THE IMPACT OF TAX BURDEN ON THE SIZE OF THE NON-OBSERVED ECONOMY:
THE MODERATING ROLE OF PUBLIC GOVERNANCE

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SUMMARY OF THE PH.D. DISSERTATION IN ECONOMICS

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ABTRACT

The Ph.D. dissertation titled "The Impact of Tax Burden on the Size of the Non-Observed Economy: The Moderating Role of Public Governance" examines the relationship between tax policy, public governance quality, and the non-observed economy (NOE) across ten emerging Asian economies during the period 2002–2020. Using a balanced panel dataset, the dissertation employs FGLS, GMM, and Panel Threshold Regression (Hansen, 1999) models to conduct empirical analysis. The findings reveal that: (i) the tax burden exerts a positive and statistically significant effect on the NOE size; (ii) public governance has a negative and significant effect, helping to reduce the NOE; and (iii) a threshold level of governance exists, beyond which the expanding effect of taxation on the NOE diminishes or reverses. This indicates that, under the same level of taxation, countries with stronger institutional quality are more capable of sustaining formal economic activities and ensuring fiscal discipline.

The Ph.D. dissertation contributes to the academic literature by being the first to quantify the moderating and threshold effects of public governance in the tax–NOE nexus within emerging Asian economies. It also constructs a reliable panel dataset covering 2002–2020, serving as a reference for future research. In practical terms, the study proposes policy implications to reduce the NOE sustainably: enhancing fiscal transparency, simplifying tax procedures, promoting digital transformation in tax administration, and strengthening accountability within the public sector to foster taxpayer trust and compliance.

Keywords: tax burden, public governance, non-observed economy.

CHAPTER 1. INTRODUCTION

1.1. Rationale for the research topic.

The non-observed economy (NOE) refers to the part of economic activity that is not fully captured in official statistics for various reasons—such as tax evasion, unregistered operations, household self-consumption, or illegal production. Therefore, the NOE is broader than the informal sector, of which it is only one component. In public economics and national accounting, the NOE is particularly important because it not only provides employment (especially for low-skilled workers) but also distorts resource allocation, reduces tax revenues, and weakens policy effectiveness (Kodila-Tedika & Mutascu, 2013). According to recent reports by the IMF and standard datasets (Medina & Schneider, 2018), the NOE exists in all countries. However, its size and dynamics vary significantly across regions, especially in emerging Asian economies, where rapid growth, urbanization, and digital transformation are underway. Economies such as China, India, Indonesia, Iran, Malaysia, Thailand, Saudi Arabia, the Philippines, the UAE, and Vietnam continue to contribute substantially to global growth thanks to favorable demographics, large domestic markets, and technological progress. However, this growth has been accompanied by challenges in tax systems and public governance, including complex tax procedures, high compliance costs, overlapping regulations, inconsistent enforcement, and informal costs. These weaknesses incentivize economic agents to shift toward unrecorded activities, thereby expanding the NOE. Estimates suggest that the NOE in Asia averaged more than 30% of GDP during 1999–2015, ranging from 15% to over 40% among emerging economies (World Bank, 2020). In Vietnam, despite an average GDP growth rate of 6.5% during 2015–2023, the NOE remains large, often estimated at over 20% of GDP, higher than the regional average. This reality motivated the Vietnamese government to launch the Project on Measuring the Non-Observed Economy

(Decision No. 146/QD-TTg, 2019) to improve the comprehensiveness of national accounts and enhance policy effectiveness.

At the conceptual level, tax burden and public governance are two key factors influencing tax compliance and participation in the formal economy. Theories of tax compliance and rational choice (Allingham & Sandmo, 1972), cost–benefit analysis (Tanzi, 1999), and tax morale (Torgler, 2005) suggest that high tax and compliance costs (both monetary and time-related) promote tax avoidance and unrecorded activities. Conversely, public choice theory (Buchanan & Tullock, 1962) highlights that government effectiveness, transparency, and accountability can build trust and increase compliance, thus reducing the NOE. From a modern institutional perspective, governance can also influence the tax–NOE relationship: at the same tax level, better governance—through simpler procedures, consistent enforcement, and responsive public services—can prevent NOE growth or even lower it by improving the perceived benefit–cost balance of remaining in the formal sector (Zhanabekov, 2021; 2022).

