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**ẢNH HƯỞNG CỦA THUẾ SUẤT THU NHẬP DOANH NGHIỆP ĐẾN
TỶ LỆ THẤT NGHIỆP CỦA CÁC QUỐC GIA ĐANG PHÁT TRIỂN
TẠI KHU VỰC CHÂU Á GIAI ĐOẠN 2013 – 2022**

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Tóm tắt

Việc cân bằng giữa mục tiêu tăng thu ngân sách và đảm bảo ổn định thị trường lao động đặt ra thách thức lớn đối với các nền kinh tế đang phát triển, từ đó nhấn mạnh tầm quan trọng của việc hiểu rõ tác động của chính sách thuế thu nhập doanh nghiệp đối với tỷ lệ thất nghiệp. Nghiên cứu này phân tích mối quan hệ giữa thuế suất thu nhập doanh nghiệp và tỷ lệ thất nghiệp tại 16 quốc gia châu Á đang phát triển trong giai đoạn 2013–2022, nhằm lấp đầy khoảng trống về bằng chứng thực nghiệm trong bối cảnh khu vực. Bằng cách sử dụng dữ liệu bảng và phương pháp ước lượng Bình phương nhỏ nhất tổng quát khả thi (FGLS) để xử lý vấn đề phương sai thay đổi, kết quả cho thấy thuế suất thu nhập doanh nghiệp có mối quan hệ dương có ý nghĩa thống kê với tỷ lệ thất nghiệp. Cụ thể, mỗi mức tăng 1% trong thuế thu nhập doanh nghiệp có liên quan đến mức tăng 0,526% trong tỷ lệ thất nghiệp, phản ánh tác động tiêu cực của mức thuế doanh nghiệp cao đối với thị trường lao động. Nghiên cứu cung cấp cơ sở thực nghiệm hỗ trợ các nhà hoạch định chính sách trong việc điều chỉnh cơ cấu thuế phù hợp với mục tiêu tạo việc làm và thúc đẩy tăng trưởng bao trùm tại các nền kinh tế đang phát triển ở châu Á.

Từ khóa: thuế thu nhập doanh nghiệp, tỷ lệ thất nghiệp, chính sách tài khóa, các quốc gia châu Á đang phát triển, phân tích dữ liệu bảng

**IMPACTS OF CORPORATE INCOME TAX RATES ON UNEMPLOYMENT RATES IN
DEVELOPING ASIAN COUNTRIES FROM 2013 TO 2022**

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Abstract

The persistent challenge of balancing fiscal revenue generation with labor market stability in developing economies underscores the urgency of understanding how corporate income tax (CIT) policies influence unemployment. This study investigates the direct impact of CIT rates on unemployment across 16 developing Asian countries from 2013 to 2022, addressing a critical gap in region-specific empirical evidence. Employing panel data analysis with Feasible Generalized Least Squares (FGLS) estimation to correct for heteroskedasticity, the results reveal a statistically significant positive relationship between CIT rates and unemployment: a 1% increase in CIT corresponds to a 0.526% rise in unemployment, highlighting the adverse labor market effects of high corporate taxation. This research provides policymakers with evidence to harmonize tax structures with employment goals, fostering inclusive growth in developing Asia.

Keywords: corporate income tax, unemployment rate, fiscal policy, developing Asian countries, panel data analysis

1. Introduction

The interplay between fiscal policy and labor market outcomes remains a critical concern for developing economies, where governments must balance revenue generation through corporate taxation with the imperative to reduce unemployment and foster inclusive growth. Corporate income tax (CIT) serves as a vital revenue source, yet its potential to deter investment and constrain job creation poses a policy dilemma, particularly in capital-mobile sectors. While existing studies have explored the CIT-unemployment nexus, the majority focus on developed economies or global panels, often overlooking the unique institutional, economic, and structural contexts of developing Asia. This gap limits the applicability of findings to a region marked by rapid industrialization, diverse fiscal systems, and evolving labor markets. Against this backdrop, this study addresses the pressing need for region-specific empirical evidence to inform tax and labor policies tailored to the challenges of developing Asian countries.

This research examines the direct impact of CIT rates on unemployment across 16 developing Asian economies, including Armenia, Bangladesh, China, Indonesia, India, Iran, Jordan, Kazakhstan, Kyrgyz Republic, Sri Lanka, Malaysia, Pakistan, Philippines, Thailand, Turkiye and Vietnam, from 2013 to 2022. The selected countries represent a diverse mix of economic structures, tax regimes, and labor market conditions, offering a comprehensive lens to analyze regional dynamics. The 2013–2022 period is particularly relevant due to its coverage of significant events such as post-global financial crisis reforms, regional trade integration, and the COVID-19 pandemic, all of which influenced fiscal policies and employment trends. By employing panel data analysis and FGLS estimation to account for heteroskedasticity, this study isolates the effects of CIT while controlling for GDP growth and government expenditure. The findings aim to provide actionable insights for policymakers striving to reconcile revenue objectives with labor market stability, ultimately contributing to sustainable development in one of the world's most dynamic regions.

