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Tax System as a Factor of Macroeconomic Dynamics

Sistema de Impuestos como factor de dinámica macroeconómica

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ABSTRACT:
This article operates the criteria of the national tax system (Thailand) in an authors' attempt to assess the stimulating effect from countrie's tax systems on its macroeconomic growth rate and also its participation in the world trade. The authors' conclusions stem from calculating the correlation between tax reforms in the country and its economic development. At this, the authors would like to emphasize on the top priority of such parameter as "taxation comfort", especially when considered in the context of global rankings. Finally, the authors prove that tax system and tax regime have enough power to stimulate or hinder economic growth as well as to increase the country's trade attractiveness in the world of today's global trade.
Keywords: tax system; tax regime; taxation comfort; world trade

RESUMEN:
Este artículo opera los criterios del sistema tributario nacional de Tailandia en el intento de los autores de evaluar el efecto estimulante de los sistemas tributarios del país sobre su tasa de crecimiento macroeconómico y también su participación en el comercio mundial. Las conclusiones de los autores surgen del cálculo de la correlación entre las reformas fiscales en el país y su desarrollo económico. Ante esto, los autores desean enfatizar la prioridad máxima de parámetros tales como "comodidad tributaria", especialmente cuando se consideran en el contexto de las clasificaciones globales. Finalmente, los autores prueban que el sistema fiscal y el régimen fiscal tienen el poder suficiente para estimular u obstaculizar el crecimiento económico, así como para aumentar el atractivo comercial del país en el mundo del comercio global de hoy.
Palabras clave: sistema tributario; régimen fiscal comodidad tributaria; comercio mundial

1. Introduction

Tax regime belongs to the most efficient instruments used by public authorities for state regulation and state stimulation of economic growth. It is also closely monitored by foreign investors and other potential business partners from overseas as tax regime is always part of trade attractiveness. International comparison of today's tax rates across countries and of the so-called "taxation comfort" has been carried out by a wide range of various international organizations, mostly for the purposes of countries' ranking. This parameter is also an important element in various aggregate indicators, such as global competitiveness, investment attractiveness and so on. Additionally to that, tax-related indicators play a highly important role in forecasting, foresighting and creation of strategic plans at various levels

Today, in the times of intense globalization and ongoing universalization of all business practices (including those directly related to fiscal regulation), the role of the tax regime as a component of economic development seems to be somewhat overestimated. Some researchers even state that tax regime has hardly any effect on country's success in global trade and/or country's competitiveness, if considered globally. All of this leads us to the following question: Are tax system and tax regime still able to boost economic growth of a country and increase its trade attractiveness?

Research Objective

Our primary objective here is to evaluate the potential effects of tax reforms on economic growth rates in the selected countries. For this, we've chosen to operate the most commonly known indicators of macroeconomic development.

In the light of this research objective, we put forward the following **tasks:**

- stemming from the determined correlation, we plan to describe the potential to boost macroeconomic growth in a range of countries and then to measure their foreign trade attractiveness in part of a tax system according to the data of "Doing Business" ranking;

- to explain why taxation parameters as represented in "Doing Business" are indeed a factor important for both exports and imports;

- to investigate whether taxation comfort really has the capacity to boost country's macroeconomic growth as compared to the influence imposed by the current tax rates (within the same country, of course);

- to describe the functionality of tax rate in stimulation of foreign trade (for both imports and exports);

- to prove empirically the reverse dependence between the level of country's economic development, its engagement in foreign trade and the degree of its taxation comfort.

2. Literature review

The role of tax regime in economic growth and other macroeconomic indicators is a "hot topic" today, mostly because these days many governments are actively revising their instruments and strategies so that to increase national competitiveness and participate more actively in global labor distribution.

Historic overview of tax policies' development in the context of changing national strategies was presented, and in the most perfect way, by H. Pemberton (2004). This author also examined the most important elements of growth policies, including all those, relatively new taxes introduced after 1960, primarily with the aim to increase government control over economic processes, labour productivity or investment growth through the changes in the structure of taxation.