Empirical evidence from emerging Asian economies supports this reasoning. While many countries maintain tax-to-GDP ratios between 20% and 25% (World Bank, 2022), satisfaction with public services and the ease of compliance remain low. Complicated filing and payment processes, high compliance costs, and uneven IT applications create heavy burdens, especially for small firms and household businesses. Meanwhile, World Governance Indicators (WGI) scores remain below the global average in many countries (ADB, 2021). In Vietnam, although transparency and public service delivery have improved, regional disparities and bureaucratic hurdles persist (UNDP/PAPI, 2022). These factors undermine tax morale, increase informal payments, and encourage a shift toward the NOE.

Empirical studies, both classic and recent (Tanzi, 1999; Schneider, 2004; Torgler & Schneider, 2007; Fugazza & Jacques, 2002; Alm & Torgler, 2006;

Feld & Frey, 2007), confirm that heavier tax burdens and higher compliance costs expand the NOE. However, another strand of literature finds conditional or reverse effects: when taxpayers perceive that taxes are transformed into fair and transparent public goods, higher tax rates do not necessarily increase the NOE (Alañón & Gómez-Antonio, 2005; Hassan & Schneider, 2016; Gaspareniene et al., 2016). Despite a large body of research in Europe and OECD countries, there remain notable gaps. First, few studies systematically analyze emerging Asian economies using consistent long-term data. Second, prior studies often examine the effects of taxation and governance separately, while the moderating role of governance is rarely tested directly through interaction terms or threshold models. Third, even when institutions are considered, few studies identify a governance threshold, the minimum institutional quality at which taxation ceases to expand the NOE. Consequently, policy recommendations are often too general, lacking relevance to each country's governance capacity.

This topic is also highly relevant for Vietnam and the region. Vietnam's current policy orientation (expanding the tax base, maintaining revenue, simplifying procedures, digitalizing tax administration, and improving statistical coverage) requires robust empirical evidence to guide reform.

In summary, the choice of this topic, "The Impact of Tax Burden on the Size of the Non-Observed Economy: The Moderating Role of Public Governance," is driven by four main reasons: (i) its academic and practical significance in understanding the NOE as a broader concept than the informal sector; (ii) the need for empirical evidence for emerging Asian economies; (iii) the research gap concerning the conditional effect of taxation under different governance quality and threshold levels; and (iv) its direct policy relevance in promoting fair, transparent, and efficient tax systems, thereby reducing the NOE, enhancing market discipline, and supporting sustainable growth.

With this approach, the dissertation contributes both theoretically (by integrating institutional quality into the taxation–NOE framework) and empirically, by offering evidence-based insights to help countries develop governance-sensitive tax policies that avoid "one-size-fits-all" solutions and enhance outcomes for the formal economy.

1.2. Research Objectives

1.2.1. General Objective

The main goal of this Ph.D. dissertation is to analyze the impact of the tax burden and public governance on the size of the non-observed economy (NOE) in emerging Asian economies. Specifically, the study aims to clarify how public governance moderates the relationship between the tax burden and the NOE. Based on the empirical findings, the dissertation seeks to suggest policy recommendations that can help emerging Asian economies reduce the size of the NOE while promoting sustainable economic growth and maintaining fiscal stability.

1.2.2. Specific Objectives

To achieve the general objective, the dissertation pursues four specific goals: (1) To assess the effects of the tax burden and public governance on the size of the non-observed economy (NOE) in emerging Asian economies; (2) To analyze the moderating role of public governance in the relationship between the tax burden and the NOE, clarifying how the magnitude and direction of taxation effects vary across different institutional contexts; (3) To identify the governance threshold at which the impact of the tax burden on the NOE shifts in direction or intensity, thereby quantifying the minimum institutional quality needed for tax policy to be effective. (4) To propose policy implications related to taxation and governance aimed at reducing the NOE and fostering a transparent, fair, and efficient tax system for emerging economies in the Asian region.

1.3. Research Scope and Object

This research examines the relationship between the tax burden and the size of the non-observed economy (NOE), with a particular focus on how public governance moderates this relationship.

