THE IMPACT OF GLOBALIZATION ON CORPORATE TAXATION: EVIDENCE FROM THE KOF GLOBALIZATION INDEX

Küreselleşmenin Kurumlar Vergilendirmesi Üzerine Etkisi: KOF Küreselleşme Endeksi'nden Bulgular

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Abstract

The increase in globalization has led to the redefinition of the tax policy perceptions of countries. The increase in globalization has also led to pressures on governments to revise their taxation policies in order to compensate for the potential risks that may arise. It is noteworthy that many countries around the world have reduced corporate tax rates in recent years. Thus, this paper investigates the role of increasing globalization in this process of decline. For this, the paper tests whether globalization has a significant effect on corporate taxation by using a panel of 33 countries over the period 1998-2016. The paper takes into account three main dimensions of globalization: economic, trade and politics. Moreover, the paper uses the two different measurements of globalization: *de facto* and *de jure*. The empirical results suggest a negative relationship between globalization and corporate tax. The results are robust in terms of different dimensions and measurements of globalization. It can be concluded that global integration does matter for policymakers and increasing integration also influences independent national fiscal and economic policies of countries.

Özet

Küreselleşmedeki artış, ülkelerin vergi politikalarını yeniden tanımlamalarına yol açmaktadır. Ayrıca küreselleşme ortaya çıkabilecek olası riskleri telafi etme amacıyla hükümetler üzerinde vergi politikalarını gözden geçirme baskısı da yaratmıştır. Bu kapsamda dünyada birçok ülkenin son yıllarda kurumlar vergisi oranlarını düşürmüş olması dikkat çekicidir. Bu nedenle, çalışma, küreselleşme artışının bu düşüş sürecindeki rolünü araştırmaktadır. Çalışmada, 1998-2016 dönemi için 33 ülkeden oluşan panel veri seti kullanılarak, küreselleşmenin kurumlar vergisi üzerinde önemli bir etkisinin olup olmadığı test edilmiştir. Çalışmada küreselleşmenin ekonomi, ticaret ve politika olmak üzere üç ana boyutu ele alınmıştır. Bunun yanında *de facto* ve *de jure* olmak üzere iki farklı ölçüm yöntemi kullanılmıştır. Ampirik sonuçlar, küreselleşme ile kurumlar vergisi arasında negatif bir ilişki olduğunu göstermektedir. Sonuçlar, küreselleşmenin farklı boyutları ve ölçümleri açısından da tutarlıdır. Küresel entegrasyonun politika yapıcılar için önemli olduğu ve entegrasyonun artmasının ülkelerin bağımsız ulusal mali ve ekonomik politikalarını da etkilediği sonucuna varılabilir.

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1. Introduction

Globalization is defined as market integration, taking up cultural barriers and trading information in many aspects. It has various effects on the side of policymakers, too. Our definition of globalization stems from Dreher (2006):

> *Globalization describes the process of creating networks of connections among actors at intra- or multi-continental distances, mediated through a variety of flows including people, information and ideas, capital, and goods. Globalization is a process that erodes national boundaries, integrates national economies, cultures, technologies and governance, and produces complex relations of mutual interdependence.*

Globalization process has clearly changed taxation strategies of countries, which normally formulate their tax policies according to their own domestic economies. Many countries have had to adapt their tax policies due to the conditions stemming from their trading partners, international agreements, negotiations and competitors. For example, Tanzi (2000) defines countries' independent taxation problems due to globalization as fiscal termites, which include electronic commerce and transactions, using of electronic money, intra-company trade, offshore financial centers and tax havens, derivatives and hedge funds, inability to tax financial capital, growing foreign activities and foreign shopping.

Globalization has been proceeding rapidly and the effect of this fast-growing phenomenon on taxation strategies of countries is still a controversial issue. For example, the current literature defines many problems of globalization on taxation as intercountry tax competition, taxation for multinational corporations and e-commerce. Globalization has initiated a competition to reduce investments and capital between countries, such as reducing tax rates, tax exemptions or using preferential tax regimes. Moreover, the literature on tax competition emphasizes that the increase on economic integration leads to competing downward of taxes, called "race to the bottom". It is clear that if the capital is immobile, governments have to increase tax rate, but if capital can move freely over countries and tax rates are still high, this can be pioneer of outflow of capital (Wildasin, 1988; Wilson, 1991; Wilson, 1999; Zodrow and Mieszkowski, 1986). Standard tax competition models advocate that larger countries are free to put higher tax than small countries since they will be less affected by capital outflow, but small countries will be able to become tax havens and provide higher welfare if they provide higher capital per labor ratios (Hansson and Olofsdotter, 2003; Schulze and Ursprung, 1999). On the other hand, economic geography models maintain scale of economies, imperfect competition and trade costs contrary to the perfect competition view of standard models (Krugman, 1991; Krugman and Venables, 1995). Integration reduces trade costs, and this situation causes condensation of production in certain countries. Countries that gain the core in this way will be able to raise taxes to some extent without outflow of capital (Baldwin and Krugman, 2004; Baldwin, Forslid, Martin, Ottaviano and Robert-Nicoud, 2003; Hansson and Olofsdotter, 2003; Haufler and Wooton, 1999). In addition, tax competition will be decreased as integration rises, trade costs and reductions in trade diminish firstly, and there will be a u-shaped relationship between trade costs and tax rates (Ludema and Wooton, 2000).