2. Literature review

2.1. Overview of previous studies

Corporate income tax (CIT) remains a key tool for revenue generation, but its potential to distort investment and employment decisions has raised significant policy concerns. While much of the literature emphasizes indirect channels, such as FDI, capital allocation, and economic growth, through which CIT affects employment, direct investigations into the CIT - unemployment nexus remain limited.

Specifically, De Mooij and Ederveen (2003), drawing on Dunning's eclectic paradigm, emphasized that corporate taxation significantly affects the location decisions of multinational firms, with a 1 percentage-point decrease in CIT associated with a 3.3% rise in FDI inflows. Developing from the foundation of this research, De Mooij and Ederveen (2008) conducted a comprehensive meta-analysis revealing that lower corporate tax rates, particularly effective average tax rates (EATR), significantly boost international investment, highlighting a strong link between CIT policy and employment through the FDI channel. Since FDI is commonly linked to job creation in host economies, this suggests that CIT policies can indirectly shape employment trends. In line with this, Edame & Okoi (2014) found that a 1% increase in CIT in Nigeria led to a 24% decrease in investment, indicating a strong disincentive effect on capital formation. Similarly, Baranová and Janíčková (2012) found that higher corporate tax burdens in 27 EU member countries from 1998 to 2010 correlated with slower long-term economic growth, while Zellner and Ngoie (2014) concluded that a permanent 5% cut in corporate and personal tax rates could raise U.S. GDP growth by 3 percentage points annually. Becker et al. (2012) showed that while higher corporate tax rates significantly reduce FDI capital stock, they simultaneously increase labor intensity, suggesting that the impact of CIT on employment is nuanced and depends on the composition and quality of foreign investment. These studies underscore the broader macroeconomic implications of CIT, with employment outcomes often mediated through reduced investment and slower economic expansion.

Beyond indirect effects, a growing body of research has examined the direct impact of corporate income taxation on unemployment, often pointing to a negative relationship between higher CIT rates and employment outcomes. A prominent example is Zirculis and Šarapovas (2016), who applied a Generalized Method of Moments (GMM) estimator to a panel of 41 countries from 2001 to 2012 and found that a 1% increase in the effective average corporate tax rate (EATR) led to a 0.4% rise in unemployment. Consistent with these findings, Bettendorf, Horst, and de Mooij (2009) examined the impact of corporate income tax on unemployment across 17 member states of the EU and confirmed that higher CIT rates were significantly associated with higher unemployment, especially in economies with a large presence of multinational enterprises (MNEs), where higher taxes tend to deter FDI and reduce labor demand. At the micro level, Siegloch (2014) provided compelling micro-level evidence from Germany, where administrative data from over 11,000 municipalities revealed that a 1% increase in local business tax led to a 0.8% drop in employment over two years. Supporting this, Keuschnigg (2009) used a search unemployment framework and showed that increased corporate taxes diminish domestic investment and job creation, leading to higher unemployment. Similarly, Parai (1999), using a Cournot duopoly model,

found that lowering CIT could enhance profits for both domestic and multinational firms, resulting in increased domestic employment. Moreover, George-Anokwuru and Okowa (2021) find that higher corporate income tax significantly increases unemployment in Nigeria, as a 1% increase in CIT raises unemployment by approximately 0.82%, highlighting how inefficient tax revenue allocation and high CIT rates discourage investment and job creation in developing economies.

While many studies link higher CIT to increased unemployment, some research highlights that this relationship is context-dependent and may vary over time. Smith (1994) shows that profit taxes can reduce unemployment in the short run, where the number of jobs (comprising both filled positions and vacancies) is assumed to be fixed, but increase it in the long run due to changes in firm behavior. Similarly, Nguyen Ngoc Son (2023) finds that the effect of CIT on unemployment differs across countries: a 1% tax cut significantly reduced unemployment in South Africa and Vietnam but unexpectedly increased it in China, underscoring the role of country-specific economic conditions.

However, other scholars have produced contrasting findings on the impacts of CIT on unemployment. Feldmann (2011) examined data from 19 industrialized nations (1979–2005) and found that higher CIT rates were significantly associated with lower unemployment rates, suggesting that in certain contexts, tax revenues might be effectively recycled into labor-supportive public spending. A similar perspective is provided by Wang (1993), who modeled a two-sector general equilibrium with sector-specific unemployment. He concluded that an increase in CIT lowers capital rents and raises wages in the non-corporate sector, narrowing the inter-sectoral wage gap and encouraging labor to shift toward sectors with lower unemployment, thereby reducing aggregate joblessness.

In sum, the literature review reveals a nuanced and often contradictory picture of the CIT-unemployment nexus. While many studies underscore the negative employment effects of higher corporate taxes, especially in capital-mobile and FDI-dependent economies, others demonstrate that positive or neutral outcomes are possible, depending on the economic structure, policy context, and time horizon considered. This body of work affirms the need for context-specific, evidence-based approaches when designing tax policies that aim to balance fiscal needs with labor market stability.