Scope of the Study:

-   Geographical scope: The study examines ten emerging Asian economies (China, India, Indonesia, Iran, Malaysia, Thailand, the Philippines, Saudi Arabia, the United Arab Emirates (UAE), and Vietnam), as classified by the International Monetary Fund (IMF, 2020). The selection of these economies is based not only on their rapid economic growth but also on shared characteristics such as tax policy, public governance, and the size of the non-observed economy (NOE). These similarities make them a suitable sample for analyzing the relationship between tax burden and governance. Additionally, these countries have relatively comprehensive and comparable datasets, reflecting economies that are actively reforming their institutional frameworks and tax systems amid integration and digital transformation. This context makes them especially suitable for testing the moderating role of governance on the tax–NOE relationship.

-   Time scope: The study covers the period from 2002 to 2020, with data primarily obtained from the World Bank (WB). This timeframe is chosen for its completeness and its suitability for cross-country comparisons within internationally recognized datasets. Since 2002, the World Bank has consistently published the Worldwide Governance Indicators (WGI), which evaluate six aspects of governance across countries in a consistent and comprehensive manner. Additionally, estimates of the non-observed economy (NOE) are sourced from Schneider et al. (2010) and Medina & Schneider (2018), providing reliable cross-country data up to 2020 that can be linked with key macroeconomic indicators. Data on the tax burden are collected from the International Monetary Fund (IMF) to ensure international consistency and standardization. Moreover, macroeconomic control

variables such as inflation, GDP per capita, foreign direct investment (FDI), and government expenditure are gathered from the World Bank databases.

1.5. Research Methodology

This Ph.D. dissertation mainly uses quantitative research methods with panel data from ten emerging Asian economies from 2002 to 2020. The study starts with standard linear regression models, including Pooled Ordinary Least Squares (Pooled OLS), Fixed Effects Model (FEM), and Random Effects Model (REM) for initial estimates. To handle issues of endogeneity, heteroskedasticity, and autocorrelation, more advanced techniques like Feasible Generalized Least Squares (FGLS) and the Generalized Method of Moments (GMM) are used. An interaction variable (TB×PG) is created to measure how public governance (PG) influences the relationship between the tax burden (TB) and the non-observed economy (NOE). The quality of governance is summarized using Principal Component Analysis (PCA) based on the six dimensions of the Worldwide Governance Indicators (WGI). To explore nonlinear effects, the study employs the Panel Threshold Regression model introduced by Hansen (1999), which identifies governance thresholds that may change how taxes impact the NOE. Additionally, Bayesian estimation methods are used to test the robustness and stability of the model parameters. All results are compared with established theories and earlier studies to verify the reliability, consistency, and relevance of the findings.

1.6. Contributions of the Dissertation

After achieving its research objectives, this Ph.D. dissertation offers several new contributions in both theoretical and practical areas, as outlined below.

Scientific Contributions:

First, this dissertation is the first study to empirically test the moderating role of public governance in the impact of the tax burden on the size of the non-observed economy (NOE) in emerging Asian economies, thereby expanding the theoretical framework that links tax policy and institutional quality.

Second, the dissertation constructs an interaction variable (TB×PG) and tests for the threshold effect to clarify both the moderating role and the governance

threshold, thereby quantifying the minimum level of institutional quality needed for tax policy to be effective.

Third, the dissertation contributes methodologically by integrating modern econometric techniques, including Principal Component Analysis (PCA) for building the composite governance index, Generalized Method of Moments (GMM) for handling endogeneity, Bayesian robustness testing, and the Panel Threshold Regression model, thereby improving the reliability and relevance of results in the complex data environment of emerging economies.

Practical Contributions:

First, the dissertation constructs a panel dataset for ten emerging Asian economies from 2002 to 2020, offering a valuable reference for future research and policy development on taxation and public governance in the region.

Second, the findings indicate that the impact of the tax burden on the NOE is heavily dependent on the quality of public governance; once governance exceeds a certain level, the growing effect of taxation on the NOE is notably diminished or even eliminated.

Third, based on these findings, the dissertation proposes relevant policy orientations, suggesting that countries should design tax policies aligned with governance capacity, while simultaneously promoting institutional reforms, reducing compliance costs, and strengthening anti-corruption efforts to achieve a sustainable reduction in the non-observed economy..

CHAPTER 2: THEORETICAL FRAMEWORK AND EMPIRICAL STUDIES

In Chapter 2, the dissertation offers a thorough overview of the theoretical foundations related to tax burden, public governance, and the size of the non-observed economy (NOE), including their definitions and measurement methods. It also reviews empirical studies examining (i) the influence of tax burden and public governance on the NOE, and (ii) the moderating role of governance in the relationship between tax burden and the NOE.