According to standard tax competition theory, capital mobility generates pressure on countries' tax policies because corporations can choose countries with low tax rates to avoid high costs, and Tiebout model implies that integration of economies reduces tax rates (Oates and Schwab, 1988; Tiebout, 1956; Zodrow and Mieszkowski, 1986).

Although many studies in the literature primarily focus on the effect of globalization on taxation policy, the empirical results they present are neither convincing nor uniform. While some researchers argue that globalization is associated positively with taxation (Garrett, 1995; Quinn, 1997; Swank, 1998), others advocate the presence of a negative relationship (Bretschger and Hettich, 2002; 2005; Kenny and Winer, 2006). Among them, some studies specifically focus on corporate taxation by investigating the impact of globalization on corporate taxes as a percentage of GDP. The empirical results are controversial. Some papers suggest that globalization has a positive effect on corporate tax (Garrett, 1995; Swank; 1998), while some others claim that globalization has a negative or no effect on corporate tax (Kenny and Winer, 2006; Slemrod, 2004).

Some papers that use statutory corporate tax rates mostly suggest that globalization has a negative (Slemrod, 2004; Swank, 2016; Swank and Steinmo, 2002) or no impact on corporate tax (Quinn, 1997). Interestingly, when studies use effective average tax rates, their empirical results seem to be getting more ambiguous and indicating a positive (see. Gellery and McCoy, 2001), negative (Adam and Kammas, 2007; Bretschger and Hettich, 2002; Bretschger and Hettich, 2005; Exbrayat, 2017; Rodrik, 1997) and no significant relationship between globalization and corporate tax rate (Dreher, 2006b; Onaran, Boesch and Leibrecht, 2012; Onaran and Boesch, 2014). Moreover, Winner (2005) suggests a negative relationship by using effective marginal capital tax rates between globalization and corporate tax rate.

The increase in globalization has also brought about pressures on governments to revise their taxation policies in order to compensate for the potential risks that may arise. It is noteworthy that many countries around the world have reduced corporate tax rates in recent years. It is interesting to recognize increasing globalization in this process of decline. Thus, the paper fills the gap in the literature by investigating whether globalization has any significant effect on corporate taxation policy by using a panel of 33 countries over the period 1998-2016. This paper provides robust empirical evidence of a negative relationship between globalization and corporate tax.

We follow Dreher (2006) and examine globalization in three main dimensions: economic, trade and politics. Moreover, we adopt the two different measurements of globalization: *de facto* and *de jure*. These sub-dimensions and measurements of globalization are significant because each represents a different characteristic of globalization. Therefore, it would be interesting to test the effect of all the deferent dimensions of globalization on corporate taxation to better guide policymakers and to get more robust results. This idea seems to be reasonable considering that the effects of different dimensions of globalization on corporate tax rates may be different.

The results show that globalization has a significant and negative effect on corporate tax rate, except for the case for political globalization. The results are mostly robust in terms of different dimensions and measurements of globalization. It is clear that independent national economic policy is deeply affected by globalization. This effect is independent from different dimensions of economic integration. In summary, global integration does matter for

policymakers and increasing integration also influences independent national economic policies of countries.

2. Literature Review

Many recent studies consider globalization in association with international integration and imply a negative impact of globalization on taxation. Over the last years, capital taxation has decreased as countries have become more integrated. However, previous studies often advocate that similar countries have similar taxation and small countries' tax rates are lower than larger countries, and trade and financial openness have a positive impact while the others do the opposite.

One of the early studies investigating the endogenous relationship between international market integration and capital taxation is that of Garrett (1995), which employs a panel of 15 OECD countries over the period 1967-1990. The results show a significant and positive relationship between international trade and capital tax burden.

Like Garett (1995), many other early studies employ the share of capital tax revenues to GDP. For instance, Quinn (1997) investigates the effects of trade balance, growth and investment on corporate tax revenue as a percentage of GDP, percentage of individual taxation and percentage of total tax revenue for 36 OECD and non-OECD countries for the period between 1974 and 1989. The results emphasize that there is only one significantly positive relationship between trade and percentage of individual taxation, whereas other variables have no significant impact. Quinn (1997) also calculates openness index by coding financial restrictions for 64 countries. Quinn and Inclan (1997) develop an index for 21 OECD countries, which is acknowledged as a globalization index by many researchers (Ranjan and Gozgor, 2018).