S. Acharya (2015) considered the taxation as an integral element of national economic policy, especially if taken in the context of global economic liberalization. F. Widmalm (2001) used pooled cross-sectional data on the selected OECD countries to conclude that tax system affects economic growth, namely, the share of tax revenues raised due to personal income taxes has a negative correlation with the rate of economic growth. More, this author concluded that taxation progressivity is always associated with lowering economic growth.

The Correlation between economic growth rates and reforms of the tax system on a range of developing economies was also investigated by Russian author E. Balatskii (2006). This researcher explained the adverse effect of tax reforms on economic growth and then suggested own and quite curious classification of fiscal reforms, which includes such rather original categories as fiscal quasi- and pseudo-traps.

Toshiki Tamai (2005) studied the relation between income distribution and economic growth. For that, the author constructed an endogenous growth model using such variables as heterogeneous households and distributive taxation system. Focusing on the status of pre- and post-tax inequality and also on the endogenous nature of the distributive policy in its effects on wealth and economic growth, the author proves that there is a negative correlation between pre-tax inequality and economic growth rate, and then also an inverted-U relationship between post-tax inequality and economic growth.

In a relatively similar direction, Bjørn Volkerink, Jan-Egbert Sturm and Jakob de Haan (2002) were studying what could be the ideal weight of a taxation load (in their context and understanding, ideal meant being capable to provide sustainable economic growth). This team of authors explained that taxes on capital can actually hinder economic growth. Moreover, they proved that high labor taxes increased unemployment rates in some of European countries.

The issues of tax policy reforms and other public policies related to budget, investments and/or taxation have been analyzed by Gustavo A. Marrero (2010), also for a range of European countries. This author concluded that the optimal tax system gets more intense in income taxation relative to consumption taxation, while public disbursements become less intense in public investments.

Other applied studies of the role of taxation and various types of taxes in the promotion of economic growth were carried out for different countries, though the absolute majority of such studies are concentrated on the data from the USA and the EU. Many of them provide only a purely theoretical explanation for tax transformations and adaptation of taxation systems to real economic real conditions that changing in the course of time. To such studies belongs, inter alia, R. Hill (2008) who managed to prove that taxation models are adapted to the requirements of economic growth stabilization. Another noteworthy study in a similar direction is the one by G. W. Scully (2003). This author calculated the optimal tax rate for separate categories of taxes in the light of economic stimulation. Another interesting study is (Cruz A. Echevarría, 2015) who studied specifically personal income tax rates, and in a great deal of detail.

L. Sinevičienė (2016) made quite a successful attempt to reveal a correlation between tax load and economic growth dynamics in the selected European countries. This author also determined that tax loads on capital and consumption are higher in the most developed countries; at the same time, the implicit tax rate on capital is higher primarily in the countries with lower Gross Domestic Product (GDP) growth, larger public sector and serious state debt.

Finally, to the most known studies that are ranking countries by their attractiveness for doing business, for international capital and for cross-country trade are on a regular basis presented by the experts affiliated to the project titled “Doing Business”. These globally famous reports have become the statistical basis for our research as well.

3. Results

Our goal with aour research is to study the correlation between the indicators of tax reforms’ success and macroeconomic development trends for the selected countries. For this, we have used statistical data on the economic development of the selected countries, and more specifically - the World Bank data:

- GDP growth rates and also GDP growth per capita;

- export volumes growth (both relative and absolute) as well as import volumes growth (again, relative and absolute) in the selected countries.

For this analysis below we have taken the following indicators extracted from “Doing Business” reports:

- taxation system rankings of the selected countries;
- Time spent on taxation formalities in each of these country;
- How many taxation reporting periods are these in each country;
- The average tax rate (a synthetic indicator which takes into account the rates for both private

individuals and businesses).

