

Governance Capacity and Public Debt in Asian Countries

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Abstract

This research focuses on the influence of governance capacity on public debt accumulation in Asian countries. We empirically assess the potential impact of governance capacity on public debt accumulation in 41 Asian countries over the period 2002–2019. Distinct from previous studies that mainly used the frequentist approach, we applied the non-frequentist method, Bayesian analysis. Findings from informative Bayesian linear regressions document that enhancing the governance capacity in voice and accountability, political stability, regulatory quality, the rule of law, and control of corruption affects the size of public debt positively. The findings also show that allocating the government's budget funds to spur governance capacity in Asian countries could accelerate the level of public debt. Meanwhile, only government effectiveness indicates a negative association with public debt. The results

this paper contribute evidence and crucial implications to policymakers to improve the governance capacity concerning the management of public debt.

Keywords: governance capacity, public debt, Asian countries, Bayesian regression.

1. Introduction

A continuous increase in debt can cause economic shocks that exert an impact on fiscal sustainability and the global economy. At the national level, the substantial increase in government public debt in the last decades could be identified in most developing countries in Asia. Numerous research papers have focused on the negative impact of public debt on economic growth (Chen et al., 2020). The basic purpose behind the imperative borrowings of the country is to bridge the gaps between the internal and external economic capital, hence increasing performance inflows. The primary rationale for a government's massive borrowing is that it will harm a country's economic growth and limit its savings and imports. Heavy debt also has a negative impact on the growth of both developing and developed countries (Atique & Malik, 2012; Akram, 2011; Bon, 2014). Further, researchers highlight the chain effect that causes an increase in the risk of default and weakness in economic uncertainty because of the continuous increase in public debt.

The growth of government capacity and the dynamics of public debt in Asian nations are crucial areas of research for comprehending the region's economic development and policy concerns. Here, we outline stylized facts about these processes using relevant research and empirical data. Some of the facts can be emphasized as the rapid accumulation of public debt, variability in debt composition, impact of economic shocks, government capacity and institution quality, growth of debt dynamics, policy response, and reform efforts (World Bank, 2020). Public debt levels have significantly increased in many Asian economies in recent decades. This trend has been influenced by elements including social expenditures, infrastructure investments, and fiscal stimulus (Aizenman & Marion, 2003; Thanh & Mai Hoai, 2015). Public debt in Asian economies comes from both external and local sources, and its composition

varies greatly. Some countries prioritize domestic debt instruments, whereas others rely more on borrowing from outside (Reinhart & Rogoff, 2009). The management of public debt in Asian economies has shown resilience in the face of economic shocks, as seen by the Asian Financial Crisis of 1997 and the Global Financial Crisis of 2008. However, different reactions to these crises have affected the dynamics of debt (Takagi, 2017). In Asian economies, the dynamics of public debt and economic growth are intricately entwined. Sustained economic expansion can enable debt sustainability through higher income production, even if high debt levels can limit growth possibilities (IMF, 2021).

Most recent studies on public debt issues in the context of developing countries indicate that the effect of public debt significantly impacts economic growth, policy, and institutional quality. Good governance will look forward to having better institution quality as a result of managing public debts effectively with strategies such as reduction of borrowing costs, containment of financial risks, and development of domestic debt markets. Thus, the idea of excellent governance will assist in the development of a country's domestic financial system and help to keep the country's financial system stable. This indicates the necessity of adequate levels of governance quality.

A theoretical framework that incorporates several viewpoints from political science, public administration, and economics is necessary for a thorough investigation of governance capacity and public debt in Asian nations. In the context of Asian economies, this framework offers a road map for comprehending the complex relationships between governance capacity and public debt management. The focus of institutional theory is on how formal and informal institutions influence outcomes and behavior in public administration and governance. According to this theory, how well governance institutions

such as legal systems, regulatory frameworks, and bureaucratic efficacy affect public debt management by governments varies (North, 1990). Through an examination of the institutional framework of Asian nations, the research may evaluate the impact of variations in governance capability on debt management strategies.

After the 2008 Global Financial Crisis, both developing and developed countries suffered from public debt. Empirical evidence has shown that most countries have become highly indebted due to this crisis. Scholars previously had a great interest in the fiscal policies of these countries, but very little focus has been given to the governance capacity and government debt. Indeed, very few studies explored governance capacity and government debt (Afonso, 2014; Imaginário & Guedes, 2020). Hence, this study focuses on the influence of governance capacity on public debt accumulation in Asian countries. Specifically, the main objective of the present study is to evaluate the relationship between governance capacity and public debt in Asian countries. The analysis of the effect of governance capacity indicators on debts is the primary contribution that this study makes to the existing body of literature. The purpose of this analysis is to provide a comprehensive understanding of the impact that each governance dimension exerts on public debt.

The remainder of this study is organized as follows: Section 2 identifies the related literature on governance capacity and public debt; Section 3 explains the methodology and the data adopted; Section 4 reports the data analysis, results, and discussions. Then, this paper accounts for robustness tests in Section 5. Finally, Section 6 presents the study conclusion, limitations, policy recommendations, and future suggestions for research.

