

MINISTRY OF EDUCATION AND TRAINING  
UNIVERSITY OF ECONOMICS HOCHI MINH CITY

**VÕ THỊ THÙY VÂN**

**PUBLIC GOVERNANCE, EXTERNAL DEBT AND  
ECONOMIC GROWTH IN DEVELOPING  
COUNTRIES**

Major: Finance and Banking

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**SUMMARY OF PHD THESIS**

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## CHAPTER 1: GENERAL INTRODUCTION

### 1.1 The reason for study

Nowadays, the trend of international integration is proceeding rapidly in all areas, and the developing countries have opportunities to take the shortcut in approaching new technologies and using external sources of capital efficient. Using external debt of developing countries will be brought enormous effects and advantages for them. However, using external debt will be made significant debt, posing major challenges and difficulties for these developing countries. There have been many debt crises in their history. At this time, aid agencies, international financial institutions and developed countries have focused on the quality of public governance as criteria for allocating financial aid to developing countries. This foreign aid condition is based on a general consensus that better public governance leads to better economic results.

The increasing external debt can contribute to economic decline. Among academic studies related the research topic of this thesis, Qayyum et al. (2014) is a study to establish a framework for theoretical analysis. Qayyum et al. (2014) shows that foreign aid and public governance support growth economic but foreign debt creates a burden for the economy. However, Qayyum & Haider (2012) do not include the interactive variables between external debt and public governance in the growth model to consider the impact of this interaction variable on economic growth. Qayyum & Haider (2012) used fixed effects and random effects to estimate and Ouedraogo (2015) used ECM to estimate. They has some disadvantages such as endogeneity and autocorrelation. In addition, Qayyum & Haider (2012) only used 3 component variables of the *Worldwide public governance indicators* of World Bank. We have used all 6 component variables to estimate the efficient of public governance. Finally, Qayyum & Haider (2012) did not divide smaller

samples to estimate the effective external debt in groups of developing countries.

Therefore, the subject of thesis is “public governance, external debt and economic growth in developing countries”. The thesis estimate the impact of public governance on the relationship between external debt and economic growth in developing countries

## **1.2 The aim for study**

By considering the role of public governance in the relationship between external debt and economic growth in Developing countries for the period 2000-2014, the thesis will focus on the following two objectives:

- (1) Analyze and evaluate the impact of public governance on foreign debt for developing countries.
- (2) Evaluate the impact of public governance on the relationship between external debt and economic growth in developing countries

## **1.3. Methodology**

Analysis and discussion are mainly based on GMM Arellano-Bond with the advantage to repair endogeneity and autocorelation.

## **1.4. Object and Scope of research**

Research data was taken from the World Bank in the period of 2000-2014 include variables such as external debt, *Worldwide governance indicators*, GDP per capital, domestic investment, tax revenue, openness trade, labour, inflation and infrastructure. The research was estimated for the panel data of overall sample with 65 countries of developing countries and 2 sub-samples include: 25 low-middle-income countries and 26 countries with high average incomes.

## **1.5 Thesis's Structure**

The thesis consists of 5 main chapters. Apart from chapter I, introduction to the Overview of the study, chapter II Literature Review; Chapter III: Models and research methods; Chapter IV: The role of public governance on the relationship between external debt and economic growth in developing countries; Chapter V: Conclusion and policy implications.

## **CHAPTER 2: LITERATURE REVIEW**

### **2.1. Related Concept**

#### **2.1.1. Foregin Debt**

World Bank WB defines "external debt, at any given time, is the outstanding amount of those actual current, and not contingent, liabilities that require payment(s) of interest and/or principal by the debtor at some point(s) in the future and that are owed to nonresidents by residents of an economy"

#### **2.1.2. Public governance**

In 2002, the World Bank (WB) discussed that public governance is the rules, enforcement mechanisms and organizations considered as instruments to support market transactions. Policies will affect the changing of public governance, whereas public governance will affect which policies will be applied.

### **Measurement Method of public governance**

"Worldwide public governance indicators" included six measured elements from 215 countries with a rating ranging from approximately - 2.5 to 2.5. Specifically, the six indexes are divided according to the three

approaches of Kaufmann's public administration and colleagues as follows: Voice and accountability; Political stability and absence of violence; Government effectiveness; Regulatory quality; Control of corruption; rule of law

### **2.1.3. Economic Growth**

Economic growth is an increase in the number of factors that characterize the economy, which is often used as a total domestic product, taking into account the relevance to the population.

## **2.2. The theory of public governance, external debt and economic growth**

### **2.2.1. The theory of relation between public governance and external debt**

Oatley (2010) developed a theoretical framework which has relationship between public governance and external debt. In this framework, Oatley (2010) emphasizes that countries have many difference efficiencies in using foreign loans with any public governance environment.