By using data of 17 advanced countries for the period between 1966 and 1993, Swank (1998) emphasizes the significantly positive impact of financial openness, which is measured according to Quinn (1997), and capital mobility on corporate taxation. Hallerberg and Basinger (1998), however, find an indirect positive relationship on OECD countries over the period between 1986 and 1990. Slemrod (2004) investigates the same impact on corporation taxes by using both statutory rate and corporation income tax revenues to GDP and finds that trade openness has no impact on share of GDP but affects statutory rate negatively. In spite of previous studies, which use share of GDP, Kenny and Winer (2006) find a negative relationship between trade openness and all taxations (corporate, social security, domestic & foreign trade and property & wealth taxes) for 100 countries over the period 1975-1992.

Heinemann (2000) examines whether globalization (as trade openness) restricts budgetary policies of governments, one of which is tax structure, for OECD countries over the period between 1970 and 1997. Heinemann (2000) uses corporate tax rate ratio and taxes on goods and services, divides total taxation ratio for measuring tax structure, and concludes that globalization is a potential propulsive force for changes in government finance and policies, and that countries adapting early liberalization of international transactions have lower increase of taxes.

Bretschger and Hettich (2002), on the other hand, suggest that using taxation as a share of GDP brings about some problems in regression analysis. They advocate that governments do

not determine taxation via GDP, but corporate tax rate or tax base, and that, in some countries, the gap is huge year over year on taxation as a share of GDP (Adam, Kammas and Lagou, 2013). Rodrik (1997) analyzes taxation in two categories as tax rate on labor income and capital income and use effective average tax rates as a proxy for taxation[1]. Rodrik (1997) investigates the effect of country openness, which is total exports and imports divided by GDP, for 18 OECD countries over the period between 1965 and 1992 and concludes that trade has a positive impact for tax rate on labor income, but it is negatively correlated with capital taxes while openness with capital account restrictions are positive for both tax rates. Garett and Mitchell (2001) use effective average tax rate and Quinn's (1997) index for 18 OECD countries for the period between 1967 and 1992. Their panel regression results show that globalization does not have any significant impact on capital taxation but affects the capital/(labor + consumption tax) ratio negatively. Gelleny and McCoy (2001) evaluate the relationship between globalization and corporate tax rates and include government education program in the analysis. The results from a dataset of 17 OECD countries over the period 1982-1991 show that trade openness has a positive impact on effective corporate tax rates whereas capital flow with education programs affect them negatively.

Swank and Steinmo (2002) investigate the determinants of taxation by using data from 14 developed countries for the period between 1981 and 1995. Their results show that trade has a negative impact only on statutory corporate rate, but liberalization decreases statutory tax and labor tax rates.

Hansson and Olofsdotter (2003) investigate how integration affect tax rates for 17 OECD countries over the period 1980-1997. Different analysis results show that openness increases both statutory and average effective tax rates while capital restrictions have a negative effect on both of them.

Hays (2003) uses a panel analysis for 17 OECD countries over the period between 1965 and 1996 and concludes that financial and capital openness have a negative impact on capital tax rates in rich and majoritarian countries.

Wibbels and Arce (2003) investigate how Latin American countries' taxation systems are affected by globalization. The authors use consumption and labor taxes to total taxes ratio and their globalization measurement involve flows of capital, foreign direct investments and portfolio investments. Their cross-sectional analysis results show that global market integration in Latin America has a negative effect on persistence of tax policies.

Bretschger and Hettich (2002) use effective average tax rates, foreign investment, trade, government restrictions and domestic openness index as measures of globalization for 14 OECD countries over the period from 1967 to 1996 and find that all globalization variables have a significant and negative effect on corporate taxation. These results are consistent with another study of Bretschger and Hettich (2005). Winner (2005) investigates the impact of trade openness and globalization on effective marginal capital tax rates for a dataset of 23 OECD countries and from 1965 to 2000. The panel regression results show that globalization has a negative impact on tax rate of capital but a positive one on labor.

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[1]Effective average tax rates calculated by Mendoza, Milesi-Ferretti and Asea (1997) from national income account data by dividing total tax revenue from capital and labour taxation.

Dreher (2005) develops an index of globalization covering its three main dimensions: economic integration, social integration, and political integration. Dreher investigates the relationship between globalization and implicit tax rates by using panel regression for the period 1970-2000. The results show that globalization has no effect on labor and consumption tax rates while it has a significant and positive effect on capital taxes.

Dreher (2006a) emphasizes that using trade or investment to GDP as a proxy for globalization provides less robust results, while using the KOF Globalization Index as a proxy for globalization yields more robust results. Dreher (2006b) examines the impact of globalization on taxation using and updating a self-developed globalization index for 30 OECD countries over the period 1970-2000. The results show that globalization has a positive effect on capital tax rates.

