TÁC ĐỘNG CỦA THUẾ NỘI ĐỊA ĐẾN MỨC ĐỘ MỞ CỬA THƯƠNG MẠI: BẰNG CHỨNG THỰC NGHIỆM TỪ CÁC QUỐC GIA OECD CÓ THU NHẬP CAO (2013 - 2023)

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Tóm tắt

Mở cửa thương mại luôn là một mục tiêu chiến lược của nhiều quốc gia nhằm thúc đẩy tăng trưởng kinh tế, đặc biệt là các quốc gia OECD. Trong khi chính sách thuế quan là công cụ chính để điều chỉnh các hoạt động thương mại quốc tế, thuế nội địa cũng đóng vai trò quan trọng để điều tiết. Nghiên cứu này tập trung khám phá tác động của thuế nội địa, bao gồm thuế đối với hàng hóa và dịch vụ, và thuế đối với thu nhập, lợi nhuận và lợi tức vốn đối với mở cửa thương mại của 23 quốc gia OECD có thu nhập cao trong giai đoạn 2013 - 2023. Bằng cách áp dụng các phương pháp nghiên cứu định lượng, nghiên cứu chỉ ra rằng hai loại thuế trên đều có tác động ngược chiều đến sự mở cửa thương mại. Nghiên cứu cũng đưa ra một số khuyến nghị cho chính quyền địa phương để cân bằng nguồn thu thuế nội địa và mở cửa thương mại quốc tế của các quốc gia OECD.

Từ khoá: mở cửa thương mại, quốc gia OECD, thuế nội địa, thuế hàng hóa và dịch vụ

THE IMPACT OF DOMESTIC TAXATION ON TRADE OPENNESS: EMPIRICAL EVIDENCE FROM UPPER-INCOME OECD COUNTRIES (2013 - 2023)

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Abstract

Trade openness has always been a strategic objective for many countries in order to promote economic growth especially among OECD countries. While tariff policies are the main tool to regulate cross-border trade activities, the role of domestic taxation is also indispensable. This paper conducts an empirical study on the impact of domestic taxation including tax on goods and services, and tax on income, profits and capital gains on trade openness among 23 high-income OECD nations from 2013 to 2023. By applying Ordinary Least Squares (OLS), Fixed Effects Model (FEM), Random Effects Model (REM) and Generalized Least Squares (GLS), the results indicate that both types of tax tend to have adverse effects on trade openness which provide further implications for policymakers to promote international trade. Following this investigation, this study will provide several recommendations for the local authorities to balance between domestic tax revenue and the international trade openness among upper-income OECD countries.

Keywords: domestic taxation, goods and services tax, OECD countries, trade openness.

1. Introduction

Trade openness has been a critical stimulation of economic growth in the era of globalization. It enables countries to allocate resources more efficiently, get access to new markets, and benefit from technology transfer (Frankel & Romer, 1999; Sachs & Warner, 1995). Particularly in high-income OECD nations, trade openness has supported production and consumption while also increased cross-border investment and macroeconomic integration (Lane & Milesi-Ferretti, 2008).

Taxes on products and services perform an essential role thanks to their administrative efficiency and low distortionary impacts (OECD, 2023). Similarly, taxes on income, profit, and capital gains continue to be central components of fiscal policy, and are regarded as not only revenue generators but also as tools for redistribution (Szarowská, 2014). While crucial for economic stability, both types of taxes can have unexpected consequences for a country's trade openness by determining firm cost structures and consumer purchasing power (Baunsgaard & Keen, 2010; Mehra, 2015).

This research, therefore, aims to examine the influence of both types of taxes on trade openness in 23 high-income OECD countries from 2013 to 2023. This study utilizes panel data regression and robust econometric approaches (OLS, FEM, REM, and FGLS) to provide empirical evidence on how different tax instruments affect a country's integration into the global economy. The results aim to inform policymakers of the trade-offs between fiscal sustainability and international rivalry which offer insights for developing balanced tax systems in an increasingly integrated world.

2. Literature review and Research gap

2.1. Literature review

2.1.1. Literature review regarding the relationship between taxation and trade openness

Previously, many studies examined the relationship between taxation and trade openness across multiple countries and time periods. However, most of them primarily focused on

international trade tax such as tariffs and export duties, which directly influence cross-border flows. Nevertheless, domestic taxation such as VAT, income tax is considered as a compensation for the revenue loss in the context of trade liberalization.

Regarding the findings from Baunsgaard and Keen (2010), they investigated the impact of trade liberalization on tax revenue using panel data for 117 countries over 32 years. Their study showed that while trade liberalization typically results in a decline in trade tax revenues, many countries, particularly higher-income ones, are able to compensate for these losses by strengthening domestic taxation through instruments like VAT and income taxes.

Another study from Crivelli (2016) analyzes transitional economies in Eastern Europe and North Africa. This study demonstrates that trade liberalization tends to reduce trade tax revenues, posing a potential risk to overall government revenue. The findings show substantial compensation through domestic taxation, with the Value-added tax (VAT) playing the primary role in replacing lost trade tax revenue, followed by a smaller contribution from the Personal Income tax (PIT).

