

# The relevance of supply side taxation for attracting foreign direct investment to developing countries: evidence from Egypt

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## ***Abstract***

Many developing countries commonly use tax incentives as a key instrument for attracting foreign direct investment (FDI). Empirical studies have identified a causal relationship between FDI and a number of determinants including tax incentives, because they lower multinational enterprises' (MNEs) tax burden and consequently maximise their after-tax returns. Egypt is an example of a developing country that employed tax incentives through granting tax holidays to MNEs, in order to attract FDI, during the period 1974 to 2004. However, in 2005 the supply side tax policy was introduced through broadening the tax base and abolishing the bulk of tax incentives including tax exemptions. Nevertheless, in 2017 a new investment law was ratified which re-introduced tax incentives. This policy reversal raises a question about the relevance or otherwise of supply side tax policy in attracting FDI. To answer this question, we employ an econometric model to test the causal relationship between FDI and its determinants during the period 1975 to 2017. We assume that abolishing tax incentives would have a positive impact on inflow FDI. Using data from 1975 to 2017 for estimating the regression model, it is shown that there is a significant relationship between inflow FDI and implementation of supply side tax policy, while tax incentives have an insignificant effect on FDI. The result indicates that MNEs are looking for simplified tax provisions and lower tax rates, which are provided under supply side taxation. Further, the majority of MNEs are often taxed on their worldwide income in their residence countries, which indicates that they do not benefit from tax exemption. Accordingly, it is recommended that developing countries should consider broadening the income tax base and lowering income tax rates as an effective means of attracting FDI.

**Key words:** foreign direct investment, tax incentives, supply side taxation, developing countries

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## 1. INTRODUCTION

In developing countries, stimulating economic growth is a key objective for achieving many goals such as reducing poverty and unemployment rates and improving living standards. There are a number of tools to achieve this objective, and one of them is attracting foreign direct investment (FDI), which is considered an important source of international finance. The inflow of FDI plays an important role for creating new jobs through establishing new projects, developing human capabilities, improving living standards, increasing exports levels and attracting technology transfer to host countries (Organisation for Economic Co-operation and Development (OECD), 2002). These benefits motivate governments, particularly in developing countries, to design specific policies to attract FDI inflow, which includes, for example, improving business environments and providing tax incentives (Andersen, Kett & von Uexkull, 2018).

Using tax incentives to attract FDI is a common tool that many developing countries implement. Tax incentives help to minimise the cost of capital and consequently increase the after-tax profits of multinational enterprises (MNEs). There are many types of tax incentives, such as tax credits, tax holidays, tax breaks, specific tax deductions and allowances. Developing countries generally implement tax holidays or tax breaks (Abdellatif & Tran-Nam, 2016). Providing tax holidays with respect to FDI encourages many MNEs to relocate their businesses in order to access these tax benefits. Nevertheless, granting tax holidays to MNEs is costly compared with other types of tax incentives as it implies increasing the level of forgone tax revenues, which represents a form of tax expenditure (Burman, 2003). In addition, tax incentives in general, and tax holidays in particular, create economic distortion, which negatively affects investment decisions (Klemm, 2010). As a result, some countries have reconsidered the effectiveness of tax incentives, especially tax holidays, through rationalising or completely abolishing tax incentives and introducing new tax measures. In the recent study of developing countries compiled by the World Bank Group, 24% of developing countries were identified as having abolished or rationalised tax incentives during the period 2009 to 2015, which is considered an implicit implementation of a supply side taxation approach (Andersen et al., 2018).

The supply side tax policy focuses on making the tax system more efficient through cutting tax rates and broadening the tax base by eliminating tax deductions and exemptions. Many developed and developing countries employ supply side tax policy and this policy is often recommended by international financial institutions (Van Den Hauwe, 2000). In this context, a number of developing countries abolished selective tax incentives, including tax holidays, such as Indonesia in 1984 and Uganda in 1997 (Andersen et al., 2018).<sup>1</sup> Furthermore, Egypt abolished tax incentives through carrying out a radical tax reform in 2005, based on supply side tax policy (OECD, 2007). Thus, investment tax incentives were abolished and tax rates cut. This tax policy contradicts historical practices where policy-makers employed tax incentives, mainly tax holidays, as the main incentive to encourage investment in general, and to attract the FDI in particular. The idea behind using supply side tax policy is to create a simple and a neutral tax system, which aims to result in establishing more businesses and

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<sup>1</sup> The World Bank has introduced a database for developing country tax incentives, which include various tax incentives granted by developing countries. According to this database, there are three categories of developing countries, which are: (1) low-income countries, (2) lower-middle-income countries and (3) upper-middle-income countries. Egypt is one of the lower-middle income countries (Andersen et al., 2018).

encouraging businesses to comply with the tax law. Nevertheless, in 2017, the Egyptian government reintroduced tax incentives through the new Investment Law No. 72 of 2017, which provides specific tax incentives. Such changes in the tax policy raise the research question, ‘is the supply side tax policy relevant to attract FDI inflow to developing countries?’.

