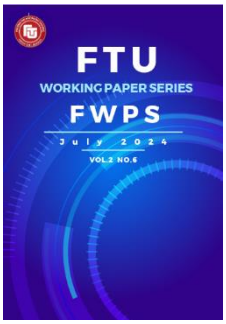

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ẢNH HƯỞNG CỦA THUẾ ĐẾN BẤT BÌNH ĐẲNG THU NHẬP TẠI CÁC NƯỚC APEC TỪ NĂM 2010 ĐẾN 2020

Hà Đan Thảo[1], Đặng Lê Hằng, Nguyễn Kim Ngân, Lê Phương Thu

Sinh viên K60 CLC Kinh tế đối ngoại – Viện Kinh tế và Kinh doanh quốc tế

Trường Đại học Ngoại thương, Hà Nội, Việt Nam

Nguyễn Thu Hằng

Giảng viên Viện Kinh tế và Kinh doanh quốc tế

Trường Đại học Ngoại thương, Hà Nội, Việt Nam

Tóm tắt

Trong bối cảnh kinh tế hiện nay, bất bình đẳng thu nhập là một nhân tố dai dẳng ảnh hưởng đáng kể tới nền kinh tế của các quốc gia. Tiêu biểu như các quốc gia thuộc khu vực APEC - hàng năm chỉ số GINI cung cấp luôn thể hiện mức độ chênh lệch về thu nhập giữa các cá nhân. Chính sách thuế là phương pháp các quốc gia tập trung để giải quyết vấn đề trên. Tuy nhiên chính sách thuế có hoạt động hiệu quả hay không thì chưa có dẫn chứng cụ thể đối với các nước thuộc khu vực trên. Chính vì vậy nghiên cứu này tập trung vào phân tích tác động của thuế lên bất bình đẳng thu nhập tại khu vực APEC, nhằm cung cấp các đánh giá về bất bình đẳng thu nhập ở các quốc gia là cao hay thấp. Phương pháp nghiên cứu định lượng tập trung vào việc phân tích số liệu từ các nhân tố như dân số, tỷ lệ thất nghiệp, thu nhập bình quân đầu người, tỷ lệ lạm phát, phần trăm tổng thuế trên GDP và kết hợp những bài nghiên cứu trước. Kết quả phân tích sẽ giúp xác định những yếu tố trên tác động lên chỉ số GINI tại các quốc gia như thế nào, từ đó đề xuất các giải pháp cụ thể nhằm cải thiện chính sách thuế để phục vụ nhu cầu phát triển.

Từ khóa: chỉ số gini, apec, bất bình đẳng thu nhập, thuế

IMPACT OF TAXATION ON INCOME INEQUALITY IN APEC COUNTRIES FROM 2010 TO 2020

Abstract

[1] Tác giả liên hệ: k60.2111110250@ftu.edu.vn

In the current economic context, income inequality remains a persistent factor significantly impacting the economies of various nations. This is especially evident in APEC countries, where the annual GINI index consistently reflects the disparity in income among individuals. Tax policy is a primary method employed by nations to address this issue. However, the effectiveness of tax policies in mitigating income inequality in these countries has yet to be concretely demonstrated. Therefore, this study focuses on analyzing the impact of taxes on income inequality within the APEC region, aiming to provide evaluations on whether income inequality in these nations is high or low. The quantitative research method centers on analyzing data from factors such as population, unemployment rate, gross domestic product, inflation rate, and the percentage of total tax revenue on GDP, along with reviewing previous studies. The analysis results will help determine how these factors influence the GINI index in different countries, thereby proposing some implications to improve tax policies to government in APEC countries and also in Vietnam to meet development needs.