More recently, a study by Ho and Tran (2022) investigates the interaction between taxation and trade openness and their joint impact on economic growth across 29 low and middle-income countries. The authors find that tax revenue positively affects economic growth, while trade openness alone tends to have a negative impact. However, the combination between tax revenue and trade openness shows a significantly positive effect, therefore, trade openness can enhance the role of taxation. The study implies that the local authority should harmonize tax policy with trade liberalization that plays a role in mobilizing revenue more effectively.

Tax on income, corporate and capital gains

The relationship between trade openness and tax on income, corporate and capital gains is often explained through its impact on price changes or economic growth. Notably, a study by Ebrill et al (1999) highlights that trade openness is linked to higher economic growth, and countries that have embraced trade liberalization tend to experience increased growth and higher income tax revenues. Additionally, Addison et al (2006) while using the gravity model, demonstrates that trade openness stimulates trade flows that contribute to economic growth. This economic growth, in turn, likely affects income tax revenue directly, as rising per capita income expands the tax base. Furthermore, Othieno et al (2011) uses regression analysis to examine the link between economic growth and taxation, finding that overall tax revenues tend to increase with higher per capita income.

Tax on goods and service

The relationship between trade openness and consumption tax is more complex than its relationship with direct taxes because it is influenced by various other factors, including the price elasticity of demand and supply for import substitutes (Addison et al, 2006). One way to understand the link between trade openness and goods and service taxes is through its effect on economic growth. Peters et al (2002) emphasizes the importance of a country's size in shaping its domestic consumption tax levels. Similarly Addison et al (2006) notes that larger countries tend to rely more

heavily on consumption taxes than smaller ones. Consequently, shifting the tax structure from trade taxes to consumption taxes may lead to fiscal challenges for developing and less developed countries with smaller domestic markets. Therefore, it is essential to carefully assess the impact of trade openness in these contexts.

2.1.2. Literature review regarding factors affecting trade openness

In addition to taxation, several studies have shown that a combination of tax policy and key macroeconomic factors plays a critical role in determining a country's level of trade openness.

One significant study by Agbeyegbe et al (2005) examines how trade liberalization and exchange rate changes affect tax revenue in Sub-Saharan Africa. The authors find that trade liberalization does not significantly impact total tax revenue, but it is associated with higher income tax revenue in some cases. This finding suggests factors such as GDP growth and inflation can significantly shape how trade liberalization affects tax revenue.

Currently, a study by Md. Rahman and Islam (2023) investigates how trade openness influences taxation in BRICS countries using panel data from 2000 to 2021. The authors examine the effects of trade freedom, trade ratio, and average tariffs on tax revenue. The findings show that trade openness positively impacts tax revenue, especially when accompanied by financial development, political stability, and GDP growth. However, inflation is found to negatively affect tax performance. While the study confirms a positive association, it acknowledges potential context-dependent variations.

2.2. Research Gap

Despite growing interest in the relationship between taxes and trade openness, some significant gaps exist in recent academic study. First of all, existing empirical work frequently focuses solely on international trade tax, without taking into account how domestic tax interacts with openness measures. In most cases, domestic taxes are just considered as effective compensation for tax revenue loss. Furthermore, trade openness is frequently viewed as an independent variable explaining growth or investment, rather than a dependent result influenced by fiscal and macroeconomic policy. As a result, there is little empirical research that directly addresses how domestic taxes impact trade openness.

3. Theoretical background & Hypothesis development

3.1. Trade openness

Baunsgaard & Keen (2010) defined trade openness as a country's ability to import and export goods and services to other countries. This allows nations to take advantage of their comparative advantages by exporting goods and services that they can efficiently produce as well as importing goods and services that they have few experiences to produce (Bowdler & Malik, 2017).

Dowrick and Golley (2004) introduced two concepts of trade openness, which are "reveal openness" and " policy openness". The former one is used in the majority of empirical studies owing to its ease to calculate and define. Mishra (2007) also defined trade openness as the sum of

imports and exports over GDP. Papers analyzing this kind of trade openness concentrate on whether the countries engaged in foreign trade have better economic performance than those which trade less.

$$Degree\ of\ openness = \frac{X + M}{GDP} * 100$$

Meanwhile, the calculation of "policy openness" is relatively difficult to conduct. This paper, therefore, will mainly use the former familiar concept of trade openness to conduct calculations. This definition will also be applied to further discuss the relationship between trade openness and other independent variables in this research. Overall, trade openness can lead to lower prices for consumers, an increase in real income and an overall increase in consumer and producer welfare (Rahman and Islam, 2023). Lane and Milesi-Ferretti (2008) also emphasized the importance of trade openness by stating that bilateral equity investment is strongly correlated with underlying patterns of trade. Investors can easily access regulatory information on markets through trade and thereby invest in foreign assets. Trade transactions may directly generate cross-border financial flows including trade credits, export insurance, payment facilitation and so on.

