



THE ROLE OF TAX ADMINISTRATION AND TAX RATE ON FOREIGN DIRECT INVESTMENT

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ABSTRACT

Pajak mempengaruhi masuknya investasi asing (FDI) melalui dua aspek, yaitu melalui administrasi pajak dan tarif pajak. Dengan melakukan pengklasifikasian negara-negara berdasarkan tingkat pendapatannya dalam kurun waktu 2010-2017, penelitian ini menyimpulkan bahwa administrasi pajak merupakan faktor penting bagi investor asing sebelum melakukan investasi di negara-negara miskin dan berkembang. Untuk negara-negara maju, penurunan tarif pajak merupakan faktor yang lebih dominan. Hasil penelitian ini menegaskan kebijakan perpajakan akan memberikan hasil yang berbeda terhadap masuknya investasi asing di suatu negara tergantung pada tingkat kemajuan ekonomi negara tersebut.

Taxes influence Foreign Direct Investment (FDI) inflow through two channels, which are tax administration and tax rate. Using data from 2010 to 2017, we group the countries around the world into two groups, based on income levels. Our findings suggest that the tax administration plays a significant role in determining FDI inflows in low & middle-income countries. In high-income countries, it is corporate tax cut that plays the role. The results confirm that countries' level of development distinct the effect of tax policies on FDI.

1. INTRODUCTION

The United Nations Conference on Trade and Development (UNCTAD) on their World Investment Report 2018 states that worldwide FDI flows fell by 23 percent in 2017 and only recovered moderately in 2018. The negative trend of FDI inflows is a major concern for governments worldwide, in particular, the low and middle-income countries because this cross-border investment is crucial to support business development in their country. For this group of countries, FDI is the most prominent external source of finance as it contributes up to 40 percent of total inward investment (Zhan et al., 2018). Due to the deceleration trend of FDI globally, many countries undertake policy efforts that aimed to attract FDI inflows. For example, in 2017, according to The World Investment Report 2018, 65 countries implemented at least 126 investment policies in which 84 percent were in favour of foreign investors. However, the report points that the prospects of FDI remain unpromising due to the increased of global tax competition and tax reforms in the United States (US) which are likely to give an effect on the global investment trends. This report then confirms the importance of taxes as a determinant of FDI.

Since many countries undertake tax cut policy, then there is a trend of the race to the bottom for countries' tax rates in which they believe that lower

tax rates would generate more benefits to the countries' economies. This phenomenon has been widely discussed in today's economic cycle (i.e., Becker, Fuest, & Riedel, 2012; Ferde & Dahlby, 2012; Suarez Serrato & Zidar, 2014; Zidar, 2015). Since many countries do the same policy, consequently there might be a new equilibrium in the sense of tax rate that holdbacks the benefits of implementing this instrument. From this point, the role of this tax competition in long-term economic development is questionable. Moreover, tax rate reduction might have a severe side effect in which instead of gaining more capital inflows, governments of countries may lose their source of money due to a lower tax rate (Zidar, 2015). In this case, some countries neglect tax cut policy and set the rate back to the initial rate, for example, Slovenia and Chile (KPMG Corporate Tax Rate). In 2013, Slovenia reduced its corporate tax rate from 18 to 17 percent. However, in 2017, it raised the rate even higher than the initial rate to 19 percent. Similarly, Chile also experienced corporate tax cut in 2013 from 20 to 19 percent. Unlike Slovenia, which took four years to set the rate back, Chile raised the rate immediately in the following year to the initial rate of 20 percent. The condition of these two countries may indicate that reducing the tax rate is not always the best option for further economic development.

Apart of implementing tax cut as a solution to accelerate the flow of FDI, there is another side of tax that can be used as a stimulus to attract FDI inflows, which is the improvement of tax administration. Tax administration defines as the administration system of taxes including payments, time and number of taxes and the degree of contribution for a corporation to comply with all regulations of tax as well as post-filing process. The objective of this tax administration improvement is to establish an efficient tax administration, which signals lower transaction costs (Lawless, 2013). It includes reducing the number of taxes that should be paid and reducing the time that is needed to comply with tax payment. Lower transaction costs then stimulate more investors to come in.

According to Doing Business Report, the level of tax administration for countries around the world is vary. We see that for high income countries such as Netherlands, Canada, and Singapore have a more efficient tax administration where the investors have to deal with than the middle-income countries such as Indonesia, India and Thailand. For example, comparing the number of taxes of those countries in 2017, we see that Netherlands, Canada and Singapore have 9, 8 and 5 type of taxes respectively while Indonesia, India and Thailand have 43, 33, and 21 each. As for the payment time, we also see that those three high income countries have lower payment time with 119, 131 and 66 hours per year than those middle-income countries with 221, 250, and 262 hours per year respectively. Thus, the variation of these tax administration indicator may influence the decision to invest of foreign investors.

Moreover, to pursue the same goal of aiming higher capital inflows, some countries undertake another path which is reforming their institutional performance. In the period after the Global Financial Crisis in 2009, countries have been improving and modifying their institutions and regulation to prevent future shocks (Shahrokhi, 2011), not only at national but also international levels despite the differences of perspectives and approaches of countries to the crises (Kowalski & Shachmurove, 2011). Since that period, they have been introducing some policies to improve their institutional quality, for example, strengthening corruption control, more effective governance, stronger property rights protection, etc.

From the aforementioned importance of taxes on determining FDI inflows, we see that taxes have a unique characteristic of how it influences investment. Taxes determine FDI inflows not only through the tax rate, but also through its administration system. The impact of the tax rate on investment has been widely discoursed by previous researches, but the role of its administration is rarely discussed (i.e. Bonucchi, Ferrari, & Tomasini, 2015; Devereux & Freeman, 1995; Egger & Raff, 2015; Horwitz, Schabel, Higgins, Material, & Surgery, 2011; Ljungqvist & Smolyansky, 2016). We expect that an improved tax administration,

which implies a smaller number of taxes and less time to comply with tax administration will attract more inward FDI because it reduces transaction costs. In this study, the tax administration is obtained from the World Bank's Doing Business Report under the paying taxes indicator.

Additionally, since we also aim to investigate the role of institutional reform on attracting FDI, then we take into account the role of property rights protection as well as cross-countries trade administration in this study to better capture the improvement of countries institutional performance. Similar to the tax administration, we use the data of protecting minority investors and trading across borders indicator from the World Bank's Doing Business Report to represent our objectives. We choose these two indicators from the doing business indicators since we believe that they relate more to FDI than other indicators.

Therefore, in this study, we investigate the central question of what is the impact of taxes on determining FDI, through its tax rate and tax administration, as well as investor protection and trade across borders on inward FDI? In particular, which tax policies should be implemented to induce FDI inflow? Hence, in this paper, we fill the gap from the existing literature of the importance of taxes, investor protection, and trade across borders on FDI inflows. Specifically, we investigate the role of taxes on FDI in the period after the Global Financial Crisis (2010-2017), a period where the role of institutions has become more pronounced.

In answering our question, we do the empirical tests on two different groups of countries, which are high-income countries, and low and middle-income countries. Using System Generalized Method Moment (GMM) and various data sources, our study highlights the following findings: 1) The tax administration influences FDI inflows only in low and middle-income countries. In this group, an improved tax administration induces higher FDI inflows. This effect, however, does not emerge in high-income countries since they have had an efficient tax administration for years. 2) Tax cut induces higher inward FDI in high-income countries in which lower tax rate increases FDI inflows. The effect of the tax cut, however, is less likely seen in low and middle-income countries. 3) Investor protection plays a vital role in determining FDI inflows in low and middle-income countries. This result shows that stronger property rights are an essential factor for foreign investors before entering a new market abroad. This finding, however, does not appear in high-income countries since it is believed that these countries have already had a well-established property rights protection. 4) Cross border trade plays a weak role in inward FDI in the low and middle-income countries. The improved export-import administration surprisingly reduces inward FDI. However, the robustness of the result of this relationship is weak.