Keywords: gini index, apec, income inequality, taxation

1. Introduction

Income inequality remains a persistent challenge across the globe, encompassing both developing and developed nations. Within the Asia-Pacific Economic Cooperation (APEC) region, the GINI index, as provided by the World Bank, consistently reflects substantial income disparities. Recognizing that income inequality hampers economic and social progress, leading to repercussions like social injustice, diminished economic efficacy, and political and social turmoil, governments within APEC nations actively seek measures to address this issue. Tax policies emerge as a crucial instrument in this pursuit, offering potential avenues to mitigate income inequality. However, formulating effective tax policies demands a profound comprehension of how taxes influence income distribution and social equity. Despite numerous studies exploring this subject, a dearth of empirical evidence persists concerning the precise impact of taxes on income inequality within APEC countries. Existing research often prioritizes factors such as education policies, labor regulations, or other economic determinants, relegating the role of tax policies to a secondary position. Hence, there exists a pressing need to delve deeper into the specific implications of tax policies on income inequality within the APEC region.

Recognizing the significance of taxation's influence on the GINI coefficient within APEC nations, we chose to research with a specific 10-year timeline with the topic ***"The impact of taxation on Income Inequality in APEC countries from 2010 to 2020".*** Income inequality is a persistent challenge in the APEC region, with significant variations across member economies. This disparity poses risks to social cohesion and sustainable economic growth. Taxation, as a core instrument of fiscal policy, has the potential to mitigate income inequality through both revenue generation and redistribution. This study aims to rigorously evaluate the impact of taxation on income inequality within APEC countries, providing evidence-based insights for policymakers striving to design equitable and effective tax systems.

2. Literature Revie

2.1. Prior Research

Taxation policies are fundamental to the socio-economic development of countries worldwide, particularly within the Asia-Pacific Economic Cooperation (APEC) region. With its diverse array of economies, ranging from developed nations to emerging markets, the APEC region presents a rich landscape for studying the effects of taxation on income distribution. This literature review aims to provide insights into the complex relationship between taxation and income distribution across APEC countries.

The review encompasses a range of factors including tax progressivity, incidence, policy design, and enforcement mechanisms, with a focus on specific countries within the APEC region.

In the United States, research by Saez and Piketty (2003) has highlighted the redistributive effects of progressive taxation, with higher tax rates for wealthier individuals contributing to a more equitable income distribution. Similarly, in the United Kingdom, analyses by Atkinson and Piketty (2007) underscore the importance of progressive tax policies in reducing income inequality.

In Vietnam, taxation policies have been identified as significant determinants of income inequality. Nguyen (2020) analyzed the redistributive effects of Vietnam's tax system, highlighting the importance of progressive taxation in narrowing income disparities.

In their 2020 study, Lustig and Wang conduct a detailed examination of the impact of taxation on income inequality and poverty dynamics in China. The authors analyze how specific tax policies have influenced overall income distribution and poverty rates, paying close attention to variations between rural and urban areas and across different economic regions. Their research reveals that certain taxes, such as personal income tax and social security contributions, have been effective in reducing inequality across various demographic groups and geographic locations. However, the study also highlights the unequalizing effect of consumption taxes, which disproportionately burden certain segments of the population. While taxation has contributed to poverty reduction in urban areas, it has inadvertently increased poverty rates in rural regions and across different economic zones. These findings underscore the importance of targeted tax reforms to address specific inequalities and alleviate poverty in China.

In addition, the design of tax policies significantly affects overall welfare and income distribution within APEC countries. In Russia, research by Tanzi and Zee (2000) has examined the challenges of tax policy implementation and its impact on income inequality, particularly in the context of tax evasion and enforcement issues. Analyses by Bahl and Bird (2008) have focused on the effectiveness of tax reforms in promoting equity and economic development, highlighting the importance of balancing equity and efficiency objectives in tax policy design. Furthermore, Duncan and Sabirianova Peter (2012) also analyze the impact of changes in national income tax systems on observed and actual income inequality. Findings show that increasing progressivity reduces inequality in observed income, but the impact on actual

inequality is smaller. The differential effect is more pronounced in countries with weaker legal institutions. Substantial differences in inequality response are found between top and bottom tax rates. In a more recent study in 2023, Ulrich Eydam and Hannes Qualo examines the relationship between income inequality and personal income taxation (PIT) in a set of countries with the lower income segmentation from 1981 to 2005. The study finds a significant negative association between PIT progressivity and income inequality, suggesting that both average and marginal tax rates can reduce inequality.

