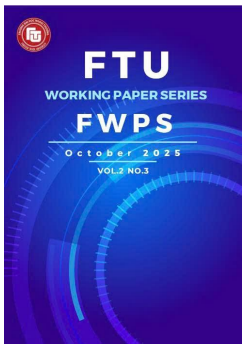

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ẢNH HƯỞNG CỦA THUẾ GIÁ TRỊ GIA TĂNG ĐẾN TĂNG TRƯỞNG KINH TẾ CỦA CÁC NƯỚC THU NHẬP TRUNG BÌNH THẤP TỪ 2014 – 2023: NGHIÊN CỨU ĐỊNH LƯỢNG SỬ DỤNG DỮ LIỆU CỦA NGÂN HÀNG THẾ GIỚI

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Tóm tắt

Nghiên cứu này xem xét tác động của thuế giá trị gia tăng (VAT) đối với tăng trưởng kinh tế tại các quốc gia có thu nhập trung bình thấp, sử dụng dữ liệu bảng từ cơ sở dữ liệu của Ngân hàng Thế giới trong giai đoạn 2014–2023. VAT là một loại thuế tiêu dùng được áp dụng rộng rãi, được xem là hiệu quả nhờ cơ sở đánh thuế rộng và khả năng tạo nguồn thu ổn định. Trong khi các quốc gia thu nhập cao đã áp dụng VAT từ lâu với những kết quả rõ rệt, thì động lực giữa VAT và tăng trưởng kinh tế ở các nền kinh tế thu nhập trung bình thấp vẫn còn chưa rõ ràng. Nghiên cứu này sử dụng mô hình hồi quy FGLS (Phương pháp Bình phương Tối thiểu Tổng quát khả thi) để phân tích mối tương quan giữa VAT và tăng trưởng GDP, cùng với các biến kinh tế vĩ mô khác như chi tiêu chính phủ, đầu tư, lạm phát, độ mở thương mại và lực lượng lao động, trong mẫu gồm 21 quốc gia thu nhập trung bình thấp. Kết quả thực nghiệm cho thấy VAT có tác động tích cực và có ý nghĩa thống kê đối với tăng trưởng kinh tế, củng cố vai trò của VAT như một công cụ tài khóa hỗ trợ tăng trưởng nếu được thực hiện hiệu quả. Đầu tư cũng cho thấy tác động tích cực có ý nghĩa, trong khi chi tiêu chính phủ lại có mối quan hệ tiêu cực và đáng kể với tăng trưởng, gợi ý về những bất cập hoặc thiên

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hướng chi tiêu cho tiêu dùng trong cấu trúc tài khóa của nhiều quốc gia. Các biến còn lại như lạm phát, lực lượng lao động và độ mở thương mại không có ý nghĩa thống kê. Những phát hiện này đóng góp vào thảo luận về thiết kế chính sách thuế tối ưu cho các nền kinh tế đang phát triển, trong bối cảnh cần cân bằng giữa nhu cầu thu ngân sách và mục tiêu tăng trưởng.

Từ khóa: thuế giá trị gia tăng, VAT, tăng trưởng kinh tế, quốc gia thu nhập trung bình thấp, tác động

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IMPACT OF VALUE-ADDED TAX ON ECONOMIC GROWTH OF LOWER-MIDDLE INCOME COUNTRIES FROM 2024 TO 2023: A QUANTITATIVE APPROACH USING WORLD BANK DATA

Abstract

This study investigates the impact of Value-Added Tax (VAT) on economic growth in lower-middle income countries, employing panel data from World Bank databases over the period 2014-2023. VAT is a widely adopted consumption tax, considered efficient due to its broad base and revenue-generating potential. While higher-income countries have long employed VAT with measurable outcomes, the dynamics in lower-middle income economies remain less clear, particularly in the context of economic growth. This research employs a Feasible Generalized Least Squares (FGLS) regression model to examine how VAT, along with other macroeconomic variables—such as government expenditure, investment, inflation, trade openness, and labour force—correlates with GDP growth in a panel of 21 lower-middle income countries. The empirical results reveal that VAT has a positive and statistically significant impact on economic growth, reinforcing its role as a growth-friendly fiscal instrument when efficiently implemented. Investment also shows a significant positive effect, while government expenditure exhibits a significant negative relationship with growth, suggesting inefficiencies or consumption-biased fiscal structures in many countries. Other variables, including inflation, labour force, and trade openness, were found to be statistically insignificant.The results contribute to the discourse on optimal tax policy design for developing economies seeking to balance fiscal needs and growth imperatives.

