INTERNATIONAL TAX COMPETITION

Professor Mutti, Anh Mai Bui

Grinnell College

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Grinnell, IA 50112

**Abstract:**

This paper analyzes two aspects of the tax competition: the one among the four home countries, and the one among the host countries in the world of foreign direct investment (FDI). The data include thirty countries from five different continents, which are both OECD and non-OECD ones. The estimates indicate that multinational corporations (MNCs) are attracted to the host countries with low statutory tax rates (STRs). Specifically, a low STR is an important element in the decision of MNCs when investing in an Asian or African country whereas it is not the case when MNCs invest in an European or OECD country. With respect to the competition among the four home countries, the one with high GDP and large population has advantages to benefit from increasing foreign assets. On the other hand, there is no evidence of the tax competition among the host countries; that is, they do not reduce the STRs in order to compete with each other to attract FDI.

1. Introduction

STRs have reduced during the last two decades, which may suggest that host countries are competing against each other to attract FDI. At the same time, home countries are competing against each other to locate their resources in host ones with low labor costs and high returns on capital. In this research, I would like to study the inter-correlation between the STR and the FDI, thus analyzing the competition among the home countries and among the host ones. This study also includes other explanatory variables such as the gross domestic product (GDP), the total population, the number of potential and actual workers, the openness index, the personal income tax (PIT), and the weighted average statutory tax rate (wastr) of other host countries.

This research aims to analyze two aspects of the competition: the one among the four home countries to create and expand their affiliates in the twenty-nine host countries, and the one among the host ones to attract more capital inflows. This study includes data from thirty countries from five continents and six regions. They are Australia (from the Australian continent), eight European countries, seven countries from the American continents, seven Asian ones, Saudi Arabia from the Middle East, and six African countries. Among those countries, fifteen ones are members of the Organization for Economic Co-operation and Development (OECD). The four home countries are the United States, the United Kingdom, Germany, and France. The STR and the FDI are the two endogenous variables that will be studied separately in two different models.

There are several different measures to estimate the amount of FDI into one host country.  The OECD reports a complete dataset of the annual FDI outflows from the four home countries into the other twenty-nine host ones. However, using the FDI outflow as a dependent variable can face two critiques.  First, Devereux and Griffith (2002, p. 84-86) argued that FDI flows are “noisy” measurements of MNCs’ activities as they measure financial flows, rather than real flows.  Second, we will need to introduce an effective econometric method in order to deal with negative values of FDI flows if we utilize the log-linear functional form.  In order to deal with the first critique, we can propose other measures of MNCs’ activities, which are reported by the U.S Bureau of Economic Analysis (BEA) such as employment, compensation of employee, value added, total sales, as well as net property, plant, and equipment. Unfortunately, these data are only available for the U.S as a home country, and are unavailable for France, Germany, and the United Kingdom-the other three home ones.  On the other hand, we can use the measure of FDI position, provided by the OECD, in order to tackle the problem of negative values in FDI flows.  This measure also surpasses the FDI flow at reflecting the real activities of MNCs as they capture the total capital stocks that MNCs accumulate in their host countries over the years.  To sum up, I will use the FDI position as a dependent variable in this research due to their availability and conceptual advantages.  Data from the BEA that capture real activities of MNCs in the US can be used in the future research to‬ compare with the initial analysis.

In general, FDI outward positions of the four home countries increased from 1993 to 2010. There were very few exceptions such as the France’s outward position in Canada decreased by half from 2000 to 2010 even though they increased during the 1990s; or the Germany’s outward FDI position in Ireland more or less remained the same during almost two decades. On the one hand, the U.S put a significant amount of their FDI stocks into the OECD countries but also received the largest amount of FDI from the U.K, France, and Germany compared to other host ones. For example, the U.S’ outward positions in the Netherlands and in the U.K reached more than five hundred billion US dollars in 2010. In most non-OECD countries, U.S’ outward positions ranged within one hundred billion, except for the case of Bermuda where the value reached more than two hundred billion since 2007, which was as significant as those in some OECD countries. On the other hand, the U.K’s outward positions were mostly less than one hundred billion U.S dollars in its host countries, except for the cases of Luxembourg and Netherlands, which reached more than two hundred billion in 2010, and the U.S, which reached nearly three hundred billion despite some declines since 2007. In non-OECD countries, the U.K put a fair amount of their FDI into Bermuda, South Africa, Australia, Hong Kong, and India, but all values were less than fifty billions US dollars. In the cases of the other two home countries, France and Germany followed the same trend by putting most of their FDI stocks into OECD-countries and the U.S. Also, France’s FDI positions in Brazil and Japan as well as Germany’s FDI positions in Brazil, China, and Hong Kong were somewhat noticeable, but all were less than fifty billion U.S dollars.

The STR, another dependent variable, has been widely used in empirical analyses because of its availability and relevance to two different aspects of the MNCs’ decision to locate an affiliate in a given country, and the incentive to shift profits across countries. Mintz and Tsiopoulos (1997), Beyer (2002), Edmiston et al. (2003), Alfano (2004), Carstensen and Toubal (2004), Javorcik (2004), Benassy-Quere and Lahreche-Revil (2005), and Clausing and Dorubantu (2005) utilized STRs in their studies.[[1]](#footnote-2) Based on the data set, host countries generally decreased their STRs from 1993 to 2010. Germany, Ireland, Saudi Arabia, India, and Egypt cut the STRs by half during the period. Argentina and Chile are the only two countries in the data set that had increasing STRs over the years. Hong Kong’s STR did not have much change during the two decades and those of Thailand and the U.S stayed completely the same. The most interesting case is Bermuda whose STR was always zero from 1993 to 2010. This observation can partially explain the huge FDI into Bermuda as MNCs can benefit from the tax retreat. However, Bermuda’s STR remained stable whereas those of other countries decreased over the years; it is likely that Bermuda could not sustain an above average rate of increase of FDI position. In fact, Bermuda still had a higher rate of annual increase in the FDI position compared to those of other host countries. This observation can be a sign of greater globalization and easier use of strategies to shift profits across countries.[[2]](#footnote-3) With regard to using the STR as a dependent variable, Bellak, Leibrecht, and Romisch (2007) argued that these measures are inappropriate both conceptually and empirically in studying the FDI. On the other hand, Klemm (2005) updated a database that includes STRs, effective average tax rates (EATRs), and effective marginal tax rates (EMTRs) of nineteen countries from 1979 to 2005.[[3]](#footnote-4) Responding to the critique of Bellak, Leibrecht, and Romisch, Klemm’s data set can be utilized in the future research in order to study if using STRs can lead to any significantly different results compared to using EATRs and EMTRs as dependent variables. Devereux, Lockwood, and Redoano (2008, p. 1211 footnote 5) argued that it was difficult to identify separately the competition in the forms of STRs and EATRs because the two forms of tax rates were strongly correlated with each other.[[4]](#footnote-5) Therefore, the competition in the form of STRs in this research suggests the decision of multinational firms not only on the location of their profit but also on the location of their foreign affiliates, which is normally suggested by the competition in the form of EATRs.

In terms of explanatory variables, there are three available measures for the GDP. The first one is GDP in current U.S dollars, in which GDP in domestic currencies are converted into U.S dollars using single year’s official exchange rates.[[5]](#footnote-6) The second one is the purchasing power parity (PPP) GDP in current international dollars, in which GDP in domestic currencies are converted into international dollars using the purchasing power parity rates; one international dollar has the same purchasing power as one US dollar in the U.S. As a result, GDP in current US dollars and PPP GDP in current international ones have the same values over the years for the United States. If absolute PPP held, no adjustment would be necessary; but PPP does not hold, especially for non-traded goods. Most non-OECD countries in this study have lower GDP in current U.S dollars than PPP GDP in international ones; even though these countries have weak currencies compared to the U.S, their standards of living are not that low compared to the U.S’ due to their low domestic costs and less expensive non-traded goods. For example, GDP in current U.S dollars of the U.S more than doubled that of China in 2010 due to the under-valued Chinese yuan, but for the United States GDP in current international dollars was less than one and a half that of China in the same year.

In the case of OECD countries, PPP GDP in current international dollars rose above GDP in current U.S dollars since the early 2000s, indicating their rising currencies over the U.S dollar. However, we observe some significant decreases in this measure in recent years, indicating the decrease in strength of their currencies over the U.S dollar (e.g. lower strength of the British pound and the Euro in recent years). Japan is the only country in our database that has higher GDP in US dollars than PPP GDP in international ones in every year from 1993 to 2010. This situation may not be the result of the Japanese yen’s rising in value over the U.S dollar but because of the high costs of living in Japan. The third measure of GDP is the PPP GDP in constant 2005 international dollars, which are higher than those in current international dollars during the years before 2005 and lower than those after 2005. These observations indicate the decreasing purchasing power of one unit of international dollar, or equivalently that of the U.S dollar, over the years. To sum up, PPP GDP in current international dollars, and especially that in constant 2005 international dollars, are better indicators of one country’s standard of living compared to GDP in current US ones. However, because the FDI positions are reported in current U.S dollars instead of constant ones, an increase in the FDI position in a certain year can be the result of both the capital inflows and the inflation during that year. As a result, the PPP GDP in constant 2005 international dollars do not explain the changes in the FDI positions as precisely as the other two measures of the GDP.

Even though the U.S and China, followed by Japan and India, surpassed other countries in the values of GDP indicators, these two countries were not the most dominant ones when we take into account the total population. Instead, Luxembourg, with more than one hundred thousand US dollars per person in 2010, ranked first in terms of the GDP per capita; Bermuda ranked second with nearly ninety thousand US dollars per person in the same year. Even though OECD countries ranked high in terms of this indicator, we also observe high values in non-OECD countries such as Singapore with forty thousand US dollars per person in 2010. China and India, the two most populous countries in the world, ranked low in this category, even lower than South Africa and other Latin American countries. Besides indicating the standard of living, GDP per capita can also indicate the productivity of an average person. In order to prevent the problem of perfect multi-collinearity, I only included indicators of GDP and the population, and left out the GDP per capita variables.