On the other hand, Abramovsky (2022) concludes that there is no evidence to suggest that poverty reduction should preclude equitable fiscal policies in many countries, both lower-income and high-income countries. In fact, proper fiscal policies are determined to be growth-reinforcing.

Studies have examined various aspects of taxation, including its redistributive effects, tax incidence, and efficiency in altering income inequality. While some research suggests that taxation can play a role in reducing income disparities, the overall findings are nuanced and context-dependent. Methodological differences, data limitations, and the diverse tax structures across countries contribute to the complexity of understanding the relationship between taxation and income distribution. Further research is needed to unpack the mechanisms through which different tax regimes influence income inequality and to inform the design of effective tax policies aimed at promoting more equitable economic outcomes. The intersectionality of taxation policies within the APEC region adds another layer of complexity to the relationship between taxation and the GINI coefficient. Variations in tax systems, including income taxes, consumption taxes, and wealth taxes, across APEC economies influence the redistributive impact of taxation on income distribution. Moreover, differences in tax administration, compliance levels, and government expenditure priorities further shape the effectiveness of taxation policies in addressing income inequality within the region.

2.2. Research gap

Previous studies have predominantly employed linear regression or VAR models, analyzing time-series or cross-sectional data. While valuable, these methods may not fully capture the heterogeneous impact of taxation across the income spectrum. This study adopts quantile regression, allowing us to examine the effect of taxation at different points of the income distribution, thus providing a more granular understanding of its redistributive effects.

In term of data, while prior research has often relied on cross-sectional or time-series data, this study utilizes panel data from reputable sources such as the World Bank and the International Monetary Fund (IMF). This approach allows us to incorporate a wider range of APEC countries and a more recent time frame, enhancing the robustness and relevance of our analysis.

Traditional studies have focused on specific tax instruments, such as personal income tax rates or corporate tax rates. This study expands the analysis by incorporating the total tax-to-GDP ratio as a comprehensive measure of tax effort, reflecting the overall tax burden imposed on the economy. Moreover, we include control variables such as GDP per capita, inflation, unemployment, and population to account for their potential influence on income inequality.

By employing quantile regression, this study offers a novel analytical framework to dissect the impact of taxation on different income groups within APEC countries, providing a more nuanced understanding of its redistributive effects.

The inclusion of the total tax-to-GDP ratio allows us to examine the comprehensive effect of taxation on income inequality, a relationship that has received limited attention in prior research on APEC countries.

The use of a distinct methodological approach and a comprehensive dataset may yield results that differ from previous studies. This could shed new light on the complex interplay between taxation and income inequality in the APEC region, potentially challenging conventional wisdom and informing policy debates.

3. Theoretical framework

3.1. GINI Index

The GINI index, devised by Italian statistician Corrado Gini in 1912, gauges the extent of income or wealth inequality within a country by assessing how income or wealth is distributed among its people.

The calculation of the GINI index involves plotting the Lorenz curve, which illustrates the cumulative distribution of income or wealth across a population, and then measuring the area between the Lorenz curve and the line of perfect equality (the 45-degree line).