This study aims to address this question by: (i) discussing the conventional and supply side taxation policies to attract FDI; (ii) reviewing the determinants of FDI including the relationship between FDI and tax policy; (iii) explaining the tax policy practices in Egypt and its relationship with foreign direct investment; (iv) assessing the relevance for employing the supply side taxation to attract FDI in Egypt, and (v) suggesting specific policy recommendations. In doing so, a quantitative research method is used through developing a regression model and time series analysis. The scope of this article focuses on assessing the impact of policy based on tax incentives vs. supply side tax policy on FDI flow to developing countries through empirical study. It is not intended to examine the impact of specific types of tax incentives on FDI flow and it does not intend to examine the impact of tax policy/tax incentives on FDI flow in specific sectors or industries.

In that context, the rest of this article proceeds as follows: section 2 reviews previous research on tax incentives and FDI inflows in developing countries. Section 3 presents an overview of the history of tax incentives in Egypt. Section 4 develops the econometric model that helps to test the relationship between the tax policy and the FDI using a stepwise regression model (OLS) and time series tests and analyses the model results. Finally, section 5 presents concluding remarks and policy recommendations.

## **2. CONCEPTUAL FRAMEWORK AND LITERATURE REVIEW**

### **2.1 Conventional tax policy vs. supply side tax policy**

Attracting FDI is an important objective for developing countries. This is achieved through employing different means, including granting fiscal incentives, in order to encourage multinational enterprises (MNEs) to relocate their business activities to host countries. Fiscal incentives include direct and indirect subsidies granted by governments. The direct subsidy involves spending government revenues on specific programs, such as financial grants to private investment in specific economic sectors (e.g., subsidising energy prices, supporting research, and development (R&D) activities) to stimulate private investment in these sectors. On the other hand, the indirect subsidy is granted through the provision of tax incentives that result in forgoing an amount of tax revenue. Tax incentives can be defined as the preferential tax measures that deviate from tax norms. These special tax measures are designed to minimise the tax burden on specific business activities and MNEs in order to achieve specific economic objectives (Vermeend, van der Ploeg & Timmer, 2009). Because most governments face a revenue shortage, particularly in resource-poor countries, it is often difficult to use direct government expenditure as a tool to stimulate private investment. Consequently, most of these countries opt to grant tax incentives to private investment in general and to FDI in particular (United Nations Conference on Trade and Development (UNCTAD), 2000).

Tax incentives are broadly classified into two categories: (1) profit-based instruments, and (2) cost-based instruments. The first category includes tax holidays and preferential tax rates, which exempt generated profit from income tax and may allow carrying

forward tax losses. The second category includes granting specific tax deductions or allowances and tax credits, which minimise taxable income and consequently the tax burden (Andersen et al., 2018). Most developing countries offer a number of forms of tax incentive, with tax holidays being the most widely used instrument, for which 77% are based on location (Andersen et al., p. 75). Nevertheless, tax holidays are costly when the forgone tax revenue that results is taken into account. Furthermore, tax incentives generally have three main shortcomings: (1) inefficient use because of being granted to all types of businesses; (2) lack of transparency measures for implementation that may encourage corruption, and (3) administrative burden related to approving eligible cases, which contributes to the complexity of tax system (Anderson et al., p. 87). Because of these shortcomings, some developing countries, such as Indonesia and Uganda, either abolished or restructured their tax incentives, in order to make the tax system more efficient. As mentioned above, the abolition of tax incentives or tax restructuring, is considered a kind of supply side economics.

The supply side economic approach focuses on the important role of both capital supply and labour supply to stimulate economic growth rates. Thus, eliminating tax incentives and reducing the marginal tax rates will result in increasing the capital and labour supply thereby increasing the return on capital and compensation on working. The increase of capital and labour supply will increase the output resulting in increasing economic growth rates (Canto, Joines & Laffer, 1981). This economic policy was implemented in the United States in the 1960s and 1980s. For instance, President Reagan's tax reform in 1986 was based on the implementation of the supply side tax policy achieved through cutting tax rates, eliminating tax shelters and broadening the tax base. This tax reform resulted in minimising the tax burden on investment and simplifying tax legislation that reflect implementation of supply side tax policy (Auerbach & Slemrod, 1997). Thereafter, the International Monetary Fund (IMF) and the OECD sought the implementation of this kind of tax policy to attract FDI instead of employing tax incentives (OECD, 2010a, p. 7), which have a number of shortcomings as discussed previously.

Therefore, in this article we are concerned with understanding the relationship between FDI and taxation and seek to determine which tax policy is more effective in attracting FDI. In doing so, we review the determinants of FDI and develop an econometric model to test the relationship between FDI inflow and its determinants in the case of Egypt.

## 2.2 Tax incentives and the determinants of FDI

The review of scholarly work indicates there are two broad groups of studies that examine the relationship between FDI inflow and taxation. The first group focuses on the direct relationship between FDI and taxation, which concludes that a tax cut through using reduced tax rates has a positive impact on the FDI since it increases the after-tax profit or return on capital. Meanwhile, the second group is interested in identifying the determinants to FDI inflow in developed and developing countries (Andersen et al., 2018). Generally, these studies have determined that there are a number of economic factors influencing the FDI inflow in developed and developing countries. The determinants of FDI inflow to developed countries include market size, labour costs and corporate taxation, while the determinants to FDI inflow in developing countries include market size, labour cost, economic stability and exchange rate. However, that fact about developing countries conflicts with the practices of many developing countries which use tax incentives (e.g., tax holidays) as a main stimulus to attract FDI (Abdellatif & Tran-Nam, 2016). Therefore, some scholars have called for abolition of tax incentives,

mainly tax holidays, in order to minimise the leakage of government revenues. At the same time they call for implementing the supply side taxation for a more transparent and simple tax system.