Keywords: value-added tax, VAT, economic growth, lower-middle income countries, impact

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1. Introduction

In the quest for sustainable economic growth, lower-middle income countries (LMICs) often face a crucial dilemma: how to raise sufficient revenue without stifling productivity and investment. Among various fiscal tools, the Value Added Tax (VAT) has emerged as a dominant instrument for mobilizing domestic revenue in both developed and developing countries. Its appeal lies in its neutrality, efficiency, and ability to generate substantial public funds. As of 2023, over 160 countries have implemented VAT, including the majority of LMICs.

Despite the widespread adoption of VAT, the empirical evidence on its impact on economic growth remains inconclusive, particularly in the context of LMICs. While VAT can enhance government revenue and enable public investment in infrastructure and human capital, it may also discourage consumption and production if not carefully calibrated. The balance between revenue generation and economic stimulation is particularly delicate in countries where large informal sectors, weak tax administrations, and structural vulnerabilities are prevalent.

This study aims to examine the relationship between VAT and economic growth specifically within lower-middle income countries, a group of nations often understudied in tax policy research despite their significant global economic and demographic weight.

2. Literature review

2.1. Previous Research

Value-Added Tax (VAT) is a consumption-based tax imposed at each stage of the production and distribution process, ultimately borne by the final consumer. Theoretically, VAT is considered economically neutral, as it minimizes distortions in investment and production decisions compared to income taxes. Under the Ramsey Rule and optimal taxation theory, consumption taxes such as VAT are argued to be more growth-friendly, particularly in open economies (Atkinson & Stiglitz, 1976). These theoretical underpinnings form the basis for much empirical investigation into VAT's macroeconomic effects.

Empirical research in high-income economies has shown relatively consistent results. For example, Arnold et al. (2011) employed panel regression techniques on OECD countries and found that shifting the tax burden from direct to indirect taxes, including VAT, is associated with higher long-term economic growth. Their study robustly controls for institutional quality and other growth drivers. However, their focus on high-income countries limits the generalizability of findings to lower-middle-income contexts.

Acosta-Ormaechea and Yoo (2012) also used panel data methods and dynamic GMM estimators to analyze the relationship between tax structure and growth. Their study confirmed that a higher share of indirect taxes, when replacing distortionary income taxes, positively correlates with growth. Yet, while their work highlights the relative efficiency of VAT, it does not isolate VAT's standalone effect from other indirect taxes like excise or sales taxes.

In developing country contexts, results are less conclusive. Keen and Lockwood (2010) conducted cross-country econometric analyses using VAT adoption data and found that VAT implementation improves revenue collection but does not have a statistically significant impact on GDP growth. Their study is rigorous in tracking VAT adoption timelines but lacks a deep exploration of administrative capacity, which could mediate the growth outcomes.

Ebrill et al. (2001) performed a broad cross-country survey complemented by descriptive statistics and case studies. They argued that VAT adoption alone is insufficient for achieving favorable economic outcomes—effective implementation depends heavily on administrative strength, taxpayer compliance, and system design. However, their largely qualitative approach means the relationship between VAT and growth is not quantitatively tested.

Fjeldstad and Heggstad (2012) used case studies and institutional analysis in sub-Saharan Africa, emphasizing that the effectiveness of VAT depends on enforcement capacity and the size of the informal sector. While insightful, their research lacks econometric rigor and cannot offer generalizable, quantitative conclusions.

In contrast, Bird and Gendron (2005) applied a comparative case approach and highlighted that VAT can worsen inequality in LMICs if essential goods are taxed without offsetting social policies. Their analysis raises valid distributional concerns, but again, does not quantify the growth trade-offs involved.

Focusing more specifically on LMICs in Asia, Bhatnagar and Bhanumurthy (2014) conducted a panel data study over multiple years and found a mildly positive impact of VAT on growth. However, they did not adequately control for institutional quality, informal sector size, or external shocks—factors critical in developing economies.

Baunsgaard and Keen (2005) analyzed the VAT-growth relationship using a panel of developing countries and showed mixed results. Their econometric model found that VAT's contribution to growth is context-specific and depends significantly on whether VAT replaces

trade taxes or simply adds to existing tax burdens. However, their study also falls short in addressing how differences in VAT design, exemptions, and enforcement influence outcomes.

2.2. Research gap

Despite the widespread adoption of Value-Added Tax (VAT) in lower middle-income countries (LMICs), there remains a notable gap in empirical research that specifically examines the relationship between VAT and economic growth within this income group. Much of the existing literature tends to generalize findings across a broad spectrum of countries, including high-income and low-income economies, thereby diluting the unique economic dynamics and policy challenges faced by LMICs. This approach limits the ability to draw nuanced, context-specific conclusions that are relevant for countries at similar stages of development.

