as GDP size. The common factor is assumed to influence all countries corporate tax rates, contemporaneously. However, if the results show that one group of countries' corporate TSR changes affect the other group of countries' probability of adopting corporate TSR changes, and not the other way around, the assumption that some common factors cause corporate tax policy co-movement among different countries can be rejected, at least in the simultaneous tax competition setting.

3.3 Data

To the best of my knowledge, my analysis uses a larger sample, covering 139 countries from 1981 to 2011, than the previous international corporate tax competition literature. To provide a more comprehensive understanding about how

countries' corporate tax policy changes interact with each other, this analysis includes both developed and developing countries and expands investigations to non-European countries.

3.3.1 The Dependent and Independent Variables

The dependent variable used in this paper is a categorical variable, which equals 1 if a country's corporate TSR increases in year t; equals -1 if a country's corporate TSR decreases in year t, and equals 0 if the corporate TSR does not change. The corporate TSR increases and decreases are created by the author. The raw corporate TSR data is obtained from the *AEI International Tax Database*.

This paper uses corporate TSR changes instead of EMTR and EATR changes because statutory corporate tax rates are legally imposed by law, and can best represent the corporate tax policies changes regarding rates. Efficient rates measure two aspects of rate structure, both tax rates and bases, and have to be estimated by using other macro variables, such as inflation and depreciation rates. As a result, efficient rate change variables may contain some adjustments other than corporate tax policy changes. Since it is difficult to measure corporate tax bases and almost impossible to keep records on all countries' corporate tax base changes, this analysis omits corporate tax base changes[24]. In addition, the corporate TSR data can be easily

[24] The only paper recording the changes of corporate tax base is Kawano and Slemrod (2012). Their data is restricted within OECD countries from 1980 to 2004, but contains changes of 12 sub-sections of corporate tax base. They also find that corporate tax base broadening is not necessary companied by a rate reduction. In other words, corporate tax rate and base policy changes are not adopted at the same

obtained, but the corporate base data is missing for most of the countries, especially for developing countries.

The independent variables can be classified into four different groups. The first group contains variables that represent other countries' corporate TSR changes. *N_increase* is the number of neighboring countries' corporate TSR increases; *N_decrease* is the number of neighboring countries' corporate TSR decreases. *Neighbor* is the number of neighboring countries by land and maritime borders. In the baseline regression, *N_%increase= N_increase/Neighbor*, which represents the proportion of neighboring countries adopting corporate TSR increases. While, *N_%decrease= N_decrease/Neighbor* represents the proportion of neighboring countries adopting corporate TSR decreases. *Low* is a dummy variable, which equals 1 if the country's corporate TSR is lower than the world average; equals 0, otherwise.

The second group of variables captures countries' economic characteristics. *Trade* measures trade openness, which represents a country's economic openness. *K_open* is capital openness, which measures the capital mobility of a country. *Log(GDP)* is the logarithm of GDP, which controls the size of an economy. *Growth* is the GDP growth rate, which measures the economic prosperity. The third group captures government activities. *Gconsump* is a country's general government

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time. So, in this paper, the lack of corporate tax base change data would not affect the results significantly. Moreover, it is plausible that countries compete over corporate tax rates and bases independently and use two different mechanisms to interact with each other.

consumption weighed by GDP. *Leader* is a dummy variable that equals 1 if a new political leader comes into power in year t, and equals 0, otherwise. *Legislative* and *Executive* are also dummy variables that capture a country's political elections. The reason for including political changes in the model is that fiscal policies are usually hot topics in election campaigns. New administrations often adopt fiscal policy changes to separate themselves from the old ones. The last group contains a country's other characteristics, such as the geographic location and international organization membership, that may influence corporate TSR changes.

3.3.2 Data Summarization: Data Sources and Statistics

Table 3.3.2 summarizes basic statistics, definitions and sources of the main variables used in this paper. Corporate TSR is obtained from the *AEI International Tax Database*, and the author calculates the numbers of neighboring countries' corporate TSR increases and decreases. Political elections and leader changes are obtained from *Database of Political Institutions*. The number of neighboring countries *Neighbor* and geographic dummy variables *European* and *Africa* are provided by Wikipedia. Developed and emerging market countries are listed by the International Monetary Fund (IMF). The list of tax haven countries is obtained from Gravelle (2013). Trade and capital openness, as well as government consumption are from *Comparative Political Data Set I*. The rest of the explanatory variables are obtained from the World Bank database.

3.4 Basic Empirical Results and Explanations

This section provides basic empirical results and explanations about two questions never been studied in the previous literature. First, do countries' corporate TSR changes exhibit a regional pattern, that is, do countries change their corporate TSRs because the neighboring countries did so in the past. Second, since corporate TSR changes include both increases and decreases, is it possible that the explanatory variables, such as economic size and political elections, have asymmetric or opposite effects on corporate TSR changes?

All tables report the marginal effects of the explanatory variables, because the coefficients and the actual marginal effects may have different signs and magnitudes in multinomial logit and probit models. Moreover, since the marginal effects of non-linear models are difficult to explain, this analysis focuses on interpreting the signs of marginal effects, instead of the magnitudes. For each table, the left half reports the results obtained from multinomial logit model and the right half shows the results obtained from multinomial probit model as robustness checks.

3.4.1 Do Countries' Corporate TSR Changes Keeping Up with the Neighbors?

Table 3.4.1 (a), (b) and (c) use legislative election, executive election, and leader change variable to capture a country's political changes, respectively. The base outcome is when the dependent variable *TSR_change* equals 0. Columns (1) to (6) and columns (7) to (12) report the results using multinomial logit and probit

models, respectively. The columns with odd (even) numbers show the marginal effects of decreasing (increasing) corporate TSR, compared to the base outcomes. Moreover, the standard errors are either robust or clustered by time or group, in order to control for possible misspecification and intragroup correlations.

N_%increase_1 is negatively and significantly correlated with the probability of corporate TSR decreases, but does not significantly affect the probability of corporate TSR increases. In contrast, *N_%decrease_1* is positively and significantly correlated with the probability of corporate TSR decreases, and is negatively and significantly correlated with the probability of corporate TSR increases. The marginal effects and the significance levels of *N_%increase_1* and *N_%decrease_1* are very similar over different specifications.

Overall, the basic results suggest that countries' corporate TSR changes do keep up with their neighbors' changes. Neighboring countries' corporate TSR increases and decreases in the previous year have offsetting effects on home countries' corporate TSR policies. A country is more likely to decrease and less likely to increase corporate TSR when a larger proportion of neighboring countries decreased their corporate TSRs last year. A country is less likely to decrease its corporate TSR when a larger proportion of neighboring countries increased their corporate TSRs in the previous year.

Countries dynamically interact with each other with respect to corporate tax rate policies, and exhibit regional patterns. If more countries decrease their corporate

TSRs, then a larger proportion of countries will adopt the same policy next year. Also, when more countries decrease corporate TSRs, fewer countries will increase corporate TSRs. This circle explains why the number of corporate TSR decreases has been increasing and the number of corporate TSR increases has been decreasing over time. However, neighboring countries' corporate TSR increases are not followed by home countries' TSR increases, but decrease the probability of home countries to decrease corporate TSRs. The asymmetric effects of corporate TSR changes suggest that countries' corporate tax policies are more responsive to neighboring countries' corporate TSR decreases than increases.

3.4.2 The Asymmetric Effects of Other Independent Variables on Corporate TSR Decreases and Increases

Most of the other explanatory variables also have asymmetric and sometimes opposite effects on home countries' corporate TSR policies. *Low_1* compares countries' corporate TSRs to the world average. In some sense, it captures how a country's corporate TSR responds to the world's common trend. *Low_1* is negatively and significantly correlated with the probability of corporate TSR decrease, but is positively and significantly correlated with the probability of corporate TSR increase. The opposite effects of this variable indicate that when making the policy decisions regarding corporate TSRs, countries not only consider the neighboring countries' policies, but also compare their corporate TSRs with the rest of the world.

Countries are less likely to decrease corporate TSRs, but are more likely to increase corporate TSRs next year when their corporate TSRs are already lower than the world average. These results indicate that a regional corporate tax decrease may have world-wide influence. For example, when some European countries dramatically decrease their corporate TSRs it drives down the world average TSR. Then, other countries, even those outside of Europe, whose corporate TSRs are higher than the world average, are more likely to decrease corporate TSRs in the following year. In other words, the effects of regional corporate tax competition probably are not restricted within a region, but can have global impacts. The results of the previous literature (Devereux et al., 2008; Rincke and Overesch, 2011) may be explained by lower average corporate TSRs in other regions or in some developing countries.

Trade openness also has opposite effects on the probability of country's corporate TSR changes. Countries with higher trade openness in the previous year are more likely to decrease corporate TSRs and less likely to increase corporate TSRs. However, countries with higher capital openness are less likely to decrease corporate TSRs. It is possible that capital is more mobile in countries with higher capital openness, thus, the corporate tax base is more flexible and the opportunity costs to decrease corporate TSR is higher in these countries.

This analysis finds the logarithm of GDP to be positively and significantly correlated with the probability of corporate TSR decreases. This positive correlation

suggests that countries with larger economic size have a higher probability of decreasing corporate TSRs. Also, economic size has no significant influence on the probability of corporate TSR increases. For the political changes, only legislative election has positive and significant effects on the probability of corporate TSR increases. This positive relationship is robust under different specifications, and suggests that countries are more likely to increase their corporate TSRs right after the legislative election year.

Economic growth rate and government consumption as a percentage of GDP do not significantly affect the probability of corporate TSR changes, both increases and decreases. The lack of significant correlations is probably due to two reasons. First, corporate tax revenue only takes a small fraction of total government income in most of the countries, so the influence of government consumption on corporate tax policy is limited. Second, compared to collecting tax revenue and attracting investment, economic growth rate may not be the priority when policymakers design and construct corporate tax policies. Surprisingly, the results suggest that European countries are not more or less likely to changes their corporate tax policies than other countries after controlling for the dynamic interactions with neighboring countries.

In sum, neighboring countries' corporate TSR changes display dynamic interactions with each other. Countries' corporate TSR policies are more responsive to neighboring countries' corporate TSR decreases than increases. When countries

set corporate TSR policies, they not only consider neighboring countries' corporate TSR changes, but also consider global corporate TSRs. Other explanatory variables, such as trade and capital openness, GDP level (economic size), have asymmetric and even opposite effects on corporate TSR changes. Overall, the factors associated with corporate TSR decreases are quite different from those associated with TSR increases.

3.5 Robustness Checks and Some Extensions

This section provides robustness checks and some extensions and focuses on three questions. First, are the dynamic interactions of countries' corporate TSR changes robust to different specifications and driven by some special countries, such as tax havens? Second, which countries are more likely to be leaders and which countries are more likely to be followers with respect to corporate TSR changes? Third, in the contemporaneous corporate TSR interactions, is it possible that the changes of corporate TSRs in different countries are due to some common causes?

3.5.1 Robustness Check: 2-year Lag and 3-year Lag of Neighboring Countries Corporate TSR Changes

It is possible that countries not only respond to neighbors' corporate TSR changes in the previous year, but also respond to the corporate TSR changes from two or three years in past. Moreover, the coefficients of lagged neighboring countries' corporate TSR changes represent the responsiveness of home countries'

corporate TSR policies. Table 3.5.1 reports the marginal effects of the main variables of interest, which are the lagged values of neighboring countries' corporate TSR changes. Because the results of the other explanatory variables are very similar to the baseline model, in order to save some space, the marginal effects of the other explanatory variables are not reported in the table[25].

Table 3.5.1 contains three sections. Section 1 reports the marginal effects of 2-year lagged neighboring countries' corporate TSR changes in the model. Section 2 reports the marginal effects of both 1-year and 2-year lagged variables and Section 3 includes all three years' lagged variables of neighboring countries' corporate TSR changes. The results in Section 2 and Section 3 both indicate that a country is less likely to increase its corporate TSR when a larger proportion of neighboring countries decreased TSR in the previous year. Section 2 shows that the probability of corporate TSR decreases is negatively and significantly affected by the proportion of neighboring countries increasing TSRs in the previous year. The results in Section 3 suggest that when a larger proportion of neighboring countries decreased their corporate TSRs last year, home countries are more likely to follow neighbors' policy changes.

Overall, a country's corporate TSR changes are only significantly influenced by neighboring countries' corporate TSR changes in the previous year. The effects of neighboring countries' corporate TSR changes become insignificant after two

[25] The tables reporting the full results are included in Appendix IV.

years. This suggests that it is sufficient to include one-year lagged corporate TSR changes in the model when analyzing dynamic corporate TSR interactions among countries..

3.5.2 Robustness Check: Excluding European Countries and/or Tax Haven Countries

Previous research shows that corporate tax competition exists in European countries and becomes more intense with the expansion of the EU membership (Redoano, 2007; Davies and Voget, 2008). It is possible that the basic results, which suggest neighboring countries' corporate TSR changes dynamically interact with each other, are driven by tax competition in European countries. It is also plausible that the countries classified as tax havens behave differently with respect to corporate TSR changes. Table 3.5.2 reports the marginal effects of regressions excluding European and tax haven countries[26] in the sample, respectively. The results of other explanatory variables are similar to the basic results. In order to save some space, this table also only reports the results of the main interested variables.

Sections 1 and 2 in Table 3.5.2 report the marginal effects of regressions using samples, which exclude European countries and tax haven countries, respectively. Section 3 in Table 3.5.2 reports the marginal effects of regressions using a sample excluding both European and tax haven countries. Moreover, a dummy variable *Africa* is used to capture the potential regional characteristics after excluding European countries.

[26] The tax haven countries are listed in the Appendix III.

The results in all three sections suggest that the interactions of countries' corporate TSR changes are not driven by European or tax haven countries, but exist in all countries around the world. Countries are more responsive to neighboring countries' corporate TSR decreases than increases. The probability that a country decreases (increases) corporate TSR is positively (negatively) and significantly correlated with the proportion of neighboring countries decreasing corporate TSRs in the previous year. The dummy variable *Africa* is negatively and significantly correlated with the probability of corporate TSR decrease, when excluding European countries in the sample. This negative correlation suggests that after excluding European countries, African countries are less likely to decrease corporate TSRs than the rest of countries in the world. Overall, the results about neighboring countries' corporate TSR change interactions are quite robust.

3.5.3 Extension: Corporate TSR Interactions between Developed, Developing and Emerging Market Countries

The previous papers suggest countries either contemporaneously or dynamically interact with each other regarding corporate tax rates. However, there is no conclusive evidence about two questions. First, is it possible that the worldwide decrease in corporate tax rates is not due to tax competition but rather to common factors, such as the global economic crisis or oil shocks? Second, in regard to dynamic corporate tax policy interactions, which countries are leaders and which countries are followers? Section 3.5.3 to Section 3.5.5 split countries into different

groups, and then test different leader-follower assumptions. In order to save space, all the tables in Section 3.5.3 to Section 3.5.5 only report the results of the main interested variables by using multinomial logit model[27].

It is difficult to identify the effects of common shocks on dynamic corporate tax interactions since some countries may respond more quickly to shocks than the others. But it is possible to partially rule out the effects of common shocks on contemporaneous corporate TSR interactions. Countries can be classified into different groups according to their economic or geographic characteristics. Figure 3.5.3 shows when countries are classified into two groups, group A and group B, the possible situations with and without common shocks.

Unobserved common shocks can cause different countries' corporate TSRs change at the same time. The co-movement of corporate TSRs in different groups can falsely indicate that the probability of group A to change corporate TSRs is influenced by the contemporaneous TSR changes in group B, and vice versa. In other words, if the probabilities of countries in different groups change corporate TSRs are affected by each other, then, it is possible that these interactions are due to common causes. However, if the probability of one group changing corporate TSRs is influence by TSR changes in the other group, and not vice versa. Or the probabilities of different groups changing corporate TSRs are not affected by each

[27] The author also uses multinomial probit model and obtains similar results. The results of the other explanatory variables are very similar to the basic model. The full results are reported in Appendix IV.

other. Then, the global shocks that contemporaneously affect countries' corporate TSR changes are not of consequence.

Leader follower relationship has always been difficult to identify in the tax competition literature. Burge and Rogers (2013) construct a leadership index to identify the leader jurisdictions in local option sales tax competition by using Oklahoma data. Because corporate TSR changes include increases and decreases, this paper uses another approach to identify leaders and followers in international corporate tax interactions.

If the probability that group A changes corporate TSRs is significantly affected by group B's corporate TSR changes in previous years, but not vice versa, then countries in group B are more likely to be leaders and those in group A are more likely to be followers in the corporate TSR competition. If the probabilities that group A and B to change corporate TSRs are significantly affected by each other's corporate TSR changes in previous years, then these two groups dynamically interact with each other with regard to corporate TSR changes. Although this method is not the perfect way to identify leaders and followers in international corporate tax competition and cannot rule out the effects of common shocks, it provides some information about which countries are more likely to be leaders and which are more likely to be followers.

Table 3.5.3 (a) reports the contemporaneous and one-year lagged corporate TSR change interactions between developed and developing countries. The

dependent variables of columns (1) to (6) and columns (7) to (12) in Table 3.5.3 (a) are corporate TSR changes in developing and developed countries, respectively. In the contemporaneous interactions, column (4) shows that developing countries are more likely to adopt corporate TSR increases at the same time as more developed countries increase their corporate TSRs. Columns (3) and (5) show that as more developed countries decrease corporate TSRs, developing countries are also more likely to adopt the same corporate tax policy.

Overall, the developed countries' corporate TSR changes contemporaneously affect the probability of developing countries to change their corporate TSRs, but not vice versa. This result suggests that the contemporaneous corporate TSR changes of developed and developing countries are not due to common shocks that affect corporate TSRs in all countries at the same time. Developing countries do adjust their corporate TSRs according to the policies taken in developed countries.

In models with one-year lagged interactions, the results of columns (1), (3) and (5) indicate that developing countries are more likely to decrease corporate TSRs when more developed countries decreased their TSRs in the previous year. Moreover, the results of columns (7), (9) and (11) suggest that this positive and significant correlation is not vice versa, that is, the probability for developed countries to change corporate TSRs are not influenced by developing countries' TSR changes in the previous year. As a result, developed countries are more likely

to be leaders and developing countries are more likely to be followers regarding corporate TSR decreases.

Developing countries experiencing high economic growth for a long period of time are classified as emerging market countries. It is possible that compared to the other developing countries, emerging market countries interact with developed countries differently regarding corporate TSR changes. Table 3.5.3 (b) reports the contemporaneous and one-year lagged corporate TSR change interactions between developed and emerging market countries.

Unlike the results from ordinary developing countries, columns (7), (9) and (11) indicate that emerging market countries' corporate TSR changes are significantly related to the contemporaneous corporate TSR changes in developed countries. More specifically, the probability that developed countries decrease corporate TSRs is positively and significantly influenced by corporate TSR decreases in emerging countries, and negatively and significantly influenced by corporate TSR increases in emerging countries. However, the results in Section 2 Table 3.5.3 (b) suggest that the one-year lagged corporate TSR changes in emerging market countries are not significantly related to developed countries' current corporate TSR changes.

Column (3) in Table 3.5.3 (b) suggests that developed countries' corporate TSR changes significantly increase the probability that emerging market countries decrease corporate TSRs contemporaneously. However, this result is not robust to

different standard error specifications. Still, the possibility that common shocks affect corporate TSR changes in both developed and emerging market countries cannot be completely ruled out. In columns (4) and (5), the significant effects of lagged developed countries' corporate TSR changes on developing countries' TSR policies are not robust to different specifications either. In sum, leader follower relationship may not exist between developed and emerging market countries with respect to corporate TSR changes.

3.5.4 Extension: Corporate TSR Interactions between Big and Small Countries

Big and small countries are identified by economic size, that is, the GDP level. The 20 countries with the top highest GDP in the world are classified as big countries, and the rest are classified as small countries. This classification is justified because the composition of countries with the highest GDPs did not change very much in the past thirty years, although the rankings of countries on the list changes tremendously. These 20 countries are listed in Appendix III. Table 3.5.4 (a) shows the interactions of corporate TSR changes between big and small countries. Because the previous literature (Davies and Voget, 2008) specifically mentioned that small European countries act more aggressively regarding corporate tax policies, Table 3.5.4 (b) reports the results showing interactions between big countries and small European countries. The dependent variables of columns (1) to (6) in Table 3.5.4 (a) and (b) are corporate TSR changes, including both increases and decreases, in big

countries. The dependent variables used in columns (7) to (12) in Table 3.5.4 (a) and (b) are corporate TSR changes in small and small European countries, respectively.

Columns (7), (9) and (11) of Section 1 in Table 3.5.4 (a) show that in the contemporaneous interactions, big countries' corporate TSR increases and decreases both positively and significantly affect the probability for small countries to decrease TSRs. This effect does not hold the other way around, as showed in column (1) to (6) in Section 1. So, the possibility that these interactions are due to common shocks can be ruled out. The results of Section 2 in Table 3.5.4 (a) indicate that big and small countries do not dynamically interact with each other. Overall, the corporate TSR change interactions between small and big countries are contemporaneous ones instead of dynamic ones. The probability that small countries decrease corporate TSRs is significantly influenced by big countries' simultaneous corporate TSR changes.

The results in Table 3.5.4 (b) indicate that the corporate TSR change interactions between big countries and small European countries are more nuanced than the interactions between big and other small countries. Big countries and small European countries display both contemporaneous and dynamic interactions regarding corporate TSR changes. The results of Section 1 in Table 3.5.4 (b) show that the probability for small European countries to simultaneously decrease corporate TSRs is positively and significantly influence by the number of big countries' TSR decreases, but not vice versa. This result indicates that corporate

TSR decreases in big and small European countries are not driven by common shocks, but by contemporaneous interactions.

Columns (1) and (3) in Section 2 Table 3.5.4 (b) show that the probability that big countries decrease corporate TSRs is negatively and significantly correlated with the number of small European countries' TSR increases in the previous year. Columns (7) and (11) in Section 2 show that this negative correlation also exists the other way around. Moreover, the results of columns (2), (6) and (10) of Section 2 in Table 3.5.4 (b) suggest that the probability that big countries increase corporate TSRs is positively and significantly correlated with number of small European countries' TSR increases in the previous year, and vice versa. The results indicate that big countries and small European countries dynamically interact with each other regarding corporate TSR changes. Compared to the other small countries, small European countries' corporate TSR policies are more sensitive to corporate TSR changes in big countries.

3.5.5 Extension: Corporate TSR Interactions between Tax Haven and Non-Tax Haven Countries

Corporate tax rates in tax haven countries are much lower than the rates in other countries in the world. The OECD report in 1998 *Harmful Tax Competition: An Emerging Global Issue* argues that the spreading of tax havens intensifies international tax competition and distorts capital flows. However, no previous literature studying international corporate tax competition specifically investigates

the strategic tax policy interactions between tax haven and non-tax haven countries. Table 3.5.5 shows corporate TSR change interactions between tax haven and non-tax haven countries. Columns (1) to (6) show that the number of corporate TSR changes in non-tax haven countries, lagged or not, do not affect the probability for tax havens to change corporate TSRs.

On the other hand, the effects of tax havens' corporate TSR changes on non-tax haven countries' TSR policies last for two years. Columns (7), (9) and (11) show that the probability that non-tax haven countries decrease corporate TSRs is positively and significantly correlated with the number of tax haven countries' TSR decreases. This positive correlation not only exists contemporaneously but also lasts for two years. Columns (8), (10) and (12) shows that the probability that non-tax haven countries increase corporate TSRs is positively and significantly correlated with the number of tax havens' TSR increases two years ago. As a result, tax havens are more likely to be leaders and non-tax haven countries are more likely to be followers in international corporate tax competition, at least with regard to rates.

3.6 Conclusions and Policy Implications

This paper investigates dynamic interactions of neighboring countries' corporate TSR changes and leader-follower behavior in international corporate tax competition. The results suggest several interesting artifacts concerning corporate TSR changes. First, neighboring countries dynamically interact with each other regarding corporate TSR changes. Countries are more responsive to neighbors'

corporate TSR decreases than increases. Also, countries are sensitive to neighbors' corporate TSR changes in the previous year, but not two or three years ago. Second, most of the explanatory variables, such as neighboring countries' corporate TSR increases and decreases, trade and capital openness and GDP level, have asymmetric even opposite estimated effects on countries' corporate TSR changes. Third, the structure of corporate tax competition is nuanced. Countries respond to each other both contemporaneously and dynamically regarding corporate tax policies. Fourth, there is no conclusive evidence about which countries are leaders and which countries are followers in the dynamic international corporate tax competition. I separate countries into two groups according to their economic characteristics, and test for asymmetric responses between two groups. The results suggest that developed countries and tax havens are more likely to be leaders than other countries. Corporate TSR changes adopted by emerging market countries have significant contemporaneous effects on developed countries' corporate TSR policies.

The OECD and EU have been trying to harness international tax competition and to encourage cooperation among member countries regarding tax policies. However, the effects of these efforts are limited. Corporate tax rates have been decreasing and the numbers of corporate TSR decreases have been increasing over the last thirty years. The previous methods, such as common consolidated corporate tax base, don't seem to be working due to the nature of the competition. As a result,

policymakers may consider some new measures to attenuate international corporate tax competition.

First, Keen and Konrad (2012) mentioned “countries may be unable to coordinate on specific tax policies” (p.30). Harmonizing corporate tax structures of different countries is unlikely due to the political and economic consequences of doing so. However, it is possible for countries to come up with an agreement on enhancing corporate tax policy stability. The primary aim of enhancing corporate tax policy stability is to decrease the number of corporate tax changes, especially tax rate decreases. The results of this chapter show that countries are more likely to decrease corporate TSRs, when more neighboring countries and competitors did so in the previous year. Thus, fewer corporate TSR changes this year would lead to fewer changes next year. This virtuous cycle may stabilize the worldwide corporate tax rates and decrease the incentives for countries to adjust corporate tax policies. As a result, the intense level of international corporate tax competition may be reduced.

Second, for OECD and EU countries to achieve corporate tax harmonization, regional coordination requires cooperation at the global level. Since corporate tax policy changes in emerging market countries and tax havens significantly influence OECD and EU countries’ corporate tax policies, corporate tax cooperation needs to expand to a more global level. Moreover, because tax havens are more likely to be leaders in corporate tax competition, as the results in this chapter suggest, it is important to construct tax policy agreements with tax havens. Reigning in tax haven

strategies, including low or no corporate income taxations, would help to lessen international corporate tax competition. Overall, achieving corporate tax harmonization in EU and OECD countries is perhaps insuperable because to be effective it will require global cooperation.