$$\text{Gini coefficient} = \frac{A}{A + B}$$

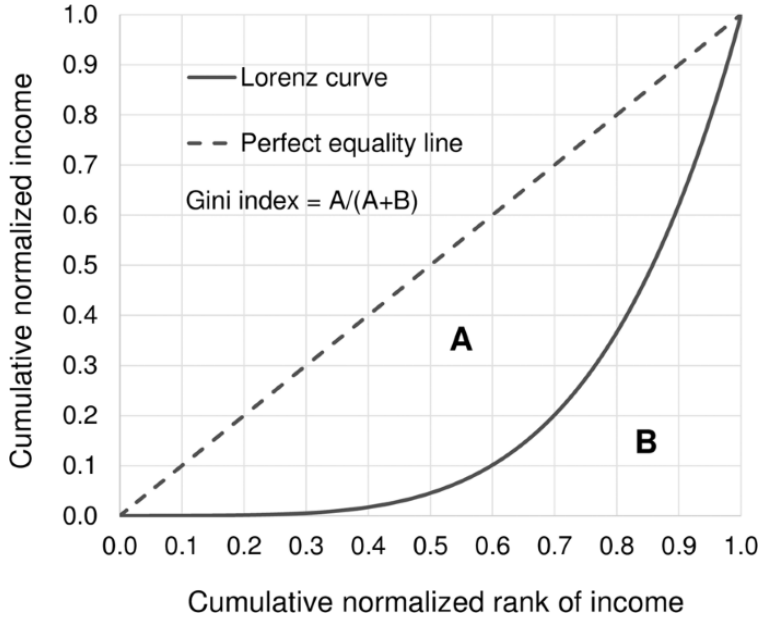

Figure 1. Lorenz Curve

Source: Thitithep Sitthiyot (2020)

The GINI index coefficient ranges from 0 (or 0%) to 1 (or 100%). A value of 0 signifies perfect equality, meaning everyone has an identical income. On the other hand, a value of 1

indicates absolute inequality, where all income is concentrated in the hands of one individual, while everyone else receives nothing.

3.2. Tax

Taxation is the process by which governments finance their spending by imposing charges on citizens and corporate entities. Taxes are levied on income, consumption, wealth, property, and other economic activities.

Taxes are categorized based on the entity being taxed (individuals, businesses), the economic activity being taxed (income, sales, property), and the method of collection (direct or indirect). Other types of tax are progressive, regressive, and proportional taxes. A progressive tax escalates alongside the taxable amount, resulting in higher-income individuals paying a greater percentage of their income in taxes. Conversely, a regressive tax extracts a higher proportion of income from low-income earners compared to high-income earners. A proportional tax, or flat tax, imposes an equal percentage rate of taxation on all individuals, irrespective of their income level.

3.3. Gross Domestic Product

GDP is a comprehensive measure of a country's economic performance, representing the total market value of all final goods and services produced within its borders in a specific period, typically annually or quarterly.

Gross Domestic Product (GDP) can be calculated using the expenditure approach formula, which sums all expenditures on final goods and services within an economy.

$$GDP = C + I + G + NX$$

Where:

C: Consumption

I: Investment by businesses

G: Government expenditures

NX: Net export (export – import)

3.4. Inflation

Inflation refers to the sustained increase in the general price level of goods and services over a period of time, leading to a decrease in the purchasing power of money.

Inflation can be driven by various factors, including demand-pull inflation (resulting from increased consumer demand), cost-push inflation (caused by rising production costs), and built-in inflation (stemming from expectations of future price increases).

Inflation is typically calculated using price indices such as the Consumer Price Index (CPI) or the Producer Price Index (PPI), which track changes in the prices of a basket of goods and services over time.

$$\text{Inflation rate} = \frac{\text{CPI}_{\text{current}} - \text{CPI}_{\text{base}}}{\text{CPI}_{\text{base}}} \text{ x } 100$$

3.5. Unemployment

Unemployment refers to the situation where individuals who are actively seeking employment are unable to find suitable job opportunities.

Unemployment can be categorized into different types, including frictional unemployment (resulting from temporary job transitions), structural unemployment (due to a mismatch between available jobs and workers' skills), and cyclical unemployment (caused by fluctuations in economic activity).

Unemployment rate can be calculated as:

$$\text{Unemployment rate} = \frac{\text{Number of Unemployed Individuals}}{\text{Labor Force}} \text{ x } 100$$

3.6. Population

Population refers to the total number of individuals living in a specific geographical area at a given time.

Population size can be determined through census surveys conducted by government agencies, which collect demographic information from households and individuals within a defined geographic area. Population figures are usually reported periodically (e.g., annually, decennially) based on census data or estimated using demographic models and statistical techniques, providing vital information for policy making, resource allocation, and planning.

4. Empirical Model

4.1. Methodology

In this research article, the author uses data obtained from APEC countries. The survey sample includes 8 APEC countries in the period 2010-2020, including: United States, Russian Federation, Peru, Indonesia, United Kingdom, China, Canada, and Vietnam. The reason why we chose the above 8 countries is that the countries on this list all play an important role in the Asia-Pacific region from economic, political to social aspects. In addition, diverse economic potential also gives us a diverse perspective to evaluate research more transparently. Typical examples include highly developed economic countries such as the United States, United Kingdom and Canada, as well as rapidly developing countries such as China and Indonesia.