2. LITERATURE REVIEW AND HYPOTHESES

In this section, we provide an overview of existing literature on FDI and its determinants with a special focus on our central question, which is the role of tax administration and tax rate. The influence of taxation on investment has been hotly discussed in academic circles. The first group of economists believes that the tax cut will increase investments. Ferede & Dahlby (2012) suggested that the tax cut can reduce capital costs and raise incentives to invest. However, the second group argues that the tax cut in today's economy will have no significant consequence for investment. This group believes that the resultant of the risen of economic concentration in today's economy is the key part of this insignificant effect of the corporate tax cut (Pigott, Victor., Walsh, 2014). Moreover, in countries where tax revenue as the primary source of national income, the tax cut will likely create a more budgetary deficit and higher interest rates that will affect both investments, and economic growth negatively (Zidar, 2015).

Given the contradictory views on the impact of taxes on investments, more research in this field is still needed. Moreover, the previous researches in this subject mainly focus on the role of taxes through the tax rate. The impact of taxes, through its administration systems, however, has been hardly addressed. Tax administration systems influence investment through their effects on investment costs. In this sense, complicated tax administration increases transaction costs that may holdbacks the flows of investments (Lawless, 2013).

Even though taxes play an important role in inducing FDI, they are not the only thing that investors consider before investing their money into a particular country. In the subsequent discussion, we provide a review of existing literature on various determinants of FDI, followed by a discussion on the role of taxes.

2.1 Determinants of FDI

Scholars have examined the determinants of FDI for many years; however, there is still no consensus among them all in their findings. It means that there is no general acceptance of what factors can be viewed as the truthful determinants of FDI (Kok & Ersoy, 2009). According to UNCTAD, there are five sets of variables that are important in determining FDI, which are: 1) Policy variables; 2) Business variables; 3) Market-related economic determinants; 4) Resource-related determinants, and: 5) Efficiency-related determinants. Most of the researchers combine these five variables into three important factors that determine the flows of FDI, which are institutional, economic, and socio-cultural factors (Jadhav, 2012). We follow this approach below.

2.2 Institutional Factors

Institutions are important ways of life on which society is based. Countries development does not only depend on the relevant set of rights, but it also takes the credible commitment of the government to them (North & Weingast, 1989). Such a combination of commitment and policies are the ingredients of good institutions. The ability of good institutions is the first-order importance factor that generates economic and political volatility (Acemoglu, Johnson, & Robinson, 2003) as it influences macroeconomic stability and investment (Fan, Morck, & Xu, 2009). A sound institution that has efficient bureaucracy, low corruption, and secure property rights will lure more investors than a weak institution, which in turn will generate further development to the host countries.

According to North (1990) as cited in Ali et al., (2010), institutions influence economic activities due to their effect on transaction costs and production costs. Weak institutions may raise transaction costs through incomplete information about other party behavior, and distress production costs by disrupting the supply chain. Thus, from the investors' point of view, the quality of institutions become more pronounce as it affects the risk associated with their investment. Accordingly, to attract as many investors as possible, countries around the world attempt to reform their institutions and improve the quality of their institutions.

The quality of a country's institution indeed crucial for foreign investors before deciding in which countries they will invest in (Bevan, Estrin, & Meyer, 2004) as they concern more about the risks and the returns of their investments before entering international markets (Fedderke & Romm, 2006). Good institutions reflect the security of their money, while bad institutions make their investment at high risk. Bad institutions may also act like a tax, as it increases the cost of investing (Buchanan, Le, & Rishi, 2012).

Many aspects have been considered as the representation of good or bad institutions, for example, control of corruption (Asiedu & Villamil, 2000; Bissoon, 2011; Wei, 2000), government performance (Buchanan et al, 2012), and property rights protection (Ali et al., 2010; Peres, Ameer, & Xu, 2018).

2.3 Economic Factors

Economic determinants of FDI inflows are factors that influence FDI from the economic perspective in which they affect the flow of FDI directly through its business cycle. In this sense, investors consider the conditions of the new markets from the supply and demand side. From the supply side, they consider the presence of labours, resources, and infrastructures that support their investment. This supply-side affects investment through costs and productivity, in which

lower costs and higher productivity are the perfect conditions for new investments. While from the demand side, investors take into account the existence of potential consumers to sell their products. Therefore, market size and purchasing power are essential for investors before starting a new business. Here, a larger market and higher purchasing power are in favour of the flow of new investments. In across borders business, macroeconomic indicators such as GDP and inflation are the representation of countries market and its purchasing power while trade openness reflects the potential market to expand.

2.4 Socio-Cultural Determinants

The social and cultural conditions in a country determine FDI through market-related factors. Socio-cultural determinants influence FDI through their effect on market potential and additional transactions costs. Two determinants that represent socio-cultural factors on FDI that has been used in previous literature are population and language (i.e., Fan et al., 2009; Peres et al., 2018; Feng, Lin, & Sim, 2019)

Population acts as the target market of the investors, where a large population promises high market potential. Empirically, the role of the population as a determinant of FDI is still ambiguous. The study of Peres, Ameer, & Xu (2018) and Corcoran & Gillanders (2014) find that population induces FDI, while Fan, Morck, & Xu (2009) claim that it is not the case in their research.

Language affects FDI in the sense of lowering transaction costs. Language difference between foreign investors and the host country may lead to communication friction and raise the cost of investment (Kim, Liu, Kim-Lee, & Brown, 2015). Feng, Lin, & Sim (2019) find that while language does not affect trade, however, it influences FDI. They suggest that having a common language with foreign investors increase the FDI for it reduces the communication barrier.

So far, we learn that existing literature classifies three critical factors of FDI determinants, which are institutional factors (corruption control, government effectiveness, IPR protection), economic factors (macroeconomic indicators, trade intensity and infrastructure), and finally socio-cultural determinants (population and language). One important aspect which we have not discoursed, but also identified by the literature is the role of taxes, which will be discussed below.

2.5 Taxes as determinants of FDI

The impact of taxes on FDI inflows can be viewed under two aspects, which are the tax rate and tax administration. It is due to the impact of taxes on FDI inflow may come either from the tax rate *per se*, or from the tax administration, or the combination of the two. In what follows, we discuss the impact of tax rates, tax administration, and tax policy separately on FDI.

2.5.1 Tax Rate

Tax rate affects investment through their effects on factor accumulation and total factor productivity (Ferede & Dahlby, 2012). The cost of capital will be raised by implementing a higher tax rate and reduce the incentives to invest. Moreover, it may create several economic distortions in which it may twist the allocation of capital and degrade the productivity of overall investment (Auten, Carroll, & Gee, 2008).

The role of the tax rate as a determinant of FDI may be vague depends on the type of tax. Every kind of tax has its unique influences on FDI, such as corporate income taxes and indirect taxes (Jayasuriya, 2011). However, the role of the corporate income tax rate is the one that mostly investigated by scholars (i.e., Abdioglu *et al.*, 2016; Djankov S., Ganser T., McIesh C., 2009; Egger & Raff, 2015). From the investors' view, the decisions to invest are based on their expected return on investment, specifically the after-tax return. Since tax acts as an additional cost of capital, they will take into account all the tax effects on income, mainly corporate tax because it influences net corporate profits, which directly affect returns from the investments (Auten *et al.*, 2008).

Becker *et al.*, (2012) study the impact of the corporate tax rate on quantity and quality of FDI in 22 countries in Europe from 2000 to 2006. Using both fixed effect and GMM estimation model in estimating micro data on European multinational firms, they find that on quantity side, the capital stock and corporate tax rate has a negative effect in which higher corporate tax rate reduces the level of FDI. On the quality side, corporate tax increases labour production intensity, but it lowers investment project profitability. Although this study gives a more comprehensive investigation of the tax rate effect since it incorporates not only the quantity of FDI but also its quality, this study somehow offers too limited information. The reason is that the study exclusively focuses on European countries, which could be seen homogenous. Consequently, it is hard to generalize the result in the world level. We need to use a more heterogeneous observation to have consistent results worldwide.