### **2.2.2. The role of public governance on the relationship between external debt and economic growth.**

#### **2.2.2.1. The theory of external debt and macro issues.**

Samuelson & Nordhaus (1976) started with the theory of "The vicious circle" and "The push from the outside" which explains the reasons developing countries need to have a lever from outside. Next, the two-gap model of Chenery & Strout (1966) refers to the "Trade- gap" and "Investment- Saving gap" is the basis to find external debt. And the

three-gap model of Bacha (1990), Solimano (1990), and Taylor (1994) explain the “budget deficit gap” in attracting external debt.

#### **2.2.2.2.Relationship among External Debt, public governance, and Economic growth.**

##### **Facing Debt Overhang when increasing external debt in Developing countries.**

Krugman (1988) provides a definition of debt overhang to explain the amount expected to pay for foreign debt will decrease as the total debt increases. This means that if in the future, the number of debt increases, the ability to pay capital and principal will reduce the rate of development investment in the country, thereby leading to negative impacts on economic growth.

##### **Solution for debt overhang and Low Efficiency.**

Although World Bank and IMF have many projects to support Highly Indebted Poor Countries (HIPC) countries but these countries still fail to achieve efficiency in economic growth.

##### **The role of public governance in increasing the effectiveness of external debt in highly indebted poor countries**

Asiedu (2003) presented a theoretical model linking between reduction debt and quality public governance in a country. Results show that a country needs to achieve a certain threshold of public governance to benefit from debt reduction. Asiedu (2003) points that debt reduction reduces the threshold of the quality public governance to attract foreign investment.

## **The framework of theoretical analysis connecting public governance, external debt and their interaction on economic growth.**

Regarding the research topic, Qayyum et al. (2014) is the study to analyze and develop a framework for theoretical analysis for an open economy to connect public governance, external debt and economic growth. Results show that foreign aid and public governance strongly support economic growth but external debt creates a pressure on the economy. In particular, public governance plays an important role in the impact of external debt on economic growth.

### **2.3. Literature Review**

#### **2.3.1 Impact of public governance to external debt.**

#### **2.3.2 External debt, Quality of public governance and Economic growth.**

##### **2.3.2.1 The effect of external debt to Economic Growth.**

##### **2.3.2.2 The effect of public governance to Economic Growth**

##### **2.3.3 The effect of external debt and public governance to economic growth**

### **2.4 Some comments and Research Gap.**

## CHAPTER 3: RESEARCH MODEL AND METHODOLOGY

### 3.1 Research Model

#### 3.1.1 Research Model about Impact of public governance to external debt.

Based on the research of Oatley (2010), when public public governance is positive, the efficiency of using foreign loans increases. In addition, Asiedu (2003) presents a model to link external debt reduction with governance, the thesis builds the correlation model of public governance to external debt as follows:

$$EDE_t = f(INS_t) = \alpha_0 + \alpha_1 INS_t + \varepsilon_t \quad (3.1)$$

Rewrite the equation to test the impact of public governance to external debt in the form of a dynamic regression equation for panel data as follows:

$$EDE_{it} = \beta_0 + \beta_1 EDE_{it-1} + \beta_2 INS_{it} + Z_{it}\beta_3 + \mu_i + \zeta_{it} \quad (3.2)$$

$i$  and  $t$  are nation and time indicators,  $EDE_{it}$  is external debt ;  $INS_{it}$  is public governance;  $Z_{it}$  is a set of control variables;  $\mu_i$  is an unobserved time-invariant and  $\zeta_{it}$  is an observation-specific error term.

#### 3.1.2 The relationship between public governance, external debt and economic Growth.

Based on Greiner (2007), the thesis assumes that the growth function of an economy depends on domestic investment and government expenditure, the thesis constructs the total production function of an economy of the following form.

$$y = Ak^\alpha G^{1-\alpha} \quad \text{với } 0 < \alpha < 1 \quad (3.3)$$

$y$  is real GDP per capita,  $A$  is the ATP is total factor productivity,  $k$  is the



capital per capita,  $G$  is the total government expenditure,  $\alpha$  and  $1 - \alpha$  are the elasticities of output by capital and government expenditure

Model (3.1) is converted to logarite:

$$\ln y_t = \ln A_t + \alpha \ln k_t + (1-\alpha) \ln G_t \quad (3.4)$$

Barro (1990) assumes that the governments wants to charge their expenditure, they use taxes (TAX) and external debt

$$G_t = \beta_1 \text{TAX}_t + \beta_2 \text{EDE}_t \quad (3.5)$$

With  $\beta_1, \beta_2$  are elasticities of output by tax and external debt,  $G_t$  is goverment expenditure,  $\text{TAX}_t$ : Government income,  $\text{EDE}_t$  Foreign debt

Replace  $G$  from equation (3.5) to equation (3.4)

$$\ln y_t = \ln A_t + \alpha \ln k_t + (1-\alpha) \ln [\beta_1 \text{TAX}_t + \beta_2 \text{EDE}_t] \quad (3.6)$$

Dựa vào lý thuyết của North (1994) ta thấy có mối tương quan giữa quản trị công và năng suất các yếu tố tổng hợp  $A$ , cụ thể năng suất yếu tố tổng hợp  $A$  chịu sự tác động của quản trị công (INS) như sau:

Based on North (1994), there is a correlation between public governance and total factor of productivity  $A$ , in particular, the public governance (INS) impact to the total factor of productivity as:

$$A = f(\text{INS}_t) = A_0 e^{\text{INS}} \quad (3.7)$$

Model (3.7) is converted to logarite:

$$\ln A_t = a_0 + \gamma \text{INS}_t \quad (3.8)$$

Replace (3.8) into vào (3.6),

$$\ln y_t = a_0 + \gamma \text{INS}_t + \alpha \ln k_t + (1-\alpha) [\ln \text{TAX}_t + \ln \text{EDE}_t]$$

$$\ln y_t = a_0 + \alpha \ln k_t + (1-\alpha) [\ln \text{TAX}_t + \ln \text{EDE}_t] + \gamma \text{INS}_t$$

$$\ln y_t = a_0 + \alpha \ln k_t + (1-\alpha) \ln TAX_t + (\alpha-1) \ln EDE_t + \gamma INS_t \quad (3.10)$$

$$\ln y_t = a_0 + \beta_1 \ln k_t + \beta_2 \ln TAX_t + \beta_3 \ln EDE_t + \beta_4 INS_t \quad (3.11)$$

Rewrite the model (3.11) as dynamic regression equations for panel data

$$y_{it} = a_0 + \alpha_1 k_{it} + \alpha_2 TAX_{it} + \alpha_3 EDE_{it} + \alpha_4 INS_{it} + \alpha_5 EDE_{it} \times INS + \alpha_6 Z_{it} + \mu_i + \zeta_{it} \quad (3.12)$$

### 3.2 Methodology

The thesis analyse and evaluate of an empirical relationship between the external debt, public governance and economic growth, in particular, the thesis will have to focus the following contents:

(1) Examine and evaluate the impact of public governance to external debt, for the main sample of 65 developing countries in the period 2000-2014.

(2) Empirically the relationship between public governance, external debt, and their interaction on economic growth in these countries.

Estimates are made on three research samples, including 65 developing countries called the main sample and two sub-samples are the sample of 25 low-middle income countries and the sample of 26 high middle-income countries.

#### 3.2.1 The effect of public governance to external Debt

##### Westerlund co-integration Test

The error correction model between two variables  $X_{it}$  and  $Z_{it}$  has the following form:

$$\Delta Z_{it} = \alpha_i + \beta_{i1} \Delta Z_{it-1} + \beta_{i2} \Delta Z_{it-2} + \dots + \beta_{ik} \Delta Z_{it-k} + \gamma_{i0} \Delta X_{it} + \gamma_{i1} \Delta X_{it-1} + \dots + \gamma_{ik} \Delta X_{it-k} + \dots + (\beta_{i1} Z_{it-1} - \gamma_{i1} X_{it-1}) + \varepsilon_{it} \quad (3.13)$$

The hypothesis accredits for each unit, as well as the whole panel data, is as follows:  $H_0: \beta_i = 0 \quad \forall i$

$$H_0: \beta_i < 0 \quad \exists I$$

With  $\beta_i$  is adjustment factor for long term equilibrium error,  $Z_{it} = -(\gamma_i/\beta_i)X_{it}$  for all chain of  $i$ . Assuming  $H_0$  is approved which means the rejection of co-integration for the whole panel data.

### **Granger Test from public governance to external debt**

$$INS_{it} = \alpha_0 + \sum_{k=1}^m \beta_k INS_{it-k} + \sum_{p=0}^n \gamma_p EDE_{it-p} + \mu_i + \zeta_{it} \quad (3.16)$$

(3.14)

$$EDE_{it} = \alpha_0 + \sum_{k=1}^m \beta_k EDE_{it-k} + \sum_{p=0}^n \gamma_p INS_{it-p} + \mu_i + \zeta_{it} \quad (3.17)$$

(3.15)

### **The effect of public governance to external debt.**

$$EDE_{it} = \beta_0 + \beta_1 EDE_{it-1} + \beta_2 INS_{it} + Z_{it} \beta'_3 + \mu_i + \zeta_{it} \quad (3.18) \quad (3.16)$$

$i$  and  $t$  are national and time indicators.  $EDE_{it}$  is foreign debt ratio regarding GDP;  $INS_{it}$  is the public governance,  $Z_{it}$  is a set of control variables,  $\mu_i$  is an unobserved- time invariant and  $\zeta_{it}$  is an observation-specific error term.

### **3.2.2 The effect public governance, external and interactive variables on economic growth.**

Based on the relationship between public governance, external debt and economic growth in section 3.1.2:

$$y_{it} = \beta_0 + \beta_1 y_{it-1} + \beta_2 EDE_{it} + \beta_3 INS_{it} + \beta_4 EDE_{it} \times INS + \beta_5 Z_{it} + \mu_i + \zeta_{it} \quad (3.17)$$

$Y_{it}$  is the real GDP per capita;  $EDE_{it}$  is external debt;  $INS_{it}$  is the public governance;  $(EDE_{it} \times INS_{it})$  is the interaction variables between public governance and external debt;  $Z_{it}$  is a set of control variables,  $\mu_i$  is an unobserved- time invariant and  $\zeta_{it}$  is an observation-specific error term.