The OECD classifies the factors influencing FDI inflow into tax and non-tax factors. The tax factors include: (1) tax incentives; (2) lower tax rate, and (3) transparency and simplicity, while non-tax factors include: (1) market size; (2) political stability; (3) availability of labour force, and (4) modern infrastructure (OECD, 2008). However, the tax factors have gained greater importance, particularly tax incentives, compared to non-tax factors. This is because the ultimate objective of investors is to minimise the tax burden which results in increasing the after-tax profit. Further, tax incentives are appealing to investors who are influenced by political objectives, which often encourage many MNEs to relocate their business to developing countries. Thus, scholars do pay more attention to examining the relationship between tax incentives and FDI inflow (Economou et al., 2017).

The impact of tax incentives on investment has been assessed by many scholars such as Shah and Slemrod (1991), Devereux and Griffith (2003), Bénassy-Quéré, Fontagné and Lahrière-Révil (2005), Beck and Chaves (2011), Becker, Fuest and Hemmelgarn (2006) and Economou et al. (2017). Shah and Slemrod (1991) conducted a study to assess the impact of income taxation on FDI in Mexico through carrying out an empirical study to test the responsiveness of the FDI inflow to income tax changes over the period 1965 to 1987.<sup>2</sup> The result of the study indicates that FDI is responsive to income tax changes, which implies that a favourable tax treatment is necessary to encourage FDI. Becker, Fuest and Hemmelgarn (2006) carried out a similar study to assess the responsiveness of FDI to the German tax reform in 2000, which introduced a tax cut and broadened the tax base. By measuring the elasticity of FDI to the tax cut, they found that the tax cut had a positive impact on FDI flow. Baccini, Li and Mirkina (2014) obtained a similar result with regard to the relationship between FDI and taxation in autonomous independent states in Russia. They found that a tax cut has a positive impact on FDI inflow.

Furthermore, tax incentives may target various business activities, or may only be provided to the FDI that are located in specific region or location, which may affect investment decisions regarding where to locate business. In this context, Devereux and Griffith (2003) studied the impact of taxation on the company decision to choose the location of its business. Taking into account that each business is concerned with profit maximisation, the after-tax profit is therefore an essential element when choosing the business location. Devereux and Griffith (2003) measured the effective average tax rates (EATR) in a number of European countries and the US, which they compared to the nominal tax rates during the period 1979 to 1999. They found that the EATR, which reflects the actual tax burden, affects companies' decision where to locate their businesses.

Other scholars have been interested in identifying all determinants, including taxation, affecting FDI inflow. These include Bevan and Estrin (2000), Alam and Shah (2013), and Arbatli (2011). Bevan and Estrin (2000) carried out a study to identify the determinants of FDI inflows to 11 countries in Central and Eastern Europe using panel datasets over 1994 to 1998. They found that, in the first level of analysis, the FDI is a

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<sup>2</sup> The FDI includes the capital flow from abroad and retained earnings of foreign companies.

function of country risk, host country market size and labour cost; while in the second level, it is a function of private sector development, industrial development, government balance of payments and corruption. Alam and Shah (2013) conducted a similar study and found that FDI inflow to nine OECD member countries is a function of market size, labour costs and quality of infrastructure. Economou et al. (2017) found that the determinants of inflow FDI in 24 OECD countries during the period 1980 to 2012 were market size, capital formation and corporate taxation. However the determinants to FDI inflow in non-OECD member developing countries were market size, labour costs and institutional variables. This indicates that factors affecting the FDI inflow to developed countries are different from those factors affecting FDI inflow to developing countries (Economou et al., 2017, pp. 537-539). Jabri, Guesmi and Abid (2013) examined the determinants of FDI inflows to the MENA region using panel data analysis during the period 1970-2010.<sup>3</sup> They found that macroeconomic factors have a significant impact on FDI inflows to MENA countries in the long run. Some of these factors have a positive impact, namely economic openness and GDP growth rates; while other factors such as economic instability and exchange rates have a negative impact.

Some scholars consider the political influence of MNEs on shaping the tax policy in developing countries. In this context, Calzolari (2004) examines the influence of MNEs on policy-makers in host countries. He finds that MNEs lobby to obtain more tax incentives through increasing the host countries shares in their businesses that enable them to receive more government subsidies, protect them from anti-dumping rules and lower their taxes. Kim and Milner (2019) show that MNEs can lobby and affect host countries' policies including income tax regulations which can be manifested through obtaining tax incentives in order to minimise their tax burden. Another dimension of tax incentives is related to the enforcement of tax incentive provisions by tax administrators. It has been argued that corruption in the tax administration influences the implementation of tax incentives as the tax administration has a discretionary power in granting them. Also, tax incentives create opportunities for corruption during the assessment of tax or resolution of tax disputes (Ajaz & Ahmed, 2010). Nevertheless, this article focuses on the tax policy aspect related to introduction of tax incentives and does not deal with enforcement of tax incentive provisions, so that corruption in the tax administration is beyond the scope of this article.

There is not much research that examines whether conventional tax incentives or supply side tax policies are more suitable to attracting FDI in developing countries. Thus, this article aims to contribute to the literature through examining the relevance of supply side taxation as an alternative to the conventional tax incentives to attracting FDI to developing countries. This is carried out by exemplifying the case of Egypt. Egypt was selected as a case study because Egypt abolished tax incentives in 2005 and implemented a supply side tax policy. However, in 2017, Egypt reintroduced tax incentives again under the new Investment Law of 2017. The following section provides an overview of the development of the tax policy in Egypt and its relationship with FDI.