There are two measures of a country’s labor force: the total population aged from fifteen to sixty-four measures the number of potential workers; and the total employment measures the number of actual workers.[[6]](#footnote-7) If a MNC is interested in training available labor and creating more jobs, it can look at the differences between the two variables. Countries that had a large pool of available but unemployed people are India (with more than three hundred million people), China (more than two hundred million ones), the U.S (sixty-five million), Nigeria (thirty-nine million), Brazil (thirty-eight million), and Egypt (twenty-seven million) in 2010. However, if a MNC is looking for high-skilled workers who have been trained in other jobs, they should invest in those countries with high number of actual workers or high percentage of total employment over the available labor force. Countries that had the ratio of actual workers over potential ones of more than seventy per cent are Bermuda (88%), Switzerland (81%), Thailand (80%), China (79%), Japan (78%), Netherlands (76%), Sweden (76%), Australia (75%), Canada (75%), Germany (73%), Brazil (71%), and the U.K (71%) in 2010.

The openness index infers the level of a country’s willingness to participate in the FDI. The index measures the percentage of total FDI assets and liabilities over GDP. That is, the index is high if the country is open to both FDI inflows and outflows. Luxembourg ranked first in this index, which reached more than seven thousand per cent; far surpassing those in other countries. Hong Kong ranked second in this index, which reached nine hundred per cent after a significant decrease from more than one thousand per cent in 2007 to seven hundred per cent in 2008, but increased gradually since then. Singapore ranked third by having more than three hundred per cent in 2010. The openness indices in OECD countries were higher than those in Latin American, Asian, and South African countries. Nigeria is the only country in our data set that had decreasing percentage from 1993 to 2008. In 1993, Nigeria already reached sixty-eight per cent, which was almost equal to the index of Germany in 2010, but decreased considerably to thirty per cent in 2010.

It can be argued that the PIT has a positive relationship with the STR. That is, if the individual tax rate is low, corporate one should also be low in order to sustain the capital inflows into domestic corporations. Moreover, authorities avoid setting the PIT higher than the STR in order to discourage individuals from incorporating to avoid taxes at the personal level. In general, the PIT fell during the past two decades. However, Canada, Bermuda, Tunisia, Saudi Arabia, China, and Thailand sustained stable PITs over the years. Specifically, Bermuda and Saudi Arabia are the only two countries in the data set where the PITs were zero from 1993 to 2010. Even though there were no dramatic changes in PITs in other countries, those in Egypt decreased by half from sixty-five per cent in 1993 to thirty-two per cent in 1994, and continued to decrease to twenty per cent in 2010.

2. Methodology

I use the log-linear models to study the inter-correlation between the FDI and the STR. These two variables are determined by the following two equations:

1. lnpost = a0 + a1lnhoststr + a2lnhomestr + a3lngdphost + a4lngdphome + a5lnpophost + a6lnpophome+ a7lnplwohost + a8lnplwohome + a9lnemphost + a10lnemphome + a11lnopen + a12 lnwastr + ei,j
2. lnhoststr= b0 + b1lnpo + b2lnhomestr +b3lngdphost + b4lnpophost+ b5lnplwohost + b6lnemphost + b7lnopen + b8lnwastr + b9lnpit + ei,j

where post is the FDI position from the home country at year t; po is the FDI position from the home country at year t-1; hoststr and homestr are the statutory tax rates in the host and home countries respectively; gdphost and gdphome are the GDP of the host and home countries respectively; pophost and pophome are the total population in the host and home countries respectively; plwohost and plwohome are the number of potential workers in the host and home countries respectively; emphost and emphome are the number of actual workers in the host and home countries respectively; open is the openness index in the host country; wastr is the weighted average statutory tax rate of other host countries (not including STRs of the home and host countries being considered); pit is the personal income tax rate in the host country.

One of the factors that influence the MNCs’ decision to invest abroad, apart from the tax base, is the corporate tax rate. Barros & Cabral (2000), Oman (2000), Panteghini & Schjelderup (2006), Devereux, Lockwood & Redoano (2008) suggested that host countries compete against each other over the tax rates to attract FDI. That is, we expect a negative value of a1 in the first equation: MNCs put more FDI into the host country with a low STR. In terms of the second equation in which STR is the dependent variable, it can be argued that the decrease in the FDI in the previous year may force the host country to lower their current STR; thus, b1 is expected to have a positive value.

The GDP variables indicate high or low-income countries. Grubert (2000), Mutti (2003) suggested that low-income countries were more likely to offer low tax rates to attract FDI whereas high-income ones are more likely to attract FDI without lowering tax rates. The population variable, on the other hand, reflects the country’s size. Haufler and Wooton (1999), Mutti and Grubert (2004) concluded that small countries were more likely to offer tax concessions, as big ones were more attractive for FDI. As a result, it can be expected that the GDP and population variables have positive relationships with both the two dependent variables. Variables of the labor force, which are the number of potential and actual workers, suggest the quantity of the host countries’ workers. It can be argued that MNCs are attracted to a host country with large labor resources; these measures should have positive relationships with the FDI position.

By definition, the openness index is the ratio of the total stock of FDI assets and liabilities over the GDP. Therefore, a significant openness index can indicate a high FDI position in the host country, or equivalently, high FDI liabilities of the host country. At the same time, a high openness index can be a result of an increase in the host country’s FDI assets; that is, the country is putting more capital abroad; whereas the FDI liabilities remain stable. Fuest, Huber, and Mintz (2005) argued that optimal corporate tax rates should be zero in a world of perfectly mobile capital. Thus, it can be inferred theoretically that host countries simultaneously reduce the tax rates to zero when they are more open to the capital mobility, or equivalently when the openness index is high. On the other hand, the STR of the host country can also be influenced by that of its home country and the weighted average rate of other host countries (wastr). For example, the STR in the host country should be lower than that in the home country, and the wastr in order to attract more inward FDI.

I argue that variables of the home country only affect the first equation in which the FDI position is endogenous and do not affect the host country’s STR directly. That is, MNCs from the home country will take into account both its own STR and that in the partner country before making any investment. However, the characteristics of the home country, i.e. high GDP or large population, are unlikely to influence the host country to lower the tax rates, because the host one can also depend on other home countries instead. On the other hand, the PIT only affects the second equation in which the STR is endogenous and does not affect the FDI position directly.

Kjetil Bjorvatn, Carsten Eckel (2006) suggested that policy competition is fierce among countries in the same region. Thus, I included the regional, year, home, and oecd dummy variables in order to obtain a broader overview of the tax competition. To include these variables in the fixed effects estimates, the regional, home, and oecd dummy variables need to be represented as interactions with the lnhoststr or the lnwastr. Also, some of these dummies are highly collinear with each other

3. Data

3.1 Dependent variables:

The OECD database offers two measures that capture the amount of FDI in the host countries: the FDI outward position and the FDI outflow. As I mentioned earlier, I will use the FDI outward position as a dependent variable due to its advantages over the FDI outflow. The OECD reports the FDI position almost completely, all of which are reported in million US dollars, from the four home countries into their partner countries from 1993 to 2010. However, we still lack some data for Luxembourg, Bermuda, Saudi Arabia, and Nigeria.

Another dependent variable is the STR. The data are gathered from the survey by KPMG from 1993 until 2010. For those unavailable from the KPMG, I gathered data provided by Mintz and Weichenrieder (2008). In the case of twelve countries: Argentina, Chile, China, Egypt, Hong Kong, India, Korea, Mexico, Nigeria, Singapore, Saudi Arabia, and Thailand, I supplemented the unavailable data from KPMG with those from Mintz and Weichenrieder’s table; the data seem logical after I merged them together. However, there is inconsistency of the two data sources for Brazil from 1997 to 2000, and for South Africa in 1999 and 2000. As a result, I picked Mintz and Weichenrieder’s data from 1993 to 2000 for the two countries in order to maximize the consistency of my data set. Some researchers have argued that countries have been reducing their corporate tax rates during the last two decades in order to attract FDI. Indeed, attracting foreign investment is not the only reason of this reduction. Clausing (2007, p. 131) concluded that the smaller and more open economies would be more successful in attracting FDI; and consequently they would raise more corporate tax revenue than they could with a higher tax rate. Even for countries where a lower rate would not necessarily raise more tax revenue, the KPMG reports that countries may compete in setting their STRs in order to avoid a capital outflow; they are able to do so because they can extract revenues from other sources such as the indirect tax rates (such as rising VAT) that are reported to be increasing during the first decade of the twenty-first century.

3.2 Independent variables:

The World Bank reports the Gross Domestic Product (GDP) in current US dollars of the thirty countries. This variable measures the size of the home market. Glass (2008) stated that the horizontal FDI model most likely reflected partnerships between two countries with similar size; whereas the vertical FDI one analyzed capital flows between a large home country and a much smaller host country.[[7]](#footnote-8) As a result, MNCs in the horizontal FDI are attracted to large countries because their main purpose is to serve domestic markets, whereas the host countries’ market size is less relevant for MNCs in vertical FDI, as their main purpose is to take advantage of the low production cost abroad and produce for export markets, possibly exporting back to the home country. The GDP variable is a valid variable in horizontal investment, especially between the four dominant countries with other developed host countries. The World Bank reports other two measures of GDP, PPP GDP in current international dollars and PPP GDP in 2005 constant international dollars, which are also the measures of one country’s standard of living.

GDP per capita can be regarded as one possible independent variable. This variable indicates an average person’s standard of living; that is, how well an average resident of the country is doing. One can argue that high GDP per capita, or equivalently high living standard, is a result of the country’s high productivity and efficiency. As a result, home countries are likely to invest in those countries with high GDP per capita. For example, China has emerged as a potential hegemon in the first decade of the twenty-first century as its GDP growth has significantly surpassed other dominant nations. However, despite the high GDP growth, the country can also observe a higher level of inequality. Whereas economic and political centers such as Beijing and Shanghai are developing rapidly, rural regions are still not doing well. As a result, it poses questions on home countries whether to put much investment in a country with high GDP growth like China, if they face high competition with other home countries in rapidly-growing centers, and can achieve little viable success in under-developed rural areas. The World Bank reports the GDP per capita of the thirty countries in current US dollars. Because I take into account three different measures of GDP, I will include the total population data, which are provided by the U.S Census Bureau, in order to infer about the three measures of GDP per capita.