Table 3.1.3 (a) the Numbers of Corporate TSR Decreases and Increases across Regions from 1982 to 2011 (Five-year Period)

	Africa		Asia		Europe		N. America		S. America		Oceania		Caribbean	
	+	-	+	-	+	-	+	-	+	-	+	-	+	-
1982-1986	10	4	4	9	10	13	5	6	4	7	3	1	0	0
1987-1991	4	16	6	15	4	33	1	17	5	7	1	4	0	2
1992-1996	5	23	5	33	14	21	5	15	7	3	1	4	0	2
1997-2001	1	12	9	21	4	40	2	3	2	2	0	4	0	0
2002-2006	1	13	7	23	3	36	3	18	6	3	0	1	0	0
2007-2011	3	14	4	30	5	42	4	11	1	6	1	6	1	4
Total	24	82	35	131	40	185	20	70	25	28	6	20	1	8

Data Source: the *AEI International Tax Database* and author's calculation.

Table 3.1.3 (b) the Overall and Average Corporate TSR Change in Each Region from 1982 to 2011

Region	Number of Countries	Increase	Decrease	Total	Average
Africa	24	24	82	106	4.42
Asia	30	35	131	166	5.53
Europe	44	40	185	225	5.11
N. America	17	20	70	90	5.29
S. America	12	25	28	53	4.42
Oceania	7	6	20	26	3.71
Caribbean	5	1	8	9	1.80

Data Source: the *AEI International Tax Database* and author's calculation.

Table 3.3.2 the Summation of the Basic statistics, Definitions and Sources of the Variables

Variable	Description	Obs.	Mean	Std. dev.	Min	Max	Data Source
TSR	federal level corporate top statutory tax rate, adjusted for sub-national corporate tax deductions, if applicable	3520	32.047	11.414	0	75	the *AEI International Tax Database*
TSR_change	Categorical variable, equals -1, if the country decreases corporate TSR in year t; equals 1, if the country increases corporate TSR in year t; equals 0, if the country does not changed its corporate TSR in year t.	3415	-0.11	0.432	-1	1	author's calculation
N_decrease	the number of neighboring countries adopt corporate TSR decrease in year t	4371	0.522	0.863	0	6	author's calculation
N_increase	the number of neighboring countries adopt corporate TSR increase in year t	4371	0.17	0.43	0	3	author's calculation
Neighbor	the number of neighboring countries included in the sample, by land and maritime borders, a country has,	4371	3.95	2.94	0	15	On line resource (Wikipedia) http://en.wikipedia.org/wiki/List_of_countries_and_territories_by_land_and_maritime_borders
K_open	capital openness, the index is for the extent of openness in capital account transactions, Chinn and Ito (2013)	3582	0.279	1.578	-1.864	2.439	*Comparative Political Data Set I*

Trade	trade openness, (export+ import)/GDP	3722	85.371	52.098	6.32	446.047	*Comparative Political Data Set I*
Log(GDP)	the logarithm of GDP in constant 2005 international dollars	3831	24.05	2.268	18.461	30.213	World Bank
Growth	the growth rate of real GDP	3836	3.333	5.889	-51.031	106.28	World Bank
Gconsump	the general government final consumption expenditure as a percentage of GDP	3644	16.355	6.132	1.375	76.222	*Comparative Political Data Set I*
Low	Dummy variable, equals 1, if the country's corporate TSR in year t is lower than the world's average; equals 0, otherwise.	3520	0.429	0.495	0	1	author's calculation
Leader	Dummy variable, equals 1, if there is a leader change in year t; equals 0, otherwise.	4371	0.141	0.348	0	1	*Database of Political Institution*s
Legislative	Dummy variable, equals 1, if there is a legislative election in year t; equals 0, otherwise.	3610	0.227	0.419	0	1	*Database of Political Institution*s
Executive	Dummy variable, equals 1, if there is an executive election in year t; equals 0, otherwise.	3611	0.096	0.295	0	1	*Database of Political Institution*s
Tax Haven	Dummy variable, equals 1, if the country is classified as a tax haven; equals 0, otherwise.	4371	0.184	0.388	0	1	Gravelle (2013)
Big20	Dummy variable, equals 1, if the country's GDP is listed in top 20 in year t; equals 0, otherwise.	4371	0.142	0.349	0	1	World Bank, and author's calculation
Developed	Dummy variable, equals 1, if the country is classified as developed country; equals 0, otherwise.	4371	0.241	0.428	0	1	International Monetary Fund (IMF)
Emerging	Dummy variable, equals 1, if the country is classified as emerging market country; equals 0, otherwise.	4371	0.17	0.376	0	1	International Monetary Fund (IMF)

European	Dummy variable, equals 1, if the country is in Europe; equals 0, otherwise.	4371	0.305	0.46	0	1	On line resource (Wikipedia) http://en.wikipedia.org/wiki/List_of_European_countries_by_area
Africa	Dummy variable, equals 1, if the country is in Africa; equals 0, otherwise.	4371	0.17	0.376	0	1	On line resource (Wikipedia) http://en.wikipedia.org/wiki/List_of_African_countries_by_GDP_(PPP)

Table 3.4.1 (a) Legislative Election

	MLogit robust Decrease	MLogit robust Increase	MLogit cluster by year Decrease	MLogit cluster by year Increase	MLogit cluster by id Decrease	MLogit cluster by id Increase	MProbit robust Decrease	MProbit robust Increase	MProbit cluster by year Decrease	MProbit cluster by year Increase	MProbit cluster by id Decrease	MProbit cluster by id Increase
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
N_%increase_1	-0.151*	0.017	-0.151*	0.017	-0.151	0.017	-0.130*	0.025	-0.130*	0.025	-0.130	0.025
	(0.089)	(0.024)	(0.091)	(0.024)	(0.106)	(0.027)	(0.077)	(0.027)	(0.078)	(0.027)	(0.093)	(0.029)
N_%decrease_1	0.067*	-0.061**	0.067*	-0.061**	0.067*	-0.061**	0.071**	-0.063***	0.071*	-0.063**	0.071**	-0.063***
	(0.035)	(0.024)	(0.038)	(0.026)	(0.035)	(0.024)	(0.036)	(0.024)	(0.039)	(0.025)	(0.036)	(0.024)
Low_1	-0.100***	0.027***	-0.100***	0.027***	-0.100***	0.027***	-0.103***	0.030***	-0.103***	0.030***	-0.103***	0.030***
	(0.015)	(0.008)	(0.020)	(0.006)	(0.021)	(0.007)	(0.015)	(0.008)	(0.020)	(0.007)	(0.021)	(0.008)
K_open_1	-0.012**	-0.000	-0.012**	-0.000	-0.012	-0.000	-0.012**	-0.001	-0.012***	-0.001	-0.012*	-0.001
	(0.005)	(0.002)	(0.005)	(0.002)	(0.007)	(0.003)	(0.005)	(0.003)	(0.005)	(0.002)	(0.007)	(0.003)
Trade_1	0.001***	-0.000***	0.001***	-0.000***	0.001***	-0.000***	0.001***	-0.001***	0.001***	-0.001***	0.001***	-0.001***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
log(GDP)_1	0.018***	0.000	0.018***	0.000	0.018***	0.000	0.019***	0.000	0.019***	0.000	0.019***	0.000
	(0.004)	(0.002)	(0.004)	(0.002)	(0.007)	(0.002)	(0.004)	(0.002)	(0.004)	(0.003)	(0.007)	(0.002)
Growth_1	-0.000	-0.001	-0.000	-0.001	-0.000	-0.001	-0.000	-0.001	-0.000	-0.001	-0.000	-0.001
	(0.002)	(0.001)	(0.002)	(0.001)	(0.002)	(0.001)	(0.002)	(0.001)	(0.002)	(0.001)	(0.002)	(0.001)
Gconsump _1	0.001	-0.001	0.001	-0.001	0.001	-0.001	0.001	-0.001	0.001	-0.001	0.001	-0.001
	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)	(0.001)
Legislative_1	-0.004	0.024***	-0.004	0.024**	-0.004	0.024***	-0.002	0.026***	-0.002	0.026**	-0.002	0.026***

	(0.017)	(0.009)	(0.013)	(0.010)	(0.017)	(0.008)	(0.017)	(0.010)	(0.013)	(0.011)	(0.018)	(0.009)
European	0.017	0.010	0.017	0.010	0.017	0.010	0.018	0.010	0.018	0.010	0.018	0.010
	(0.019)	(0.009)	(0.020)	(0.008)	(0.033)	(0.010)	(0.019)	(0.010)	(0.020)	(0.008)	(0.034)	(0.011)
N_obs	2,484	2,484	2,484	2,484	2,484	2,484	2,484	2,484	2,484	2,484	2,484	2,484
Log-Likelihood	-1,489.23	-1,489.23	-1,489.23	-1,489.23	-1,489.23	-1,489.23	-1,489.24	-1,489.24	-1,489.24	-1,489.24	-1,489.24	-1,489.24
Pseudo R2	0.045	0.045	0.045	0.045	0.045	0.045						

Note: *** p<0.01, ** p<0.05, * p<0.1

Table 3.4.1 (b) Executive Election

	MLogit robust Decrease	**MLogit robust Increase**	**MLogit cluster by year Decrease**	**MLogit cluster by year Increase**	**MLogit cluster by id Decrease**	**MLogit cluster by id Increase**	**MProbit robust Decrease**	**MProbit robust Increase**	**MProbit cluster by year Decrease**	**MProbit cluster by year Increase**	**MProbit cluster by id Decrease**	**MProbit cluster by id Increase**
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**	**(8)**	**(9)**	**(10)**	**(11)**	**(12)**
N_%increase_1	-0.150*	0.016	-0.150*	0.016	-0.150	0.016	-0.129*	0.024	-0.129*	0.024	-0.129	0.024
	(0.089)	(0.025)	(0.091)	(0.025)	(0.105)	(0.028)	(0.077)	(0.028)	(0.078)	(0.028)	(0.092)	(0.031)
N_%decrease_1	0.067*	-0.063**	0.067*	-0.063**	0.067*	-0.063***	0.071**	-0.064**	0.071*	-0.064**	0.071**	-0.064***
	(0.035)	(0.025)	(0.038)	(0.026)	(0.035)	(0.024)	(0.036)	(0.025)	(0.039)	(0.026)	(0.036)	(0.024)
Low_1	-0.100***	0.028***	-0.100***	0.028***	-0.100***	0.028***	-0.102***	0.030***	-0.102***	0.030***	-0.102***	0.030***
	(0.015)	(0.008)	(0.020)	(0.006)	(0.021)	(0.007)	(0.015)	(0.008)	(0.020)	(0.007)	(0.021)	(0.008)
K_open_1	-0.012**	-0.000	-0.012**	-0.000	-0.012*	-0.000	-0.013**	-0.000	-0.013***	-0.000	-0.013*	-0.000
	(0.005)	(0.002)	(0.005)	(0.002)	(0.007)	(0.003)	(0.005)	(0.003)	(0.005)	(0.002)	(0.007)	(0.003)
Trade_1	0.001***	-0.000***	0.001***	-0.000***	0.001***	-0.000***	0.001***	-0.001***	0.001***	-0.001***	0.001***	-0.001***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
log(GDP)_1	0.018***	0.001	0.018***	0.001	0.018***	0.001	0.019***	0.001	0.019***	0.001	0.019***	0.001
	(0.004)	(0.002)	(0.004)	(0.002)	(0.007)	(0.002)	(0.004)	(0.002)	(0.004)	(0.003)	(0.007)	(0.002)
Growth_1	-0.000	-0.001	-0.000	-0.001	-0.000	-0.001	-0.000	-0.001	-0.000	-0.001	-0.000	-0.001
	(0.002)	(0.001)	(0.002)	(0.001)	(0.002)	(0.001)	(0.002)	(0.001)	(0.002)	(0.001)	(0.002)	(0.001)
Gconsump _1	0.001	-0.001	0.001	-0.001	0.001	-0.001	0.001	-0.001	0.001	-0.001	0.001	-0.001
	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)	(0.001)
Executive_1	0.006	0.022*	0.006	0.022	0.006	0.022**	0.007	0.022	0.007	0.022	0.007	0.022*

	(0.025)	(0.013)	(0.027)	(0.015)	(0.024)	(0.011)	(0.025)	(0.014)	(0.028)	(0.016)	(0.025)	(0.012)
European	0.016	0.011	0.016	0.011	0.016	0.011	0.018	0.010	0.018	0.010	0.018	0.010
	(0.019)	(0.009)	(0.020)	(0.008)	(0.033)	(0.010)	(0.019)	(0.010)	(0.020)	(0.009)	(0.034)	(0.011)
N_obs	2,484	2,484	2,484	2,484	2,484	2,484	2,484	2,484	2,484	2,484	2,484	2,484
Log-Likelihood	-1,491.60	-1,491.60	-1,491.60	-1,491.60	-1,491.60	-1,491.60	-1,491.74	-1,491.74	-1,491.74	-1,491.74	-1,491.74	-1,491.74
Pseudo R2	0.044	0.044	0.044	0.044	0.044	0.044						

Note: *** p<0.01, ** p<0.05, * p<0.1

Table 3.4.1 (c) Leader Changes

	MLogit robust Decrease	MLogit robust Increase	MLogit cluster by year Decrease	MLogit cluster by year Increase	MLogit cluster by id Decrease	MLogit cluster by id Increase	MProbit robust Decrease	MProbit robust Increase	MProbit cluster by year Decrease	MProbit cluster by year Increase	MProbit cluster by id Decrease	MProbit cluster by id Increase
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**	**(8)**	**(9)**	**(10)**	**(11)**	**(12)**
N_%increase_1	-0.157*	0.017	-0.157*	0.017	-0.157	0.017	-0.136*	0.024	-0.136*	0.024	-0.136	0.024
	(0.086)	(0.024)	(0.090)	(0.024)	(0.101)	(0.027)	(0.075)	(0.028)	(0.077)	(0.027)	(0.090)	(0.030)
N_%decrease_1	0.060*	-0.056**	0.060	-0.056**	0.060*	-0.056**	0.064*	-0.056**	0.064*	-0.056**	0.064*	-0.056**
	(0.033)	(0.023)	(0.037)	(0.026)	(0.034)	(0.023)	(0.034)	(0.023)	(0.037)	(0.026)	(0.035)	(0.023)
Low_1	-0.099***	0.027***	-0.099***	0.027***	-0.099***	0.027***	-0.102***	0.030***	-0.102***	0.030***	-0.102***	0.030***
	(0.014)	(0.007)	(0.019)	(0.007)	(0.020)	(0.007)	(0.014)	(0.008)	(0.019)	(0.007)	(0.020)	(0.008)
K_open_1	-0.012**	0.000	-0.012**	0.000	-0.012*	0.000	-0.013**	-0.000	-0.013***	-0.000	-0.013*	-0.000
	(0.005)	(0.002)	(0.005)	(0.002)	(0.007)	(0.003)	(0.005)	(0.003)	(0.005)	(0.002)	(0.007)	(0.003)
Trade_1	0.001***	-0.001***	0.001***	-0.001***	0.001**	-0.001***	0.001***	-0.001***	0.001***	-0.001***	0.001***	-0.001***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
log(GDP)_1	0.019***	0.000	0.019***	0.000	0.019***	0.000	0.020***	0.000	0.020***	0.000	0.020***	0.000
	(0.004)	(0.002)	(0.004)	(0.002)	(0.006)	(0.002)	(0.004)	(0.002)	(0.004)	(0.002)	(0.007)	(0.002)
Growth_1	0.000	-0.001	0.000	-0.001	0.000	-0.001	0.000	-0.001	0.000	-0.001	0.000	-0.001
	(0.002)	(0.001)	(0.002)	(0.001)	(0.002)	(0.001)	(0.002)	(0.001)	(0.002)	(0.001)	(0.002)	(0.001)
Gconsump _1	0.000	-0.000	0.000	-0.000	0.000	-0.000	0.001	-0.001	0.001	-0.001	0.001	-0.001
	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)	(0.001)
Leader_1	-0.003	0.015	-0.003	0.015*	-0.003	0.015	-0.001	0.016	-0.001	0.016*	-0.001	0.016
	(0.019)	(0.010)	(0.021)	(0.009)	(0.022)	(0.009)	(0.020)	(0.011)	(0.021)	(0.010)	(0.022)	(0.011)

European	0.019	0.011	0.019	0.011	0.019	0.011	0.020	0.011	0.020	0.011	0.020	0.011
	(0.019)	(0.009)	(0.020)	(0.008)	(0.033)	(0.009)	(0.019)	(0.010)	(0.020)	(0.009)	(0.034)	(0.010)
N_obs	2,569	2,569	2,569	2,569	2,569	2,569	2,569	2,569	2,569	2,569	2,569	2,569
Log-Likelihood	-1,539.64	-1,539.64	-1,539.64	-1,539.64	-1,539.64	-1,539.64	-1,539.47	-1,539.47	-1,539.47	-1,539.47	-1,539.47	-1,539.47
Pseudo R2	0.045	0.045	0.045	0.045	0.045	0.045						

Note: *** p<0.01, ** p<0.05, * p<0.1

Table 3.5.1 Neighboring Countries Corporate TSR Change Interactions (Lagged)

	MLogit robust Decrease	MLogit robust Increase	MLogit cluster by year Decrease	MLogit cluster by year Increase	MLogit cluster by id Decrease	MLogit cluster by id Increase	MProbit robust Decrease	MProbit robust Increase	MProbit cluster by year Decrease	MProbit cluster by year Increase	MProbit cluster by id Decrease	MProbit cluster by id Increase
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Section 1: 2-year lag only												
N_%increase_2	-0.048	-0.007	-0.048	-0.007	-0.048	-0.007	-0.046	-0.009	-0.046	-0.009	-0.046	-0.009
	(0.073)	(0.028)	(0.088)	(0.025)	(0.078)	(0.030)	(0.068)	(0.030)	(0.081)	(0.026)	(0.072)	(0.032)
N_%decrease_2	0.011	-0.006	0.011	-0.006	0.011	-0.006	0.013	-0.004	0.013	-0.004	0.013	-0.004
	(0.037)	(0.020)	(0.042)	(0.021)	(0.045)	(0.020)	(0.037)	(0.020)	(0.041)	(0.022)	(0.044)	(0.021)
N_obs	2,420	2,420	2,420	2,420	2,420	2,420	2,420	2,420	2,420	2,420	2,420	2,420
Log-Likelihood	-1,459.64	-1,459.64	-1,459.64	-1,459.64	-1,459.64	-1,459.64	-1,459.55	-1,459.55	-1,459.55	-1,459.55	-1,459.55	-1,459.55
Pseudo R2	0.040	0.040	0.040	0.040	0.040	0.040						
Section 2:1-year lag and 2-year lag												
N_%increase_1	-0.167*	0.020	-0.167*	0.020	-0.167	0.020	-0.145*	0.028	-0.145*	0.028	-0.145	0.028
	(0.091)	(0.023)	(0.097)	(0.021)	(0.104)	(0.023)	(0.078)	(0.027)	(0.084)	(0.025)	(0.090)	(0.026)
N_%decrease_1	0.059	-0.056**	0.059	-0.056**	0.059*	-0.056**	0.060	-0.058**	0.060	-0.058**	0.060*	-0.058**
	(0.036)	(0.024)	(0.038)	(0.026)	(0.035)	(0.024)	(0.037)	(0.024)	(0.039)	(0.026)	(0.036)	(0.023)
N_%increase_2	-0.056	-0.000	-0.056	-0.000	-0.056	-0.000	-0.052	-0.004	-0.052	-0.004	-0.052	-0.004
	(0.071)	(0.029)	(0.087)	(0.025)	(0.072)	(0.030)	(0.067)	(0.031)	(0.082)	(0.026)	(0.068)	(0.032)
N_%decrease_2	0.005	0.002	0.005	0.002	0.005	0.002	0.009	0.004	0.009	0.004	0.009	0.004
	(0.038)	(0.019)	(0.043)	(0.021)	(0.046)	(0.018)	(0.038)	(0.020)	(0.044)	(0.022)	(0.046)	(0.018)

N_obs	2,420	2,420	2,420	2,420	2,420	2,420	2,420	2,420	2,420	2,420	2,420	2,420
Log-Likelihood	-1,450.87	-1,450.87	-1,450.87	-1,450.87	-1,450.87	-1,450.87	-1,450.92	-1,450.92	-1,450.92	-1,450.92	-1,450.92	-1,450.92
Pseudo R2	0.046	0.046	0.046	0.046	0.046	0.046						
Section 3:1-year lag, 2-year lag and 3-year lag												
N_%increase_1	-0.131	0.017	-0.131	0.017	-0.131	0.017	-0.110	0.023	-0.110	0.023	-0.110	0.023
	(0.091)	(0.023)	(0.095)	(0.021)	(0.103)	(0.021)	(0.079)	(0.027)	(0.084)	(0.026)	(0.090)	(0.023)
N_%decrease_1	0.061*	-0.052**	0.061	-0.052*	0.061*	-0.052**	0.063*	-0.055**	0.063	-0.055**	0.063*	-0.055**
	(0.037)	(0.025)	(0.039)	(0.028)	(0.036)	(0.024)	(0.038)	(0.024)	(0.039)	(0.027)	(0.037)	(0.023)
N_%increase_2	-0.051	0.001	-0.051	0.001	-0.051	0.001	-0.047	-0.001	-0.047	-0.001	-0.047	-0.001
	(0.072)	(0.029)	(0.090)	(0.025)	(0.074)	(0.031)	(0.068)	(0.031)	(0.087)	(0.026)	(0.070)	(0.032)
N_%decrease_2	0.012	0.002	0.012	0.002	0.012	0.002	0.016	0.005	0.016	0.005	0.016	0.005
	(0.040)	(0.019)	(0.044)	(0.021)	(0.048)	(0.017)	(0.040)	(0.020)	(0.045)	(0.022)	(0.048)	(0.018)
N_%increase_3	-0.128	0.025	-0.128	0.025	-0.128	0.025	-0.113	0.030	-0.113*	0.030	-0.113	0.030
	(0.085)	(0.022)	(0.078)	(0.019)	(0.083)	(0.022)	(0.076)	(0.026)	(0.068)	(0.023)	(0.074)	(0.025)
N_%decrease_3	-0.046	-0.013	-0.046	-0.013	-0.046	-0.013	-0.048	-0.012	-0.048	-0.012	-0.048	-0.012
	(0.041)	(0.021)	(0.044)	(0.019)	(0.044)	(0.019)	(0.041)	(0.021)	(0.044)	(0.019)	(0.043)	(0.020)
N_obs	2,357	2,357	2,357	2,357	2,357	2,357	2,357	2,357	2,357	2,357	2,357	2,357
Log-Likelihood	-1,414.29	-1,414.29	-1,414.29	-1,414.29	-1,414.29	-1,414.29	-1,414.11	-1,414.11	-1,414.11	-1,414.11	-1,414.11	-1,414.11
Pseudo R2	0.046	0.046	0.046	0.046	0.046	0.046						

Note: *** p<0.01, ** p<0.05, * p<0.1

Table 3.5.2 Neighboring Countries Corporate TSR Change Interactions (Excluding European and/or Tax Haven Countries)

	MLogit robust Decrease	**MLogit robust Increase**	**MLogit cluster by year Decrease**	**MLogit cluster by year Increase**	**MLogit cluster by id Decrease**	**MLogit cluster by id Increase**	**MProbit robust Decrease**	**MProbit robust Increase**	**MProbit cluster by year Decrease**	**MProbit cluster by year Increase**	**MProbit cluster by id Decrease**	**MProbit cluster by id Increase**
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**	**(8)**	**(9)**	**(10)**	**(11)**	**(12)**
Section 1: No European Countries												
N_%increase_1	-0.113	0.020	-0.113	0.020	-0.113	0.020	-0.106	0.029	-0.106*	0.029	-0.106	0.029
	(0.092)	(0.025)	(0.075)	(0.023)	(0.110)	(0.029)	(0.080)	(0.028)	(0.064)	(0.027)	(0.098)	(0.031)
N_%decrease_1	0.072*	-0.066**	0.072*	-0.066***	0.072*	-0.066***	0.077*	-0.070***	0.077*	-0.070***	0.077**	-0.070***
	(0.039)	(0.027)	(0.038)	(0.024)	(0.038)	(0.023)	(0.041)	(0.026)	(0.039)	(0.023)	(0.039)	(0.023)
Africa	-0.035*	0.002	-0.035**	0.002	-0.035	0.002	-0.038*	0.003	-0.038**	0.003	-0.038	0.003
	(0.020)	(0.011)	(0.018)	(0.010)	(0.025)	(0.011)	(0.021)	(0.012)	(0.019)	(0.011)	(0.026)	(0.012)
N_obs	1,749	1,749	1,749	1,749	1,749	1,749	1,749	1,749	1,749	1,749	1,749	1,749
Log-Likelihood	-1,012.20	-1,012.20	-1,012.20	-1,012.20	-1,012.20	-1,012.20	-1,011.44	-1,011.44	-1,011.44	-1,011.44	-1,011.44	-1,011.44
Pseudo R2	0.056	0.056	0.056	0.056	0.056	0.056						
Section 2: No Tax Haven Countries												
N_%increase_1	-0.168*	0.021	-0.168	0.021	-0.168	0.021	-0.143*	0.029	-0.143	0.029	-0.143	0.029
	(0.101)	(0.028)	(0.106)	(0.028)	(0.122)	(0.032)	(0.085)	(0.032)	(0.088)	(0.032)	(0.105)	(0.034)
N_%decrease_1	0.075*	-0.062**	0.075*	-0.062**	0.075*	-0.062**	0.076*	-0.062**	0.076*	-0.062**	0.076**	-0.062**
	(0.038)	(0.028)	(0.045)	(0.030)	(0.038)	(0.028)	(0.040)	(0.028)	(0.046)	(0.029)	(0.039)	(0.027)
N_obs	2,228	2,228	2,228	2,228	2,228	2,228	2,228	2,228	2,228	2,228	2,228	2,228
Log-Likelihood	-1,369.83	-1,369.83	-1,369.83	-1,369.83	-1,369.83	-1,369.83	-1,369.95	-1,369.95	-1,369.95	-1,369.95	-1,369.95	-1,369.95
Pseudo R2	0.042	0.042	0.042	0.042	0.042	0.042						