2.5.2 Tax Administration

The administration system of taxes including payments, time and number of taxes and the degree of contribution for a company to satisfy all regulations of tax and also the post-filing process influence FDI by involving additional transaction costs for investors. In that sense, a highly complicated tax administration may increase business costs (Edmiston, Mudd, & Valev, 2003). Multinational firms decide to locate in a particular country by considering the cost associated with the complexity of the tax administration. Investors may choose to invest in a highly complex tax administration if it is followed by a lower tax rate, or it gives a higher opportunity to implement tax avoidance and/or evasion.

The effect of a complicated tax administration on investment could emerge through two different channels (Lawless, 2013). Firstly, tax complexity acts as a variable cost, in which the value of the cost depends on the scale of the firms' operation. The costs will be higher for larger firms because the administrative requirements of detailed accounting to comply with the complicated tax administration are also higher in larger entities. Secondly, tax complexity may also play a role as a fixed cost as it emerges from the early stage of investment because, in that stage, investors consider the costs they have to bear before starting a new business, including the costs required to deal with all complex elements of tax administration.

Edmiston, Mudd, & Valev (2003) study the tax complexity and uncertainty in the former Soviet Union and Central and Eastern Europe. Using data directly from the tax legislation, they find that complicated tax code and uncertainty affect FDI inflows negatively. Another study by Lawless (2013), using Doing Business Survey from World Bank in 2002 on 16 OECD countries and gravity model, finds that the time to comply and the number of tax payment negatively affect FDI inflows. Thus, a more complicated tax administration decreases the attractiveness of a host country to FDI. Both studies show that simplified administration on taxes gives more incentive to invest.

2.5.3 Tax Policy

Countries tax policies are affected by increased economic integration at the international level, in which national tax policies are influenced by international tax competition (Heinemann, Overesch, & Rincke, 2010). Two major tax policies have been implemented by many countries to attract FDI, which are tax cut and improved tax administration. On the one hand, tax cut policy will increase investment by lowering business costs through some fiscal incentives, such as tax holidays, tax amnesty, tax exemptions, and the tax cut. On the other hand, improved tax administrations influence investments by reducing transaction costs through simplification of tax administration, such as efficient tax payment and fewer number of taxes that are needed to comply.

The corporate tax cut is one instrument that has been commonly applied to attract foreign investors in many countries. The previous studies conducted to assess the effect of corporate tax cut on FDI conclude that FDI is positively correlated with a corporate tax cut in which FDI increases as tax cut increase as well (i.e., Djankov et al., 2009). Egger & Raff (2015) deconstruct the effect of corporate tax cut on FDI inflows to 43 OECD countries and emerging countries from 1982 to 2005. Their results confirm that the degradation of the FDI tends to have a significant effect on the reduction in corporate tax rates.

Abdioglu, Binis, & Arslan (2016) also concentrate on the effect of tax policies on FDI in OECD countries. They investigate the relationship between those two

using sets of time-series analysis. The findings indicate the variation of the tax policies impact on FDI across countries. The empirical results illustrate that high tax rates and FDI have a negative relationship. Thus, under the *ceteris paribus* assumption, taxes have a significant impact on FDI.

The openness of the economy and capital volatility is crucial in determining fiscal policies (Devereux, Lockwood, & Redoano, 2008; Ghinamo, Panteghini, & Revelli, 2010). The study of Ghinamo, Panteghini, & Revelli (2010) incorporate the importance of tax rate, government credibility, and capital flows. They find that an increase in risk due to government expropriation leads to a decrease in the tax rate. In this sense, lower government credibility generates economic instability, which stimulates capital outflows. As a response, the government likely to set a lower tax rate to offset possible income shifting opportunities. This finding is in line with the study of Devereux, Lockwood, & Redoano (2008). Investigating the tax competition in OECD countries between 1982-1999, they find that the relaxation of capital control generates international competition to attract foreign investment in which results in lower tax rate among countries.

The effect of tax policy, however, may different due to countries' economic size. Winner (2005) investigate the effect of tax policy on *the small and large economy*. Using GMM estimation model for 23 OECD countries in the period of 1965-2000, he finds that economic size is positively related to capital taxes in which the larger the economy, the tax burden on capital is more substantial than the tax burden on labour. Moreover, he also finds that the effect of tax competition is more pronounced in the small economy than in a large economy. It means that in the open economy, small countries could only follow the rate of taxes set by the larger economy to survive in international competition. Even though this study provides a relatively different perspective on the effect of tax policies in two groups of economic size, it still has some limitations. One of the most important aspects of investment, which are institution factors is not included in the study. Here, he only focuses on the economic factors which could lead to a biased result.

Aside from the previous researches of FDI determinants, there is another study that is worth to discuss in this paper, which is the role of ease of doing business on FDI. The recent study, Corcoran & Gillanders (2014) investigated the correlation of FDI and the ease of doing business, especially the trading component. They used 2009 ease of doing business report and the sum of FDI stock over the period 2004-2009. They clustered the countries into three groups; Sub-Saharan Africa, OECD, and rest of the world. Using a cross-sectional approach, they find that the quality of doing business does not play a significant role in attracting FDI in Sub-Saharan Africa and OECD countries. It does important only in the last group of countries. It means that both in the poorest and richest

group of countries, institution and business improvement are not accompanied by the increasing number of FDI inflows. On the other countries group, however, the improvement of business environment benefits them to have greater FDI inflows. Corcoran & Gillanders (2014) suggest that natural resources are the culprit of the result as this factor becomes the essential determinant of FDI inflows in the natural resources dependent countries.

2.6 Hypotheses Development

In the motivation of this study, we look into the impact of the tax rate, tax administration, the safety of investment, and cross-border trade in the host country, as the important determinants of FDI inflows. From the literatures, it is evident that the corporate tax rate, as well as the tax administration, plays major roles in determining FDI inflows. We see that from most study focus on the impact of the tax rate on FDI inflows while the effect of the tax administration has been hardly discussed (i.e. Edmiston et al., 2003; Lawless, 2013). The latter is mostly confined to cross-section analysis on high-income OECD countries.

We extend the study to a much more global sample with panel data analysis, distinguishing between high-income and low and middle-income countries. Considering the findings of Winner (2005), it is important to classify the countries into these two groups because it is likely the effect of our interest variables are different in each group. In the following discussion, we provide the hypotheses of our interest variables, which are taxes, including the tax rate, and tax administration, and also investor protection and cross-border trade.

The role of tax rates on FDI has been frequently discussed in the academic cycle (i.e., Abdioglu et al., 2016; Bonucchi et al., 2015; Egger & Raff, 2015). They confirm that lower tax rate attracts more inward FDI as it reduces the cost of capital, which in turn promises more return on investments. In this subject, the initial level of the tax rate is not important since investors consider each tax reduction as important in all countries. Therefore, the effect of the corporate tax cut is likely to be similar in all nations regardless of the level of their income, in which higher corporate tax rate reduces FDI inflows.

Hypothesis 1:

Tax rate influences FDI inflows negatively in all countries, regardless of their income levels.

Tax administration influences FDI through additional costs, in which a more complicated tax administration will increase transaction costs. A complicated tax administration is a condition where it takes a long time to comply with tax regulations as well as a large number of taxes that should be paid. Based on the World Bank Doing Business Report 2018, the tax administration of high-income countries is better than in low and middle income-countries since they have a less complicated tax administration.

Therefore, we expect that the improvement of the tax administration in low and middle-income countries induce more inward FDI than in high-income countries.

Hypothesis 2:

The positive effect of the tax administration on FDI inflows is higher in low and middle-income countries than in high-income countries.

The security of investment is very crucial for investors. Investors choose to invest in a country with strong protection of their investment as it promises the safety of their money and their products through stronger property rights protection. Weak protection of IPR will be a disincentive for investment as investors consider the high level of imitation as a threat for their products that can reduce their profits. High-income countries have better protection of both investment and property rights than low and middle-income countries (The World Bank Group, 2018). Therefore, we expect that investor protection will be likely to play a role in low and middle-income countries, where IPR is still weakly protected.