Many prior studies include a wage variable to represent the cost of producing in the host country. However, such a variable is likely to be endogenous, dependent upon the demand for labor in the country. I am including a measure of the workforce, which is much more likely to be exogenous. Even if the number of labor looking for work rises as wages rise, they must be attracted from the pool of potential workers that I am measuring. As a result, my approach is more consistent with a general equilibrium approach, whereas including a wage cost variable is more a partial equilibrium approach. The U.S Census Bureau reports population aged 15-64 in thousands for the thirty countries. This variable measures the number of potential workers in the workforce. Companies from the home country are specifically interested in host countries with a large amount of available workers to participate in the production, thus putting more capital into these countries. Another measure of the labor force is the total employment, which measures the actual workers in one country. In order to gather this variable, I used the available data about the total employment, 15+ (thousands) provided by the U.S Census Bureau and the Employment to Population Ratio, 15+ (%), which is provided by the World Bank. The International Labor Organization defines the term “employment” in these data. Therefore, total employment, 15+ (thousands) is calculated by using the following formula:

Total employment, 15+ (thousands) = (Employment to Population Ratio, 15+ (%)) \* (Total Population, 15+) / 100000.

In the case of Bermuda, where data are not available from the World Bank, I gathered the data of total employment, 15+, directly from the International Labor Organization (ILO). I could not gather a complete set of data from all of the thirty countries from the ILO, as the database is incomplete and inconsistent; thus I needed to do some calculations instead. If the number of actual workers is much lower than that of potential workers, the host country still has a resourceful pool of available workers that can be taken by the production of MNCs. On the other hand, if the number of actual workers is almost equivalent to the number of potential workers, it can be inferred that the economy is doing well to take the full advantage of the available labor.

The openness index is relevant in this study because we expect the tax competition is more intense if many host countries are open to foreign investment. Because MNCs face few capital controls, they can decide to invest in the country in which they can extract the highest profits. As a result, host countries are competing against each other to lower the tax rates in favor of their partners. On the other hand, if a host country reduces capital controls to attract investment, home countries will compete against each other instead as all want to take advantage of the preferable business environment in their host. Lane and Milesi-Ferretti (2007) proposed a measure of the volume of capital transactions by calculating the percentage of total capital assets and liabilities over GDP.[[8]](#footnote-9) In order to apply their method to the context of this study, I propose another measure of the volume of FDI, which reflects the percentage of total FDI assets and liabilities over the GDP.[[9]](#footnote-10) This new measure is highly relevant in this study as it only takes into account the de-facto capital openness of FDI in our countries of interest. There is also a possibility of creating an instrumental variable based on measures of business practices reported by the World Bank or the World Economic Forum, which is available for the future work.

I utilized STATA, a statistical program, to calculate the wastr. I weighted the STR by the GDP; that is, a country’s low STR does not enforce the tax competition severely in other countries if its GDP is low compared to others. This strategy for weighting the STR certainly makes sense to capture the attraction to establish an affiliate to produce in the country. If the main motive is profit shifting, not production, then weighting by GDP may not be as relevant. Devereux, et al, found that the simple average of the STRs performed better than the GDP weighted average (or the FDI weighted average); thus I will also utilize the simple average of the STRs as an independent variable. In order to calculate the wastr, I multiplied the STR by the GDP of each country and calculated the total of all thirty countries. Afterwards, I took the total minus the values of both the host and home countries being considered, and then divided the result by the total GDP minus GDP of the host and home ones. The equation for my calculation is:

wastr = (total str\*gdp – hoststr\*hostgdp – homestr\*homegdp)/ (total gdp – hostgdp – homegdp)

As a result, wastr demonstrates the weighted average tax rates of the other twenty-eight host countries.

PITs before 2006 are provided by Peter, Buttrick, and Duncan (2010). PITs from 2006 to 2010 are provided by the KPMG. In the cases of Kenya and Morocco, the data are supplemented by other tax guide resources.

4. Empirical Results

4.1 lnpost as a dependent variable

In this study, I ran the pooled, random effects and fixed effects regressions. First, I used the log of GDP in current U.S dollars (lngdp) as an independent variable, then replaced them with the log other two measures of the GDP: the PPP GDP in current 2005 international dollars (lnppp05), and one in current international dollars (lnppp). Apart from coefficients of lnhomestr, lngdphost (or equivalently lnppp05host or lnppphost), lnemphome, lnopen, and all the year dummy variables except for y09, there is inconsistency in the signs of those of other explanatory variables in the nine regressions. All of the regressions agree that lnhomestr have a positive relationship with lnpost; that is, higher tax rates in the home country induce MNCs to invest in other host countries. Moreover, the positive signs of the coefficients of lngdphost (or log of other measures of GDP) confirm that countries with high GDP are more likely to attract capital inflows. The positive signs of the coefficients of lnemphome infer that a well-functioning economy with a high level of employment can have resources to invest in and create more jobs in other countries. Not only may the high lnemphome be a sign that the country generates enough income to be able to invest abroad, but it is also consistent with the idea that a high value of employment, controlling on the size of the working-age population, suggests the economy already has drawn most of its potential capacity into use, and therefore it may be more interested in the opportunity to invest abroad. Lnopen has positive-sign coefficients, indicating that the more the host country is open to FDI, the higher the FDI position in the country. Finally, coefficients of all the year dummy variables have negative signs, indicating that the FDI position in 2010 was higher than those in previous years. Except for the coefficients of lnopen, those of other three independent variables are statistically significant in all of the nine regressions. The coefficients of lnopen are significant in eight out of nine regressions. In fixed effects regressions, the coefficients of the year dummy variables except for y09 are statistically significant.

In the fixed effects regressions, the P-value for the F test that all u\_i=0 is almost zero; thus, the null hypothesis is rejected, which means that all u\_i cannot be zero, and the composite error terms (ui+eit) are correlated; the iid condition is violated. Therefore, results from the pooled regression are not reliable. If we do not take into account results from the pooled regression and all the explanatory variables discussed in the previous paragraph, the random effects and fixed effects regressions also produce the same signs for coefficients of lnhoststr, lngdphome (or equivalently lnppp05home or lnppphome), lnpophome, lnplwohome, lnemphost, and lnwastr. Coefficients of lnhoststr have negative signs, inferring that host countries are likely to reduce STRs in order to increase their FDI positions. Coefficients of lngdphome have positive signs but those of lnppp05home and lnppphome have negative ones; but only those of lngdphome are statistically significant. Positive signs of the coefficients of lngdphome and lnpophome indicate that the richer and more populous the home country is, the more likely it is to invest in other countries. Negative signs of the coefficients of lnplwohome and lnemphost indicate that the FDI position in the host country is high when the number of potential workers in the home one and the number employed workers in the host one are low. These results indicate that MNCs invest in order to create more jobs abroad when there is small available labor force at home. Lnwastr has positive coefficients, indicating that the higher the average of STRs of other host countries, the higher the FDI position in the host country of concern; but coefficients are significant only when we use lngdphome and lngdphost as explanatory variables (instead of lnppp05 or lnppp). Also, if we use lngdphome and lngdphost as independent variables, coefficients of the other five variables are also statistically significant. In the case of lnpophost and lnplwohost, we do not get the consistency in the signs of the coefficients, which are also not statistically significant in general. In the random effects regression using lngdphost and lngdphome as independent variables, the coefficients of all regional and home country dummy variables are statistically significant; those of oecd dummy variables are not significant. Besides, the coefficients of all regional and home country dummy variables except for the us and oecd are statistically significant if we use lnppphost and lnppphome in random effects regression.

According to the Hausman test, coefficients in the random effects regression, which differ significantly from the consistent fixed effects estimates, are not consistent. Therefore, I will use the fixed effects regression with lngdphome and lngdphost as explanatory variables to interpret the coefficients, as they are both consistent and statistically significant. The coefficient of lnplwohost is not taken into account as it is not significant.

Interpretation:

Lnhoststr: the coefficient is -0.48, indicating that the host country can increase the FDI position by 0.48 per cent by reducing its STR by one per cent. This result confirms the argument that countries with low STRs are more likely to attract capital inflows. If I constrain the coefficients of lnhoststr and lnhomestr to be equal in absolute value, by creating a variable from (lnhoststr – lnhomestr), the new coefficient is -0.60 and is still significant. This formulation can offer the advantage of including fewer separate tax variables and potential multicollinearity between them. The rationale for such a constraint is that the gap between these two rates represents the gain from profit shifting and the advantage of facing taxation abroad rather than in the home country. That is, MNCs reduce the FDI position in the host country if they gain limited advantage (STR in the host country is higher than that in the home one). In addition, if we use different forms of the tax variable, we will still get expected results. In the regression using hoststr and hoststr squared, the coefficient of hoststr is -0.07 and that of hoststr squared is approximately 0, all of which are statistically significant. That is, the host STR has a linear relationship with its FDI position; if the host STR is reduced by one unit, its FDI position will increase by 0.07 per cent. On the other hand, if we use ln(1-hoststr) as an independent variable, the coefficient turns out to be 0.60 and is statistically significant. That is, the higher the return on capital after tax, the more likely MNCs invest. Also, the initial increase in the FDI position is high when the STR is high; but as STR is reduced over the time, the increase in the FDI position is not that significant. Table 5 reports the impact of the host country’s STR on its FDI position using three different functional forms. The functional form using lnhoststr shows the greatest impact on the value of FDI: the FDI position falls by more than sixty per cent when tax increases from 0.1 to 0.4, followed by the regression using ln(1-hoststr) with a twenty-per-cent decrease. If we use hoststr and hoststr squared, the increase in the tax rate from 0.1 to 0.4 causes an insignificant decrease in the FDI position of two per cent.

Lnhomestr: the coefficient is 1.09, indicating that if the domestic STR is higher by one per cent, the home country will increase its FDI position in the partner country by 1.09 per cent.

