

# Business and institutional determinants of Effective Tax Rate in Emerging Economies

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# **Business and institutional determinants of Effective Tax Rate in Emerging Economies**

## **Abstract**

This paper studies the determinants of Effective Tax Rate (ETR) in emerging economies from a joint perspective, focusing on the BRICS (Brazil, Russia, India, China and South Africa) and MINT (Mexico, Indonesia, Nigeria and Turkey) countries. We consider both traditional business characteristics (size, leverage, asset composition and profitability) and other newer ones (firm growth, earnings management and deferred tax), as well as the specific institutional factors of each country (Statutory Tax Rate, level of development, index of economic freedom, GDP growth and institutional quality). We use a sample of 7,844 listed companies taken from the Compustat data base for the period 2006-2015 and we apply panel data methodology. Our results show that both business variables and institutional factors have a significant effect on the tax burden for firms in emerging countries. We consider that these findings will be of use to firms in their investment and location decisions in these countries, and to governments when drawing up fiscal policies. In our opinion, this research amounts to an important contribution to the literature because it includes new variables, both business-related and institutional, which had not been considered together in previous studies on the determinants of ETR.

**Keywords:** Effective Tax Rate (ETR); Tax burden; Emerging economies; Institutional environment; BRICS; MINT.

**JEL classification:** H25; H32; M41; O57

## **1. Introduction**

The emerging economies have been of interest for years, although there is no general consensus as to which countries should be classified as such. Various classifications exist, but in this research we shall focus on the BRICS (Brazil, Russia, India, China and South Africa) and the MINT (Mexico, Indonesia, Nigeria and Turkey) countries. Terence James O'Neill coined the term BRIC in 2001, adding the fifth country in 2011, and in 2014 he created a new term, MINT, for four countries that he considered to have great potential.

The emerging economies are characterized by fast economic growth in comparison with developed economies, gradual industrialization and internationalization. For these reasons and because they are considered to have potential, they are usually attractive markets for investors and businesses. This is indicated by the data provided by the International Monetary Fund (IMF [International Monetary Fund], 2018) regarding expected GDP up to 2023, starting from 2017 data. Specifically, during this period, seven of the nine countries studied in this research fall within the 20 largest economies of the world, excluding only South Africa and Nigeria.

The interest aroused in these emerging countries led us to consider their situation from the point of view of Corporate Income Tax (CIT). For several decades, there has been an international trend towards reduction of the Statutory Tax Rate (STR) with a view to attracting new investments. However, these emerging economies already have great appeal, which is why it is of interest to find out if they too follow this international trend.

Also, according to a report by the IMF/OECD [International Monetary Fund/Organisation for Economic Co-operation and Development] (2017), after corruption and political certainty, the overall tax environment is the most important factor for consideration when deciding to invest or locate operations in a country. Moreover, the two most important tax factors for

investment and location decisions are uncertainty about the effective tax rate on profit and the anticipated effective tax rate on profit.

According to data provided by the audit firm KPMG (2019) for a set of approximately 170 countries, the average “worldwide” STR dropped from almost 32.00% in 2000 to 23.79% in 2019, a decrease of 8.21 percentage points. If we consider only the nine emerging economies analysed, we find a similar trend because the average STR dropped by 6.70 percentage points, from 33.81% in 2000 to 27.11% in 2019.

However, most countries usually accompany reductions in STR with increases in the tax base in order to maintain tax collection. It is therefore appropriate to analyse evolution of the Effective Tax Rate (ETR) borne by businesses, because STR is not a good indicator of the tax burden (GAO [Government Accountability Office], 2008). Markle and Shackelford (2012) observed that ETRs have also seen a constant reduction worldwide over the last two decades. The importance of ETR has led to a considerable proliferation of research on this topic over recent years, as can be seen from the excellent reviews by Shackelford and Shevlin (2001), Hanlon and Heitzman (2010), Graham et al. (2012) and Wilde and Wilson (2018). Most research in this field has focused on determinants of ETR. The most usual variables in the prior literature are size, leverage, asset structure and profitability, although other business variables have been included in recent years.

Traditionally, previous literature searching for the determinants of ETR has only analyzed business variables separately for each country. Most of the studies refer to the USA, although there are also studies for Australia, China, Germany, Malaysia and Spain, among others. Among the small number of studies that cover more than one country, Kim and Limpaphayom (1998) perform separate analyses for Hong Kong, Korea, Malaysia, Taiwan and Thailand, and Fernández-Rodríguez and Martínez-Arias (2014) consider each of the four BRIC countries.

Some studies analyze business factors determining ETR in specific geographical areas. Fernández-Rodríguez and Martínez-Arias (2011) consider the USA and the EU, Delgado et al. (2012) focus on the EU, and Molina Llopis and Barberá Martí (2017) cover the Eurozone. Finally, Fonseca-Díaz et al. (2019) study a set of 63 countries worldwide, and also include institutional factors as possible determinants of ETR.

To date, there have been no studies searching for determinants of ETR in emerging economies taken together. The purpose of this research is, therefore, to analyze the determinants of business tax burden in emerging countries from a joint perspective. We study not only business characteristics but also specific institutional factors in each of the nine countries. For this purpose, we use a sample of listed companies obtained from the Compustat data base during 2006-2015 and apply panel data methodology.

Among the business variables that may affect ETRs are the classic ones (size, leverage, asset composition and profitability), as well as other newer ones (firm growth, earnings management and tax deferred) that we believe enrich the research. The institutional factors considered are STR, the country's level of development, the index of economic freedom, GDP growth and institutional quality.

The contribution of this paper is three-fold. Firstly, it analyzes the determinants of ETR in emerging economies from a joint perspective. Secondly, it includes both new business variables, in particular deferred taxation, and institutional variables. Finally, since it uses a new measure of fiscal burden, modified ETR, it takes into account the statutory rates in effect in each country.

The paper is structured as follows. Section 2 provides the institutional characteristics of the emerging economies. Section 3 analyzes the business and institutional variables that determine the ETR, poses the hypotheses to be tested and states the models to be estimated.

Section 4 describes the sample used and shows the results. Finally, section 5 presents the main conclusions.

## **2. Institutional characteristics of emerging economies**

Recently, in research covering countries all over the world, Fonseca-Díaz et al. (2019) found that membership of the OECD, economic development and institutional quality affect the ETRs borne by firms. It is therefore useful to test whether certain institutional factors can determine corporate tax burden in the emerging economies considered. For this purpose, we analyze the institutional factors that may have an effect on the tax burden of firms.