Furthermore, joining trade agreements such as the Trans-Pacific Partnership (TPP) and the Regional Free Trade Agreement (RCEP) has created new opportunities and challenges for Vietnam. The lists, especially Chinese and American partners, has played an important role in technology transfer and direct investment into Vietnam and has a significant impact on taxes on businesses. Typical examples include direct and indirect taxes, trade taxes, and service taxes. That's why we have the most general overview of other countries and compare it with the tax market in Vietnam to be able to make an objective and meaningful assessment for future research.

First, the article estimates the regression coefficient using the Quantile Regression estimation method to evaluate the overall impact of total taxes on income inequality in these countries. Then, to test the research hypothesis:

H_1 = higher total taxes lead to reduced income inequality in lower income segmentation,

H_1' = total taxes have minimal effect on income inequality in middle income and higher income segments

The article divides the survey sample into four quantiles including: 25%, 50% and 75% and 90%. The 25th percentile typically represents the lower income group in the dataset; the 50th represents individual with middle-income; and the others represent groups with high income level. Quantile regression is especially suitable when analyzing on regression models with the presence of heteroskedasticity or in data samples where the distribution function of the dependent variable is asymmetrical around the mean value. Then, the quantile regression function on different quantiles will have clear differences, showing the different impact of the independent variable on the dependent variable in different quantiles (Bitler & al, 2006).

Table 1. Descriptive Analysis

	Observation	Mean	Standard Deviation	Max	Min
GINI	88	38,03	3,71	45,5	31,7
POP	88	2.90	4.25	1.41	2.92
UNEM	88	4.90	2.01	9.66	1.00
INF	88	3.44	2.88	18.67	0.11
GDP	88	4.59	6.24	2.13	1.47
tGDP	88	14.27	5.28	25.82	8.09

Source: Author's Calculation

4.2. Estimated Model

To achieve the research objective, the paper uses an analytical recovery model to study the different actions of taxes on income inequality. The model is estimated as follow:

$$\boldsymbol{GINI = \beta_0 + \beta_1 POP + \beta_2 UNEM + \beta_3 INF + \beta_4 GDP + \beta_5 tGDP + \varepsilon}$$

Where:

GINI: Income inequality coefficient

POP: Total population of countries

UNEM: Unemployment rate

INF: Inflation rate

GDP: Real gross domestic product per capita

tGDP: percentage of total tax revenue on GDP

ε: error

Table 2. Data description and data sources

	Calculation	Data source
GINI	Coefficient measuring income difference	WDI
POP	National population	WDI
UNEM	Unemployment rates of countries	WDI
INF	Consumer price index	WDI
GDP	GDP per capita annually	WDI
tGDP	Tax/annual real GDP	WDI

Source: Author's Calculation

This research paper uses the GINI coefficient obtained from statistical reports of different countries from 2010 - 2020 as a proxy for income inequality. The GINI coefficient measures the income gap with levels from 0 to 100, whereby countries with higher values will show higher income inequality and vice versa.

The next variable in this research is the annual per capita income of countries (GDP). GDP is always an indispensable factor in studies assessing the general economic situation as well as that of specific regions. GDP can affect income inequality through mechanisms such as job creation, wage levels, and tax policies for individuals and businesses set by the government. A developing economy typically offers more job opportunities and higher incomes, but it can also lead to greater income disparity if economic benefits are not distributed evenly.

Inflation variable directly affects individuals' real income. Inflation can widen the gap between different income groups, particularly when the income of lower-income groups does not keep pace with inflation. Additionally, the inflation rate influences how governments establish tax policies. For instance, if tax rates are not adjusted for inflation, the tax burden can become unfair for individuals and businesses. High inflation can reduce the effectiveness of tax policies designed to reduce income inequality.

