

Are tax rates still decisive in FDI investment choice or what drives sectoral FDI nowadays? *

Nicolae-Bogdan Ianc †

Abstract

We explore the effects of effective taxation and institutional quality on sectoral FDI. Our analysis comprises European countries and we use data from 2002 to 2020. We employ a GMM approach and show that a rise in both apparent taxation and tax differential reduces sectoral FDI flow while soaring tax differential increase FDI stock. Among the institutional variables, tertiary enrollment attract FDI and secondary attainment has opposite results depending on the sectoral FDI. Our findings indicate that government should lower taxation for more FDI flows and strengthen tertiary and secondary enrollment.

Keywords: Sectoral FDI, effective taxation, institution quality, European countries.

JEL classification: F21, H21, O43.

*This is a preliminary version of the paper. Please do not cite or distribute without permission of the authors.

†University of Orléans, CNRS, LEO, FRE 2014 and West University of Timisoara, East-European Center for Research in Economics and Business (ECREB), Email: nicolae-bogdan.ianc@univ-orleans.fr

1 Introduction

A variety of determinants are evaluated by companies before deciding to invest abroad while FDI still increases constantly in developed countries since the 2000s. Affected by the financial crisis of 2007 and the pandemic crisis of 2020, government deficits are soaring due to increased public spending. In this respect, investment is seriously affected and governments are looking for a way to increase it. FDI is a valid and credible solution, so governments are in strong competition with each other.

The manner a country decides to tax corporations is a traditional determinant for FDI, but the institutional quality represents a new aspect of private decision-making. This paper proposes a macroeconomic approach to highlight the relationship between fiscal policy, institutional quality, and foreign direct investment (FDI). Particularly, we explore the effects of effective taxation and institutional quality on the FDI at the sectoral level. However, our contribution is threefold. First, we focus more on effective taxation and less on specific corporate tax rates, as companies benefit from tax avoidance in many developed countries. As there is a huge difference between what a company reports in pre-tax income and what it actually owes after several exemptions, credits or deductions, we introduce the apparent effective tax rate. This is a measure composed by [Mendoza et al. \(1994\)](#), which represents the ratio of observed receipts to observed taxable income ([Bénassy-Quéré et al. 2005](#)) and could better detect any tax exemption. Second, our study concerns the FDI sectors namely exploiting natural resources, manufacturing and services industries. The impact of taxation on sectoral FDI is not a widespread practice when countries project their fiscal policy, although attracting FDI is a very topical issue for each economy. Moreover, we consider both FDI flow and FDI stock as FDI flow is primarily driven by friendly taxation. [Devereux et al. \(2002\)](#) claim that the choice for a new FDI in a specific country is made according to its statutory- and average effective tax rate, but when an extension of the FDI stock is considered, companies prioritize the marginal effective tax rate. Third, we add institutional quality, claiming that performing domestic institutions attract FDI. When institutions work properly, investors have a strong state guarantee so they can start or extend their projects easily. This is confirmed by [Bénassy-Quéré et al. \(2007\)](#), who show that good institutions almost always increase the amount of FDI received. Furthermore, institutional factors such as judicial independence and labor market flexibility influence both secondary and tertiary FDI sectors, as [Walsh and Yu \(2010\)](#) mention.

Our analysis comprises European countries that are also OECD members. Our results prove that both fiscal policy and institutional quality are to be considered when choosing the sector to invest in. In more detail, our findings highlight that the lower the effective taxation in a country is, the more likely it is to invest there, but exceptions could exist depending on the FDI sector. Moreover, a high institutional quality level is an

incentive to attract FDI inwards.

This paper is organized as follows. Section 2 presents the Literature, Section 3 illustrates the Data and the Research Methodology. Section 4 displays the Results, and Section 5 points out the Robustness Analysis. Section 6 shows the Conclusions and Implications.

2 Literature

The literature regarding FDI and its determinants is expansive and the companies' challenge of finding new determinants is fierce. The macroeconomic determinants still count, as trade is a complement to FDI when new imports have to be done (Fontagné 1999). Trade openness attracts Japanese FDI in specific locations, as Azémar and Delios (2008) claim. The net capital flow is a counterpart of the current account deficit so higher FDI flows mean unsustainable current account deficits, as Nier et al. (2014) display. The amount of GDP is positively correlated with the FDI, as expected (Bénassy-Quéré et al. 2005) and GDP growth exhibits the same results (Walsh and Yu 2010). Resmini (2000) infers that few variables like GDP per capita, the operational risk index, the population and the wage differentials have significant effects on FDI and only the operational risk index maintains its effects between FDI sectors. Furthermore, Sane et al. (2016) discover that domestic credit to the private sector is a key determinant for FDI flows.

Moreover, population matters when FDI is reached and the gravity model analysis best this relationship, as Eaton and Tamura (1994) show. In plus, the urban population has a negative impact on FDI in African countries but it is statistically insignificant (Morisset 2000). Besides, Alsan et al. (2006) prove that FDI inflows are strongly and positively influenced by population health and Blomström (2002) mentions that education and R&D spending attract FDI inwards. School enrollment appears to have little effect on FDI attraction, as Walsh and Yu (2010) highlight, while Egger et al. (2014) exhibit that education has a significant positive result on investment.