2.2. Research gap

Despite the growing body of literature on the macroeconomic effects of corporate income tax (CIT), empirical studies directly examining the relationship between CIT rates and unemployment remain limited, especially in the context of developing Asian countries. Much of the existing research focuses on developed economies or uses global panels, which often overlook the unique institutional and economic characteristics of developing Asia.

Furthermore, prior studies commonly analyze the indirect effects of CIT on labor markets through channels such as FDI, investment, or economic growth. While insightful, these approaches do not isolate the direct employment impact of tax policy. Even in the few studies focused on developing countries, most are country-specific and lack comparative regional analysis across Asia, where economic structures and fiscal policies vary widely.

This research addresses these gaps by empirically analyzing the direct impact of CIT rates on unemployment across developing Asian economies from 2013 to 2022. By focusing on this region and time frame, marked by tax reforms and external shocks, this study offers regionally relevant, evidence-based insights to support labor-sensitive and growth-oriented tax policy in developing contexts.

3. Theoretical framework

3.1. Definition of corporate income tax (CIT)

According to Hines (2015), corporate tax (or corporation tax) is a tax levied by each jurisdiction on profits made by companies or associations. It taxes the value of the corporation's profits. This analysis examines the taxes imposed on dividends and capital gains paid to firms, rather than the fiscal and R&D incentives provided for companies.

According to Vietnam's Law on Corporate Income Tax (2008, amended 2014), taxable income includes income from the production and trading of goods and services, as well as other sources such as capital and real estate transfers, asset use rights, interest income, and income generated from business activities both within and outside Vietnam.

In summary, Corporate Income Tax (CIT) can be understood as a direct tax imposed on a corporation's taxable profits, which encompass not only income from core business operations such as the production and trading of goods and services but also a variety of other income sources as defined by legal provisions.

3.2. Definition of unemployment

The OECD defines the unemployment rate as the proportion of the labor force that is not currently employed. Individuals are considered unemployed if they are of working age, actively seeking employment, available to work, and have undertaken concrete efforts to secure a job within the past four weeks.

As stated by the Reserve Bank of Australia, unemployment refers to the situation in which individuals who are both willing and able to work are unable to secure paid employment. The unemployment rate represents the proportion of the labor force that is without a job.

This concept is further elaborated in labor economics, where unemployment is viewed not only as a macroeconomic indicator but also as a reflection of labor market inefficiencies and socio-economic conditions. These consistent criteria across institutions emphasize the role of job-seeking behavior and work availability in identifying unemployment. Understanding the definition and measurement of unemployment is essential for analyzing labor market dynamics and the impacts of macroeconomic policies, trade liberalization, or structural changes within an economy.

3.3. Classical theory of unemployment

The classical theory of unemployment is one of the earliest economic theories that sought to explain the causes and propose solutions to unemployment, laying the groundwork for subsequent analyses of the labor market. Developed by economists such as Adam Smith (1776), Jean-Baptiste Say (1803), and John Stuart Mill (1848) in the 18th and 19th centuries, the core premise of this

theory lies in the assumptions of supply-demand laws, wage flexibility, labor market autonomy, and the existence of perfect information. According to this theory, unemployment arises when real wages exceed the equilibrium wage level, leading to an excess supply of labor over demand. As a result, firms are forced to cut back on hiring to reduce costs, pushing workers into unemployment.

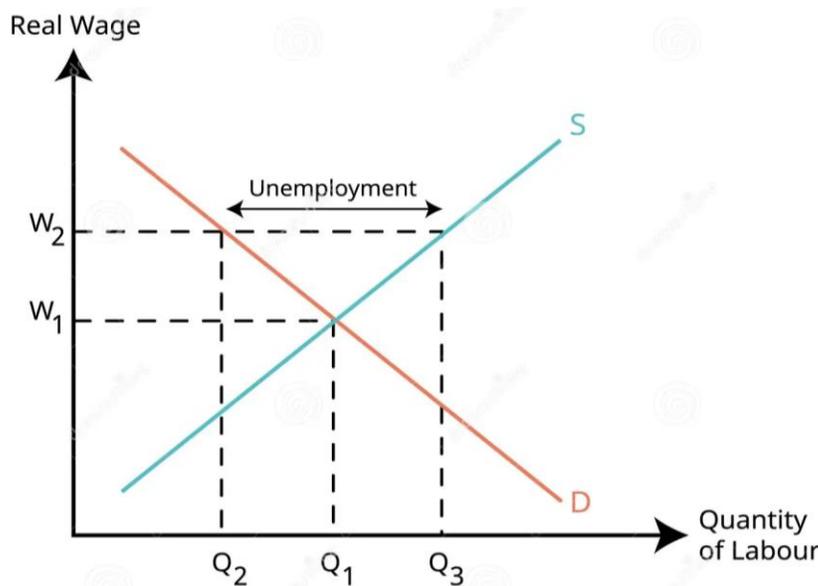


Figure 1. Unemployment under the classical theory

Source: Damane and Sekantsi (2018)

However, this theory reveals several significant limitations. Its assumptions do not fully reflect reality, particularly in terms of wage rigidity and the lack of perfect information in the market. Moreover, the classical theory fails to account for structural causes of unemployment, such as technological change or globalization. Ignoring the role of government intervention in addressing unemployment is another major shortcoming of this theory.