Section 3: No European and No Tax Haven Countries												
N_%increase_1	-0.136	0.023	-0.136	0.023	-0.136	0.023	-0.124	0.032	-0.124*	0.032	-0.124	0.032
	(0.104)	(0.031)	(0.087)	(0.029)	(0.128)	(0.035)	(0.087)	(0.033)	(0.071)	(0.032)	(0.110)	(0.036)
N_%decrease_1	0.076*	-0.066**	0.076*	-0.066**	0.076**	-0.066**	0.078*	-0.067**	0.078	-0.067**	0.078**	-0.067**
	(0.042)	(0.031)	(0.045)	(0.028)	(0.038)	(0.027)	(0.044)	(0.030)	(0.048)	(0.027)	(0.039)	(0.026)
Africa	-0.044**	0.004	-0.044***	0.004	-0.044	0.004	-0.047**	0.005	-0.047***	0.005	-0.047	0.005
	(0.021)	(0.013)	(0.017)	(0.013)	(0.028)	(0.013)	(0.022)	(0.014)	(0.018)	(0.014)	(0.030)	(0.014)
N_obs	1,563	1,563	1,563	1,563	1,563	1,563	1,563	1,563	1,563	1,563	1,563	1,563
Log-Likelihood	-919.36	-919.36	-919.36	-919.36	-919.36	-919.36	-918.79	-918.79	-918.79	-918.79	-918.79	-918.79
Pseudo R2	0.050	0.050	0.050	0.050	0.050	0.050						

Note: *** p<0.01, ** p<0.05, * p<0.1

Table 3.5.3 (a) the Corporate TSR Interactions between Developed and Developing Countries

	Developing robust Decrease	**Developing robust Increase**	**Developing cluster by year Decrease**	**Developing cluster by year Increase**	**Developing cluster by id Decrease**	**Developing cluster by id Increase**		**Developed robust Decrease**	**Developed robust Increase**	**Developed cluster by year Decrease**	**Developed cluster by year Increase**	**Developed cluster by id Decrease**	**Developed cluster by id Increase**
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**		**(7)**	**(8)**	**(9)**	**(10)**	**(11)**	**(12)**
Section 1: Contemporaneous Interaction													
Developed_increase	0.010	0.005	0.010	0.005*	0.010	0.005	*Developing_increase*	-0.009	-0.000	-0.009	-0.000	-0.009	-0.000
	(0.006)	(0.003)	(0.009)	(0.002)	(0.007)	(0.003)		(0.009)	(0.002)	(0.011)	(0.002)	(0.009)	(0.002)
Developed_decrease	0.005	0.001	0.005*	0.001	0.005*	0.001	*Developing_decrease*	0.004	-0.001	0.004	-0.001	0.004	-0.001
	(0.003)	(0.002)	(0.003)	(0.002)	(0.003)	(0.001)		(0.003)	(0.001)	(0.003)	(0.001)	(0.003)	(0.001)
N_obs	1,255	1,255	1,255	1,255	1,255	1,255	*N_obs*	794	794	794	794	794	794
Log-Likelihood	-643.06	-643.06	-643.06	-643.06	-643.06	-643.06	*Log-Likelihood*	-496.76	-496.76	-496.76	-496.76	-496.76	-496.76
Pseudo R2	0.065	0.065	0.065	0.065	0.065	0.065	*Pseudo R2*	0.063	0.063	0.063	0.063	0.063	0.063
Section 2: One-year Lag Interaction													
Developed_increase_1	0.005	0.004	0.005	0.004	0.005	0.004	*Developing_increase_1*	-0.007	0.002	-0.007	0.002	-0.007	0.002
	(0.006)	(0.003)	(0.008)	(0.003)	(0.006)	(0.003)		(0.009)	(0.003)	(0.010)	(0.002)	(0.009)	(0.003)
Developed_decrease_1	0.009***	-0.000	0.009***	-0.000	0.009***	-0.000	*Developing_decrease_1*	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001

	(0.003)	(0.002)	(0.003)	(0.001)	(0.003)	(0.002)		(0.003)	(0.001)	(0.004)	(0.001)	(0.004)	(0.001)
N_obs	1,205	1,205	1,205	1,205	1,205	1,205	*N_obs*	770	770	770	770	770	770
Log-Likelihood	-607.52	-607.52	-607.52	-607.52	-607.52	-607.52	*Log-Likelihood*	-482.05	-482.05	-482.05	-482.05	-482.05	-482.05
Pseudo R2	0.073	0.073	0.073	0.073	0.073	0.073	*Pseudo R2*	0.058	0.058	0.058	0.058	0.058	0.058

Note: *** p<0.01, ** p<0.05, * p<0.1

Table 3.5.3 (b) the Corporate TSR Interactions between Developed and Emerging Market Countries

	Emerging robust Decrease	**Emerging robust Increase**	**Emerging cluster by year Decrease**	**Emerging cluster by year Increase**	**Emerging cluster by id Decrease**	**Emerging cluster by id Increase**		**Developed robust Decrease**	**Developed robust Increase**	**Developed cluster by year Decrease**	**Developed cluster by year Increase**	**Developed cluster by id Decrease**	**Developed cluster by id Increase**
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**		**(7)**	**(8)**	**(9)**	**(10)**	**(11)**	**(12)**
Section 1: Contemporaneous Interaction													
Developed_increase	0.017	-0.005	0.017*	-0.005	0.017	-0.005	*Emg_increase*	-0.030**	-0.007	-0.030**	-0.007	-0.030***	-0.007*
	(0.011)	(0.008)	(0.009)	(0.007)	(0.013)	(0.009)		(0.014)	(0.004)	(0.013)	(0.004)	(0.011)	(0.004)
Developed_decrease	0.008	-0.003	0.008*	-0.003	0.008	-0.003	*Emg_decrease*	0.018**	-0.001	0.018*	-0.001	0.018**	-0.001
	(0.006)	(0.003)	(0.004)	(0.002)	(0.006)	(0.003)		(0.009)	(0.002)	(0.010)	(0.002)	(0.009)	(0.002)
N_obs	575	575	575	575	575	575	*N_obs*	794	794	794	794	794	794
Log-Likelihood	-375.44	-375.44	-375.44	-375.44	-375.44	-375.44	*Log-Likelihood*	-493.37	-493.37	-493.37	-493.37	-493.37	-493.37
Pseudo R2	0.060	0.060	0.060	0.060	0.060	0.060	*Pseudo R2*	0.069	0.069	0.069	0.069	0.069	0.069
Section 2: One-year Lag Interaction													
Developed_increase_1	0.016	-0.004	0.016	-0.004	0.016*	-0.004	*Emg_increase_1*	-0.010	0.004	-0.010	0.004	-0.010	0.004
	(0.010)	(0.006)	(0.010)	(0.004)	(0.010)	(0.006)		(0.015)	(0.003)	(0.015)	(0.003)	(0.012)	(0.003)
Developed_decrea	-0.004	0.003	-0.004	0.003*	-0.004	0.003	*Emg_decreas*	0.008	-0.003	0.008	-0.003	0.008	-0.003

se_1							*e_1*						
	(0.005)	(0.003)	(0.004)	(0.002)	(0.004)	(0.003)		(0.009)	(0.002)	(0.012)	(0.002)	(0.011)	(0.002)
N_obs	558	558	558	558	558	558	*N_obs*	770	770	770	770	770	770
Log-Likelihood	-359.87	-359.87	-359.87	-359.87	-359.87	-359.87	*Log-Likelihood*	-481.72	-481.72	-481.72	-481.72	-481.72	-481.72
Pseudo R2	0.069	0.069	0.069	0.069	0.069	0.069	*Pseudo R2*	0.059	0.059	0.059	0.059	0.059	0.059

Note: *** p<0.01, ** p<0.05, * p<0.1

Table 3.5.4 (a) the Corporate TSR Interactions between Big and Small Countries

	Big robust Decrease	**Big robust Increase**	**Big cluster by year Decrease**	**Big cluster by year Increase**	**Big cluster by id Decrease**	**Big cluster by id Increase**		**Small robust Decrease**	**Small robust Increase**	**Small cluster by year Decrease**	**Small cluster by year Increase**	**Small cluster by id Decrease**	**Small cluster by id Increase**
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**		**(7)**	**(8)**	**(9)**	**(10)**	**(11)**	**(12)**
Section 1: Contemporaneous Interaction													
Small_increase	0.005	-0.004	0.005	-0.004	0.005	-0.004	*Big_increase*	0.017***	-0.003	0.017***	-0.003	0.017***	-0.003
	(0.008)	(0.004)	(0.010)	(0.003)	(0.009)	(0.004)		(0.006)	(0.003)	(0.006)	(0.002)	(0.005)	(0.003)
Small_decrease	0.002	0.001	0.002	0.001	0.002	0.001	*Big_decrease*	0.010**	0.001	0.010	0.001	0.010**	0.001
	(0.003)	(0.002)	(0.003)	(0.002)	(0.003)	(0.001)		(0.004)	(0.002)	(0.007)	(0.002)	(0.004)	(0.002)
N_obs	538	538	538	538	538	538	*N_obs*	2,071	2,071	2,071	2,071	2,071	2,071
Log-Likelihood	-386.97	-386.97	-386.97	-386.97	-386.97	-386.97	*Log-Likelihood*	-1,151.66	-1,151.66	-1,151.66	-1,151.66	-1,151.66	-1,151.66
Pseudo R2	0.038	0.038	0.038	0.038	0.038	0.038	*Pseudo R2*	0.051	0.051	0.051	0.051	0.051	0.051
Section 2: One-year Lag Interaction													
Small_increase_1	0.005	0.007	0.005	0.007	0.005	0.007	*Big_increase_1*	-0.008	0.001	-0.008	0.001	-0.008	0.001
	(0.009)	(0.004)	(0.011)	(0.005)	(0.010)	(0.005)		(0.006)	(0.002)	(0.007)	(0.002)	(0.005)	(0.002)
Small_decrease_1	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	*Big_decrease_1*	0.005	-0.002	0.005	-0.002	0.005	-0.002
	(0.003)	(0.001)	(0.003)	(0.001)	(0.005)	(0.002)		(0.004)	(0.002)	(0.007)	(0.002)	(0.004)	(0.002)

N_obs	521	521	521	521	521	521	*N_obs*	1,997	1,997	1,997	1,997	1,997	1,997
Log-Likelihood	-371.36	-371.36	-371.36	-371.36	-371.36	-371.36	*Log-Likelihood*	-1,104.20	-1,104.20	-1,104.20	-1,104.20	-1,104.20	-1,104.20
Pseudo R2	0.047	0.047	0.047	0.047	0.047	0.047	*Pseudo R2*	0.051	0.051	0.051	0.051	0.051	0.051

Note: *** p<0.01, ** p<0.05, * p<0.1

Table 3.5.4 (b) the Corporate TSR Interactions between Big and Small European Countries

	Big robust Decrease	**Big robust Increase**	**Big cluster by year Decrease**	**Big cluster by year Increase**	**Big cluster by id Decrease**	**Big cluster by id Increase**		**Small European robust Decrease**	**Small European robust Increase**	**Small European cluster by year Decrease**	**Small European cluster by year Increase**	**Small European cluster by id Decrease**	**Small European cluster by id Increase**
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**		**(7)**	**(8)**	**(9)**	**(10)**	**(11)**	**(12)**
Section 1: Contemporaneous Interaction													
EUSmall_increase	-0.002	-0.011	-0.002	-0.011	-0.002	-0.011	*Big_increase*	-0.014	-0.008	-0.014	-0.008*	-0.014	-0.008
	(0.020)	(0.007)	(0.017)	(0.008)	(0.025)	(0.009)		(0.016)	(0.006)	(0.016)	(0.004)	(0.016)	(0.007)
EUSmall_decrease	0.010	-0.004	0.010	-0.004	0.010*	-0.004	*Big_decrease*	0.025**	-0.002	0.025**	-0.002	0.025**	-0.002
	(0.007)	(0.004)	(0.007)	(0.004)	(0.006)	(0.004)		(0.010)	(0.004)	(0.010)	(0.003)	(0.011)	(0.004)
N_obs	538	538	538	538	538	538	*N_obs*	502	502	502	502	502	502
Log-Likelihood	-385.98	-385.98	-385.98	-385.98	-385.98	-385.98	*Log-Likelihood*	-299.78	-299.78	-299.78	-299.78	-299.78	-299.78
Pseudo R2	0.041	0.041	0.041	0.041	0.041	0.041	*Pseudo R2*	0.060	0.060	0.060	0.060	0.060	0.060
Section 2: One-year Lag Interaction													
EUSmall_increase_1	-0.040**	0.015*	-0.040**	0.015	-0.040	0.015**	*Big_increase_1*	-0.022*	0.006	-0.022	0.006**	-0.022*	0.006
	(0.020)	(0.009)	(0.017)	(0.011)	(0.025)	(0.007)		(0.013)	(0.005)	(0.017)	(0.003)	(0.013)	(0.005)

EUSmall_decrease_1	-0.011	-0.000	-0.011	-0.000	-0.011	-0.000	*Big_decrease_1*	0.005	-0.000	0.005	-0.000	0.005	-0.000
	(0.008)	(0.005)	(0.008)	(0.004)	(0.009)	(0.004)		(0.008)	(0.004)	(0.010)	(0.003)	(0.007)	(0.004)
N_obs	521	521	521	521	521	521	*N_obs*	485	485	485	485	485	485
Log-Likelihood	-370.04	-370.04	-370.04	-370.04	-370.04	-370.04	*Log-Likelihood*	-288.19	-288.19	-288.19	-288.19	-288.19	-288.19
Pseudo R2	0.050	0.050	0.050	0.050	0.050	0.050	*Pseudo R2*	0.049	0.049	0.049	0.049	0.049	0.049

Note: *** p<0.01, ** p<0.05, * p<0.1

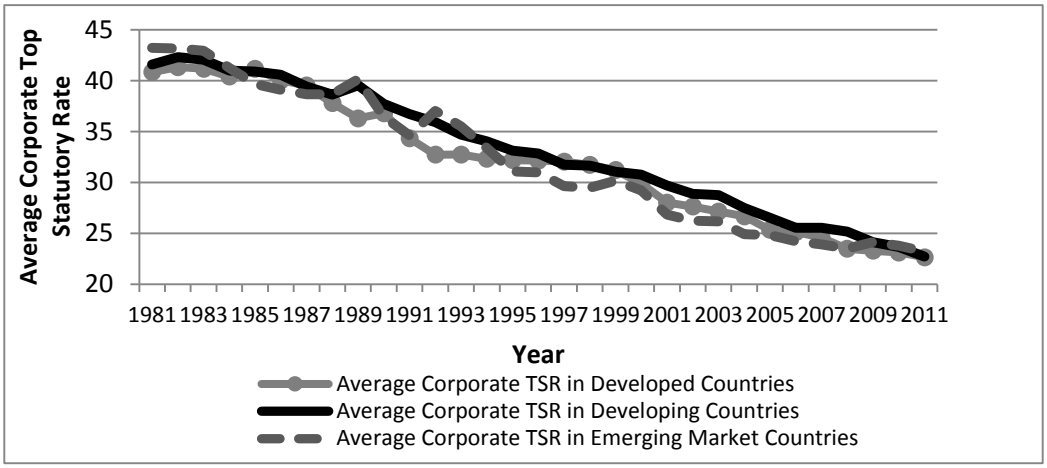
Table 3.5.5 the Corporate TSR Interactions between Tax Haven and Non-Tax Haven Countries

	Tax Haven robust Decrease	**Tax Haven robust Increase**	**Tax Haven cluster by year Decrease**	**Tax Haven cluster by year Increase**	**Tax Haven cluster by id Decrease**	**Tax Haven cluster by id Increase**		**Non Tax Haven robust Decrease**	**Non Tax Haven robust Increase**	**Non Tax Haven cluster by year Decrease**	**Non Tax Haven cluster by year Increase**	**Non Tax Haven cluster by id Decrease**	**Non Tax Haven cluster by id Increase**
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**		**(7)**	**(8)**	**(9)**	**(10)**	**(11)**	**(12)**
Section 1: Contemporaneous Interaction													
NonHaven_increase	0.007	0.001	0.007	0.001	0.007	0.001	*Haven_increase*	-0.002	0.007	-0.002	0.007*	-0.002	0.007
	(0.007)	(0.001)	(0.008)	(0.001)	(0.005)	(0.001)		(0.010)	(0.005)	(0.015)	(0.004)	(0.009)	(0.005)
NonHaven_decrease	0.004	0.000	0.004	0.000	0.004	0.000	*Haven_decrease*	0.016***	-0.000	0.016***	-0.000	0.016***	-0.000
	(0.002)	(0.000)	(0.002)	(0.000)	(0.003)	(0.000)		(0.005)	(0.003)	(0.006)	(0.003)	(0.005)	(0.003)
N_obs	281	281	281	281	281	281	*N_obs*	2,328	2,328	2,328	2,328	2,328	2,328
Log-Likelihood	-111.26	-111.26	-111.26	-111.26	-111.26	-111.26	*Log-Likelihood*	-1,425.20	-1,425.20	-1,425.20	-1,425.20	-1,425.20	-1,425.20
Pseudo R2	0.157	0.157	0.157	0.157	0.157	0.157	*Pseudo R2*	0.042	0.042	0.042	0.042	0.042	0.042
Section 2: One-year Lag Interaction													
NonHaven_increase_1	-0.004	0.000	-0.004	0.000	-0.004	0.000	*Haven_increase_1*	0.016	-0.001	0.016	-0.001	0.016	-0.001
	(0.008)	(0.001)	(0.007)	(0.001)	(0.006)	(0.001)		(0.010)	(0.005)	(0.014)	(0.004)	(0.010)	(0.004)
NonHaven_decrease_1	0.003	-0.000	0.003	-0.000	0.003	-0.000	*Haven_decrease_1*	0.009*	0.001	0.009	0.001	0.009*	0.001

	(0.003)	(0.000)	(0.003)	(0.000)	(0.003)	(0.000)		(0.005)	(0.003)	(0.006)	(0.003)	(0.006)	(0.003)
N_obs	271	271	271	271	271	271	*N_obs*	2,247	2,247	2,247	2,247	2,247	2,247
Log-Likelihood	-107.97	-107.97	-107.97	-107.97	-107.97	-107.97	*Log-Likelihood*	-1,372.27	-1,372.27	-1,372.27	-1,372.27	-1,372.27	-1,372.27
Pseudo R2	0.146	0.146	0.146	0.146	0.146	0.146	*Pseudo R2*	0.051	0.051	0.051	0.051	0.051	0.051
Section 3: Two-year Lag Interaction													
NonHaven_increase_2	-0.009*	-0.001	-0.009	-0.001	-0.009	-0.001	*Haven_increase_2*	0.003	0.009**	0.003	0.009***	0.003	0.009**
	(0.005)	(0.002)	(0.006)	(0.001)	(0.006)	(0.001)		(0.010)	(0.004)	(0.009)	(0.003)	(0.010)	(0.004)
NonHaven_decrease_2	0.001	0.000	0.001	0.000	0.001	0.000	*Haven_decrease_2*	0.010*	0.002	0.010	0.002	0.010*	0.002
	(0.002)	(0.000)	(0.002)	(0.000)	(0.002)	(0.000)		(0.005)	(0.003)	(0.009)	(0.003)	(0.005)	(0.002)
N_obs	259	259	259	259	259	259	*N_obs*	2,154	2,154	2,154	2,154	2,154	2,154
Log-Likelihood	-100.34	-100.34	-100.34	-100.34	-100.34	-100.34	*Log-Likelihood*	-1,312.59	-1,312.59	-1,312.59	-1,312.59	-1,312.59	-1,312.59
Pseudo R2	0.182	0.182	0.182	0.182	0.182	0.182	*Pseudo R2*	0.041	0.041	0.041	0.041	0.041	0.041

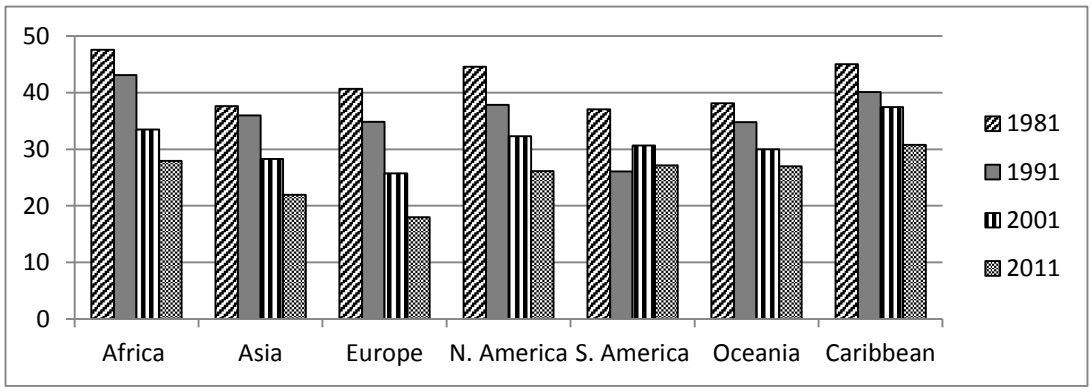
Note: *** p<0.01, ** p<0.05, * p<0.1

Figure 3.1.2 (a) the Average Corporate TSRs of Developing, Developed and Emerging Market Countries from 1981 to 2011



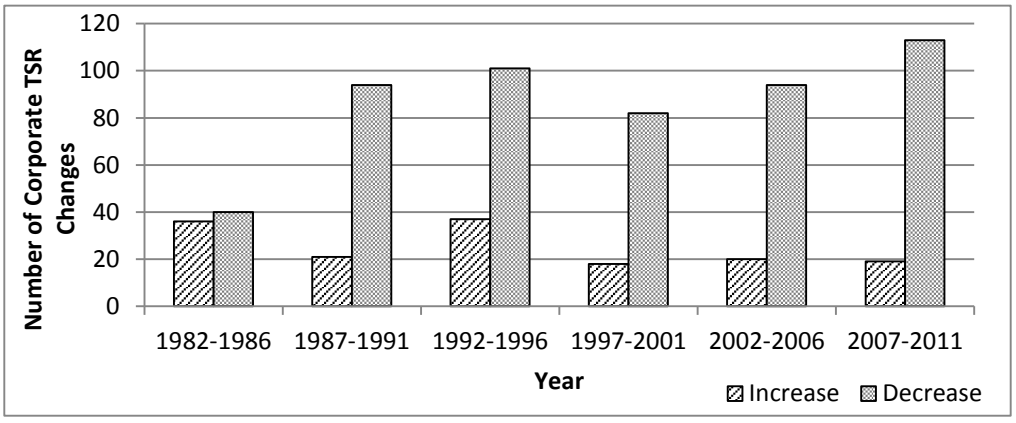
Data Source: the *AEI International Tax Database* and author's calculation.

Figure 3.1.2 (b) the Regional Average Corporate TSR in 1991, 2001 and 2011



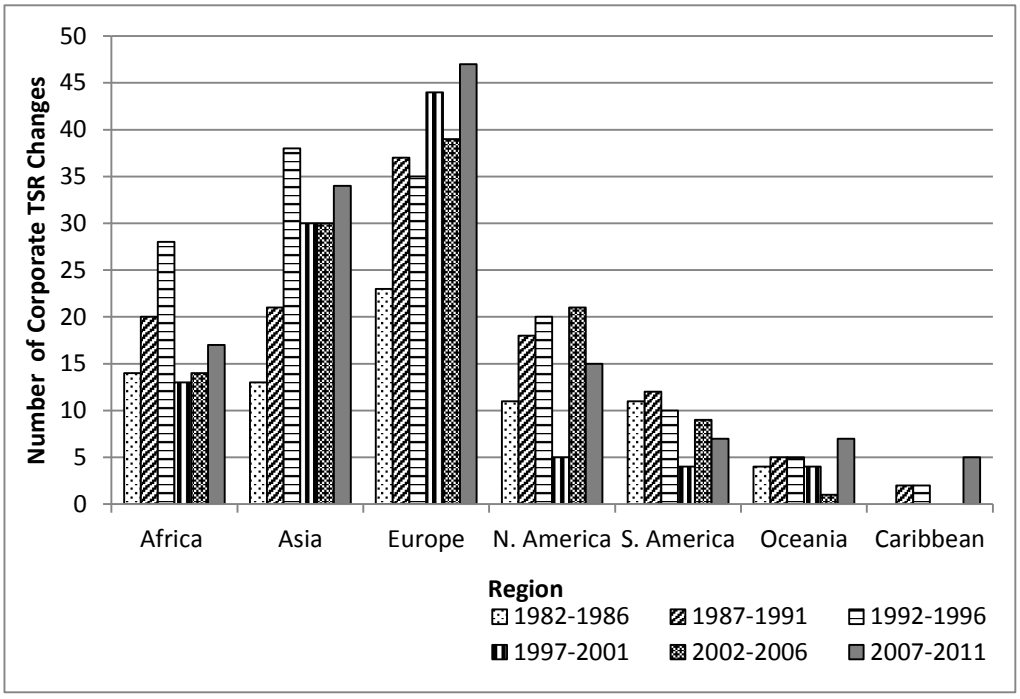
Data Source: the *AEI International Tax Database* and author's calculation.

Figure 3.1.3 (a) Corporate TSR Changes in 139 Countries from 1982 to 2011



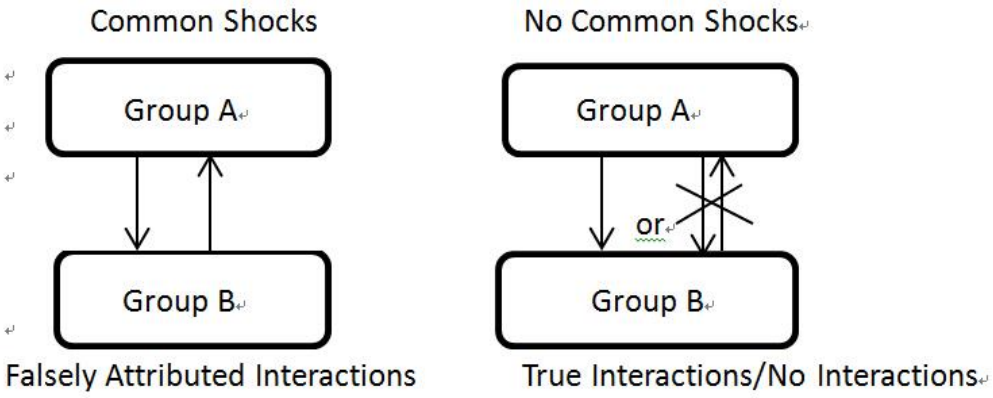
Data Source: the *AEI International Tax Database* and author's calculation.

Figure 3.1.3 (b) the Number of Corporate TSR Changes across 7 Regions from 1982 to 2011 (Five-year Period)



Data Source: the *AEI International Tax Database* and author's calculation.