Hypothesis 3:

Investor protection plays a major role in low and middle-income countries in which it positively affects FDI inflows, but less likely in high-income countries.

Cross-border trade is a crucial aspect of countries' economy as it influences the development of the countries. A large volume of this international trade signals the openness of the economy, which in turn reflects the market potential for the foreign investors. A simple and less complicated export and import administration procedure is a preferable condition for investors. Based on the World Bank Doing Business Report 2018, since high-income countries have less complicated trade across border procedure than in low and middle-income countries, we expect that in this subject, the improvement of export-import procedure influences FDI inflows more significantly in low and middle-income countries than in high-income countries.

Hypothesis 4:

The positive effect of trade across borders on inward FDI is stronger in low and middle-income countries than in high-income countries.

3 RESEARCH METHODOLOGY

3.1 Methodology

The decision to invest is based on costs and productivity (Krugman, Obstfeld, & Melitz, 2012). Firms choose a location in which they can maximize operating profits. Only firms with high productivity engage in foreign investments (Helpman, Melitz, & Yeaple, 2003). It is due to the fact that to invest in a foreign nation, it takes huge fixed costs and only those high productivity firms that can bear the costs.

Consequently, this condition results in the sorting effect of FDI.

The importance of production costs then distinct FDI into two types; Horizontal FDI (HFDI) and Vertical FDI (VFDI). HFDI refers to similar production of home countries' firms in foreign nations. Here, firms duplicate similar activities in different states. The main reason to do this type of FDI is the transportation costs to serve foreign customers. On the other hand, VFDI refers to firms that slice up the production process in different countries. Here, firms separate the production stages by outsourcing the process abroad. The reason behind this VFDI is different input requirement comes with varying prices across countries; thus it is more profitable for firms to split the production chain to where it has comparative advantages in certain inputs. These two types of FDI imply the sensitivity of foreign investment to hosts countries conditions, in which it very much depends on labour productivity and costs (Azemar & Desbordes, 2010).

Labour productivity is vital for foreign investment. On the one hand, it favours FDI due to the rise in the marginal profitability of a new investment. On the other sides, it also implies an unfavourable impact on FDI as it might push the inputs demand in which generates higher wage or rental costs (Le & Tran-nam, 2018). On the labour wage perspective, investors prefer low wages to aim higher return on investment. However, low wages are attractive if only those wages do not reflect low productivity (Azemar & Desbordes, 2010). Labour wage mainly plays a role in determining FDI inflows to developing countries as they have relatively lower wages than developed countries, but they have better productivity than those in poor countries.

This study replicates the basic idea of Corcoran & Gillanders (2014) that use Doing Business Indicator to estimate their study. Firstly, they extract the interest variable, which is trade across borders indicator, then they recalculate the rest of the indicators as a new Doing Business Indicator. However, unlike Corcoran & Gillanders (2014), who focus only on the trade indicators, in this study, the main focus is tax administration indicator. Since investor protection and trade across borders indicators also crucial in influencing investors to invest, we will also focus on those indicators as well. Therefore, we will use three focused indicators instead of only one like in Corcoran & Gillanders (2014) study, which are *paying taxes*, *protecting minority investors*, and *trading across borders indicators*.

Following the cost and productivity approach on determining the level of FDI inflows, we construct the model as follow. Taxes, through its rate and administration, play essential role on determining additional investment cost. Meanwhile, investor protection and trade across borders signify the efficiency of investment and productivity through market potential.

Therefore, we follow the model from previous researches to estimate the impact of tax on FDI inflows. The previous studies use the general form of the regression model as:

$$FDI_{c,t} = \alpha_0 + \beta_1 Tax_{c,t} + \beta_2 Investor_{c,t} + \beta_3 Borders_{c,t} + \beta_4 X_{c,t} + \varepsilon_{c,t} \quad (1)$$

where *FDI* as the dependent variable is the net FDI inflows to a country (*c*) at time *t*. *Tax* as our primary independent variable is corporate tax rate or tax administration in each country at time *t*. *Investor* is defined as investor protection in each country at time *t*. *Borders* represents trading across borders of each country at time *t*. We introduce *X* as variables vector that is effectively influencing FDI inflows. These variables derived from the literature, under the different categories discussed in the previous section, such as institutional factors, economic factors, and socio-cultural factors. In these variables, we include annual growth rate of GDP, GDP per capita, annual rate of inflation, the openness of the economy, infrastructure, corruption index, government effectiveness index, ease of doing business, population, and language. We treat language as a dummy variable, whereas English speaking countries is treated as 1 and 0 otherwise. α is the constant intercept parameter estimation, β_1 , β_2 , and β_3 represents the slope of interest parameter estimates, β_4 represents the slope of other control variables parameter, while $\varepsilon_{c,t}$ represents the error term.

Since we believe that investors also consider the previous level of FDI inflows before entering the international market, following previous studies (i.e. Abdioglu et al., 2016; Becker et al., 2012; Corcoran & Gillanders, 2015), we reconstruct our general model into a dynamic model. Following the methodology constructed by Winner (2005), we use the combination of current and lag time to avoid the potential endogeneity problem. Moreover, the decision to invest is not an instant policy. Investors consider current conditions for their future investment, and it takes them some time to decide their investment. In that sense, we focus on the previous year condition rather than the current one of our focussed variables and use current year for other variables.

Therefore, we reconstruct our model into:

$$FDI_{c,t} = \alpha_0 + \alpha_1 FDI_{c,t-1} + \beta_1 Tax_{c,t-1} + \beta_2 Investor_{c,t-1} + \beta_3 Borders_{c,t-1} + \beta_4 X_{c,t} + \varepsilon \quad (2)$$

where $FDI_{c,t-1}$ is previous FDI inflows.

Previous studies, however, indicate that endogeneity is an issue in estimating tax and FDI (Abdioglu et al., 2016; Becker et al., 2012), then we follow the previous studies by using System GMM estimation model to address this problem. The benefit of using this estimation method is that we can control for possible endogeneity by using exogenous variables

and their lags as instruments (Arellano & Bond, 1991). The dynamic equation becomes:

$$\Delta FDI_{c,t} = \alpha_0 + \gamma \Delta FDI_{c,t-1} + \beta_1 Tax_{c,t-1} + \beta_2 Investor_{c,t-1} + \beta_3 Borders_{c,t-1} + \beta_4 X_{c,t} + \eta_c + v_c \quad (3)$$

where $\Delta FDI_{c,t}$ is lagged differences and η is countries-specific effects.

System GMM is better used when we have a few periods and many individuals (Roodman, 2006), which is similar to this study. The core idea of the model is to estimate a system of equations in both first-difference and levels. It uses lagged levels of $FDI_{c,t}$ ($FDI_{c,t-1}$) as instruments for equations in dynamic differences while using lagged differences ($\Delta FDI_{c,t}$) as instruments for equation in levels. The prerequisites for this model are that the autocorrelation at the first order autoregressive AR(1) should be significant while it should be insignificant for autocorrelation at second order autoregressive AR(2) (Arellano & Bond, 1991). Sargan test is used to test the overidentifying restriction or the validity of instrumental variables (Roodman, 2006).

Since we investigate the role of our interest variables on FDI in two different groups, we then construct the estimation three times. Firstly, we do the estimation in all countries data. We need to do this step to distinct the result before and after we group the countries based on their income level. Following this step, then we run the model in two countries groups, which are high-income and low and middle-income countries.