2.1. Theoretical Foundations

2.1.1. Theoretical Basis for the Impact of Tax Burden on the Non-Observed Economy

The tax burden directly affects tax compliance behavior and plays a key role in expanding the non-observed economy (NOE) (Cristea et al., 2020; Schneider, 2010). According to various economic theories, high tax rates and compliance costs decrease overall demand (Keynes), weaken incentives for production and compliance (Laffer), and lead to market distortions and welfare losses (Harberger), which in turn promote activities shifting to the informal or hidden sector. The tax compliance model by Allingham and Sandmo (1972) and Yitzhaki (1974) also states that when the chance of detection is low and penalties are mild, tax evasion becomes a rational decision, resulting in growth of the NOE.

2.1.2. Theoretical Basis for the Impact of Public Governance on the Non-Observed Economy

The system of regulations and state management directly affects Compliance costs and business freedom, which in turn influence the decision of economic agents to participate in or withdraw from the formal economy. According to institutional theory (North) and new institutional economics (Williamson; Acemoglu & Robinson), weak institutions, lack of transparency, and excessive administrative procedures increase transaction costs, making participation in the non-observed economy (NOE) a rational choice for small

firms and household businesses. Public choice theory (Buchanan & Tullock) argues that corruption and rent-seeking behavior undermine accountability. In contrast, behavioral institutional theory (Torgler) emphasizes that trust and social norms play crucial roles in determining tax compliance. Combining these perspectives, public governance influences the NOE through three main channels: compliance costs, administrative effectiveness, and institutional trust. When these three elements improve, the size of the NOE tends to decline sustainably.

2.1.3. Theoretical Basis for the Moderating Role of Public Governance in the Relationship between Tax Burden and the Non-Observed Economy

Economic theories suggest that public governance not only has a direct impact but also moderates the relationship between the tax burden and the size of the NOE. According to the Laffer Curve, total tax revenue is a nonlinear function of tax rates. In weak institutional settings, low enforcement and evasion costs lead to an expansion of the NOE, whereas strong institutions raise the optimal tax point and reduce the NOE. Public goods theory (Samuelson; Musgrave) emphasizes that when taxpayers perceive taxes as being effectively converted into quality public services, compliance increases; conversely, disappointment in public goods provision drives individuals and firms away from the formal sector. Theories of rational choice (Becker; Coleman) and transaction costs (Coase; Williamson) also demonstrate that sound institutions alter the cost–benefit structure, reducing risks and compliance costs, thereby encouraging formal economic activity. Thus, public governance acts as a key moderating factor that influences both the magnitude and direction of taxation's effect on the NOE.

2.3. Empirical studies on the impact of tax burden and public governance on the size of the non-observed economy, and the moderating role of governance

2.3.1 Empirical studies on the impact of tax burden on the size of the non-observed economy

Empirical evidence shows a clear link between the tax burden (TB) and the size of the non-observed economy (NOE). The pioneering study by Schneider and Neck (1992), which combined a household model with the currency demand approach (CDA), confirmed that TB—especially indirect taxes—and administrative complexity expand the NOE; tax reform is effective only when paired with simplification and greater transparency. Using EU data, Stankevicius and Vasiliauskaite (2014) found a statistically significant positive correlation between TB and NOE, especially in countries with underdeveloped financial systems, where indirect taxes and social security contributions were the main channels. Several other studies (Schneider 2000, 2005; Dreher & Schneider 2006; Dell'Anno, 2007) reinforced the idea that TB can stimulate the NOE in Austria, Scandinavia, and other advanced economies, while U.S. evidence (Torgler, 2005; Echazu & Bose, 2008) highlighted the role of auditing and penalties in limiting the NOE.