Figure 3.5.3 the Probability of Corporate TSR Changes of Group A and Group B with and without Common Shocks



Appendices

Appendix I: OECD Country Names and Codes

A.I.1 OECD Country Names and Corresponding IOC (the International Olympic Committee) Country Codes

Country Name	Country Code	Country Name	Country Code	Country Name	Country Code
Australia	AUS	Greece	GRC	Norway	NOR
Austria	AUT	Iceland	ISL	Portugal	PRT
Belgium	BEL	Ireland	IRL	Spain	ESP
Canada	CAN	Italy	ITA	Sweden	SWE
Denmark	DNK	Japan	JPN	Switzerland	CHE
Finland	FIN	Luxembourg	LUX	Turkey	TUR
France	FRA	Netherlands	NLD	United Kingdom	GBR
Germany	GER	New Zealand	NZL	United States	USA

Appendix II: The Corporate Effective Average Tax Rate and the Corporate Effective Marginal Tax Rate

Appendix II. 1: The Corporate Effective Average Tax Rate

Corporate EATR is calculated according to the method provided by Devereux and Griffith (2003). The data used to calculate the present value of the depreciation allowance rate is from the *AEI International Tax Database*. This corporate EATR is calculated based on a hypothetical investment project and can be showed as a weighted average of an adjusted corporate TSR and EMTR. Moreover, Devereux and Griffith (2003) point out, as the profitability of this hypothetical investment increasing, the corporate EATR is closer to the adjusted corporate TSR, which is adjusted for possible sub-national deductions.

The formula used to calculate corporate EATR is:

$$\text{Corporate EATR} = \frac{\text{pre-tax net present value} - \text{post-tax net present value}}{\text{pre-tax net present value}}$$

$$= \frac{R^{*}-R}{p/(1+r)},$$

where R^{*} is the pre-tax economic rent and R is the post-tax economic rent. p is the financial return, which is assumed to be 20%, and r is the real annual discount rate, which is assumed to be 10%. All the assumptions and calculations of the corporate EATR are the same as those in Hassett and Mathur (2011)[28].

[28] For the detailed steps, instructions, and assumptions to calculate the corporate EATR and EMTR, please check *the Appendix of Report Card on Effective Corporate Tax Rates United States Gets an F*, by Kevin A. Hassett and Aparna Mathur, 2011.

To calculate the post economic rent R, the adjusted top statutory corporate tax rates and the inflation rates are also needed. The data of the 24 OECD countries' adjusted corporate TSRs is provided by *OECD tax database* and is recently updated with the data of 2012. For the inflation rate, previous papers use two types of inflation rates to calculate the corporate EATR. One is the expected annual inflation rate and following Devereux et al. (2002), is assumed to be 3.5%; the other is the real annual inflation rate Consumer Price Index (CPI), which can be found in World Development Indicators. In this paper, the variable *EATRcpi* denotes the corporate EATR that is calculated using real annual inflation rate CPI and *EATRex* denotes the corporate EATR that is calculated using the expected 3.5% inflation rate.

Appendix II. 2: The Corporate Effective Marginal Tax Rate

The corporate EMTR is also calculated under the assumption of a hypothetical investment. Only in this case, this hypothetical investment is a marginal investment, which the post-tax economic return just equals to the capital cost. So, the main difference between corporate EATR and EMTR is that the latter's financial return p just equals to the capital costs. Hassett and Mathur (2011) provide a simplified formula of corporate EMTR. Similarly, this paper also uses the expected and the real inflation rate to calculate corporate EMTR. The variable *EMTRcpi* denotes the corporate EMTR that is calculated using real annual inflation rate CPI and *EMTRex*

This article is available at *http://www.aei.org/article/economics/fiscal-policy/taxes/report-card-on-effective-corporate-tax-rates/.*

denotes the corporate EMTR that is calculated using the expected 3.5% inflation rate.

Appendix II. 3: The Advantage of Corporate EATR and EMTR

Both corporate EATR and EMTR are estimated variables based on a hypothetical investment on plant and machinery and financed by equity. Compare to the corporate TSR, these two variables have the advantage that they incorporate both corporate tax rates and bases. In other words, corporate EATR and EMTR can reflect the corporate tax policy changes on both rates and bases, but corporate TSR only shows the governments' corporate tax policy changes on rates.

Moreover, compare to the average corporate tax rate, which is calculated by using corporate tax revenue divided by corporate taxable income, the corporate EATR has at least two advantages. First of all, the corporate EATR is a forward-looking corporate tax rate, and is not influenced by factors that influence corporate taxable income[29]. That is, the changes of corporate EATR truly reflect the changes of governments' corporate tax policies, both rates and bases.

[29] Reed and Rogers (2006) use U.S. state-level data and show that half of the variation of *Tax Burden*, measured as the state tax revenue divided by personal income, is due to the changes of state income rather than the changes of state tax policy. So, it is reasonable to expect that the changes of average corporate tax rate, which is the real corporate tax burden on firms, not only contain the changes of corporate tax policies, but also contains the changes of corporate taxable income that are not due to tax policy changes. For example, the changes such as labor costs and technologic improvements can influence corporate income, but may have nothing to do with changes of corporate tax policies.

Second, the legal definition of corporate tax base varies significantly across time and country, and is very complicated[30]. So, it is impossible to accurately measure corporate tax bases. Moreover, a country's the average corporate tax rate, which measures the actual corporate tax burden, is affected by the country's corporate tax laws. Even use firm-level average corporate tax rates cannot properly measure corporate tax policy changes, because it can be influenced by firms' ability of tax avoidance and management skills. Corporate EATR provides a measure of corporate average tax rates that has the same standards across country and time, and thus is comparable.

Overall, corporate EATR and EMTR, which are calculated by Devereux and Griffith (2003), are more proper measures of corporate tax policies. So, this paper use corporate EATR and EMTR to measure the corporate tax policy changes on both corporate tax rates and bases.

[30] For example, the American corporate tax laws are extremely complicated. The small business and large firms have different corporate income tax rates. Different corporate properties are subject to different tax rates, the tax rate on inventories is high, while the tax rates on airplane and transportation are relatively low. Moreover, in order to prevent tax avoidance and effectively tax multinational firms, especially their foreign incomes, the corporate tax deduction laws are extremely complex, and have exemptions of exemptions.

Appendix III: List of Countries

A.III.1 List of Countries

Albania [#]	Honduras	Paraguay
Angola [a]	Hong Kong [d, h]	Peru [&]
Antigua and Barbuda [h]	Hungary [#, &, *]	Philippines [&]
Argentina [&]	Iceland [#, d, *]	Poland [#, &, *]
Aruba [h]	India [&, b]	Portugal [#, d, *]
Australia [d, b, *]	Indonesia [&]	Puerto Rico
Austria [#, d, *]	Iran	Qatar
Azerbaijan [#]	Ireland [#, d, h, *]	Romania [&]
Bangladesh	Isle of Man [h]	Russia [#, &]
Barbados [h,]	Israel [d, *]	Samoa
Belgium [#, d, b, *]	Italy [#, d, b, *]	Saudi Arabia [b]
Belize [h]	Jamaica	Senegal [a]
Bolivia	Japan [d, b, *]	Serbia [#]
Bosnia and Herzegovinia [#]	Kazakhstan [#]	Singapore [d, h]
Botswana [a]	Kenya [a]	Slovak Republic [#, d, *]
Brazil [&, b]	Korea [d, b, *]	Slovenia [#, d, *]
Brunei Darussalam	Kuwait	Solomon Islands
Bulgaria [#, &]	Kyrgyz Republic	South Africa [&, a]
Cambodia	Laos	Spain [#, d, b, *]
Canada [d, b, *]	Latvia [#, &]	Sri Lanka
Channel Islands, Guernsey [h]	Lebanon [h]	St. Kitts and Nevis [h]
Channel Islands, Jersey [h]	Liberia[a, h]	St. Lucia [h]
Chile [&, *]	Libya [a]	St. Vincent and the Grenadines [h]
China [&, b]	Liechtenstein [#, h]	Sudan [a]
Colombia	Lithuania [#, &]	Swaziland [a]
Congo, Democratic Republic of [a]	Luxembourg [#, d, h, *]	Sweden [#, d, b, *]
Costa Rica [h]	Macedonia [#]	Switzerland [#, d, b, *]
Cote d'Ivoire [a]	Malawi [a]	Taiwan [d]
Croatia [#]	Malaysia[&]	Tanzania [a]
Cyprus [#, d, h]	Malta [#, d, h]	Thailand [&]
Czech Republic [#, d, *]	Mauritius [a, h]	Trinidad and Tobago
Denmark [#, d, *]	Mexico [&, b, *]	Turkey [#, &, b, *]
Dominica [h]	Moldova [#]	Uganda [a]
Dominican Republic	Morocco [a]	Ukraine [#, &]
Ecuador	Mozambique [a]	United Kingdom [#, d, b, *]
Egypt [a]	Namibia [a]	United States [d , b, *]
El Salvador	Netherlands [#, d, b, *]	Uruguay

Estonia [#, d, &, *]	Mozambique [a]	Uzbekistan
Fiji	Namibia [a]	Venezuela [&]
Finland [#, d, *]	Netherlands [#, d, b, *]	Vietnam
France [#, d, b, *]	Netherlands Antilles [h]	Zambia [a]
Gabon [a]	New Caledonia	Zimbabwe [a]
Georgia[#]	New Zealand [d, *]	Uruguay
Germany [#, d, b, *]	Nicaragua	Uzbekistan
Ghana [a]	Nigeria [a]	Venezuela [&]
Gibraltar [h]	Norway [#, d, *]	Vietnam
Greece [#, d, *]	Oman	Zambia [a]
Grenada [h]	Pakistan [&]	Zimbabwe [a]
Guatemala	Panama [h]	Venezuela [&]
Guyana	Papua New Guinea	

**Note: # represents European countries; d represents developed countries; & represents emerging market countries; a represents African countries; h represents tax haven countries; b represents big countries with the top 20 GDP; * represents the OECD countries.

Appendix IV: Tables of All Results

A.IV.1 Neighboring Countries' Corporate TSR Changes (Two-year Lag) (Table 3.5.1, Section 1)

	MLogit robust Decrease	**MLogit robust Increase**	**MLogit cluster by year Decrease**	**MLogit cluster by year Increase**	**MLogit cluster by id Decrease**	**MLogit cluster by id Increase**	**MProbit robust Decrease**	**MProbit robust Increase**	**MProbit cluster by year Decrease**	**MProbit cluster by year Increase**	**MProbit cluster by id Decrease**	**MProbit cluster by id Increase**
N_%increase_2	-0.048	-0.007	-0.048	-0.007	-0.048	-0.007	-0.046	-0.009	-0.046	-0.009	-0.046	-0.009
	(0.073)	(0.028)	(0.088)	(0.025)	(0.078)	(0.030)	(0.068)	(0.030)	(0.081)	(0.026)	(0.072)	(0.032)
N_%decrease_2	0.011	-0.006	0.011	-0.006	0.011	-0.006	0.013	-0.004	0.013	-0.004	0.013	-0.004
	(0.037)	(0.020)	(0.042)	(0.021)	(0.045)	(0.020)	(0.037)	(0.020)	(0.041)	(0.022)	(0.044)	(0.021)
Low_1	-0.104***	0.028***	-0.104***	0.028***	-0.104***	0.028***	-0.107***	0.031***	-0.107***	0.031***	-0.107***	0.031***
	(0.015)	(0.008)	(0.021)	(0.007)	(0.021)	(0.008)	(0.015)	(0.008)	(0.020)	(0.007)	(0.021)	(0.008)
K_open_1	-0.011**	-0.000	-0.011**	-0.000	-0.011	-0.000	-0.012**	-0.000	-0.012**	-0.000	-0.012	-0.000
	(0.005)	(0.003)	(0.005)	(0.002)	(0.007)	(0.003)	(0.005)	(0.003)	(0.005)	(0.002)	(0.007)	(0.003)
Trade_1	0.001***	-0.001***	0.001***	-0.001***	0.001***	-0.001***	0.001***	-0.001***	0.001***	-0.001***	0.001**	-0.001***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
log(GDP)_1	0.018***	-0.000	0.018***	-0.000	0.018**	-0.000	0.019***	0.000	0.019***	0.000	0.019***	0.000
	(0.004)	(0.002)	(0.004)	(0.002)	(0.007)	(0.002)	(0.004)	(0.002)	(0.004)	(0.003)	(0.007)	(0.002)
Growth_1	0.000	-0.001	0.000	-0.001	0.000	-0.001	0.000	-0.001	0.000	-0.001	0.000	-0.001
	(0.002)	(0.001)	(0.002)	(0.001)	(0.002)	(0.001)	(0.002)	(0.001)	(0.002)	(0.001)	(0.002)	(0.001)
Gconsump_1	0.001	-0.001	0.001	-0.001	0.001	-0.001	0.001	-0.001	0.001	-0.001	0.001	-0.001
	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)	(0.001)

Legislative_1	-0.002	0.024***	-0.002	0.024**	-0.002	0.024***	0.000	0.025**	0.000	0.025**	0.000	0.025***
	(0.018)	(0.009)	(0.013)	(0.010)	(0.018)	(0.009)	(0.018)	(0.010)	(0.014)	(0.011)	(0.018)	(0.010)
European	0.017	0.010	0.017	0.010	0.017	0.010	0.019	0.009	0.019	0.009	0.019	0.009
	(0.019)	(0.010)	(0.021)	(0.008)	(0.034)	(0.011)	(0.020)	(0.010)	(0.022)	(0.009)	(0.035)	(0.011)
N_obs	2,420	2,420	2,420	2,420	2,420	2,420	2,420	2,420	2,420	2,420	2,420	2,420
Log-Likelihood	-1,459.64	-1,459.64	-1,459.64	-1,459.64	-1,459.64	-1,459.64	-1,459.55	-1,459.55	-1,459.55	-1,459.55	-1,459.55	-1,459.55
Pseudo R2	0.040	0.040	0.040	0.040	0.040	0.040						

Note: *** p<0.01, ** p<0.05, * p<0.1

A.IV.2 Neighboring Countries' Corporate TSR Changes (One-year and Two-year Lag) (Table 3.5.1, Section 2)

	MLogit robust Decrease	**MLogit robust Increase**	**MLogit cluster by year Decrease**	**MLogit cluster by year Increase**	**MLogit cluster by id Decrease**	**MLogit cluster by id Increase**	**MProbit robust Decrease**	**MProbit robust Increase**	**MProbit cluster by year Decrease**	**MProbit cluster by year Increase**	**MProbit cluster by id Decrease**	**MProbit cluster by id Increase**
N_%increase_1	-0.167*	0.020	-0.167*	0.020	-0.167	0.020	-0.145*	0.028	-0.145*	0.028	-0.145	0.028
	(0.091)	(0.023)	(0.097)	(0.021)	(0.104)	(0.023)	(0.078)	(0.027)	(0.084)	(0.025)	(0.090)	(0.026)
N_%decrease_1	0.059	-0.056**	0.059	-0.056**	0.059*	-0.056**	0.060	-0.058**	0.060	-0.058**	0.060*	-0.058**
	(0.036)	(0.024)	(0.038)	(0.026)	(0.035)	(0.024)	(0.037)	(0.024)	(0.039)	(0.026)	(0.036)	(0.023)
N_%increase_2	-0.056	-0.000	-0.056	-0.000	-0.056	-0.000	-0.052	-0.004	-0.052	-0.004	-0.052	-0.004
	(0.071)	(0.029)	(0.087)	(0.025)	(0.072)	(0.030)	(0.067)	(0.031)	(0.082)	(0.026)	(0.068)	(0.032)
N_%decrease_2	0.005	0.002	0.005	0.002	0.005	0.002	0.009	0.004	0.009	0.004	0.009	0.004
	(0.038)	(0.019)	(0.043)	(0.021)	(0.046)	(0.018)	(0.038)	(0.020)	(0.044)	(0.022)	(0.046)	(0.018)
Low_1	-0.102***	0.027***	-0.102***	0.027***	-0.102***	0.027***	-0.105***	0.030***	-0.105***	0.030***	-0.105***	0.030***
	(0.015)	(0.008)	(0.020)	(0.006)	(0.021)	(0.007)	(0.015)	(0.008)	(0.021)	(0.007)	(0.022)	(0.008)
K_open_1	-0.011**	-0.000	-0.011**	-0.000	-0.011	-0.000	-0.013**	-0.000	-0.013***	-0.000	-0.013*	-0.000
	(0.005)	(0.002)	(0.005)	(0.002)	(0.007)	(0.003)	(0.005)	(0.003)	(0.005)	(0.002)	(0.007)	(0.003)
Trade_1	0.001***	-0.000***	0.001***	-0.000***	0.001**	-0.000***	0.001***	-0.000***	0.001***	-0.000***	0.001**	-0.000***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
log(GDP)_1	0.018***	0.000	0.018***	0.000	0.018**	0.000	0.019***	0.000	0.019***	0.000	0.019***	0.000
	(0.004)	(0.002)	(0.004)	(0.002)	(0.007)	(0.002)	(0.004)	(0.002)	(0.004)	(0.003)	(0.007)	(0.002)
Growth_1	0.000	-0.001	0.000	-0.001	0.000	-0.001	-0.000	-0.001	-0.000	-0.001	-0.000	-0.001

	(0.002)	(0.001)	(0.002)	(0.001)	(0.002)	(0.001)	(0.002)	(0.001)	(0.002)	(0.001)	(0.002)	(0.001)
Gconsump_1	0.001	-0.001	0.001	-0.001	0.001	-0.001	0.001	-0.001	0.001	-0.001	0.001	-0.001
	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)	(0.001)
Legislative_1	-0.003	0.023**	-0.003	0.023**	-0.003	0.023***	-0.001	0.025**	-0.001	0.025**	-0.001	0.025**
	(0.017)	(0.009)	(0.013)	(0.010)	(0.018)	(0.009)	(0.018)	(0.010)	(0.014)	(0.011)	(0.018)	(0.010)
European	0.018	0.010	0.018	0.010	0.018	0.010	0.019	0.010	0.019	0.010	0.019	0.010
	(0.019)	(0.009)	(0.021)	(0.008)	(0.034)	(0.010)	(0.020)	(0.010)	(0.021)	(0.009)	(0.035)	(0.011)
N_obs	2,420	2,420	2,420	2,420	2,420	2,420	2,420	2,420	2,420	2,420	2,420	2,420
Log-Likelihood	-1,450.87	-1,450.87	-1,450.87	-1,450.87	-1,450.87	-1,450.87	-1,450.92	-1,450.92	-1,450.92	-1,450.92	-1,450.92	-1,450.92
Pseudo R2	0.046	0.046	0.046	0.046	0.046	0.046						

Note: *** p<0.01, ** p<0.05, * p<0.1

A.IV.3 Neighboring Countries' Corporate TSR Changes (One-year Lag, Two-year Lag and Three-year Lag) (Table 3.5.1, Section 3)

	MLogit robust Decrease	**MLogit robust Increase**	**MLogit cluster by year Decrease**	**MLogit cluster by year Increase**	**MLogit cluster by id Decrease**	**MLogit cluster by id Increase**	**MProbit robust Decrease**	**MProbit robust Increase**	**MProbit cluster by year Decrease**	**MProbit cluster by year Increase**	**MProbit cluster by id Decrease**	**MProbit cluster by id Increase**
N_%increase_1	-0.131	0.017	-0.131	0.017	-0.131	0.017	-0.110	0.023	-0.110	0.023	-0.110	0.023
	(0.091)	(0.023)	(0.095)	(0.021)	(0.103)	(0.021)	(0.079)	(0.027)	(0.084)	(0.026)	(0.090)	(0.023)
N_%decrease_1	0.061*	-0.052**	0.061	-0.052*	0.061*	-0.052**	0.063*	-0.055**	0.063	-0.055**	0.063*	-0.055**
	(0.037)	(0.025)	(0.039)	(0.028)	(0.036)	(0.024)	(0.038)	(0.024)	(0.039)	(0.027)	(0.037)	(0.023)
N_%increase_2	-0.051	0.001	-0.051	0.001	-0.051	0.001	-0.047	-0.001	-0.047	-0.001	-0.047	-0.001
	(0.072)	(0.029)	(0.090)	(0.025)	(0.074)	(0.031)	(0.068)	(0.031)	(0.087)	(0.026)	(0.070)	(0.032)
N_%decrease_2	0.012	0.002	0.012	0.002	0.012	0.002	0.016	0.005	0.016	0.005	0.016	0.005
	(0.040)	(0.019)	(0.044)	(0.021)	(0.048)	(0.017)	(0.040)	(0.020)	(0.045)	(0.022)	(0.048)	(0.018)
N_%increase_3	-0.128	0.025	-0.128	0.025	-0.128	0.025	-0.113	0.030	-0.113*	0.030	-0.113	0.030
	(0.085)	(0.022)	(0.078)	(0.019)	(0.083)	(0.022)	(0.076)	(0.026)	(0.068)	(0.023)	(0.074)	(0.025)
N_%decrease_3	-0.046	-0.013	-0.046	-0.013	-0.046	-0.013	-0.048	-0.012	-0.048	-0.012	-0.048	-0.012
	(0.041)	(0.021)	(0.044)	(0.019)	(0.044)	(0.019)	(0.041)	(0.021)	(0.044)	(0.019)	(0.043)	(0.020)
Low_1	-0.105***	0.025***	-0.105***	0.025***	-0.105***	0.025***	-0.109***	0.028***	-0.109***	0.028***	-0.109***	0.028***
	(0.015)	(0.008)	(0.020)	(0.006)	(0.021)	(0.007)	(0.015)	(0.008)	(0.020)	(0.007)	(0.021)	(0.008)
K_open_1	-0.012**	0.001	-0.012**	0.001	-0.012*	0.001	-0.013**	0.001	-0.013***	0.001	-0.013*	0.001
	(0.005)	(0.002)	(0.005)	(0.002)	(0.007)	(0.003)	(0.005)	(0.003)	(0.005)	(0.002)	(0.007)	(0.003)
Trade_1	0.001***	-0.000***	0.001***	-0.000***	0.001**	-0.000***	0.001***	-0.000***	0.001***	-0.000***	0.001**	-0.000***

	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
log(GDP)_1	0.018***	0.000	0.018***	0.000	0.018**	0.000	0.019***	0.000	0.019***	0.000	0.019***	0.000
	(0.004)	(0.002)	(0.004)	(0.002)	(0.007)	(0.002)	(0.005)	(0.002)	(0.004)	(0.003)	(0.007)	(0.002)
Growth_1	0.000	-0.001	0.000	-0.001	0.000	-0.001	0.000	-0.001	0.000	-0.001	0.000	-0.001
	(0.002)	(0.001)	(0.002)	(0.001)	(0.002)	(0.001)	(0.002)	(0.001)	(0.002)	(0.001)	(0.002)	(0.001)
Gconsump_1	0.000	-0.001	0.000	-0.001	0.000	-0.001	0.000	-0.001	0.000	-0.001	0.000	-0.001
	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)	(0.001)
Legislative_1	-0.006	0.020**	-0.006	0.020**	-0.006	0.020**	-0.004	0.022**	-0.004	0.022**	-0.004	0.022**
	(0.018)	(0.009)	(0.014)	(0.010)	(0.017)	(0.009)	(0.018)	(0.010)	(0.014)	(0.011)	(0.018)	(0.010)
European	0.023	0.011	0.023	0.011	0.023	0.011	0.025	0.011	0.025	0.011	0.025	0.011
	(0.020)	(0.010)	(0.021)	(0.008)	(0.033)	(0.011)	(0.020)	(0.010)	(0.022)	(0.009)	(0.035)	(0.012)
N_obs	2,357	2,357	2,357	2,357	2,357	2,357	2,357	2,357	2,357	2,357	2,357	2,357
Log-Likelihood	-1,414.29	-1,414.29	-1,414.29	-1,414.29	-1,414.29	-1,414.29	-1,414.11	-1,414.11	-1,414.11	-1,414.11	-1,414.11	-1,414.11
Pseudo R2	0.046	0.046	0.046	0.046	0.046	0.046						

Note: *** p<0.01, ** p<0.05, * p<0.1

A.IV.4 Neighboring Countries' Corporate TSR Changes (Excluding European Countries) (Table 3.5.2, Section 1)

	MLogit robust Decrease	**MLogit robust Increase**	**MLogit cluster by year Decrease**	**MLogit cluster by year Increase**	**MLogit cluster by id Decrease**	**MLogit cluster by id Increase**	**MProbit robust Decrease**	**MProbit robust Increase**	**MProbit cluster by year Decrease**	**MProbit cluster by year Increase**	**MProbit cluster by id Decrease**	**MProbit cluster by id Increase**
N_%increase_1	-0.113	0.020	-0.113	0.020	-0.113	0.020	-0.106	0.029	-0.106*	0.029	-0.106	0.029
	(0.092)	(0.025)	(0.075)	(0.023)	(0.110)	(0.029)	(0.080)	(0.028)	(0.064)	(0.027)	(0.098)	(0.031)
N_%decrease_1	0.072*	-0.066**	0.072*	-0.066***	0.072*	-0.066***	0.077*	-0.070***	0.077*	-0.070***	0.077**	-0.070***
	(0.039)	(0.027)	(0.038)	(0.024)	(0.038)	(0.023)	(0.041)	(0.026)	(0.039)	(0.023)	(0.039)	(0.023)
Low_1	-0.111***	0.020**	-0.111***	0.020**	-0.111***	0.020**	-0.114***	0.022**	-0.114***	0.022**	-0.114***	0.022**
	(0.017)	(0.010)	(0.020)	(0.008)	(0.026)	(0.009)	(0.017)	(0.010)	(0.020)	(0.009)	(0.025)	(0.010)
K_open_1	-0.018***	0.002	-0.018***	0.002	-0.018**	0.002	-0.020***	0.002	-0.020***	0.002	-0.020**	0.002
	(0.006)	(0.003)	(0.005)	(0.003)	(0.009)	(0.003)	(0.006)	(0.003)	(0.005)	(0.003)	(0.009)	(0.003)
Trade_1	0.001***	-0.000***	0.001***	-0.000***	0.001***	-0.000***	0.001***	-0.000***	0.001***	-0.000***	0.001***	-0.000***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
log(GDP)_1	0.016***	-0.000	0.016***	-0.000	0.016**	-0.000	0.017***	-0.000	0.017***	-0.000	0.017**	-0.000
	(0.005)	(0.002)	(0.005)	(0.003)	(0.007)	(0.002)	(0.005)	(0.003)	(0.005)	(0.003)	(0.008)	(0.002)
Growth_1	-0.002	-0.001	-0.002	-0.001	-0.002	-0.001	-0.002	-0.001	-0.002	-0.001	-0.002	-0.001
	(0.002)	(0.001)	(0.002)	(0.001)	(0.002)	(0.001)	(0.002)	(0.001)	(0.002)	(0.001)	(0.002)	(0.001)
Gconsump_1	0.001	-0.000	0.001	-0.000	0.001	-0.000	0.001	-0.001	0.001	-0.001	0.001	-0.001
	(0.002)	(0.001)	(0.002)	(0.001)	(0.002)	(0.001)	(0.002)	(0.001)	(0.002)	(0.001)	(0.003)	(0.001)
Legislative_1	0.033	0.033***	0.033*	0.033***	0.033*	0.033***	0.034	0.036***	0.034*	0.036***	0.034*	0.036***