### *2.1. Statutory Tax Rate (STR)*

The STRs in effect in the emerging countries over the time frame considered are shown in Table 1. The legal rates set by the nine countries differ greatly over the decade considered. Brazil and India have the highest rates, which are fairly stable, followed by Nigeria and Mexico. South Africa also has high tax rates, although in 2013 there was a large decrease of almost nine points. Other countries that reduced their STRs are China, with an eight-point drop in 2008, and Indonesia, which reduced its legal rates by five points. At the other extreme are Turkey, which maintained a rate of 20% throughout the decade, and Russia, which started out with 24% but applied 20% as from 2009.

**Table 1. Trends in STRs in the emerging economies (2006-2015) (%)**

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Brazil	34.00	34.00	34.00	34.00	34.00	34.00	34.00	34.00	34.00	34.00
China	33.00	33.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00
India	33.66	33.99	33.99	33.99	33.99	32.44	32.45	33.99	33.99	34.61
Indonesia	30.00	30.00	30.00	28.00	25.00	25.00	25.00	25.00	25.00	25.00
Mexico	29.00	28.00	28.00	28.00	30.00	30.00	30.00	30.00	30.00	30.00
Nigeria	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00
Russia	24.00	24.00	24.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00
South Africa	36.89	36.89	34.55	34.55	34.55	34.55	34.55	28.00	28.00	28.00
Turkey	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00

Source: KPMG (2019)

## 2.2. Development

For the purposes of this study, we use the World Bank classification based on Gross National Income (GNI) to distinguish between developed and developing countries. More specifically, we follow the grouping drawn up by Fonseca-Díaz et al. (2014) who consider as developed countries those with high and upper middle incomes, and as developing countries those with low and lower middle incomes. Since the classification is based on annual GNI data for each country, some of them may change category during the time frame studied. The nine emerging countries considered are classified as follows:

- Brazil, Mexico, Russia, South Africa and Turkey: developed.
- India, Indonesia and Nigeria: developing.
- China from 2006 to 2009 was developing, and as from 2010 is considered a developed country.

Therefore, according to the World Bank, five countries are considered developed during the decade analyzed, with China entering the group in 2010.

## 2.3. Economic freedom

The Index of Economic Freedom, created by the Heritage Foundation and The Wall Street Journal in 1995, is made up of four categories broken down into a total of twelve variables

that indicate the degree of economic freedom in the countries, as follows: Rule of Law (property rights, government integrity, judicial effectiveness), Government Size (government spending, tax burden, fiscal health), Regulatory Efficiency (business freedom, labor freedom, monetary freedom), Open Markets (trade freedom, investment freedom, financial freedom). Each of the twelve economic freedoms within these categories is graded on a scale of 0 to 100. A country's overall score is derived by averaging these twelve economic freedoms, with equal weight being given to each. Based on this average score, the countries are classified as:

- “Free”: from 90 to 100 points.
- “Mostly free”: from 70 to 79.9 points.
- “Moderately free”: from 60 to 69.9 points.
- “Mostly unfree”: from 50 to 59.9 points.
- “Repressed”: from 0 to 49.9 points.

The emerging countries covered by this research fall in two categories, as follows:

- “Mostly unfree”: Brazil, China, India, Indonesia, Nigeria and Russia.
- “Moderately free”: Mexico, South Africa and Turkey.

So three countries are considered “moderately free” and the other six “mostly unfree”.

#### *2.4. GDP growth*

Emerging economies are usually characterized by a high rate of annual growth in their Gross Domestic Product (GDP), which is why it is of interest to know whether this variable can determine fiscal burden. Table 2 shows that growth in GDP is fairly different among these countries. The highest average growth is in India and China, and the lowest in Mexico, South Africa, Russia and Brazil, with Turkey, Indonesia and Nigeria recording intermediate levels. In addition, some countries such as China, India and Indonesia have fair stable, high figures throughout the decade. Finally, if the analysis is performed annually, the lowest figures are



noted in 2009, with five countries recording negative growth as a consequence of the international economic crisis.

**Table 2. GDP growth in the emerging economies (2006-2015)**

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	Mean
Brazil	3.96	6.07	5.09	-0.13	7.53	3.97	1.92	3.00	0.50	-3.77	2.82
China	12.72	14.23	9.65	9.40	10.64	9.54	7.86	7.76	7.30	6.90	7.57
India	9.26	9.80	3.89	8.48	10.26	6.64	5.46	6.39	7.51	8.01	9.60
Indonesia	5.50	6.35	6.01	4.63	6.22	6.17	6.03	5.56	5.01	4.88	5.64
Mexico	4.94	3.20	1.40	-4.70	5.11	4.04	4.02	1.36	2.27	2.65	2.43
Nigeria	8.21	6.83	6.27	6.93	7.84	4.89	4.28	5.39	6.31	2.65	5.96
Russia	8.15	8.54	5.25	-7.82	4.50	5.28	3.66	1.79	0.74	-2.83	2.73
South Africa	5.60	5.36	3.19	-1.54	3.04	3.28	2.21	2.49	1.70	1.30	2.66
Turkey	7.11	5.03	0.85	-4.70	8.49	11.11	4.79	8.49	5.17	6.09	5.24

Source: IMF [International Monetary Fund] (2018)

*2.5. Institutional quality*

Most of the studies that consider institutional factors measure institutional quality on the basis of six Worldwide Governance Indicators developed by Kaufmann et al. (2011): Voice and Accountability, Control of Corruption, Political Stability and Absence of Violence/Terrorism, Rule of Law, Government Effectiveness and Regulatory Quality. For this study, following Fonseca-Díaz et al. (2019), we only analyze the last three of these because the first three are not directly related to our purpose. These three variables vary from -2.5 (weak) to +2.5 (strong). Figure 1 shows the values of the nine emerging countries analyzed here for the three variables studied: Rule of Law (RULELAW), Government Effectiveness (GOVEFF) and Regulatory Quality (REGQUAL).