Additionally, prior studies often focus on the revenue-generating aspects of VAT, assessing its effectiveness in expanding tax bases and improving fiscal capacity. While this is undoubtedly important, such analyses typically overlook VAT's broader macroeconomic implications, particularly its impact on economic growth. The absence of studies that treat VAT not only as a fiscal instrument but also as a potential determinant of growth leaves an important dimension of tax policy underexplored.

Further, critical moderating variables—such as institutional quality, administrative efficiency, and the size of the informal economy—are frequently excluded or insufficiently addressed in prior empirical models. These factors can significantly influence the effectiveness and economic consequences of VAT implementation, especially in countries with limited administrative capacity or governance challenges.

This gap is particularly urgent in the current global context. Many LMICs are navigating complex fiscal environments shaped by post-pandemic recovery demands, rising climate adaptation and mitigation costs, and growing concerns over debt sustainability. In such a scenario, effective and growth-friendly tax policy becomes not just a matter of technical efficiency but a strategic imperative for long-term development.

3. Theoretical framework

3.1. Theoretical framework on economic growth

Economic growth, as a fundamental concept in development economics, refers to the sustained increase in the productive capacity of an economy, commonly measured through real Gross Domestic Product (GDP). The theoretical understanding of economic growth has evolved through different schools of thought. In the neoclassical model, particularly the Solow-Swan model, economic growth is driven by capital accumulation, labour force growth, and exogenous technological progress. Within this framework, taxes are often seen as distortionary, reducing incentives to save, invest, and work, thereby slowing capital formation and limiting output growth in the short run (Alesina & Rodrik, 1994).

On the other hand, endogenous growth theories, developed by Romer and Lucas, argue that long-term economic growth is primarily a result of internal factors such as technological innovation, human capital development, and government policy. These models posit that taxation, if used to fund productive public investments—particularly in education, research and development, and infrastructure—can foster growth rather than hinder it (Sameti & Rafie, 2010). Thus, the design of tax systems becomes critical in influencing the rate and inclusivity of growth.

Furthermore, the political economy perspective, as discussed by Alesina and Rodrik (1994), highlights the interplay between economic growth and economic growth. High inequality may lead to social unrest and political instability, which deter investment and diminish institutional effectiveness. In contrast, equitable societies often provide a more stable environment for long-term growth by fostering broad-based access to opportunity and capital.

For lower-middle income countries, economic growth is additionally influenced by factors such as institutional quality, access to global markets, and the efficiency of public spending. In these contexts, tax policy plays a dual role: it must ensure fiscal sustainability while also enabling inclusive growth. The way governments raise and spend tax revenue—including from VAT—can directly shape developmental trajectories and poverty outcomes.

3.2. Theoretical framework on value-added-tax

Value-Added Tax (VAT) is a consumption-based, multi-stage indirect tax applied on the added value of goods and services at each stage of production and distribution. It is ultimately borne by the final consumer but collected incrementally by businesses along the supply chain. Theoretically, VAT is considered an efficient revenue-generating tool due to its broad tax

base and relatively low enforcement cost, making it particularly suitable for developing economies where income and corporate tax compliance may be weak.

Ochei (2010) emphasize VAT's multi-stage design and its relative transparency, which reduces tax evasion compared to single-stage sales taxes. However, VAT is also widely recognized as regressive. Lower-income households, which allocate a greater share of their income to consumption, bear a heavier relative tax burden than higher-income groups. This regressive impact can be mitigated through policy design—such as zero-rating basic necessities or combining VAT with progressive direct taxes—but often remains a concern in countries lacking robust redistribution mechanisms.

The theoretical underpinnings of VAT are also informed by taxation theories. The faculty theory, as outlined by Bhartia (2009), argues that taxes should be levied according to an individual's ability to pay. VAT contradicts this principle since it applies equally across income levels. Ibn Khaldun's theory of taxation further differentiates between the arithmetic effect (higher tax rates yield more revenue) and the economic effect (excessive taxation discourages economic activity). If VAT rates are too high, they may reduce consumer spending, lower aggregate demand, and ultimately contract the tax base.

Therefore, while VAT plays a central role in modern fiscal systems, its effectiveness depends on careful design and complementary policies. It can be a powerful revenue tool but must be balanced against its equity implications, especially in lower-middle-income countries with fragile social protection systems.