### **3. AN OVERVIEW OF TAXATION POLICY RELATED TO FDI IN EGYPT**

The Egyptian investment policy employed tax incentives as one of the key instruments for attracting FDI to Egypt during the period 1974 to 2005. There were two main types

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<sup>3</sup> The MENA region refers to a group of Middle East and North African countries, which include, for example, Egypt, Algeria, Morocco, Jordan, etc.

of tax incentives: (i) tax holidays granted for a period from five to 20 years to non-free zone investment, and (ii) absolute tax exemption for investment companies established in free zones. Those incentives were granted in accordance with specific eligibility criteria, which were stipulated either by investment or by tax legislation (Abdellatif & Tran-Nam, 2016).

The eligibility criteria were determined in accordance with: (i) investment location, or (ii) investment types. Holland and Vann (1998) examined the effectiveness of these tax incentives on private investment in Egypt and concluded that investment tax incentives led to increasing private investment in the new urban communities and also encouraged the flow of FDI to specific economic sectors. However, other studies have found that there are other important factors that affect the FDI inflow rather than tax incentives, which are often charged with creating economic distortions and losses of tax revenue (Zolt, 2013). This situation compelled the Egyptian government to consider other means to encourage private investment in addition to the inflow of FDI.

In 2005, a new tax policy was introduced which was based on eliminating tax incentives, broadening the tax base and cutting marginal tax rates (the highest income tax rate was reduced from 40% to 20%) through the ratification of Income Tax Law No. 91 of 2005 (OECD, 2010a, p. 19). Accordingly, tax incentives were repealed from the investment law No. 8 of 1997. In particular, this constituted those incentives that were used to stimulate domestic investment projects and the bulk of tax incentives that were included in the abolished Income Tax Law No. 157 of 1981. However, companies established in free zones are not subject to the income tax law. Instead, they are liable to pay only 1% of their annual value added as a service fee to the General Authority for Investment (GAFI) (Abdellatif & Tran-Nam, 2016). A number of developed countries, such as the US in the 1980s and Ireland in the 1990s, implemented this type of tax policy. Furthermore, a few developing countries implemented this tax policy, such as Taiwan in the late of 1980s and Uganda in 1997 (Andersen et al., 2018).

In 2017 a new investment law was ratified (Investment Law No. 72 of 2017), which provided specific types of incentives to particular industries. These specific types of incentives include allowing a deduction of 50% or 30% of invested capital from taxable income, depending on business location. This deduction is applicable within seven years from starting the business in accordance with article 11. This type of tax incentive targets specific industries focusing on technology transfer and increasing employment.

The reintroduction of tax incentives in 2017 under the new investment law may be interpreted as a result of MNEs lobbying to minimise their tax burden as previously discussed. Nevertheless, Imam and Jacobs (2007) found that there is a high level of corruption in tax collected from international trade (Customs tariffs) compared to other taxes in the Middle East countries including Egypt. A similar conclusion was obtained by Jewell et al. (2015) about the performance of tax administrations in MENA countries as they concluded that MENA countries focus on large corporations and foreign companies through establishing large taxpayers units (Jewell et al., 2015). In 2005, Egypt established the large taxpayer office, which focuses on large corporations and foreign companies (MNEs) in order to ensure the payment of a fair tax burden. Also, in 2005, the Income Tax Law No. 91 of 2005 was introduced which abolished tax incentives as previously discussed that indicates negligible influence of MNEs in tax policy in Egypt. Another example of negligible influence of MNEs is reflected in introduction of a number of tax law amendments, which have increased the marginal tax rate from 20% to 22.5%, imposed dividends tax on domestic and foreign companies

and introduced international anti-avoidance measures targeting MNEs. These measures indicate (Income Tax No. 91 of 2005, amendments) that MNE lobbying is unlikely to affect tax policy in Egypt. There is a process for ratification of any new tax legislation including introduction or abolition of tax incentives starting from initiating new tax measures until their ratification by the Parliament, which ensures independence of tax policy-makers from any MNE lobbying.

Accordingly, the use of tax incentives for the period 1974 to 2004, abolition of them during the period 2005 to 2016 and their reintroduction in 2017, raises the issue of whether tax incentive policy is an important factor in attracting FDI inflow to Egypt. Therefore, this study uses time series data and applies an econometric model to identify the causal relationship between FDI inflow and various types of tax incentives in Egypt. Based on the model estimation, the results are analysed and policy recommendations suggested. The following section explains the methodology of assessment and the sources of data.

## **4. METHODOLOGY AND DATA**

### **4.1 Overall research methodology**

Since this study reflects the need to examine causes that influence outcomes, its research framework (or knowledge claim) is the positivist approach. While it has sometimes been argued that it is not possible to be ‘positive’ about claims of knowledge when studying the behaviour and actions of humans (Creswell, 2003, p. 7), the present study is positivist in the sense that:

- (i) we use the inflow FDI aggregate data to illustrate the trend of FDI and to test the regression model that provides evidence about the research finding and rational arguments shaping the knowledge, as the implication of this research is based on a scientific approach, and
- (ii) we seek to establish relevant propositions that explain causal relationships in an objective manner. Consistent with its positivist research framework, this study adopts a primarily quantitative method of analysis (time series and stepwise regression). Therefore, we develop an econometric model to identify the causal relationship between FDI inflow and its determinants. In particular, we apply a stepwise regression model using secondary data. More details about the scientific background of causal relation, econometric model and descriptive stats are provided below.