For our analysis we took data on 134 countries of the world (countries met the following criteria: GDP in 2011 exceeded 20 billion US dollars, countries are included in the annual report of the "Doing Business" expert group, the statistical information necessary for conducting the study is available in the World Bank databases). Due to some data availability constraints, the time period of our research is 2011-2018 which should be sufficient enough for the purposes of this particular study.

The results of our correlation analysis show that the tax system ranking according to "Doing Business" indeed has some influence on GDP per capita. Moreover, this influence seems to be rather long-term and stable, not changing much through years (Table 1). Improvement of this rank per country predetermines the growth of GDP per capita (in dynamics) but this influence seems to be very much short-term, as it does not last for more than 2-3 years.

Table 1
Correlation between national tax system ranking
and GDP per capita rate (2011 to 2018)

Rank in Doing Business	**GDP per capita**						
	2012	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
2011	0,55	0,55	0,56	0,56	0,55	0,56	0,56
2012		0,55	0,55	0,55	0,55	0,55	0,55
2013			0,54	0,54	0,54	0,54	0,55
2014				0,54	0,54	0,54	0,54
2015					0,55	0,55	0,55
2016						0,55	0,55
2017							0,53

*Calculated by the authors on the data from "Doing Business" and the World Bank

Since we are taking into account the international trade indicators here, we need to note separately that national tax system ranks tend to demonstrate significantly stronger impact on export volumes, rather than on import volumes. This is yet another confirmation of a popular idea that taxation system reforms, in both developing and developed countries, have immediate impact on the performance of most successful companies rather than on population well-being and paying capacity.

Table 2
Correlation between national tax system rankings and
the volumes of exports/imports (2011 to 2018)

	Export volumes						**Import volumes**					
Rank	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
2012	0,57	0,57	0,58	0,58	0,58	0,58	-0,09	0,04	0,04	0,002	-0,03	0,16
2013		0,56	0,57	0,57	0,57	0,57	-0,06	0,06	0,06	0,004	-0,03	0,17

2014			0,56	0,56	0,57	0,56		0,05	0,06	-0,003	-0,05	0,17
2015				0,56	0,56	0,55			0,06	-0,03	-0,05	0,13
2016					0,56	0,56				-0,09	-0,1	0,07
2017						0,54					-0,1	0,04

*same data sources as in Table 1

At this, we can only conclude that despite the commonly accepted idea that the core objective of tax reforms is always about public welfare and the level of population incomes, eventually such reforms also lead to the growth of national production volumes and stronger national competitiveness in foreign trade markets.

Our next step in this analysis is to determine the influence of separate components of national tax systems (average tax rate, the number of payments per year and the time needed for tax formalities) on macroeconomic indicators of our sample countries.

For this we have calculated the correlation between key tax indicators on the one hand and key macroeconomic indicators on the other. See three tables below for full details on this correlation.

Table 3
Correlations between average tax rate, GDP per capita and national export growth (as of 2011-2018)

Tax rate	GDP per capita						Export growth					
	2013	**2014**	**2015**	**2016**	**2017**	**2018**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
2012	-0,16	-0,16	-0,17	-0,17	-0,17	-0,17	0,2	0,08	0,05	-0,05	-0,06	-0,02
2013		-0,16	-0,17	-0,17	-0,17	-0,17	0,17	0,07	0,05	-0,04	-0,01	-0,03
2014			-0,17	-0,17	-0,17	-0,18		0,08	0,04	-0,02	-0,04	-0,02
2015				-0,17	-0,17	-0,17			0,03	-0,01	-0,07	-0,09
2016					-0,16	-0,16				-0,003	-0,05	-0,04
2017						-0,15					-0,06	0,01