3.3. Impact of value-added-tax on economic growth

The impact of VAT on economic growth is multidimensional and heavily influenced by the surrounding fiscal and institutional context. Theoretically, VAT can support economic growth by providing governments with a reliable and scalable source of revenue. This revenue, when allocated efficiently, can finance critical public goods such as education, infrastructure, and healthcare, which in turn enhance productivity and foster long-term development (Ibadin & Oladipupo, 2015; Sameti & Rafie, 2010).

Moreover, VAT does not tax income or investment returns directly, allowing it to maintain neutrality toward savings and capital formation. In economies with large informal sectors, VAT may also encourage formalization, as businesses seek input tax credits and thus have incentives to register with tax authorities. This formalization effect can contribute to improved regulatory oversight and a more accurate understanding of the national economy, which are prerequisites for sustainable growth.

Nonetheless, VAT's impact on growth is not universally positive. In countries with high levels of poverty or consumption-led growth models, a high VAT burden may reduce household purchasing power, suppress domestic demand, and widen inequality. These adverse effects may be further exacerbated in the absence of well-functioning social safety nets or compensatory fiscal measures. Furthermore, the administrative complexity of VAT can place compliance burdens on small and medium enterprises (SMEs), limiting entrepreneurship and local business expansion.

The economic theory presented by Ibn Khaldun—particularly the distinction between arithmetic and economic effects of taxation—offers an important lens for understanding these dynamics. While increasing VAT rates may initially increase public revenue (arithmetic effect), they can also discourage consumption and investment, leading to slower economic growth (economic effect) (Bird, 2005; Alesina & Perotti, 1996). This trade-off underscores the need for careful calibration of VAT rates and exemptions, especially in economies with limited absorptive capacity and high vulnerability to economic shocks.

In sum, the theoretical relationship between VAT and economic growth is contingent upon factors such as tax design, public expenditure quality, institutional strength, and socio-economic conditions. When VAT is embedded in a comprehensive and equitable fiscal framework, it can contribute positively to economic growth. However, in the absence of such conditions, its regressive nature and potential to suppress consumption may hinder inclusive development. Therefore, policymakers in lower-middle-income countries must weigh revenue needs against social impact, ensuring that VAT implementation aligns with long-term growth objectives.

4. Methodology

4.1. Research methodology

This study adopts a quantitative panel data approach to investigate the impact of value-added tax (VAT) on economic growth in lower-middle-income countries (LMICs) over the period 2014 to 2023. The research design is explanatory, aiming to identify potential causal relationships by leveraging both cross-sectional and temporal variations in VAT-related variables and macroeconomic performance indicators.

To account for unobserved heterogeneity across countries, a regression model is employed. This model specification controls for time-invariant characteristics that may bias the estimated relationship between VAT and economic growth. It aims to ensure the robustness and credibility of the results. The study emphasizes model comparison and

sensitivity checks to validate the consistency of the estimated VAT-growth relationship across different specifications.

4.2. Research model

Based on the literature review and theoretical framework, this study develops the following model to examine the impact of VAT on economic growth of lower-middle income countries

Model Specification

$$GDPG_{it} = \beta_0 + \beta_1 VAT_{it} + \beta_2 TRADE_{it} + \beta_3 INVEST_{it} + \beta_4 INF_{it} + \beta_5 GOVEXP_{it} + \beta_6 LABOUR_{it} + \varepsilon_{it}$$

In which:

- β_0 : The intercept term of the regression model.
- $\beta_1 - \beta_6$: The coefficients for the independent variables that measure their marginal effect on GDP growth.
- **GDPG** *(Dependent variable)*: Annual GDP growth rate (%) for country *i* at time *t*. This variable represents the economic performance of a country.
- **VAT**: VAT-related variable, measured either as VAT revenue as a percentage of GDP or as the statutory VAT rate. It is expected to influence economic growth depending on its structure and efficiency.
- **TRADE**: Trade openness, measured by the sum of exports and imports as a percentage of GDP. A higher trade openness level may enhance economic growth through increased market access and efficiency.
- **INVEST**: Gross capital formation (% of GDP), representing the level of investment in the economy. Higher investment is generally expected to positively impact GDP growth.
- **INF**: Inflation rate (Consumer Price Index, annual %). Moderate inflation might support growth, but high inflation can harm economic stability.
- **GOVEXP**: Government expenditure as a percentage of GDP. This reflects public sector spending, which can stimulate economic growth depending on its composition and efficiency.
- **LABOUR:** Labour force participation rate is the proportion of the population ages 15 and older that is economically active: all people who supply labour for the production of goods and services during a specified period.
- **εi:** The error term for country *i* in year *t*, capturing unobserved shocks or variables not included in the model

4.3. Data and data source

The authors utilized secondary data obtained from the World Bank. The analysis focused on one dependent variable: GDP. Six independent variables were included in the model: VAT, Trade openness (TRADE), Gross capital formation (TRADE), Government expenditure (GOVEXP), Inflation rate (INF), and Labour participation rate (LABOUR.