### **3.2.3 The estimation method of two-step difference GMM Arellano-Bond**

The thesis uses the estimation method of two-step difference GMM Arellano-Bond to solving the models with disabilities such as: endogeneity, autocorrelation, ...

## **3.3 Research Data and selection variables**

### **3.3.1 Research Data**

The research data is a balanced panel data of 65 developing countries including 14 low-income countries, 25 low-middle income countries, 26 high middle incomes countries in the period of 2000-2014 from World Bank and IMF

### **3.3.2 Selection of Variables**

Key variables: Economic growth, public governance, external debt

Control variables: Domestic investment, tax revenue, labour force, trade openness, inflation, infrastructure

## **CHAPTER 4: THE ROLE OF PUBLIC MANAGEMENT IN THE RELATIONSHIP BETWEEN FOREIGN DEBT AND ECONOMIC GROWTH**

### **4.1 The effect of public governance to external debt in developing countries**

#### **4.1.1. Summary of the impact of public governance to external debt**

#### **4.1.2 Research model on the impact of public governance to external debt**

From the model (3.13), the thesis verifies the impact of public administration on foreign debt by the following equation:

$$EDE_{it} = \beta_o + \beta_1 EDE_{it-1} + \beta_2 INS_{it} + Z_{it}\beta_3 + \mu_i + \zeta_{it} \quad (4.1)$$

There are many factors affecting foreign debt: TAX tax revenue, OPE trade openness, INF inflation and infrastructure TEL . Inserting these factors into (4.1), rewrite the model:

$$EDE_{it} = \beta_o + \beta_1 EDE_{it-1} + \beta_2 INS_{it} + \beta_3 TAX_{it} + \beta_4 LAB_{it} + \beta_5 OPEN_{it} + \beta_6 INF_{it} + \beta_7 TEL_{it} + \varepsilon_{it} \quad (4.2)$$

#### **4.1.3 Statistics on elemental variables in the empirical model**

#### **4.1.4 Empirical results on the impact of public governance to external debt**

##### **4.1.4.1. Testing Granger causality relationship between public governance and external debt**

##### **4.1.4.2 Estimated results for the main sample (overall sample)**

**Bảng 4.12. public governance and external debt in the overall sample: D-GMM, 2000-2014**

**Dep variable: External debt**

	IN1	IN2	IN3	IN4	IN5	IN6
External Debt (-1)	0.454*** (0.087)	0.373*** (0.122)	0.323** (0.126)	0.896*** (0.181)	0.395*** (0.082)	0.333*** (0.076)
public governance	39.944** (16.476)	58.715** (29.150)	49.046** (18.841)	129.89** (52.923)	72.71*** (26.972)	34.351** (14.799)
Tax income	-0.056*** (1.833)	-7.250** (3.713)	-7.869** (3.205)	-0.581 (3.201)	-8.557** (3.347)	-3.261** (1.699)
Labour Force	0.808 (0.661)	1.204 (0.939)	0.492 (0.785)	3.156 (6.155)	0.292 (2.437)	2.016 (1.735)
Trade openness	-0.131 (0.093)	-0.048 (0.147)	0.258 (0.255)	-0.542*** (0.182)	-0.804*** (0.162)	-0.454*** (0.166)
Inflation	0.557** (0.273)	0.279 (0.396)	-0.083 (0.115)	0.430 (0.666)	0.721*** (0.466)	0.187** (0.072)
Infrastructrue	-0.351*** (0.124)	-0.537** (0.210)	-0.455*** (0.132)	-0.441** (0.255)	-0.450*** (0.123)	-0.213 (0.131)
Tooled Variables	21	19	19	19	20	21
Nation/Observation	65/715	65/715	65/780	65/715	65/715	65/715
AR Test(2)	0.256	0.123	0.453	0.313	0.302	0.247
Sargan Test	0.144	0.131	0.107	0.115	0.301	0.152
Hansen Test	0.459	0.886	0.814	0.810	0.380	0.776
<i>Note: ***, ** and * denote the significance at 1%, 5%, và 10% respectively</i>						
<i>Source: Stata software</i>						

Results from the overall sample in Table 4.12 show that public governance has a positive impact on external debt, and is completely compatible with all 6 component variables of public governance. In addition, Table 4.12 also indicates that tax revenue, trade openness and infrastructure reduce foreign debt while inflation raises foreign debt.