Lngdphost: the coefficient is 0.85, indicating that if the host country’s GDP in current U.S dollars increases by one per cent, its FDI position will increase by 0.85 per cent. The fact that the effect of host country’s GDP on the FDI position is less than proportionate (0.85 rather than 1), it can be inferred that an increase in GDP is caused by an increase in the population, as economies of scale make the country proportionately less dependent on foreign investment.[[10]](#footnote-11) On the other hand, if both the home and the host countries grow at the same rate, say ten per cent, the increase in FDI will be greater than 10 per cent. Therefore, a long-run equilibrium where all nations grow at the same rate will still have FDI increasing at a faster rate.

Lngdphome: the coefficient is 0.39, indicating that if the home country’s GDP in current U.S dollars increase by one percent, the country will increase its outward position in its partner country by 0.39 per cent. This result also confirms that competition among home countries; that is, the richer the country, the more likely it is able to benefit from investing abroad.

Lnpophost: the coefficient is -1.79, indicating that if the host’s population increases by one per cent, its FDI position will decrease by 1.79 per cent. Equivalently, we can infer that one per cent increase in the GDP per capita will lead to 1.79 per cent increase in the FDI position.[[11]](#footnote-12) The negative sign of this coefficient explains a popular phenomenon that large countries are relatively less dependent on foreign investment as a percentage of GDP as they can exploit economies of scale in the domestic market (Frankel, 1997, p. 57).

Lnpophome: the coefficient is 11.77, indicating that if the home country’s population increases by one per cent, its outward FDI position in the partner country will increase by 11.77 per cent. This coefficient is unexpectedly high, perhaps balanced by the unexpectedly high coefficient for lnplwohome. A larger population at home for a given work force may encourage an MNC to invest abroad, because domestic demand will have driven up the cost of labor at home.

Lnplwohome: the coefficient is -10.55, indicating that if the number of potential workers in the home country increases by one per cent, the country will reduce its outward FDI position by 10.55 per cent. An increase in the potential work force at home may reduce outward FDI because costs of production will become lower at home for a given level of demand.

Lnemphost: the coefficient is -1.54, indicating that if the number of employed workers in the host country increases by one per cent, its FDI position will decrease by 1.54 per cent. It can be argued in this case that MNCs aim to create more jobs for available but unemployed workers in the new country, rather than compete with foreign firms over the skillful and employed ones.

Lnemphome: the coefficient is 2.01 per cent, indicating that if the number of employed workers in the home country increases by one per cent, the country will increase the outward FDI position in its partner one by 2.01 per cent. As employment at home rises, labor gets more expensive, MNCs thus have an incentive to invest abroad.

Lnopen: the coefficient is 0.25, indicating that if the host country increases its openness index by one percent, its FDI position will increase by 0.25 per cent.

Lnwastr: the coefficient is 2.06, indicating if other host countries raise their weighted average STRs by one per cent, the FDI position in the host country being considered will increase by 2.06 per cent. This result confirms the argument that the tax comparison plays an important role in the MNCs’ decision to invest abroad.

Interactions between lnhoststr and the dummy variables:

Without any interaction term, we know that reducing the STR by one per cent will increase the host country’s FDI position by 0.48 per cent. However, the effect of the STR on the FDI position is more significant if the host country is in either the Asian or African continent. That is, by reducing one per cent of STR, an Asian, African country can increase the FDI position by 0.84, and 1.11 per cent, respectively. Besides, reducing STR may not be a priority for European countries or those in the OECD, as one per cent reduction in the STR only lead to 0.09, or 0.13 per cent increase in the FDI position, respectively. Therefore, it can be inferred that under-developed or developing countries need to rely on the tax competition whereas developed ones can rely on other advantageous factors instead of reducing taxes in order to attract the foreign investment.

If comparing among the home countries, the impact of the host country’s STR is more significant if it attracts FDI from France. By reducing one per cent of the STR, a typical host country can increase it FDI position from France by 1.05 per cent. If the home country is Germany, the coefficient of lnhostr is 0.25; that is, a host country does not need to reduce corporate taxes at all to attract German MNCs. I cannot conclude about the tax competition among countries in the American continent as the coefficient is not significant. The fact that French MNCs appear to be more sensitive to the host country’s tax rate is consistent with the fact that the country follows a territorial system of taxation. Because the FDI occurs outside of the French territory is not subject to French tax, the only income tax MNCs pay is the local one. As a result, the French result is consistent with our expectations. However, the result for Germany, another territorial country, shows the opposite pattern; this result is not consistent with our expectations.

4.2 lnhoststr as a dependent variable

Coefficients of lnhomestr, lnopen, lnwastr, lnpit, and all the year dummy variables except for y94, y95, y08, and y09 are statistically significant in all of the nine regressions. Coefficients of lnhomestr, lnopen, and lnwastr have negative signs, which indicate that the host country is likely to impose a low STR when the home country’s STR is high, the host country is open to FDI, and the weighted average STR in other host countries are high. Additionally, coefficients of lnpit have positive signs, indicating that corporate taxes are likely to be low when personal ones are low. It can be inferred that the tax policy seems more responsive to domestic concerns rather than foreign competition.

In the fixed effects regression with lnhoststr as the dependent variables, the P-value for the F test that all u\_i=0 is almost zero; thus the iid condition is violated. As a result, results from the pooled regression are not reliable. In the random effects regression, none of coefficients of the home and the oecd dummy variables is statistically significant. Coefficients of the dummy variables af and as are significant if we use lnppp05host instead of lngdphost as the independent variables, implying that STRs in Africa are higher and those in Asia are lower than those in the American continent. Using lngdphost or lnppphost as independent variables in the random effects regression, one can conclude that the STRs in Europe are higher than those in the American continent.

The Hausman test for the fixed effects and random effects regressions indicate that coefficients of the random effects regression are not consistent. I will thus use the fixed effects regression with lnppphost as an explanatory variable to interpret the coefficients, as they are both consistent and statistically significant; the fixed effects regression with lngdphost as an explanatory variable also give similar results. As a result, using the purchasing power parity measures do not surpass the other measure in current U.S dollars at explaining our FDI and STR stories. Because the level of inflation in the host country can directly influence MNCs’ decision to invest, i.e. MNCs are not attracted to a host country with high fluctuation of the price level, it can be argued that a host country may set a low STR in order to offset the impact of high inflation. As a result, the two measures of the GDP, which does not control on inflation, are better at explaining the change in STR than lnppphost05.

Lnpo: the coefficient is -0.03, indicating that if the FDI position in the previous year reduces by one per cent, the host country’s STR in the current year will increase by 0.03 per cent. As a result, the argument that low FDI positions induce host countries to lower their STRs is no longer valid. Instead, if the FDI is low, domestic firms carry most of the activities in the host country, thus the STRs can be high.

Lnhomestr: the coefficient is -0.17, indicating that if the home country’s STR increases by one per cent, that of host one will decrease by 0.17 per cent; the sign of the coefficient is unexpected. This result infers that a low STR of the home country does not induce the host country to reduce its own rate in order to attract more FDI into the host one.

Lnppphost: the coefficient is -0.09, indicating that if the host country’s GDP in current international dollars increases by one per cent, its STR will decrease by 0.09 per cent. As the host country’s income rises, the country chooses to lower its STR. That contrasts with the more expected result that as a country’s income rises, we expect it to increase infrastructure and amenities; instead it seems to have taken advantage of its growing income to reduce taxes. On the other hand, if the increase in the host country’s income is a result of high inflation, it is logical to argue that the country needs to reduce its STR in order to offset the negative impact of inflation on MNCs’ decision to invest in the host country.

Lnpophost: the coefficient is -1.75, indicating that if the host country’s population increases by one per cent, its STR will reduce by 1.75 per cent. This result confirms the phenomenon that large countries are less open to trade and foreign investment as they can gain economies of scale in the domestic market. Equivalently, the coefficient of the PPP GDP per capita is 1.75; that is, the high GDP per capita can protect the host from the tax competition.

Lnplwohost: the coefficient is 1.88, indicating that if the number of potential workers in the host country increases by one per cent, its STR will also increase by 1.88 per cent. This result confirms the argument that with the large number of potential workers, the host country does not choose to lower its tax rate. The host country will be more attractive as a productive site and therefore needs not compete for FDI with lower taxes.

Lnemphost: the coefficient is -0.83, indicating that if the number of actual workers in the host country increases by one percent, its STR will decrease by 0.83 per cent. Greater competition for existing work force suggests the increase in wages and the need to compete with lower taxes.

Lnopen: the coefficient is -0.05, indicating that if the host country increases its openness index by one percent, its STR will reduce by 0.05 per cent.

Lnwastr: the coefficient is -0.83, indicating that if other host countries increase their weighted average STR by one per cent, the host country will reduce its STR by 0.83 per cent. This result, which is unexpected, refutes the argument about the tax competition among the host countries. It is also inconsistent with Devereux’s, Lockwood’s, and Redoano’s results (2008). These authors concluded that the host country’s STR has a positive relationship with the weighted average of values of other countries’ STRs. That is, the host country has a pressure to reduce its tax rate if other countries are doing so. On the other hand, if I use the log of the simple average STR of the host countries excluding Bermuda, where STR remained zero over the years, there is also no strong evidence that the coefficient of lnavg\_str (simple average STR) has a positive sign. The signs of the coefficients of lnavg\_str are the same whether I include the year dummy variables or not: regressions using lngdphost and lnppphost as independent variables yield negative coefficients, whereas regression using lnppphost05 as an independent variable yield a positive coefficient of lnavg\_str. However, the coefficients of lnavg\_str are not significant in all the regressions including the year dummy variables. Without the year dummy variables, the coefficient of lnavg\_str is -0.27 if lngdphost is an independent variable; the coefficient is 0.22 if lnppphost05 is an independent variable. In the third case where I do not control on the year dummy variables and lnppphost is used as an independent variable to measure the host country’s income, the coefficient of lnavg\_str is not significant.

Lnpit: the coefficient is 0.47, indicating that if the personal taxes reduce by one per cent; corporate taxes will reduce by 0.47 per cent. This result indicates that the STR depends more on other domestic tax rates, rather than external ones.

Year dummy variables: all coefficients are statistically significant except for y94, y95, y08, and y09. All the coefficients have positive values, indicating that STRs in previous years are higher than those in 2010, or equivalently, the STR decreases over time.