3.2 Data

We use data for 151 countries around the world, which we group into two groups of high-income, and non-high-income countries from 2010 to 2017. We use the classification based on World Bank Criteria. The classification from the World Bank is based on GNI per capita in US dollars. Since the list is dynamic and the incomes threshold also varies over time, then we use the latest version of the data, which is 2017 classification. In this period, the classification is set as follows;

Table 1. Countries classification

Countries Classification	Level of Income per capita (US dollar)
High income	More than 12,055
Low and Middle income	Less than 12,055

Source: World Bank

3.2.1. Dependent Variable

FDI Inflows is our dependent variable. It refers to the flows of direct investment equity in the countries, which is the total of equity capital, reinvestment of earnings, and other capital. In this study, we use FDI net inflows Balance of Payment (BoP) obtained from World Bank since we believe that this type of FDI captures the effect of policies to FDI inflows better

than FDI-GDP ratio. We do not use FDI as a percentage of GDP because this type of FDI cannot clearly show the real changes of FDI due to the GDP effect. In FDI-GDP ratio, although FDI inflows increase from the last period, the value of the ratio may be smaller than the previous year if the growth of GDP outnumbers the growth of FDI.

3.2.2. Independent Variable

While data of corporate tax rate, tax administration, investor protection, and trade across the border are treated as our focused variables, other independent variables are treated as the control variables. For the control variables, we use the data that represent the Economic Factors such as GDP growth, GDP per Capita, Inflation, and Infrastructure; Institutional Factors such as Corruption Control, Government Effectiveness, Doing Business Indicator; and Socio-Cultural Factors such as Population and Language. Since we use a dynamic model, lag FDI inflows will also be used as our control variable.

Table 2 reports the summary of variables that we use in this study, the abbreviation of the variables, the and the sources.

Table 2. Summary of Variables

Variable		Source(s)
FDI	FDI Inflows	World Bank
TaxRate	Corporate Tax Rate	KPMG
TaxAdm	Tax administration system or <i>paying taxes</i> indicator	Ease of Doing Business Report, World Bank
Investor	Investor protection or <i>protecting minority investors</i> indicator	Ease of Doing Business Report, World Bank
Borders	<i>Trading across borders</i> indicator	Ease of Doing Business Report, World Bank
GDPGrowth	Annual GDP Growth	World Bank
GDPPC	GDP per capita	World Bank
Inflation	Inflation rate	World Bank (WDI)
TradeOp	Trade Openness	World Bank (WDI)
Internet	Internet subscriptions	World Bank (WDI)
CC	Control of Corruption	World Bank (WGI)
GE	Government Effectiveness	World Bank (WGI)
DB7	Ease of Doing Business indicator. It is a recalculated doing business indicator after extracting <i>paying taxes, protecting minority investors</i> and <i>trading across borders</i> indicators.	Ease of Doing Business Report, World Bank
Pop	Total Population	World Bank
Language	Countries' language that uses English not only as a <i>de facto</i> but also a <i>de jure</i> official language.	Lingoda

Source: Author's compilation

Since we run the estimation model in three groups of datasets, in the following tables, we present the descriptive data statistics in all three groups. We transform our model into the log model to deal with the non-linear parameters. Variables such as FDI, GDPPC, TradeOp, Internet, and Pop are used in term of natural logarithm, while other variables enter the

model using the level value since they are in percentage form. From those tables, heterogeneous datasets are confirmed.

4 RESULTS AND FINDINGS

4.1 Prelude

Prior to the estimation model, we performed diagnostic checks of the data, which are the collinearity test and heteroskedasticity check. Firstly, we perform the collinearity check using the Variance Inflation Factor (VIF). The result shows that two of our institutional variables, which are government effectiveness (GE) and control of corruption (CC), is highly correlated. Therefore, in our estimation, we treat them separately to have better estimation results. After we distinctly use them in our regression, we get VIF for all variables below ten, and the mean of all models is lower than three, indicating that none of these variables is overstated considerably as a result of collinearity. For heteroskedasticity check, since we have a linear model, we then apply Breusch-Pagan tests, and the results indicate that the error variances in our model are all equal. It means that the homoscedastic assumption holds in our model.

4.2 Empirical Results

We provide three regression results as stated before. Firstly, we do the regression in all countries level as seen in Table 3 to know the effect of our interest variables in all level of income. Afterward, we run the estimation model in countries group based on their income development. The result for high-income countries is presented in Table 4, while Table 5 reports the result for low and middle-income countries. In column 1 and 2, we present the result of the relationship of the dependent variables with the interest variables of *Tax Rate*, *Investor*, and *Borders*. The difference between these two columns is in the institution determinants, which are CC and GE. As mentioned previously, we regress them separately because they are highly correlated. In column 1, we provide the result when we control for CC as institutional determinant while in column 2 when we use GE as a control variable. In column 3 and 4, we present the result for *Tax Adm*, *Investor*, and *Borders* as the determining factors of FDI inflows. Similarly, we separately regress the model between CC as the institutional determinant in column 3 and GE in column 4. Additionally, we also provide the VIF value

Table 3. FDI Inflows in all countries, 2010-2017.

Variable	(1)		(2)		(3)		(4)	
	Tax Rate	VIF	Tax Rate	VIF	Tax Adm	VIF	Tax Adm	VIF
$(\ln FDI)_{(t-1)}$	0.221*** (0.0577)	4.53	0.239*** (0.0567)	4.42	0.262*** (0.0579)	4.65	0.271*** (0.0562)	4.48
$(TaxRate)_{(t-1)}$	0.0257 (0.0231)	1.41	0.0253 (0.0232)	1.40	-	-	-	-
$(TaxAdm)_{(t-1)}$	-	-	-	-	0.0131* (0.00756)	1.63	0.0127* (0.00757)	1.67
$(Investor)_{(t-1)}$	0.0326*** (0.00928)	1.46	0.0320*** (0.00937)	1.46	0.0336*** (0.00933)	1.60	0.0323*** (0.00936)	1.60
$(Borders)_{(t-1)}$	-0.00818 (0.00518)	2.36	-0.00818 (0.00522)	2.40	-0.00880* (0.00520)	1.65	-0.00917* (0.00521)	2.33
GDPGrowth	0.0270* (0.0149)	1.21	0.0276* (0.0150)	1.22	0.0297** (0.0141)	1.20	0.0300** (0.0141)	1.20
lnGDPPC	0.0950 (0.380)	5.15	-0.00253 (0.392)	5.48	0.143 (0.346)	5.85	0.0417 (0.353)	6.19
Inflation	-0.000407 (0.0103)	1.32	-0.00127 (0.0104)	1.36	0.0146 (0.0105)	1.25	0.0150 (0.0105)	1.34
lnTradeOp	0.829** (0.354)	1.85	0.820** (0.356)	1.88	1.018*** (0.350)	1.83	1.029*** (0.351)	1.86
lnInternet	0.0311 (0.113)	4.28	0.0558 (0.113)	4.26	0.0483 (0.0952)	5.03	0.0656 (0.0953)	4.63
CC	0.727** (0.310)	3.24	-	-	0.568* (0.318)	2.96	-	-
GE	-	-	0.679** (0.309)	4.90	-	-	0.673** (0.298)	5.04
DB7	-0.0101 (0.0107)	2.40	-0.00997 (0.0107)	2.52	-0.0196 (0.0105)	3.28	-0.0183 (0.0105)	2.79
lnpop	0.316 (0.214)	4.30	0.158 (0.199)	3.86	0.610*** (0.161)	4.42	0.533*** (0.151)	4.02
Language	-8.343** (3.952)	1.29	-7.053* (3.856)	1.29	2.128 (3.387)	1.21	2.606 (3.264)	1.24
Constant	7.686 (5.812)	-	10.43* (5.928)	-	-1.459 (4.781)	-	0.343 (4.929)	-
Observations	827	-	827	-	925	-	925	-
Number of Id	134	-	134	-	151	-	151	-

Note: Robust standard errors in parentheses

Statistical significance level; * $\alpha=5$ percent, ** $\alpha=1$ percent, *** $\alpha=0.1$ percent.

in each column to show the variance of each variable in the model.

Firstly, we do our model for all countries' observation. The post-estimation tests for first- and second-order autocorrelation (AR(1) and AR(2)) show that our result fits the prerequisites of the GMM model. The Sargan tests result also shows that the instrumental variables in our model are valid. Based on the regression result, we find that from our interest FDI inflows determinants, both tax administration and investor protection play an important role on determining FDI while corporate tax rate and trade across borders don't. In this model, the tax administration influences FDI inflows positively in which, when the tax administration is improved by one point, the FDI inflows increased with the coefficient of 0.013. It implies that when the tax administration of one country is getting better, more FDI flows into that country. This result is in line with the study of Lawless (2013) about the improved tax payment and FDI inflows.