3.2. Independent variables

Domestic taxation is the system by which a national government collects taxes on individuals, businesses and other entities within the country's boundaries. Bird and Zolt (2008) regarded domestic taxation as a means of financing the government and reflection of the state's social and political contract. Similarly, Besley and Persson (2014) found that domestic taxation is a key indicator of state capacity. Countries with higher reliance on domestic tax revenues tend to have stronger institutions and better governance outcomes compared to those dependent on external aid or natural resource rents.

Domestic taxation includes a wide range of tax instruments, for instance income tax, value added tax, property tax, excise duties, and so forth. However, in the context of this research, developed OECD countries often decide to combine different taxes into one so that the government can easily administer and ensure the tax structure stability and clearance. This paper, therefore, aims to study two main types of domestic taxation, which are goods and services tax, and income, profit and capital tax.

3.2.1. Tax on goods and services

According to the research by Padmavathy (2020), the tax on goods and services include indirect taxes levied on many objects ranging from manufacturers and consumers. This type of tax in most countries aims to combine multiple taxes namely sales tax, excise duty tax, etc with state-level taxes like entertainment tax, entry tax, luxury tax, etc and describe them as a unified tax.
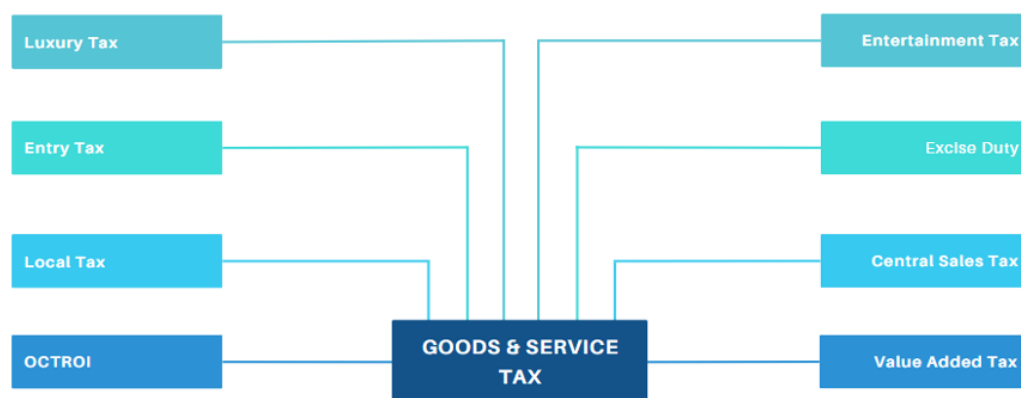
Figure 1: Some components of goods and services tax

Source: Authors' compilation

This type of tax is convenient and provides better administration efficiency for the governments. Nevertheless, it has an adverse impact as the cost of goods and services have grown (Mehra, 2015). Regarding businesses, they can mitigate the tax burden by transferring it to the consumers through increasing the price of goods and services (Jaitley, 2017), yet consumers may not be satisfied with that.

3.3.2. Tax on income, profit and capital

According to the World Bank, tax on income, profits, and capital is a direct tax imposed on the actual net income of individuals, on the profits of corporations and enterprises, and on capital gains like land, securities, and other property. Particularly, this comprises sub taxes which are personal income tax, corporate income tax and capital gains tax. Personal income tax is imposed directly on the income of a person considering the individual background of the taxpayer, which makes it an important instrument for income redistribution (Sandmo, 2001). The taxable income includes forms of income earned by individuals after deductions and exemptions.

Corporate income tax is levied by each jurisdiction on profits - the difference between enterprises' total revenue and total cost made by companies or associations. (Casell & Negri, 2021). This contributes to the budget of governments and varies significantly across countries in both rate and base definitions. Capital gains tax is applied for the profit arising from the increase in the value of assets, namely publicly-held stocks, closely-held businesses or real estate, from their acquisition price (OECD, 2025). This type of tax not only financially contributes to the government budget but also has an impact on other government policies and objectives such as economic growth, competitiveness, fiscal federalism, etc (Szarowská, 2014).

3.3. Controlling variables

The controlling variables in this paper include gross domestic product (GDP), inflation and population growth rate, owing to their prominence in empirical models analyzing trade openness and macroeconomic dynamics (Frankel & Romer, 1999; Sachs & Warner, 1995). Such variables reflect core macroeconomic dimensions: economic performance and stability, demographic trends, which are fundamental driving forces of taxation impacts.

Despite the relevance of variables like institution or trade freedom, they are not included in the model for practical and methodological factors. Initially, the institutional environment in high-income OECD countries are relatively stable, reducing their explanatory meaning in the model. Besides, trade freedom is closely correlated to the dependent variable itself (trade openness), which raises endogeneity concerns. Including such variables might result in model errors and reduce the causal interpretation of taxation's impact on openness.

3.3.1. Gross Domestic Product

Gross domestic product (GDP) is the market value of all final goods and services produced within a country in a given period of time (Mankiw, 2004). To evaluate the wealth of a nation, economists use gross domestic product. It represents, in monetary value, all goods and services which a nation produced during a specific period of time. GDP is the sum of household consumption, investments, government spending, and net export (Mankiw, 2004).