#### 4.1.4.3 Estimated results for two sub-samples

**Bảng 4.13. public governance and external debt in low middle income countries: D-GMM, 2000-2014.**

**Dep variable: External debt**

	IN1	IN2	IN3	IN4	IN5	IN6
External Debt (-1)	0.456*** (0.097)	0.381*** (0.113)	0.961*** (0.109)	0.556*** (0.134)	0.493*** (0.068)	0.492*** (0.054)
public governance	63.151*** (21.985)	52.398** (20.487)	19.033** (8.507)	86.27*** (30.698)	23.744** (9.960)	18.04*** (6.027)
Tax income	-0.559 (1.854)	-4.894** (2.599)	0.194 (1.674)	3.947 (3.175)	-3.859*** (1.126)	-1.888** (0.893)
Labour Force	2.570 (2.058)	-0.082 (1.238)	2.176 (2.085)	1.379 (1.025)	-0.666 (0.573)	-0.728 (1.513)
Trade openness	-0.567*** (0.178)	-0.154 (0.206)	-0.198 (0.118)	-1.33*** (0.398)	-0.209** (0.074)	-0.377*** (0.064)
Inflation	-0.054 (0.144)	-0.513** (0.245)	-0.223*** (0.075)	0.191 (0.229)	-0.090 (0.063)	-0.225** (0.107)
Infrastructrue	-0.235** (0.107)	-0.246** (0.088)	0.072 (0.042)	-0.452** (0.183)	-0.026** (0.015)	-0.037*** (0.007)
Tooled variables	17	18	20	17	21	20
Nation/Observation	25/275	25/275	25/275	25/275	25/275	25/275
AR Test(2)	0.124	0.149	0.554	0.279	0.813	0.318
Sargan Test	0.228	0.543	0.172	0.562	0.101	0.160
Hansen Test	0.306	0.464	0.613	0.672	0.833	0.730

*Note: \*\*\*, \*\* and \* denote the significance at 1%, 5%, và 10% respectively*

*Source: Stata software*

Table 4.13 shows that all 6 components of public governance have a positive impact on foreign debt. In low middle income countries, tax revenue, trade openness and infrastructure have a negative impact on foreign debt. In particular, inflation has a negative impact on foreign debt, which is different from the overall sample.

**Bảng 4.14. public governance and external debt in high middle income countries: D-GMM, 2000-2014**

**Dep variable: External debt**

	IN1	IN2	IN3	IN4	IN5	IN6
External Debt (-1)	0.203*** (0.036)	0.601*** (0.114)	0.460*** (0.101)	0.273*** (0.037)	0.154*** (0.052)	0.237*** (0.022)
public governance	12.72** (5.730)	15.623*** (4.244)	5.769** (2.398)	10.907** (5.032)	15.86*** (5.310)	25.33*** (7.544)
Tax income	-1.871*** (0.339)	0.170 (0.329)	-2.175*** (0.641)	-0.32*** (0.111)	-0.695** (0.252)	-0.287** (0.122)
Labour Force	0.692 (0.441)	5.710** (2.853)	1.908** (0.875)	0.634** (0.299)	3.142** (1.227)	0.172 (0.504)
Trade openness	-0.016 (0.029)	-0.192*** (0.046)	0.006 (0.043)	-0.038 (0.029)	-0.227 (0.190)	-0.099 (0.094)
Inflation	-0.057 (0.045)	0.097 (0.068)	-0.064 (0.077)	-0.020 (0.041)	0.130 (0.118)	0.068 (0.100)
Infrastructure	0.015 (0.018)	-0.372*** (0.114)	-0.002 (.031)	-0.23*** (0.078)	-0.077* (0.041)	-0.320*** (0.083)
Tooled variables	20	20	20	22	20	22
Nation/Observation	26/338	26/286	26/286	26/312	26/312	26/312
AR Test(2)	0.272	0.280	0.968	0.240	0.435	0.155
Sargan Test	0.834	0.308	0.387	0.426	0.255	0.534
Hansen Test	0.955	0.459	0.159	0.642	0.375	0.594

*Note: \*\*\*, \*\* and \* denote the significance at 1%, 5%, và 10% respectively*

*Source: Stata software*

Table 4.14 illustrates that all 6 component variables of public governance have a positive impact on external debt.

#### **4.1.5. Conclusion and policy implications of the impact of public public governance on foreign debt**

The estimation results show a similarity in the positive impact of public governance on external debt for all three research samples.



## 4.2. The role of public governance in the relationship between external Debt and economic growth.

### 4.2.1 Introduction

#### 4.2.2. Research model on public governance, external debt and economic growth

From the model (3.8), the thesis rewrites as dynamic regression equation for the panel data.

$$y_{it} = a_o + \alpha_1 k_{it} + \alpha_2 TAX_{it} + \alpha_3 EDE_{it} + \alpha_4 INS_{it} + \alpha_5 Z_{it} + \mu_i + \zeta_{it} \quad (4.3)$$

The factors impact to economic growth include: EDE foreign debt, INS public governance, TAX tax revenue, OPE trade openness, INF inflation and infrastructure TEL

Insert these factors in (4.3), rewrite the model in the form of econometrics:

$$y_{it} = \beta_o + \beta_1 EDE_{it-1} + \beta_2 INS_{it} + \beta_3 DIN_{it} + \beta_4 TAX_{it} + \beta_5 LAB_{it} + \beta_6 OPEN_{it} + \beta_7 INF_{it} + \beta_8 TEL_{it} + \epsilon_{it} \quad (4.4)$$