*data sources - same as in the previous tables above

Table 4
Correlation between number of tax payments a year, GDP per capita and national exports growth (as of 2012-2018)

tax payments	GDP per capita						Export growth					
	2013	**2014**	**2015**	**2016**	**2017**	**2018**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
2012	-0,49	-0,49	-0,49	-0,49	-0,48	-0,48	-0,31	-0,32	-0,32	-0,32	-0,31	-0,3
2013		-0,49	-0,49	-0,48	-0,48	-0,48	-0,31	-0,31	-0,31	-0,31	-0,31	-0,3

2014			-0,5	-0,49	-0,49	-0,49		-0,32	-0,32	-0,32	-0,31	-0,3
2015				-0,47	-0,47	-0,47			-0,3	-0,3	-0,3	-0,29
2016					-0,54	-0,54				-0,36	-0,35	-0,33
2017						-0,53					-0,34	-0,33

*data sources - same as in the previous tables above

At this point, we can confirm that there is low correlation between the time needed for doing taxes and the number of tax payments per year on one hand, and macroeconomic indicators on the other. Still, this correlation is anyway higher than that with tax rates.

Table 5
Correlation between the time spent on doing taxes, GDP per capita and national exports growth (2012-2018)

Time spent	GDP per capita						Export growth					
	2013	**2014**	**2015**	**2016**	**2017**	**2018**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
2012	-0,37	-0,37	-0,38	-0,38	-0,38	-0,38	-0,16	-0,17	-0,17	-0,17	-0,17	-0,16
2013		-0,38	-0,39	-0,39	-0,39	-0,39	-0,16	-0,17	-0,17	-0,17	-0,17	-0,16
2014			-0,4	-0,4	-0,4	-0,4		-0,17	-0,17	-0,18	-0,17	-0,16
2015				-0,41	-0,41	-0,42			-0,17	-0,18	-0,17	-0,16
2016					-0,44	-0,44				-0,19	-0,18	-0,17
2017						-0,44					-0,18	-0,17

*data sources - same as in the previous tables above

Therefore, our results overall prove our initial assumption that in today's conditions of the global economy's development the administrative components of tax system (the number of tax payments per year and the time spent on doing taxes) turned out to be much more stimulating for countries' economic development overall and trade relations in particular, as opposed to the influence of average tax rates.

In simple terms, this means that convenience of doing taxes is more important than tax system rigidness. And this would be quite understandable, considering the limitedness of tax rates as a fiscal policy tool. Obviously, there is always a limit, after which the tax rate cannot decrease, and this limit should be carefully considered in the course of budget discussions. In a more global context, the winner in terms of tax rate competition are very much obvious. These always will be the smallest states with their tiny social programs and limited budgets. Such countries normally do not have armies as such (therefore, zero spending on military spending). Moreover, these countries are very much interested in foreign labour force (here belong Singapore, Hong Kong, UAE, countries of the Caribbean region).

Countries that have vast territories and/or huge population numbers simply cannot afford to have really low tax rates. This means that in between their own group, they are forced to compete in other parameters, such as taxation comfort, number of various formalities, transparency of bureaucratic procedures, client support within tax administrations, fair logic of taxes' distribution in the society and so on. For obvious reasons, taxation comfort cannot have any exact threshold value, as it is nearly impossible to measure in quantitative terms. Therefore, developing countries need to focus on the qualitative side of taxation comfort provision.

Regarding the promotion of taxation comfort, we need to note another obvious correlation (Table 6): this would be two-way correlation between the number of payments a year and the level of population well-being (here, represented as GDP per capita). In other words, less tax payments can stimulate the GDP per capita growth in many countries globalwide, but this dependence works in the opposite direction as well – wealthy countries usually demonstrate much higher levels of taxation comfort. However, it would be fair to mention that the gradual welfare growth practically never leads to lower taxation. Moreover, we fail to detect any correlation between export attractiveness growth and the level of taxation comfort.