Because the amount produced and the price to evaluate the value of products varies in distinct periods, economists define another indicator called real GDP to calculate. Nominal GDP measures the amount of production of goods and services valued at current prices. Meanwhile, real GDP measures the amount produced not affected by price shifts, but the production of goods and services at a constant price. This paper utilized nominal GDP to ensure the suitability of data in different periods of time and at different prices.

3.3.2. Inflation

According to Mankiw (2009), inflation is an increase in the overall general price level of goods and services in the economy over a period of time, which constantly makes the purchasing power of the domestic currency fall. Government, therefore, will face a short-run tradeoff between inflation and unemployment.

Inflation is categorized based on different criteria. Based on the causes, inflation is divided into demand - pull and cost - push inflation. Based on the origin of occurrence, inflation is classified into domestic and imported inflation. In this paper, the authors only use the general inflation as a controlling variable.

3.3.3. Population growth rate

The population growth rate is the percentage by which a population increases or decreases over a certain period of time. This is the indicator of trends in population density or abundance, growing or declining and how fast it is shifting. (Sibly & Hone, 2002).

3.4. Research hypothesis development

3.4.1. Relationship between goods and services tax and trade openness

Goods and services taxes are regarded as moderately growth-friendly (OECD, 2023) and administratively efficient. Suresh Babu and Sridevi (2019) and Shettar (2018) noticed that these taxes can raise the cost of products and services, affecting demand and trade volumes. Jaitley (2017) underlined that enterprises often pass on the tax burden to customers, which could impact international pricing competitiveness. Crivelli (2016) also showed that VAT systems have effectively replaced trade taxes in various emerging countries, but they must be properly designed to prevent overburdening consumption and distorting trade decisions.

Based on the empirical evidence and theories synthesized, this paper develops this hypothesis:

H1: The increase of tax on goods and services will negatively affect trade openness

3.4.2. Relationship between income, private and capital tax and trade openness

Direct taxes, such as personal income tax, corporate income tax, and capital gains tax, have more complicated and diverse effects on trade openness. While they have little direct impact on the price of traded products, they do influence investment decisions, company behavior, and international capital flows. According to Sandmo (2001), income taxes might promote redistribution while discouraging labor and capital mobility, thereby indirectly restricting openness. Szarowská (2014) found that corporate income tax has a major impact on company competitiveness, with higher tax rates possibly hindering foreign direct investment and export expansion. Baunsgaard and Keen (2010) and Waglé (2011) revealed governments' efforts to replace declining trade revenues with income-related taxes and highlighted the risk of lowering competitiveness if these taxes are not coordinated with trade policy. In recent years, global minimum tax initiatives have attempted to standardize corporate tax systems to eliminate detrimental tax competition. This transition might help to stabilize trade conditions by guaranteeing tax uniformity between nations (OECD, 2024).

Based on the empirical evidence and theories synthesized, this paper develop this hypothesis:

H2: The increase of tax on income, private and capital gains will negatively affect trade openness

3.4.3. Relationship between GDP and trade openness

Classical and neoclassical economic theories state that open trade positively contributes to a country's economic performance, which is normally revealed through GDP. Dollar and Kraay (2003) found that countries that adopted more open trade policies experienced higher growth rates than those that remained protectionist. Similarly, Frankel and Romer (1999) demonstrated a strong relationship between trade openness and GDP across countries. Sachs and Warner (1995) demonstrated that open economies expand quicker than closed ones, particularly in the context of emerging nations entering the global marketplace. These findings suggest that greater integration into global markets enables economies to further access markets, allocate resources efficiently, and increase FDI, all of which contribute to economic growth.

After synthesizing previous studies, this paper proposes a hypothesis:

H3: The increase of GDP will positively affect trade openness

3.4.4. Relationship between inflation and trade openness

According to Romer (1993), greater trade openness is often associated with lower inflation rates. This derives from the idea that opener economies are more exposed to global competition, which can restrain domestic firms from raising prices excessively. Moreover, access to cheaper imported goods can reduce the cost of consumption and production, contributing to downward pressure on the overall price level. Rogoff (1985) showed economies that are more open tend to have less inflation. Similarly, Terra (1998) emphasized that openness discourages inflationary financing by reducing the inflation tax base and increasing the cost of high inflation in open markets. According to 'new growth theory', openness is likely to affect inflation through its likely effect on output (Jin, 2006).