**Figure 1. Institutional quality in the emerging economies (2006-2015)**

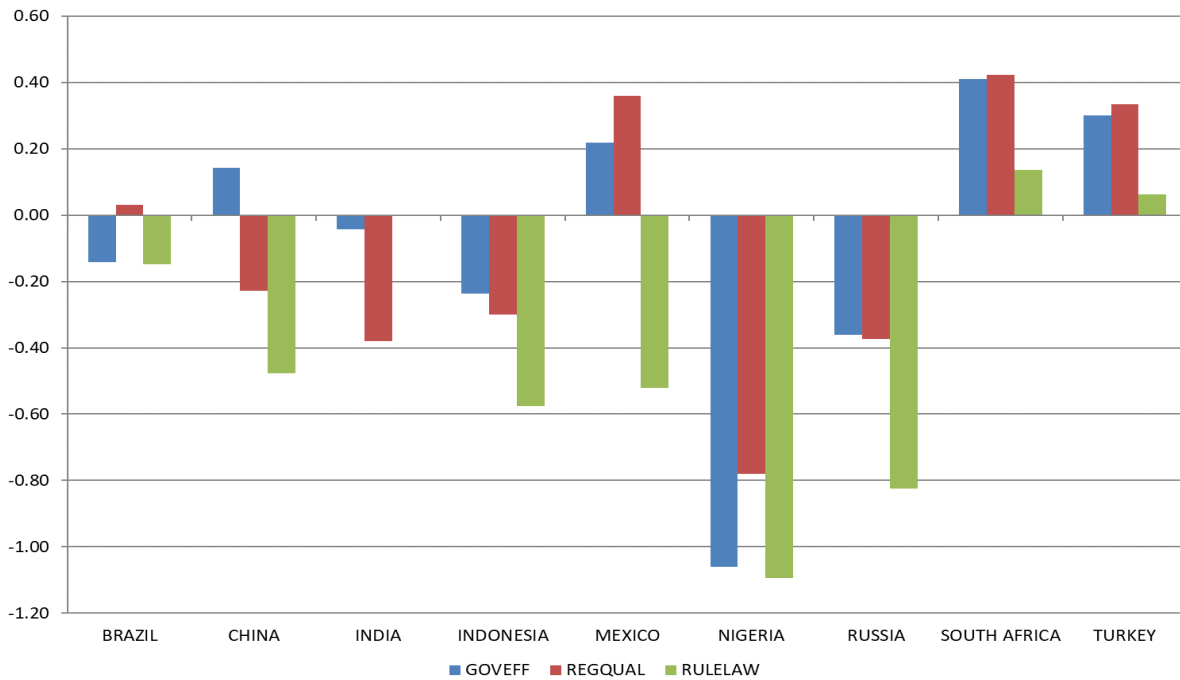


Figure 1 shows that, except for South Africa and Turkey, the countries analyzed have negative values in all or some of the variables, indicating that these countries are characterized by weak institutional quality. Also, when the values are positive, they are fairly low, because the highest reach just 0.4 although the maximum is 2.5. Nevertheless, differences can be observed between the countries, with Nigeria presenting the worst values, followed by Indonesia and Russia, because all their values are negative.

### 3. Research design

Here we explain the possible determinants of ETR that are used in this research, starting with business characteristics and following on to institutional factors. The section closes with the models to be estimated.

#### 3.1. Business characteristics determining the effective tax rate

Analysis of the business variables that may explain ETR was performed by grouping them in two categories – which we label as “traditional” because they are used in most prior studies, and “new” because they figure very little in the literature and some of them are very recent.

### *3.1.1. Traditional business variables*

The research by Delgado et al. (2012) includes an important review of the literature related to determinants of ETR. It concludes that there is more or less a consensus with regard to the principal explanatory variables of the ETR: size, leverage, composition of the assets, and profitability. But the results are not conclusive as the researchers find different relations between these variables and ETR.

Size is the variable that is most widely used in this type of study, although the results vary widely. The effect of size on the ETR of firms may be explained by two opposing hypotheses. On the one hand, the political cost hypothesis predicts a positive relation between business size and ETR by arguing that the largest firms bear greater tax burden because they are subject to greater governmental control. But, on the other hand, the political power hypothesis predicts the negative relation between size and tax burden by assuming that larger firms will exert a greater influence on regulators to try to lower their ETR.

In prior research, debt is usually negatively related to the ETR because, in most countries, interest can be deducted from CIT. So firms with higher levels of debt can reduce their tax burden to a greater extent. However, some studies find a positive, non-linear relation or no relation at all.

Asset composition, which is normally measured by the volume of fixed assets and of inventories, generally presents a negative relation for fixed assets and a positive one for inventories. The main explanation for this is that in most countries, depreciation of fixed assets is tax deductible, and inventories do not receive any tax deduction. But some studies have found different relations.

For profitability, most of the research finds a positive relation with ETR, because the most profitable firms have the highest profits so usually pay more tax, and the least profitable firms

have lower benefits or losses, so will pay less tax or even none at all if they obtain tax losses. However, some studies find a negative relation or none at all, especially when analyzing firms in emerging countries.

### *3.1.2. New business variables*

Initially, the studies that aimed to find the determinants of the ETR only used the traditional variables. But, over recent years, researchers have started to include other variables in their studies, among which we consider firm growth and earnings management to be of special interest. Moreover, because of the relation between accounting and taxation, we propose a new variable related to deferred taxation which we believe may have effects on the ETR.

#### *Firm growth.*

According to Bankman (1994), high-growth firms might place less emphasis on tax-planning efforts, which might suggest that such firms would have higher ETRs. However, in the opinion of Phillips (2003), growing firms generally have more tax planning opportunities, which might lead to a lower tax burden.

Therefore, the sign of the relation between firm growth and tax burden is not clear. The limited literature on the subject is not conclusive, because Badertscher et al. (2013) for USA and Tang et al. (2017) for China do not find that growth affects the ETR. However, Monterrey-Mayoral and Sánchez-Segura (2015; 2017) for Spain, and Powers et al. (2016) for USA find a negative and significant relation between firm growth and tax burden. Finally, Taylor et al. (2019) for USA find a positive and significant relation between firm growth and ETR.

#### *Earnings management.*

There is extensive literature on earnings management, as shown in the review of prior research carried out by Walker (2013), who found more than 300 studies, most of them dated after 2000. Earnings management is the consequence of the options in accounting regulations

that allow managers to choose the criteria that suit them best for manipulating the earnings figure. If earnings are altered, it is reasonable to assume that corporate income tax rate and CIT payment will also be affected and, consequently, business tax burden.

Some researchers have recently included a variable in their studies to find whether earnings management might be an explanatory variable for ETR. They mostly include discretionary accruals, based on the model drawn up by Jones (1991) or one of the subsequent modifications. More specifically, for a study focusing on the USA, Guenther et al. (2017) show that accruals are negatively associated with tax burden. Tang et al. (2017) consider earnings management in their study on Chinese firms and find a positive relation between accruals and tax burden.

A priori, we believe there may be a negative relation between earnings management and tax burden, although the limited prior literature is not conclusive.

#### *Deferred tax liabilities.*

Studies on earnings management are very varied and adopt different approaches, with taxation being just one of the areas studied. More specifically, various items relating to CIT have been studied to find if they have effects on earnings management, with analyses of deferred tax assets and liabilities (Bauman et al., 2001; Phillips et al., 2003; Schrand and Wong, 2003; Wang et al., 2016), income tax expense (Dhaliwal et al., 2004), deferred tax expense (Ifada and Wulandari, 2015; Noor et al., 2007; Phillips et al., 2004), deferred tax provisions (Holland and Jackson, 2004), and book-tax differences (Fernández-Rodríguez and Martínez-Arias, 2015; Mills and Newberry, 2001; Wilson, 2009).