### **4.2 Theoretical framework**

Based on theoretical analysis and the OECD approach for identifying the determinants of FDI, the following tax and non-tax variables affect FDI flows:

1. *Taxation.* Investors are looking to maximise their profits manifested in the after-tax return on investment. It is assumed that there is a negative relationship between FDI and higher tax rates. Therefore, most developing countries provide tax incentives to attract FDI inflow. Other countries may implement supply side tax policy through cutting tax rates and broadening the tax base. This will result in a lower tax burden and a simpler tax system, which encourages FDI.



2. *Gross Domestic Product (GDP) growth rates.* Higher GDP growth rates indicate the economy is booming and GDP per capita is increasing, which leads to an increase in household expenditure.
3. *Foreign exchange (Forex).* Relative stability of exchange rates of domestic currency against foreign currencies is an important factor for foreign investors. Accordingly, continuous fluctuations in exchange rates are expected to have a negative relationship with FDI flow.
4. *Labour force participation rate.* When a country has a high rate of labour force participation, the availability of workers (labour supply) to new projects increases, which leads to a positive relationship between the inflow of FDI and labour force participation rate.
5. *Political stability (POL).* Political stability plays an important role for FDI; scholarly works identify a positive relationship between FDI and political stability.
6. *Trade openness (TROP).* Trade openness is an indicator reflecting the level of integration with the world economy through dividing the aggregate value of exports and imports on GDP. Whenever the percentage is high (or greater than 100%), this reflects a high level of openness. It is expected that trade openness will have a positive impact on FDI inflow as it enables MNEs to import their needs (inputs) or export their products (outputs) to foreign markets.

Accordingly, the FDI regression model is as follows:

$$Y_i = \alpha + \beta_t X_{it} + v_i; t = 1, 2, \dots, p \text{ and } i = 0, 1, 2, \dots, n \quad (1)$$

Where  $Y_i$  is FDI inflow and  $X_{it}$  are the FDI determinants ( $X_0, X_1, X_2, X_3, \dots etc$ ) that will be tested in the study. The model explanatory variables are:

- $X_0$ : Tax policy
- $X_1$ : CPI
- $X_2$ : The GDP growth rates
- $X_3$ : Exchange Rate
- $X_4$ : Trade openness
- $X_5$ : Labour force participation rate
- $X_6$ : Political stability

Based on the theoretical analysis and the model specification, we assume that supply side tax policy is an important factor for encouraging investment in general, and attracting FDI in particular. Therefore, the research hypothesis is:

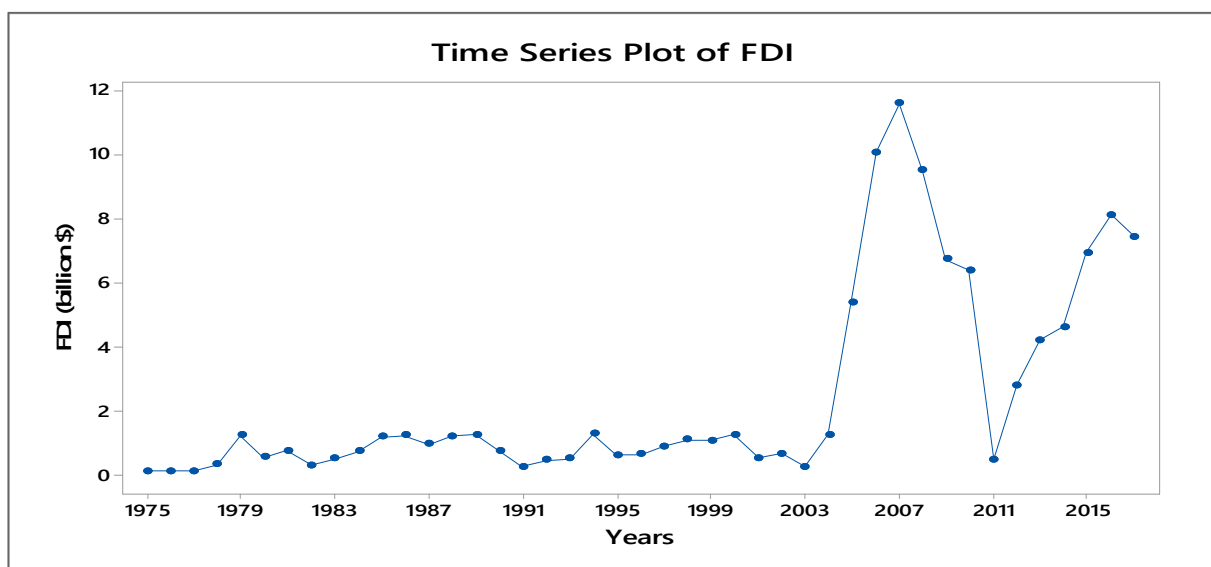
$H_0$ : introducing supply side tax policy attracts FDI to Egypt.

We test this hypothesis through: (i) using time series analysis to identify the FDI trend and related fluctuation because of the changes in tax policy, and (ii) using the abovementioned regression model and utilising FDI data obtained from the World Bank database for the period 1975 to 2017.