Given the supportive evidence, this study proposes q hypothesis:

H4: The increase of inflation will negatively affect trade openness

3.5.6. Relationship between population growth and trade openness

Trade openness, according to previous literature, can both directly and indirectly influence population growth. Open economies often experience structural shifts that affect demographic status, such as shifts in fertility rates, urbanization, and changes in health and education outcomes (Galor and Weil, 2000). These factors can influence population dynamics over time. From an economic development perspective, trade openness can stimulate jobs, hence raise incomes and offer access to goods and services, all of which can contribute to declining fertility rates as observed in many developing countries transitioning through the demographic transition model (Todaro and Smith, 2020). Moreover, trade liberalization is frequently associated with greater investment in human capital, which have been empirically linked to slower population growth (World Bank, 2018). Despite the limited studies directly stating how the change in population growth will affect trade openness, this paper, however, propose a hypothesis based on the synthesized research that:

H5: The increase of population growth rate will negatively affect trade openness

4. Research methodology

4.1. Proposed model

Based on some theories and the prior studies, in order to clarify the impact of different taxes on trade openness among OECD countries, we propose a research model as follow:

$$log(OP) = \beta_0 + \beta_1 GST + \beta_2 IPCT + \beta_3 log(GDP) + \beta_4 log(INF) + \beta_5 POP + e$$

or

$$lop = gst + ipct + lgdp + linf + pop + e$$

In which:

- *lop*: The natural logarithm of trade openness

- *gst*: Tax on good and services as a percentage of revenue

- *ipct*: Tax on income, profit and capital gains as a percentage of revenue

- *lgdp*: The natural logarithm of GDP

- *linf*: The natural logarithm of inflation rate

- *pop*: The population growth rate

- β_0 : Estimated free coefficient

- $\beta_1, \beta_2, \beta_3, \beta_4, \beta_5$: Estimated regression coefficient of the independent variables

- *e*: error term (unobserved factors that are not captured by the model)

We applied a logarithmic transformation to the Trade Openness, GDP and Inflation rate. Therefore, this study can explore potential non-linear relationships between the independent and dependent variables. This log transformation of the variable enables the interpretation of coefficients in percentage terms.

4.2. Data Sampling

Data was collected across 23 highest-income countries within the OECD region during the period from 2013 to 2023. The initial sample has 253 observations (23 countries over 11 years). However, due to missing data for certain control variables, the final sample includes only 229 observations. Most of the data are collected from the World Bank Database (2025), International Monetary Fund. The data collected is panel data.

Table 1. Variables description, symbols and sources

Variables	Symbols	Unit	Source
Trade openness	OP	%	World Bank
Tax on goods and services	GST	%	IMF, World Bank
Tax on income, profits and capital gains	IPCT	%	IMF, World Bank
Gross Domestic Product	GDP	Current USD	World Bank
Inflation rate	INF	%	World Bank
Population growth rate	POP	%	World Bank

4.3. Research methodology

Before testing the model, the data was processed to ensure its accuracy and stability. The cleaning process involved applying logarithmic transformations to some variables including in order to standardize and stabilize the distribution of skewed data.

This study uses descriptive statistics to summarize the characteristics of each variable in the model and applies correlation analysis to identify any linear relationships between variables which will help to avoid the probability of multicollinearity problems. The analysis is carried out using three econometric models: ordinary least squares (OLS), fixed effects model (FEM), and random effects model (REM). Model selection is based on the results of the Breusch-Pagan test and the Hausman test. Ultimately, FEM is the most appropriate choice for estimation of this model.

The multicollinearity issue is examined by using variance inflation factors (VIF). Furthermore, the Wald test is applied to test for heteroskedasticity, while the Wooldridge test is used to detect serial correlation in the panel data. A Feasible Generalized Least Squares (FGLS) method is utilized to address those errors. Finally, we will discuss the overall results, compare them with previous studies to assess their consistency and efficiency, thereby coming to a conclusion about their meaning.

5. Results analysis

5.1. Descriptive statistics and correlation analysis

The descriptive statistics table below summarizes the detailed overview of the variables used in the analysis. The table reports the mean, maximum, and minimum values for each variable, highlighting their distribution and range.

Table 2. Descriptive statistics

Variable	Observation	Mean	Std. Dev.	Min	Max
lop	253	-.354596	.4375946	-1.61873	.652306
gst	244	29.2573	9.345706	1.89867	62.128
ipct	244	31.27141	12.58783	14.3254	67.8574
lgdp	253	26.9793	1.368869	23.5036	30.9532
linf	239	.8798431	1.115736	-3.28303	4.28095

Variable	Observation	Mean	Std. Dev.	Min	Max
pop	253	.8031974	.6606876	-1.25989	2.92688

Source: Author's calculation

The correlation matrix table below reveals that independent variables exhibit weak to moderate correlations with the dependent variable (all coefficients are below 0.35) which present low levels of linear associations. Regarding the correlation between independent variables, their coefficients are all notably less than 0.6 which is still within acceptable range.

Table 3. Correlation Matrix

	lop	gst	ipct	lgdp	linf	pop
lop	1.0000					
gst	0.2941	1.0000				
ipct	-0.3478	-0.3818	1.0000			
lgdp	-0.3018	-0.5591	0.3888	1.0000		
linf	-0.1316	0.1486	-0.0105	-0.0880	1.0000	
pop	-0.2109	0.1753	0.2007	-0.3119	0.1822	1.0000

Source: Author's calculation

5.2. Diagnosis tests and regression results

The analysis starts by estimating the model using three approaches: Ordinary Least Squares (OLS), Fixed Effects Model (FEM), and Random Effects Model (REM). Among the initial estimation techniques, the Fixed Effects Model (FEM) is determined to be the most suitable, based on the results of the Hausman test (Prob>chi2 = 0.0000) and the Breusch-Pagan test (Prob>chibar2 = 0.0000).