Clearly, there are two types of earnings manipulation, accounting and tax, because both accounting and tax regulations usually offer options. Therefore, firm managers have to consider any such alternatives and their decisions will affect both the accounting result and

the tax burden. In fact, one of the main methods of earnings management is related to deferred taxation. This implies an advance or delay in the payment of CIT, which generates deferred tax assets and liabilities.

Wang et al. (2016) develop a more practical method of measuring earnings management using deferred tax items and compare the new method to the traditional approach (discretionary accruals). For Chinese firms, they find that the new method is effective and may be used alone on individual companies or as a complement to other earnings measurement techniques, since the new method focuses on different data.

We therefore consider it appropriate to specifically include deferred taxation. In our case, we only include deferred tax liabilities, because they arise when CIT payment is postponed. From the point of view of fiscal planning, firms usually try to reduce or postpone CIT payment, thus benefiting from the options allowed by tax regulation. So firms with larger deferred tax liabilities should be under a smaller tax burden because they postpone payment of the tax.

For all the above reasons, we pose the following hypotheses relating to the possible business variables that determine tax burden:

*H1: Business characteristics are related to the Effective Tax Rate.*

*H1.1: Size is related to the Effective Tax Rate.*

*H1.2: Leverage is related to the Effective Tax Rate.*

*H1.3: Capital intensity is related to the Effective Tax Rate.*

*H1.4: Inventory intensity is related to the Effective Tax Rate.*

*H1.5: Profitability is related to the Effective Tax Rate.*

*H1.6: Firm growth is related to the Effective Tax Rate.*

*H1.7: Earnings Management is related to the Effective Tax Rate.*

*H1.8: Deferred tax liabilities are related to the Effective Tax Rate.*

### *3.2. Institutional factors determining the effective tax rate*

As explained in section 2 above, there are a number of institutional variables whose values differ to varying extents among the nine emerging countries under study. In addition, according to Fonseca-Díaz et al. (2019), when drawing up their tax strategy, firms take into account the country's tax regulation, tax culture, governmental and legal control, and the degree of fraud. Therefore, the ETR borne by firms will depend not only on their business decisions but also on their environment. In line with these arguments, the institutional factors that may have an effect on the business ETR are covered below.

#### *Statutory tax rate.*

Previous studies on the ETR do not usually consider the STR that firms are subject to, although it is true that they mostly focus on a single country so the legal rate is not relevant. However, some authors study several countries or geographical areas in which it would have been of special interest to consider the STR. In their study of the determinants of the ETR in the European Union, Delgado et al. (2012) do include STRs and find a positive relation between the legal and the effective rates.

Atwood et al. (2010) also include in their models the STR of each of the 33 countries they analyze, although the aim of their research is to examine whether the level of required book-tax conformity affects earnings persistence and the association between earnings and future cash flows. Atwood et al. (2012) also consider STRs in their study on the determinants of corporate tax avoidance in 22 countries. Finally, Tang (2015) considers STRs in his research on whether book-tax conformity can restrain managers from opportunistically reporting financial profits and taxable income.

According to the data given in Table 1, during the time frame of the study, the STRs of all nine countries differ greatly, which is why it is appropriate to include this variable in the analysis.

In principle, the STR should indicate corporate tax burden, but the presence of book tax differences, tax losses and tax incentives in the legislation of most of the countries means that ETR is not usually the same as STR. All the same, we believe that the legal rates should positively affect the ETRs borne by firms.

#### *Development.*

The prior literature has already analyzed how the level of development may affect business taxation. Easterly and Rebelo (1993) find a strong association between a country's economic development and its fiscal structure. Molina-Morales et al. (2011) demonstrate that the degree of economic development has a positive effect on tax burden measured as total tax revenue over GDP. And Fonseca-Díaz et al. (2019) conclude that firms located in developed countries bear higher ETRs than those in developing economies.

Although this research analyzes nine countries considered emerging economies, according to the World Bank most of them would be considered developed, as explained in section 2. We therefore consider it of interest to analyze the effect of this variable on the ETR, expecting a priori a positive relation between development and tax burden.

#### *Economic freedom.*

Miller and Kim (2016) indicate that greater economic freedom leads to higher tax collection at all levels. Molina-Morales et al. (2011) find a positive relation between the economic freedom index and tax burden. And Fonseca-Díaz et al. (2014) conclude that ETRs are lower in countries with low economic freedom. The prior literature therefore points to a direct relation between economic freedom and fiscal burden.



### *GDP growth.*

It seems reasonable to assume that when an economy is growing, firms will get better results and will therefore pay more tax. Fonseca-Díaz et al. (2019) find a positive relation between GDP growth and the tax burden of firms at an international level. Moreover, in the case of emerging economies, which are characterized by high growth, we believe this is a relevant institutional factor. However, the data shown in Table 2 indicate that, even though we consider nine emerging economies, GDP growth in each of them differs greatly over the decade studied. We therefore consider that this variable might have a direct effect on the ETR.

### *Institutional quality.*

According to Alonso and Garcimartín (2011), institutional quality depends, among other factors, on an efficient tax system. Therefore, if institutional quality is related to the tax system, it seems appropriate to consider that it will be a determinant of the ETR borne by firms. Fonseca-Díaz et al. (2019) find a positive relation between government effectiveness and tax burden, and a negative relation for the rule of law and regulatory quality. In this research, we also analyze separately these three factors indicating countries' institutional quality. The details are given in Figure 1, which shows that the countries analyzed have "weak" institutional quality although there are certain differences between them. As a result, we believe these variables should be included in the study, even though a priori we cannot predict their effect on tax pressure.

For all the above reasons, we pose the following hypotheses regarding institutional factors that may determine business tax burden:

*H2: Institutional factors are related to the Effective Tax Rate.*

*H2.1: Statutory Tax Rate is related to the Effective Tax Rate.*

*H2.2: Development is related to the Effective Tax Rate.*

*H2.3: Economic freedom is related to the Effective Tax Rate.*

*H2.4: GDP growth is related to the Effective Tax Rate.*

*H2.5: Government effectiveness is related to the Effective Tax Rate.*

*H2.6: Regulatory quality is related to the Effective Tax Rate.*

*H2.7: Rule of law is related to the Effective Tax Rate.*

### *3.3. Econometric specification and description of variables*

Statistical tests were run to determine whether the use of ordinary least squares was more appropriate than panel data. The F test and the Breusch and Pagan multiplier test indicated that it is appropriate to consider individual effects and to work with panel data. The suitability of using a dynamic model was then verified, including the lagged dependent variable in the model. This lagged variable is not significant and, moreover, the Sargan test indicates that a dynamic model is not appropriate.