### 4.3 Time series analysis

The following time series plot shows the trend of FDI between 1975 and 2017 in Egypt. The following observations can be made. Minor fluctuations occurred from 1975 to 2004. From 2005, FDI underwent a significant increase and reached the highest level in 2007. Afterwards, there was a decline in the trend until 2011 before it began to increase again in 2012 and onwards until 2016. This is shown in figure 1 below.

**Fig. 1: Time Series Plot of FDI**



Source: authors' graph, based on World Bank FDI database.

Furthermore, the Zivot-Andrews test confirms that in 2005 and 2011 there were structural changes in Egypt, which affected FDI, particularly introduction of new tax policy and political changes. As a result, the FDI had significantly increased in the period 2005 to 2010 because of the introduction of supply side taxation and the elimination of tax incentives. Therefore, we can infer that elimination of tax incentives has a positive impact on FDI inflow.

The time series analysis indicates that there is a causal relation between tax policy changes and FDI as is illustrated in Figure 1. This reflects both a time order of the causal relation and existence of the relation between tax policy and FDI. Further, most countries as previously discussed change their tax policies and grant tax incentives in order to attract FDI.

### 4.4 Empirical model

In order to accept or reject the hypothesis  $H_0$ , the Least Square method is utilised to estimate the model, which will be tested using the time series data from 1975 to 2017. This period witnessed a number of tax policy changes in Egypt as follows:

- from 1975 to 2004, the implementation of a conventional tax policy, which focused on using tax incentives to stimulate FDI;
- from 2005 to 2016, the implementation of a supply side tax policy, which focused on eliminating tax incentives, broadening the tax base and lowering tax rates;
- from 2017 to date, the re-introduction of tax incentives.

Taking into account tax policy changes, we use a dummy variable for tax policy (the government opts to implement either a conventional tax policy or supply side tax policy) as follows:

- years in which the supply side tax policy is implemented will take the value of 1, while years in which the tax incentive policy is implemented will take the value of zero.

For the control variables, we use secondary data available in the World Bank database. Further, we use the World Bank Database of World Governance Indicators for the values of political stability data.

Descriptive statistics are used to describe the basic features regarding the data. Table 1 shows the mean, median and standard deviation of different variables.

**Table 1: Summary of Descriptive Statistics**

Variables	FDI	GDP	Exchange Rate	Trade	Labour Force	Political Stability
Mean	2.46	5.42	3.73	50.76	47.52	-0.68
Median	1.07	4.92	3.39	50.25	48.98	-0.55
Std. Deviation	3.14	2.53	3.34	11.17	5.49	0.42

#### 4.4.1 Regression model

##### *Normality test*

Before running the regression analysis, we check the distribution of the FDI variable. According to Table 2 below, the distribution of FDI is not normal since the p-values of normality tests are less than 5%.

**Table 2: Tests of Normality**

	Kolmogorov-Smirnov			Shapiro-Wilk		
	Statistic	DF	Sig.	Statistic	DF	Sig.
FDI	0.371	43	0.000	0.713	43	0.000

To solve this issue, we will use a log transformation and the new variable (ln (FDI)) will be used in the regression.

**Table 3: Model Summary of Dependent Variable (FDI)**

Model	R	R square	Adjusted R square	St. error of the estimate
1	0.829	0.687	0.663	0.74178

**Table 4: ANOVA**

Model		Sum of squares	Df	Mean square	F	Sig.
1	Regression	47.167	4	15.722	28.573	0.000
	Residual	21.459	38	.550		
	Total	68.626	42			

**Table 5: Model Estimation Summary (Dependent Variable: FDI Inflow)**

Variables	Coefficients B	T test	Sig.
Constant	-0.472 (0.226)	-2.09	.043
Exchange Rate	0.183 (0.045)	4.054	.000
Political stability	0.908 (0.394)	2.302	.027
Supply side tax	1.93 (0.330)	5.857	.000

Table 5 above shows only the significant variables affecting the FDI inflow, which are the exchange rate, political stability and supply side tax. The exchange rate is found to

positively and significantly affect FDI inflow with a point estimate of 0.183. The interpretation of this relationship is attributed to the significant depreciation of the Egyptian pound (EGP) value over the period 1991 to date. The EGP value has witnessed a significant depreciation since 1991 and culminated in 2016 when the exchange rate of the EGP against the US dollar depreciated around 100% (Elsherif, 2016). The depreciation of local currency encourages exports to foreign markets and consequently encourages investment in exporting industries and services (Hegazy, 2018). Therefore, this explains the positive relationship between the FDI inflow and exchange rate.

In addition, the model results indicate a positive and significant relationship between political stability and FDI inflow, with a point estimate of 0.908. This result aligns with previous studies such as Lucas (1990) and the OECD policy recommendations and practices that political stability is a critical factor for attracting FDI inflow.

Finally, the impact of the supply side tax policy on FDI inflow is found to be positive and significant with a point estimate of 1.93. The interpretation of this positive relationship is related to the nature of the supply side tax as it is based on a broader tax base and a lower tax rate, which create a simpler and neutral tax system. This tax system is based on supply side tax policy and is believed to be more competitive and attractive to many MNEs to invest in. Furthermore, MNEs often pay more attention to the simplicity of the tax system rather than tax incentives taking into account that most MNEs pay profit taxes in their home countries according to the worldwide income taxation approach (Kohlhase & Pierk, 2020). This means that their exempted income in the host country will be taxed in the home country. Therefore, providing tax incentives does not create a competitive tax system compared to the implementation of supply side taxation. Based on the above result, we accept the null hypothesis that a supply side tax policy has a positive impact on inflow FDI to Egypt.