Adam and Kammas (2007) investigate the relationship between effective average tax rate and globalization for 17 OECD countries from the period between 1970 and 1997. Their results show that international integration has a significant and negative effect on corporate tax rates.

Kubátová, Vančurová and Foltysová (2008) use the CSGR Globalization Index by Lockwood and Redoano (2005), which characterizes the sub-forms of globalization as economic, social and political dimensions. They investigate the impact of globalization on taxation. The empirical results of their cluster analysis show that taxation policies of countries shift from direct to indirect taxes while the sub-forms of globalization, especially economic globalization, affect the influencing factors of taxation.

Clausing (2008) tests whether economic integration has any effect on corporate tax systems by using 36 countries for the period from 1979 to 2002. Clausing then concludes that bigger countries have high corporate tax rates, but more integrated countries have low corporate tax rates, and European integration decreases tax rates. On the other hand, Overesch and Rincke (2009) analyze how economic integration of Western and Eastern Europe influence corporate tax rates from the 1980s to 2005 and conclude that Western countries cut their taxes due to competition of direct investments and wage levels.

Neumann, Holman and Alm (2009) analyze the relationship between globalization and tax policy by using a two-country, two-factor and two-good model. They conclude that revenues of governments from taxes decline while factor mobility increases.

Kumar and Quinn (2012), on the other hand, argue that there is no relationship between globalization and corporate tax rate. Onaran et al. (2012) analyze how globalization affects effective average tax rates for EU15 countries between the period 1970-2007. They show that globalization has no impact on tax rates of capital and consumption but increases labor taxes. Onaran and Boesch (2014) show that globalization only affects labor tax rates positively.

Swank (2016) shows that trade and capital flows decrease taxes and also US tax model set downward pressure on other countries' taxations. Exbrayat (2017) examines the empirical relevance of new economic geography models of tax competition and concludes that national governments tend to set higher corporate tax rates when their countries enjoy a high real market potential. Exbrayat (2017) further suggests that trade liberalization increases corporate tax rates in countries with higher potential while trade integration enforce pressure on corporate tax rates to decrease in European countries.

Ranjan and Gozgor (2018) test the impact of globalization on statutory tax rates by using the KOF index, trade to percentage of GDP and financial openness as a proxy of globalization for 149 countries over the period between 1970 and 2015. The authors show that both the KOF index and financial openness have a significant and negative effect on corporate and income taxes while trade openness has no significant effect on it. They also indicate that the relationship between financial openness and taxes is not robust.

Egger, Nigai and Strecker (2019) examine the effect of trade openness on labor taxes for 26 OECD countries and 39 non-OECD countries during the periods 1980-1993 and 1994-2007. Their empirical results of panel analysis show that OECD countries hold on employee-based taxes while non-OECD countries rely on taxes from goods, openness raised tax burden of workers before 1994, but taxes on workers declined as tax burden of the middle class continued after 1994

In theory, the expected impacts of different dimensions of globalization on taxation are controversial in terms of measurement proxy of globalization, methodology, sample period, definitions of variables, region and developing level of countries. For example, in terms of economic globalization, the sign of the relationship can be either positive or negative. In terms of "to race to the bottom", there is a negative relationship between globalization and corporate tax rate. On the other hand, this decline leads to a need for new income sources, and finally taxes on consumption and labor may increase. Political globalization may limit the competition, increasing tax rates. In addition, social globalization makes it easy for people to move easily because of tax burden. On the other hand, social globalization makes a country more attractive for investments. To sum up, the relationship between social globalization and taxation is an ambiguous one (Dreher, 2006b; Kumar and Quinn, 2012).

3. Empirical Results
3.1. Description of Data

The dataset derived from 33 countries for the period between 1998 and 2016 is shown in Table 2. This paper uses panel data that combines cross-section and time-series data to test for any endogenous interaction between globalization and corporate tax rate. Table 1 shows the source and definitions of the data.

Following the literature, average effective tax rate is used as a dependent variable since real tax revenue is expressed in relation to the tax base that causes it while globalization index is used as an in dependent variable in this study (Adam and Kammas, 2007; Dreher, 2005).

The concept of globalization is mainly discussed in the literature in different dimensions. For example, Keohane and Nye (2000) emphasize the forms of globalization as economic, military, environmental, social and cultural, which affect each other. However, Lockwood and Redoano (2005), and Dreher (2002, 2005 and 2006a) emphasize the forms of globalization in three sub-indices: economic, social and political. One of the most used globalization indices is the KOF globalization index, introduced by Dreher (2006b). It was later updated in 2008 by Dreher et al. and in 2019 by Gygli et al.