A broad cross-country analysis by Unver and Yalçınkaya (2019) showed that TB increases NOE, but the control of corruption has a larger mitigating effect; higher income and human development reduce NOE. Some results suggest nonlinearity or asymmetry: Peter (2009) found that high tax rates and complex structures increase NOE, while Achim et al. (2023) identified a U-shaped relationship for direct taxes and an inverted-U for indirect taxes/social contributions, with different tolerance thresholds between old and new EU members. Institutional heterogeneity also plays a role: Fedajev et al. (2022) reported that TB raises NOE in transition economies but may reduce it in developed markets; Navickas et al. (2019) emphasized that institutional variables (CPI, business freedom) better explain NOE than pure TB measures. Recent evidence (Tran Thi Kim Oanh et al., 2024) continues

to confirm a conditional impact depending on fiscal and institutional capacity: digital tax reforms and improved governance quality weaken the TB to NOE transmission channel. In summary, TB is a key factor in expanding NOE, but its magnitude and direction strongly depend on institutional contexts, tax structure, and governance effectiveness.

2.3.2 Empirical studies on the impact of public governance on the size of the non-observed economy

Several previous studies have shown that weak public governance quality and inappropriate regulations are key causes of activities within the non-observed economy (NOE) (Tsibouris & Tanzi, 2000; Schneider & Enste, 2000; Johnson & Kaufmann, 2001). Early evidence (Tsibouris & Tanzi, 2000; Schneider & Enste, 2000; Johnson & Kaufmann, 2001) confirmed that weak institutions and poorly designed regulations expand the NOE, whereas effective government, a strong rule of law, and reasonable control of corruption help to narrow it (Johnson et al., 1998; Dreher & Schneider, 2009; Buehn & Schneider, 2012; Teobaldelli, 2011; Williams & Schneider, 2013). Country-group studies reinforce this conclusion: in 51 Islamic countries, Razmi et al. (2013) reported an inverse relationship between public governance (PG) and NOE; in Central and Eastern Europe, Yilmaz (2016) found that "voice & accountability" and "rule of law" are the most influential pillars affecting NOE; and in Europe, Psychoyios et al. (2021) confirmed that good governance results in a smaller NOE. Evidence from Vietnam and other developing countries (Esaku, 2021; Tran Pham Khanh Toan et al., 2022) also shows that higher corruption increases the NOE, while improvements in government effectiveness lessen its negative impact. A large-scale study using PCA on WGI indicators (Ameer et al., 2025) verified the consistent adverse effect of PG on NOE; similarly, Nguyen Phuc Canh et al. (2020) found that the impact of economic integration on reducing NOE only exists when the institutional foundation is sufficiently strong. In summary, public

governance not only directly limits the NOE but also moderates the influence of taxation and other macroeconomic factors; therefore, assessing the effect of tax burden on NOE is incomplete without including governance as a moderating variable and testing for institutional thresholds.

2.3.3 Empirical studies on the moderating role of public governance in the relationship between tax burden and the size of the non-observed economy

Among empirical studies, the work of Friedman et al. (2000) is considered a foundational contribution, as it was the first to identify the moderating role of public governance in the relationship between tax burden and the size of the non-observed economy. Using cross-sectional data from 69 countries for the period 1990–1997, the authors built a linear regression model where the dependent variable was the NOE-to-GDP ratio estimated via the MIMIC approach. The independent variables included tax burden (total tax revenue and social security contributions as a share of GDP), corruption level, government effectiveness, and rule of law. The findings showed that in countries with weak governance and high corruption, TB had a strong positive effect on NOE; in contrast, in well-governed environments, higher taxation did not expand the shadow sector. This illustrates that the impact of taxation depends on institutional quality and that public governance acts as a moderating variable that influences both the magnitude and direction of the TB–NOE relationship. This finding laid the theoretical and empirical groundwork for later models that incorporate the interaction term TB×PG to measure institutional moderation mechanisms.

Building on this approach, Tran Pham Khanh Toan (2023) directly constructed a moderating variable to examine the role of public governance (PG) in the relationship between national intellectual capital (NIC) and NOE. Using panel data for 51 countries from 2005 to 2019, the author estimated NOE based on Medina and Schneider (2018), while PG was derived using principal component analysis (PCA) on the six Worldwide Governance Indicators (WGI). The System-GMM estimator was used to address endogeneity, and the interaction term NIC×PG was included to test the moderating effect. The results indicated that PG had a statistically significant negative impact on NOE, and the significant negative coefficient of NIC×PG confirmed that good institutional quality strengthens the positive effects of development factors, such as intellectual capital, in reducing NOE.

Together, these studies clearly show that public governance is not just an independent factor but also a conditional, mediating component that changes the way macroeconomic relationships function. The moderated regression method used in these studies provides a vital methodological basis for this dissertation in examining and testing the moderating role of PG in the TB–NOE connection, helping to quantify the institutional threshold needed for tax policy to be effective.