Subtract two sides of equation (4.4) for  $Y_{it-1}$ , resulting in:

$$\Delta y_{it} = \beta_o + \beta_1 y_{it-1} + \beta_2 EDE_{it-1} + \beta_3 INS_{it} + \beta_4 DIN_{it} + \beta_5 TAX_{it} + \beta_6 LAB_{it} + \beta_7 OPEN_{it} + \beta_8 INF_{it} + \beta_9 TEL_{it} + \epsilon_{it} \quad (4.5)$$

The interaction variable between public governance and external debt ( $EDE_{it} \times INS_{it}$ ) is also integrated into the growth model. The final empirical equation takes the following form:

with  $\epsilon_{it} = \mu_i + \zeta_{it}$

$$\Delta y_{it} = \beta_o + \beta_1 y_{it-1} + \beta_2 EDE_{it-1} + \beta_3 INS_{it} + \beta_4 EDE_{it} \times INS_{it} + \beta_5 DIN_{it} + \beta_6 TAX_{it} + \beta_7 LAB_{it} + \beta_8 OPEN_{it} + \beta_9 INF_{it} + \beta_9 TEL_{it} + \mu_i + \zeta_{it} \quad (4.6)$$

### 4.2.3 Empirical result:

#### 4.2.3.1. Research results for the main sample on the relationship between public governance, external debt and economic growth

**Bảng 4.17. External debt, public governance and economic growth in the overall sample: D-GMM, 2000-2014. Dependent variable: Economic growth**

	IN1	IN2	IN3	IN4	IN5	IN6
Growth (-1)	0.737*** (0.066)	0.694*** (0.031)	0.620*** (0.049)	0.821*** (0.041)	0.611*** (0.078)	0.659*** (0.041)
External Debt	-0.18*** (.053)	-0.142*** (0.036)	-0.179*** (0.047)	-0.133*** (0.024)	-0.152*** (0.041)	-0.087*** (0.017)
public governance	36.673** (17.100)	13.992** (6.063)	7.899*** (6.509)	9.044** (3.699)	19.519** (7.761)	20.824*** (7.283)
public governance*external debt	-0.134** (0.061)	-0.064** (0.030)	-0.090** (0.041)	-0.045*** (0.016)	-0.09*** (0.033)	-0.032** (0.017)
Domestic Investment	-0.053 (0.250)	-0.174 (0.229)	-0.023 (0.085)	-0.225 (0.208)	-0.464 (0.323)	0.017 (0.075)
Tax income	0.307 (0.776)	0.027 (0.149)	-0.142 (0.148)	0.121 (0.090)	2.304 (1.317)	0.918 (0.581)
Labour force	-0.080 (0.263)	0.163 (0.619)	0.007 (0.224)	-0.719 (0.472)	-0.202 (0.263)	0.259 (0.716)
Trade openness	0.230*** (0.079)	0.127*** (0.021)	0.197*** (0.049)	0.115*** (0.013)	0.135*** (0.027)	0.111*** (0.017)
Inflation	-0.305** (0.116)	-0.216** (0.103)	-0.266** (0.139)	-0.207** (0.088)	-0.369** (0.152)	-0.239*** (0.088)
Infrastrucure	-0.060 (0.046)	0.025 (0.032)	0.029 (0.035)	-0.092 ** (0.038)	0.055 (0.039)	0.032 (0.026)
Tooled Variables	22	22	22	26	22	23
Nation/Observation	65/780	65/780	65/780	65/780	65/780	65/780
AR test(2)	0.107	0.144	0.942	0.137	0.514	0.170
Sargan test	0.152	0.106	0.272	0.442	0.269	0.293
Hansen test	0.344	0.277	0.544	0.166	0.667	0.132

*Note: \*\*\*, \*\* and \* denote the significance at 1%, 5%, và 10% respectively*

*Source: Stata software*

Table 4.17 shows that the first-order lag of growth has a positive effect on growth, and is completely consistent with 6 component variables of public governance. External debt has a negative impact on economic growth while public governance has a positive impact on economic growth, these results are completely consistent for all 6 public governance indicators. The interaction variables between public governance and external debt has a negative impact on economic growth.

#### 4.2.3.2 Research results for two sub-samples

**Bảng 4.18. External debt, public governance and economic growth in low middle income: D-GMM, 2000-2014. Dependent variable: Economic growth**