This paper adopts the KOF globalization Index and uses 18 different definitions of globalization. The definitions of variables are presented in Table 1. The different dimensions of globalization are important to capture economic, social and political effects individually. For

example, economic globalization involves long-distance flows of goods, services and capital, also information and perceptions that companion market exchanges, includes trade and financial globalization. Social globalization states the spread of information, ideas, images and people and movement of religious and scientific knowledge while political globalization describes the diffusion of government policies.

The separation of globalism is arbitrary but helpful for analysis because changes in the forms of globalization do not occur simultaneously. For example, economic globalization occurred between the mid-1800s and World War I, and trade and capital flows between countries increased, but it declined between the two world wars. However, the spread of concerns and chaos after Chernobyl is an example of social globalization and it did not rise simultaneously with economic or political globalization (Gygli, Haelg, Potrafke and Sturm, 2019; Keohane and Nye, 2000).

Table 1. Data Definition

Variable Name	Short Definition	Source
Ctr	Average effective tax rates	Spengel, C. et al. (2018), Effective Tax Levels Using the Devereux/Griffith Methodology - Update 2017, Project for the EU Commission TAXUD/2013/CC/120 Final Report 2017, Mannheim.
KOFGI	Globalization	KOF Globalization Index
KOFGIdf	Globalization, de facto	KOF Globalization Index
KOFGIdj	Globalization, de jure	KOF Globalization Index
KOFEcGI	Economic Globalization	KOF Globalization Index
KOFEcGIdf	Economic Globalization, de facto	KOF Globalization Index
KOFEcGIdj	Economic Globalization, de jure	KOF Globalization Index
KOFTrGI	Trade Globalization	KOF Globalization Index
KOFTrGIdf	Trade Globalization, de facto	KOF Globalization Index
KOFTrGIdj	Trade Globalization, de jure	KOF Globalization Index
KOFFiGI	Financial Globalization	KOF Globalization Index
KOFFiGIdf	Financial Globalization, de facto	KOF Globalization Index
KOFFiGIdj	Financial Globalization, de jure	KOF Globalization Index
KOFSoGI	Social Globalization	KOF Globalization Index
KOFSoGIdf	Social Globalization, de facto	KOF Globalization Index
KOFSoGIdj	Social Globalization, de jure	KOF Globalization Index
KOFPoGI	Political Globalization	KOF Globalization Index
KOFPoGIdf	Political Globalization, de facto	KOF Globalization Index
KOFPoGIdj	Political Globalization, de jure	KOF Globalization Index
dependency	Age dependency ratio (% of working-age population)	The World Bank, WDI
unemployment	Unemployment, total (% of total labor force)	The World Bank, WDI
growth	Economic growth	Peen World Table, 9.1
open	Trade openness (export+import/GDP)	Peen World Table, 9.1
gdpper	GDP per capita	Peen World Table, 9.1
inflation	Inflation, consumer prices (annual %)	The World Bank, WDI
popgrowh	Population growth	Peen World Table, 9.1

Additionally, globalization indices vary depending on the focus of measurement such as *de facto* and *de jure*. *De* facto globalization measures activities and actual flows while *de jure* globalization characterizes policies, conditions and institutions that permit these activities and actual flows[2]. In this context, this paper further extends the analysis to consider whether the relationship between corporate tax rate and globalization differs across measurements of both *de facto* and *de jure* (see details in Table-1).

Table 2. Countries

Austria	Finland	Lithuania	Spain
Belgium	France	Luxembourg	Sweden
Bulgaria	Germany	Malta	Switzerland
Canada	Greece	The Netherlands	Turkey
Croatia	Hungary	Norway	the UK
Cyprus	Ireland	Poland	the US
Czechia	Italy	Portugal	
Denmark	Japan	Romania	
Estonia	Latvia	Slovenia	

3.2. Model and Empirical Evidences

The paper uses a panel regression approach. Panel data consists of both "time-series" and "cross-section" dimensions. Thus, the model is based on comprehensive observations derived from both "time-series" and "cross-section" data, which enhances degree of freedom and ensures estimation of a more robust model with fewer problems (Baltagi, 1995).

The model we estimate is given by:

$$Ctr_{it} = \beta_0 + \beta_1 Globalization_{it} + \sum_{j=2}^{m=8} \beta_j X_{it} + e_{it} \qquad (1)$$

Here, i (1,…,33) refers to the countries, t (1998,…,2016) refers to the time period and e_{it} is an iid error term. The dependent variable is corporate tax rate (Ctr_{it}) and X represents the control variables: dependency, unemployment, growth, open, gdpper, inflation, popgrowth. The control variables are chosen based on the existing literature on the relationships between

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[2] Most globalization measurements consider de facto globalization except for the KOF Globalization index in 2007 version and GlobalIndex by Raab et al. (2008). In the 2007 version of KOF Globalization Index, sub-indices include trade and capital flows, which are de facto measures, and also import barriers and tariff barriers can be classified as de jure globalization. De facto economic globalization includes exchange of goods and services over long distance, which are called de facto trade globalization and capital flows, liabilities, foreign direct investment, portfolio investments etc. are called de facto financial globalization. On the other hand, the policy that enables trade flows between countries is referred as de jure trade globalization while openness of a country for international financial flows and investments is called de jure financial globalization and they all express de jure economic globalization.