The result of the time series analysis indicates that FDI inflow increased when the Egyptian government introduced the supply side taxation policy. Furthermore, testing of the econometric model indicates that abolishing tax incentives and cutting tax rates (implementation of supply side tax policy) has a positive impact on FDI inflow. Consequently, we can infer that a tax incentive policy is not considered a significant factor for attracting FDI compared to a supply side taxation policy.

Accordingly, we accept the study hypothesis that introducing supply side taxation had a positive impact on inflow FDI to Egypt. This result contrasts with practices of many developing countries that consider granting generous tax incentives to FDI to be an important factor for attracting FDI. The other structural change was in 2011 as FDI declined sharply because of an unstable political situation in Egypt and then resumed growth when political stability improved.

## **5. CONCLUDING REMARKS**

This article aims to identify the relevance of supply side tax policy to attract FDI. In doing so, we reviewed the scholarly works related to the determinant factors for FDI inflow, which include tax and non-tax factors. Among the tax factors are tax incentives, which are commonly applied by the majority of developing countries, while the non-tax factors include important macroeconomic and political variables such as political stability and foreign exchange.

The tax incentives take various forms such as tax holidays, tax exemption, tax credits and reduced tax rates. In addition to forgone tax revenue, tax incentives have a number of disadvantages that encourage some countries to abolish them and introduce a new tax policy known as supply side taxation, which is based on broadening the tax base through eliminating tax allowances, deductions, exemptions and lowering the tax rate, which creates a more competitive tax system. Both approaches in tax policy aim to minimise the tax burden and to increase FDI inflow. However, this situation raises a question about whether a tax incentive or supply side taxation policy is more effective for attracting FDI. In order to empirically identify which tax policy is more effective, we choose the case of Egypt, which has implemented both types of tax policies.

In this article, we used a regression model (OLS) and time series analysis to assess the impact of supply side taxation on inflow FDI in Egypt. In doing so, we reviewed the tax policy practices in Egypt, which have evolved since 1974 to date.

Egypt employed tax incentives as a key determinant for inflow FDI from 1974 to 2004. In 2005, a new tax policy was implemented through abolishing tax incentives and lowering tax rates (the supply side tax policy). The econometric model results, using the data from 1975 to 2017, show that the tax incentives policy is insignificant for attracting FDI while the supply side taxation positively and significantly affects FDI inflow in Egypt. This result draws attention for policy-makers in Egypt and other countries to designing broad-based tax legislation with a moderate tax rate. Such tax legislation will have a positive impact on the country's competitiveness and FDI inflow. Therefore, the reintroduction of tax incentives under the new Egyptian tax legislation will add to complexity of tax system and is not expected to have a significant impact on FDI inflow.

## 6. REFERENCES

- Abdellatif, M M 2009, 'Looking for efficient tax incentives to stimulate research and development and economic growth', *New Zealand Journal of Taxation Law and Policy*, vol. 15, no. 2, pp. 133-158.
- Abdellatif, M & Tran-Nam, B 2016, 'The tax policy debate regarding tax incentives in developing countries: The case of targeted tax incentives in Egypt', *Bulletin of International Taxation*, vol. 70, no. 7, pp. 379-386.
- Ajaz, T & Ahmad, E 2010, 'The effect of corruption and governance on tax revenues', *The Pakistan Development Review*, vol. 49, no. 4, pp. 405-417.
- Auerbach, A J & Slemrod, J 1997, 'The economic effects of the Tax Reform Act of 1986', *Journal of Economic Literature*, vol. 35, no. 2, pp. 589-632.
- Alam, A & Shah, S Z A 2013, 'Determinants of foreign direct investment in OECD member countries', *Journal of Economic Studies*, vol. 40, no. 4, pp. 515-527.
- Andersen, M R, Kett, B R & von Uexkull, E 2018, 'Corporate tax incentives and FDI in developing countries', in World Bank, *Global investment competitiveness report 2017/2018: Foreign investor perspectives and policy implications*, World Bank, Washington, DC, pp. 73-99.