The unemployment rate is an important economic indicator reflecting the state of a country's labor market. Changes in the unemployment rate often indicate significant economic fluctuations, including income inequality. This factor also has the potential to affect the effectiveness of tax policies set by the government. For example, in a context of high unemployment, tax policies such as reducing personal income taxes or providing tax breaks to businesses can be used to stimulate employment and reduce unemployment, thereby indirectly reducing income inequality.

The total population variable impacts the economic scale and social structure. For countries with large populations, the economy is usually more diverse and complex, which means income inequality becomes more apparent. This stratification also contributes to the tax system in those countries. Whether tax policies are effective and fully implemented also depends on this population variable.

The variable tGDP is a representation of corruption control calculated based on the annual Tax/GDP formula. Due to the currency denomination of the General Statistics Office of Vietnam's data in Vietnamese Dong, it is imperative to undertake currency conversion from the World Bank's exchange rate data. This process ensures the alignment of tax-related variables with other pertinent factors for research purposes.

The other variables in the model are exploited from the World Bank Development Index.

5. Model Result

5.1. Correlation Matrix

Table 3. Correlation Matrix

	GINI	POP	UNEM	INF	GDP
POP	0.248385				
UNEM	- 0.217183	- 0.032098			
INF	0.163186	- 0.105557	- 0.291208		
GDP	0.257315	0.524106	0.267064	- 0.302674	
tGDP	- 0.450234	- 0.457632	- 0.224353	0.013449	- 0.402352

Source: Author's Calculation

GINI vs. POP: Positive correlation of 0.248 between the GINI index and population (POP). This suggests a weak positive relationship, indicating that countries with larger populations tend to have slightly higher income inequality levels.

GINI vs. UNEM: Negative correlation of -0.217 between the GINI index and the unemployment rate (UNEM). This indicates a weak negative relationship, implying that higher levels of unemployment are associated with slightly lower income inequality.

GINI vs. INF: Positive correlation of 0.163 between the GINI index and the inflation rate (INF). This suggests a weak positive relationship, indicating that higher inflation rates may be associated with slightly higher income inequality levels.

GINI vs. GDP: Positive correlation of 0.257 between the GINI index and GDP. This indicates a weak positive relationship, suggesting that countries with higher GDPs may tend to have slightly higher income inequality levels.

GINI vs tGDP: Negative correlation of -0.450 between the GINI index and the percentage of tax on GDP (tGDP). This indicates a moderate negative relationship, suggesting that higher levels of taxation as a percentage of GDP may be associated with lower income inequality.

The statistical results of Pearson correlation coefficients between variables in the experimental model are presented in Table 1. The results indicate that the signs of the explanatory variables in the model are consistent with expectations and all have statistical significance at the 1%, 5%, and 10% levels. Furthermore, the correlation coefficients between variable pairs are relatively small, suggesting a low likelihood of multicollinearity in the regression model.

5.2. Parameter estimates

Table 4. Parameter estimates

	Q(0.25)	**Q(0.5)**	**Q(0.75)**	**Q(0.9)**
POP	-83.344e-07	-7.501e-08	2.703e-08	4.234e-08
UNEM	3.429e-13	1.268e-15	9.954e-18	1.551e-16
INF	4.606e-14	3.031e-16	9.22e-17	2.521e-16
GDP	3.264e-11	1.257e-11	2.234e-12	1.633e-12
tGDP	**-3.926e-13**	**4.916e-15**	**2.029e-16**	**5.443e-16**

Source: Author's Calculation

At the 25th Quantile Q (0.25): β_5 = -3.926e-13

A one-unit increase in the percentage of tax on GDP is associated with a decrease in the GINI index by -3.926e-13 units at the 25th quantile. This negative coefficient suggests that higher levels of taxation tend to be associated with lower income inequality, particularly among individuals at the lower end of the income distribution.

At the Median Q (0.5): β_5 = 4.916e-15

At the median, the coefficient for tGDP is extremely small (4.916e-15), indicating that the impact of taxation on income inequality is negligible for individuals positioned at the middle of the income distribution. In other words, changes in the percentage of tax on GDP do not significantly influence income inequality among individuals at the median income level.