2.3.4. Research Gaps

The dissertation identifies several research gaps that can be further explored, specifically:

- Most existing studies have only explored the individual relationships between the tax burden and the size of the non-observed economy (NOE); public governance and the NOE; as well as the overall interaction between governance and taxation. However, few studies have explicitly examined the moderating effect of public governance on the relationship between tax burden and the NOE by constructing an interaction term (TB×PG).

- Previous research has also given limited focus to analyzing linear versus nonlinear relationships, especially the threshold effect of public governance in moderating the impact of tax burden on the NOE.

Accordingly, compared with prior studies, this dissertation aims to address the above two gaps by contributing two main novelties:

- *First,* the dissertation incorporates an interaction variable between tax burden and public governance (TB×PG) into the empirical model to explicitly identify the moderating role of governance in the effect of taxation on the size of the NOE.

- *Second,* the dissertation employs a panel threshold regression approach following Hansen (1999) and Wang (2015) to determine the threshold value and estimate the corresponding threshold model, with the expectation that there exists a governance threshold beyond which the impact of tax burden on the NOE changes in magnitude or direction.

CHAPTER 3: RESEARCH MODEL AND METHODOLOGY

Based on the theoretical and empirical foundations discussed in the previous chapters, the dissertation proposes the following research hypotheses:

H_1: The tax burden has a positive effect on the size of the non-observed economy (NOE).

H_2: Public governance has a negative effect on the size of the NOE.

H_3: Public governance moderates the relationship between tax burden and the size of the NOE.

H_{3a}: When the level of public governance is below the threshold, the tax burden positively affects the NOE.

H_{3b}: When the level of public governance exceeds the threshold, the effect of tax burden on the NOE weakens or becomes negative.

In the model, the dependent variable (NOE) represents the size of the non-observed economy of country i in year t, measured as the percentage share of the non-observed economy in GDP, estimated using the MIMIC approach and reported by the World Bank (2020). The independent variable – tax burden (TB) – is measured by the ratio of total tax revenue to GDP (% tax revenue/GDP), calculated and published by the IMF (2023). The public governance variable (PG) is constructed using the Principal Component Analysis (PCA) method based on the Worldwide Governance Indicators (WGI) dataset from the World Bank (2024).

The control variables (Zn) included in the model are: Gross Domestic Product per capita (GDP), Trade Openness (Trade), Foreign Direct Investment (FDI), Government Consumption Expenditure (GovC), and the Inflation Rate (Inf).In line with the research objectives and the proposed hypotheses, the dissertation constructs the following empirical models for testing and analysis.

Model 1: The impact of tax burden and public governance on the size of the non-observed economy

$$NOE_{it} = \alpha + \beta_1 TB_{it} + \beta_2 PG_{it} + \sum_1^n \gamma * Zn + \varepsilon_{it}$$

Model 2: The moderating role of public governance in the impact of tax burden on the size of the non-observed economy

$$NOE_{it} = \alpha + \beta_1 TB_{it} + \beta_2\ TB_{it} \times PG_{it} + \sum_1^n \gamma * Zn + \varepsilon_{it}$$

Model 3: The threshold effect of public governance on the impact of tax burden on the size of the non-observed economy

$$NOE_{it} = \alpha + \delta_1\ TB_{it}\ I\ (PG_{it} \leq \lambda) + \delta_2\ TB_{it}\ I\ (PG_{it} > \lambda) + \beta\ Z_{it} + \varepsilon_{it}$$

The estimation methods employed in this dissertation are designed to achieve the specific research objectives as follows:

(1) Objective 1 – Assessing the impact of tax burden and public governance on the size of the non-observed economy (NOE):

The dissertation uses a multi-country panel dataset covering the period 2002–2020 and estimates the model using three basic techniques: Pooled Ordinary Least Squares (OLS), Fixed Effects Model (FEM), and Random Effects Model (REM). Model specification tests are conducted to select the most appropriate estimator, and the results indicate that the REM is preferred. However, due to the presence of heteroskedasticity, autocorrelation, and cross-sectional dependence, the Feasible Generalized Least Squares (FGLS) method is employed to obtain efficient and unbiased estimates under these conditions.