Table 1. Data sources

Variables	Meaning	Unit	Source
GDP	Annual GDP growth rate	%	World Bank (WDI)
VAT	Value-added tax revenue or statutory VAT rate	% of GDP / % rate	WDI
TRADE	Trade openness (exports + imports)	% of GDP	WDI
INVEST	Gross capital formation	% of GDP	WDI
INF	Inflation rate (CPI, annual)	%	WDI
GOVEXP	General government expenditure	% of GDP	WDI
LABOUR	Participation rate of the population ages 15 and older that is economically active	% of total population aged 15 or older	WDI

Source: The authors' compilation

5. Empirical result

5.1. Descriptive statistics of data

The study utilizes panel data covering 21 lower-middle-income countries over a period of 10 years, resulting in a balanced panel with 210 observations per variable. Although a few missing values were present, their number remained within an acceptable range, ensuring the

consistency and robustness of the empirical results. The summary statistics of the main variables employed in the regression model are presented in the table below:

Table 2. Data summary

Variable	Obs	Mean	Std. Dev.	Min	Max
GDPG	210	0.0362287	0.0424124	-0.2080528	0.1584368
VAT	210	0.1394744	0.0443902	0.028783	0.2668286
TRADE	210	0.8205342	0.4570695	0.2627145	2.568882
INVEST	210	0.279249	0.1026681	0.108476	0.7678232
GOVEXP	210	0.1412165	0.051435	0	0.3607545
INF	210	0.0505317	0.0496458	-0.0140782	0.3607545
LABOUR	210	0.66040506	0.0711728	0.51547	0.82426

Source: The authors' compilation

Following the descriptive statistics, a correlation matrix is constructed to examine the linear relationships among the independent variables in the model. Correlation coefficients range from -1 to 1, with values closer to either extreme indicating stronger negative or positive relationships, respectively.

Table 3. Correlation matrix

	GDPG	VAT	TRADE	INVEST	GOVEXP	INF	LABOUR
GDPG	1.0000						
VAT	0.0596	1.0000					
TRADE	0.0899	0.6148	1.0000				
INVEST	0.0014	-0.0203	0.1564	1.0000			
GOVEXP	-0.2260	0.5186	0.3463	0.2377	1.0000		

INF	0.0825	-0.0671	-0.1538	0.0192	-0.2318	1.0000	
LABOUR	-0.0388	0.0105	0.0179	0.0372	-0.0714	0.0218	1.0000

Source: The authors' compilation

- **GDPG vs. VAT**: Positive correlation of 0.0596, suggesting that higher VAT levels may be associated with slightly higher economic growth
- **GDPG vs. TRADE:** Positive correlation of 0.0899, indicating that higher trade openess level may be associated with slightly higher economic growth.
- **GDPG vs. INVEST:** Positive correlation of 0.0014, suggesting that greater gross capital formation may contribute to higher economic growth.
- **GDPG vs. GOVEXP:** Negative correlation of -0.2260, implying that higher government expenditure may be linked to lower economic growth.
- **GDPG vs. INF:** Positive correlation of 0.0825, indicating that higher inflation associated with slightly higher economic growth.
- **GDPG vs. LABOUR:** Negative correlation of -0.0388, implying that higher labour participation rate may be linked to lower economic growth

Overall, the correlation coefficients remain relatively low, suggesting a low likelihood of multicollinearity in the regression model. These preliminary findings provide insight into the expected relationships between variables but require further validation through regression analysis.

5.2. Estimated result

To assess the impact of Value-Added Tax (VAT) on economic growth in lower-middle-income countries, a linear regression analysis was conducted based on the specified model. The estimation results are shown in the following table.