	IN1	IN2	IN3	IN4	IN5	IN6
Growth (-1)	0.907*** (0.044)	0.679*** (0.104)	0.739*** (0.049)	0.579*** (0.060)	0.910*** (0.045)	1.035*** (0.061)
External Debt	0.225*** (0.052)	0.498*** (0.157)	0.158*** (0.056)	0.194*** (0.046)	0.331*** (0.095)	0.286*** (0.081)
public governance	-22.218*** (7.191)	-33.034** (14.358)	-9.918** (4.362)	-39.546*** (8.035)	-8.128* (4.450)	-13.282** (5.586)
public governance*External Debt	0.324*** (0.078)	0.577*** (0.164)	0.116* (0.061)	0.436*** (0.085)	0.260*** (0.078)	0.293** (0.113)
Domestic Investment	-0.044 (0.108)	1.082** (0.603)	0.599** (0.243)	0.491** (0.186)	0.286* (0.142)	0.696*** (0.142)
Tax income	-0.261 (0.764)	0.145 (2.109)	-1.161** (0.491)	-0.490** (0.251)	0.155 (0.655)	-3.276*** (0.820)
Labour fource	-0.455** (0.193)	1.911 (1.898)	-3.913*** (0.782)	-3.916*** (1.197)	-1.153 (0.868)	-1.381 (1.130)
Trade openness	0.267** (0.097)	-0.081 (0.149)	-0.018 (0.067)	0.024 (0.083)	0.210** (0.087)	0.089** (0.040)
Inflation	-0.021 (0.055)	0.275** (0.136)	0.123** (0.056)	0.055 (0.067)	-0.011 (0.055)	0.436*** (0.094)
Infrastruncture	0.030** (0.016)	0.155** (0.071)	-0.067 (0.048)	0.104** (0.051)	0.037 (0.029)	-0.009 (0.029)
Tooled Variables	21	21	23	22	23	21
Nation/Observation	25/275	25/275	25/275	25/300	25/275	25/275
AR test(2)	0.433	0.460	0.425	0.250	0.520	0.122

Sargan test	0.245	0.888	0.309	0.446	0.294	0.836
Hansen test	0.478	0.885	0.568	0.375	0.350	0.740

*Note: \*\*\*, \*\* and \* denote the significance at 1%, 5%, và 10% respectively*

*Source: Stata software*

From the estimation, the thesis has concluded the following remarks:

(1) The first-order lag variable of economic growth in the low-middle income countries also has a positive effect and is completely consistent for the 6 public governance indicators.

(2) The quality of public governance has a negative effect on growth while external debt and interaction variables have a positive impact on economic growth.

(3) Similar result as the overall sample, trade openness in the two sub-samples also promotes economic growth. In the low middle-income group , inflation and domestic investment has a boosting effect on economic growth. In addition, labour force and tax revenue sources have a negative impact on economic growth, infrastructure has a positive impact to economic growth.

**Bảng 4.19. External debt, public governance and economic growth in the high middle income model: D-GMM, 2000-2014. Dep variable: Economic growth**

	IN1	IN2	IN3	IN4	IN5	IN6
Growth (-1)	0.889*** (0.023)	0.906*** (0.050)	0.894*** (0.056)	0.673*** (0.043)	0.667*** (0.069)	0.768*** (0.037)
External Debt	-0.127*** (0.032)	-0.096** (0.044)	-0.200*** (0.065)	-0.095** (0.044)	-0.223*** (0.071)	-0.153*** (0.045)
public governance	9.893** (4.357)	13.400** (5.670)	11.234** (4.736)	35.831*** (9.425)	37.400*** (8.105)	26.418*** (8.098)
Gov*External Debt	-0.139** (0.066)	-0.226** (0.084)	-0.125** (0.054)	-0.415*** (0.109)	-0.289** (0.132)	-0.226*** (0.078)
Domestic Investment	-0.357** (0.143)	-0.478** (0.196)	-0.861** (0.355)	-0.107 (0.111)	-0.120 (0.140)	-0.351*** (0.086)
Tax income	0.466** (0.186)	1.205*** (0.277)	-0.227 (0.176)	0.594** (0.246)	0.918** (0.337)	-0.077 (0.062)
Labour fource	-0.026 (0.207)	-0.166 (0.247)	0.118 (0.338)	0.202 (0.450)	0.470 (0.277)	0.470 (0.338)
Trade openness	0.178***	0.204***	0.218***	0.272***	0.160**	-0.034

	(0.029)	(0.042)	(0.038)	(0.052)	(0.061)	(0.115)
Inflation	-0.265***	-0.338***	-0.169***	-0.402***	-0.272**	-0.022
	(0.062)	(0.071)	(0.034)	(0.056)	(0.131)	(0.069)
Infrastruncture	0.018	-0.077	-0.0007	0.077**	0.157***	0.246***
	(0.029)	(0.056)	(0.031)	(0.040)	(0.056)	(0.070)
Tooled Variables	22	21	20	22	22	22
Nation/Observatio n	26/312	26/286	26/286	26/312	26/312	26/312
AR test(2)	0.126	0.476	0.185	0.518	0.464	0.528
Sargan test	0.117	0.151	0.177	0.174	0.163	0.178
Hansen test	0.306	0.422	0.302	0.141	0.172	0.450

*Note: \*\*\*, \*\* and \* denote the significance at 1%, 5%, và 10% respectively*

*Source: Stata software*

The estimated results shows that:

- (1) The first-order lag variable of economic growth in the high middle-income countries has a positive impact to economic growth and is completely consistent for the 6 public governance indicators.
- (2) The resultsshow that public governance has a positive impact on economic growth, while external debt and the interaction between public governance and external debt have a negative impact on economic growth.