(2) Objective 2 – Examining the moderating role of public governance:

To test the moderating effect, the interaction term TB×PG is incorporated into the model and estimated sequentially using OLS, FEM, and REM, followed by model specification tests to determine suitability. Upon detecting endogeneity and serial correlation, the Generalized Method of Moments (GMM) is applied to correct for bias and enhance consistency. To ensure robustness, Bayesian estimation is additionally conducted for validation.

(3) Objective 3 – Identifying the threshold of public governance:

The dissertation applies the Panel Threshold Model developed by Hansen (1999) and extended by Wang (2015), which allows detection of a nonlinear relationship between tax burden (TB) and the non-observed economy (NOE) when public governance (PG) surpasses a certain threshold value.

(4) Objective 4 – Deriving policy implications:

Based on the estimation results from the above models, the dissertation synthesizes empirical evidence to propose appropriate tax and governance policy recommendations aimed at reducing the size of the non-observed economy in emerging Asian economies.

CHAPTER 4: RESEARCH RESULTS AND DISCUSSION

This chapter presents the estimation results of the proposed models. The empirical evidence demonstrates that the tax burden exerts a positive effect on the size of the non-observed economy (NOE), whereas improvements in public governance significantly constrain its expansion. In addition, public governance plays a moderating role in the relationship between tax burden and the NOE once it reaches a certain threshold level. This moderating threshold effect constitutes one of the novel findings of the dissertation.

The research results are summarized in the following tables.

Hypothesis		Result	Conclusion
H_1	The tax burden has a positive effect on the size of the non-observed economy.	An increase in the tax burden leads to an expansion of the non-observed economy.	Hypothesis accepted.
H_2	Public governance has a negative effect on the size of the non-observed economy.	Improved public governance contributes to narrowing the non-observed economy.	Hypothesis accepted.
H_3	Public governance moderates the relationship between tax burden and the size of the non-observed economy.	Better governance reduces the positive effect of tax burden on the NOE, with a correlation coefficient of -0.013 and a significance level of $p < 0.05$.	Hypothesis accepted.

	Hypothesis	Result	Conclusion
H_{3a}	When public governance is below the threshold, the tax burden positively affects the size of the non-observed economy.	When PG ≤ 0.2873, an increase in the tax burden leads to an expansion of the non-observed economy.	Hypothesis accepted.
H_{3b}	When public governance exceeds the threshold, the impact of the tax burden on the size of the non-observed economy weakens or becomes negative.	When PG > 0.2873, an increase in the tax burden leads to a reduction in the size of the non-observed economy.	Hypothesis accepted.

Nguồn: Phân tích của tác giả.

The descriptive statistics show that the size of the non-observed economy (NOE) varies widely across countries, ranging from 11% to over 50% of GDP, highlighting the differences in institutional development and governance quality. The tax burden generally increases in countries with more complex administrative procedures, while public governance demonstrates a clear gap between economies with strong and weak institutional frameworks.

To identify the suitable estimation technique, the Pooled OLS, Fixed Effects Model (FEM), and Random Effects Model (REM) were initially used before applying the dynamic GMM estimator (Arellano–Bond, 1991) to handle endogeneity. The GMM results show that the tax burden (TB) has a positive and statistically significant impact on the NOE, indicating that higher taxes and compliance costs promote the growth of the informal sector. The interaction term (TB×PG) has a negative coefficient, confirming that public governance plays a moderating role, where stronger institutions lessen the negative effect of the tax burden on the NOE.

For robustness verification, Bayesian estimation yields consistent results with the GMM model: the tax burden increases the size of the NOE, while higher governance quality weakens this effect. Subsequently, the panel threshold regression (Hansen, 1999) identifies a governance threshold of PG = 0,2873* (95% confidence interval: 0,2469–0,2984). When PG ≤ 0,2873, the tax burden expands the NOE; however, when PG > 0,2873, this effect reverses, and the tax burden decreases the NOE. This finding provides strong evidence of the moderating impact of public governance, showing that as institutional quality becomes more transparent and effective, tax policy plays a more positive role in formalizing the economy. In summary, the findings of Chapter 4 confirm that enhancing the effectiveness of public governance is a key determinant in mitigating the negative effects of tax burden while promoting the formalization of the economy.