Table 4. Regression result

GDPG	**Coefficient**	**Std. Err.**	**t**	**P > | t |**	**95% Conf. Interval**	
VAT	0.2027681	0. 0923504	2.20	0.029	0.0206791	0.3848572
TRADE	0.0078032	0.0080731	0.97	0.335	-0.0081146	0.023721
INVEST	0.0358502	0.0295065	1.21	0.226	-0.0223284	0.0940287
GOVEXP	-0.3186792	0.069278	-4.60	0.000	-0.4552759	-0.1820825

INF	0.0170732	0.0592136	0.29	0.773	-0.0996794	0.1338257
LABOUR	-0.0439579	0.0396593	-1.11	0.269	-0.122155	0.0342391
const	0.0647059	0.028993	2.23	0.027	0.0075399	0.121872

Source: The authors' calculation

The regression results indicate that among the independent variables, only **value-added tax (VAT)** and **government expenditure (GOVEXP)** exhibit **statistically significant relationships** with economic growth at the 5% significance level. Specifically, the coefficient of **VAT** is positive (0.2027681, p = 0.029), suggesting that higher levels of VAT revenue or statutory VAT rate are associated with increased GDP growth. In contrast, **GOVEXP** has a negative coefficient (-0.3186792, p = 0.000), implying that greater government spending may have a dampening effect on economic growth in lower-middle-income countries, possibly due to inefficiencies or misallocation of public resources.

The remaining variables — **TRADE, INVEST, INF, and LABOUR** — do not demonstrate statistically significant effects on GDP growth, with p-values of 0.335, 0.226, 0.273, and 0.269, respectively.

5.3. Violation test

After obtaining the original regression results, the authors conducted a series of tests to check for defects in the model. First, to assess the presence of multicollinearity, the authors employed the VIF method. The VIF values are presented in the table below.

Table 5. VIF test result

Variable	VIF	1/VIF
VAT	2.14	0.468114
TRADE	1.73	0.577780
GOVEXP	1.61	0.619579
INVEST	1.17	0.857228
INF	1.10	0.910324
LABOUR	1.01	0.987381

Mean VIF	1.46

Source: The authors' calculation

The table above shows that the VIF values for all independent variables are below 5, indicating that multicollinearity is not present in the model.

Furthermore, the **Ramsey RESET test** was used to examine potential model misspecification due to omitted variables or incorrect functional form. The test reported an **F-statistic of 0.78** with a corresponding **p-value of 0.5070**. As this value is well above conventional significance thresholds, implying that the model does not exhibit significant functional form misspecification or omitted variable bias.

Moreover, the **Wooldridge test** for autocorrelation in panel data revealed a potential issue. The test produced an **F-statistic of 3.806** and a **p-value of 0.0652**, leading to the acceptance of the null hypothesis of no first-order autocorrelation. This indicates the absence of autocorrelation within the panel structure.

However, the **Breusch-Pagan/Cook-Weisberg test for heteroskedasticity** yielded a **chi-square statistic of 18.05** with a **p-value of 0.000**, indicating that the model suffers from heteroskedasticity, and the variance of the error terms is not constant across observations. To fix this, the authors use the **Feasible Generalized Least Squares (FGLS) method**, thereby producing more efficient and unbiased coefficient estimates and correct standard errors. The rationale for choosing FGLS rather than simply using robust standard errors is that FGLS not only provides consistent standard errors but also yields more efficient coefficient estimates by incorporating information about the error structure directly into the estimation process, leading to a more statistically powerful analysis.

The FGLS regression results are presented in the second output. The **Correlation: no autocorrelation** setting indicates that the chosen GLS specification addresses heteroscedasticity without assuming or modeling autocorrelation. The **heteroskedastic panel** option confirms that the model explicitly accounts for differing variances across the panels.

Table 6. Regression result using FGLS method

GDPG	**Coefficient**	**Std. Err.**	**t**	**P > | t |**	**95% Conf. Interval**	
VAT	0.2109883	0.0851267	2.48	0.013	0.0441431	0.3778336
TRADE	0.0001741	0.0071362	0.02	0.981	-0.0138126	0.0141609

INVEST	0.0590622	0.0265599	2.22	0.026	0.0070059	0.1111186
GOVEXP	-0.3387014	0.0605887	-5.59	0.000	-0.4574531	-0.2199496
INF	-0.0428926	0.0390019	-1.10	0.271	-1.119335	0.335497
LABOUR	-0.038581	0.330486	-1.17	0.243	-0.103355	0.26193
const	0.0668064	0.0234904	2.84	0.004	0.020766	0.1128469

Source: The authors' calculation

After using FGLS method, value-added tax (VAT) and government expenditure (GOVEXP) remain highly statistically significant at the 5% significance level, while trade openness (TRADE), inflation rate (INF), and labour participation rate (LABOUR) still show little statistical significance with relatively similar p-values to original result. A striking difference from the original regression result (Table 4) can be seen in **gross capital formation (INVEST)**, which is **now statistically significant**, contrary to the original result. This means there are now three contributing factors to the economic growth of lower-middle income countries with high statistical significance, namely VAT revenue level or statutory VAT rate, government expenditure, and gross capital formation.