#### **4.2.4. Test robustness of Model**

Testing the robustness of model, the thesis uses the IV-FE method for the overall sample. The results in Table 4.20 are quite similar to those in Table 4.17 with D-GMM. This implies that the estimated results with D-GMM are highly reliable

**Bảng 4.20. External debt, public governance and economic growth in the overall sample:  
IV-FE, 2000-2014. Dep variable: Economic growth**

	IN1	IN2	IN3	IN4	IN5	IN6
Growth (-1)	0.901*** (0.008)	0.936*** (0.007)	0.903*** (0.008)	0.899*** (0.009)	0.902*** (0.008)	0.903*** (0.008)
External Debt	-0.014** (0.006)	-0.029*** (0.008)	-0.020*** (0.007)	-0.014** (0.008)	-0.015** (0.008)	-0.014*** (0.004)
public governance	1.783** (0.883)	1.581** (0.854)	1.162** (0.537)	1.145 (0.933)	1.069 (1.055)	1.504** (0.881)
Gov*Ext Debt	0.000 (0.006)	-0.006 (0.005)	-0.005 (0.006)	0.000 (0.005)	-0.000 (0.005)	0.001 (0.004)
Domestic Investment	0.081*** (0.029)	0.077*** (0.027)	0.078*** (0.029)	0.081*** (0.029)	0.080*** (0.029)	0.077*** (0.029)
Tax income	0.039 (0.067)	-0.050 (0.061)	0.044 (0.066)	0.046 (0.067)	0.046 (0.067)	0.030 (0.067)
Labour force	-0.047 (0.076)	-0.088 (0.063)	-0.009 (0.078)	-0.053 (0.076)	-0.038 (0.076)	-0.028 (0.076)
Trade openness	0.049*** (0.010)	0.056*** (0.007)	0.048*** (0.011)	0.050*** (0.011)	0.050*** (0.011)	0.050*** (0.010)
Inflation	-0.022 (0.024)	-0.017** (0.009)	-0.017 (0.024)	-0.019 (0.024)	-0.019 (0.024)	-0.023 (0.024)
Infrastrcture	0.000 (0.003)	0.003 (0.003)	0.000 (0.003)	0.000 (0.003)	0.000 (0.003)	0.002 (0.003)
Sargan Test	0.577	0.211	0.183	0.784	0.431	0.898

*Note: \*\*\*, \*\* and \* denote the significance at 1%, 5%, và 10% respectively*

*Source: Stata software*

#### 4.2.5. Conclusion and Policy Implications

The result shows that public governance promotes economic growth while external debt and interactive variables reduce economic growth in the overall sample and high middle income countries. On the contrary, in the low middle income, external debt and the interaction variable that promotes economic growth while public governance reduces economic growth. In addition, domestic investment, tax revenue, labour force, trade openness, inflation and infrastructure are the important factors for economic growth in these countries.

## **CHAPTER 5: CONCLUSION AND POLICY IMPLICATION.**

### **5.1. Conclusion**

### **5.2. Policy Implication**

#### **5.2.1. Policy implication related to the impact of public governance to external debt**

The results of this study require that governments in developing countries need to be cautious in designing, issuing and enforcing policies related to external debt in developing countries.

##### **5.2.1.1. General suggestions on policies for developing countries' governments**

- The government needs to set specific goals with clear strategies for external debt
- Governments should consider the significant impact to external debt when issuing and enforcing external debt related policies.

##### **5.2.1.2. Policies recommendations for each group of countries.**

Low middle-income group

High middle-income group

**5.2.2** The policies concerns economic growth due to the effects of external debt, public governance and their interaction.

##### **5.2.2.1** General recommendations for government policies in developing countries

- + Policies related to promoting economic growth should consider the negative impact of external debt.
- + Opening policy has an impact on economic growth while inflation reduces economic growth. These are two macro variables that governments in developing countries can perform well in their capacity

##### **5.2.2.2** Policies recommendations for each group of countries

### ***Low middle income countries***

- + External debt has a positive influence and public governance has a negative impact on economic growth.
- + In addition, domestic investment, trade openness, inflation and infrastructure boost economic growth while tax revenues and labour force reduce economic growth.

### ***Higmiddle income countries***

The impact of public governance, external debt and their interaction on economic growth in the high middle-income countries are similar to the main sample, so this suggestion is similar as above.

In addition, tax revenues, trade openness and infrastructure boost economic growth while domestic investment and inflation reduce economic growth.

## **5.3 Limitation and research tendency in future.**

### **5.3.1 Limitation**

### **5.3.2 Research tendency in future**

## **LIST OF RESEARCH WORKS.**

Science Press

1/ Võ Thị Thùy Vân (2017) Public governance, external debt and economic growth in developing countries. Asian Economic and Business Research Magazine, numbers 12/2017, ISSN 1859-1124.

2/ Võ Thị Thùy Vân (2018) The impact of public governance on external debt - research in developing countries. Journal of banking technology, numbers 5/2018, ISSN 1859-3682.