For this reason, the estimates were run using static panel data, and the Hausman test was applied to verify whether the individual effects are correlated with the explanatory variables. The results of the test indicate that it is more appropriate to use fixed effects.

In addition, the Wooldridge test points to the presence of autocorrelation, and the Wald test indicates problems of heteroscedasticity. To correct both these problems, two estimators can be used: Feasible Generalized Least Squares (FGLS) or Panel Corrected Standard Errors (PCSE). Beck and Katz (1995) show that standard errors with PCSE are more precise than those with FGLS, so this research uses the PCSE estimator.

To test the hypotheses listed above, the following models are considered, bearing in mind that model (1) allows us to search for the business characteristics that explain the ETR, while model (2) considers both business and institutional variables:

$$ETR_{i,t} = \beta_0 + \beta_1 SIZE_{i,t} + \beta_2 LEV_{i,t} + \beta_3 CAPINT_{i,t} + \beta_4 INVINT_{i,t} + \beta_5 ROA_{i,t} + \beta_6 GROWTH_{i,t} + \beta_7 ACCRUALS_{i,t} + \beta_8 DEFERRED_{i,t} + \text{dummies SECTOR} + \text{dummies YEAR} + \text{dummies COUNTRY} + \varepsilon_{i,t} \quad (1)$$

$$ETR_{i,t} = \beta_0 + \beta_1 SIZE_{i,t} + \beta_2 LEV_{i,t} + \beta_3 CAPINT_{i,t} + \beta_4 INVINT_{i,t} + \beta_5 ROA_{i,t} + \beta_6 GROWTH_{i,t} + \beta_7 ACCRUALS_{i,t} + \beta_8 DEFERRED_{i,t} + \beta_9 STR_t + \beta_{10} DEV_t + \beta_{11} ECONFREE_t + \beta_{12} GDPGROWTH_t + \beta_{13} GOVEFF_t + \beta_{14} REGQUAL_t + \beta_{15} RULELAW_t + \text{dummies SECTOR} + \text{dummies YEAR} + \text{dummies COUNTRY} + \varepsilon_{i,t} \quad (2)$$

Where ETR (Effective Tax Rate) is the dependent variable indicating the company's tax burden which, for the purpose of this research, is defined in two different ways:

- CASHETR: this is the cash taxes paid on the pretax income of entity *i* in year *t*. All observations with negative cash taxes paid and/or negative pretax income were eliminated. In addition, the variable is limited between zero and one, following the usual procedure in previous research. This measure of tax burden is one of the most widely used in the extensive prior literature.
- METR: this is the ratio of CASHETR of entity *i* in year *t* between the STR current in each year and country. This measure of tax burden, called Modified ETR, is fairly new although it has already been used by Amiram et al. (2013) and Tang et al. (2017). When the value of METR is one, the legal rate and the effective rate are the same. If it is over one, then the effective rate is greater than the statutory rate, which does not often happen. If it is under one, this means that the firm manages to pay less tax than is established by the STR. Therefore, the higher the METR the greater the tax burden of the firm, that is, it can be interpreted in a similar way to CASHETR. It is appropriate to use METR when several countries are studied over a time frame because CASHETR can be weighted for each year and firm by the STR in force.

The two measures that are most widely used in the prior literature to calculate ETR are CASHETR and GAAPETR (Wang et al., 2018). The first is used in this study and is based on CIT

payment, and the second is calculated by the quotient between CIT expense and pretax income. However, we consider that GAAPETR is not appropriate for this research because one of the independent variables is deferred tax liabilities, which directly affects CIT expense through deferred tax.

The explanatory business variables we use are the following:

- SIZE: size of the company, measured as the logarithm of total assets.
- LEV: leverage, defined as the ratio of total debt to total assets.
- CAPINT: capital intensity, defined as the ratio of gross property, plant, and equipment to total assets.
- INVINT: inventory intensity, measured as the ratio of inventories to total assets.
- ROA (Return On Assets): ratio of earnings before income tax to total assets.
- GROWTH: firm's sales growth, measured as the percentage change in sales between year  $t$  and  $t-1$ .
- ACCRUALS: discretionary accruals, estimated from the Jones model adjusted to ROA (Kothari et al., 2005) by year and industry.
- DEFERRED: deferred tax liability, measured as the ratio of deferred tax liability to total assets.

The institutional variables considered are the following:

- STR: statutory tax rate in every country for each year.
- DEV: level of development of the country according to the World Bank Development Indicators based on GNI per capita, which takes the value 1 for developed countries and 0 for developing countries.
- ECONFREE: index of economic freedom, which ranges from 0 to 100, classifying countries into the five categories listed in section two.

- GDPGROWTH: Gross Domestic Product growth.
- GOVEFF: government effectiveness, which ranges from -2.5 (weak) to 2.5 (strong).
- REGQUAL: regulatory quality, which ranges from -2.5 (weak) to 2.5 (strong).
- RULELAW: rule of law, which ranges from -2.5 (weak) to 2.5 (strong).

Finally, SECTOR, YEAR and COUNTRY are dummy variables for the sectors, years and countries analyzed, respectively.

To conclude, note that all independent business variables, except for dummies, were limited by the percentiles of 1% and 99% to avoid outliers. To facilitate reading, all variables are summarized in Appendix A.

#### **4. Sample and results**

##### *4.1. Sample and descriptive statistics*

For this research, the data were obtained from the Compustat data base, using the financial information on listed firms in the BRICS and MINT countries over the period 2006-2015. As is usual in other research, only non-financial firms are considered, giving a total of 7,844 firms. Table 3 gives the composition of the sample and the descriptive statistics for the variables used in Models (1) and (2). Panel A gives the number of firms available for each of the nine emerging countries, mean values for each variable by country and descriptive statistics for the sample. Panel B gives the Pearson correlation matrix.

**Table 3. Descriptive statistics and correlations**

Panel A shows the composition of the sample and the statistical descriptions of the dependent and explanatory variables, whose definitions are given in Appendix A. The Pearson correlation matrix is shown in Panel B. \*\*\*, \*\*, and \* represent significant values at the 1%, 5%, and 10% levels, respectively.