3.4. Keynesian theory of unemployment

The Keynesian theory of unemployment marked a significant turning point in the history of economic thought, offering a novel explanation for the causes of unemployment and proposing innovative policy solutions. Developed by British economist John Maynard Keynes in his seminal work "The General Theory of Employment, Interest, and Money" (1936), this theory sparked a revolution in macroeconomics and has had a profound influence on modern economic policy.

At its core, the Keynesian theory emphasizes the concept of effective demand and the role of aggregate supply and demand in determining employment levels. Keynes argued that unemployment arises when aggregate demand (including household consumption, business investment, and government spending) falls short of an economy's productive capacity. In such cases, insufficient demand leads to a reduction in output and employment, thereby causing involuntary unemployment.

Keynes advocated for an active role of government in addressing unemployment through demand-side policies, particularly fiscal and monetary interventions. He suggested that during periods of economic downturn, the government should stimulate demand by increasing public

spending on infrastructure and social programs, or by cutting taxes to encourage household consumption and business investment. Additionally, monetary policy tools such as lowering interest rates could be employed by central banks to boost investment and credit activity.

However, despite its significant contributions, the Keynesian approach also has several limitations. Critics argue that the theory places excessive emphasis on the role of government intervention while underestimating the importance of the private sector in driving long-term growth and employment. Furthermore, excessive fiscal stimulus may lead to inflationary pressures if not carefully managed, requiring a delicate balance between economic stimulus and price stability. The effectiveness of fiscal and monetary policies can also be constrained by institutional, political, and external factors.

Nevertheless, Keynesian unemployment theory remains a cornerstone of modern macroeconomic thought. It has provided a practical framework for policymakers to combat unemployment and stabilize economic fluctuations, making it an enduring and influential contribution to economic theory.

3.5. Theoretical impact of corporate taxation on economic growth

According to Engen and Skinner (1996), in their study on the relationship between taxation and economic growth in the United States—based on a large sample of countries and empirical evidence from macroeconomic studies (such as labor supply, investment demand, and productivity)—the authors proposed two main channels through which tax policy can affect economic growth: (i) First, changes in the structure and level of taxes can influence short-term growth through their impact on aggregate demand, but in the long run, these changes affect steady-state GDP growth (as in the Solow model); (ii) Second, in endogenous growth models (Romer, 1986; Lucas, 1988), where long-term growth is determined by factors such as technology and human capital, taxes can have lasting effects on growth through their influence on labor, capital accumulation, and government spending decisions (King and Rebelo, 1990). Within these models, taxes are shown to have long-term impacts on economic growth.

This theoretical framework also provides insights into how tax policy can influence growth via the labor market, including the unemployment rate. Specifically, corporate taxes may reduce labor supply incentives, discourage workforce participation, and weaken motivation for upskilling or acquiring advanced skills. Moreover, they may lower capital productivity by discouraging investment in various sectors, particularly those that are heavily burdened by taxation.

4. Estimating the impact of corporate income tax rates on unemployment rates

4.1. Research model and data

4.1.1. Research model and hypotheses

This study aims to investigate the impact of corporate income tax on the unemployment rate across countries. The analysis is grounded in Keynesian macroeconomic theory, which posits that fiscal policy plays a significant role in shaping labor market dynamics. While multiple factors influence unemployment, taxation—particularly corporate taxation—has been identified as a key determinant of firm behavior, capital investment, and employment generation (Keynes, 1936).

Higher corporate income tax rates may reduce firms' after-tax profits, discouraging investment, lowering labor demand, and thereby increasing unemployment. On the other hand, moderate taxation can finance productive government spending that stimulates demand. Given these competing channels, empirical examination is needed to determine the net effect of CIT on unemployment.

To isolate the effect of CIT, the study includes government expenditure and gross domestic product (GDP) as control variables. Government expenditure serves as a proxy for fiscal stimulus and public sector employment, while GDP captures the scale of economic output and business cycles that inherently affect employment levels.

In order to address potential heteroskedasticity and ensure interpretability of results in percentage terms, all continuous variables are transformed into their natural logarithmic forms. The econometric model is specified as follows:

$$\ln UNEMP_{it} = \beta_0 + \beta_1 \ln CIT_{it} + \beta_2 \ln GOV_{it} + \beta_3 \ln GDP_{it} + \epsilon_{it}$$

Table 1. Variables in the research model

Variable	Code	Measurement	References
DEPENDENT VARIABLE			
Unemployment Rate	UNEMP	Unemployment, total (% of total labor force) (modeled ILO estimate)	
INDEPENDENT VARIABLE			
Corporate Income Tax Rate	CIT	Corporate income tax rate (%)	Zirgulis & Šarapovas (2016) Bettendorf, Horst & de Mooij (2009) Keuschnigg (2008)
CONTROL VARIABLES			
Government Expenditure	GOV	General government final consumption expenditure (% of GDP)	Saraireh (2020) Fosu (2019)
Gross Domestic Product	GDP	GDP (current US\$)	Farsio & Quade (2003)

Source: Author's compilation

Based on the proposed research model, the authors conduct an empirical analysis using econometric methods to test the following hypotheses:

Hypothesis 1 (H1): The corporate income tax rate has a positive impact on the unemployment rate.