On the one hand, the way taxation affects the firm's incentives to invest is a quotidian point. Several studies find new forms of tax rate calculus to give a more precise image of the tax burden. King and Fullerton (1984) introduce the effective marginal tax rates (EMTR) in a comparative analysis, and then Mendoza et al. (1994) compute a newborn method for tax rates using the national account. Devereux and Freeman (1995) highlight that taxation does not affect choosing domestic investment or outward FDI, but in a recent paper, Merz et al. (2017) suggest that both tax incentives and regulation are significant for choosing the location of financial sector FDI. Using their own calculus, Devereux and

Griffith (1998a) compose the effective average tax rates (EATR) in a neoclassical approach because investors face more investment projects and they need aggregate results. In another paper, Devereux and Griffith (1998b) affirm that the effective average tax rate plays a role in the choice between FDI locations.

On the other hand, studies that treat the impact of institutional quality on a firm's investment are not plentiful. The impact of institutions' performance on FDI has more recently been analyzed within the framework of gravity models where FDI bilateral flows or stocks essentially depend on GDP or population in the source and/or the host country and on the geographic distance between both countries. Eaton and Tamura (1994) provide an early application of the gravity model to FDI. Bénassy-Quéré et al. (2007) point out that public efficiencies, like tax systems, contract law or lack of corruption, are a major determinant of inward FDI. While good institutions almost always increase the amount of FDI received, no general result applies to outward FDI. Moreover, Aziz (2018) finds out that both corruption and the rule of law have an impact on FDI. Buchanan et al. (2012) demonstrate that a one standard deviation change in institutional quality improves FDI by a factor of 1.69. Positive results between institutions (measured by economic freedoms, state fragility, political rights and civil liberties indices) and FDI inflows were reached by Tintin (2013). Opposite results were obtained by Akpan et al. (2014) in their study within emerging countries (i.e., BRICS, MINT) namely institutional quality plays insignificant roles in attracting FDI.

As governments challenge attracting FDI, there is a lack of works that analyse the impact of taxation on FDI sectors and we propose to fill in this gap by studying how taxation affects sectoral FDI. As far as we know there is no paper regarding the effects of effective taxation and institutional quality on sectorial FDI. Stöwhase (2005) accrues that high taxes deter the bilateral sectoral FDI in the EU, even if the investment is driven by other than the tax incentives. In a very comprehensive paper about how institutional and macroeconomic variables affect sectoral FDI, Walsh and Yu (2010) highlight that the secondary FDI sector (i.e., manufacturing and industry) is positively affected by both labour market and financial depth. Furthermore, the tertiary FDI sector is also positively influenced by institutional variables, like judiciary independence, financial depth and infrastructure quality. Besides, Overesch and Wamser (2009) find that vertical FDI in manufacturing is more responsive to local tax rates than horizontal FDI.

3 Data and Research Methodology

The data used in our work is the FDI flow per country and sector¹. The core of our study concerns the effects of the apparent tax rate, calculated as the ratio of observed receipts to observed taxable income. For a strong robustness check, we add the FDI stock as well, as an independent variable. Further, we employ the tax rate differential, computed as the difference from the corporate tax rates' average for all countries, and the effective marginal tax rate, following [Devereux and Griffith \(2003\)](#)². The data sources are the OECD databases Statistics. Moreover, we use development indicators such as R&D, the domestic credit provided by the financial sector, the school enrollment (i.e., secondary and tertiary), and institutional quality variables, such as rule of law and corruption control. Data is provided by the World Bank and the length of the period studied lasts from 2000 to 2020.³

In plus, we employ several control variables such as macroeconomic ones: the current account, the trade openness and the GDP growth, and development ones such as urban population, health spending and education spending.

Taxation impacts FDI flows but several endogeneity questions can arise and to tackle them we employ the Generalized Method of Moments (GMM) dynamic estimator following the Arellano-Bond methodology. The equation estimated is:

$$FDI_{i,t} = \alpha + \lambda FDI_{i,t-1} + \beta X_{i,t} + \mu_i + v_{i,t} \quad (1)$$

We use i ($i=1..N$) to index the selected countries and t for time. The model includes the following variables: $FDI_{i,t}$ represents the FDI flow, as a percentage of GDP, $X_{i,t}$ represents the macroeconomic and development or institutional variables, μ_i is the time-invariant country-specific effects and the error term is represented by $v_{i,t}$. When we take the first difference, we get rid of the time-invariant country-specific effects. Moreover, we use lagged values in levels as instruments on the left- and right side and we obtain:

$$FDI_{i,t} - FDI_{i,t-1} = \alpha + \lambda(FDI_{i,t-1} - FDI_{i,t-2}) + \beta(X_{i,t} - X_{i,t-1}) + (v_{i,t} - v_{i,t-1}) \quad (2)$$

¹We list the countries in our sample in Appendix A, Table A.1

²A descriptive statistics is displayed in Appendix A, Table A.2

³All data sources can be found in Appendix A, Table A.3.