De facto social globalization involves direct interactions between people living in different countries, the flow of ideas, images and knowledge and the domination of a country's cultural product. However, de jure social globalization refers to policies that enable direct interaction between people living in different countries, ability to share information and ability to understand and adopt other cultures. Moreover, de facto political globalization represents the diffusion of government policies, but de jure political globalization measures the ability to engage in international cooperation politically (Gygli et al., 2019).

corporate tax rate and globalization (Clausing, 2008; Dreher, 2005; Dreher, 2006a; Dreher, 2006b; Egger et. al., 2019; Kumar and Quinn, 2012). As dimensions of globalization, the paper uses eighteen different variables, each of which represents a different dimension and measurement of globalization.

The estimation results are presented in Table 3. The estimated coefficient for globalization is negative and statistically significant, indicating that globalization has a statistically significant effect on decreasing of corporate taxation. Our empirical results are robust in terms of different sub-dimensions of globalization as economic, trade, financial, and social, except for political dimension. The empirical results mostly support the existence of a negative endogenous interaction between globalization and corporate tax rate (see Table 4-8).

In terms of measurements of globalization, our results provide robust and consistence evidence of a negative relationship between globalization and corporate tax rate for *de facto* measures while presenting some evidence for negative relationship for *de jure* measurement. In other words, our results interestingly capture some restricted empirical evidence which suggests a positive relationship between globalization and corporate tax rate only for the case of the total, financial and political dimensions of globalization in terms of *de jure* measurement. It is not surprising considering the fact that the sign of the relationship between globalization and corporate tax rate is ambiguous in the literature.

On the other hand, it is clear that the increase in globalization also leads to pressures on governments to decrease their taxation policy, which is consistent with the previous findings.

In terms of the control variables, our results are consistent with the existing literature. For example, the estimated coefficient for dependency, gdpper, and popgrowh is positive and statistically significant while the estimated coefficient for growth, open, unemployment, and inflation is negative (Clausing, 2008; Egger et. al., 2019; Hines and Summers, 2008; Kumar and Quinn, 2012).

Table 3. Regression Results

Dep. Var: ctr Independent Variables	(1)	(2)	(3)
KOFGI	-0.126 (-1.94)*		
KOFGIdf		-0.262 (-4.94)***	
KOFGIdj			0.113 (1.83)*
dependency	0.558 (6.86)***	0.550 (6.90)***	0.526 (6.42)***
unemployment	-0.0103 (-0.12)	-0.0343 (-0.41)	0.0306 (0.36)
growth	-19.84 (-2.24)**	-23.12 (-2.67)***	-13.66 (-1.54)
open	-2.560 (-1.17)	-0.526 (-0.24)	-2.603 (-1.19)
gdpper	0.0000951 (2.43)**	0.000129 (3.42)***	0.0000429 (1.11)
inflation	0.0228 (0.26)	-0.0503 (-0.59)	0.105 (1.25)
popgrowth	188.0 (3.51)***	198.9 (3.78)***	193.9 (3.61)***
_cons	3.338 (0.54)	13.30 (2.38)**	-13.94 (-2.30)**
Obs	558	558	558
R-Square	0.4492	0.4753	0.3829
Heteros. Test Prob>chi2	[0.0000]	[0.0000]	[0.0000]
Autocorr. Test Prob>F	[0.0000]	[0.0000]	[0.0000]
Hausman Test Prob>chi2	[0.0000]	[0.0000]	[0.0000]

Heteros. The test represents a Modified Wald test for Groupwise heteroscedasticity. Autocorr. The test represents Wooldridge test for autocorrelation in panel data. The null hypothesis for both heteroscedasticity and autocorrelation is rejected for all the models. Therefore, we consider gls estimation correction to increase efficiency for all the models. Robust standard errors are reported. t statistics in parentheses. *p < 0.10, **p < 0.05, ***p < 0.01