A growing body of empirical and theoretical literature suggests that higher corporate income tax rates may negatively affect labor market outcomes, particularly by increasing the unemployment rate. Zirgulis and Šarapovas (2016) argue that high corporate tax burdens can discourage investment, reduce firm competitiveness, and limit job creation, especially in open economies. Similarly, Parai (1999) finds that increased corporate taxation reduces business profitability, which in turn constrains firms' capacity to expand production and hire additional labor. Bettendorf, Horst, and de Mooij (2009), through a general equilibrium analysis, demonstrate that corporate tax shifts can lead to higher labor costs and lower employment levels as firms seek to maintain profit margins. Keuschnigg (2008) highlights that corporate taxes distort capital allocation and innovation incentives, thereby undermining long-term employment growth.

Hypothesis 2 (H2): Government expenditure has a negative impact on the unemployment rate.

Empirical evidence suggests that increased government expenditure can contribute to lower unemployment rates by stimulating aggregate demand and enhancing economic productivity. Saraireh (2020) finds that, in the long run, a 1% increase in government spending leads to a 0.43 percentage point reduction in the unemployment rate, highlighting the significant and sustained impact of fiscal expansion on labor market outcomes. Similarly, Fosu (2019) focuses on the role of government investment, particularly in infrastructure, and shows that a 1% increase in public investment reduces unemployment by 0.08%, a result that is statistically significant at the 1% level. These findings indicate that efficient and targeted government spending, especially on capital formation, can create job opportunities, boost private sector activity, and reduce unemployment.

Hypothesis 3 (H3): Gross domestic product (GDP) has a negative impact on the unemployment rate.

Farsio and Quade (2003) confirm a statistically significant inverse relationship between GDP and unemployment. Their study shows that a 1% decrease in unemployment is associated with a 0.10% increase in GDP. This supports the hypothesis that higher economic output is linked to lower unemployment rates.

These hypotheses are tested to evaluate the effects of fiscal policy instruments and macroeconomic conditions on labor market performance, with a particular focus on the unemployment rate as the dependent variable.

4.1.2. Data and descriptive statistics

Data collection process

This study utilizes panel data covering 16 developing Asian countries over a 10-year period from 2013 to 2022. The selected countries include Armenia, Bangladesh, China, Indonesia, India, Iran, Jordan, Kazakhstan, Kyrgyz Republic, Sri Lanka, Malaysia, Pakistan, Philippines, Thailand, Turkiye, and Vietnam. According to the World Bank classification (2024), these are categorized as developing economies.

The dataset includes variables such as the unemployment rate, government expenditure (as a percentage of GDP), and gross domestic product (GDP), all of which were collected from the World Bank database. Data on corporate income tax rates were sourced from the OECD database. All data were processed and analyzed using STATA 18 software.

Descriptive statistics

Table 2 presents the descriptive statistics of the variables used in our model, expressed in natural logarithmic form. All variables have complete data and thus no imputation methods were employed. The total number of observations is 160 for most variables, with a slightly lower number for *lnGOV* due to missing entries. The statistics demonstrate that the dataset is suitable for regression analysis, with reasonable variability and no extreme outliers across the variables.

Table 2. Descriptive statistics

Variables	Observations	Mean	Standard deviation	Min	Max
<i>lnUNEMP</i>	160	1,564207	0,8110265	-1,390302	2,987549
<i>lnCIT</i>	160	3,118864	0,2988762	2,302585	3,877846
<i>lnGOV</i>	157	2,484239	0,2988762	1,632399	2,914901
<i>lnGDP</i>	160	26,33904	1,785961	22,62211	30,5148

Source: Author's compilation

The correlation matrix presented in Table 3 examines the linear relationships among the variables *lnUNEMP*, *lnCIT*, *lnGOV*, and *lnGDP*. The results reveal that the pairwise correlation coefficients fall within the range of -0.2873 to 0.6083 , all of which are well below the commonly used multicollinearity threshold of 0.8 . This indicates that the correlations between the independent variables are generally low to moderate, thereby reducing concerns regarding multicollinearity in the regression model. Among the variables, the highest observed correlation is between *lnCIT* and *lnGDP* (0.6083), suggesting a moderate positive relationship. Conversely, *lnCIT* and *lnGOV* show a moderate negative correlation of -0.2873 . The variable *lnUNEMP* exhibits weak correlations with all other variables, with the strongest being a negative correlation of -0.2006 with *lnGDP*. Overall, the low magnitude of these coefficients suggests that the explanatory variables in the model are sufficiently independent of one another, supporting the robustness of subsequent econometric analyses.