	(0.021)	(0.012)	(0.018)	(0.013)	(0.019)	(0.011)	(0.022)	(0.013)	(0.019)	(0.013)	(0.020)	(0.012)
Africa	-0.035*	0.002	-0.035**	0.002	-0.035	0.002	-0.038*	0.003	-0.038**	0.003	-0.038	0.003
	(0.020)	(0.011)	(0.018)	(0.010)	(0.025)	(0.011)	(0.021)	(0.012)	(0.019)	(0.011)	(0.026)	(0.012)
N_obs	1,749	1,749	1,749	1,749	1,749	1,749	1,749	1,749	1,749	1,749	1,749	1,749
Log-Likelihood	-1,012.20	-1,012.20	-1,012.20	-1,012.20	-1,012.20	-1,012.20	-1,011.44	-1,011.44	-1,011.44	-1,011.44	-1,011.44	-1,011.44
Pseudo R2	0.056	0.056	0.056	0.056	0.056	0.056						

Note: *** p<0.01, ** p<0.05, * p<0.1

A.IV.5 Neighboring Countries' Corporate TSR Changes (Excluding Tax Haven Countries) (Table 3.5.2, Section 2)

	MLogit robust Decrease	**MLogit robust Increase**	**MLogit cluster by year Decrease**	**MLogit cluster by year Increase**	**MLogit cluster by id Decrease**	**MLogit cluster by id Increase**	**MProbit robust Decrease**	**MProbit robust Increase**	**MProbit cluster by year Decrease**	**MProbit cluster by year Increase**	**MProbit cluster by id Decrease**	**MProbit cluster by id Increase**
N_%increase_1	-0.168*	0.021	-0.168	0.021	-0.168	0.021	-0.143*	0.029	-0.143	0.029	-0.143	0.029
	(0.101)	(0.028)	(0.106)	(0.028)	(0.122)	(0.032)	(0.085)	(0.032)	(0.088)	(0.032)	(0.105)	(0.034)
N_%decrease_1	0.075*	-0.062**	0.075*	-0.062**	0.075*	-0.062**	0.076*	-0.062**	0.076*	-0.062**	0.076**	-0.062**
	(0.038)	(0.028)	(0.045)	(0.030)	(0.038)	(0.028)	(0.040)	(0.028)	(0.046)	(0.029)	(0.039)	(0.027)
Low_1	-0.101***	0.033***	-0.101***	0.033***	-0.101***	0.033***	-0.103***	0.036***	-0.103***	0.036***	-0.103***	0.036***
	(0.016)	(0.009)	(0.022)	(0.008)	(0.023)	(0.009)	(0.016)	(0.010)	(0.022)	(0.008)	(0.023)	(0.009)
K_open_1	-0.011**	-0.000	-0.011**	-0.000	-0.011	-0.000	-0.012**	-0.000	-0.012**	-0.000	-0.012	-0.000
	(0.005)	(0.003)	(0.005)	(0.002)	(0.007)	(0.003)	(0.006)	(0.003)	(0.005)	(0.003)	(0.008)	(0.003)
Trade_1	0.000	-0.001***	0.000	-0.001***	0.000	-0.001***	0.000	-0.001***	0.000	-0.001***	0.000	-0.001***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
log(GDP)_1	0.011**	0.000	0.011**	0.000	0.011	0.000	0.012**	-0.000	0.012**	-0.000	0.012	-0.000
	(0.005)	(0.002)	(0.005)	(0.003)	(0.008)	(0.002)	(0.005)	(0.003)	(0.005)	(0.003)	(0.008)	(0.002)
Growth_1	-0.000	-0.001	-0.000	-0.001	-0.000	-0.001	-0.000	-0.001	-0.000	-0.001	-0.000	-0.001
	(0.002)	(0.001)	(0.002)	(0.001)	(0.002)	(0.001)	(0.002)	(0.001)	(0.002)	(0.001)	(0.002)	(0.001)
Gconsump_1	0.001	-0.001	0.001	-0.001	0.001	-0.001	0.001	-0.001	0.001	-0.001	0.001	-0.001
	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)	(0.001)	(0.002)	(0.001)	(0.002)	(0.001)	(0.002)	(0.001)
Legislative_1	-0.000	0.026**	-0.000	0.026**	-0.000	0.026***	0.002	0.028**	0.002	0.028**	0.002	0.028***

	(0.018)	(0.010)	(0.014)	(0.012)	(0.019)	(0.010)	(0.019)	(0.011)	(0.014)	(0.012)	(0.019)	(0.011)
European	0.042*	0.012	0.042	0.012	0.042	0.012	0.043*	0.012	0.043*	0.012	0.043	0.012
	(0.022)	(0.011)	(0.026)	(0.009)	(0.039)	(0.011)	(0.022)	(0.012)	(0.026)	(0.010)	(0.040)	(0.012)
N_obs	2,228	2,228	2,228	2,228	2,228	2,228	2,228	2,228	2,228	2,228	2,228	2,228
Log-Likelihood	-1,369.83	-1,369.83	-1,369.83	-1,369.83	-1,369.83	-1,369.83	-1,369.95	-1,369.95	-1,369.95	-1,369.95	-1,369.95	-1,369.95
Pseudo R2	0.042	0.042	0.042	0.042	0.042	0.042						

Note: *** p<0.01, ** p<0.05, * p<0.1

A.IV.6 Neighboring Countries' Corporate TSR Changes (Excluding European and Tax Haven Countries) (Table 3.5.2, Section 3)

	MLogit robust Decrease	**MLogit robust Increase**	**MLogit cluster by year Decrease**	**MLogit cluster by year Increase**	**MLogit cluster by id Decrease**	**MLogit cluster by id Increase**	**MProbit robust Decrease**	**MProbit robust Increase**	**MProbit cluster by year Decrease**	**MProbit cluster by year Increase**	**MProbit cluster by id Decrease**	**MProbit cluster by id Increase**
N_%increase_1	-0.136	0.023	-0.136	0.023	-0.136	0.023	-0.124	0.032	-0.124*	0.032	-0.124	0.032
	(0.104)	(0.031)	(0.087)	(0.029)	(0.128)	(0.035)	(0.087)	(0.033)	(0.071)	(0.032)	(0.110)	(0.036)
N_%decrease_1	0.076*	-0.066**	0.076*	-0.066**	0.076**	-0.066**	0.078*	-0.067**	0.078	-0.067**	0.078**	-0.067**
	(0.042)	(0.031)	(0.045)	(0.028)	(0.038)	(0.027)	(0.044)	(0.030)	(0.048)	(0.027)	(0.039)	(0.026)
Low_1	-0.107***	0.027**	-0.107***	0.027**	-0.107***	0.027**	-0.110***	0.027**	-0.110***	0.027**	-0.110***	0.027**
	(0.018)	(0.012)	(0.022)	(0.011)	(0.029)	(0.011)	(0.018)	(0.012)	(0.021)	(0.011)	(0.028)	(0.012)
K_open_1	-0.018***	0.003	-0.018***	0.003	-0.018*	0.003	-0.020***	0.003	-0.020***	0.003	-0.020*	0.003
	(0.006)	(0.003)	(0.005)	(0.003)	(0.010)	(0.003)	(0.006)	(0.003)	(0.005)	(0.004)	(0.010)	(0.004)
Trade_1	0.000	-0.000***	0.000	-0.000***	0.000	-0.000***	0.000	-0.001***	0.000	-0.001***	0.000	-0.001***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
log(GDP)_1	0.009	-0.000	0.009*	-0.000	0.009	-0.000	0.011*	-0.000	0.011**	-0.000	0.011	-0.000
	(0.006)	(0.003)	(0.005)	(0.003)	(0.010)	(0.003)	(0.006)	(0.003)	(0.005)	(0.003)	(0.010)	(0.003)
Growth_1	-0.002	-0.001	-0.002	-0.001	-0.002	-0.001	-0.002	-0.001	-0.002	-0.001	-0.002	-0.001
	(0.002)	(0.001)	(0.002)	(0.001)	(0.002)	(0.001)	(0.002)	(0.001)	(0.002)	(0.001)	(0.002)	(0.001)
Gconsump_1	0.002	-0.000	0.002	-0.000	0.002	-0.000	0.002	-0.001	0.002	-0.001	0.002	-0.001
	(0.002)	(0.001)	(0.002)	(0.001)	(0.003)	(0.001)	(0.002)	(0.001)	(0.002)	(0.001)	(0.003)	(0.001)
Legislative_1	0.042*	0.036**	0.042**	0.036**	0.042**	0.036***	0.043*	0.040***	0.043**	0.040***	0.043**	0.040***

	(0.022)	(0.014)	(0.020)	(0.015)	(0.021)	(0.013)	(0.023)	(0.015)	(0.021)	(0.015)	(0.021)	(0.014)
Africa	-0.044**	0.004	-0.044***	0.004	-0.044	0.004	-0.047**	0.005	-0.047***	0.005	-0.047	0.005
	(0.021)	(0.013)	(0.017)	(0.013)	(0.028)	(0.013)	(0.022)	(0.014)	(0.018)	(0.014)	(0.030)	(0.014)
N_obs	1,563	1,563	1,563	1,563	1,563	1,563	1,563	1,563	1,563	1,563	1,563	1,563
Log-Likelihood	-919.36	-919.36	-919.36	-919.36	-919.36	-919.36	-918.79	-918.79	-918.79	-918.79	-918.79	-918.79
Pseudo R2	0.050	0.050	0.050	0.050	0.050	0.050						

Note: *** p<0.01, ** p<0.05, * p<0.1

A.IV.7 Corporate TSR Interactions between Developed and Developing Countries (Contemporaneously), Table 3.5.3 (a), Section 1, Developing Countries as Dependent Variables

	MLogit robust Decrease	**MLogit robust Increase**	**MLogit cluster by year Decrease**	**MLogit cluster by year Increase**	**MLogit cluster by id Decrease**	**MLogit cluster by id Increase**	**MProbit robust Decrease**	**MProbit robust Increase**	**MProbit cluster by year Decrease**	**MProbit cluster by year Increase**	**MProbit cluster by id Decrease**	**MProbit cluster by id Increase**
Developed_increase	0.010	0.005	0.010	0.005*	0.010	0.005	0.010	0.005*	0.010	0.005*	0.010	0.005
	(0.006)	(0.003)	(0.009)	(0.002)	(0.007)	(0.003)	(0.007)	(0.003)	(0.010)	(0.003)	(0.007)	(0.003)
Developed_decrease	0.005	0.001	0.005*	0.001	0.005*	0.001	0.005	0.001	0.005	0.001	0.005*	0.001
	(0.003)	(0.002)	(0.003)	(0.002)	(0.003)	(0.001)	(0.003)	(0.002)	(0.003)	(0.002)	(0.003)	(0.001)
Low_1	-0.122***	0.017	-0.122***	0.017	-0.122***	0.017	-0.129***	0.021	-0.129***	0.021*	-0.129***	0.021*
	(0.017)	(0.013)	(0.019)	(0.012)	(0.020)	(0.012)	(0.017)	(0.013)	(0.019)	(0.012)	(0.019)	(0.012)
K_open_1	-0.018**	0.003	-0.018***	0.003	-0.018	0.003	-0.020***	0.003	-0.020***	0.003	-0.020*	0.003
	(0.007)	(0.003)	(0.007)	(0.004)	(0.011)	(0.003)	(0.007)	(0.003)	(0.007)	(0.004)	(0.011)	(0.004)
Trade_1	-0.000	-0.000**	-0.000	-0.000**	-0.000	-0.000***	-0.000	-0.000**	-0.000	-0.000*	-0.000	-0.000**
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
log(GDP)_1	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	0.001	-0.000	0.001	-0.000	0.001
	(0.007)	(0.004)	(0.006)	(0.003)	(0.007)	(0.003)	(0.007)	(0.004)	(0.007)	(0.004)	(0.008)	(0.004)
Growth_1	0.001	-0.001**	0.001	-0.001**	0.001	-0.001*	0.002	-0.002*	0.002	-0.002**	0.002	-0.002*
	(0.002)	(0.001)	(0.002)	(0.001)	(0.002)	(0.001)	(0.002)	(0.001)	(0.002)	(0.001)	(0.002)	(0.001)
Gconsump_1	-0.000	-0.001	-0.000	-0.001	-0.000	-0.001	-0.000	-0.001	-0.000	-0.001	-0.000	-0.001
	(0.002)	(0.001)	(0.002)	(0.001)	(0.002)	(0.001)	(0.002)	(0.001)	(0.002)	(0.001)	(0.002)	(0.001)
Legislative_1	0.034	0.037**	0.034*	0.037**	0.034	0.037***	0.036	0.040**	0.036*	0.040**	0.036	0.040***
	(0.023)	(0.016)	(0.018)	(0.015)	(0.022)	(0.014)	(0.024)	(0.016)	(0.019)	(0.016)	(0.023)	(0.014)

European	0.107*	0.009	0.107	0.009	0.107	0.009	0.112*	0.008	0.112*	0.008	0.112*	0.008
	(0.062)	(0.026)	(0.068)	(0.032)	(0.069)	(0.017)	(0.059)	(0.026)	(0.065)	(0.033)	(0.067)	(0.017)
Africa	-0.043**	0.001	-0.043***	0.001	-0.043*	0.001	-0.050***	0.003	-0.050***	0.003	-0.050*	0.003
	(0.018)	(0.011)	(0.015)	(0.011)	(0.025)	(0.012)	(0.019)	(0.012)	(0.016)	(0.011)	(0.026)	(0.012)
N_obs	1,255	1,255	1,255	1,255	1,255	1,255	1,255	1,255	1,255	1,255	1,255	1,255
Log-Likelihood	-643.06	-643.06	-643.06	-643.06	-643.06	-643.06	-641.66	-641.66	-641.66	-641.66	-641.66	-641.66
Pseudo R2	0.065	0.065	0.065	0.065	0.065	0.065						

Note: *** p<0.01, ** p<0.05, * p<0.1

A.IV.8 Corporate TSR Interactions between Developed and Developing Countries (One-year Lag), Table 3.5.3 (a), Section 2, Developing Countries as Dependent Variables

	MLogit robust Decrease	**MLogit robust Increase**	**MLogit cluster by year Decrease**	**MLogit cluster by year Increase**	**MLogit cluster by id Decrease**	**MLogit cluster by id Increase**	**MProbit robust Decrease**	**MProbit robust Increase**	**MProbit cluster by year Decrease**	**MProbit cluster by year Increase**	**MProbit cluster by id Decrease**	**MProbit cluster by id Increase**
Developed_increase_1	0.005	0.004	0.005	0.004	0.005	0.004	0.005	0.005	0.005	0.005	0.005	0.005
	(0.006)	(0.003)	(0.008)	(0.003)	(0.006)	(0.003)	(0.006)	(0.003)	(0.008)	(0.004)	(0.007)	(0.003)
Developed_decrease_1	0.009***	-0.000	0.009***	-0.000	0.009***	-0.000	0.009***	-0.000	0.009***	-0.000	0.009***	-0.000
	(0.003)	(0.002)	(0.003)	(0.001)	(0.003)	(0.002)	(0.003)	(0.002)	(0.003)	(0.002)	(0.003)	(0.002)
Low_1	-0.122***	0.018	-0.122***	0.018	-0.122***	0.018	-0.130***	0.021*	-0.130***	0.021*	-0.130***	0.021*
	(0.018)	(0.013)	(0.019)	(0.012)	(0.022)	(0.012)	(0.018)	(0.013)	(0.019)	(0.012)	(0.021)	(0.012)
K_open_1	-0.019***	0.003	-0.019***	0.003	-0.019*	0.003	-0.022***	0.003	-0.022***	0.003	-0.022*	0.003
	(0.007)	(0.003)	(0.007)	(0.003)	(0.011)	(0.003)	(0.007)	(0.003)	(0.008)	(0.003)	(0.011)	(0.004)
Trade_1	-0.000	-0.000**	-0.000	-0.000*	-0.000	-0.000**	-0.000	-0.000**	-0.000	-0.000*	-0.000	-0.000**
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
log(GDP)_1	-0.002	0.002	-0.002	0.002	-0.002	0.002	-0.002	0.003	-0.002	0.003	-0.002	0.003
	(0.007)	(0.004)	(0.006)	(0.003)	(0.007)	(0.003)	(0.007)	(0.004)	(0.007)	(0.004)	(0.008)	(0.004)
Growth_1	0.001	-0.001	0.001	-0.001	0.001	-0.001	0.001	-0.001	0.001	-0.001	0.001	-0.001
	(0.002)	(0.001)	(0.002)	(0.001)	(0.002)	(0.001)	(0.002)	(0.001)	(0.002)	(0.001)	(0.002)	(0.001)
Gconsump_1	-0.001	-0.000	-0.001	-0.000	-0.001	-0.000	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001
	(0.002)	(0.001)	(0.002)	(0.001)	(0.002)	(0.001)	(0.002)	(0.001)	(0.002)	(0.001)	(0.002)	(0.001)

Legislative_1	0.039	0.042***	0.039**	0.042***	0.039*	0.042***	0.042*	0.045***	0.042**	0.045***	0.042*	0.045***
	(0.024)	(0.016)	(0.019)	(0.014)	(0.022)	(0.015)	(0.025)	(0.017)	(0.019)	(0.015)	(0.023)	(0.015)
European	0.095	0.000	0.095	0.000	0.095	0.000	0.098*	-0.001	0.098*	-0.001	0.098	-0.001
	(0.061)	(0.022)	(0.060)	(0.020)	(0.072)	(0.015)	(0.059)	(0.023)	(0.057)	(0.021)	(0.071)	(0.016)
Africa	-0.045**	0.005	-0.045***	0.005	-0.045*	0.005	-0.053***	0.006	-0.053***	0.006	-0.053**	0.006
	(0.018)	(0.011)	(0.016)	(0.011)	(0.024)	(0.012)	(0.019)	(0.012)	(0.017)	(0.012)	(0.025)	(0.012)
N_obs	1,205	1,205	1,205	1,205	1,205	1,205	1,205	1,205	1,205	1,205	1,205	1,205
Log-Likelihood	-607.52	-607.52	-607.52	-607.52	-607.52	-607.52	-606.40	-606.40	-606.40	-606.40	-606.40	-606.40
Pseudo R2	0.073	0.073	0.073	0.073	0.073	0.073						

Note: *** p<0.01, ** p<0.05, * p<0.1

A.IV.9 Corporate TSR Interactions between Developed and Developing Countries (Contemporaneously), Table 3.5.3 (a), Section 1, Developed Countries as Dependent Variables

	MLogit robust Decrease	**MLogit robust Increase**	**MLogit cluster by year Decrease**	**MLogit cluster by year Increase**	**MLogit cluster by id Decrease**	**MLogit cluster by id Increase**	**MProbit robust Decrease**	**MProbit robust Increase**	**MProbit cluster by year Decrease**	**MProbit cluster by year Increase**	**MProbit cluster by id Decrease**	**MProbit cluster by id Increase**
Developing_increase	-0.009	-0.000	-0.009	-0.000	-0.009	-0.000	-0.010	0.000	-0.010	0.000	-0.010	0.000
	(0.009)	(0.002)	(0.011)	(0.002)	(0.009)	(0.002)	(0.008)	(0.002)	(0.011)	(0.002)	(0.009)	(0.002)
Developing_decrease	0.004	-0.001	0.004	-0.001	0.004	-0.001	0.004	-0.001	0.004	-0.001	0.004	-0.001
	(0.003)	(0.001)	(0.003)	(0.001)	(0.003)	(0.001)	(0.003)	(0.001)	(0.003)	(0.001)	(0.003)	(0.001)
Low_1	-0.048	0.029***	-0.048*	0.029**	-0.048	0.029***	-0.048	0.035***	-0.048*	0.035***	-0.048	0.035***
	(0.030)	(0.011)	(0.028)	(0.011)	(0.037)	(0.009)	(0.030)	(0.012)	(0.028)	(0.012)	(0.037)	(0.009)
K_open_1	-0.001	-0.004	-0.001	-0.004	-0.001	-0.004	-0.002	-0.005	-0.002	-0.005	-0.002	-0.005
	(0.014)	(0.004)	(0.014)	(0.003)	(0.016)	(0.004)	(0.014)	(0.004)	(0.014)	(0.004)	(0.015)	(0.004)
Trade_1	0.001***	-0.001***	0.001***	-0.001***	0.001***	-0.001***	0.001***	-0.001***	0.001***	-0.001***	0.001***	-0.001***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
log(GDP)_1	0.021*	-0.003	0.021*	-0.003	0.021	-0.003*	0.022*	-0.004	0.022**	-0.004	0.022	-0.004
	(0.011)	(0.003)	(0.011)	(0.003)	(0.019)	(0.002)	(0.011)	(0.003)	(0.011)	(0.004)	(0.019)	(0.003)
Growth_1	0.003	-0.002	0.003	-0.002	0.003	-0.002	0.002	-0.002	0.002	-0.002	0.002	-0.002
	(0.006)	(0.001)	(0.005)	(0.001)	(0.006)	(0.002)	(0.006)	(0.002)	(0.005)	(0.002)	(0.005)	(0.002)
Gconsump_1	0.013***	0.001	0.013***	0.001	0.013***	0.001	0.013***	0.001	0.013***	0.001	0.013***	0.001
	(0.004)	(0.001)	(0.003)	(0.001)	(0.005)	(0.001)	(0.004)	(0.001)	(0.003)	(0.001)	(0.005)	(0.001)
Legislative_1	-0.057*	0.010	-0.057**	0.010	-0.057**	0.010	-0.056*	0.013	-0.056**	0.013	-0.056**	0.013
	(0.030)	(0.009)	(0.027)	(0.010)	(0.027)	(0.009)	(0.030)	(0.011)	(0.027)	(0.012)	(0.027)	(0.012)

European	-0.100**	-0.008	-0.100***	-0.008	-0.100*	-0.008	-0.102**	-0.008	-0.102***	-0.008	-0.102*	-0.008
	(0.040)	(0.010)	(0.037)	(0.009)	(0.055)	(0.008)	(0.040)	(0.012)	(0.038)	(0.011)	(0.056)	(0.009)
N_obs	794	794	794	794	794	794	794	794	794	794	794	794
Log-Likelihood	-496.76	-496.76	-496.76	-496.76	-496.76	-496.76	-497.66	-497.66	-497.66	-497.66	-497.66	-497.66
Pseudo R2	0.063	0.063	0.063	0.063	0.063	0.063						

Note: *** p<0.01, ** p<0.05, * p<0.1

A.IV.10 Corporate TSR Interactions between Developed and Developing Countries (One-year Lag), Table 3.5.3 (a), Section 2, Developed Countries as Dependent Variables

	MLogit robust Decrease	**MLogit robust Increase**	**MLogit cluster by year Decrease**	**MLogit cluster by year Increase**	**MLogit cluster by id Decrease**	**MLogit cluster by id Increase**	**MProbit robust Decrease**	**MProbit robust Increase**	**MProbit cluster by year Decrease**	**MProbit cluster by year Increase**	**MProbit cluster by id Decrease**	**MProbit cluster by id Increase**
Developing_increase_1	-0.007	0.002	-0.007	0.002	-0.007	0.002	-0.007	0.003	-0.007	0.003	-0.007	0.003
	(0.009)	(0.003)	(0.010)	(0.002)	(0.009)	(0.003)	(0.009)	(0.003)	(0.010)	(0.003)	(0.009)	(0.003)
Developing_decrease_1	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001
	(0.003)	(0.001)	(0.004)	(0.001)	(0.004)	(0.001)	(0.003)	(0.001)	(0.004)	(0.001)	(0.004)	(0.001)
Low_1	-0.044	0.027**	-0.044	0.027**	-0.044	0.027***	-0.045	0.033***	-0.045	0.033***	-0.045	0.033***
	(0.031)	(0.011)	(0.030)	(0.011)	(0.037)	(0.008)	(0.031)	(0.012)	(0.030)	(0.012)	(0.037)	(0.009)
K_open_1	0.004	-0.002	0.004	-0.002	0.004	-0.002	0.003	-0.003	0.003	-0.003	0.003	-0.003
	(0.015)	(0.004)	(0.015)	(0.003)	(0.017)	(0.004)	(0.015)	(0.004)	(0.015)	(0.004)	(0.017)	(0.005)
Trade_1	0.001***	-0.000***	0.001***	-0.000***	0.001***	-0.000***	0.001***	-0.001***	0.001***	-0.001***	0.001***	-0.001***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
log(GDP)_1	0.020*	-0.004	0.020*	-0.004	0.020	-0.004**	0.021*	-0.004	0.021*	-0.004	0.021	-0.004*
	(0.012)	(0.003)	(0.011)	(0.004)	(0.020)	(0.002)	(0.012)	(0.003)	(0.011)	(0.004)	(0.020)	(0.003)
Growth_1	0.001	-0.001	0.001	-0.001	0.001	-0.001	-0.000	-0.002	-0.000	-0.002	-0.000	-0.002
	(0.006)	(0.001)	(0.006)	(0.001)	(0.006)	(0.002)	(0.006)	(0.002)	(0.006)	(0.001)	(0.006)	(0.002)
Gconsump_1	0.012***	0.001	0.012***	0.001	0.012***	0.001	0.012***	0.001	0.012***	0.001	0.012**	0.001*
	(0.004)	(0.001)	(0.003)	(0.001)	(0.005)	(0.001)	(0.004)	(0.001)	(0.004)	(0.001)	(0.005)	(0.001)

