



Anh Mai Bui '13

INTRODUCTION

Statutory tax rates (STRs) have reduced during the last two decades, which may suggest that host countries are competing against each other to attract foreign direct investment (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 includes thirty countries from five different continents, which are both OECD and non-OECD ones. The four home countries are the United States, the United Kingdom, France, and Germany. The estimates indicate that multinational corporations (MNCs) are attracted to the host countries with low statutory tax rates (STRs). 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. My research result is consistent with earlier literature that a low statutory tax rate is an important factor in a MNC's decision to invest abroad. However, I do not observe any direct tax competition among the host countries, which is inconsistent with Devereux's, Lockwood's, and Redoano's results (2008). There is no distinction in the impacts of independent variables on FDI in the four home countries. On the other hand, the impact of a low STR on increasing FDI is more significant in Asian and African host countries, compared to European and OECD ones.

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:

- $\ln post = a_0 + a_1 \ln hoststr + a_2 \ln homestr + a_3 \ln gdp_{host} + a_4 \ln gdp_{home} + a_5 \ln pop_{host} + a_6 \ln pop_{home} + a_7 \ln plwo_{host} + a_8 \ln plwo_{home} + a_9 \ln em_{host} + a_{10} \ln em_{home} + a_{11} \ln open + a_{12} \ln wastr + e_{i,j}$
- $\ln hoststr = b_0 + b_1 \ln po + b_2 \ln homestr + b_3 \ln gdp_{host} + b_4 \ln pop_{host} + b_5 \ln plwo_{host} + b_6 \ln em_{host} + b_7 \ln open + b_8 \ln wastr + b_9 \ln pit + e_{i,j}$

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; gdp_{host} and gdp_{home} are the GDP of the host and home countries respectively; pop_{host} and pop_{home} are the total population in the host and home countries respectively; plwo_{host} and plwo_{home} are the number of potential workers in the host and home countries respectively; em_{host} and em_{home} 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.

In this study, I utilized econometrics methods to run the pooled, random effects and fixed effects regressions. It turns out that only the results from fixed effects regressions are reliable.

DATA

- 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.
- STRs 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).
- The World Bank reports the Gross Domestic Product (GDP) in current US dollars of the thirty countries.
- The U.S Census Bureau provides the total population data and the population aged 15-64 in thousands, which measures the number of potential workers in the workforce, for the thirty countries.
- In order to gather the total employment data, 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. Total employment, 15+ (thousands) is calculated by using the following formula:

$$\text{Total employment, 15+ (thousands)} = (\text{Employment to Population Ratio, 15+ (\%)}) * (\text{Total Population, 15+}) / 100000.$$
- 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. 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. 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.
- Personal income taxes 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.
- I utilized STATA to calculate the weighted average tax rate using the following formula:

$$wastr = (\text{total str} * \text{gdp} - \text{hoststr} * \text{hostgdp} - \text{homestr} * \text{homegdp}) / (\text{total gdp} - \text{hostgdp} - \text{homegdp})$$
- I also calculated the simple average tax rate, in which STRs are not weighted by GDP, to compare with the case in which I use wastr as an independent variable.

FUN FACTS

- 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.
- 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.
- 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. The most interesting case is Bermuda whose STR was always zero from 1993 to 2010.

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.

ACKNOWLEDGEMENT

I would like to thank Professor Mutti for his mentoring and support in this research. I also would like to thank Grinnell College for providing the Mentor Advanced Projects and the funding to make this research feasible.

BIBLIOGRAPHY

- Devereux, M., Lockwood, B., Redoano, M. 2008. Do countries compete over corporate tax rates? *Journal of Public Economics* 92, 1210-1235.
- Mintz, J. and Weichenrieder, A., 2008. *The Indirect Side of Direct Investment – Multinational Company Finance and Taxation*. MIT Press, Cambridge, MA.
- KPMG, 2006. *KPMG's Corporate Tax Rate Survey*. An international analysis of corporate tax rates from 1993 to 2006. KPMG International.
- KPMG, 2009. *KPMG's Corporate and Indirect Tax Survey 2009*. KPMG International.
- KPMG, 2011. *Corporate and Indirect Tax Survey 2011*. KPMG International.
- KPMG. *KPMG's Individual Income Tax and Social Security Rate Survey 2011*. KPMG International.
- Nafisa Alibhai & Company, 2010. *Kenya Tax Guide*. Nairobi.
- OECD, various years. *Foreign Direct Investment Statistics*. OECD, Paris.
- Peter, K.S., Buttrick, S., and Duncan, D., 2010. *Global Reform of Personal Income Taxation, 1981-2005: Evidence from 189 Countries*. *National Tax Journal* 6, Issue 3.
- Lane, P. and Milesi-Ferretti, G.M., 2007. *The external wealth of nations mark II: Revised and extended estimates of foreign assets and liabilities, 1970-2004*. *Journal of International Economics* 73, 223-250.
- PKF, 2010. *Morocco Tax Guide*. PKF International, London.
- World dataBank, various years. *World Development Indicators and Global Development Finance*. The World Bank, Washington, D.C.
- The United States Census Bureau, various years. *International Program*. International Data Base. Washington, D.C.