Table 3. Correlation matrix

	<i>lnUNEMP</i>	<i>lnCIT</i>	<i>lnGOV</i>	<i>lnGDP</i>
<i>lnUNEMP</i>	1,0000			

<i>lnCIT</i>	0,0511	1,0000		
<i>lnGOV</i>	0,0622	-0,2873	1,0000	
<i>lnGDP</i>	-0,2006	0,6083	-0,0914	1,0000

Source: Author's compilation

4.2. Estimation procedure

4.2.1. OLS Regression Estimation

The Ordinary Least Squares (OLS) is used to estimate the linear relationship between the dependent and independent variables. It minimizes the sum of squared residuals, producing unbiased and efficient estimates under the Gauss-Markov assumptions, including linearity, no perfect multicollinearity, zero conditional mean, homoskedasticity, and no autocorrelation. The OLS estimator is given by:

$$\hat{\beta} = (X'X)^{-1}X'y$$

Despite its advantages, OLS can produce biased results when these assumptions are violated, such as in the presence of heteroskedasticity or autocorrelation (Wooldridge, 2016).

4.2.2. Testing for Autocorrelation

Due to panel data analysis, our research uses the Wooldridge autocorrelation testing through the `xtserial` command in STATA. Developed by Wooldridge (2002), this test is appropriate for detecting first-order autocorrelation within panel units. The null hypothesis is no autocorrelation. If rejected, the presence of serial correlation may bias standard errors and affect inference.

4.2.3. Testing for Heteroskedasticity

Heteroskedasticity is tested using the White test (`estat imtest`, `white` in STATA). If the test indicates a non-constant variance of errors, robust standard errors or alternative estimators like FGLS are employed to ensure valid inference (Wooldridge, 2016).

4.2.4. Feasible Generalized Least Squares Estimation (FGLS)

FGLS addresses heteroskedasticity and autocorrelation by first estimating the error structure and then re-estimating the model with corrected standard errors. This method improves efficiency when OLS assumptions are violated, particularly in panel data settings (Wooldridge, 2016).

4.3. Results and Discussion

4.3.1. Results of OLS regression estimation

Table 4 presents the results of an Ordinary Least Squares regression analysis where the dependent variable is the unemployment rate (*lnUNEMP*). The independent variables include corporate income tax (*lnCIT*), government expenditure (*lnGOV*), and gross domestic product (*lnGDP*). The analysis was conducted using a sample of 157 observations.

Table 4. OLS Estimation Results

Independent Variable	Coefficient	Std. Error	t-Statistic	P-value	95% Confidence Interval
<i>lnCIT</i>	0,8750	0,2775	3,15	0,002	[0,326; 1,4233]
<i>lnGOV</i>	0,3221	0,2187	1,47	0,143	[-0,1989; 0,7541]
<i>lnGDP</i>	-0,1737	0,0440	-3,95	0,000	[-0,2607; -0,08686]
constant	2,6099	1,1428	2,28	0,024	[0,3522; 4,8676]

Source: Author's compilation

The regression results indicate that two out of the three explanatory variables have a statistically significant relationship with the unemployment rate at conventional levels.

The coefficient on *lnCIT* is positive and statistically significant at the 1% level ($p = 0.002$). This suggests that a 1% increase in corporate taxation is associated with approximately a 0.875% increase in the unemployment rate, holding other factors constant. This result may reflect that higher corporate taxation could discourage business expansion and job creation, potentially leading to higher unemployment.

The coefficient on *lnGOV* is positive but not statistically significant ($p = 0.143$). This suggests that variations in government expenditure may not have a consistent or clear effect on unemployment in the sample studied, possibly due to the composition or efficiency of spending.

In contrast, *lnGDP* has a negative and highly statistically significant coefficient ($p < 0.01$), implying that a 1% increase in GDP is associated with approximately a 0.174% decrease in the unemployment rate. This result is consistent with economic theory, as higher economic output is typically associated with more employment opportunities.

The overall model explains about 10% of the variation in the unemployment rate. Although this explanatory power is modest, the model is statistically significant as a whole ($F = 5.71$, $p = 0.001$), indicating that the included variables contribute meaningfully to explaining unemployment. To ensure the robustness and validity of these findings, it is essential to perform diagnostic checks for potential econometric issues, including multicollinearity, autocorrelation, and heteroskedasticity tests.

4.3.2. Results of multicollinearity, autocorrelation, and heteroskedasticity tests

Table 5 reports the results of the Variance Inflation Factor (VIF) test, which is used to detect the presence of multicollinearity among the explanatory variables in a regression model. Multicollinearity occurs when independent variables are highly correlated with each other, which can inflate the standard errors of the estimated coefficients, reduce statistical power, and potentially distort the interpretation of the regression results.