4 Empirical results

The core of our study is the impact of the apparent tax rate on sectoral FDI flow but we add also the Total FDI flow as an independent variable. In this respect, Table 1 shows that apparent taxation decreases Total FDI flow for every development/institutional variable used, and among them, only employing the control of corruption yields statistically significant results, although negative ones. Following [Walsh and Yu \(2010\)](#) and [Wheeler and Mody \(1992\)](#), we assume that there is a counter-intuitive relationship but as [Marakbi et al. \(2021\)](#) show, corruption could affect positively the economic activities if institutions are not strong enough. Soar in the current account affects negatively the Total FDI flow while GDP growth increases it. Health expenditure appears positively correlated with the Total FDI flow, but the results are statistically significant just when the rule of law and the control of corruption are engaged. Education spending increases the Total FDI flow when the control of corruption is employed but, unlikely, Total FDI flow decreases when the control of corruption augments. Tertiary educational attainment is the only significant variable that increases the Total FDI flow.

Table 2 exhibits the effects of apparent taxation on Primary FDI flow and the results are opposite to those on Total FDI flow. More specifically, apparent taxation boosts the Primary FDI flow but in a very small magnitude and the intuition is the idea that Primary FDI, which refers to the exploitation of natural resources, is driven less by taxation and more by resource scarcity ([Stöwhase 2005](#)). The current account attenuates the Primary FDI flow when domestic credit and corruption are engaged, and trade openness raises Primary FDI flow when R&D, tertiary education and corruption control are taken into consideration. Education spending boosts Primary FDI flow only when we employ the R&D and secondary enrollment. The control of corruption contracts the Primary FDI flow and the secondary enrollment surges it.

Moreover, Table 3 presents the effects of apparent taxation on Manufacturing FDI flow, but the results did not pass the Sargan test of overidentifying restrictions, with the exception of the secondary enrollment, which increases the Manufacturing FDI flow. Further, we exhibit the effects of apparent taxation on Services FDI flow (i.e., Table 4) which proves that Services FDI flow slow down when apparent taxation surges and almost all the results are significant. The current account and the GDP growth maintain their negative and positive respectively impact as above. Among the quality institutions variables, just R&D and tertiary education raise Services FDI flow. Furthermore, we add a new explanatory variable namely sectoral FDI stock, as FDI benefit from agglomeration or cluster effects ([Barrell and Pain 1999](#), [Wheeler and Mody 1992](#)) and the results show that both secondary enrollment and Manufacturing Stock FDI lower Services FDI flow. A contradictory negative effect from Secondary FDI enrollment is associated with idea that working in the Services sector

requires a higher diploma level namely a certain level of human capital should be achieved (Borensztein et al. 1998).

Table 1: The effects of apparent taxation on Total FDI flows

Explanatory var.	R&D	Credit	Secondary	Tertiary	Rule of law	Corruption control
Apparent effective tax	-3.96 (4.14)	-4.74 (6.10)	-5.88 (6.61)	-3.10 (2.78)	-7.6 (9.50)	-6.91* (4.46)
Current account	-2.45*** (0.82)	-3.00** (1.50)	-2.43** (1.19)	-3.71* (2.15)	-3.00* (1.64)	-2.45*** (0.75)
Trade	-0.50 (0.64)	-0.63 (1.31)	0.12 (0.44)	-0.74 (1.13)	0.98 (-0.21)	-0.22 (0.43)
GDP growth	1.97** (0.94)	2.78* (1.57)	2.87** (1.37)	3.89* (2.64)	2.95** (1.49)	2.25*** (0.78)
Urban population	-3.04 (12.71)	-11.96 (19.00)	-13.00 (17.52)	-24.43 (26.91)	-9.71 (21.59)	-0.04 (13.52)
Health expenditure	-0.84 (14.59)	31.96 (36.34)	28.76 (33.68)	23.88 (37.8)	34.87*** (40.48)	7.36*** (22.97)
Expenditure on edu.	-0.11 (14.60)	-6.25 (31.74)	-2.82 (28.19)	14.05 (7.68)	-11.79 (54.76)	7.44*** (23.99)
Quality of Institutions	7.16 (14.95)	0.53 (-0.23)	-0.13 (0.40)	1.67* (1.24)	-15.75 (45.21)	-8.86** (43.45)
No. Obs.	313	328	326	318	335	335
Sargan p-value	0.86	0.99	0.90	0.90	0.80	0.86

Standard errors in parentheses. Significance Codes: *** : 0.01; ** : 0.05; * : 0.1.