Interactions between llnwastr (the lagged variable of lnwastr) and dummy variables:

Table 4 reports the result when we use the lagged variable of lnwastr, instead of lnwastr, as an independent variable. As stated earlier, the result when we use the lnwastr as an independent variable is not consistent with that of the three authors in 2008. However, we still get the negative coefficient of llnwastr. If we analyze countries by region, by the home country, or by the oecd interaction, we still get a negative relationship between the host country’s STR and the weighted average STR of other countries; the coefficient of llnwastr of a host country in the European continent or in the OECD has a smaller absolute value than those in other categories or the coefficient of llnwastr without any interaction term.

5. Conclusion

- Outward FDI positions of the four home countries have increased whereas STRs of the host countries have decreased over the past two decades, imposing questions on researchers whether the host countries are participating in the tax competition to attract FDI.

- It is true that MNCs pay more attention to the host countries with low tax rates when deciding to invest abroad. However, there is no strong evidence that the host countries take into account the MNCs’ decisions when setting their STRs. That is, the low STRs of the home country and other host ones do not induce a low STR in the host country being considered. In other words, the STR depends more on domestic tax rates, rather than external ones.

- MNCs look for low STRs when investing in African and Asian countries; whereas they take into account other factors when investing in European and OECD countries. That is, a decrease in the STR in an African or Asian country has a larger impact on the increase in the FDI position in that host country compared to an European or OECD one.

- There is observable result about the competition among the home countries. That is, home countries with high GDP and large population can put more investment abroad to benefit from low labor costs and high returns to capital. Also, these countries can achieve more economies of scale at home and have more specialized expertise that they can use effectively abroad.

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Table 1: Determinants of host country’s FDI positions in 30 countries. Standard errors are reported in the parenthesis.

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Dependent variable: lnpost | Using lngdp, pooled regression | Using lngdp, re | Using lngdp, fe | Using lnppp05, pooled regression | Using lnppp05, re | Using lnppp05, fe | Using lnppp, pooled regression | Using lnppp, re | Using lnppp, fe |
| lnhoststr | 0.27  (0.10) | -0.25  (0.08) | -0.48  (0.09) | 0.15  (0.10) | -0.60  (0.09) | -0.78  (0.10) | 0.17  (0.10) | -0.43  (0.08) | -0.62  (0.09) |
| lnhomestr | 1.40  (0.41) | 1.14  (0.19) | 1.09  (0.19) | 1.15  (0.42) | 0.93  (0.20) | 0.87  (0.20) | 1.31  (0.40) | 1.07  (0.19) | 1.02  (0.19) |
| lngdphost | 0.93  (0.04) | 0.92  (0.05) | 0.85  (0.06) | 1.32  (0.05) | 1.67  (0.09) | 1.77  (0.12) | 1.29  (0.05) | 1.61  (0.09) | 1.70  (0.12) |
| lngdphome | 0.34  (0.33) | 0.41  (0.16) | 0.39  (0.15) | -2.59  (1.96) | -1.06  (0.94) | -1.22  (0.92) | -1.70  (1.29) | -0.55  (0.62) | -0.65  (0.61) |
| lnpophost | -0.40  (0.54) | 1.02  (0.56) | -1.79  (0.84) | 0.02  (0.54) | 0.92  (0.56) | -0.96  (0.84) | -0.08  (0.54) | 1.10  (0.56) | -0.93  (0.85) |
| lnpophome | 3.51  (5.59) | 12.21  (2.76) | 11.77  (2.70) | -11.13  (9.52) | 4.20  (4.70) | 3.30  (4.60) | -3.88  (5.92) | 7.71  (2.98) | 7.16  (2.91) |
| lnplwohost | -0.69  (0.58) | -0.85  (0.58) | 1.13  (0.68) | -2.05  (0.61) | -1.64  (0.59) | -0.14  (0.69) | -1.80  (0.60) | -1.31  (0.59) | 0.34  (0.70) |
| lnplwohome | -6.74  (3.82) | -10.43  (1.82) | -10.55  (1.77) | 3.60  (7.76) | -5.23  (3.71) | -4.80  (3.62) | -2.78  (4.22) | -8.01  (2.03) | -7.97  (1.98) |
| lnemphost | 0.95  (0.19) | -0.46  (0.32) | -1.54  (0.36) | 1.52  (0.18) | -0.24  (0.32) | -1.30  (0.38) | 1.37  (0.18) | -0.72  (0.32) | -1.94  (0.37) |
| lnemphome | 3.50  (1.57) | 1.82  (0.76) | 2.01  (0.74) | 6.17  (1.71) | 3.75  (0.84) | 3.92  (0.82) | 6.30  (1.70) | 3.71  (0.84) | 3.89  (0.82) |
| lnopen | 0.66  (0.03) | 0.35  (0.03) | 0.25  (0.04) | 0.59  (0.03) | 0.15  (0.03) | 0.07  (0.04) | 0.59  (0.03) | 0.15  (0.03) | 0.06  (0.04) |
| lnwastr | 1.88  (1.41) | 2.74  (0.83) | 2.06  (0.82) | -0.54  (1.41) | 1.09  (0.86) | 0.53  (0.86) | -0.50  (1.41) | 1.45  (0.86) | 0.84  (0.85) |
| y93 | -0.92  (0.45) | -1.11  (0.24) | -1.43  (0.24) | -1.76  (0.67) | -1.58  (0.33) | -1.76  (0.33) | -1.55  (0.87) | -1.17  (0.42) | -1.36  (0.42) |
| y94 | -0.83  (0.42) | -1.07  (0.23) | -1.37  (0.23) | -1.53  (0.61) | -1.46  (0.30) | -1.63  (0.30) | -1.36  (0.80) | -1.07  (0.39) | -1.26  (0.39) |
| y95 | -0.85  (0.42) | -1.14  (0.23) | -1.41  (0.23) | -1.37  (0.58) | -1.39  (0.29) | -1.54  (0.29) | -1.22  (0.76) | -1.05  (0.37) | -1.22  (0.37) |
| y96 | -0.60  (0.41) | -0.92  (0.22) | -1.17  (0.22) | -1.11  (0.55) | -1.17  (0.27) | -1.30  (0.27) | -0.93  (0.71) | -0.84  (0.35) | -0.99  (0.35) |
| y97 | -0.72  (0.38) | -1.00  (0.20) | -1.24  (0.20) | -1.25  (0.49) | -1.31  (0.24) | -1.44  (0.24) | -1.10  (0.65) | -1.00  (0.32) | -1.14  (0.32) |
| y98 | -0.74  (0.38) | -0.94  (0.20) | -1.13  (0.20) | -1.20  (0.46) | -1.20  (0.23) | -1.29  (0.23) | -1.09  (0.62) | -0.93  (0.30) | -1.04  (0.30) |
| y99 | -0.56  (0.34) | -0.70  (0.18) | -0.88  (0.18) | -1.02  (0.40) | -0.98  (0.20) | -1.07  (0.20) | -0.95  (0.56) | -0.74  (0.28) | -0.83  (0.28) |
| y00 | -0.40  (0.30) | -0.46  (0.16) | -0.63  (0.16) | -0.92  (0.33) | -0.82  (0.17) | -0.89  (0.17) | -0.88  (0.49) | -0.60  (0.24) | -0.69  (0.24) |
| y01 | -0.18  (0.27) | -0.26  (0.14) | -0.44  (0.14) | -0.79  (0.29) | -0.71  (0.14) | -0.79  (0.14) | -0.74  (0.43) | -0.50  (0.21) | -0.59  (0.21) |
| y02 | -0.12  (0.24) | -0.15  (0.12) | -0.32  (0.13) | -0.71  (0.26) | -0.59  (0.13) | -0.67  (0.13) | -0.65  (0.38) | -0.40  (0.19) | -0.48  (0.18) |
| y03 | -0.18  (0.22) | -0.18  (0.12) | -0.31  (0.12) | -0.58  (0.25) | -0.46  (0.12) | -0.52  (0.12) | -0.55  (0.35) | -0.30  (0.17) | -0.37  (0.17) |
| y04 | -0.21  (0.20) | -0.21  (0.10) | -0.30  (0.10) | -0.47  (0.22) | -0.38  (0.11) | -0.41  (0.11) | -0.45  (0.30) | -0.25  (0.15) | -0.29  (0.15) |
| y05 | -0.26  (0.18) | -0.26  (0.09) | -0.35  (0.09) | -0.48  (0.19) | -0.43  (0.09) | -0.47  (0.09) | -0.46  (0.25) | -0.32  (0.12) | -0.37  (0.12) |
| y06 | -0.31  (0.16) | -0.27  (0.08) | -0.33  (0.08) | -0.45  (0.16) | -0.39  (0.08) | -0.41  (0.08) | -0.44  (0.19) | -0.32  (0.09) | -0.35  (0.09) |
| y07 | -0.34  (0.16) | -0.28  (0.08) | -0.29  (0.08) | -0.33  (0.16) | -0.27  (0.08) | -0.26  (0.08) | -0.35  (0.17) | -0.25  (0.08) | -0.25  (0.08) |
| y08 | -0.17  (0.15) | -0.12  (0.07) | -0.17  (0.07) | -0.27  (0.15) | -0.20  (0.07) | -0.24  (0.07) | -0.28  (0.15) | -0.17  (0.07) | -0.21  (0.07) |
| y09 | -0.05  (0.14) | 0.01  (0.07) | -0.02  (0.06) | -0.22  (0.15) | -0.09  (0.07) | -0.11  (0.07) | -0.19  (0.15) | -0.06  (0.07) | -0.08  (0.07) |
| us | 0.39  (3.43) | -3.78  (1.74) | n/a | 6.69  (4.53) | -0.62  (2.32) | n/a | 4.03  (3.68) | -2.27  (1.91) | n/a |
| uk | 0.74  (0.76) | 1.82  (0.44) | n/a | -0.68  (0.96) | 1.06  (0.54) | n/a | -0.13  (0.80) | 1.42  (0.47) | n/a |
| fr | 0.55  (0.73) | 1.23  (0.42) | n/a | -0.31  (0.82) | 0.84  (0.46) | n/a | 0.14  (0.74) | 1.14  (0.43) | n/a |
| am | 0.36  (0.08) | 0.96  (0.25) | n/a | 0.21  (0.08) | 0.68  (0.25) | n/a | 0.28  (0.08) | 0.86  (0.25) | n/a |
| eu | 0.80  (0.09) | 1.65  (0.29) | n/a | 0.91  (0.10) | 1.79  (0.28) | n/a | 0.95  (0.09) | 1.94  (0.28) | n/a |
| as | -0.22  (0.10) | 0.63  (0.25) | n/a | -0.37  (0.10) | 0.27  (0.25) | n/a | -0.32  (0.10) | 0.51  (0.24) | n/a |
| oecd | -0.08  (0.07) | 0.07  (0.22) | n/a | -0.13  (0.07) | -0.36  (0.22) | n/a | -0.09  (0.07) | -0.24  (0.22) | n/a |
| R-squared | 0.81 | w/i: 0.74  btw: 0.80  overall:  0.78 | w/i: 0.74  btw: 0.18  overall: 0.19 | 0.81 | w/i: 0.74  btw: 0.78  overall: 0.77 | w/i: 0.74  btw: 0.30  overall: 0.31 | 0.81 | w/i: 0.74  btw: 0.78  overall:  0.77 | w/i: 0.74  btw: 0.25  overall: 0.27 |