Table 5. Multicollinearity tests

Variable	VIF	1/VIF
<i>lnCIT</i>	1,74	0,575787
<i>lnGOV</i>	1,10	0,906440
<i>lnGDP</i>	1,61	0,622336
Mean VIF		1,48

Source: Author's compilation

The VIF values for all three explanatory variables (*lnCIT*, *lnGOV*, and *lnGDP*) are well below the commonly used threshold of 10, and even more conservative thresholds of 5 or 2.5. Specifically, the highest VIF recorded is 1.74 for *lnCIT*, followed by 1.61 for *lnGDP*, and 1.10 for *lnGOV*. The mean VIF is 1.48, indicating a very low average level of multicollinearity among the independent variables.

These results suggest that multicollinearity is not a concern in this model, and the estimated coefficients can be interpreted with confidence. The low VIF values imply that the explanatory variables are not significantly correlated with one another, which helps ensure the reliability of the regression estimates and preserves the precision of hypothesis testing.

Table 6 presents the results of diagnostic tests for two important econometric issues: autocorrelation and heteroskedasticity. These tests are crucial for validating the assumptions underlying Ordinary Least Squares (OLS) regression and ensuring the reliability of the model's estimates.

Table 6. Autocorrelation and heteroskedasticity tests

Wooldridge test	H0: no first-order autocorrelation F(1, 15) = 3,648 Prob > F = 0,0754
White's test	H0: Homoskedasticity Ha: Unrestricted heteroskedasticity chi2(9) = 53,89 Prob > chi2 = 0,0000

Source: Author's compilation

The Wooldridge test is employed to detect the presence of first-order autocorrelation in panel data or time series regressions. The null hypothesis (H_0) of the test states that there is no first-order autocorrelation. Since the p-value (0,0754) is greater than the conventional significance level of 0.05, we fail to reject the null hypothesis. This suggests that there is no statistically significant evidence of first-order autocorrelation in the residuals of the regression model. Consequently, the

assumption of independent errors is likely to be satisfied, which enhances the reliability of standard errors and t-statistics.

White’s test is used to detect heteroskedasticity, a condition where the variance of the error term is not constant across observations. The null hypothesis (H0) assumes homoskedasticity, whereas the alternative hypothesis (Ha) posits unrestricted heteroskedasticity. The extremely small p-value (less than 0.01) leads to a rejection of the null hypothesis at any conventional significance level. This indicates the presence of heteroskedasticity in the residuals of the model, which violates a key OLS assumption.

Based on the previous diagnostic tests, the presence of heteroskedasticity (as identified by White’s test) and the absence of autocorrelation (as suggested by the Wooldridge test) indicate that the classical OLS assumptions are violated in terms of error variance, though not in terms of error independence. To address this issue, the FGLS method was employed, using the `xtgls` command with the specification `panels(heteroskedastic)` in STATA.

4.3.3. Estimation results

The results of the FGLS regression, presented in Table 7, offer further insights into the relationship between unemployment *lnUNEMP* and the independent variables: corporate income tax *lnCIT*, government expenditure *lnGOV*, and gross domestic product *lnGDP*, while correcting for heteroskedasticity.

Table 7. FGLS Estimation results

Independent Variable	Coefficient	Std. Error	z	P > z	95% Confidence Interval
<i>lnCIT</i>	0,5257	0,1400	3,75	0,000	[0,2512; 0,8002]
<i>lnGOV</i>	0,2316	0,1062	2,18	0,029	[0,0235; 0,4398]
<i>lnGDP</i>	-0,0708	0,0238	-2,98	0,003	[-0,1174; -0,0242]
constant	1,2263	0,5871	2,09	0,037	[0,0755; 2,3771]

Source: Author’s compilation

The FGLS regression results indicate that all three explanatory variables are statistically significant at the 5% level, as evidenced by their p-values being below 0.05. This represents an improvement over the previous OLS model, where government expenditure did not exhibit statistical significance. Specifically, the coefficient for corporate income tax (*lnCIT*) remains positive and highly significant ($p < 0.01$), suggesting that a 1% increase in corporate income tax is associated with a 0.526% rise in the unemployment rate, holding other factors constant.

Government expenditure (*lnGOV*) also displays a positive and statistically significant relationship with unemployment at the 5% level. A 1% increase in public spending is associated with a 0.232% increase in unemployment. Although this finding may seem counterintuitive, it

could be attributed to short-term inefficiencies, delayed impacts of spending, or structural factors that limit the immediate effectiveness of fiscal policies.

On the other hand, GDP ($\ln GDP$) shows a negative and statistically significant effect on unemployment, aligning with economic theory. A 1% increase in GDP leads to an estimated 0.071% decrease in the unemployment rate, highlighting the inverse relationship between economic growth and joblessness. The constant term is also positive and statistically significant, indicating a baseline level of unemployment even when the logarithmic values of the independent variables are zero.

4.3.4. Discussion of the estimated model

The FGLS regression results provide several key insights into the relationship between fiscal policy and unemployment, evaluated against the proposed hypotheses and prior literature.

First, the coefficient for corporate income tax ($\ln CIT$) is positive and significant at the 1% level, supporting Hypothesis 1 (H1). A 1% increase in CIT correlates with a 0.526% rise in unemployment, consistent with studies such as Zirgulis and Šarapovas (2016), Parai (1999), Bettendorf et al. (2009), and Keuschnigg (2008), all of which highlight the negative labor market impacts of high corporate tax burdens through reduced investment and distorted capital allocation.