Table 2: The effects of apparent taxation on Primary FDI flows

Explanatory var.	R&D	Credit	Secondary	Tertiary	Rule of law	Corruption control
Apparent effective tax	0.12 (0.15)	0.19 (0.32)	0.11 (0.32)	0.09 (0.25)	0.15 (0.22)	0.18** (0.09)
Current account	-0.08 (0.06)	-0.07*** (0.03)	-0.05 (0.09)	-0.09 (0.09)	-0.07 (0.06)	-0.13*** (0.04)
Trade	0.05* (0.03)	0.01 (0.08)	0.07 (0.05)	0.05* (0.03)	0.04 (0.04)	0.04*** (0.02)
GDP growth	-0.11 (0.11)	-0.03 (0.29)	-0.15 (0.16)	-0.13 (0.11)	0.01 (0.13)	-0.05 (0.05)
Urban population	0.76 (0.66)	0.82 (0.71)	0.78 (1.51)	0.63 (1.40)	0.82 (0.62)	1.34 (2.46)
Health expenditure	0.09 (0.95)	0.57 (2.21)	-0.02 (1.85)	-0.16 (1.65)	0.19 (1.25)	0.30 (0.33)
Expenditure on edu.	0.63* (0.41)	0.33 (0.97)	0.63* (0.38)	0.84 (0.59)	0.56 (0.67)	0.42 (0.58)
Quality of Institutions	-0.36 (1.55)	0.02 (0.04)	0.01* (0.00)	-0.01 (0.08)	0.97 (6.01)	-5.47** (2.54)
No. Obs.	313	328	326	318	335	335
Sargan p-value	0.94	0.72	0.80	0.75	0.67	0.96

Standard errors in parentheses. Significance Codes: *** : 0.01; ** : 0.05; * : 0.1.

Table 3: The effects of apparent taxation on Manufacturing FDI flows

Explanatory var.	R&D	Credit	Secondary	Tertiary	Rule of law	Corruption control
Apparent effective tax	-0.50 (0.45)	0.77 (3.03)	-1.66** (0.81)	-0.31 (0.75)	-0.58 (1.03)	-0.32 (1.23)
Current account	0.03 (0.19)	0.39 (0.41)	-0.50*** (0.14)	0.12 (0.39)	0.07 (0.36)	0.03 (0.35)
Trade	0.00 (0.10)	0.29* (0.20)	-0.07 (0.14)	0.11 (0.19)	0.12 (0.14)	0.14 (0.11)
GDP growth	-0.00 (0.21)	-0.60 (0.17)	0.23 (0.17)	-0.14 (0.26)	-0.04 (0.24)	-0.15 (0.21)
Urban population	-0.08 (4.66)	-4.05 (11.38)	-2.49 (6.02)	-10.14 (14.82)	-7.44 (9.18)	-10.91 (17.27)
Health expenditure	-3.57 (3.56)	-5.2 (3.75)	-0.83 (3.44)	-6.81** (2.90)	-5.00* (3.00)	-5.94** (3.12)
Expenditure on edu.	3.73 (5.11)	4.70 (7.84)	-5.20 (4.20)	3.22 (6.50)	2.72 (4.03)	1.91 (3.85)
Quality of Institutions	11.95 (16.93)	0.17 (0.19)	0.53*** (0.13)	-0.01 (0.25)	-6.05 (16.68)	2.37 (13.74)
No. Obs.	313	328	326	318	335	335
Sargan p-value	0.00	0.01	0.44	0.00	0.00	0.00

Standard errors in parentheses. Significance Codes: *** : 0.01; ** : 0.05; * : 0.1.

5 Robustness check

In order to highlight the validity of our core results presented above, we change the independent variable namely we introduce the tax differential. This variable is obtained by taking the difference from the average corporate tax rate for all the countries. We run out all the FDI sectoral flow with tax differential but only the Services FDI flow are significant. The results shown in Table 5 hold the core findings as tax differential decreases the Services FDI flows when domestic credit, secondary enrollment and Total FDI stock are regressed. Both the current account and the GDP growth continue their path as mentioned in Section 4. Trade and health expenditures are significant only when secondary enrollment is hired and education spending is significant with the control of corruption. Among the institutional variables, the secondary and the Manufacturing FDI Stock decreases Services FDI flow but tertiary enrollment augments them.

Moreover, we change the dependent variable also to strengthen our main results and we add the Total FDI stock (Table 6), which is the only significant variable. We notice a positive relationship between Total FDI stock and the tax differential which proves that more FDI is indifferent to taxation as higher FDI stock exerts a positive spillover for new investment (Campos and Kinoshita 2003) so higher taxation could be offset. Only the secondary enrollment declines Total FDI stock and we put forward the idea that FDI stock is higher in rich countries where a huge part of the population passed the secondary.

In the end, we add a new tax variable namely the marginal tax rate, following [Devereux and Griffith \(2003\)](#) and we run only the Total FDI flow, as a significant dependent variable. Table 7 displays the results and marginal tax has no significant effects on Total FDI flow, but the current account and the GDP growth maintain their effects. Secondary decreases the Total FDI flow, but the rule of law augments it.

6 Conclusion and implications

Multinational companies are looking for durable advantages when they want to invest outside their domestic countries which could be good infrastructure, lower taxation, or better institutions. There are a lot of determinants which affect FDI and we focus on effective taxation and the quality of institutions. Besides, the effects of taxation differ regarding the industry in which a company wants to invest. In this respect, a rise in both apparent taxation and tax differential reduces sectoral FDI flow while soaring tax differential increase FDI stock. The former result is typical as companies seek lower taxation when they invest. The latter exerts a counter-intuitively finding but positive externalities from accumulating FDI stock worth more than a tax rate hike.