Table 5. Appropriate model selection

Test	Prob > chi²	Conclusion
Breusch and Pagan Lagrangian multiplier test	0.0000	The REM model is more appropriate than the Pooled OLS mode
Hausman test	0.0000	The FEM model is more appropriate than the REM model

Source: Author's calculation

Multicollinearity was evaluated by using the variance inflation factor (VIF), with all values falling below 2 and an average of 1.43, well below the critical threshold of 10. Therefore, no significant multicollinearity issues among variables in the model.

Table 6. Multicollinearity detection

Variable	VIF	1/VIF
lgdp	1.76	0.568912
gst	1.56	0.641614
ipct	1.44	0.694435
linf	1.32	0.755549
pop	1.05	0.755549
Mean VIF	1.43	

Source: Author's calculation

The Modified Wald test presents a p-value of 0.0000, indicating the presence of heteroskedasticity. Similarly, the Wooldridge test reports a p-value of 0.0001, suggesting significant autocorrelation in the panel data. Therefore, the proposed model exhibits both heteroskedasticity and autocorrelation issues.

Table 7. Error tests

Test	Prob > chi²	Conclusion
Modified Wald test	0.0000	heteroskedasticity
Wooldridge test	0.0001	autocorrelation

Source: Author's calculation

In order to remedy the identified errors, the Feasible Generalized Least Squares (FGLS) regression was applied which enables the model to account for both problems while maintaining the reliability and precision of the parameter estimates. The final results of the FGLS regression are displayed in the table below.

Table 8. FGLS regression result

lop	Coef.	Std. Err.	z	P>z	[95% Conf. Interval]	
gst	-0.0068523	0.0023315	-2.94	0.003	-0.0114221	-0.0022826
ipct	-0.0064035	0.0018132	-3.53	0.000	-0.0099574	-0.0028496
lgdp	0.0058519	0.020931	0.28	0.780	-0.0351722	0.0468759
linf	0.0139526	0.009455	1.48	0.140	-0.004579	0.0324841
pop	-0.0304048	0.021895	-1.39	0.165	-0.0733182	0.0125086
_cons	-0.1585537	0.5808818	-0.27	0.785	-1.297061	0.9799538

Source: Author's calculation

Regarding independent variables, a 1% rise in tax on goods and service (gst) will lead to 0.0068% decrease in the trade openness. This supports Hypothesis 1, proving that goods and services tax contributes negatively to the trade openness, consistent with the findings from Suresh Babu and Sridevi (2019) and Shettar (2018). Similarly, tax on income, profits and capital gains

(ipct) also suggests a negative effect with 1% increase representing 0.0064% drop in trade openness. This result strongly supports Hypothesis 2, confirming the role of this kind of tax in promoting trade activities in a country which is in accordance with the findings from Sandmo (2001), Szarowská (2014)

For control variables, the natural logarithm of GDP (lgdp) presents a positive relationship with trade openness, however, the p-value of 0.780 indicates a statistically insignificant effect. The natural logarithm of inflation rate (inf) demonstrates the similar pattern with a positive sign but p-value of 0.140 suggests that this effect is not statistically significant. Last but not least, the population growth rate (pop) yields a negative coefficient of -0.0304 with a p-value of 0.165, further indicating a lack of statistical significance.

6. Discussions and policy implications

6.1. Result discussions

Although the marginal effect sizes (-0.0068 and -0.0064, respectively) appear to be small, they have a huge impact, particularly in the context of large trade volumes in developed economies. For instance, a 1% point increase in IPCT leads to an estimated 0.0064% reduction in trade openness. In absolute terms, for countries like Germany or the United States which have annual trade volumes exceeding trillions of USD - even this marginal decline may reflect billions of dollars missing in trade activities.

Goods and services tax has a negative effect on trade openness. This final tax on consumption is often used to neutralize the production process and international trade. It is often considered a relatively growth-friendly tax. In reality, the average Goods and Services Tax across OECD countries has increased slightly from 19.2% in 2022 to 19.3% in 2024 (OECD, 2024). Such a moderate tax increase can be seen as a positive sign, helping countries to neutralize the effects on trade openness. However, if an increase in goods and services tax is not offset by other trade-friendly policies such as reductions in other taxes or regulatory burdens, it may reduce a country's competitive advantage in international trade.

Additionally, the findings highlight a negative impact of income, profit, and capital gains taxes on trade openness. The analysis reveals that an increase in these taxes leads to the decline in trade openness. This finding is particularly relevant in the context of global corporate tax trends. Across OECD countries, statutory CIT rates have witnessed a decline over recent decades and stabilized in recent years since 2018. This stable rate is attributed to the introduction of the Global Minimum Tax, leading to a reduction in competitive pressure and promoting trade openness. This international initiative has helped to create a fair market, reducing the incentive for countries to undercut each other on corporate taxes and potentially promoting more stable conditions for trade and investment.