**Panel A: Sample composition, means by country and descriptive statistics**

	Means by country									Descriptive statistics per sample				
	Brazil	China	India	Indonesia	Mexico	Nigeria	Russia	South Africa	Turkey	Mean	Median	Standard Deviation	Minimum	Maximum
CASHETR	0.2177	0.3797	0.2632	0.2918	0.2523	0.2157	0.2925	0.2725	0.1926	0.2890	0.2593	0.1979	0.0000	0.9986
METR	0.6404	1.5110	0.7815	1.1120	0.8491	0.7190	1.3903	0.8333	0.9628	0.8361	0.8067	0.4884	0.0000	5.0000
SIZE	6.0281	5.3509	3.1793	4.5861	6.6786	3.8655	5.8808	5.1436	4.6005	4.4369	4.6044	2.0986	-1.8431	9.5012
LEV	0.6248	0.4560	0.5423	0.5334	0.5008	0.5906	0.5402	0.4921	0.4923	0.5069	0.5068	0.2602	0.0140	2.1074
CAPINT	0.2954	0.3062	0.3121	0.3777	0.4091	0.4297	0.4231	0.2966	0.3195	0.3175	0.2897	0.2153	0.0000	0.8688
INVINT	0.0832	0.1392	0.1384	0.1367	0.1062	0.1533	0.0970	0.1277	0.1354	0.1349	0.1133	0.1187	0.0000	0.5799
ROA	0.0399	0.0708	0.0404	0.0535	0.0601	0.0578	0.0599	0.0877	0.0374	0.0552	0.0477	0.0969	-0.4278	0.4153
GROWTH	0.1118	0.2325	0.1105	0.1339	0.0868	0.0593	0.0659	0.0667	0.0690	0.1552	0.1044	0.5213	-1.0000	5.4499
ACCRUALS	-23.7860	-23.4710	-24.6762	-0.3954	-0.3541	-0.1323	-24.2231	-23.6994	-0.2201	-21.6231	-23.6459	7.4690	-50.0097	1.0770
DEFERRED	0.0259	0.0027	0.0163	0.0095	0.0449	0.0334	0.0244	0.0357	0.0142	0.0122	0.0001	0.0399	0.0000	3.4934
STR	0.3400	0.2660	0.3371	0.2680	0.2930	0.3000	0.2120	0.3305	0.2000	0.2946	0.3244	0.0469	0.2000	0.3689
DEV	1.0000	0.6000	0.0000	0.0000	1.0000	0.0000	1.0000	1.0000	1.0000	0.3840	0.0000	0.4863	0.0000	1.0000
ECONFREE	57.1002	52.3200	54.3100	55.3100	66.4300	54.9300	51.1600	62.9500	61.7400	54.2030	53.6000	3.0392	48.7000	68.3000
GDPGROWTH	2.8189	9.5989	7.5692	5.6352	2.4301	5.9607	2.7256	2.6642	5.2416	7.7357	7.8563	3.1252	-7.8209	14.2314
GOVEFF	-0.1415	0.1433	-0.0434	-0.2367	0.2187	-1.0604	-0.3630	0.4088	0.2995	0.0282	0.0260	0.2238	-1.2146	0.5095
REGQUAL	0.0311	-0.2308	-0.3807	-0.3007	0.3592	-0.7792	-0.3729	0.4220	0.3334	-0.2488	-0.2880	0.2158	-0.9073	0.6834
RULELAW	-0.1474	-0.4775	0.0003	-0.5761	-0.5202	-1.0939	-0.8253	0.1380	0.0438	-0.2678	-0.4071	0.2897	-1.1815	0.2550
Number of Companies	256	3,258	3,039	391	92	99	204	209	296	7,844	7,844	7,844	7,844	7,844

**Panel B: Pearson correlations**

	CASHETR	METR	SIZE	LEV	CAPINT	INVINT	ROA	GROWTH	ACCRUALS	DEFERRED
CASHETR	1									
METR	0.963***	1								
SIZE	0.089***	0.003	1							
LEV	-0.044***	0.164***	0.105***	1						
CAPINT	-0.076***	0.068***	0.177***	0.153***	1					
INVINT	0.032***	0.039***	-0.010***	0.176***	-0.133***	1				
ROA	-0.083***	-0.160***	0.093***	-0.327***	-0.095***	0.039***	1			
GROWTH	-0.083***	-0.074***	0.052***	-0.022***	-0.045***	0.011***	0.184***	1		
ACCRUALS	-0.060***	0.134***	0.139***	-0.003	-0.001	0.023***	0.027***	-0.034***	1	
DEFERRED	-0.055***	0.079***	-0.005	0.041***	0.161***	-0.021***	0.024***	-0.025***	0.058***	1

	CASHETR	METR	STR	DEV	ECONFREE	GDPGROWTH	GOVEFF	REGQUAL	RULELAW
CASHETR	1								
METR	0.963**	1							
STR	-0.147**	-0.359**	1						
DEV	0.180**	0.334**	-0.632***	1					
ECONFREE	-0.118**	-0.144**	0.115***	0.066***	1				
GDPGROWTH	-0.028**	-0.064**	0.105***	-0.286***	-0.465***	1			
GOVEFF	0.145**	0.189**	-0.220***	0.355***	0.147***	0.190***	1		
REGQUAL	-0.046**	0.005	-0.277***	0.477***	0.633***	-0.143***	0.581***	1	
RULELAW	-0.149**	-0.287**	0.521***	-0.275***	0.378***	-0.195***	0.205***	0.129***	1

As shown in Panel A of Table 3, in general the statutory rates do not give sufficient information about the tax burden borne by firms because of the gap between the STR and CASHETR, and the values of METR which are far from one. The data for Russia, China and Indonesia stand out, because their effective rates exceed the statutory rates and METR exceeds one. Therefore, in these countries, the average tax burden for the decade under study exceeded the average STRs in force. In fact, these are the three countries with the greatest average tax burden during the period analyzed.

The most striking case is that of Russia with an average deviation of over nine points between STR and CASHETR. Lee and Swenson (2008), in a descriptive study in which they compare the average ETRs of 70 countries in 2006 and 2007 with the STRs in force in 2007, already found a large negative gap in Russia. Similarly, Fernández-Rodríguez and Martínez-Arias (2014), in research covering the period 2000-2009, also found a negative, but smaller, gap in Russia.

At the other extreme are Brazil, Nigeria and India, with tax burden that is considerably lower than might be expected from the STRs in force. In fact, Brazil and Nigeria are the emerging countries with the lowest ETRs even though their statutory rates are very high. It is usual for the effective rates to be lower than the statutory rates and for firms to reduce their CIT payment because of the presence of book tax difference, tax losses and tax incentives.

So, we observe great differences between countries, in both STR and ETR. Moreover, our argument in section 3 that it would be normal to find a positive relation between STR and tax burden is not at all clear because there are three countries whose ETR is higher than the STR. Therefore, high statutory rates do not always point to high tax pressure, and vice versa.

For the other explanatory variables, both business and institutional, we also find large differences among the nine countries studied. The most striking are those in the three



variables representing institutional quality, where positive and negative values vary from one country to another without following any sort of pattern in any of the three variables.