From table 3, we can see that investors protection is the most important factors in determining FDI since it shows a strong and positive relationship with the dependent variable. It means that when the protection for investors rights is getting better, the foreign investment would also increase. This result confirms the previous studies' findings (Lai, 1998; Tanaka & Iwaisako, 2014) of the importance of property rights protection for inducing investment. The result, however, contradicts the findings of Corcoran & Gillanders (2014) of the positive relationship of improvement in across border trade administration with FDI inflows since we find that in the world level the relationship is negative. But the result only shows a very weak relationship since it only appears in one model and the magnitude is also very small in which one-point improvement of trading across borders indicator reduce FDI inflows 0.009 percent.

In the control variables perspective, we see that institutional and socio-cultural factors give more effect on FDI inflows than economic factors. From economic factors view, only GDP growth and trade openness that influence FDI inflows. Other factors such as GDP per capita, inflation rate, and infrastructure do not give an impact on FDI inflows. The level of previous FDI, however, strongly affects the flow of current FDI. We see that, in the world level, countries' trade and economic growth determine the level of FDI inflows positively. When the countries become more open to trade and have higher economic growth, more FDI inflows follow.

From institutional factors view, both controls of corruption and government effectiveness become a major determinant on FDI as they show their importance in all model. In this sense, less corruption and more reliable government attract foreign investments to come in, which support the study by

Boța-Avram (2013) and Sabir, Rafique, & Abbas (2019).

Population plays an essential role as it appears to be substantial in our model. Although it only plays a part in one model, it implies that market size is still a major consideration to start new investments. In that sense, in line with the findings of Peres, Ameer, & Xu (2018), populous countries are in favour of new investments as they provide more markets. Similarly, language also gives an impact on one model. The result shows that in the last decade, investors targeted non-English speaking countries to invest.

From this result, we may say that in the world level in the period of 2010-2017, institutional factors are more important for investors than economic factors. They consider the good quality of the institution before they invest their money in one country. In this sense, for one country to induce more FDI inflows, they need to focus on reforming their institutional performance first above anything else.

Table 4 shows the result of our model in high-income countries. The result of all the post-estimation tests shows the validity of our model. In this group, although the effect is weak, the corporate tax rate is proven as a determining factor of FDI inflows. The result shows that corporate tax rate influences FDI inflows negatively, in which lower tax rate induces more FDI inflows. Specifically, for one percent corporate tax cut, FDI inflows increase by 0.12 percent. This result confirms the importance of tax cut policy in high-income countries economy, which is in line with the previous study of Becker et al., (2012) and Djankov et al., (2009). Our other focused variables, however, seem to not affect FDI inflows. It is due to the performance of these countries in terms of the tax administration, investor protection, and trade across borders has already been well-established, in which investors do not take into account their improvement anymore.

In this group, since high-income countries have already performed good institutions, unsurprisingly these institutional factors influence FDI inflows weakly, only through corruption control. In this sense, better control of corruption attracts more foreign investors. For high-income countries, investors consider economic factors in investing. As seen in table 4, foreign investors choose to invest in countries with higher GDP growth, which reflect higher market potential (Egger & Raff, 2015; Morrissey, O., 1995). Other economic factors, such as GDP per capita, inflation, trade openness, and infrastructure, do not give effect on determining FDI inflows. Besides, the previous level of FDI inflows also does not play a role.

From the socio-cultural view, population strongly affect FDI inflows. It confirms the importance of population growth in this group. In this sense, higher population growth induces FDI. It then points to the erratic problems of the declining population growth in some countries in this group. The result shows that the

Table 4. FDI Inflows in High-income countries, 2010-2017.

Variables	(1)		(2)		(3)		(4)	
	Tax Rate	VIF	Tax Rate	VIF	Tax Adm	VIF	Tax Adm	VIF
$(\ln FDI)_{(t-1)}$	0.0514 (0.0937)	3.55	0.116 (0.0899)	3.38	0.0824 (0.0897)	4.27	0.125 (0.0865)	4.07
$(TaxRate)_{(t-1)}$	-0.124* (0.0669)	1.39	-0.113 (0.0689)	1.41	-	-	-	-
$(TaxAdm)_{(t-1)}$	-	-	-	-	0.0101 (0.0309)	2.17	0.00959 (0.0310)	2.17
$(Investor)_{(t-1)}$	0.0203 (0.0217)	1.70	0.0189 (0.0225)	1.70	0.0208 (0.0217)	1.77	0.0193 (0.0222)	1.77
$(Borders)_{(t-1)}$	-0.0119 (0.0150)	2.33	-0.0208 (0.0149)	2.35	-0.0170 (0.0147)	2.38	-0.0234 (0.0146)	2.44
GDPGrowth	0.0700** (0.0308)	1.25	0.0731** (0.0319)	1.31	0.0507* (0.0297)	1.26	0.0552* (0.0305)	1.31
lnGDPPC	0.182 (1.172)	2.03	0.276 (1.215)	2.05	0.942 (1.183)	2.89	1.070 (1.210)	2.94
Inflation	0.0456 (0.0571)	1.28	0.0582 (0.0594)	1.22	0.0818 (0.0544)	1.30	0.0915 (0.0560)	1.23
lnTradeOp	0.916 (1.115)	2.60	1.093 (1.151)	2.29	1.023 (1.105)	2.78	1.236 (1.124)	2.39
lnInternet	-0.0568 (0.468)	2.60	-0.0635 (0.486)	2.85	0.0777 (0.443)	2.74	0.0504 (0.454)	2.42
CC	1.309** (0.564)	3.38	-	-	1.252** (0.604)	3.43	-	-
GE	-	-	0.805 (0.695)	5.14	-	-	0.832 (0.733)	5.55
DB7	-0.0218 (0.0377)	3.30	-0.0124 (0.0389)	3.60	-0.0233 (0.0369)	3.05	-0.0179 (0.0378)	3.26
lnpop	1.613*** (0.419)	5.36	1.342*** (0.409)	4.39	1.006*** (0.280)	6.15	0.840*** (0.276)	4.99
Language	8.925** (3.986)	1.46	8.936** (4.131)	1.48	2.692 (3.429)	1.51	3.057 (3.520)	1.53
Constant	-9.295 (15.52)	-	-7.914 (16.12)	-	-11.19 (15.42)	-	-2.625 (15.16)	-
Observations	292	-	292	-	304	-	304	-
Number of Id	51	-	51	-	53	-	53	-

Note: Robust standard errors in parentheses

Statistical significance level; * $\alpha=5$ percent, ** $\alpha=1$ percent, *** $\alpha=0.1$ percent.

declining population will not give a good sign for new investments. On the other hand, language seems to be an important part in determining FDI inflows. Supporting the findings of Feng, Lin, & Sim (2019), in this group, foreign investors prefer investing in English-speaking to non-English-speaking countries as it promises lower transaction costs. The effect of this factor, however, is weak because it only shows its substantial role in one model. Thus, to generalize the impact of language on FDI in this group is unconvincing.

Finally, table 5 displays the result of our model in non-high-income countries. In this group, we see that tax administration, as well as investor protection, are important in determining FDI inflows. However, it is not the case with tax rate and trade across the border variable. Tax administration affects FDI positively in which one point improvement in tax administration increases FDI inflows as much as 0.012 to 0.014 percent, while investor protection rises 0.033 percent of FDI inflows for its one point improvement. It implies the importance of institutional performance in this countries group. In this group, similar to all countries result, trading across border also illustrates its

negative relationship with FDI inflows. However, the relationship between these two variables is weak as it only shows its influence in one model with a small magnitude as well. Thus, the robustness of the effect of this trading across borders on FDI inflows is not convincing.