In contrast, although GDP, logarithms of inflation, and population growth are theoretically expected to influence trade openness, the results indicate that they do not exhibit statistical significance in the model. One possible reason is the nature of trade openness in this study which

is measured as the ratio of total trade - which reflects a country's degree of integration into global trade rather than the absolute size of its economy. Therefore, logarithms of GDP may not be a reliable explanatory variable for openness.

Similarly, inflation does not have a direct and consistent impact on trade openness. Its effects are often transmitted indirectly through exchange rate adjustments, investment costs, or changes in consumer and producer expectations (Fischer, 1993). Regarding population growth, while it influences the size of domestic markets, it does not necessarily correspond to a country's trade engagement, particularly in developing economies where high population growth may coexist with protective trade policies.

6.2. Policy implications

Governments in a global economy commonly impose tariffs to manipulate international trade in their favor. However, this paper has shown that the domestic taxation including higher tax on consumption, income, and capital can hinder trade openness. Therefore, the government can be flexible with indirect and direct taxes to help balance internationalization. At the same time, it remains crucial to promote transparency, improve tax compliance, and uphold commitments to international tax and trade standards.

For OECD countries and other developed economies, the implications are particularly relevant given their complex and mature tax systems. These countries should explore tax reforms that reduce distortions in economic behavior while preserving fiscal sustainability. For instance, a shift toward more efficient consumption-based taxes (such as value-added tax, or VAT), with appropriate safeguards for equity, could reduce the adverse effects of taxation on trade volumes and competitiveness.

Moreover, developed countries should ensure better alignment between tax and trade policy. Often, tax reforms are undertaken independently of trade strategy, leading to unintended conflicts. Enhanced coordination across ministries especially between finance and trade authorities can help avoid policies undermining each other. In this regard, OECD mechanisms such as the Inclusive Framework on BEPS provide valuable platforms for cooperation.

Finally, OECD countries play a leadership role in shaping global norms. As such, they should continue to support multilateral dialogue on tax and trade interactions and promote fair, cooperative international standards that prevent harmful tax competition while fostering open markets.

7. Conclusion, Limitation and Future research direction

7.1. Conclusion

This study has investigated the impact of domestic taxation, specifically taxes on goods and services, as well as income, profits, and capital gains on trade openness across 23 high-income OECD countries from 2013 to 2023. The findings demonstrate that both types of taxes are negatively associated with trade openness, supporting the hypotheses that domestic tax burdens can act as barriers to international trade. While the effects are relatively small in magnitude, they

are statistically significant and carry meaningful implications for policymakers seeking to foster open, competitive economies.

7.2. Limitation

Several limitations should be acknowledged. First, this study measures trade openness using the trade-to-GDP ratio, which albeit widely used, captures only one dimension of openness. It omits qualitative and policy-based aspects of trade integration, such as tariff, non-tariff barriers, and participation in free trade agreements, which also significantly influence a country's trade openness.

In addition, it does not fully consider the differences in tax systems across countries. For example, countries like France, Belgium, and Denmark have relatively high tax burdens, while others like Ireland, Switzerland, and the Netherlands have more business-friendly, lower-tax environments. Grouping countries based on these differences could help researchers explore whether the impact of domestic taxation on trade openness is stronger or weaker depending on a country's overall tax regime.

Lastly, the study does not take into account the quality of national institutions, which may play a crucial role in how tax policies are implemented and enforced. Variables such as government effectiveness, rule of law, and regulatory quality - could help capture the broader governance context in which tax decisions are made.

7.3. Future Research Direction

To build on this study, future research should aim to refine the measurement of trade openness by including tariff and non-tariff indicators, trade policy indices, or even qualitative measures of regulatory trade openness. In addition, greater attention should be paid to the interaction between taxation and specific trade policy instruments namely export incentives, tax treaties, and customs proc namely, which could reveal more nuanced effects. Last but not least, future research could examine how tax regimes shape the impact of domestic taxation on trade openness by comparing high-tax countries with low-tax ones.

Reference

Addison, T. and Levin, J. (2006) Tax Policy Reform in Developing Countries.

Agbeyegbe, T.D., Stotsky, J. and WoldeMariam, A. (2006). Trade liberalization, exchange rate changes, and tax revenue in Sub-Saharan Africa. *Journal of Asian Economics*, 17(2), pp.261–284.

Baunsgaard, T. and Keen, M., 2005. Tax revenue and (or?) trade liberalization (Working Paper). *Washington: Fondo Monetario Internacional. Recuperado de: http://www. imf. org/external/pubs/ft/wp/2005/wp05112. Pdf.*

Baunsgaard, T. and Keen, M. (2010). Tax revenue and (or?) trade liberalization. *Journal of*

Public Economics, 94(9-10), pp.563–577.

Besley, T. and Persson, T., 2014. Why do developing countries tax so little?. *Journal of economic perspectives*, *28*(4), pp.99-120.

Bird, R.M. and Zolt, E.M., 2008. Tax policy in emerging countries. *Environment and Planning C: Government and policy*, *26*(1), pp.73-86.