At the 75th Quantile Q (0.75): β_5= 2.029e-16

Similar to the median, the coefficient for tGDP at the 75th quantile is very small (2.029e-16), suggesting minimal impact of taxation on income inequality for individuals positioned at

the 75th percentile of the income distribution. This indicates that changes in taxation are unlikely to have a discernible effect on income inequality among relatively higher-income individuals.

At the 90th Quantile Q (0.9): β_5= 5.443e-16

At the 90th quantile, the coefficient for tGDP is also very small (5.443e-16), indicating that the impact of taxation on income inequality remains negligible for individuals positioned at the 90th percentile of the income distribution. Like the previous quantiles, changes in taxation are unlikely to significantly influence income inequality among individuals with relatively higher incomes.

5.3. Discussion

The negative coefficients for tGDP at lower quantiles suggest that progressive taxation policies, where higher-income individuals bear a larger tax burden relative to their income, may contribute to reducing income inequality among lower-income segments of the population. However, at higher quantiles, the coefficients for tGDP are close to zero, indicating that the redistributive effect of taxation diminishes for individuals with higher incomes. This finding aligns with the theoretical expectations, as progressive taxation systems typically aim to redistribute wealth from higher-income individuals to lower-income individuals, thereby potentially reducing income inequality.

However, if the tax system disproportionately burdens lower-income individuals through indirect taxes like consumption taxes (e.g., sales tax or value-added tax), while offering generous exemptions or loopholes to higher-income individuals, it may fail to effectively redistribute wealth. In such cases, the tax burden could exacerbate income inequality rather than alleviating it.

While taxation can be an essential tool for funding social programs and reducing inequality, excessively high tax rates could discourage investment, entrepreneurship, and economic growth, particularly if tax revenues are inefficiently allocated or if the tax system imposes excessive administrative burdens. In such cases, the adverse effects on economic dynamism may outweigh any potential benefits of redistributive taxation, leading to increased income inequality.

The effectiveness of taxation policies in achieving this goal may vary depending on other economic factors such as population size, unemployment rate, inflation rate, and overall economic performance as captured by GDP. The significant positive coefficients for population, unemployment rate, inflation rate, and GDP further underscore the complexity of factors influencing income inequality. Therefore, policymakers should consider a holistic approach that takes into account multiple socioeconomic variables when designing taxation policies aimed at addressing income inequality. Further research is needed to explore the underlying mechanisms driving these relationships and to evaluate the effectiveness of taxation policies in promoting equitable income distribution across different socio-economic strata within the APEC region.

5.4. Violation testing & remedies

Multicollinearity refers to the situation where some predictor variables in a regression model are correlated with each other. In other words, there is a high degree of linear association between two or more independent variables. Multicollinearity can lead to unstable and unreliable coefficient estimates. It makes it challenging to determine the individual effect of each predictor on the response variable.

Hypothesis:

H_0: The predictor variables are not correlated with each other (Collinearity)

H_1: The predictor variables are correlated with each other (Multicollinearity)

By calculating the Variance Inflation Factor (VIF) for each variable, we may determine whether or not the model has multicollinearity. If VIF values are high (typically above 5 or 10), removing one of the correlated predictors will be needed. In this case, all variables appear to be clear of this violation. The following is the outcome of our efforts:

Table 5. VIF features

POP	2.007944
UNEM	4.781761
INF	2.225106
GDP	2.535104
tGDP	4.315333

Source: Author's Calculation

6. Policy implication

6.1. Within APEC countries

The role of progressive taxation and public welfare benefits in redistributing income exhibits considerable variation across nations. Developed countries such as the USA, Canada and the UK rely on highly progressive public welfare programs funded by tax systems that range from neutral to regressive, effectively combating inequality. In contrast, in many developing nations, neither taxation nor public expenditure effectively mitigates inequality due to factors such as limited progressivity in tax structures, widespread tax exemptions, instances of tax evasion, and inadequate investment in social welfare.