From economic factors only previous level of FDI inflows and GDP growth that give an impact in current FDI inflows. Both variables positively influence FDI, in which higher FDI inflows from the previous year induces more FDI inflows. Countries with a higher GDP growth also in favour of more FDI inflows in this group. Trade openness also shows a positive relationship, however, the impact is weak since it only confirms its significance in one model. Other factors such as GDP per capita, inflation, and the internet do not seem to be important in determining FDI inflows.

It is commonly known that in this group, political pressure highly influences business and economic cycle, which in turn become a major drawback of economic development. Moreover, this country group is also known for its weak corruption control. The result shows that government effectiveness plays a

Table 5. FDI Inflows in Low and Middle-income countries, 2010-2017.

Variable	(1)		(2)		(3)		(4)	
	Tax Rate	VIF	Tax Rate	VIF	Tax Adm	VIF	Tax Adm	VIF
$(\ln FDI)_{(t-1)}$	0.397*** (0.0929)	5.58	0.387*** (0.0921)	5.60	0.525*** (0.111)	4.65	0.476*** (0.109)	4.64
$(TaxRate)_{(t-1)}$	0.00722 (0.0180)	1.63	0.00263 (0.0179)	1.59	-	-	-	-
$(TaxAdm)_{(t-1)}$	-	-	-	-	0.0144** (0.00732)	1.24	0.0123* (0.00723)	1.24
$(Investor)_{(t-1)}$	0.0365*** (0.00846)	1.40	0.0363*** (0.00841)	1.49	0.0346*** (0.00925)	1.52	0.0335*** (0.00908)	1.57
$(Borders)_{(t-1)}$	-0.00727 (0.00448)	1.80	-0.00797* (0.00444)	1.80	-0.00626 (0.00486)	1.76	-0.00719 (0.00476)	1.72
GDPGrowth	0.0256* (0.0154)	1.23	0.0263* (0.0153)	1.22	0.0408*** (0.0154)	1.20	0.0396*** (0.0151)	1.20
lnGDPPC	0.151 (0.325)	4.99	0.0678 (0.328)	5.08	-0.187 (0.360)	5.09	-0.297 (0.356)	5.17
Inflation	-0.000406 (0.00863)	1.25	0.00174 (0.00853)	1.27	0.0112 (0.00947)	1.24	0.0125 (0.00927)	1.28
lnTradeOp	0.450 (0.357)	1.65	0.581* (0.351)	1.67	0.440 (0.391)	1.60	0.587 (0.383)	1.60
lnInternet	0.0373 (0.0909)	4.47	0.0458 (0.0907)	4.54	0.0431 (0.0849)	4.47	0.0528 (0.0834)	4.54
CC	-0.399 (0.340)	2.05	-	-	-0.216 (0.351)	1.84	-	-
GE	-	-	0.334 (0.298)	2.73	-	-	0.539* (0.301)	2.81
DB7	-0.00796 (0.00899)	1.86	-0.00951 (0.00890)	2.00	-0.0145 (0.00974)	2.05	-0.0136 (0.00956)	2.15
lnpop	-0.452 (0.382)	5.45	-0.154 (0.345)	5.09	-0.732 (0.476)	4.69	-0.372 (0.451)	4.43
Language	0.156 (0.690)	1.38	0.229 (0.691)	1.38	-1.787 (1.209)	1.23	-1.385 (1.191)	1.25
Constant	15.33** (7.363)	-	11.34* (6.821)	-	20.16** (8.942)	-	16.06* (8.552)	-
Observations	535	-	535	-	621	-	621	-
Number of Id	83	-	83	-	98	-	98	-

Note: Robust standard errors in parentheses
Statistical significance level; * $\alpha=5$ percent, ** $\alpha=1$ percent, *** $\alpha=0.1$ percent.

more important role than corruption control. Even though the effect is weak, it implies that the quality of civil and public service, as well as the freedom from political pressure in one country, is more crucial for foreign investors to start a business in this group than the control for corruption. This result confirms the fact that less political pressure on the economy would generate business, particularly foreign investments. We may also state that in this group, foreign investment can tolerate corruption but not political pressure before entering a new market.

From socio-cultural factors, table 5 illustrates that both population and language do not play a role in determining FDI inflows. It confirms that for investors, economic and institutional factors are the main aspects that they consider before investing their money. In this group with a higher risk of investments than in high-income countries, economic and institutional performance is more important than the potential market size represents by population.

5 CONCLUSIONS

In the period of 2010-2017, we see that many countries have constantly been improving their institutional performance to boost their economic development. We investigate the role of taxes, which are the rate and the administration on FDI inflows for all countries in the world for a period after the Global Financial Crises 2009. In addition to taxes effect, we also focus on the role of investors protection and trade across borders in determining the flow of FDI in countries around the world.

Investigating the role of taxes, investors protection and trade across border in two grouped countries, which are high-income and low and middle-income countries, our finding supports the study of Winner (2005) which suggest that the effect of taxes on investment is different across countries, in which it depends on countries level of development. We find that in high-income countries, even though it is weak, the corporate tax rate is an important element for foreign investors before investing their money. In this group, lower tax rate induces FDI inflows. Therefore, unsurprisingly tax cut is widely implemented by

countries to increase the level of investment in their country. The tax administration, however, does not play a role in this group. Investor protection and trade across border shows a similar result as well. It implies that in this group, investors do not seem the improvement of these factors as important as in other countries group since they have already been well-established. In this group, institutional factors only give an impact on FDI inflows through corruption control, in which higher control of corruption increases FDI. It is the market size that is the most crucial aspect for investors since the growth of GDP and population confirm their significant role in investment decision in these countries.

In the second group, which is low and middle-income countries, unlike the high-income countries, we find that the tax administration plays an essential role in determining FDI inflows. In this group, in contrast to the first group, the lower tax rate does not influence foreign investors. Here, they consider the tax administration more importantly. The improvement of the tax administration encourages investors to invest more in these countries. Unlike high-income countries, in this group, the improvement of trading across borders administration plays a weak role as it negatively affects FDI inflows. However, the impact is too feeble and unconvincing. Investor protection, however, plays a crucial part in inducing FDI inflows in these countries. We may say that a higher degree of property rights protection is needed for these countries to attract more investments to their country. Moreover, government effectiveness is more important in these countries than the control of corruption. In this group, it is proved that better institutions stimulate FDI inflows. For more investment to flows in, countries in this group need to set a better tax administration and reduce political pressure on the economic and business cycle.

Our results suggest that taxes and investor protection influence FDI inflows in each group differently. We see that taxes influence FDI through two possible channels. While in high-income countries, they influence FDI inflows through the tax rate, they affect inward FDI in low and middle-income countries through the tax administration. Investor protection only gives an impact on low and middle-income countries while in high-income countries, it is not the case. Since these two countries groups have quite different characteristics, then they need different approaches and policies to generates more FDI inflows, which in turn will boost their economic performance.

6 IMPLICATION AND LIMITATION

Through this study, government around the world may have much broader options on attracting FDI inflows, not only by imposing lower tax rate but also by improving tax administration as a product of well-managed institutions. However, the tax regime chosen by countries will depend on the economic

development as well as the institutions reliability of their country. Our study suggests that for high income countries, it is better to apply tax cut policy, while in low and middle- income countries, improved tax administration is the best choice to boost FDI inflows.

Even though this study results in conclusions above, but it only shows the impact of taxes on FDI inflows with some limitations, such as:

- 1) The observation is too limited. More observations with longer period may give more reliable result.
- 2) The tax rates that are used in this study do not take into account countries with progressive tax rate. Consequently, it may give inconsistent result for some countries. Thus, further study is needed to confirm the result of this study.