Table 2: Determinants of host country’s STRs in 30 countries. Standard errors are reported in the parenthesis.

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Dependent variable: lnhoststr | Using lngdp, pooled regression | Using lngdp, re | Using lngdp, fe | Using lnppp05, pooled regression | Using lnppp05, re | Using lnppp05, fe | Using lnppp, pooled regression | Using lnppp, re | Using lnppp, fe |
| lnpo | 0.01  (0.01) | -0.01  (0.01) | -0.03  (0.01) | -0.005  (0.01) | -0.02  (0.01) | -0.03  (0.01) | -0.005  (0.01) | -0.02  (0.01) | -0.03  (0.01) |
| lnhomestr | -0.39  (0.07) | -0.22  (0.04) | -0.17  (0.04) | -0.36  (0.07) | -0.20  (0.03) | -0.17  (0.03) | -0.36  (0.07) | -0.22  (0.04) | -0.17  (0.04) |
| lngdphost | 0.13  (0.01) | -0.02  (0.01) | -0.08  (0.02) | 0.24  (0.02) | 0.07  (0.02) | -0.04  (0.03) | 0.24  (0.02) | 0.07  (0.03) | -0.09  (0.03) |
| lnpophost | 0.86  (0.13) | -0.29  (0.16) | -1.69  (0.23) | 1.13  (0.14) | -0.42  (0.14) | -1.51  (0.20) | 1.16  (0.13) | -0.04  (0.17) | -1.75  (0.24) |
| lnplwohost | -1.16  (0.14) | 0.65  (0.17) | 1.87  (0.19) | -1.65  (0.15) | 0.34  (0.15) | 1.34  (0.17) | -1.65  (0.15) | 0.35  (0.18) | 1.88  (0.20) |
| lnemphost | 0.25  (0.05) | -0.30  (0.08) | -0.83  (0.09) | 0.38  (0.05) | 0.09  (0.08) | -0.22  (0.08) | 0.34  (0.05) | -0.31  (0.08) | -0.83  (0.09) |
| lnopen | -0.06  (0.01) | -0.04  (0.01) | -0.07  (0.01) | -0.07  (0.01) | -0.02  (0.01) | -0.04  (0.01) | -0.07  (0.01) | -0.04  (0.01) | -0.05  (0.01) |
| lnwastr | -1.73  (0.24) | -1.00  (0.15) | -0.85  (0.14) | -1.62  (0.24) | -0.92  (0.13) | -0.81  (0.12) | -1.60  (0.24) | -0.99  (0.15) | -0.83  (0.14) |
| lnpit | 0.21  (0.02) | 0.43  (0.03) | 0.48  (0.03) | 0.21  (0.02) | 0.45  (0.02) | 0.49  (0.03) | 0.22  (0.02) | 0.43  (0.03) | 0.47  (0.03) |
| y93 | 0.83  (0.08) | 0.42  (0.06) | 0.12  (0.06) | 0.73  (0.08) | 0.46  (0.05) | 0.27  (0.05) | 0.81  (0.08) | 0.47  (0.06) | 0.12  (0.06) |
| y94 | 0.75  (0.08) | 0.37  (0.05) | 0.09  (0.05) | 0.66  (0.08) | 0.41  (0.04) | 0.23  (0.05) | 0.74  (0.08) | 0.42  (0.05) | 0.09  (0.06) |
| y95 | 0.76  (0.08) | 0.39  (0.05) | 0.11  (0.05) | 0.68  (0.08) | 0.42  (0.05) | 0.24  (0.05) | 0.75  (0.08) | 0.43  (0.06) | 0.11  (0.06) |
| y96 | 0.78  (0.08) | 0.43  (0.05) | 0.17  (0.05) | 0.69  (0.08) | 0.43  (0.04) | 0.27  (0.04) | 0.76  (0.08) | 0.46  (0.05) | 0.16  (0.05) |
| y97 | 0.69  (0.07) | 0.37  (0.05) | 0.13  (0.05) | 0.60  (0.07) | 0.37  (0.04) | 0.23  (0.04) | 0.67  (0.07) | 0.40  (0.05) | 0.13  (0.05) |
| y98 | 0.73  (0.08) | 0.39  (0.05) | 0.16  (0.05) | 0.64  (0.07) | 0.40  (0.04) | 0.26  (0.04) | 0.71  (0.07) | 0.43  (0.05) | 0.16  (0.05) |
| y99 | 0.66  (0.07) | 0.35  (0.04) | 0.14  (0.04) | 0.59  (0.07) | 0.36  (0.04) | 0.23  (0.04) | 0.64  (0.07) | 0.38  (0.04) | 0.14  (0.04) |
| y00 | 0.56  (0.06) | 0.30  (0.04) | 0.12  (0.04) | 0.49  (0.06) | 0.33  (0.03) | 0.22  (0.03) | 0.54  (0.06) | 0.33  (0.04) | 0.13  (0.04) |
| y01 | 0.47  (0.05) | 0.24  (0.03) | 0.08  (0.03) | 0.40  (0.05) | 0.28  (0.03) | 0.18  (0.03) | 0.45  (0.05) | 0.27  (0.03) | 0.09  (0.03) |
| y02 | 0.43  (0.04) | 0.21  (0.03) | 0.06  (0.03) | 0.36  (0.04) | 0.24  (0.02) | 0.15  (0.02) | 0.40  (0.04) | 0.24  (0.03) | 0.07  (0.03) |
| y03 | 0.42  (0.04) | 0.21  (0.03) | 0.08  (0.03) | 0.37  (0.04) | 0.24  (0.02) | 0.16  (0.02) | 0.40  (0.04) | 0.24  (0.03) | 0.08  (0.03) |
| y04 | 0.38  (0.04) | 0.20  (0.03) | 0.09  (0.02) | 0.33  (0.04) | 0.22  (0.02) | 0.15  (0.02) | 0.37  (0.04) | 0.23  (0.03) | 0.10  (0.03) |
| y05 | 0.28  (0.04) | 0.15  (0.02) | 0.06  (0.02) | 0.24  (0.04) | 0.16  (0.02) | 0.11  (0.02) | 0.27  (0.04) | 0.17  (0.02) | 0.06  (0.02) |
| y06 | 0.23  (0.04) | 0.13  (0.02) | 0.06  (0.02) | 0.20  (0.03) | 0.14  (0.02) | 0.10  (0.02) | 0.21  (0.03) | 0.14  (0.02) | 0.07  (0.02) |
| y07 | 0.23  (0.04) | 0.14  (0.02) | 0.10  (0.02) | 0.21  (0.04) | 0.13  (0.02) | 0.11  (0.02) | 0.22  (0.03) | 0.15  (0.02) | 0.10  (0.02) |
| y08 | 0.01  (0.03) | 0.01  (0.02) | -0.00  (0.02) | 0.002  (0.03) | 0.02  (0.01) | 0.01  (0.01) | 0.01  (0.03) | 0.02  (0.02) | 0.00  (0.02) |
| y09 | 0.02  (0.03) | 0.01  (0.02) | -0.01  (0.01) | 0.02  (0.03) | 0.01  (0.01) | 0.00  (0.01) | 0.02  (0.03) | 0.01  (0.02) | -0.00  (0.01) |
| af | 0.23  (0.03) | -0.07  (0.07) | n/a | 0.27  (0.03) | 0.14  (0.06) | n/a | 0.25  (0.03) | -0.02  (0.07) | n/a |
| as | -0.04  (0.02) | -0.08  (0.05) | n/a | -0.04  (0.02) | -0.12  (0.05) | n/a | -0.04  (0.02) | -0.07  (0.05) | n/a |
| eu | 0.03  (0.02) | 0.11  (0.05) | n/a | 0.07  (0.02) | 0.06  (0.05) | n/a | 0.07  (0.02) | 0.11  (0.05) | n/a |
| us | -0.05  (0.02) | -0.02  (0.04) | n/a | -0.03  (0.02) | 0.01  (0.04) | n/a | -0.03  (0.02) | 0.001  (0.04) | n/a |
| uk | -0.08  (0.02) | -0.03  (0.05) | n/a | -0.07  (0.02) | -0.02  (0.04) | n/a | -0.07  (0.02) | -0.03  (0.04) | n/a |
| fr | -0.03  (0.02) | -0.02  (0.04) | n/a | -0.02  (0.02) | -0.02  (0.04) | n/a | -0.02  (0.02) | -0.02  (0.04) | n/a |
| oecd | -0.16  (0.02) | -0.001  (0.05) | n/a | -0.20  (0.02) | -0.08  (0.05) | n/a | -0.20  (0.02) | -0.08  (0.05) | n/a |
| R-squared | 0.52 | w/i: 0.47  btw: 0.23  overall: 0.27 | w/i: 0.51  btw: 0.23  overall: 0.17 | 0.54 | w/i: 0.50  btw: 0.30  overall: 0.36 | w/i: 0.53  btw: 0.22  overall: 0.15 | 0.54 | w/i: 0.46  btw: 0.29  overall: 0.33 | w/i: 0.50  btw: 0.24  overall: 0.18 |

Table 3: Determinants of host country’s FDI positions in 30 countries, including the interaction term between lnhoststr and a dummy variable. Standard errors are reported in the parenthesis.