It is recommended that governments within the APEC countries prioritize the adoption of progressive taxation strategies to mitigate income inequality, particularly among economically disadvantaged sectors of society. Implementing progressive income taxes and introducing levies on wealth can effectively redistribute resources from affluent individuals to those with lower incomes, thereby mitigating income disparities and fostering social parity. Furthermore, governments should enhance tax enforcement mechanisms to ensure compliance and deter tax evasion, particularly among higher-income earners who may seek to evade increased tax burdens. Moreover, directing investments towards education, healthcare, and social welfare

initiatives tailored to underserved communities can complement progressive tax policies and contribute to enhancing the socio-economic welfare of these populations. By placing emphasis on addressing the needs of lower-income demographics, governments can cultivate more inclusive and equitable societies within the APEC region.

Nevertheless, there exists potential for improvement as countries undergo economic and institutional advancement. Latin America offers instructive examples, having experienced a decline in inequality and a rise in tax revenues since the early 2000s. This transformation was facilitated by tax reforms that bolstered income tax frameworks and enhanced tax administration. Similar progressions may be feasible in Asia-Pacific nations, given their sustained economic growth and improving administrative capabilities. However, persistent challenges like tax evasion, particularly among affluent segments, necessitate robust fiscal strategies and reinforced tax administration.

6.2. Within Vietnam

Vietnam stands to glean valuable insights from developed nations' endeavors in mitigating income inequality through the adoption of progressive tax strategies. Despite Vietnam's commendable strides in economic expansion and administrative capacity, ample opportunities exist for leveraging progressive taxation to address inequality.

Firstly, Vietnam can emulate developed countries' approach of fortifying income tax structures via purposeful policy overhauls. Introducing reforms akin to those witnessed in Canada and China, particularly in the realm of progressive personal income tax (PIT), holds promise. These reforms should underscore the imperative of improving the efficacy and transparency of direct tax systems, ensuring equitable contributions from high-income individuals.

Secondly, Vietnam could prioritize enhancing tax administration to optimize the efficacy of progressive tax measures. Augmenting tax collection mechanisms and curtailing evasion, especially among affluent segments, should assume precedence. Investments in technological advancements and capacity enhancement within tax authorities could augment compliance efforts and mitigate instances of evasion.

Thirdly, Vietnam might glean insights from the APEC region experience with VAT reforms, which inadvertently bolstered tax administration. By adopting analogous measures and embarking on comprehensive enhancements in tax administration, Vietnam could enhance its adeptness in managing progressive taxes.

Finally, Vietnam could contemplate measures to broaden the tax base and augment revenue from direct taxation, particularly from affluent demographics. This might entail revisiting tax brackets and implementing measures to deter tax avoidance and evasion.

In summary, Vietnam holds the potential to make notable strides in diminishing income inequality through proactive fiscal initiatives and fortified tax administration. By assimilating lessons from Latin American counterparts and implementing targeted reforms, Vietnam can advance towards a more equitable tax framework conducive to fostering inclusive economic progress and societal development.

7. Conclusion

This study delves into assessing the impact of taxes on the income inequality index across APEC member countries, using a 10-year timeframe from 2010 to 2020 as a representative study period. The outputs reveal a gradual reduction in the redistributive effect of taxes on individuals with higher incomes, aligning with theoretical expectations and suggesting the potential for alleviating income inequality. However, the effectiveness of tax policies in achieving this goal may vary depending on other economic factors. Population demographics, unemployment rates, inflation levels, and overall economic efficiency, measured by GDP, underscore the complexity of factors influencing income inequality. To address income inequality, APEC governments should prioritize implementing progressive tax policies by increasing progressive income taxes, imposing property taxes, intensifying efforts to combat tax evasion - particularly among high-income individuals - and investing in welfare policies to foster a healthy and equitable society among member countries.

Vietnam can learn from deliberate policy reform factors aimed at enhancing tax accountability and effectiveness. Additionally, Vietnam can prioritize improving tax administration to enhance policy effectiveness. Combining tax collection mechanisms and reducing tax evasion, considering measures to broaden the tax base and increase revenue, especially from high-income earners, are crucial. This study provides objective assessments of tax impacts through the GINI index, highlighting that higher-taxes lead to reduced income inequality in lower income segments, and emphasizes further avenues for research to contribute to a broader understanding of how taxes impact a country's economic system.

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