- Arbatli, E 2011, 'Economic policies and FDI inflows to emerging market economies', IMF Working Paper WP/11/192, Washington, DC, 1 August.
- Baccini, L, Li, Q & Mirkina, I 2014, 'Corporate tax cuts and foreign direct investment', *Journal of Policy Analysis and Management*, vol. 33, no. 4, pp. 977-1006.
- Beck, S & Chaves, A 2011, 'The impacts of various taxes on foreign direct investment', University of Delaware Department of Economics Working Paper 2018-11.
- Becker, J, Fuest, C & Hemmelgarn, T 2006, 'Corporate tax reform and foreign direct investment in Germany – evidence from firm-level data', CESifo Working Paper Series No. 1722, May.
- Bénassy-Quéré, A, Fontagné, L & Lahrière-Révil, A 2005, 'How does FDI react to corporate taxation?', *International Tax and Public Finance*, vol. 12, no. 5, pp. 583-603.
- Bevan, A A & Estrin, S 2000, 'The determinants of foreign direct investment in transition economies', William Davidson Institute Working Papers Series 342, University of Michigan, October.
- Burman, L E 2003, 'Is the tax expenditure concept still relevant?', *National Tax Journal*, vol. 56, no. 3, pp. 613-627.
- Calzolari, G 2004, 'Incentive regulation of multinational enterprises', *International Economic Review*, vol. 45, no. 1, pp. 257-282.
- Canto, V A, Joines, D H & Laffer, A B 1981, 'Tax rates, factor employment, and market production', in Meyer, L H (ed), *The supply-side effects of economic policy*, Springer, Dordrecht, pp. 3-32.
- Creswell, J W 2003, *Research design: Qualitative, quantitative, and mixed methods approaches*, 2nd edn, Sage Publications, Thousand Oaks, CA.
- Devereux, M P & Griffith, R 2003, 'Evaluating tax policy for location decisions', *International Tax and Public Finance*, vol. 10, no. 2, pp. 107-126.
- Economou, F, Hassapis, C, Philippas, N & Tsionas, M 2017, 'Foreign direct investment determinants in OECD and developing countries', *Review of Development Economics*, vol. 21, no. 3, pp. 527-542.
- Elsherif, M 2016, 'Exchange rate volatility and Central Bank actions in Egypt: Generalized autoregressive conditional heteroscedasticity analysis', *International Journal of Economics and Financial Issues*, vol. 6, no. 3, pp. 1209-1216.
- Feldstein, M 1986, 'Supply side economics: Old truths and new claims', *The American Economic Review*, vol. 76, no. 2, pp. 26-30.
- Hegazy, Z S (2018, 'Exchange rate volatility and Egyptian exports', *Australian Academy of Accounting and Finance Review*, vol. 4, no. 3, pp. 100-110.
- Holland, D & Vann, R 1998, 'Income tax incentives for investment', in Thuronyi, V (ed), *Tax law design and drafting*, vol. 2, International Monetary Fund, Washington, DC, pp. 986-1020.
- Imam, P. A & Jacobs, D F 2007, 'Effect of corruption on tax revenues in the Middle East', IMF Working Paper WP/07/270, November. Available at: <https://www.imf.org/external/pubs/ft/wp/2007/wp07270.pdf>.

- International Monetary Fund (IMF) 2016, *World economic outlook April 2016: Too slow for too long*, International Monetary Fund, Washington, DC.
- Jabri, A, Guesmi, K & Abid, I 2013, 'Determinants of foreign direct investment in MENA region: Panel co-integration analysis', *The Journal of Applied Business Research*, vol. 29, no. 4, pp. 1103-1110.
- Jewell, A, Mansour, M, Mitra, P & Sdralevich, C 2015, 'Fair taxation in the Middle East and North Africa', IMF Staff Discussion Note SDN/15/16, September.
- Kim, I S & Milner, H V 2019, 'Multinational corporations and their influence through lobbying on foreign policy', forthcoming in *Multinational corporations in a changing global economy*, Brookings Institution, Washington, DC. Available at: [https://scholar.princeton.edu/sites/default/files/hvmilner/files/revised\\_manuscript\\_submission\\_2\\_marc\\_h.pdf](https://scholar.princeton.edu/sites/default/files/hvmilner/files/revised_manuscript_submission_2_marc_h.pdf).
- Klemm, A 2010, 'Causes, benefits, and risks of business tax incentives', *International Tax and Public Finance*, vol. 17, no. 3, pp. 315-336.
- Kohlhase, S & Pierk, J 2020, 'The effect of a worldwide tax system on tax management of foreign subsidiaries', *Journal of International Business Studies*, vol. 51, no. 8, pp. 1312-1330.
- Lucas, R E, Jr. 1990, 'Supply-side economics: An analytical review', *Oxford Economic Papers*, vol. 42, no. 2, pp. 293-316.
- Organisation for Economic Co-operation and Development (OECD) 2002, *Foreign direct investment for development: Maximising benefits, minimising costs*, OECD, Paris.
- Organisation for Economic Co-operation and Development (OECD) 2007, *OECD investment policy reviews: Egypt 2007*, OECD, Paris.
- Organisation for Economic Co-operation and Development (OECD) 2008, *Making reforms succeed: Moving forward with the MENA investment policy agenda*, OECD, Paris.
- Organisation for Economic Co-operation and Development (OECD) 2010a, *Business climate development strategy, phase I policy assessment: Egypt, dimension I-3, tax policy*, MENA-OECD Initiative and European Commission, January, OECD, Paris. Available at: <https://www.oecd.org/global-relations/46340489.pdf>.
- Organisation for Economic Co-operation and Development (OECD) 2010b, *Choosing a broad base – low rate approach to taxation*, OECD, Paris
- Shah, A & Slemrod, J 1991, 'Do taxes matter for foreign direct investment?', *The World Bank Economic Review*, vol. 5, no. 3, pp. 473-491.
- United Nations Conference on Trade and Development (UNCTAD) 2000, 'Tax incentives and foreign direct investment: A global survey', ASIT Advisory Studies No. 16, United Nations, New York and Geneva.
- Vermeend, W, van der Ploeg, R & Timmer, J W 2009, *Taxes and the economy: A survey on the impact of taxes on growth, employment, investment, consumption and the environment*, Edward Elgar Publishing, Cheltenham, UK.
- Zolt, E M 2013, 'Tax incentives and tax base protection issues', Papers on Selected Topics in Protecting the Tax Base of Developing Countries, Draft Paper No. 3, United Nations.