Among the institutional quality variables, the control of corruption yields negative effects on FDI which is unlikely, but tertiary enrollment plays a role in attracting FDI. Moreover, secondary attainment has positive effects on sectoral FDI with the exception of Services FDI, and negative effects on Services FDI. Our findings indicate that government should lower taxation if it wants more FDI flows. In plus, it is indicated to strengthen development/institutional indicators namely tertiary and secondary enrollment.

Table 4: The effects of apparent taxation on Services FDI flows

Explanatory var.	R&D	Credit	Secondary	Tertiary	Rule of law	Corr ctr	Total stock	Manu stock	Services stock
Apparent effective tax	-8.90*** (2.97)	-7.34** (3.60)	-0.38 (4.24)	-1.77 (3.53)	-8.60* (6.48)	-7.93* (5.85)	-7.27** (3.48)	-12.08** (6.60)	-10.00* (6.26)
Current account	-2.77*** (0.75)	-3.27*** (1.34)	-1.02* (0.93)	-3.84** (1.74)	-2.71*** (0.88)	-2.56*** (0.78)	-2.51*** (0.67)	-2.68*** (0.51)	-2.61*** (0.77)
Trade	-0.58 (0.52)	0.26 (1.35)	0.65 (0.28)	-0.64 (0.76)	0.20 (0.35)	0.20 (0.50)	0.26 (0.32)	0.47 (0.46)	0.25 (0.36)
GDP growth	2.00*** (0.55)	1.79** (0.89)	2.30*** (0.34)	4.41*** (1.50)	2.55*** (0.75)	2.39*** (0.88)	2.14*** (0.51)	2.11*** (0.55)	1.80*** (0.83)
Urban population	-2.32 (10.14)	2.31 (9.28)	-5.12 (12.14)	-27.13* (24.38)	-1.64 (11.22)	-1.35 (9.57)	-1.96 (10.73)	4.64 (13.19)	-0.04 (13.95)
Health expenditure	0.08 (17.39)	-3.20 (25.31)	9.65 (15.10)	-6.89 (22.88)	11.52 (14.02)	4.99 (13.30)	8.23 (10.92)	9.42 (11.46)	10.02 (13.28)
Expenditure on edu.	2.39 (27.53)	11.03 (18.64)	2.69 (12.59)	48.10 (33.29)	-2.18 (18.48)	2.18* (18.85)	-2.36* (14.60)	-6.01* (10.36)	-12.69 (29.17)
Quality of Institutions	21.05* (15.29)	-0.83 (0.93)	-1.17*** (0.22)	3.04* (2.19)	-23.04 (41.07)	-17.43 (57.12)	0.01 (0.13)	-0.03*** (0.09)	0.13 (0.19)
No. Obs.	313	328	326	318	335	335	335	335	326
Sargan p-value	0.51	0.35	0.45	0.74	0.40	0.31	0.28	0.89	0.58

Standard errors in parentheses. Significance Codes: *** : 0.01; ** : 0.05; * : 0.1.

6

Table 5: The effects of tax rate differential on Services FDI flows

Explanatory	R&D	Credit	Secondary	Tertiary	Rule of law	Corr. ctr	Total stock	Manu stock	Serv stock
Tax differential	-9.85 (10.65)	-6.43* (4.08)	-4.15* (3.49)	-2.06 (5.21)	-5.33 (3.97)	-1.64 (3.79)	-8.06* (5.29)	-2.61 (3.69)	-3.05 (4.57)
Current account	-2.89* (1.55)	-2.25 (1.95)	-1.21* (1.07)	-4.29* (2.30)	-2.23*** (0.73)	-2.35*** (0.73)	-3.30** (1.64)	-2.12*** (0.34)	-2.15*** (0.98)
Trade	-0.27 (0.73)	0.20 (1.23)	0.59** (0.25)	-0.83 (0.96)	0.21 (0.36)	0.14 (0.32)	0.51 (0.50)	0.36 (0.36)	0.09 (0.36)
GDP growth	2.73 (2.12)	2.99*** (1.12)	3.05*** (1.19)	4.93** (2.21)	2.10 (1.04)	2.57*** (0.87)	3.65** (1.94)	1.98*** (0.68)	2.57* (1.84)
Urban pop.	-36.17 (29.54)	-11.271** (11.92)	-18.27 (15.14)	-39.48* (33.19)	-24.34 (19.37)	-21.89 (13.77)	-36.20 (33.15)	-15.78** (8.13)	-19.16 (21.98)
Health exp.	0.77 (14.85)	-11.11 (19.46)	-2.23* (29.50)	-14.40 (24.92)	-17.07 (22.32)	-5.27 (16.69)	-19.81 (23.89)	-7.04 (12.46)	-12.19 (20.86)
Expen. on edu.	2.19 (12.83)	22.27 (28.22)	27.57 (38.47)	63.13 (50.29)	18.77 (32.62)	14.52* (22.58)	19.10 (23.48)	0.28 (16.96)	17.43 (43.90)
Quality of Inst.	-41.63 (59.45)	0.04 (1.07)	-1.29*** (0.42)	3.56* (2.37)	44.44 (49.48)	-9.90 (56.06)	-0.41 (0.37)	-0.16** (0.09)	0.02 (0.25)
No. Obs.	313	328	326	318	335	335	335	335	326
Sargan p-value	0.69	0.48	0.92	0.85	0.50	0.26	0.76	0.23	0.19

Standard errors in parentheses. Significance Codes: *** : 0.01; ** : 0.05; * : 0.1.