Second, government expenditure ($\ln GOV$) shows a positive and significant relationship with unemployment at the 5% level, contrary to Hypothesis 2 (H2). A 1% increase in spending is associated with a 0.232% rise in unemployment. This contrasts with findings from Sarairoh (2020) and Fosu (2019), who report job-creating effects from public spending. The unexpected result here may be due to inefficient resource allocation, short-term structural rigidities, or crowding-out effects, indicating the need for further analysis of spending composition and effectiveness.

Third, GDP ($\ln GDP$) has a negative and statistically significant impact on unemployment at the 1% level, validating Hypothesis 3 (H3). A 1% rise in GDP leads to a 0.071% decrease in unemployment, affirming Okun's Law and aligning with Farsio and Quade (2003), who emphasize the role of economic growth in job creation.

Overall, the results illustrate that while higher CIT significantly raises unemployment, the effects of government spending are more nuanced and potentially context-specific. GDP growth remains a reliable factor in reducing unemployment. These findings highlight the importance of well-structured and efficient fiscal policy to support labor market outcomes, and suggest future research should examine the quality of government spending and additional macroeconomic controls.

5. Recommendations

5.1. Optimizing CIT structures

The study's robust evidence of a positive CIT-unemployment relationship underscores the need for strategic CIT reforms. Policymakers in developing Asian economies should consider gradual CIT rate reductions, particularly in sectors with high capital mobility, to incentivize business expansion

and job creation. To mitigate fiscal revenue losses, complementary measures such as broadening the tax base, enhancing compliance through digital tax administration, and eliminating inefficient tax exemptions should be prioritized. Additionally, CIT incentives, such as tax credits linked to employment generation or investments in labor-intensive industries, could align corporate profitability with labor market objectives. For instance, offering reduced CIT rates for firms that exceed employment growth targets would directly channel tax benefits into job creation.

5.2. Enhancing the Efficiency of Government Expenditure

The counterintuitive positive association between government expenditure and unemployment highlights structural inefficiencies in fiscal allocation. Governments should reorient public spending toward high-impact, employment-generating sectors such as infrastructure development, vocational training, and technology adoption. Implementing rigorous monitoring frameworks, including real-time impact assessments and transparency mechanisms, can ensure resources are allocated to projects with measurable employment outcomes. Concurrently, addressing bureaucratic bottlenecks and corruption in public procurement processes is critical to accelerating project execution and maximizing labor absorption. For example, prioritizing "shovel-ready" infrastructure projects with high local employment multipliers could amplify short-term job creation while fostering long-term productivity gains.

5.3. Leveraging GDP Growth

The significant negative GDP-unemployment relationship reaffirms the centrality of economic growth in labor market improvement. Policymakers should strengthen macroeconomic stability through prudent monetary and fiscal policies to attract foreign and domestic investment. Targeted support for small and medium enterprises (SMEs), such as streamlined access to credit, technology subsidies, and export facilitation programs can unlock their potential as primary employment drivers. Furthermore, fostering innovation ecosystems through public-private partnerships in digital infrastructure and green technologies can create high-quality jobs aligned with global trends. Regional cooperation frameworks, such as harmonized trade agreements and cross-border investment protocols, should be leveraged to integrate developing Asian economies into global value chains, amplifying growth-employment synergies.

5.4. Adopting Context-Specific Policy Design

The heterogeneity across developing Asian economies necessitates tailored policy approaches. Nations heavily reliant on FDI should prioritize CIT competitiveness to retain investor confidence, while those with underdeveloped tax systems might focus on improving fiscal governance to enhance revenue mobilization. Labor market policies must also account for sectoral disparities, for instance, agriculture-dependent economies could invest in agro-processing industries to reduce underemployment, whereas manufacturing-oriented nations might focus on upskilling programs to address skills mismatches. Longitudinal studies tracking the lagged effects of CIT reforms and expenditure reallocations are recommended to refine policy calibration over time.

6. Conclusions

This study provides empirical evidence on the relationship between corporate income tax (CIT) rates and unemployment in developing Asian economies from 2013 to 2022. Results show that higher CIT rates significantly increase unemployment, with a 1% rise in CIT linked to a 0.526% increase in unemployment. GDP growth is associated with lower unemployment, while government expenditure shows a surprising positive correlation with joblessness, hinting at inefficiencies or delayed fiscal impacts.

However, limitations include the use of aggregated panel data, omission of relevant labor market and technological factors, and broad expenditure metrics that hinder detailed fiscal insights. Future research should incorporate disaggregated data, explore regional and sectoral dynamics, and assess long-term effects of CIT reforms.

Overall, the findings highlight the importance of balanced, context-aware fiscal policies. Reducing CIT and promoting growth can help lower unemployment, but must be coupled with efficient public spending and structural reforms to ensure inclusive, resilient labor markets.

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