Table 4. Regression Results

Dep. Var: ctr Independent Variables	(1)	(2)	(3)
KOFEcGI	-0.219		
	(-6.25)***		
KOFEcGIdf		-0.231	
		(-10.21)***	
KOFEcGIdj			0.0561
			(1.62)
dependency	0.481	0.407	0.545
	(6.07)***	(5.36)***	(6.72)***
unemployment	-0.0740	-0.109	0.0259
	(-0.89)	(-1.39)	(0.31)
growth	-14.31	-13.74	-17.14
	(-1.69)*	(-1.71)*	(-1.97)**
open	-4.884	-7.608	-3.088
	(-2.29)**	(-3.70)***	(-1.42)
gdpper	0.000135	0.000165	0.0000558
	(3.65)***	(4.74)***	(1.51)
inflation	-0.0878	-0.127	0.105
	(-1.04)	(-1.62)	(1.23)
popgrowth	143.6	104.1	191.1
	(2.74)***	(2.08)**	(3.56)***
_cons	12.88	15.53	-10.17
	(0.54)	(3.60)***	(-2.06)**
Obs	558	558	558
R-Square	0.4056	0.4339	0.3455
Heteros. Test Prob>chi2	[0.0000]	[0.0000]	[0.0000]
Autocorr. Test Prob>F	[0.0000]	[0.0000]	[0.0000]
Hausman Test Prob>chi2	[0.0000]	[0.0000]	[0.0000]

Heteros. The test represents a Modified Wald test for Groupwise heteroscedasticity. Autocorr. The test represents Wooldridge test for autocorrelation in panel data. The null hypothesis for both heteroscedasticity and autocorrelation is rejected for all the models. Therefore, we regard gls estimation correction to increase efficiency for all the models. Robust standard errors are reported. t statistics in parentheses. *p < 0.10, **p < 0.05, ***p < 0.01

Table 5. Regression Results

Dep. Var: ctr Independent Variables	(1)	(2)	(3)
KOFTrGI	-0.316 (-11.13)***		
KOFTrGIdf		18.55 (4.63)***	
KOFTrGIdj			0.00999 (0.27)
dependency	0.374 (4.97)***	0.311 (4.28)***	0.546 (6.71)***
unemployment	-0.106 (-1.37)	-0.127 (-1.71)*	0.0123 (0.14)
growth	-9.010 (-1.14)	-5.624 (-0.74)	-16.60 (-1.90)*
open	-5.897 (-2.96)***	-6.870 (-3.58)***	-2.962 (-1.36)
gdpper	0.000130 (3.89)***	0.000122 (3.84)***	0.0000656 (1.78)*
inflation	-0.166 (-2.12)**	-0.0849 (-1.17)	0.0789 (0.90)
popgrowth	53.54 (1.07)	26.27 (0.55)	189.3 (3.52)***
_cons	25.66 (5.49)***	-0.213 (-13.50)***	-6.601 (-1.29)
Obs	558	558	558
R-Square	0.4053	0.4882	0.3579
Heteros. Test Prob>chi2	[0.0000]	[0.0000]	[0.0000]
Autocorr. Test Prob>F	[0.0000]	[0.0000]	[0.0000]
Hausman Test Prob>chi2	[0.0000]	[0.0000]	[0.0000]

Heteros. The test represents a Modified Wald test for Groupwise heteroscedasticity. Autocorr. The test represents Wooldridge test for autocorrelation in panel data. The null hypothesis for both heteroscedasticity and autocorrelation is rejected for all the models. Therefore, we take into account gls estimation correction to increase efficiency for all the models. Robust standard errors are reported. t statistics in parentheses. *p < 0.10, **p < 0.05, ***p < 0.01

Table 6. Regression Results

Dep. Var: ctr Independent Variables	(1)	(2)	(3)
KOFFiGI	-0.0162		
	(-0.46)		
KOFFiGIdf		-0.0899	
		(-3.20)***	
KOFFiGIdj			0.0766
			(2.59)**
dependency	0.545	0.537	0.546
	(6.70)***	(6.66)***	(6.75)***
unemployment	0.00477	-0.0236	0.0441
	(0.06)	(-0.28)	(0.52)
growth	-16.67	-19.04	-18.30
	(-1.91)*	(-2.19)**	(-2.10)**
open	-3.107	-4.919	-3.333
	(-1.41)	(-2.19)**	(-1.53)
gdpper	0.0000739	0.000120	0.0000473
	(1.88)*	(3.02)***	(1.28)
inflation	0.0600	-0.0166	0.105
	(0.69)	(-0.19)	(1.25)
popgrowth	188.7	191.5	188.7
	(3.51)***	(3.60)***	(3.53)***
_cons	-4.613	0.501	-11.35
	(-0.96)	(0.11)	(-2.45)**
Obs	558	558	558
R-Square	0.3824	0.4222	0.3348
Heteros. Test Prob>chi2	[0.0000]	[0.0000]	[0.0000]
Autocorr. Test Prob>F	[0.0000]	[0.0000]	[0.0000]
Hausman Test Prob>chi2	[0.0000]	[0.0000]	[0.0000]

Heteros. The test represents a Modified Wald test for Groupwise heteroscedasticity. Autocorr. The test represents Wooldridge test for autocorrelation in panel data. The null hypothesis for both heteroscedasticity and autocorrelation is rejected for all the models. Therefore, we consider gls estimation correction to increase efficiency for all the models. Robust standard errors are reported. t statistics in parentheses. *p < 0.10, **p < 0.05, ***p < 0.01