Table 6: The effects of tax rate differential on Total FDI stocks

Explanatory var.	R&D	Credit	Secondary	Tertiary	Rule of law	Corruption control
Tax differential	11.92 (10.80)	-5.57 (8.71)	3.14 (6.45)	13.07** (7.38)	9.04 (15.01)	4.20 (10.55)
Current account	2.85 (3.53)	1.00 (2.64)	3.78* (3.03)	2.95 (2.31)	-2.37 (5.08)	0.99 (2.59)
Trade	-0.06 (1.98)	-0.10 (1.09)	0.69 (1.50)	0.51 (1.10)	-1.45 (2.48)	-0.44 (1.08)
GDP growth	-0.28 (3.02)	-2.85 (2.80)	-3.72* (2.64)	-3.86** (1.62)	5.47 (8.50)	-0.71 (1.60)
Urban population	23.13 (20.65)	-57.57 (108.52)	-21.09 (51.88)	30.08 (64.93)	14.70 (29.24)	22.60 (30.89)
Health expenditure	45.77 (68.01)	-40.96 (45.77)	-15.36 (32.68)	-30.11 (30.34)	38.81 (130.31)	38.28 (35.81)
Expenditure on edu.	-49.54 (70.11)	-31.36 (48.54)	-26.83 (56.74)	18.80 (56.52)	-55.80 (100.28)	-32.28 (47.29)
Quality of Institutions	4.93 (135.56)	1.20 (1.22)	-1.15* (0.66)	3.86 (3.81)	2.20 (2.40)	-23.96 (28.30)
No. Obs.	313	328	326	318	335	335
Sargan p-value	0.99	0.83	0.12	0.10	0.99	0.23

Standard errors in parentheses. Significance Codes: *** : 0.01; ** : 0.05; * : 0.1.

Table 7: The effects of marginal taxation on Total FDI flows

Explanatory var.	R&D	Credit	Secondary	Tertiary	Rule of law	Corruption control
Marginal effective tax	-2.59 (2.50)	-2.72 (3.33)	-3.20 (6.40)	-3.35 (3.66)	-0.33 (3.77)	-2.43 (3.04)
Current account	-2.05*** (0.46)	-2.28*** (0.76)	-1.96** (0.94)	-2.86 (1.86)	-2.15*** (0.71)	-2.14*** (0.61)
Trade	-0.18 (0.32)	-0.38 (0.96)	-0.00 (0.53)	-0.33 (0.86)	0.02 (0.36)	-0.05 (0.29)
GDP growth	1.82*** (0.57)	1.83 (1.40)	2.69*** (0.68)	2.76 (2.09)	1.23* (0.74)	1.68*** (0.61)
Urban population	-0.49 (9.95)	-4.11 (23.02)	-14.37** (6.33)	-18.61* (31.95)	-8.54 (17.04)	-6.61 (18.66)
Health expenditure	0.54 (11.83)	4.92 (22.23)	14.71* (13.74)	5.14 (20.71)	-2.12 (9.58)	-0.82 (9.94)
Expenditure on edu.	4.04 (5.55)	2.51 (8.92)	9.33* (5.79)	12.80 (10.85)	7.51** (3.77)	6.97* (5.93)
Quality of Institutions	-5.99 (19.29)	-0.15 (0.93)	-0.44*** (0.17)	0.98 (1.71)	12.20* (21.08)	-13.96 (26.81)
No. Obs.	313	328	326	318	335	335
Sargan p-value	0.64	0.76	0.83	0.97	0.79	0.76

Standard errors in parentheses. Significance Codes: *** : 0.01; ** : 0.05; * : 0.1.

Appendix A

Table A.1: List of countries and mean values for FDI (% GDP), Apparent Effective Tax Rate (% GDP), Tax Rate Differential and Marginal Tax Rate