The correlations presented in Panel B of Table 3 show that practically all the explanatory variables are correlated to the dependent variables. The only exceptions are size and regulatory quality with the METR dependent variable. Also, the correlation between the STR and the two dependent variables is negative.

#### 4.2. Business determinants of effective tax rate in emerging economies

The results of estimations for model (1) are given in Table 4.

**Table 4. Business determinants of the ETR in emerging economies**

Regressions are estimated using the Panel Corrected Standard Errors (PCSE) estimator, controlling for both heteroscedasticity and autocorrelation. All of the variables are defined in Appendix A. The regressions are estimated with annual data for the period 2006-2015. Dummy variables are included for every year, sector and country in all estimations, though their coefficients are not shown for reasons of space. \*\*\*, \*\*, and \* represent significant values at the 1%, 5%, and 10% levels, respectively.

	CASHETR		METR	
	Coefficient	t (p-value)	Coefficient	t (p-value)
SIZE	0.0047	4.86***	0.0141	4.03***
LEV	-0.0423	-5.06***	-0.1328	-4.35***
CAPINT	-0.0439	-4.41***	-0.1436	-4.06***
INVINT	0.0975	6.82***	0.3572	7.10***
ROA	-0.4176	-21.97***	-1.5524	-22.51***
GROWTH	-0.0382	-12.57***	-0.1286	-12.24***
ACCRUALS	-0.0031	-2.30**	-0.0104	-2.26**
DEFERRED	-0.3580	-5.23***	-1.3794	-5.75***
Country Dummies	Included		Included	
Year Dummies	Included		Included	
Sector Dummies	Included		Included	
Adjusted R <sup>2</sup>	17.48%		25.42%	
Observations	24,305		24,305	

The results of the estimate, considering CASHETR as the dependent variable, show that all the business variables included are statistically significant. This reveals that the variables chosen are appropriate and important for assessing the determinants of tax burden in emerging economies. Regarding the variables that are usual in the prior literature, firstly, the size coefficient is positive and significant, indicating that in emerging economies the political cost

hypothesis prevails, with larger firms bearing higher tax pressure. As in most of the prior research, the coefficients for leverage and capital intensity are negative. Therefore, firms pay less tax when they are more in debt. Similarly, firms with a larger percentage of fixed assets bear less tax burden. The results also show that inventory intensity has a positive effect on the ETR, so firms with larger inventories pay more tax.

Profitability must receive a special mention. The ROA variable is found to negatively affect tax pressure, so more profitable firms have a smaller tax burden. Most of the prior research that focuses on developed countries find a positive relation, but in research on some emerging countries a negative relation was found between profitability and tax burden. Specifically, this negative relation between profitability and the ETR was found by: Derashid and Zhang (2003), Adhikari et al. (2006), Noor et al. (Noor et al., 2008, 2010) for Malaysia; Wu et al. (2013) for China; Fernández-Rodríguez and Martínez-Arias (2014) for India; and Freitas Sant'Ana and Costa da Silva Zonatto (2015) for Mexico and Peru.

Regarding the new variables, the results show that firms pay less tax when their growth is greater, because the GROWTH coefficient is negative and significant. It therefore seems that in emerging economies firms adopt tax planning strategies to reduce CIT payments when their growth increases. It must be considered that greater business growth involves new investments and a search for funding. Businesses will therefore have more options to achieve a lower ETR by making investments that generate tax savings, for example, through amortisation. Similarly, through external financing they will normally obtain lower CIT payment because of deductions for the financial expenses related to the debt. These results are in line with those found by Monterrey-Mayoral and Sánchez-Segura (2015; 2017) for Spain, and by Powers et al. (2016) for USA.

Also negative and significant is the coefficient for the ACCRUALS variable, which represents earnings management. In consequence, firms in emerging countries manage to reduce their tax burden by following the options allowed by accounting regulations. This same result was found by Guenther et al. (2017) for firms in USA.

In the same way, the negative and significant coefficient of the DEFERRED variable, which represents deferred tax liabilities, shows that firms exploit the regulatory options that allow them to reduce the tax paid.

The results of the estimate, using METR as the dependent variable, are in line with the above results, which gives support to the conclusions reached. As already explained, this dependent variable corrects CASHETR with the STR that is applicable in each country throughout the period studied. Also, some better results are achieved, as shown by the increase in Adjusted R<sup>2</sup>, from 17.48% to 25.42%.

#### 4.3. Institutional determinants of effective tax rate in emerging economies

This section covers the estimates of model (2), in which not only business characteristics are taken into account as determinants of CIT tax burden, but also institutional variables. One of these is the STR applicable in each country during each year under study. Therefore, when METR is used as the dependent variable, the STR variable is excluded because it is already included in the calculation. Table 5 shows the two estimates, distinguishing them by the tax pressure measure used.

**Table 5. Business and institutional determinants of the ETR in emerging economies**

Regressions are estimated using the Panel Corrected Standard Errors (PCSE) estimator, controlling for both heteroscedasticity and autocorrelation. All of the variables are defined in Appendix A. The regressions are estimated with annual data for the period 2006-2015. Dummy variables are included for every year, sector and country in all estimations, though their coefficients are not shown for reasons of space. \*\*\*, \*\*, and \* represent significant values at the 1%, 5%, and 10% levels, respectively.

	CASHETR		METR	
	Coefficient	t (p-value)	Coefficient	t (p-value)
SIZE	0.0047	4.90***	0.0142	4.09***
LEV	-0.0391	-4.72***	-0.1192	-3.94***

	CASHETR		METR	
	Coefficient	t (p-value)	Coefficient	t (p-value)
CAPINT	-0.0455	-4.61***	-0.1493	-4.26***
INVINT	0.0920	6.52***	0.3398	6.85***
ROA	-0.4012	-21.24***	-1.4781	-21.57***
GROWTH	-0.0385	-12.62***	-0.1290	-12.26***
ACCRUALS	-0.0032	-2.42**	-0.0112	-2.45***
DEFERRED	-0.3457	-5.10***	-1.3679	-5.76***
STR	0.0524	0.45	--	--
DEV	0.1173	9.62***	0.5062	10.70***
ECONFREE	0.0029	1.47	0.0150	1.87*
GDPGROWTH	-0.0014	-1.55	-0.0091	-2.38**
GOVEFF	0.1543	8.73***	0.5655	8.23***
REGQUAL	-0.0853	-2.52***	-0.2716	-2.03**
RULELAW	-0.1615	-5.76***	-0.3385	-3.27***
Country Dummies	Included		Included	
Year Dummies	Included		Included	
Sector Dummies	Included		Included	
Adjusted R <sup>2</sup>	18.12%		26.37%	
Observations	24,305		24,305	

The results of both estimations ratify all the results presented for business characteristics in Table 4. Therefore, the relations found are confirmed for both the variables that are usually found in the prior literature and for the three newer ones.