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Dependent variable: lnpost | Fixed effects, interaction term: am\*lnhoststr | Fixed effects, interaction term: eu\*lnhoststr | Fixed effects, interaction term: as\*lnhoststr | Fixed effects, interaction term: af\*lnhoststr | Fixed effects, interaction term: us\*lnhoststr | Fixed effects, interaction term: uk\*lnhoststr | Fixed effects, interaction term: fr\*lnhoststr | Fixed effects, interaction term: ge\*lnhoststr | Fixed effects, interaction term: oecd\*lnhoststr |
| Lnhoststr | -0.52  (0.09) | -0.82  (0.11) | -0.45  (0.09) | -0.28  (0.09) | -0.43  (0.10) | -0.53  (0.10) | -0.28  (0.10) | -0.70  (0.10) | -0.89  (0.12) |
| lnhomestr | 1.09  (0.19) | 1.10  (0.19) | 1.08  (0.19) | 1.11  (0.19) | 1.12  (0.19) | 1.10  (0.19) | 0.86  (0.19) | 0.89  (0.19) | 1.10  (0.19) |
| lngdphost | 0.89  (0.06) | 0.89  (0.06) | 0.84  (0.06) | 0.90  (0.06) | 0.85  (0.06) | 0.85  (0.06) | 0.86  (0.06) | 0.86  (0.06) | 0.88  (0.06) |
| lngdphome | 0.39  (0.15) | 0.38  (0.15) | 0.38  (0.15) | 0.40  (0.15) | 0.39  (0.15) | 0.39  (0.15) | 0.39  (0.15) | 0.41  (0.15) | 0.39  (0.15) |
| lnpophost | -1.87  (0.84) | -1.59  (0.83) | -2.16  (0.86) | -1.76  (0.83) | -1.80  (0.84) | -1.78  (0.84) | -1.70  (0.84) | -1.80  (0.83) | -1.34  (0.84) |
| lnpophome | 11.66  (2.70) | 11.45  (2.68) | 11.44  (2.71) | 12.15  (2.68) | 11.47  (2.72) | 10.36  (2.99) | 7.95  (2.80) | 12.36  (2.68) | 11.72  (2.69) |
| lnplwohost | 1.16  (0.68) | 0.23  (0.70) | 1.23  (0.68) | 0.86  (0.68) | 1.15  (0.68) | 1.12  (0.68) | 1.02  (0.68) | 1.14  (0.68) | -0.18  (0.73) |
| lnplwohome | -10.52  (1.77) | -10.53  (1.76) | -10.55  (1.77) | -10.61  (1.76) | -10.56  (1.77) | -9.56  (1.99) | -7.45  (1.88) | -11.65  (1.77) | -10.55  (1.76) |
| lnemphost | -1.54  (0.36) | -1.17  (0.37) | -1.38  (0.37) | -1.57  (0.36) | -1.53  (0.36) | -1.54  (0.36) | -1.55  (0.36) | -1.54  (0.36) | -1.20  (0.37) |
| lnemphome | 2.02  (0.74) | 2.09  (0.74) | 2.13  (0.74) | 1.91  (0.74) | 2.10  (0.75) | 2.01  (0.74) | 1.30  (0.75) | 1.65  (0.74) | 2.01  (0.74) |
| lnopen | 0.25  (0.04) | 0.26  (0.04) | 0.24  (0.04) | 0.26  (0.04) | 0.25  (0.04) | 0.25  (0.04) | 0.25  (0.04) | 0.25  (0.04) | 0.24  (0.04) |
| lnwastr | 2.00  (0.82) | 1.82  (0.82) | 1.77  (0.84) | 2.35  (0.82) | 2.18  (0.83) | 2.13  (0.83) | 1.39  (0.83) | 1.56  (0.82) | 2.03  (0.82) |
| y93 | -1.43  (0.24) | -1.38  (0.24) | -1.38  (0.25) | -1.52  (0.24) | -1.49  (0.25) | -1.50  (0.25) | -1.35  (0.24) | -1.31  (0.24) | -1.53  (0.24) |
| y94 | -1.36  (0.23) | -1.33  (0.23) | -1.32  (0.23) | -1.45  (0.23) | -1.42  (0.23) | -1.43  (0.23) | -1.29  (0.23) | -1.26  (0.23) | -1.47  (0.23) |
| y95 | -1.40  (0.23) | -1.37  (0.23) | -1.36  (0.23) | -1.49  (0.23) | -1.46  (0.23) | -1.46  (0.23) | -1.30  (0.23) | -1.28  (0.23) | -1.51  (0.23) |
| y96 | -1.17  (0.22) | -1.13  (0.22) | -1.12  (0.22) | -1.25  (0.22) | -1.22  (0.23) | -1.22  (0.23) | -1.06  (0.22) | -1.04  (0.22) | -1.27  (0.22) |
| y97 | -1.23  (0.20) | -1.21  (0.20) | -1.20  (0.20) | -1.30  (0.20) | -1.28  (0.21) | -1.29  (0.21) | -1.14  (0.20) | -1.12  (0.20) | -1.33  (0.20) |
| y98 | -1.13  (0.20) | -1.10  (0.20) | -1.09  (0.20) | -1.20  (0.20) | -1.18  (0.21) | -1.18  (0.21) | -1.02  (0.20) | -1.00  (0.20) | -1.21  (0.20) |
| y99 | -0.88  (0.18) | -0.85  (0.18) | -0.84  (0.18) | -0.94  (0.18) | -0.92  (0.19) | -0.93  (0.19) | -0.78  (0.18) | -0.76  (0.18) | -0.95  (0.18) |
| y00 | -0.63  (0.16) | -0.61  (0.16) | -0.61  (0.16) | -0.67  (0.16) | -0.67  (0.16) | -0.67  (0.16) | -0.55  (0.16) | -0.53  (0.16) | -0.69  (0.16) |
| y01 | -0.44  (0.14) | -0.41  (0.14) | -0.42  (0.14) | -0.45  (0.14) | -0.47  (0.14) | -0.48  (0.14) | -0.40  (0.14) | -0.37  (0.14) | -0.48  (0.14) |
| y02 | -0.32  (0.13) | -0.28  (0.12) | -0.31  (0.13) | -0.32  (0.12) | -0.34  (0.13) | -0.35  (0.13) | -0.28  (0.13) | -0.25  (0.13) | -0.34  (0.12) |
| y03 | -0.31  (0.12) | -0.27  (0.11) | -0.29  (0.12) | -0.32  (0.11) | -0.34  (0.12) | -0.34  (0.12) | -0.27  (0.11) | -0.24  (0.12) | -0.33  (0.11) |
| y04 | -0.30  (0.10) | -0.26  (0.10) | -0.28  (0.10) | -0.31  (0.10) | -0.32  (0.11) | -0.33  (0.11) | -0.26  (0.10) | -0.24  (0.10) | -0.31  (0.10) |
| y05 | -0.35  (0.09) | -0.33  (0.09) | -0.34  (0.09) | -0.37  (0.09) | -0.37  (0.09) | -0.38  (0.09) | -0.32  (0.09) | -0.30  (0.09) | -0.37  (0.09) |
| y06 | -0.33  (0.08) | -0.32  (0.08) | -0.32  (0.08) | -0.34  (0.08) | -0.35  (0.08) | -0.35  (0.08) | -0.29  (0.08) | -0.28  (0.08) | -0.35  (0.08) |
| y07 | -0.29  (0.08) | -0.28  (0.07) | -0.28  (0.08) | -0.31  (0.07) | -0.31  (0.08) | -0.31  (0.08) | -0.24  (0.08) | -0.23  (0.08) | -0.306  (0.08) |
| y08 | -0.18  (0.07) | -0.19  (0.07) | -0.19  (0.07) | -0.17  (0.07) | -0.18  (0.07) | -0.18  (0.07) | -0.17  (0.07) | -0.16  (0.07) | -0.19  (0.07) |
| y09 | -0.02  (0.06) | -0.02  (0.06) | -0.03  (0.06) | -0.02  (0.06) | -0.03  (0.06) | -0.03  (0.06) | -0.02  (0.06) | -0.01  (0.06) | -0.02  (0.06) |
| Interaction term | 0.48  (0.27) | 0.73  (0.14) | -0.39  (0.19) | -0.83  (0.16) | -0.17  (0.18) | 0.19  (0.18) | -0.77  (0.16) | 0.95  (0.18) | 0.76  (0.16) |

Table 4: Determinants of host country’s STRs in 30 countries, using the lagged variable of lnwastr as an independent variable. Standard errors are reported in the parenthesis.