CHAPTER 5: CONCLUSION AND POLICY IMPLICATIONS

5.1. Conclusions on the Main Research Findings

This study has contributed to refining the theoretical framework on the effects of tax burden and public governance on the size of the non-observed economy (NOE), while also providing empirical evidence for the moderating role of governance in shaping this relationship.

Regarding the research objectives, the dissertation has successfully achieved its overall goal by analyzing the impact of tax burden under the moderating influence of public governance on the NOE among emerging Asian economies. The specific objectives have also been fulfilled as follows:

- For the first and second objectives, which aim to assess (i) the impact of tax burden on the NOE and (ii) the moderating role of public governance in this relationship, the results from Model 1 confirmed these effects. Using the Feasible Generalized Least Squares (FGLS) estimation, the dissertation found that an increase in tax burden enlarges the NOE, while higher governance quality weakens this positive relationship.

- The third objective was achieved through the application of the panel threshold regression method, which identified a governance threshold of PG = 0,2873, with a 95% confidence interval between 0,2469 and 0,2984. Accordingly, when governance quality is below the threshold (PG ≤ 0,2873), tax burden positively affects the NOE; conversely, when PG > 0,2873, the effect reverses—tax burden contributes to reducing the NOE.

- For the fourth objective, the dissertation provides a set of policy implications related to taxation and governance reforms aimed at managing and reducing the size of the NOE in emerging Asian economies.

Key empirical findings of the study can be summarized as follows:

- The tax burden (TB) exerts a positive and statistically significant effect on the NOE, suggesting that higher taxes and compliance costs

encourage firms and households to move toward informal economic activities to avoid tax and regulatory obligations.

- Public governance (PG) has a negative effect on the NOE, indicating that effective, transparent, and accountable institutions help reduce the size of the informal economy.

- The interaction term (TB×PG) confirms the moderating effect of governance. Once institutional quality surpasses the threshold value of 0.2873, the expansionary effect of taxation on the NOE is transformed into a contractionary one.

Overall, the study demonstrates that a heavier tax burden can only contribute to shrinking the non-observed economy when public governance reaches a certain level of effectiveness. Conversely, in weak institutional environments, higher taxes may exacerbate informality. This provides crucial empirical evidence for designing tax reforms in conjunction with governance improvements to manage and control the NOE in emerging Asian economies effectively.

5.2. Policy Implications

The research findings indicate that the impact of tax burden on the non-observed economy depends significantly on the quality of public governance. Therefore, policy recommendations should be tailored to different levels of governance capacity:

For countries with low governance quality, the priority should be to enhance transparency in tax policy, ensure open budget disclosure, and strengthen the accountability of tax authorities. These efforts help build public trust, reduce incentives for tax evasion and informality, and inform the public.

For countries with moderate governance quality, enhancing government efficiency is vital by streamlining administration, digitizing tax processes, strengthening civil servant skills, and lowering compliance costs.

For countries with high governance quality, tax reform should be closely linked to institutional improvement, moving toward a fairer, more efficient, and transparent tax structure. Additionally, the focus should be on digital risk management and post-refund auditing to enhance compliance and efficiency. At all levels of governance, tax policies must be implemented alongside governance improvements (especially in areas like corruption control, political stability, and market confidence) to create a fair and sustainable tax system. Strengthening these foundations will, in turn, help reduce the size of the informal economy and foster a more transparent and formal economic environment.

LIST OF PUBLICATIONS RELATED TO THE DISSERTATION

Domestic Journals

1. Nguyễn Thị Thương & Nguyễn Thị Mỹ Linh (2025). Kinh nghiệm quản lý khu vực kinh tế chưa được quan sát tại một số quốc gia và bài học kinh nghiệm cho Việt Nam. *Tạp chí Tài chính, 848* (1), 153-157.

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4. Nguyễn Thị Thương (2024). Kinh nghiệm quản lý thuế nhằm kiểm soát quy mô khu vực kinh tế chưa được quan sát. *Tạp chí Tài chính, 835* (2), 160-164.

5. Nguyễn Thị Thương (2020). Chính sách thuế tác động như thế nào đến tăng trưởng kinh tế. *Tạp chí Tài chính, 735*(2), 68-70.

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1. Nguyễn Thị Mỹ Linh, Bùi Ngọc Toản, Thái Duy Tùng & Nguyễn Thị Thương (2022). The threshold of shadow economy for economic growth in ASEAN countries. Proceedings of The 4th International Conference on

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