6. Discussion

This study set out to examine the impact of Value-Added Tax (VAT) on the economic growth of lower-middle-income countries, using a linear regression model with five independent variables. As expected, the analysis reveals that **VAT does have a statistically significant effect** on GDP growth. This result suggests that when implemented efficiently, VAT can support economic growth by providing a stable revenue base that funds productive government expenditure.

Furthermore, **gross capital formation (INVEST)** shows a positive and statistically significant impact on economic growth, confirming the widely accepted notion that capital formation is a key driver of productivity and long-term development. This result reinforces the importance of policies that promote private and public investment as a means to accelerate growth in lower-middle-income countries.

Conversely, **government expenditure (GOVEXP)** exhibits a significant negative relationship with GDP growth. This could point to inefficiencies in public spending, misallocation of resources, or excessive recurrent expenditures that do not translate into

productive outcomes. It highlights the need for fiscal discipline and a reorientation of spending toward growth-enhancing sectors such as infrastructure, education, and healthcare.

Trade openness (TRADE) and **inflation (INF)** do not show statistically significant effects. While trade is often associated with growth through greater market access and efficiency, the result here may reflect structural constraints such as limited diversification or weak competitiveness in the sampled countries. The lack of significance for inflation, with a notably large and unstable coefficient, suggests that its relationship with growth may be nonlinear or affected by other unobserved macroeconomic factors.

Labour (LABOUR) has a negative but statistically insignificant effect on GDP growth. While labour is a fundamental input in production, this result could be explained by low labour productivity, underemployment, or skill mismatches that prevent the labour force from contributing effectively to output growth. In economies with rigid labour markets or inadequate human capital investment, additional labour may not translate into higher output. This outcome aligns with the idea that simply expanding labour inputs without enhancing their quality or productivity may not drive growth.

7. Conclusion and Implications

This study has examined the impact of value-added tax (VAT) on the economic growth of lower-middle income countries over the period from 2004 to 2023 using a fixed-effects generalized least squares (FGLS) model to address heteroskedasticity. The empirical results confirm that VAT has a positive and statistically significant effect on GDP growth, highlighting the potential of VAT as an effective and growth-friendly fiscal instrument. Enhancing tax compliance, reducing evasion, and modernizing tax collection systems—such as expanding the use of digital platforms and e-invoicing—can help maximize revenue without harming growth. For Vietnam, continuing the digitalization of its tax infrastructure and simplifying tax procedures for small enterprises would support this goal.

The strong positive effect of investment on economic growth reinforces the need to encourage both public and private capital formation. Vietnam and other lower-middle-income countries should maintain and improve policies that attract foreign direct investment (FDI), while also nurturing domestic investment ecosystems. This includes improving infrastructure, ensuring legal transparency, and offering targeted incentives in high-value sectors. Supporting access to finance for SMEs, especially in emerging industries like green energy and digital services, would further unlock growth potential.

The negative relationship between government expenditure and growth highlights the need to enhance the quality—not just the quantity—of public spending. Governments should reallocate expenditure toward sectors with high multiplier effects, such as education, healthcare, and infrastructure, while minimizing inefficient or politically driven spending. In Vietnam's case, improving public investment management, adopting performance-based budgeting, and increasing transparency in fiscal operations can ensure that government expenditure translates into real development gains.

Though trade openness did not show a statistically significant impact, it remains a potential long-term driver of growth. To unlock its benefits, Vietnam should focus on upgrading its industrial capacity, improving logistics, and fostering innovation to move up the global value chain. Emphasis should also be placed on reducing non-tariff barriers, strengthening trade agreements, and ensuring domestic firms can compete globally.

Meanwhile, although inflation was not a significant factor in this study, maintaining macroeconomic stability remains crucial. Vietnam should continue to coordinate fiscal and monetary policy effectively to manage inflation expectations and shield the economy from external shocks.

Finally, the labour variable has a negative but statistically insignificant impact on economic growth in lower-middle income countries during the 2004–2023 period. While labour is traditionally viewed as a fundamental input in economic production, this finding suggests that simply expanding the size of the labour force does not automatically translate into higher growth. The negative coefficient, although not statistically significant, may point to underlying issues such as low labour productivity, skills mismatches, or underemployment—common challenges in many developing economies. For Vietnam, this result offers important policy lessons. As the country continues to benefit from a large and relatively young workforce, the quality—not just quantity—of labour must be prioritized. Investing in education, vocational training, and digital skills development is essential to improve labour productivity and meet the demands of a modern, innovation-driven economy. Vietnam must also focus on aligning its human capital development strategy with the needs of key sectors such as manufacturing, high-tech, and services to avoid a “labour surplus but skill shortage” scenario.