Legislative_1	-0.064**	0.012	-0.064**	0.012	-0.064**	0.012	-0.063**	0.013	-0.063**	0.013	-0.063**	0.013
	(0.030)	(0.009)	(0.027)	(0.011)	(0.029)	(0.011)	(0.031)	(0.011)	(0.028)	(0.013)	(0.030)	(0.012)
European	-0.100**	-0.007	-0.100***	-0.007	-0.100*	-0.007	-0.102**	-0.008	-0.102***	-0.008	-0.102*	-0.008
	(0.041)	(0.010)	(0.039)	(0.010)	(0.055)	(0.008)	(0.041)	(0.012)	(0.039)	(0.012)	(0.056)	(0.009)
N_obs	770	770	770	770	770	770	770	770	770	770	770	770
Log-Likelihood	-482.05	-482.05	-482.05	-482.05	-482.05	-482.05	-482.68	-482.68	-482.68	-482.68	-482.68	-482.68
Pseudo R2	0.058	0.058	0.058	0.058	0.058	0.058						

Note: *** p<0.01, ** p<0.05, * p<0.1

A.IV.11 Corporate TSR Interactions between Developed and Emerging Market Countries (Contemporaneously), Table 3.5.3 (b), Section 1, Emerging Market Countries as Dependent Variables

	MLogit robust Decrease	**MLogit robust Increase**	**MLogit cluster by year Decrease**	**MLogit cluster by year Increase**	**MLogit cluster by id Decrease**	**MLogit cluster by id Increase**	**MProbit robust Decrease**	**MProbit robust Increase**	**MProbit cluster by year Decrease**	**MProbit cluster by year Increase**	**MProbit cluster by id Decrease**	**MProbit cluster by id Increase**
Developed_increase	0.017	-0.005	0.017*	-0.005	0.017	-0.005	0.017	-0.004	0.017*	-0.004	0.017	-0.004
	(0.011)	(0.008)	(0.009)	(0.007)	(0.013)	(0.009)	(0.012)	(0.008)	(0.010)	(0.007)	(0.013)	(0.009)
Developed_decrease	0.008	-0.003	0.008*	-0.003	0.008	-0.003	0.008	-0.004	0.008*	-0.004	0.008	-0.004
	(0.006)	(0.003)	(0.004)	(0.002)	(0.006)	(0.003)	(0.006)	(0.004)	(0.004)	(0.003)	(0.006)	(0.003)
Low_1	-0.170***	0.030	-0.170***	0.030	-0.170***	0.030	-0.168***	0.032	-0.168***	0.032	-0.168***	0.032
	(0.036)	(0.019)	(0.039)	(0.020)	(0.035)	(0.024)	(0.036)	(0.021)	(0.040)	(0.022)	(0.036)	(0.026)
K_open_1	-0.004	0.003	-0.004	0.003	-0.004	0.003	-0.006	0.004	-0.006	0.004	-0.006	0.004
	(0.012)	(0.007)	(0.011)	(0.007)	(0.014)	(0.008)	(0.012)	(0.007)	(0.011)	(0.007)	(0.014)	(0.009)
Trade_1	0.001	-0.001*	0.001	-0.001*	0.001	-0.001**	0.001	-0.001*	0.001	-0.001*	0.001	-0.001**
	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)	(0.000)	(0.000)	(0.000)	(0.001)	(0.000)	(0.001)	(0.000)
log(GDP)_1	0.000	0.015*	0.000	0.015	0.000	0.015*	-0.000	0.016*	-0.000	0.016	-0.000	0.016*
	(0.018)	(0.009)	(0.018)	(0.011)	(0.020)	(0.009)	(0.017)	(0.010)	(0.019)	(0.012)	(0.020)	(0.010)
Growth_1	0.002	-0.001	0.002	-0.001	0.002	-0.001	0.001	-0.001	0.001	-0.001	0.001	-0.001
	(0.003)	(0.001)	(0.003)	(0.002)	(0.004)	(0.001)	(0.003)	(0.002)	(0.003)	(0.002)	(0.004)	(0.001)
Gconsump_1	0.003	-0.004*	0.003	-0.004**	0.003	-0.004**	0.003	-0.004*	0.003	-0.004**	0.003	-0.004*
	(0.004)	(0.002)	(0.004)	(0.002)	(0.004)	(0.002)	(0.004)	(0.002)	(0.004)	(0.002)	(0.004)	(0.002)
Legislative_1	0.002	0.014	0.002	0.014	0.002	0.014	0.007	0.013	0.007	0.013	0.007	0.013
	(0.035)	(0.022)	(0.028)	(0.022)	(0.037)	(0.021)	(0.036)	(0.023)	(0.028)	(0.024)	(0.039)	(0.021)

European	0.081	0.064*	0.081*	0.064*	0.081*	0.064*	0.083*	0.068*	0.083**	0.068*	0.083	0.068*
	(0.050)	(0.036)	(0.042)	(0.037)	(0.048)	(0.032)	(0.050)	(0.037)	(0.042)	(0.037)	(0.053)	(0.035)
N_obs	575	575	575	575	575	575	575	575	575	575	575	575
Log-Likelihood	-375.44	-375.44	-375.44	-375.44	-375.44	-375.44	-375.88	-375.88	-375.88	-375.88	-375.88	-375.88
Pseudo R2	0.060	0.060	0.060	0.060	0.060	0.060						

Note: *** p<0.01, ** p<0.05, * p<0.1

A.IV.12 Corporate TSR Interactions between Developed and Emerging Market Countries (One-year Lag), Table 3.5.3 (b), Section 2, Emerging Market Countries as Dependent Variables

	MLogit robust Decrease	**MLogit robust Increase**	**MLogit cluster by year Decrease**	**MLogit cluster by year Increase**	**MLogit cluster by id Decrease**	**MLogit cluster by id Increase**	**MProbit robust Decrease**	**MProbit robust Increase**	**MProbit cluster by year Decrease**	**MProbit cluster by year Increase**	**MProbit cluster by id Decrease**	**MProbit cluster by id Increase**
Developed_increase_1	0.016	-0.004	0.016	-0.004	0.016*	-0.004	0.020*	-0.006	0.020*	-0.006	0.020*	-0.006
	(0.010)	(0.006)	(0.010)	(0.004)	(0.010)	(0.006)	(0.011)	(0.007)	(0.011)	(0.005)	(0.011)	(0.006)
Developed_decrease_1	-0.004	0.003	-0.004	0.003*	-0.004	0.003	-0.003	0.003	-0.003	0.003	-0.003	0.003
	(0.005)	(0.003)	(0.004)	(0.002)	(0.004)	(0.003)	(0.006)	(0.003)	(0.004)	(0.002)	(0.005)	(0.003)
Low_1	-0.187***	0.032*	-0.187***	0.032	-0.187***	0.032	-0.186***	0.037*	-0.186***	0.037	-0.186***	0.037
	(0.037)	(0.019)	(0.040)	(0.020)	(0.036)	(0.024)	(0.036)	(0.020)	(0.040)	(0.023)	(0.037)	(0.026)
K_open_1	0.001	0.004	0.001	0.004	0.001	0.004	-0.001	0.005	-0.001	0.005	-0.001	0.005
	(0.012)	(0.007)	(0.011)	(0.007)	(0.013)	(0.008)	(0.012)	(0.008)	(0.012)	(0.008)	(0.014)	(0.009)
Trade_1	0.001	-0.001**	0.001	-0.001**	0.001	-0.001***	0.001	-0.001**	0.001	-0.001**	0.001	-0.001***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)	(0.000)	(0.000)	(0.000)	(0.001)	(0.000)	(0.001)	(0.000)
log(GDP)_1	0.002	0.012	0.002	0.012	0.002	0.012	0.003	0.013	0.003	0.013	0.003	0.013
	(0.017)	(0.009)	(0.017)	(0.010)	(0.019)	(0.010)	(0.018)	(0.010)	(0.017)	(0.012)	(0.020)	(0.011)
Growth_1	0.003	-0.001	0.003	-0.001	0.003	-0.001	0.002	-0.001	0.002	-0.001	0.002	-0.001
	(0.003)	(0.002)	(0.002)	(0.002)	(0.004)	(0.001)	(0.003)	(0.002)	(0.003)	(0.002)	(0.004)	(0.002)
Gconsump_1	0.004	-0.004*	0.004	-0.004**	0.004	-0.004**	0.003	-0.004*	0.003	-0.004**	0.003	-0.004**
	(0.004)	(0.002)	(0.004)	(0.002)	(0.004)	(0.002)	(0.004)	(0.002)	(0.004)	(0.002)	(0.004)	(0.002)
Legislative_1	0.001	0.005	0.001	0.005	0.001	0.005	0.008	0.003	0.008	0.003	0.008	0.003
	(0.035)	(0.020)	(0.027)	(0.019)	(0.038)	(0.019)	(0.037)	(0.021)	(0.028)	(0.021)	(0.040)	(0.020)

European	0.069	0.069**	0.069	0.069**	0.069	0.069**	0.073	0.069*	0.073*	0.069*	0.073	0.069**
	(0.049)	(0.035)	(0.043)	(0.035)	(0.045)	(0.031)	(0.050)	(0.036)	(0.044)	(0.036)	(0.051)	(0.034)
N_obs	558	558	558	558	558	558	558	558	558	558	558	558
Log-Likelihood	-359.87	-359.87	-359.87	-359.87	-359.87	-359.87	-360.20	-360.20	-360.20	-360.20	-360.20	-360.20
Pseudo R2	0.069	0.069	0.069	0.069	0.069	0.069						

Note: *** p<0.01, ** p<0.05, * p<0.1

A.IV.13 Corporate TSR Interactions between Developed and Emerging Market Countries (Contemporaneously), Table 3.5.3 (b), Section 1, Developed Countries as Dependent Variables

	MLogit robust Decrease	**MLogit robust Increase**	**MLogit cluster by year Decrease**	**MLogit cluster by year Increase**	**MLogit cluster by id Decrease**	**MLogit cluster by id Increase**	**MProbit robust Decrease**	**MProbit robust Increase**	**MProbit cluster by year Decrease**	**MProbit cluster by year Increase**	**MProbit cluster by id Decrease**	**MProbit cluster by id Increase**
Emg_increase	-0.030**	-0.007	-0.030**	-0.007	-0.030***	-0.007*	-0.030**	-0.009*	-0.030**	-0.009*	-0.030**	-0.009*
	(0.014)	(0.004)	(0.013)	(0.004)	(0.011)	(0.004)	(0.014)	(0.005)	(0.013)	(0.005)	(0.011)	(0.005)
Emg_decrease	0.018**	-0.001	0.018*	-0.001	0.018**	-0.001	0.017*	0.000	0.017	0.000	0.017*	0.000
	(0.009)	(0.002)	(0.010)	(0.002)	(0.009)	(0.002)	(0.009)	(0.003)	(0.011)	(0.003)	(0.009)	(0.002)
Low_1	-0.050*	0.027***	-0.050*	0.027***	-0.050	0.027***	-0.050*	0.032***	-0.050*	0.032***	-0.050	0.032***
	(0.030)	(0.010)	(0.028)	(0.010)	(0.037)	(0.008)	(0.030)	(0.011)	(0.029)	(0.011)	(0.036)	(0.008)
K_open_1	0.002	-0.004	0.002	-0.004	0.002	-0.004	0.000	-0.005	0.000	-0.005	0.000	-0.005
	(0.014)	(0.004)	(0.014)	(0.003)	(0.016)	(0.004)	(0.014)	(0.004)	(0.013)	(0.004)	(0.016)	(0.004)
Trade_1	0.001***	-0.001***	0.001***	-0.001***	0.001***	-0.001***	0.001***	-0.001***	0.001***	-0.001***	0.001***	-0.001***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
log(GDP)_1	0.021*	-0.003	0.021*	-0.003	0.021	-0.003	0.021*	-0.003	0.021**	-0.003	0.021	-0.003
	(0.011)	(0.003)	(0.011)	(0.003)	(0.019)	(0.002)	(0.011)	(0.003)	(0.011)	(0.004)	(0.020)	(0.003)
Growth_1	0.000	-0.001	0.000	-0.001	0.000	-0.001	-0.000	-0.002	-0.000	-0.002	-0.000	-0.002
	(0.006)	(0.001)	(0.005)	(0.001)	(0.006)	(0.002)	(0.006)	(0.001)	(0.005)	(0.001)	(0.005)	(0.002)
Gconsump_1	0.013***	0.001	0.013***	0.001	0.013***	0.001*	0.013***	0.001	0.013***	0.001	0.013***	0.001
	(0.004)	(0.001)	(0.003)	(0.001)	(0.005)	(0.001)	(0.004)	(0.001)	(0.003)	(0.001)	(0.005)	(0.001)
Legislative_1	-0.056*	0.010	-0.056**	0.010	-0.056**	0.010	-0.054*	0.012	-0.054**	0.012	-0.054*	0.012
	(0.030)	(0.009)	(0.026)	(0.009)	(0.028)	(0.009)	(0.030)	(0.011)	(0.026)	(0.012)	(0.029)	(0.012)

European	-0.101**	-0.007	-0.101***	-0.007	-0.101*	-0.007	-0.103***	-0.007	-0.103***	-0.007	-0.103*	-0.007
	(0.040)	(0.010)	(0.037)	(0.009)	(0.056)	(0.007)	(0.040)	(0.011)	(0.037)	(0.010)	(0.056)	(0.009)
N_obs	794	794	794	794	794	794	794	794	794	794	794	794
Log-Likelihood	-493.37	-493.37	-493.37	-493.37	-493.37	-493.37	-493.97	-493.97	-493.97	-493.97	-493.97	-493.97
Pseudo R2	0.069	0.069	0.069	0.069	0.069	0.069						

Note: *** p<0.01, ** p<0.05, * p<0.1

A.IV.14 Corporate TSR Interactions between Developed and Emerging Market Countries (One-year Lag), Table 3.5.3 (b), Section 2, Developed Countries as Dependent Variables

	MLogit robust Decrease	**MLogit robust Increase**	**MLogit cluster by year Decrease**	**MLogit cluster by year Increase**	**MLogit cluster by id Decrease**	**MLogit cluster by id Increase**	**MProbit robust Decrease**	**MProbit robust Increase**	**MProbit cluster by year Decrease**	**MProbit cluster by year Increase**	**MProbit cluster by id Decrease**	**MProbit cluster by id Increase**
Emg_increase_1	-0.010	0.004	-0.010	0.004	-0.010	0.004	-0.009	0.004	-0.009	0.004	-0.009	0.004
	(0.015)	(0.003)	(0.015)	(0.003)	(0.012)	(0.003)	(0.015)	(0.004)	(0.016)	(0.004)	(0.012)	(0.004)
Emg_decrease_1	0.008	-0.003	0.008	-0.003	0.008	-0.003	0.008	-0.004	0.008	-0.004	0.008	-0.004
	(0.009)	(0.002)	(0.012)	(0.002)	(0.011)	(0.002)	(0.009)	(0.003)	(0.012)	(0.003)	(0.011)	(0.003)
Low_1	-0.046	0.027**	-0.046	0.027**	-0.046	0.027***	-0.047	0.032***	-0.047	0.032***	-0.047	0.032***
	(0.031)	(0.011)	(0.030)	(0.011)	(0.038)	(0.008)	(0.031)	(0.012)	(0.030)	(0.012)	(0.037)	(0.009)
K_open_1	0.003	-0.003	0.003	-0.003	0.003	-0.003	0.002	-0.003	0.002	-0.003	0.002	-0.003
	(0.015)	(0.003)	(0.015)	(0.003)	(0.017)	(0.004)	(0.015)	(0.004)	(0.015)	(0.004)	(0.017)	(0.004)
Trade_1	0.001***	-0.001***	0.001***	-0.001***	0.001***	-0.001***	0.001***	-0.001***	0.001***	-0.001***	0.001***	-0.001***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
log(GDP)_1	0.021*	-0.004	0.021*	-0.004	0.021	-0.004**	0.021*	-0.004	0.021*	-0.004	0.021	-0.004*
	(0.012)	(0.002)	(0.011)	(0.003)	(0.020)	(0.002)	(0.012)	(0.003)	(0.011)	(0.004)	(0.020)	(0.003)
Growth_1	0.001	-0.001	0.001	-0.001	0.001	-0.001	0.000	-0.001	0.000	-0.001	0.000	-0.001
	(0.006)	(0.001)	(0.005)	(0.001)	(0.006)	(0.002)	(0.006)	(0.001)	(0.005)	(0.001)	(0.006)	(0.002)
Gconsump_1	0.012***	0.001	0.012***	0.001	0.012***	0.001*	0.012***	0.001	0.012***	0.001	0.012**	0.001*
	(0.004)	(0.001)	(0.003)	(0.001)	(0.005)	(0.001)	(0.004)	(0.001)	(0.004)	(0.001)	(0.005)	(0.001)
Legislative_1	-0.063**	0.011	-0.063**	0.011	-0.063**	0.011	-0.061**	0.013	-0.061**	0.013	-0.061**	0.013

	(0.031)	(0.009)	(0.027)	(0.010)	(0.029)	(0.010)	(0.031)	(0.010)	(0.028)	(0.012)	(0.030)	(0.012)
European	-0.099**	-0.006	-0.099***	-0.006	-0.099*	-0.006	-0.101**	-0.007	-0.101***	-0.007	-0.101*	-0.007
	(0.041)	(0.010)	(0.037)	(0.009)	(0.055)	(0.007)	(0.041)	(0.012)	(0.038)	(0.011)	(0.056)	(0.009)
N_obs	770	770	770	770	770	770	770	770	770	770	770	770
Log-Likelihood	-481.72	-481.72	-481.72	-481.72	-481.72	-481.72	-482.56	-482.56	-482.56	-482.56	-482.56	-482.56
Pseudo R2	0.059	0.059	0.059	0.059	0.059	0.059						

Note: *** p<0.01, ** p<0.05, * p<0.1

A.IV.15 Corporate TSR Interactions between Big and Small Countries (Contemporaneously), Table 3.5.4 (a), Section 1, Big Countries as Dependent Variables

	MLogit robust Decrease	**MLogit robust Increase**	**MLogit cluster by year Decrease**	**MLogit cluster by year Increase**	**MLogit cluster by id Decrease**	**MLogit cluster by id Increase**	**MProbit robust Decrease**	**MProbit robust Increase**	**MProbit cluster by year Decrease**	**MProbit cluster by year Increase**	**MProbit cluster by id Decrease**	**MProbit cluster by id Increase**
Small_increase	0.005	-0.004	0.005	-0.004	0.005	-0.004	0.005	-0.004	0.005	-0.004	0.005	-0.004
	(0.008)	(0.004)	(0.010)	(0.003)	(0.009)	(0.004)	(0.008)	(0.004)	(0.010)	(0.004)	(0.009)	(0.004)
Small_decrease	0.002	0.001	0.002	0.001	0.002	0.001	0.002	0.001	0.002	0.001	0.002	0.001
	(0.003)	(0.002)	(0.003)	(0.002)	(0.003)	(0.001)	(0.003)	(0.002)	(0.004)	(0.002)	(0.003)	(0.001)
Low_1	-0.055	0.050**	-0.055*	0.050*	-0.055	0.050**	-0.056	0.054**	-0.056*	0.054**	-0.056	0.054**
	(0.039)	(0.023)	(0.032)	(0.027)	(0.058)	(0.023)	(0.039)	(0.024)	(0.031)	(0.027)	(0.055)	(0.023)
K_open_1	0.000	0.001	0.000	0.001	0.000	0.001	-0.001	0.002	-0.001	0.002	-0.001	0.002
	(0.021)	(0.011)	(0.020)	(0.010)	(0.027)	(0.011)	(0.020)	(0.011)	(0.019)	(0.010)	(0.027)	(0.011)
Trade_1	0.001	-0.001**	0.001	-0.001*	0.001	-0.001***	0.001	-0.001**	0.001	-0.001*	0.001	-0.001***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.000)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.000)
log(GDP)_1	0.003	-0.014	0.003	-0.014	0.003	-0.014	0.006	-0.017	0.006	-0.017	0.006	-0.017
	(0.022)	(0.013)	(0.022)	(0.014)	(0.036)	(0.012)	(0.023)	(0.014)	(0.023)	(0.014)	(0.038)	(0.012)
Growth_1	0.001	-0.002	0.001	-0.002	0.001	-0.002	0.001	-0.002	0.001	-0.002	0.001	-0.002
	(0.006)	(0.002)	(0.007)	(0.002)	(0.008)	(0.002)	(0.006)	(0.002)	(0.007)	(0.002)	(0.008)	(0.003)
Gconsump_1	0.005	-0.001	0.005	-0.001	0.005	-0.001	0.005	-0.001	0.005	-0.001	0.005	-0.001
	(0.005)	(0.002)	(0.005)	(0.002)	(0.007)	(0.002)	(0.005)	(0.002)	(0.005)	(0.002)	(0.007)	(0.002)

Legislative_1	-0.057	0.016	-0.057	0.016	-0.057	0.016	-0.058	0.017	-0.058	0.017	-0.058	0.017
	(0.039)	(0.019)	(0.040)	(0.019)	(0.038)	(0.022)	(0.038)	(0.021)	(0.040)	(0.021)	(0.038)	(0.025)
European	-0.046	0.015	-0.046	0.015	-0.046	0.015	-0.051	0.017	-0.051	0.017	-0.051	0.017
	(0.047)	(0.020)	(0.044)	(0.014)	(0.080)	(0.016)	(0.045)	(0.021)	(0.042)	(0.014)	(0.076)	(0.017)
Emerging	0.027	0.030	0.027	0.030	0.027	0.030	0.029	0.038	0.029	0.038	0.029	0.038
	(0.069)	(0.035)	(0.071)	(0.041)	(0.091)	(0.026)	(0.068)	(0.039)	(0.069)	(0.045)	(0.090)	(0.027)
N_obs	538	538	538	538	538	538	538	538	538	538	538	538
Log-Likelihood	-386.97	-386.97	-386.97	-386.97	-386.97	-386.97	-387.01	-387.01	-387.01	-387.01	-387.01	-387.01
Pseudo R2	0.038	0.038	0.038	0.038	0.038	0.038						

Note: *** p<0.01, ** p<0.05, * p<0.1

A.IV.16 Corporate TSR Interactions between Big and Small Countries (One-year Lag), Table 3.5.4 (a), Section 2, Big Countries as Dependent Variables

	MLogit robust Decrease	**MLogit robust Increase**	**MLogit cluster by year Decrease**	**MLogit cluster by year Increase**	**MLogit cluster by id Decrease**	**MLogit cluster by id Increase**	**MProbit robust Decrease**	**MProbit robust Increase**	**MProbit cluster by year Decrease**	**MProbit cluster by year Increase**	**MProbit cluster by id Decrease**	**MProbit cluster by id Increase**
Small_increase_1	0.005	0.007	0.005	0.007	0.005	0.007	0.005	0.009*	0.005	0.009*	0.005	0.009
	(0.009)	(0.004)	(0.011)	(0.005)	(0.010)	(0.005)	(0.009)	(0.005)	(0.010)	(0.005)	(0.010)	(0.005)
Small_decrease_1	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001
	(0.003)	(0.001)	(0.003)	(0.001)	(0.005)	(0.002)	(0.003)	(0.001)	(0.003)	(0.002)	(0.004)	(0.002)
Low_1	-0.059	0.036*	-0.059*	0.036	-0.059	0.036**	-0.061	0.040*	-0.061*	0.040*	-0.061	0.040**
	(0.040)	(0.021)	(0.032)	(0.023)	(0.059)	(0.018)	(0.039)	(0.022)	(0.031)	(0.024)	(0.057)	(0.019)
K_open_1	0.010	0.007	0.010	0.007	0.010	0.007	0.009	0.009	0.009	0.009	0.009	0.009
	(0.023)	(0.011)	(0.022)	(0.012)	(0.029)	(0.010)	(0.022)	(0.011)	(0.021)	(0.012)	(0.028)	(0.010)
Trade_1	0.000	-0.001	0.000	-0.001	0.000	-0.001*	0.000	-0.001	0.000	-0.001	0.000	-0.001*
	(0.001)	(0.000)	(0.001)	(0.001)	(0.001)	(0.000)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.000)
log(GDP)_1	-0.000	-0.006	-0.000	-0.006	-0.000	-0.006	0.003	-0.009	0.003	-0.009	0.003	-0.009
	(0.023)	(0.012)	(0.022)	(0.013)	(0.040)	(0.012)	(0.025)	(0.013)	(0.023)	(0.013)	(0.042)	(0.012)
Growth_1	0.004	-0.001	0.004	-0.001	0.004	-0.001	0.004	-0.001	0.004	-0.001	0.004	-0.001
	(0.006)	(0.002)	(0.007)	(0.002)	(0.009)	(0.003)	(0.006)	(0.002)	(0.007)	(0.002)	(0.009)	(0.003)
Gconsump_1	0.005	-0.002	0.005	-0.002	0.005	-0.002	0.005	-0.002	0.005	-0.002	0.005	-0.002
	(0.005)	(0.002)	(0.005)	(0.002)	(0.007)	(0.002)	(0.005)	(0.002)	(0.005)	(0.002)	(0.007)	(0.002)

Legislative_1	-0.065	0.016	-0.065	0.016	-0.065*	0.016	-0.064	0.017	-0.064	0.017	-0.064	0.017
	(0.040)	(0.019)	(0.040)	(0.018)	(0.039)	(0.022)	(0.039)	(0.020)	(0.040)	(0.020)	(0.039)	(0.025)
European	-0.049	0.019	-0.049	0.019	-0.049	0.019	-0.054	0.021	-0.054	0.021	-0.054	0.021
	(0.048)	(0.020)	(0.046)	(0.015)	(0.083)	(0.015)	(0.046)	(0.021)	(0.044)	(0.015)	(0.079)	(0.016)
Emerging	0.031	0.074	0.031	0.074	0.031	0.074**	0.031	0.086*	0.031	0.086	0.031	0.086***
	(0.075)	(0.049)	(0.077)	(0.064)	(0.103)	(0.029)	(0.073)	(0.051)	(0.074)	(0.067)	(0.101)	(0.030)
N_obs	521	521	521	521	521	521	521	521	521	521	521	521
Log-Likelihood	-371.36	-371.36	-371.36	-371.36	-371.36	-371.36	-370.72	-370.72	-370.72	-370.72	-370.72	-370.72
Pseudo R2	0.047	0.047	0.047	0.047	0.047	0.047						

Note: *** p<0.01, ** p<0.05, * p<0.1

A.IV.17 Corporate TSR Interactions between Big and Small Countries (Contemporaneously), Table 3.5.4 (a), Section 1, Small Countries as Dependent Variables