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APPENDIX

Table 6. Descriptive Statistics for all countries

Variables ¹	Mean	Std. Deviation	Min	Max
lnFDI	21.16	2.23	10.92	26.95
TaxRate	24.32	8.21	0	55
TaxAdm	68.41	17.96	3.32	100
Investor	52.37	15.43	10	96.67
Borders	67.37	20.84	1.26	100
GDPGrowth	3.57	3.50	-20.59	25.57
lnGDPPC	9.30	1.18	6.47	11.77
Inflation	4.38	5.54	-3.89	59.21
lnTradeOp	4.38	0.56	-1.74	6.09
lnInternet	1.20	2.34	-7.36	3.81
CC	0.01	0.99	-1.67	2.40
GE	0.08	0.94	-2.06	2.24
DB7	61.53	13.43	24.62	93.07
lnPop	15.95	1.94	9.92	21.04
Language	0.20	0.40	0	1

Table 7. Descriptive Statistics for High-Income countries

Variables	Mean	Std. Deviation	Min	Max
lnFDI	22.32	2.22	14.80	26.95
TaxRate	23.07	9.11	0	55
TaxAdm	80.22	12.55	39.66	100
Investor	58.85	14.17	26.67	96.67
Borders	83.57	10.06	48.45	100
GDPGrowth	2.43	3.06	-9.13	25.55
lnGDPPC	10.52	0.45	9.36	11.77
Inflation	1.87	1.93	-2.45	10.54
lnTradeOp	4.61	0.58	3.11	6.09
lnInternet	3.06	0.67	0.15	3.81
CC	1.04	0.81	-0.64	2.40
GE	1.08	0.64	-0.85	2.24
DB7	71.71	9.83	54.27	93.07
lnPop	15.47	1.91	9.92	19.60
Language	0.20	0.40	0	1

Table 8. Descriptive Statistics for Low and Middle-Income countries

Variables	Mean	Std. Deviation	Min	Max
lnFDI	20.59	2.01	10.92	26.39
TaxRate	25.01	7.52	8	36
TaxAdm	62.44	16.38	3.32	100
Investor	49.12	15.24	10.00	90
Borders	59.01	20.67	1.26	100
GDPGrowth	4.16	3.56	-20.59	20.71
lnGDPPC	8.66	0.92	6.47	10.29
Inflation	5.73	6.33	-3.89	59.21
lnTradeOp	4.25	0.51	-1.74	5.30
lnInternet	0.17	2.31	-7.37	3.51
CC	-0.53	0.54	-1.67	1.02
GE	-0.45	0.56	-2.06	1.12
DB7	56.14	11.88	24.62	82.7
lnPop	16.21	1.90	11.17	21.04
Language	0.21	0.40	0	1

¹ In total, we have 925 observations, which are 304 observations for High-Income countries, and 621 observations for Low and Middle-Income countries

Table 9. List of High-Income Countries

Antigua and Barbuda	Hong Kong	Portugal
Argentina	Hungary	Qatar
Australia	Iceland	Saudi Arabia
Austria	Ireland	Seychelles
Bahamas, The	Israel	Singapore
Bahrain	Italy	Slovak Republic
Barbados	Japan	Slovenia
Belgium	Korea, Rep.	Spain
Brunei Darussalam	Kuwait	Sweden
Canada	Latvia	Switzerland
Chile	Lithuania	Trinidad and Tobago
Croatia	Luxembourg	United Arab Emirates
Cyprus	Malta	United Kingdom
Czech Republic	Netherlands	United States
Denmark	New Zealand	Uruguay
Estonia	Norway	
Finland	Oman	
France	Palau	
Germany	Panama	
Greece	Poland	

Table 10. List of Middle-Income Countries

Albania	Guatemala	Namibia
Algeria	Guyana	Nicaragua
Angola	Honduras	Nigeria
Armenia	India	Pakistan
Azerbaijan	Indonesia	Paraguay
Bangladesh	Iran, Islamic Rep.	Peru
Belarus	Iraq	Philippines
Bolivia	Jamaica	Romania
Bosnia & Herzegovina	Jordan	Russian Federation
Botswana	Kazakhstan	Samoa
Brazil	Kenya	Serbia
Bulgaria	Kiribati	Solomon Islands
Cambodia	Kyrgyz Republic	South Africa
Cameroon	Lao PDR	Sri Lanka
China	Lebanon	St. Vincent
Colombia	Lesotho	Sudan
Costa Rica	Macedonia, FYR	Suriname
Dominica	Malaysia	Thailand
Dominican Republic	Maldives	Tunisia
Ecuador	Mauritania	Turkey
Egypt, Arab Rep.	Mauritius	Ukraine
El Salvador	Mexico	Uzbekistan
Fiji	Moldova	Vanuatu
Gabon	Mongolia	Vietnam
Georgia	Montenegro	Zambia
Ghana	Morocco	
Grenada	Myanmar	

Table 11. List of Low-Income Countries

Afghanistan	Liberia	Tajikistan
Benin	Madagascar	Tanzania
Burkina Faso	Malawi	Uganda
Burundi	Mali	Yemen, Rep.
Congo, Dem. Rep.	Mozambique	Zimbabwe
Ethiopia	Nepal	
Gambia, The	Niger	
Guinea	Rwanda	

Guinea-Bissau	Senegal	
Haiti	Sierra Leone	

Table 12. List of English-speaking Countries

Australia	Ireland	Samoa
Bahamas, The	Jamaica	Singapore
Barbados	Kenya	Solomon Islands
Botswana	Kiribati	South Africa
Cameroon	Malaysia	Sri Lanka
Canada	Malta	Sudan
Ethiopia	New Zealand	Trinidad and Tobago
Fiji	Nigeria	United Kingdom
Ghana	Pakistan	United States
Guyana	Philippines	Vanuatu
India	Rwanda	Zimbabwe

Table 13. Correlation Matrix

	lnFDI	$(lnFDI)_{(t-1)}$	$(TaxRate)_{(t-1)}$	$(TaxAdm)_{(t-1)}$	$(Investors)_{(t-1)}$	$(Borders)_{(t-1)}$	GDP Growth	lnGDPPC	Inflation	lnTradeOp	lnInternet	GE	CC	DB7	lnPop	Language
lnFDI	1.000															
$(lnFDI)_{(t-1)}$	0.921*	1.000														
$(TaxRate)_{(t-1)}$	0.086*	0.085*	1.000													
$(TaxAdm)_{(t-1)}$	0.224*	0.232*	-0.195*	1.000												
$(Investors)_{(t-1)}$	0.331*	0.330*	-0.089*	0.391*	1.000											
$(Borders)_{(t-1)}$	0.342*	0.336*	-0.045	0.390*	0.388*	1.000										
GDPGrowth	0.007	-0.026	0.065	-0.137*	-0.066	-0.255*	1.000									
lnGDPPC	0.533*	0.531*	-0.238*	0.520*	0.411*	0.629*	-0.252*	1.000								
Inflation	-0.064	-0.061	0.135*	-0.246*	-0.199*	-0.412*	0.017	-0.305*	1.000							
lnTradeOp	-0.010	-0.010	-0.294*	0.296*	0.161*	0.295*	-0.024	0.306*	-0.194*	1.000						
lnInternet	0.462*	0.458*	-0.277*	0.402*	0.440*	0.665*	-0.312*	0.854*	-0.307*	0.305*	1.000					
GE	0.508*	0.506*	-0.075	0.544*	0.502*	0.692*	-0.214*	0.811*	-0.381*	0.337*	0.743*	1.000				
CC	0.382*	0.379*	-0.021	0.538*	0.431*	0.654*	-0.213*	0.710*	-0.356*	0.324*	0.629*	0.928*	1.000			
DB7	0.449*	0.452*	-0.161*	0.480*	0.517*	0.545*	-0.195*	0.697*	-0.265*	0.284*	0.694*	0.772*	0.696*	1.000		
lnPop	0.585*	0.583*	0.262*	-0.201*	0.009	-0.176*	0.156*	-0.121*	0.213*	-0.496*	-0.137*	-0.122*	-0.239*	-0.048	1.000	
Language	0.003	0.007	0.195*	0.109*	0.246*	0.013	0.079*	-0.051	0.027	-0.096*	-0.109*	0.095*	0.126*	0.055	-0.003	1.000

Note: * statistically significant at $\alpha=5$ percent,
 ** statistically significant at $\alpha=1$ percent,
 *** statistically significant at $\alpha=0.1$ percent.