Crivelli, E., 2016. Trade liberalization and tax revenue in transition: an empirical analysis of the replacement strategy. *Eurasian Economic Review, 6*, pp.1-25.

Cagé, J. and Gadenne, L., 2018. Tax revenues and the fiscal cost of trade liberalization, 1792–2006. *Explorations in Economic History*, *70*, pp.1-24.

Diamond, P. and Mirrlees, J. (1971). Optimal Taxation and Public Production I: Production Efficiency. *Source: The American Economic Review*, [online] 61(1), pp.8–27.

Dollar, D. and Kraay, A., 2003. Institutions, trade, and growth. *Journal of monetary economics*, *50*(1), pp.133-162.

Dowrick, S. and Golley, J., 2004. Trade openness and growth: who benefits?. *Oxford review of economic policy, 20*(1), pp.38-56.

Frankel, J.A. and Romer, D. (1999). Does Trade Cause Growth? *The American Economic Review*, [online] 89(3), pp.379–399.

Fischer, S. (1993). The role of macroeconomic factors in growth. *Journal of Monetary Economics*, 32(3), 485–512.

Galor, O. and Weil, D.N. (2000). Population, Technology, and Growth: From Malthusian Stagnation to the Demographic Transition and Beyond. *American Economic Review*, 90(4), pp.806–828.

Gnangnon, S.K. and Brun, J.F., 2019. Trade openness, tax reform and tax revenue in developing countries. *The World Economy*, *42*(12), pp.3515-3536.

Jin, J.C., 2006. Can openness be an engine of sustained high growth rates and inflation?: Evidence from Japan and Korea. *International Review of Economics & Finance*, *15*(2), pp.228-240.

Lane, P.R. and Milesi-Ferretti, G.M. (2008). International Investment Patterns. *Review of Economics and Statistics*, 90(3), pp.538–549.

Longoni, E., 2009. Trade liberalization and trade tax revenues in African countries. *Working Paper Dipartimento di Economia Politica, Università di Milano Bicocca; n. 158*.

Mehra, P., 2015. Modi govt. 's model for GST may not result in significant growth push. *The Hindu*.

Mishra, P. (2006). Emigration and Brain Drain: Evidence From the Caribbean. *IMF Working Papers*, 06(25), p.1.

Moller, L., 2016. *Tax revenue implications of trade liberalization in low-income countries* (No. 2016/173). WIDER Working Paper.

OECD. (2025). *Taxing Capital Gains*. [online] Available at: https://dx.doi.org/10.1787/9e33bd2b-en.

Othieno, L. and Shinyekwa, I. (2011). Trade, Revenue And Welfare Effects Of The East African Community Customs Union Principle Of Asymmetry On Uganda: An Application Of Wits-Smart Simulation Model. doi:https://doi.org/10.22004/ag.econ.150480.

Padmavathy, C., 2020. Goods and services Tax (GsT): an ex Tension To Theory of planned behaviour. *Global Management Review, 14*(1), pp.1-8.

Peters, A., Secretariat, C.A.R.I.C.O.M. and Guyana, S.A. (2002) The Fiscal Effects of Tariff Reduction in the Caribbean Community.

Rahman, M.M. and Islam, M.E., 2023. Does trade openness affect taxation? Evidence from BRICS countries. *Millennial Asia*, p.09763996231199310.

Rodrik, D., 1998. Why do more open economies have bigger governments?. *Journal of political economy, 106*(5), pp.997-1032.

Rogoff, K., 1985. The optimal degree of commitment to an intermediate monetary target. *The quarterly journal of economics*, *100*(4), pp.1169-1189.

Romer, D., 1993. Openness and inflation: theory and evidence. *The quarterly journal of economics*, *108*(4), pp.869-903.

Sachs, J.D. and Warner, A. (1995). Economic Reform and the Process of Global Integration. *Brookings Papers on Economic Activity*, 1995(1), p.1.

Shettar, R.M., 2018. Impact of goods and service tax on the Indian economy. *IOSR Journal of Business and Management (IOSRJBM)*, *22*(4), pp.1-7.

Suresh Babu, G. and Sridevi, K. (2019). Impact of GST (Goods and services tax) on consumers. ~ *39 ~ International Journal of Financial Management and Economics*, [online] 2(2), pp.39–43.

Szarowská, I., 2014. Personal income taxation in a context of a tax structure. *Procedia Economics and Finance*, *12*, pp.662-669.

Tanzi, V. (1989). The Impact of Macroeconomic Policies on the Level of Taxation and the Fiscal Balance in Developing Countries. *IMF Staff Papers*, [online] 1989(003). doi:https://doi.org/10.5089/9781451973037.024.A005.

Terra, C.T., 1998. Openness and inflation: a new assessment. *The quarterly journal of economics*, *113*(2), pp.641-648.

Todaro, M.P. and Smith, S.C., 2020. *Economic Development.* 13th ed. Harlow: Pearson.

Waglé, S., 2011. Coordinating tax reforms in the poorest countries: Can lost tariffs be

recouped?. *World Bank Policy Research Working Paper*, (5919).