	MLogit robust Decrease	**MLogit robust Increase**	**MLogit cluster by year Decrease**	**MLogit cluster by year Increase**	**MLogit cluster by id Decrease**	**MLogit cluster by id Increase**	**MProbit robust Decrease**	**MProbit robust Increase**	**MProbit cluster by year Decrease**	**MProbit cluster by year Increase**	**MProbit cluster by id Decrease**	**MProbit cluster by id Increase**
Big_increase	0.017***	-0.003	0.017***	-0.003	0.017***	-0.003	0.017***	-0.003	0.017***	-0.003	0.017***	-0.003
	(0.006)	(0.003)	(0.006)	(0.002)	(0.005)	(0.003)	(0.006)	(0.003)	(0.006)	(0.002)	(0.006)	(0.003)
Big_decrease	0.010**	0.001	0.010	0.001	0.010**	0.001	0.010**	0.002	0.010	0.002	0.010**	0.002
	(0.004)	(0.002)	(0.007)	(0.002)	(0.004)	(0.002)	(0.004)	(0.002)	(0.007)	(0.002)	(0.004)	(0.002)
Low_1	-0.117***	0.027***	-0.117***	0.027***	-0.117***	0.027***	-0.122***	0.030***	-0.122***	0.030***	-0.122***	0.030***
	(0.015)	(0.009)	(0.018)	(0.008)	(0.018)	(0.009)	(0.015)	(0.010)	(0.018)	(0.008)	(0.018)	(0.009)
K_open_1	-0.008	0.001	-0.008	0.001	-0.008	0.001	-0.009*	0.001	-0.009*	0.001	-0.009	0.001
	(0.005)	(0.003)	(0.005)	(0.002)	(0.007)	(0.003)	(0.006)	(0.003)	(0.005)	(0.002)	(0.008)	(0.003)
Trade_1	0.001***	-0.000***	0.001***	-0.000***	0.001***	-0.000***	0.001***	-0.000***	0.001***	-0.000***	0.001**	-0.000***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
log(GDP)_1	0.013***	-0.001	0.013***	-0.001	0.013*	-0.001	0.014***	-0.001	0.014***	-0.001	0.014*	-0.001
	(0.005)	(0.003)	(0.004)	(0.002)	(0.007)	(0.002)	(0.005)	(0.003)	(0.004)	(0.003)	(0.007)	(0.003)
Growth_1	0.000	-0.001**	0.000	-0.001*	0.000	-0.001*	0.000	-0.002**	0.000	-0.002*	0.000	-0.002*
	(0.002)	(0.001)	(0.002)	(0.001)	(0.002)	(0.001)	(0.002)	(0.001)	(0.002)	(0.001)	(0.002)	(0.001)
Gconsump_1	0.000	-0.000	0.000	-0.000	0.000	-0.000	0.000	-0.000	0.000	-0.000	0.000	-0.000
	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)	(0.001)

Legislative_1	0.016	0.028***	0.016	0.028**	0.016	0.028***	0.019	0.029***	0.019	0.029**	0.019	0.029***
	(0.018)	(0.010)	(0.014)	(0.011)	(0.018)	(0.009)	(0.019)	(0.011)	(0.015)	(0.012)	(0.019)	(0.009)
European	0.041*	0.005	0.041*	0.005	0.041	0.005	0.048**	0.003	0.048**	0.003	0.048	0.003
	(0.023)	(0.010)	(0.022)	(0.009)	(0.038)	(0.009)	(0.023)	(0.011)	(0.022)	(0.010)	(0.039)	(0.009)
Africa	-0.026	0.003	-0.026	0.003	-0.026	0.003	-0.029	0.004	-0.029*	0.004	-0.029	0.004
	(0.018)	(0.010)	(0.016)	(0.009)	(0.026)	(0.010)	(0.019)	(0.011)	(0.017)	(0.010)	(0.026)	(0.011)
N_obs	2,071	2,071	2,071	2,071	2,071	2,071	2,071	2,071	2,071	2,071	2,071	2,071
Log-Likelihood	-1,151.66	-1,151.66	-1,151.66	-1,151.66	-1,151.66	-1,151.66	-1,150.98	-1,150.98	-1,150.98	-1,150.98	-1,150.98	-1,150.98
Pseudo R2	0.051	0.051	0.051	0.051	0.051	0.051						

Note: *** p<0.01, ** p<0.05, * p<0.1

A.IV.18 Corporate TSR Interactions between Big and Small Countries (One-year Lag), Table 3.5.4 (a), Section 2, Small Countries as Dependent Variables

	MLogit robust Decrease	**MLogit robust Increase**	**MLogit cluster by year Decrease**	**MLogit cluster by year Increase**	**MLogit cluster by id Decrease**	**MLogit cluster by id Increase**	**MProbit robust Decrease**	**MProbit robust Increase**	**MProbit cluster by year Decrease**	**MProbit cluster by year Increase**	**MProbit cluster by id Decrease**	**MProbit cluster by id Increase**
Big_increase_1	-0.008	0.001	-0.008	0.001	-0.008	0.001	-0.008	0.001	-0.008	0.001	-0.008	0.001
	(0.006)	(0.002)	(0.007)	(0.002)	(0.005)	(0.002)	(0.006)	(0.003)	(0.007)	(0.003)	(0.005)	(0.002)
Big_decrease_1	0.005	-0.002	0.005	-0.002	0.005	-0.002	0.005	-0.003	0.005	-0.003	0.005	-0.003
	(0.004)	(0.002)	(0.007)	(0.002)	(0.004)	(0.002)	(0.004)	(0.002)	(0.008)	(0.002)	(0.004)	(0.002)
Low_1	-0.121***	0.029***	-0.121***	0.029***	-0.121***	0.029***	-0.126***	0.033***	-0.126***	0.033***	-0.126***	0.033***
	(0.015)	(0.009)	(0.019)	(0.008)	(0.019)	(0.009)	(0.015)	(0.010)	(0.019)	(0.009)	(0.019)	(0.009)
K_open_1	-0.009	0.001	-0.009*	0.001	-0.009	0.001	-0.011*	0.001	-0.011**	0.001	-0.011	0.001
	(0.006)	(0.002)	(0.005)	(0.002)	(0.007)	(0.002)	(0.006)	(0.003)	(0.005)	(0.002)	(0.008)	(0.003)
Trade_1	0.001***	-0.000***	0.001***	-0.000***	0.001**	-0.000***	0.001***	-0.000***	0.001***	-0.000***	0.001**	-0.000***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
log(GDP)_1	0.012**	0.000	0.012***	0.000	0.012	0.000	0.012**	0.000	0.012***	0.000	0.012	0.000
	(0.005)	(0.003)	(0.004)	(0.002)	(0.007)	(0.002)	(0.005)	(0.003)	(0.004)	(0.003)	(0.008)	(0.003)
Growth_1	-0.000	-0.001	-0.000	-0.001	-0.000	-0.001	-0.000	-0.001	-0.000	-0.001	-0.000	-0.001
	(0.002)	(0.001)	(0.002)	(0.001)	(0.002)	(0.001)	(0.002)	(0.001)	(0.002)	(0.001)	(0.002)	(0.001)
Gconsump_1	-0.000	0.000	-0.000	0.000	-0.000	0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000
	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)	(0.001)	(0.002)	(0.001)	(0.001)	(0.001)	(0.002)	(0.001)

Legislative_1	0.018	0.027***	0.018	0.027***	0.018	0.027***	0.021	0.028**	0.021	0.028**	0.021	0.028***
	(0.019)	(0.010)	(0.014)	(0.010)	(0.019)	(0.009)	(0.020)	(0.011)	(0.015)	(0.011)	(0.019)	(0.010)
European	0.038*	0.002	0.038*	0.002	0.038	0.002	0.044*	0.001	0.044*	0.001	0.044	0.001
	(0.023)	(0.009)	(0.023)	(0.008)	(0.038)	(0.009)	(0.024)	(0.010)	(0.023)	(0.009)	(0.039)	(0.010)
Africa	-0.028	0.004	-0.028*	0.004	-0.028	0.004	-0.032	0.005	-0.032*	0.005	-0.032	0.005
	(0.019)	(0.010)	(0.017)	(0.010)	(0.025)	(0.010)	(0.019)	(0.011)	(0.017)	(0.011)	(0.026)	(0.011)
N_obs	1,997	1,997	1,997	1,997	1,997	1,997	1,997	1,997	1,997	1,997	1,997	1,997
Log-Likelihood	-1,104.20	-1,104.20	-1,104.20	-1,104.20	-1,104.20	-1,104.20	-1,103.55	-1,103.55	-1,103.55	-1,103.55	-1,103.55	-1,103.55
Pseudo R2	0.051	0.051	0.051	0.051	0.051	0.051						

Note: *** p<0.01, ** p<0.05, * p<0.1

A.IV.19 Corporate TSR Interactions between Big Countries and Small European Countries (Contemporaneously), Table 3.5.4 (b), Section 1, Big Countries as Dependent Variables

	MLogit robust Decrease	**MLogit robust Increase**	**MLogit cluster by year Decrease**	**MLogit cluster by year Increase**	**MLogit cluster by id Decrease**	**MLogit cluster by id Increase**	**MProbit robust Decrease**	**MProbit robust Increase**	**MProbit cluster by year Decrease**	**MProbit cluster by year Increase**	**MProbit cluster by id Decrease**	**MProbit cluster by id Increase**
EUSmall_increase	-0.002	-0.011	-0.002	-0.011	-0.002	-0.011	-0.001	-0.011	-0.001	-0.011	-0.001	-0.011
	(0.020)	(0.007)	(0.017)	(0.008)	(0.025)	(0.009)	(0.019)	(0.008)	(0.016)	(0.009)	(0.024)	(0.010)
EUSmall_decrease	0.010	-0.004	0.010	-0.004	0.010*	-0.004	0.010	-0.004	0.010	-0.004	0.010*	-0.004
	(0.007)	(0.004)	(0.007)	(0.004)	(0.006)	(0.004)	(0.008)	(0.004)	(0.007)	(0.004)	(0.006)	(0.004)
Low_1	-0.055	0.050**	-0.055*	0.050*	-0.055	0.050**	-0.056	0.054**	-0.056*	0.054*	-0.056	0.054**
	(0.039)	(0.023)	(0.032)	(0.028)	(0.058)	(0.022)	(0.038)	(0.024)	(0.031)	(0.028)	(0.056)	(0.022)
K_open_1	-0.002	0.004	-0.002	0.004	-0.002	0.004	-0.003	0.005	-0.003	0.005	-0.003	0.005
	(0.021)	(0.011)	(0.021)	(0.011)	(0.027)	(0.011)	(0.020)	(0.011)	(0.020)	(0.011)	(0.026)	(0.011)
Trade_1	0.000	-0.001	0.000	-0.001	0.000	-0.001**	0.000	-0.001*	0.000	-0.001	0.000	-0.001**
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.000)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.000)
log(GDP)_1	-0.005	-0.008	-0.005	-0.008	-0.005	-0.008	-0.003	-0.010	-0.003	-0.010	-0.003	-0.010
	(0.022)	(0.014)	(0.022)	(0.015)	(0.035)	(0.012)	(0.024)	(0.014)	(0.023)	(0.014)	(0.037)	(0.012)
Growth_1	0.001	-0.002	0.001	-0.002	0.001	-0.002	0.000	-0.002	0.000	-0.002	0.000	-0.002
	(0.006)	(0.002)	(0.007)	(0.002)	(0.008)	(0.002)	(0.006)	(0.002)	(0.007)	(0.002)	(0.008)	(0.003)
Gconsump_1	0.005	-0.001	0.005	-0.001	0.005	-0.001	0.005	-0.001	0.005	-0.001	0.005	-0.001
	(0.005)	(0.002)	(0.005)	(0.002)	(0.007)	(0.002)	(0.005)	(0.002)	(0.005)	(0.002)	(0.007)	(0.002)

Legislative_1	-0.058	0.016	-0.058	0.016	-0.058	0.016	-0.058	0.016	-0.058	0.016	-0.058	0.016
	(0.038)	(0.019)	(0.040)	(0.018)	(0.036)	(0.023)	(0.038)	(0.021)	(0.040)	(0.020)	(0.037)	(0.026)
European	-0.049	0.016	-0.049	0.016	-0.049	0.016	-0.054	0.018	-0.054	0.018	-0.054	0.018
	(0.047)	(0.020)	(0.044)	(0.015)	(0.080)	(0.017)	(0.045)	(0.021)	(0.042)	(0.015)	(0.077)	(0.018)
Emerging	0.008	0.054	0.008	0.054	0.008	0.054*	0.011	0.061	0.011	0.061	0.011	0.061*
	(0.067)	(0.047)	(0.070)	(0.055)	(0.088)	(0.032)	(0.067)	(0.047)	(0.069)	(0.054)	(0.088)	(0.032)
N_obs	538	538	538	538	538	538	538	538	538	538	538	538
Log-Likelihood	-385.98	-385.98	-385.98	-385.98	-385.98	-385.98	-386.06	-386.06	-386.06	-386.06	-386.06	-386.06
Pseudo R2	0.041	0.041	0.041	0.041	0.041	0.041						

Note: *** p<0.01, ** p<0.05, * p<0.1

A.IV.20 Corporate TSR Interactions between Big Countries and Small European Countries (One-year Lag), Table 3.5.4 (b), Section 2, Big Countries as Dependent Variables

	MLogit robust Decrease	**MLogit robust Increase**	**MLogit cluster by year Decrease**	**MLogit cluster by year Increase**	**MLogit cluster by id Decrease**	**MLogit cluster by id Increase**	**MProbit robust Decrease**	**MProbit robust Increase**	**MProbit cluster by year Decrease**	**MProbit cluster by year Increase**	**MProbit cluster by id Decrease**	**MProbit cluster by id Increase**
EUSmall_increase_1	-0.040**	0.015*	-0.040**	0.015	-0.040	0.015**	-0.039**	0.018*	-0.039**	0.018	-0.039	0.018**
	(0.020)	(0.009)	(0.017)	(0.011)	(0.025)	(0.007)	(0.019)	(0.009)	(0.017)	(0.012)	(0.024)	(0.007)
EUSmall_decrease_1	-0.011	-0.000	-0.011	-0.000	-0.011	-0.000	-0.010	-0.001	-0.010	-0.001	-0.010	-0.001
	(0.008)	(0.005)	(0.008)	(0.004)	(0.009)	(0.004)	(0.008)	(0.005)	(0.008)	(0.004)	(0.009)	(0.004)
Low_1	-0.053	0.035*	-0.053	0.035	-0.053	0.035*	-0.054	0.037*	-0.054*	0.037	-0.054	0.037*
	(0.040)	(0.021)	(0.033)	(0.022)	(0.058)	(0.018)	(0.039)	(0.022)	(0.032)	(0.023)	(0.057)	(0.019)
K_open_1	0.012	0.003	0.012	0.003	0.012	0.003	0.010	0.005	0.010	0.005	0.010	0.005
	(0.023)	(0.011)	(0.022)	(0.011)	(0.029)	(0.009)	(0.022)	(0.011)	(0.021)	(0.011)	(0.029)	(0.009)
Trade_1	0.000	-0.001*	0.000	-0.001*	0.000	-0.001**	0.000	-0.001	0.000	-0.001	0.000	-0.001**
	(0.001)	(0.000)	(0.001)	(0.000)	(0.001)	(0.000)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.000)
log(GDP)_1	0.001	-0.008	0.001	-0.008	0.001	-0.008	0.002	-0.011	0.002	-0.011	0.002	-0.011
	(0.023)	(0.012)	(0.023)	(0.012)	(0.040)	(0.009)	(0.024)	(0.013)	(0.024)	(0.013)	(0.043)	(0.010)
Growth_1	0.003	-0.002	0.003	-0.002	0.003	-0.002	0.004	-0.002	0.004	-0.002	0.004	-0.002
	(0.006)	(0.002)	(0.007)	(0.002)	(0.008)	(0.002)	(0.006)	(0.002)	(0.007)	(0.003)	(0.008)	(0.003)
Gconsump_1	0.005	-0.002	0.005	-0.002	0.005	-0.002	0.006	-0.002	0.006	-0.002	0.006	-0.002
	(0.005)	(0.002)	(0.005)	(0.002)	(0.007)	(0.002)	(0.005)	(0.002)	(0.005)	(0.002)	(0.007)	(0.002)

Legislative_1	-0.064	0.019	-0.064	0.019	-0.064*	0.019	-0.065*	0.021	-0.065	0.021	-0.065	0.021
	(0.039)	(0.019)	(0.041)	(0.018)	(0.039)	(0.023)	(0.039)	(0.021)	(0.041)	(0.020)	(0.040)	(0.026)
European	-0.052	0.019	-0.052	0.019	-0.052	0.019	-0.057	0.021	-0.057	0.021	-0.057	0.021
	(0.048)	(0.020)	(0.045)	(0.015)	(0.081)	(0.015)	(0.046)	(0.021)	(0.044)	(0.016)	(0.077)	(0.016)
Emerging	0.046	0.049	0.046	0.049	0.046	0.049**	0.038	0.067	0.038	0.067	0.038	0.067***
	(0.078)	(0.042)	(0.081)	(0.051)	(0.110)	(0.023)	(0.074)	(0.046)	(0.077)	(0.058)	(0.106)	(0.026)
N_obs	521	521	521	521	521	521	521	521	521	521	521	521
Log-Likelihood	-370.04	-370.04	-370.04	-370.04	-370.04	-370.04	-369.76	-369.76	-369.76	-369.76	-369.76	-369.76
Pseudo R2	0.050	0.050	0.050	0.050	0.050	0.050						

Note: *** p<0.01, ** p<0.05, * p<0.1

A.IV.21 Corporate TSR Interactions between Big Countries and Small European Countries (Contemporaneously), Table 3.5.4 (b), Section 1, Small European Countries as Dependent Variables

	MLogit robust Decrease	**MLogit robust Increase**	**MLogit cluster by year Decrease**	**MLogit cluster by year Increase**	**MLogit cluster by id Decrease**	**MLogit cluster by id Increase**	**MProbit robust Decrease**	**MProbit robust Increase**	**MProbit cluster by year Decrease**	**MProbit cluster by year Increase**	**MProbit cluster by id Decrease**	**MProbit cluster by id Increase**
Big_increase	-0.014	-0.008	-0.014	-0.008*	-0.014	-0.008	-0.017	-0.008	-0.017	-0.008*	-0.017	-0.008
	(0.016)	(0.006)	(0.016)	(0.004)	(0.016)	(0.007)	(0.016)	(0.007)	(0.016)	(0.005)	(0.014)	(0.008)
Big_decrease	0.025**	-0.002	0.025**	-0.002	0.025**	-0.002	0.023**	-0.002	0.023**	-0.002	0.023**	-0.002
	(0.010)	(0.004)	(0.010)	(0.003)	(0.011)	(0.004)	(0.010)	(0.004)	(0.010)	(0.003)	(0.011)	(0.004)
Low_1	-0.108***	0.039***	-0.108**	0.039***	-0.108***	0.039***	-0.105***	0.044***	-0.105**	0.044***	-0.105***	0.044***
	(0.037)	(0.015)	(0.044)	(0.013)	(0.037)	(0.015)	(0.038)	(0.015)	(0.043)	(0.013)	(0.038)	(0.014)
K_open_1	0.017	-0.009	0.017*	-0.009	0.017*	-0.009	0.017	-0.010*	0.017*	-0.010*	0.017*	-0.010
	(0.012)	(0.006)	(0.010)	(0.006)	(0.010)	(0.007)	(0.013)	(0.006)	(0.010)	(0.006)	(0.010)	(0.007)
Trade_1	-0.001	-0.000	-0.001*	-0.000	-0.001	-0.000	-0.001	-0.000	-0.001*	-0.000	-0.001	-0.000
	(0.001)	(0.000)	(0.001)	(0.000)	(0.001)	(0.000)	(0.001)	(0.000)	(0.001)	(0.000)	(0.001)	(0.000)
log(GDP)_1	-0.010	0.002	-0.010	0.002	-0.010	0.002	-0.008	0.002	-0.008	0.002	-0.008	0.002
	(0.016)	(0.006)	(0.016)	(0.006)	(0.018)	(0.005)	(0.016)	(0.006)	(0.016)	(0.006)	(0.018)	(0.005)
Growth_1	0.001	-0.000	0.001	-0.000	0.001	-0.000	0.001	-0.001	0.001	-0.001	0.001	-0.001
	(0.005)	(0.002)	(0.004)	(0.001)	(0.005)	(0.002)	(0.005)	(0.002)	(0.003)	(0.001)	(0.005)	(0.002)
Gconsump_1	0.000	0.002	0.000	0.002	0.000	0.002*	-0.001	0.002	-0.001	0.002	-0.001	0.002
	(0.005)	(0.002)	(0.005)	(0.001)	(0.004)	(0.001)	(0.005)	(0.002)	(0.005)	(0.002)	(0.004)	(0.002)

Legislative_1	-0.028	0.001	-0.028	0.001	-0.028	0.001	-0.023	-0.000	-0.023	-0.000	-0.023	-0.000
	(0.036)	(0.014)	(0.030)	(0.018)	(0.039)	(0.012)	(0.038)	(0.015)	(0.032)	(0.019)	(0.042)	(0.014)
Emerging	0.082*	-0.011	0.082	-0.011	0.082*	-0.011	0.077	-0.007	0.077	-0.007	0.077*	-0.007
	(0.050)	(0.015)	(0.067)	(0.016)	(0.046)	(0.017)	(0.048)	(0.016)	(0.066)	(0.017)	(0.045)	(0.019)
N_obs	502	502	502	502	502	502	502	502	502	502	502	502
Log-Likelihood	-299.78	-299.78	-299.78	-299.78	-299.78	-299.78	-300.41	-300.41	-300.41	-300.41	-300.41	-300.41
Pseudo R2	0.060	0.060	0.060	0.060	0.060	0.060						

Note: *** p<0.01, ** p<0.05, * p<0.1

A.IV.22 Corporate TSR Interactions between Big Countries and Small European Countries (One-year Lag), Table 3.5.4 (b), Section 2, Small European Countries as Dependent Variables

	MLogit robust Decrease	**MLogit robust Increase**	**MLogit cluster by year Decrease**	**MLogit cluster by year Increase**	**MLogit cluster by id Decrease**	**MLogit cluster by id Increase**	**MProbit robust Decrease**	**MProbit robust Increase**	**MProbit cluster by year Decrease**	**MProbit cluster by year Increase**	**MProbit cluster by id Decrease**	**MProbit cluster by id Increase**
Big_increase_1	-0.022*	0.006	-0.022	0.006**	-0.022*	0.006	-0.022*	0.007	-0.022	0.007**	-0.022*	0.007
	(0.013)	(0.005)	(0.017)	(0.003)	(0.013)	(0.005)	(0.013)	(0.005)	(0.018)	(0.003)	(0.013)	(0.006)
Big_decrease_1	0.005	-0.000	0.005	-0.000	0.005	-0.000	0.005	0.000	0.005	0.000	0.005	0.000
	(0.008)	(0.004)	(0.010)	(0.003)	(0.007)	(0.004)	(0.008)	(0.004)	(0.010)	(0.003)	(0.008)	(0.004)
Low_1	-0.108***	0.043***	-0.108**	0.043***	-0.108***	0.043***	-0.105***	0.046***	-0.105**	0.046***	-0.105***	0.046***
	(0.039)	(0.015)	(0.046)	(0.011)	(0.038)	(0.014)	(0.038)	(0.015)	(0.046)	(0.012)	(0.039)	(0.013)
K_open_1	0.016	-0.007	0.016	-0.007	0.016*	-0.007	0.017	-0.008	0.017	-0.008	0.017*	-0.008
	(0.013)	(0.005)	(0.010)	(0.006)	(0.009)	(0.007)	(0.013)	(0.006)	(0.010)	(0.006)	(0.010)	(0.007)
Trade_1	-0.001	-0.000	-0.001*	-0.000	-0.001	-0.000	-0.001	-0.000	-0.001	-0.000	-0.001	-0.000
	(0.001)	(0.000)	(0.001)	(0.000)	(0.001)	(0.000)	.	(0.000)	.	(0.000)	.	(0.000)
log(GDP)_1	-0.007	0.003	-0.007	0.003	-0.007	0.003	-0.006	0.004	-0.006	0.004	-0.006	0.004
	(0.017)	(0.005)	(0.016)	(0.004)	(0.020)	(0.004)	(0.017)	(0.006)	(0.016)	(0.005)	(0.020)	(0.004)
Growth_1	0.003	-0.000	0.003	-0.000	0.003	-0.000	0.002	0.000	0.002	0.000	0.002	0.000
	(0.005)	(0.001)	(0.004)	(0.001)	(0.004)	(0.002)	(0.005)	(0.001)	(0.004)	(0.001)	(0.004)	(0.002)
Gconsump_1	0.000	0.003	0.000	0.003*	0.000	0.003**	-0.001	0.003*	-0.001	0.003*	-0.001	0.003**
	(0.005)	(0.002)	(0.005)	(0.002)	(0.005)	(0.001)	(0.005)	(0.002)	(0.005)	(0.002)	(0.005)	(0.001)

Legislative_1	-0.028	-0.000	-0.028	-0.000	-0.028	-0.000	-0.024	-0.004	-0.024	-0.004	-0.024	-0.004
	(0.037)	(0.014)	(0.028)	(0.017)	(0.043)	(0.014)	(0.038)	(0.014)	(0.030)	(0.019)	(0.045)	(0.014)
Emerging	0.055	-0.007	0.055	-0.007	0.055	-0.007	0.048	-0.005	0.048	-0.005	0.048	-0.005
	(0.049)	(0.014)	(0.062)	(0.015)	(0.044)	(0.016)	(0.047)	(0.015)	(0.061)	(0.016)	(0.044)	(0.018)
N_obs	485	485	485	485	485	485	485	485	485	485	485	485
Log-Likelihood	-288.19	-288.19	-288.19	-288.19	-288.19	-288.19	-288.51	-288.51	-288.51	-288.51	-288.51	-288.51
Pseudo R2	0.049	0.049	0.049	0.049	0.049	0.049						

Note: *** p<0.01, ** p<0.05, * p<0.1

A.IV.23 Corporate TSR Interactions between Tax Haven and Non-Tax Haven Countries (Contemporaneously), Table 3.5.5, Section 1, Tax Haven Countries as Dependent Variables