Table 6

Correlation between the number of tax payments per year, time needed for doing taxes, GDP per capita and export volumes' growth (2012 to 2018)

# of pay-ments	GDP per capita						Time spent	GDP per capita					
	2013	**2014**	**2015**	**2016**	**2017**	**2018**		**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
2012	-0,5						2012	-0,4					
2013	-0,48	-0,48					2013	-0,41	-0,41				
2014	-0,54	-0,55	-0,54				2014	-0,43	-0,44	-0,44			
2015	-0,54	-0,54	-0,53	-0,53			2015	-0,43	-0,44	-0,44	-0,44		
2016	-0,52	-0,52	-0,51	-0,51	-0,51		2016	-0,42	-0,42	-0,42	-0,42	-0,42	
2017	0,07	0,09	0,09	0,08	0,08	0,09	2017	-0,09	-0,09	-0,09	-0,09	-0,09	-0,08

*Same sources as in all previous tables

4. Conclusions and recommendations

Our statistics-based study has been aimed at determining the economic development impact factors, primarily those directly related to tax systems. The obtained results allow us to formulate the following conclusions.

Countries' rankings in "Doing Business" prove to have long-term effect on GDP growth per capita. And this effect proves to be much more stronger if export is taken into account, as compared to import.

Our second conclusion is that correlation between average tax rates and countries' economic development as well as the degree of their engagement in the world economic processes is insignificant in both short and long terms. Also, the parameters which are included into a rather abstract category known as "taxation regime comfort" (measured primarily through the time spent on tax procedures and the number of tax payments during one year) seem to be much more influential factors in what concerns macroeconomic growth, especially if compared with the influence of the average tax rate in the same country.

Thirdly, lower number of tax payments do not always mean quicker growth of GDP per capita. It can be exactly the opposite: more well-to-do countries usually have higher taxation comfort.

Generally speaking, we can state that the most influential indicator in our research is the global ranking of the country's tax system. Other two parameters - namely, average tax rate and taxation comfort level - demonstrate much lower influence.

In other words, the actual situation in a country (its taxation comfort level and the average tax rates established by its government) seems to have a much lower influence on socioeconomic performance of a country and its successes in trade and foreign relations overall, as compared to the rankings of the same countries defined by the groups of experts on the annual basis. This is yet another proof for the fact that global ranking, country's image and potential attractiveness for international actors are on the rise today. Even more, opinions provided by the internationally acknowledged experts have sufficient power to predetermine future economic development and nation's involvement in world trade and international relations overall. International rankings are also able to change the attitudes of the most influential investors and politicians, and this, in turn, would always have its impact on capital inflow/outflow, labor migration movement, international business deals, M&A in the first place and so on. Thus, international rankings have already become the factor of strong external influence on national economies, and this influence is often stronger than that of taxes, budgets, public regulation etc.

This conclusion of ours is yet another proof that the world economy today tends to be based not on facts and actual economic trends, but rather on interpretations and subjective assessments of these facts. And for this reason alone, global rankings are so popular these days, and not only among economists and politicians.

One of the serious reasons why global rankings are sometimes criticized is that their methodologies are always based on rather primitive math calculations, and the latter have very little in common with real-life economy which is far more complex and multifaceted. More, some researchers even go as far as stating that global rankings are some sort of quasi-science producing rather misleading results.

Generally speaking, economic analysis today too often stems from rather abstract, subjective and hard-to-measure notions, such as creativity, innovative skills, economic openness, emotional intelligence and so on. The list of such notion is getting only longer, thus pushing economic analysis and economic science overall away from measurable and objective categories.

Our greatest risk in this regard is that abstract phenomena, despite all their blurry features and borders, still have very real economic consequences, which are often unexpected and impossible to prevent.

On the other side, this does not mean that we should fully neglect qualitative indicators of taxation and fiscal policies. They may be abstract and hard to define, however, they are still vitally important. Here belong such parameters as degree of trade freedom, financial potential of a nation, ease of doing business, attitude to private property and so on. All these and many other categories mostly certainly require further research, within both national and international context.

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