Regarding the analysis of the institutional variables for estimation with CASHETR, the results show that the STR does not directly affect tax pressure. A priori, it seems reasonable to assume that effective tax payment depends on the statutory rates applicable. However, it has already been stated in Panel A of Table 3 that in some countries effective rates are higher than statutory rates and in others are lower. Neither the economic freedom index nor GDP growth are related to the ETR because their coefficients are not significant.

As regards the Index of Economic Freedom, created by the Heritage Foundation and The Wall Street Journal, the result obtained for the emerging economies is in line with the findings of Molina-Morales et al. (2011), for European countries, and of Fonseca-Díaz et al. (2019), for a set of 63 countries from all over the world. Both these studies conclude that this index is of little importance as a determinant of tax burden.

Regarding the link between GDP growth and tax burden, the scarce empirical evidence indicates that, on an international level, there is a positive relation between the two variables (Molina-Morales et al.(2011); Fonseca-Díaz et al. (2019). However, the non-significant relation found for the emerging economies analysed seems reasonable because these countries have high rates of growth. Therefore, a positive relation would imply high tax burden, which might generate greater fiscal uncertainty. And fiscal uncertainty is one of the main concerns of companies when considering decisions on location and investment, according to the IMF/OECD (2017). These growing countries need mechanisms to hold back tax burden if they want to attract new investments, which is why our results seem reasonable.

The remaining institutional factors, both level of development and institutional quality, do have an effect on tax burden. More specifically, we find that firms in countries with a higher level of development and more effective government bear a greater tax burden. On the other hand, regulatory quality and the rule of law have a negative effect. These results are in line with those found by Fonseca-Díaz et al. (2019) and, in consequence, in countries that are “weaker” according to both variables, firms bear a higher tax burden.

When METR is the dependent variable, all the institutional variables are significant except for the STR which is omitted from the estimation. In addition to those discussed for CASHETR, in this estimation the coefficients for both economic freedom and GDP growth are significant, the first being positive and the second negative. Therefore, firms pay more tax when the country has a higher level of economic freedom and when GDP growth is low.

Finally, with the estimation for METR, again a very good fit with the model is achieved, because Adjusted  $R^2$  is 26.37%, and 18.12% for the CASHETR. Therefore, we consider that METR is a very appropriate measure for estimating business tax burden when several countries are studied together.

## 5. Conclusions

The aim of this research is to find evidence about the determinants of corporate tax burden in emerging economies, focusing on the BRICS and MINT countries. Two variables are used to indicate tax burden, CASHETR, which is commonly found in the prior literature, and METR, a newer measure which weighs CASHETR by the rate of statutory tax in force. The explanatory variables include both business characteristics and institutional factors. The sample used is 7,844 listed firms obtained from the Compustat data base for the period 2006-2015.

Our results show that all the business variables considered are significant. More specifically, business size and inventory intensity positively affect the ETR, while leverage and capital intensity have a negative effect. These results are in line with prior research. Profitability, however, has a negative effect on tax burden, even though in most of the literature the relation is positive. The limited studies focusing on emerging countries also mostly find a negative relation between ETR and profitability.

In addition to the above-mentioned traditional variables, we have included other new ones. These are business growth, earnings management and deferred tax liabilities which negatively affect tax burden for firms located in emerging countries.

Regarding the institutional factors, we find that the statutory rates do not affect the effective rates. A priori, this result might seem surprising but in these emerging economies there is a large gap between STRs and ETRs and, moreover, in some countries, the effective rate is lower than the statutory one while in others it is higher. The conclusion is, therefore, that the STRs do not provide information on business tax burden and are not associated with it.

The remaining institutional factors considered do affect business tax burden in these emerging economies. Specifically, the country's level of development and government effectiveness have a positive effect on the ETR, while regulatory quality and the rule of law have a negative

effect. There is evidence that GDP growth has a negative effect on tax burden, and economic freedom has a positive effect. However, these two variables are only significant when METR is used as the indicator of tax burden.

We believe this research implies an important advance in research on the tax burden because it includes new business and institutional variables. These had not previously been considered together in studies on the determinants of the ETR. In addition, for studies that consider several countries together, we believe that it is appropriate to use a measure of tax burden that considers the statutory rates in force, similar to the METR used in our research.

Finally, since uncertainty about the ETR is one of the main concerns for firms when making investments or location decisions in a country, according to a recent report by the IFM/OECD, we believe that this research will be of use for business decisions. On the one hand, it shows that little information is provided by STRs and, on the other, it reveals which business and institutional variables affect the tax burden borne by firms. Also, we consider this study will be of interest for governments when drawing up their tax policies.

## Appendix A. Variable definitions

Dependent Variables	
CASHETR	Total cash taxes paid divided by pretax income. Firms' denominator and numerator are required to be positive. The variable is winsorized at 0 and 1.
METR	CASHETR divided by Statutory Tax Rate (STR).
Independent Variables	
Business variables	
SIZE	Natural logarithm of total assets.
LEV	Total leverage scaled by total assets.
CAPINT	Book value of gross property, plant, and equipment scaled by total assets.
INVINT	Inventories scaled by total assets.
ROA	Pretax income scaled by total assets.
GROWTH	Firm's sales growth, measured as the percentage change in sales between year t and t-1.
ACCRUALS	Discretionary accruals, estimated from the Jones model adjusted to ROA (Kothari et al., 2005) by year and industry.
DEFERRED	Deferred tax liabilities scaled by total assets.
Institutional variables	
STR	Statutory Tax Rate.
DEV	Level of development of the country according to the World Bank Development Indicators based on GNI per capita. Dummy variable that equals 1 for the developed countries and 0 for the developing countries. Specifically, the first category includes countries with high and upper middle incomes, while the second category includes countries with low and lower middle incomes.
ECONFREE	Index of Economic Freedom of the countries, ranges from 0 to 100: Free (80–100), Mostly Free (70–79.9), Moderately Free (60–69.9), Mostly Unfree (50–59.9), Repressed (0–49.9).
GDPGROWTH	Gross Domestic Product Growth.
GOVEFF	Government Effectiveness, ranges from -2.5 (weak) to 2.5 (strong).
REGQUAL	Regulatory Quality, ranges from -2.5 (weak) to 2.5 (strong).
RULELAW	Rule of Law, ranges from -2.5 (weak) to 2.5 (strong).
Control Variables	
SECTOR	A dummy variable for each sector.
YEAR	A dummy variable for each year.
COUNTRY	A dummy variable for each country.

All continuous business variables are winsorized at 1 percent and 99 percent of the distribution.

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