Despite its contributions, this study also reveals several gaps for future research. The analysis does not disaggregate the quality or efficiency of VAT implementation across countries, which could significantly influence its growth impact. Moreover, the model does not fully capture institutional quality, governance, or the informal economy—all of which are critical in lower-middle income settings. Future research should incorporate these qualitative dimensions and potentially explore nonlinear or threshold effects of VAT on growth. Country-specific case studies, particularly on Vietnam, could also provide richer, context-specific insights that complement this cross-country analysis.

References

Acosta-Ormaechea, S. and Yoo, J., 2012. *Tax Composition and Growth: A Broad Cross-Country Perspective*. IMF Working Paper WP/12/257. International Monetary Fund.

Agha, A. and Haughton, J., 1996. *Designing VAT systems: Some efficiency considerations*. The Review of Economics and Statistics, 78(2), pp.303–308.

Alesina, A., & Perotti, R. (1996), Income distribution, political instability, and investment, *European Economic Review*, 40(6), 1203–1228. Available at: https://doi.org/10.1016/0014-2921(95)00030-5 (Accessed 16 May, 2025)

Alesina, A., & Rodrik, D. (1994), Distributive politics and economic growth, *The Quarterly Journal of Economics*, 109(2), 465–490, Available at: https://doi.org/10.2307/2118470 (Accessed 16 May, 2025)

Barro, R.J., 1991. *Economic Growth in a Cross Section of Countries*. The Quarterly Journal of Economics, 106(2), pp.407–443.

Baunsgaard, T. and Keen, M., 2005. *Tax Revenue and (or?) Trade Liberalization*. IMF Working Paper WP/05/112. International Monetary Fund.

Bhartia, H. L. (2009), *Public Finance* (14th ed.), Vikas Publishing House.

Bhatnagar, H. and Bhanumurthy, N.R., 2014. *Fiscal Consolidation and Tax Reforms in India*. National Institute of Public Finance and Policy (NIPFP) Working Paper No. 134.

Bird, R. M. (2005), Value-added taxes in developing and transitional countries: Lessons and questions. *International Center for Public Policy Working Paper Series*, at AYSPS, GSU, https://ideas.repec.org/p/ays/ispwps/paper0505.html (Accessed 16 May, 2025)

Bird, R.M. and Zolt, E.M., 2005. *The limited role of the personal income tax in developing countries*. Journal of Asian Economics, 16(6), pp.928–946.

Ebrill, L., Keen, M., Bodin, J.P. and Summers, V., 2001. *The Modern VAT*. Washington, DC: International Monetary Fund.

Fjeldstad, O.H. and Heggstad, K., 2012. *Building taxpayer culture in Mozambique, Tanzania and Zambia: Achievements, challenges and policy recommendations*. CMI Report R 2012:1. Bergen: Chr. Michelsen Institute.

Ibadin, P. O., & Oladipupo, A. O. (2015), Indirect taxes and economic growth in Nigeria, *Economic Thought and Practice*, 24(2), 345–364.

Ibn Khaldun (as interpreted in Bhartia, 2009), Theoretical perspectives on taxation and economic outcomes.

Keen, M. and Lockwood, B., 2010. *The value added tax: Its causes and consequences*. Journal of Development Economics, 92(2), pp.138–151.

Mahdavi, S., 2008. *The level and composition of tax revenue in developing countries: Evidence from unbalanced panel data*. International Review of Economics & Finance, 17(4), pp.607–617.

Ochei, A. (2010), The effects of value-added tax on economic development, *Nigerian Journal of Economic and Financial Research*, 5(1), 12–25.

OECD, 2020. *Tax Policy Reforms 2020: Special Edition on Tax Policy during the COVID-19 Pandemic*. Paris: OECD Publishing.

Rodrik, D., 2008. *Second-best institutions*. American Economic Review, 98(2), pp.100–104.

Sameti, M., & Rafie, L. (2010), Interaction of income distribution, taxes and economic growth: The case of Iran and some selected East Asian countries. *Iranian Economic Review*, 14(25), 89–110, Availabe at: https://ier.ut.ac.ir/article_32691_781295f582dd0b8a0ae62052e65827da.pdf (Accessed 16 May, 2025)

Tait, A. A. (1991), *VAT Policy Issues: Structure, Efficiency and Equity,* IMF Working Paper.

Tanzi, V. and Zee, H.H., 2000. *Tax policy for emerging markets: Developing countries*. National Tax Journal, 53(2), pp.299–322.