Country	Variables									
	Total FDI flow	Primary FDI Flow	Secondary FDI Flow	Services FDI Flow	Apparent tax	Differential tax	Total FDI Stock	Secondary FDI Stock	Services FDI Stock	Marginal tax
Austria	2.03	0.005	0.25	1.68	5.41	2.76	37.55	4.54	32.87	16.49
Belgium	10.72	0.02	1.34	5.56	8.14	8.81	144.18	20.14	68.13	-23.58
Czech Republic	2.24	0.02	0.60	1.48	7.53	-1.87	35.53	14.10	20.47	10.40
Denmark	0.92	0.21	0.34	0.51	8.28	1.54	54.50	7.30	41.98	8.40
Estonia	4.77	0.09	0.63	3.86	3.86	-1.87	51.45	9.30	38.93	0
Finland	2.37	0.04	0.15	2.22	6.67	0.44	36.03	11.66	23.30	16.20
France	1.78	0.006	0.28	1.46	6.86	12.29	33.22	6.64	25.88	8.5
Germany	1.05	0.008	0.08	0.931	4.42	-4.42	25.40	2.56	22.53	16.87
Greece	0.78	0.015	0.09	0.59	4.24	3.60	10.60	3.96	5.66	17.57
Hungary	3.52	0.02	0.46	2.97	4.40	-7.11	56.20	12.98	34.68	4.67
Iceland	7.05	0.08	0.99	5.59	5.73	-4.92	56.71	19.23	42.20	12.50
Ireland	12.91	0	4.79	9.54	5.35	-10.97	173.14	57.40	114	10.57
Italy	0.89	0.05	0.30	0.44	4.93	5.04	15.37	4.83	9.7	-17.51
Netherlands	2.26	0.12	2.19	0.04	7.10	3.52	246.27	56.60	187.73	14.21
Norway	1.56	0.63	0.06	0.48	17.99	2.74	46.20	9.20	21.19	10.94
Poland	1.65	0.008	0.62	0.97	4.23	-3.76	19.03	7.55	11.81	9.49
Portugal	2.05	0.01	0.17	1.25	7.27	4.02	37.76	2.89	16.94	-22.03
Slovak	1.87	0.014	0.97	0.80	6.03	-2.60	32.54	13.33	16.39	8.59
Spain	2.20	0.23	0.66	0.94	6.02	6.36	37.61	8.59	13.39	11.86
Sweden	3.35	0.02	1.19	1.61	8.59	1.39	69.04	36.24	28.78	13.38
Swiss	2.95	0	1.24	1.04	6.70	-15.16	140.85	19.39	118.66	12.09
Turkey	0.84	0.01	0.23	0.41	2.83	-0.92	8.86	3.39	5.24	-4.64
UK	3.28	0.37	0.69	1.78	6.80	1.28	50.07	10.21	24.83	6.66

Table A.2: Descriptive statistics

Variables	Mean	Standard deviation	Minimum	Maximum
Total FDI Flow	3.18	7.59	-37.11	58
Primary FDI Flow	0.08	0.43	-1.19	5.31
Secondary FDI Flow	0.80	2.17	-7.72	19.42
Services FDI Flow	2.00	7.8	-38.35	60.56
Total FDI Stock	61.40	74.60	3.07	531.64
Secondary FDI Stock	14.87	20.87	0.00	223.59
Services FDI Stock	39.64	61.29	0.00	480.18
Apparent tax	6.50	3.26	2.06	25.35
Differential tax	0.00	6.82	-15.16	20.74
Marginal tax	6.16	11.975	-30.44	17.85
Current account	0.24	5.97	-22.66	16.40
Trade	98.94	41.94	45.42	252.25
GDP/capita growth	1.80	3.59	-14.63	24.37
Urban pop.	0.75	0.73	-1.60	3.22
Health Expen.	8.62	1.74	4.12	11.70
Education Exp.	5.34	1.21	2.73	8.56
R&D	1.79	0.84	0.45	3.73
Credit	97.69	42.85	12.87	304.58
Secondary	110.38	16.50	80.04	163.93
Tertiary	69.12	16.68	26.56	150.88
Rule of law	1.29	0.61	-0.41	2.12
Corruption ctr.	1.28	0.79	-0.57	2.46

Table A.3: Data sources

Variables	Description	Source
FDI	%GDP	OECD Statistics
Apparent tax	The ratio of Corporate tax revenues and Operating Surplus	OECD Statistics
Differential tax	Difference from the average of Corporate tax rates	OECD Statistics
Marginal tax	Marginal tax rate (Devereux and Griffith 2003)	OECD Statistics
Current account	Current account balance as % of GDP	OECD Statistics
Trade	%GDP	World Bank Data
GDP/capita growth	GDP growth annual rate	OECD Statistics
Urban pop.	Urban Population Growth	World Bank Data
Health Expen.	%GDP	World Bank Data
Education Exp.	%GDP	World Bank Data
R&D	%GDP	World Bank Data
Credit	Domestic credit provided by financial sector (% of GDP)	World Bank Data
Secondary	School enrollment, secondary (% gross)	World Bank Data
Tertiary	School enrollment, tertiary (% gross)	World Bank Data
Rule of law	Ranging from approximately -2.5 to 2.5	World Bank Data
Corruption ctr.	Ranging from approximately -2.5 to 2.5	World Bank Data