Table 7. Regression Results

Dep. Var: ctr Independent Variables	(1)	(2)	(3)
KOFSoGI	-0.338		
	(-4.48)***		
KOFSoGIdf		-0.0674	
		(-1.06)	
KOFSoGIdj			-0.483
			(-7.21)***
dependency	0.532	0.543	0.530
	(6.65)***	(6.67)***	(6.80)***
unemployment	-0.0454	-0.00258	-0.0530
	(-0.54)	(-0.03)	(-0.65)
growth	-23.03	-17.82	-26.43
	(-2.65)***	(-2.03)**	(-3.12)***
open	-6.227	-3.552	-8.052
	(-2.75)***	(-1.58)	(-3.65)***
gdpper	0.000199	0.0000973	0.000226
	(4.29)***	(2.10)	(5.48)***
inflation	-0.118	0.0291	-0.158
	(-1.28)	(0.32)	(-1.85)*
popgrowth	161.6	189.4	103.5
	(3.04)***	(3.53)***	(1.96)**
_cons	18.99	-1.070	31.33
	(2.77)***	(-0.18)	(4.83)***
Obs	558	558	558
R-Square	0.5229	0.4696	0.4626
Heteros. Test Prob>chi2	[0.0000]	[0.0000]	[0.0000]
Autocorr. Test Prob>F	[0.0000]	[0.0000]	[0.0000]
Hausman Test Prob>chi2	[0.0000]	[0.0000]	[0.0000]

Heteros. The test represents a Modified Wald test for Groupwise heteroscedasticity. Autocorr. The test represents Wooldridge test for autocorrelation in panel data. The null hypothesis for both heteroscedasticity and autocorrelation is rejected for all the models. Therefore, we pay regard to gls estimation correction to increase efficiency for all the models. Robust standard errors are reported. t statistics in parentheses. *p < 0.10, **p < 0.05, ***p < 0.01

Table 8. Regression Results

Dep. Var: ctr Independent Variables	(1)	(2)	(3)
KOFPoGI	0.131		
	(4.26)***		
KOFPoGIdf		0.0869	
		(3.36)***	
KOFPoGIdj			0.156
			(4.79)***
dependency	0.464	0.486	0.458
	(5.63)***	(5.88)***	(5.60)***
unemployment	0.00570	-0.00632	0.0296
	(0.07)	(-0.08)	(0.36)
growth	-7.732	-10.62	-6.169
	(-0.87)	(-1.20)	(-0.70)
open	-6.584	-7.892	-2.759
	(-2.85)***	(-3.02)***	(-1.29)
gdpper	0.0000701	0.0000807	0.0000498
	(1.95)*	(2.22)**	(1.39)
inflation	0.0552	0.0636	0.0468
	(0.68)	(0.77)	(0.57)
popgrowth	152.7	147.6	176.3
	(2.85)***	(2.70)***	(3.34)***
_cons	-13.48	-10.71	-15.32
	(-3.04)***	(-2.47)**	(-3.40)***
Obs	558	558	558
R-Square	0.3509	0.3502	0.3387
Heteros. Test Prob>chi2	[0.0000]	[0.0000]	[0.0000]
Autocorr. Test Prob>F	[0.0000]	[0.0000]	[0.0000]
Hausman Test Prob>chi2	[0.0000]	[0.0000]	[0.0000]

Heteros. The test represents a Modified Wald test for Groupwise heteroscedasticity. Autocorr. The test represents Wooldridge test for autocorrelation in panel data. The null hypothesis for both heteroscedasticity and autocorrelation is rejected for all the models. Therefore, we take into account gls estimation correction to increase efficiency for all the models. Robust standard errors are reported. t statistics in parentheses. *p < 0.10, **p < 0.05, ***p < 0.01

4. Conclusion

Globalization has been proceeding rapidly for a long time now and the effect of globalization on governments is still a controversial issue. The paper has provided compressive empirical evidence for the effect of globalization on corporate tax rate by using a panel of 33 countries over the period 1998-2016. We follow Dreher (2006b) and consider globalization in three main dimensions: economic, trade and politics. Economic globalization characterizes long distance flows of goods, capital and services as well as information and perceptions that accompany market exchanges. Social globalization expresses the spread of ideas, information, images and people. Political globalization characterizes the diffusion of government policies (Gygli et. al., 2019). It is interesting to see the effect of all the different dimensions of globalization on corporate taxation because each represents a different characteristic of globalization. In addition, the paper also takes into account the two different measurements of globalization: de facto and de jure. In the light of the results, the paper mostly shows that

globalization has a significantly negative effect on corporate taxation. The results are robust in terms of different dimensions and different measurements of globalization. The increase in globalization leads to pressures on governments to decrease their taxation policies. It can be concluded that global integration does matter for policymakers and increasing integration also influences independent national economic policies of countries.

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