	MLogit robust Decrease	**MLogit robust Increase**	**MLogit cluster by year Decrease**	**MLogit cluster by year Increase**	**MLogit cluster by id Decrease**	**MLogit cluster by id Increase**	**MProbit robust Decrease**	**MProbit robust Increase**	**MProbit cluster by year Decrease**	**MProbit cluster by year Increase**	**MProbit cluster by id Decrease**	**MProbit cluster by id Increase**
NonHaven_increase	0.007	0.001	0.007	0.001	0.007	0.001	0.007	0.001	0.007	0.001	0.007	0.001
	(0.007)	(0.001)	(0.008)	(0.001)	(0.005)	(0.001)	(0.008)	(0.001)	(0.008)	(0.001)	(0.006)	(0.001)
NonHaven_decrease	0.004	0.000	0.004	0.000	0.004	0.000	0.004	0.000	0.004	0.000	0.004	0.000
	(0.002)	(0.000)	(0.002)	(0.000)	(0.003)	(0.000)	(0.003)	(0.000)	(0.003)	(0.000)	(0.003)	(0.000)
Low_1	-0.135***	-0.003	-0.135***	-0.003	-0.135***	-0.003	-0.139***	-0.001	-0.139***	-0.001	-0.139***	-0.001
	(0.043)	(0.003)	(0.046)	(0.004)	(0.035)	(0.003)	(0.043)	(0.002)	(0.046)	(0.002)	(0.039)	(0.002)
K_open_1	-0.023	-0.001	-0.023	-0.001	-0.023*	-0.001	-0.025	-0.001	-0.025	-0.001	-0.025*	-0.001
	(0.016)	(0.002)	(0.019)	(0.003)	(0.013)	(0.002)	(0.017)	(0.001)	(0.020)	(0.001)	(0.013)	(0.001)
Trade_1	0.001**	-0.000	0.001**	-0.000	0.001***	-0.000	0.001**	-0.000	0.001**	-0.000	0.001***	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
log(GDP)_1	0.045**	0.002	0.045*	0.002	0.045***	0.002	0.051***	0.001	0.051**	0.001	0.051***	0.001
	(0.019)	(0.002)	(0.025)	(0.002)	(0.015)	(0.002)	(0.020)	(0.001)	(0.025)	(0.001)	(0.015)	(0.001)
Growth_1	0.003	-0.000	0.003	-0.000	0.003	-0.000	0.003	-0.000	0.003	-0.000*	0.003	-0.000
	(0.003)	(0.000)	(0.003)	(0.000)	(0.003)	(0.000)	(0.003)	(0.000)	(0.003)	(0.000)	(0.004)	(0.000)
Gconsump_1	0.000	-0.000	0.000	-0.000	0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000
	(0.007)	(0.001)	(0.007)	(0.001)	(0.008)	(0.001)	(0.007)	(0.000)	(0.007)	(0.000)	(0.008)	(0.000)

Legislative_1	-0.031	0.002	-0.031	0.002	-0.031	0.002	-0.039	0.002	-0.039	0.002	-0.039	0.002
	(0.035)	(0.005)	(0.028)	(0.005)	(0.032)	(0.004)	(0.037)	(0.004)	(0.028)	(0.004)	(0.035)	(0.003)
European	-0.087***	-0.001	-0.087***	-0.001	-0.087***	-0.001	-0.090***	0.000	-0.090**	0.000	-0.090**	0.000
	(0.031)	(0.003)	(0.032)	(0.003)	(0.034)	(0.003)	(0.034)	(0.002)	(0.035)	(0.002)	(0.038)	(0.002)
Africa	0.014	-0.006	0.014	-0.006	0.014	-0.006	0.021	-0.006	0.021	-0.006	0.021	-0.006
	(0.103)	(0.007)	(0.099)	(0.007)	(0.090)	(0.007)	(0.100)	(0.005)	(0.095)	(0.006)	(0.091)	(0.006)
N_obs	281	281	281	281	281	281	281	281	281	281	281	281
Log-Likelihood	-111.26	-111.26	-111.26	-111.26	-111.26	-111.26	-111.24	-111.24	-111.24	-111.24	-111.24	-111.24
Pseudo R2	0.157	0.157	0.157	0.157	0.157	0.157						

Note: *** p<0.01, ** p<0.05, * p<0.1

A.IV.24 Corporate TSR Interactions between Tax Haven and Non-Tax Haven Countries (One-year Lag), Table 3.5.5, Section 2, Tax Haven Countries as Dependent Variables

	MLogit robust Decrease	**MLogit robust Increase**	**MLogit cluster by year Decrease**	**MLogit cluster by year Increase**	**MLogit cluster by id Decrease**	**MLogit cluster by id Increase**	**MProbit robust Decrease**	**MProbit robust Increase**	**MProbit cluster by year Decrease**	**MProbit cluster by year Increase**	**MProbit cluster by id Decrease**	**MProbit cluster by id Increase**
NonHaven_increase_1	-0.004	0.000	-0.004	0.000	-0.004	0.000	-0.005	0.000	-0.005	0.000	-0.005	0.000
	(0.008)	(0.001)	(0.007)	(0.001)	(0.006)	(0.001)	(0.008)	(0.000)	(0.008)	(0.000)	(0.006)	(0.000)
NonHaven_decrease_1	0.003	-0.000	0.003	-0.000	0.003	-0.000	0.003	-0.000	0.003	-0.000	0.003	-0.000
	(0.003)	(0.000)	(0.003)	(0.000)	(0.003)	(0.000)	(0.003)	(0.000)	(0.003)	(0.000)	(0.003)	(0.000)
Low_1	-0.139***	-0.000	-0.139***	-0.000	-0.139***	-0.000	-0.140***	0.000	-0.140***	0.000	-0.140***	0.000
	(0.047)	(0.006)	(0.050)	(0.006)	(0.038)	(0.005)	(0.046)	(0.000)	(0.049)	(0.000)	(0.042)	(0.000)
K_open_1	-0.025	-0.000	-0.025	-0.000	-0.025*	-0.000	-0.027	-0.000	-0.027	-0.000	-0.027*	-0.000
	(0.017)	(0.001)	(0.019)	(0.001)	(0.014)	(0.002)	(0.018)	(0.000)	(0.020)	(0.000)	(0.014)	(0.000)
Trade_1	0.001***	-0.000**	0.001**	-0.000**	0.001***	-0.000**	0.001***	-0.000	0.001**	-0.000	0.001***	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
log(GDP)_1	0.041**	0.000	0.041*	0.000	0.041***	0.000	0.048**	-0.000	0.048*	-0.000	0.048***	-0.000
	(0.020)	(0.001)	(0.025)	(0.001)	(0.015)	(0.001)	(0.021)	(0.000)	(0.026)	(0.000)	(0.016)	(0.000)
Growth_1	0.003	-0.000	0.003	-0.000	0.003	-0.000	0.004	-0.000	0.004	-0.000	0.004	-0.000
	(0.003)	(0.000)	(0.003)	(0.000)	(0.003)	(0.000)	(0.003)	(0.000)	(0.003)	(0.000)	(0.003)	(0.000)
Gconsump_1	-0.001	-0.000	-0.001	-0.000	-0.001	-0.000	-0.001	-0.000	-0.001	-0.000	-0.001	-0.000
	(0.006)	(0.001)	(0.007)	(0.001)	(0.007)	(0.001)	(0.007)	(0.000)	(0.007)	(0.000)	(0.007)	(0.000)

Legislative_1	-0.032	0.008	-0.032	0.008	-0.032	0.008	-0.038	0.000	-0.038	0.000	-0.038	0.000
	(0.035)	(0.006)	(0.029)	(0.006)	(0.029)	(0.005)	(0.039)	(0.000)	(0.030)	(0.000)	(0.033)	(0.000)
European	-0.088***	0.002	-0.088**	0.002	-0.088**	0.002	-0.091**	0.000	-0.091**	0.000	-0.091**	0.000
	(0.033)	(0.005)	(0.034)	(0.004)	(0.036)	(0.006)	(0.036)	(0.000)	(0.038)	(0.000)	(0.040)	(0.000)
Africa	0.044	-0.008	0.044	-0.008	0.044	-0.008	0.037	-0.008	0.037	-0.008	0.037	-0.008
	(0.133)	(0.008)	(0.126)	(0.008)	(0.113)	(0.007)	(0.117)	(0.006)	(0.108)	(0.006)	(0.102)	(0.005)
N_obs	271	271	271	271	271	271	271	271	271	271	271	271
Log-Likelihood	-107.97	-107.97	-107.97	-107.97	-107.97	-107.97	-107.79	-107.79	-107.79	-107.79	-107.79	-107.79
Pseudo R2	0.146	0.146	0.146	0.146	0.146	0.146						

Note: *** p<0.01, ** p<0.05, * p<0.1

A.IV.25 Corporate TSR Interactions between Tax Haven and Non-Tax Haven Countries (Two-year Lag), Table 3.5.5, Section 3, Tax Haven Countries as Dependent Variables

	MLogit robust Decrease	**MLogit robust Increase**	**MLogit cluster by year Decrease**	**MLogit cluster by year Increase**	**MLogit cluster by id Decrease**	**MLogit cluster by id Increase**	**MProbit robust Decrease**	**MProbit robust Increase**	**MProbit cluster by year Decrease**	**MProbit cluster by year Increase**	**MProbit cluster by id Decrease**	**MProbit cluster by id Increase**
NonHaven_increase_2	-0.009*	-0.001	-0.009	-0.001	-0.009	-0.001	-0.009	-0.001	-0.009	-0.001	-0.009	-0.001
	(0.005)	(0.002)	(0.006)	(0.001)	(0.006)	(0.001)	(0.006)	(0.001)	(0.006)	(0.001)	(0.007)	(0.001)
NonHaven_decrease_2	0.001	0.000	0.001	0.000	0.001	0.000	0.002	0.000	0.002	0.000	0.002	0.000
	(0.002)	(0.000)	(0.002)	(0.000)	(0.002)	(0.000)	(0.002)	(0.000)	(0.002)	(0.000)	(0.002)	(0.000)
Low_1	-0.083***	-0.0004766	-0.083***	-0.000	-0.083***	-0.000	-0.085***	0.000	-0.085***	0.000	-0.085***	0.000
	(0.031)	(0.003)	(0.030)	(0.003)	(0.028)	(0.003)	(0.032)	(0.002)	(0.031)	(0.002)	(0.030)	(0.002)
K_open_1	-0.018	-0.001	-0.018	-0.001	-0.018*	-0.001	-0.019	-0.000	-0.019	-0.000	-0.019**	-0.000
	(0.011)	(0.001)	(0.012)	(0.001)	(0.009)	(0.001)	(0.012)	(0.001)	(0.013)	(0.001)	(0.009)	(0.001)
Trade_1	0.000***	-0.000	0.000**	-0.000	0.000***	-0.000	0.000***	-0.000	0.000**	-0.000	0.000***	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
log(GDP)_1	0.025*	0.000	0.025*	0.000	0.025**	0.000	0.030**	-0.000	0.030**	-0.000	0.030***	-0.000
	(0.013)	(0.001)	(0.015)	(0.001)	(0.010)	(0.001)	(0.014)	(0.001)	(0.015)	(0.001)	(0.011)	(0.001)
Growth_1	0.002	-0.000	0.002	-0.000	0.002	-0.000	0.002	-0.000	0.002	-0.000	0.002	-0.000
	(0.002)	(0.000)	(0.002)	(0.000)	(0.002)	(0.000)	(0.002)	(0.000)	(0.002)	(0.000)	(0.002)	(0.000)
Gconsump_1	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.001	-0.000	-0.001	-0.000	-0.001	-0.000
	(0.004)	(0.001)	(0.004)	(0.001)	(0.004)	(0.001)	(0.005)	(0.000)	(0.004)	(0.000)	(0.005)	(0.000)

Legislative_1	-0.022	0.006	-0.022	0.006	-0.022	0.006	-0.027	0.006	-0.027	0.006	-0.027	0.006
	(0.022)	(0.006)	(0.019)	(0.006)	(0.018)	(0.006)	(0.023)	(0.005)	(0.020)	(0.005)	(0.020)	(0.005)
European	-0.058***	0.002	-0.058***	0.002	-0.058***	0.002	-0.059***	0.002	-0.059**	0.002	-0.059***	0.002
	(0.020)	(0.005)	(0.021)	(0.005)	(0.021)	(0.005)	(0.022)	(0.003)	(0.024)	(0.003)	(0.023)	(0.004)
Africa	-0.096***	-0.004	-0.096***	-0.004	-0.096***	-0.004	-0.103***	-0.003	-0.103***	-0.003	-0.103***	-0.003
	(0.023)	(0.004)	(0.022)	(0.004)	(0.026)	(0.005)	(0.023)	(0.003)	(0.021)	(0.003)	(0.023)	(0.003)
N_obs	259	259	259	259	259	259	259	259	259	259	259	259
Log-Likelihood	-100.34	-100.34	-100.34	-100.34	-100.34	-100.34	-100.32	-100.32	-100.32	-100.32	-100.32	-100.32
Pseudo R2	0.182	0.182	0.182	0.182	0.182	0.182						

Note: *** p<0.01, ** p<0.05, * p<0.1

A.IV.26 Corporate TSR Interactions between Tax Haven and Non-Tax Haven Countries (Contemporaneously), Table 3.5.5, Section 1, Non-Tax Haven Countries as Dependent Variables

	MLogit robust Decrease	**MLogit robust Increase**	**MLogit cluster by year Decrease**	**MLogit cluster by year Increase**	**MLogit cluster by id Decrease**	**MLogit cluster by id Increase**	**MProbit robust Decrease**	**MProbit robust Increase**	**MProbit cluster by year Decrease**	**MProbit cluster by year Increase**	**MProbit cluster by id Decrease**	**MProbit cluster by id Increase**
Haven_increase	-0.002	0.007	-0.002	0.007*	-0.002	0.007	-0.003	0.008	-0.003	0.008*	-0.003	0.008
	(0.010)	(0.005)	(0.015)	(0.004)	(0.009)	(0.005)	(0.010)	(0.005)	(0.014)	(0.004)	(0.010)	(0.006)
Haven_decrease	0.016***	-0.000	0.016***	-0.000	0.016***	-0.000	0.017***	0.000	0.017***	0.000	0.017***	0.000
	(0.005)	(0.003)	(0.006)	(0.003)	(0.005)	(0.003)	(0.005)	(0.003)	(0.006)	(0.003)	(0.005)	(0.003)
Low_1	-0.109***	0.037***	-0.109***	0.037***	-0.109***	0.037***	-0.112***	0.039***	-0.112***	0.039***	-0.112***	0.039***
	(0.015)	(0.010)	(0.020)	(0.010)	(0.021)	(0.010)	(0.015)	(0.010)	(0.020)	(0.010)	(0.021)	(0.010)
K_open_1	-0.014**	-0.001	-0.014***	-0.001	-0.014*	-0.001	-0.015***	-0.001	-0.015***	-0.001	-0.015*	-0.001
	(0.005)	(0.003)	(0.005)	(0.002)	(0.007)	(0.004)	(0.006)	(0.003)	(0.005)	(0.002)	(0.008)	(0.004)
Trade_1	0.000	-0.001***	0.000	-0.001***	0.000	-0.001***	0.000	-0.001***	0.000	-0.001***	0.000	-0.001***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
log(GDP)_1	0.006	0.000	0.006	0.000	0.006	0.000	0.007	-0.000	0.007	-0.000	0.007	-0.000
	(0.005)	(0.003)	(0.004)	(0.003)	(0.008)	(0.002)	(0.005)	(0.003)	(0.005)	(0.004)	(0.009)	(0.003)
Growth_1	0.000	-0.001	0.000	-0.001	0.000	-0.001	0.000	-0.001	0.000	-0.001	0.000	-0.001
	(0.002)	(0.001)	(0.002)	(0.001)	(0.002)	(0.001)	(0.002)	(0.001)	(0.002)	(0.001)	(0.002)	(0.001)
Gconsump_1	0.002*	-0.001	0.002	-0.001	0.002	-0.001	0.003*	-0.001	0.003*	-0.001	0.003	-0.001
	(0.001)	(0.001)	(0.002)	(0.001)	(0.002)	(0.001)	(0.002)	(0.001)	(0.002)	(0.001)	(0.002)	(0.001)

Legislative_1	0.004	0.026**	0.004	0.026**	0.004	0.026***	0.006	0.027**	0.006	0.027**	0.006	0.027***
	(0.018)	(0.011)	(0.013)	(0.012)	(0.018)	(0.010)	(0.018)	(0.011)	(0.013)	(0.012)	(0.018)	(0.010)
European	0.037*	0.011	0.037	0.011	0.037	0.011	0.037*	0.011	0.037	0.011	0.037	0.011
	(0.021)	(0.011)	(0.024)	(0.010)	(0.037)	(0.012)	(0.022)	(0.012)	(0.025)	(0.011)	(0.038)	(0.013)
Africa	-0.056***	0.003	-0.056***	0.003	-0.056**	0.003	-0.058***	0.002	-0.058***	0.002	-0.058**	0.002
	(0.019)	(0.013)	(0.017)	(0.013)	(0.025)	(0.013)	(0.020)	(0.013)	(0.017)	(0.013)	(0.026)	(0.013)
N_obs	2,328	2,328	2,328	2,328	2,328	2,328	2,328	2,328	2,328	2,328	2,328	2,328
Log-Likelihood	-1,425.20	-1,425.20	-1,425.20	-1,425.20	-1,425.20	-1,425.20	-1,424.77	-1,424.77	-1,424.77	-1,424.77	-1,424.77	-1,424.77
Pseudo R2	0.042	0.042	0.042	0.042	0.042	0.042						

Note: *** p<0.01, ** p<0.05, * p<0.1

A.IV.27 Corporate TSR Interactions between Tax Haven and Non-Tax Haven Countries (One-year Lag), Table 3.5.5, Section 2, Non-Tax Haven Countries as Dependent Variables

	MLogit robust Decrease	**MLogit robust Increase**	**MLogit cluster by year Decrease**	**MLogit cluster by year Increase**	**MLogit cluster by id Decrease**	**MLogit cluster by id Increase**	**MProbit robust Decrease**	**MProbit robust Increase**	**MProbit cluster by year Decrease**	**MProbit cluster by year Increase**	**MProbit cluster by id Decrease**	**MProbit cluster by id Increase**
Haven_increase_1	0.016	-0.001	0.016	-0.001	0.016	-0.001	0.018*	-0.001	0.018	-0.001	0.018*	-0.001
	(0.010)	(0.005)	(0.014)	(0.004)	(0.010)	(0.004)	(0.010)	(0.005)	(0.014)	(0.004)	(0.011)	(0.005)
Haven_decrease_1	0.009*	0.001	0.009	0.001	0.009*	0.001	0.010*	0.001	0.010	0.001	0.010*	0.001
	(0.005)	(0.003)	(0.006)	(0.003)	(0.006)	(0.003)	(0.005)	(0.003)	(0.006)	(0.003)	(0.006)	(0.003)
Low_1	-0.113***	0.037***	-0.113***	0.037***	-0.113***	0.037***	-0.117***	0.040***	-0.117***	0.040***	-0.117***	0.040***
	(0.016)	(0.010)	(0.021)	(0.010)	(0.021)	(0.010)	(0.016)	(0.010)	(0.020)	(0.010)	(0.022)	(0.010)
K_open_1	-0.011**	-0.002	-0.011**	-0.002	-0.011	-0.002	-0.012**	-0.002	-0.012***	-0.002	-0.012	-0.002
	(0.006)	(0.003)	(0.005)	(0.002)	(0.008)	(0.003)	(0.006)	(0.003)	(0.005)	(0.002)	(0.008)	(0.004)
Trade_1	0.000	-0.001***	0.000	-0.001***	0.000	-0.001***	0.000	-0.001***	0.000	-0.001***	0.000	-0.001***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
log(GDP)_1	0.007	-0.000	0.007	-0.000	0.007	-0.000	0.008	-0.000	0.008	-0.000	0.008	-0.000
	(0.005)	(0.003)	(0.005)	(0.003)	(0.009)	(0.002)	(0.005)	(0.003)	(0.005)	(0.004)	(0.009)	(0.003)
Growth_1	0.001	-0.001	0.001	-0.001	0.001	-0.001	0.001	-0.001	0.001	-0.001	0.001	-0.001
	(0.002)	(0.001)	(0.002)	(0.001)	(0.002)	(0.001)	(0.002)	(0.001)	(0.002)	(0.001)	(0.002)	(0.001)
Gconsump_1	0.002	-0.000	0.002	-0.000	0.002	-0.000	0.002	-0.001	0.002	-0.001	0.002	-0.001
	(0.001)	(0.001)	(0.002)	(0.001)	(0.002)	(0.001)	(0.002)	(0.001)	(0.002)	(0.001)	(0.002)	(0.001)

Legislative_1	0.005	0.025**	0.005	0.025**	0.005	0.025**	0.008	0.026**	0.008	0.026**	0.008	0.026**
	(0.018)	(0.010)	(0.013)	(0.012)	(0.019)	(0.010)	(0.019)	(0.011)	(0.014)	(0.012)	(0.019)	(0.011)
European	0.038*	0.010	0.038	0.010	0.038	0.010	0.039*	0.010	0.039	0.010	0.039	0.010
	(0.022)	(0.011)	(0.024)	(0.010)	(0.038)	(0.013)	(0.022)	(0.011)	(0.025)	(0.011)	(0.039)	(0.013)
Africa	-0.053***	-0.000	-0.053***	-0.000	-0.053**	-0.000	-0.055***	-0.000	-0.055***	-0.000	-0.055**	-0.000
	(0.020)	(0.012)	(0.018)	(0.012)	(0.025)	(0.013)	(0.021)	(0.013)	(0.019)	(0.012)	(0.027)	(0.013)
N_obs	2,247	2,247	2,247	2,247	2,247	2,247	2,247	2,247	2,247	2,247	2,247	2,247
Log-Likelihood	-1,372.27	-1,372.27	-1,372.27	-1,372.27	-1,372.27	-1,372.27	-1,371.49	-1,371.49	-1,371.49	-1,371.49	-1,371.49	-1,371.49
Pseudo R2	0.041	0.041	0.041	0.041	0.041	0.041						

Note: *** p<0.01, ** p<0.05, * p<0.1

A.IV.28 Corporate TSR Interactions between Tax Haven and Non-Tax Haven Countries (Two-year Lag), Table 3.5.5, Section 3, Non-Tax Haven Countries as Dependent Variables

	MLogit robust Decrease	**MLogit robust Increase**	**MLogit cluster by year Decrease**	**MLogit cluster by year Increase**	**MLogit cluster by id Decrease**	**MLogit cluster by id Increase**	**MProbit robust Decrease**	**MProbit robust Increase**	**MProbit cluster by year Decrease**	**MProbit cluster by year Increase**	**MProbit cluster by id Decrease**	**MProbit cluster by id Increase**
Haven_increase_2	0.003	0.009**	0.003	0.009***	0.003	0.009**	0.003	0.011**	0.003	0.011***	0.003	0.011**
	(0.010)	(0.004)	(0.009)	(0.003)	(0.010)	(0.004)	(0.010)	(0.005)	(0.009)	(0.004)	(0.010)	(0.005)
Haven_decrease_2	0.010*	0.002	0.010	0.002	0.010*	0.002	0.010*	0.002	0.010	0.002	0.010**	0.002
	(0.005)	(0.003)	(0.009)	(0.003)	(0.005)	(0.002)	(0.005)	(0.003)	(0.009)	(0.003)	(0.005)	(0.003)
Low_1	-0.116***	0.029***	-0.116***	0.029***	-0.116***	0.029***	-0.119***	0.031***	-0.119***	0.031***	-0.119***	0.031***
	(0.016)	(0.010)	(0.021)	(0.009)	(0.022)	(0.009)	(0.016)	(0.010)	(0.021)	(0.009)	(0.022)	(0.009)
K_open_1	-0.012**	0.001	-0.012**	0.001	-0.012	0.001	-0.013**	0.001	-0.013***	0.001	-0.013	0.001
	(0.006)	(0.003)	(0.005)	(0.002)	(0.008)	(0.003)	(0.006)	(0.003)	(0.005)	(0.002)	(0.008)	(0.004)
Trade_1	0.000	-0.001***	0.000	-0.001***	0.000	-0.001***	0.000	-0.001***	0.000	-0.001***	0.000	-0.001***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
log(GDP)_1	0.006	-0.001	0.006	-0.001	0.006	-0.001	0.007	-0.001	0.007	-0.001	0.007	-0.001
	(0.006)	(0.003)	(0.005)	(0.003)	(0.009)	(0.002)	(0.006)	(0.003)	(0.006)	(0.004)	(0.009)	(0.002)
Growth_1	0.001	-0.001	0.001	-0.001	0.001	-0.001	0.000	-0.001	0.000	-0.001	0.000	-0.001
	(0.002)	(0.001)	(0.002)	(0.001)	(0.002)	(0.001)	(0.002)	(0.001)	(0.002)	(0.001)	(0.002)	(0.001)
Gconsump_1	0.001	-0.000	0.001	-0.000	0.001	-0.000	0.001	-0.001	0.001	-0.001	0.001	-0.001
	(0.002)	(0.001)	(0.002)	(0.001)	(0.002)	(0.001)	(0.002)	(0.001)	(0.002)	(0.001)	(0.002)	(0.001)

Legislative_1	0.002	0.023**	0.002	0.023**	0.002	0.023**	0.005	0.024**	0.005	0.024**	0.005	0.024**
	(0.019)	(0.010)	(0.014)	(0.011)	(0.019)	(0.010)	(0.019)	(0.011)	(0.014)	(0.012)	(0.019)	(0.010)
European	0.047**	0.008	0.047*	0.008	0.047	0.008	0.047**	0.007	0.047*	0.007	0.047	0.007
	(0.023)	(0.011)	(0.025)	(0.011)	(0.038)	(0.014)	(0.023)	(0.012)	(0.025)	(0.012)	(0.040)	(0.014)
Africa	-0.047**	-0.006	-0.047**	-0.006	-0.047*	-0.006	-0.049**	-0.007	-0.049**	-0.007	-0.049*	-0.007
	(0.021)	(0.012)	(0.019)	(0.011)	(0.026)	(0.011)	(0.022)	(0.012)	(0.019)	(0.011)	(0.027)	(0.012)
N_obs	2,154	2,154	2,154	2,154	2,154	2,154	2,154	2,154	2,154	2,154	2,154	2,154
Log-Likelihood	-1,312.59	-1,312.59	-1,312.59	-1,312.59	-1,312.59	-1,312.59	-1,311.84	-1,311.84	-1,311.84	-1,311.84	-1,311.84	-1,311.84
Pseudo R2	0.041	0.041	0.041	0.041	0.041	0.041						

Note: *** p<0.01, ** p<0.05, * p<0.1

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