References

- Akpan, U., Isihak, S., and Asongu, S. (2014). Determinants of foreign direct investment in fast-growing economies: a study of brics and mint. *African Governance and Development Institute WP/14/002*.
- Alsan, M., Bloom, D. E., and Canning, D. (2006). The effect of population health on foreign direct investment inflows to low-and middle-income countries. *World Development*, 34(4):613–630.
- Azémar, C. and Delios, A. (2008). Tax competition and fdi: The special case of developing countries. *Journal of the Japanese and International Economies*, 22(1):85–108.
- Aziz, O. G. (2018). Institutional quality and fdi inflows in arab economies. *Finance Research Letters*, 25:111–123.
- Barrell, R. and Pain, N. (1999). Domestic institutions, agglomerations and foreign direct investment in europe. *European Economic Review*, 43(4-6):925–934.
- Bénassy-Quéré, A., Coupet, M., and Mayer, T. (2007). Institutional determinants of foreign direct investment. *World Economy*, 30(5):764–782.
- Bénassy-Quéré, A., Fontagné, L., and Lahrèche-Révil, A. (2005). How does fdi react to corporate taxation? *International Tax and Public Finance*, 12:583–603.
- Blomström, M. (2002). The economics of international investment incentives.
- Borensztein, E., De Gregorio, J., and Lee, J.-W. (1998). How does foreign direct investment affect economic growth? *Journal of International Economics*, 45(1):115–135.
- Buchanan, B. G., Le, Q. V., and Rishi, M. (2012). Foreign direct investment and institutional quality: Some empirical evidence. *International Review of Financial Analysis*, 21:81–89.
- Campos, N. F. and Kinoshita, Y. (2003). *Why does FDI go where it goes? New evidence from the transition economies*. International Monetary Fund.
- Devereux, M. and Griffith, R. (1998a). The taxation of discrete investment choices. Technical report, IFS working papers.
- Devereux, M. P. and Freeman, H. (1995). The impact of tax on foreign direct investment: empirical evidence and the implications for tax integration schemes. *International Tax and Public Finance*, 2:85–106.
- Devereux, M. P. and Griffith, R. (1998b). Taxes and the location of production: Evidence from a panel of us multinationals. *Journal of Public Economics*, 68(3):335–367.
- Devereux, M. P. and Griffith, R. (2003). Evaluating tax policy for location decisions. *International Tax and Public Finance*, 10:107–126.
- Devereux, M. P., Griffith, R., and Klemm, A. (2002). Corporate income tax reforms and international tax competition. *Economic Policy*, 17(35):449–495.
- Eaton, J. and Tamura, A. (1994). Bilateralism and regionalism in japanese and us trade and direct foreign investment patterns. *Journal of the Japanese and International Economies*, 8(4):478–510.

- Egger, P. H., Merlo, V., and Wamser, G. (2014). Unobserved tax avoidance and the tax elasticity of fdi. *Journal of Economic Behavior & Organization*, 108:1–18.
- Fontagné, L. (1999). Foreign direct investment and international trade: Complements or substitutes: Sont-ils complémentaires ou substituables?
- King, M. A. and Fullerton, D. (1984). Introduction to "the taxation of income from capital: A comparative study of the united states, the united kingdom, sweden, and germany". In *The taxation of income from capital: A comparative study of the United States, the United Kingdom, Sweden, and Germany*, pages 1–6. University of Chicago Press.
- Marakbi, R., Turcu, C., and Villieu, P. (2021). Institutionsâ€ˆimpact on the corruption–growth nexus: Nonlinearities and transmission channels. *Macroeconomic Dynamics*, 25(1):257–279.
- Mendoza, E. G., Razin, A., and Tesar, L. L. (1994). Effective tax rates in macroeconomics: Cross-country estimates of tax rates on factor incomes and consumption. *Journal of Monetary Economics*, 34(3):297–323.
- Merz, J., Overesch, M., and Wamser, G. (2017). The location of financial sector fdi: Tax and regulation policy. *Journal of Banking & Finance*, 78:14–26.
- Morisset, J. (2000). *Foreign direct investment in Africa: policies also matter*, volume 2481. World Bank Publications.
- Nier, E., Sedik, T. S., and Mondino, T. (2014). *Gross private capital flows to emerging markets: can the global financial cycle be tamed?* International Monetary Fund.
- Overesch, M. and Wamser, G. (2009). Who cares about corporate taxation? asymmetric tax effects on outbound fdi. *World Economy*, 32(12):1657–1684.
- Resmini, L. (2000). The determinants of foreign direct investment in the ceecs: new evidence from sectoral patterns. *Economics of transition*, 8(3):665–689.
- Sane, M. et al. (2016). Determinants of foreign direct investment inflows to ecowas member countries: Panel data modelling and estimation. *Modern Economy*, 7(12):1517.
- Stöwhase, S. (2005). Tax-rate differentials and sector-specific foreign direct investment: Empirical evidence from the eu. *FinanzArchiv/Public Finance Analysis*, pages 535–558.
- Tintin, C. (2013). The determinants of foreign direct investment inflows in the central and eastern european countries: The importance of institutions. *Communist and Post-Communist Studies*, 46(2):287–298.
- Walsh, M. J. P. and Yu, J. (2010). *Determinants of foreign direct investment: A sectoral and institutional approach*. International Monetary Fund.
- Wheeler, D. and Mody, A. (1992). International investment location decisions: The case of us firms. *Journal of International Economics*, 33(1-2):57–76.