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Dependent variable: lnhoststr | Fixed effects, interaction term: am\*llnwastr | Fixed effects, interaction term: eu\*llnwastr | Fixed effects, interaction term: as\*llnwastr | Fixed effects, interaction term: af\*llnwastr | Fixed effects, interaction term: us\*llnwastr | Fixed effects, interaction term: uk\*llnwastr | Fixed effects, interaction term: fr\*llnwastr | Fixed effects, interaction term: ge\*llnwastr | Fixed effects, interaction term: oecd\*llnwastr |
| lnpo | -0.02  (0.01) | -0.02  (0.01) | -0.03  (0.01) | -0.03  (0.01) | -0.03  (0.01) | -0.03  (0.01) | -0.03  (0.01) | -0.03  (0.01) | -0.03  (0.01) |
| lnhomestr | -0.12  (0.04) | -0.15  (0.04) | -0.15  (0.04) | -0.14  (0.04) | -0.20  (0.04) | -0.17  (0.04) | -0.18  (0.04) | -0.16  (0.07) | -0.17  (0.04) |
| lngdphost | -0.06  (0.02) | -0.06  (0.02) | -0.09  (0.02) | -0.08  (0.02) | -0.07  (0.02) | -0.08  (0.02) | -0.08  (0.02) | -0.08  (0.02) | -0.06  (0.02) |
| lnpophost | -1.54  (0.24) | -1.37  (0.23) | -1.80  (0.23) | -1.81  (0.24) | -1.73  (0.23) | -1.77  (0.24) | -1.82  (0.24) | -1.81  (0.24) | -1.50  (0.24) |
| lnplwohost | 1.78  (0.20) | 1.11  (0.20) | 1.86  (0.20) | 2.01  (0.20) | 1.79  (0.20) | 1.94  (0.20) | 1.95  (0.20) | 1.97  (0.20) | 1.27  (0.21) |
| lnemphost | -0.94  (0.09) | -0.66  (0.09) | -0.71  (0.10) | -0.86  (0.09) | -0.80  (0.09) | -0.84  (0.09) | -0.84  (0.09) | -0.85  (0.09) | -0.75  (0.09) |
| lnopen | -0.05  (0.01) | -0.05  (0.01) | -0.08  (0.01) | -0.07  (0.01) | -0.06  (0.01) | -0.06  (0.01) | -0.06  (0.01) | -0.06  (0.01) | -0.07  (0.01) |
| llnwastr | -0.46  (0.14) | -1.01  (0.14) | -0.66  (0.14) | -0.69  (0.14) | -1.94  (0.24) | -0.81  (0.15) | -0.82  (0.15) | -0.69  (0.14) | -1.16  (0.15) |
| lnpit | 0.51  (0.03) | 0.55  (0.03) | 0.56  (0.03) | 0.53  (0.03) | 0.51  (0.03) | 0.53  (0.03) | 0.52  (0.03) | 0.53  (0.03) | 0.52  (0.03) |
| y93 | n/a | n/a | n/a | n/a | n/a | n/a | n/a | n/a | n/a |
| y94 | 0.05  (0.05) | 0.08  (0.05) | 0.05  (0.05) | 0.05  (0.06) | 0.35  (0.07) | 0.11  (0.06) | 0.10  (0.06) | 0.05  (0.06) | 0.05  (0.05) |
| y95 | 0.05  (0.05) | 0.08  (0.05) | 0.06  (0.05) | 0.05  (0.05) | 0.34  (0.07) | 0.11  (0.06) | 0.11  (0.06) | 0.06  (0.05) | 0.06  (0.05) |
| y96 | 0.11  (0.05) | 0.14  (0.05) | 0.13  (0.05) | 0.12  (0.05) | 0.41  (0.07) | 0.18  (0.06) | 0.17  (0.06) | 0.12  (0.05) | 0.13  (0.05) |
| y97 | 0.09  (0.05) | 0.12  (0.05) | 0.11  (0.05) | 0.10  (0.05) | 0.38  (0.07) | 0.15  (0.06) | 0.15  (0.05) | 0.10  (0.05) | 0.11  (0.05) |
| y98 | 0.10  (0.05) | 0.14  (0.05) | 0.12  (0.05) | 0.11  (0.05) | 0.36  (0.06) | 0.16  (0.05) | 0.16  (0.05) | 0.11  (0.05) | 0.12  (0.05) |
| y99 | 0.11  (0.05) | 0.14  (0.04) | 0.12  (0.05) | 0.11  (0.05) | 0.37  (0.06) | 0.16  (0.05) | 0.16  (0.05) | 0.12  (0.05) | 0.13  (0.05) |
| y00 | 0.10  (0.04) | 0.13  (0.04) | 0.12  (0.04) | 0.11  (0.04) | 0.34  (0.05) | 0.15  (0.04) | 0.15  (0.04) | 0.11  (0.04) | 0.13  (0.04) |
| y01 | 0.07  (0.03) | 0.09  (0.03) | 0.08  (0.03) | 0.07  (0.03) | 0.25  (0.04) | 0.10  (0.04) | 0.10  (0.04) | 0.07  (0.03) | 0.08  (0.03) |
| y02 | 0.04  (0.03) | 0.06  (0.03) | 0.04  (0.03) | 0.04  (0.03) | 0.18  (0.04) | 0.07  (0.03) | 0.07  (0.03) | 0.04  (0.03) | 0.05  (0.03) |
| y03 | 0.05  (0.03) | 0.06  (0.03) | 0.05  (0.03) | 0.05  (0.03) | 0.18  (0.03) | 0.07  (0.03) | 0.07  (0.03) | 0.05  (0.03) | 0.06  (0.03) |
| y04 | 0.07  (0.03) | 0.09  (0.02) | 0.08  (0.03) | 0.08  (0.03) | 0.21  (0.03) | 0.10  (0.03) | 0.10  (0.03) | 0.08  (0.03) | 0.09  (0.03) |
| y05 | 0.05  (0.02) | 0.07  (0.02) | 0.06  (0.02) | 0.05  (0.02) | 0.17  (0.03) | 0.08  (0.03) | 0.08  (0.03) | 0.06  (0.02) | 0.06  (0.02) |
| y06 | 0.06  (0.02) | 0.07  (0.02) | 0.07  (0.02) | 0.06  (0.02) | 0.16  (0.03) | 0.08  (0.02) | 0.08  (0.02) | 0.07  (0.02) | 0.07  (0.02) |
| y07 | 0.08  (0.02) | 0.09  (0.02) | 0.09  (0.02) | 0.08  (0.02) | 0.15  (0.02) | 0.10  (0.02) | 0.10  (0.02) | 0.09  (0.02) | 0.09  (0.02) |
| y08 | 0.04  (0.02) | 0.05  (0.02) | 0.04  (0.02) | 0.04  (0.02) | 0.11  (0.02) | 0.05  (0.02) | 0.05  (0.02) | 0.04  (0.02) | 0.05  (0.02) |
| y09 | -0.01  (0.01) | -0.01  (0.01) | -0.01  (0.01) | -0.01  (0.01) | -0.01  (0.01) | -0.01  (0.01) | -0.01  (0.01) | -0.01  (0.01) | -0.01  (0.01) |
| Interaction term | -0.45  (0.07) | 0.84  (0.07) | -0.35  (0.07) | 0.07  (0.09) | 0.59  (0.09) | -0.19  (0.08) | -0.22  (0.07) | 0.07  (0.21) | 0.54  (0.07) |

Table 5: Impacts of the tax rate on the value of FDI position in three tax formulations; t denotes the host country’s STR.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Tax functional form | t = 0.1 | t = 0.2 | t = 0.3 | t = 0.4 |
| -0.48\*ln(t) | 1.105 | 0.773 | 0.578 | 0.440 |
| -0.07\*(t) + 0\*(t^2) | -0.007 | -0.014 | -0.021 | -0.028 |
| 0.6\*ln(1-t) | -0.063 | -0.134 | -0.214 | -0.307 |

1. Eight papers that were surveyed in the paper by Bellak, C., Leibrecht, M., and Romisch, R. On the appropriate measure of tax burden on foreign direct investment to the CEEs. *Applied Economics Letters,* 2007, **14*,*** 603-606. [↑](#footnote-ref-2)
2. See Grubert, H., 2012. Foreign taxes and the growing share of U.S. multinational company income abroad: profits, not sales, are being globalized. Working Paper 103, Office of Tax Analysis, The Department of the Treasury. Washington D.C. [↑](#footnote-ref-3)
3. These data were used in Devereux, M.P., R. Griffith and A. Klemm (2002) *Corporate Income Tax Reforms and International Tax Competition*, *Economic Policy*, Vol. 35, pp. 451-495. [↑](#footnote-ref-4)
4. Devereux, M., Lockwood, B., and Redoano, M. (2008). “Do countries compete over corporate tax rates.” Journal of Public Economics 92, 2008, 1210-1235. [↑](#footnote-ref-5)
5. All definitions of different measures in this paragraph are given in World dataBank, various years, *World Development Indicators and Global Development Finance,* Washington, DC: The World Bank. [↑](#footnote-ref-6)
6. The International Labor Organization defines the term “employment” as both paid-employment and self-employment. Member of the armed forces are included. The measure of total employment include workers who are employed or those who are on temporary leave provided that they have a formal job attachment. [↑](#footnote-ref-7)
7. Glass, A. “[Vertical versus Horizontal FDI](http://econweb.tamu.edu/aglass/VerticalVsHorizontalFDI.pdf)” in Ramkishen S. Rajan and Kenneth A. Reinert, eds., [*Princeton Encyclopedia of the World Economy*](http://press.princeton.edu/titles/8736.html), Princeton University Press (2008) [↑](#footnote-ref-8)
8. Philip R. Lane and Gian Maria Milesi-Ferretti (2007),  "[The external wealth of nations mark II: Revised and extended estimates of foreign assets and liabilities, 1970–2004](http://www.sciencedirect.com/science?_ob=ArticleURL&_udi=B6V6D-4NJ7WGN-1&_user=10&_coverDate=11%2F30%2F2007&_rdoc=1&_fmt=high&_orig=browse&_srch=doc-info%28%23toc%235812%232007%23999269997%23673025%23FLA%23display%23Volume%29&_cdi=5812&_sort=d&_docanchor=&_ct=12&_acct=C000050221&_version=1&_urlVersion=0&_userid=10&md5=f0246ea81843e9f6f495241e818fca86)", Journal of International Economics 73, November, 223-250. [↑](#footnote-ref-9)
9. My measure only includes the percentage of total stock of FDI assets and liabilities over the GDP whereas Lane and Milesi-Ferretti calculated the total assets and liabilities of portfolio equity, FDI, debt, financial derivatives, and foreign exchange reserves minus gold. [↑](#footnote-ref-10)
10. Read Frankel, J. 1997. *Regional Trading Blocs in the World Economic System*. Institute for International Economics: Washington, DC, p. 57-59 [↑](#footnote-ref-11)
11. For more information about how to interpret the coefficients of GDP, population and GDP per capita, please read Frankel, J. 1997. *Regional Trading Blocs in the World Economic System*. Institute for International Economics: Washington, DC, p. 57-59 [↑](#footnote-ref-12)