2. Literature Review

The repayment of the debt of any government in the future will create fiscal stability for the government, which can be considered a basic need of a country. The key determinant of government debt is the budget balance of government debt dynamics. Most of the researchers who conduct studies on the economy have focused on the idea of public debt. Further, some economists have devoted their attention to the debt-growth relationship, while many researchers have paid attention to the governance quality associated with government debt. Thus, this study could find the importance and the extent to which governance capacity influences public debt and economic growth. Reinhart et al. (2010) discovered a negative relationship between growth and debt. This finding explains why a ratio of public debt to gross domestic product (GDP) higher than the threshold of 90% is associated with sluggish economic growth. The fiscal stability of a country would be severely impacted when there is a continuous and persevering increase in government debt (Kim et al., 2017). Thus, the literature review of the study argues that governance capacity and public debt are two comparatively different areas that impact the fiscal stability of a country. Among all the factors that may influence public debt, governance capacity would be more likely to determine the public debt level in Asian countries.

This section has been arranged in a way that proves the above argument. At the initial stage, the authors focus more on public debt and then move to governance or institutional quality, which are the main dimensions of the research. Then follows a discussion of the existing empirical evidence on the relationship between governance and public debt and the relationship between public debt and other factors.

2.1 Public Debt

There are witnesses to most countries with a significant increase in public debt, among both developing and developed countries. A continuous increase in a country's debt will influence the economic institutions related to fiscal sustainability as well as the world economy. Several authors have defined the term "public debt" in different ways. "Gross general government debt," stated as a percentage of a country's GDP, is what the International Monetary Fund (IMF) considers public debt. The entire number of unpaid obligations (debt in the form of bonds and other securities) held by a nation's central government is referred to as public debt. This phrase is also known as government debt. The simplest way to describe public debt is as a percentage of the GDP. Public debt might be raised either from the outside or from within the country. It is possible to identify public debt as a major source of resources for a government to fund public spending and make the budget more manageable. This indicates the ability of governance to meet future objectives.

2.2 Governance Capacity

Several studies have focused on governance and its impact, but the idea and the concept of governance have not been clearly identified. Many authors define governance as well as governance capacity in a more embracing way. The term "governance" suggests an intermediate definition of governance as "the traditions and institutions by which authority in a country is exercised" (Kaufmann et al., 1999). A simple definition of governance is "the traditions and institutions by which the authority in a country is exercised" (Kaufmann et al., 2010). Scholars have also introduced six worldwide governance indicators scaled between -2.5 and +2.5, where a higher score indicates a higher governance capacity. According to this definition, governance covers the main

areas of processes by which governments are selected, such as the capacity of the government and the state for the institutions. The main areas of governance capacity measure six dimensions that determine the quality of the governance: Voice and Accountability, Political Stability and Absence of Violence/Terrorism, Government Effectiveness, Regulatory Quality, Rule of Law, and Control of Corruption.

Due to the available literature on the broad concept of the capacity of governance, the measurement indices are not clear. Thus, the majority use indices related to corruption measurement as a proxy for good governance. Most previous studies used the CPI index published by Transparency International as the measurement of corruption to measure the quality of governance (Cooray et al., 2016). Further, many studies also use the Country Policy and Institutional Assessment Index (CPIA), where higher values are associated with a superior policy environment (Cordella et al., 2010).

2.3 Existing Empirical Evidence on the Relationship Between Governance Capacity and Public Debt

As previously stated, it is possible to identify vast literature on the relationship between public debt and economic growth. However, it is not easy to find a significant amount of literature related to the importance of the capacity of governance and public debt, which are seen as fundamental to preserving the sustainable economic growth of a country.

According to Kim et al. (2017), good institutions or quality governance reduce uncertainty about economic decision-making, leading to a higher level of productivity. At the same time, Masuch et al. (2016) argued that the quality of institutions is one crucial determinant of the GDP per capita growth of a country. Evidence on governance quality and public debt in OECD countries

suggests that good institutional quality is a major instrument that leads toward smoothing the government debt over by better management of expenditures and economic growth sustainability. Further, the empirical results of the debt-institutions' relation have been discussed by Cordella et al. (2010), arguing that countries with governance quality and policy quality deal with debt overhang much less. Also, developing countries with bad policies and inefficient institutions or unfavorable governance are more likely to have more debt.

Furthermore, many previous studies reveal that governance or institutions' characteristics are the most significant determinant of public debt (Roubini & Sachs, 1989; De Haan & Sturm, 1997; Woo, 2003). Some scholars argue that governance might influence public debt with the political distortion of rent-seeking activities (Battaglini & Coate, 2008; Yared, 2010; Caballero & Yared, 2010; Kaufman, 2010).

A country's political and economic environment is greatly influenced by its public debt and capacity for governance. The relationship between public debt and governance capacity has attracted significant scholarly interest, particularly in Asian nations due to their distinct socio-economic foundations and governance arrangements. However, there are contradictions and conflicting viewpoints in the literature. Researchers frequently use theoretical frameworks to structure their investigations to comprehend the complex relationships between public debt and governance capacity.

According to the principal-agent theory, governments may not always behave in the best interests of their principals and the people, which could result in poor financial management and debt accumulation. On the other hand, the state capacity theory suggests that efficient governance structures can reduce these risks by guaranteeing responsible debt management and fiscal policies.

Further, the empirical findings that discuss the relationship between public debt and governance capacity in Asian countries are inconsistent. According to some research, there is a negative association between improved governance and a lower chance of excessive borrowing and debt accumulation. In their study of East Asian countries, Lee and Haber (2018) discovered evidence in favor of this theory, linking lower levels of public debt to efficient governance processes. On the other hand, divergent viewpoints indicate that public debt and governance capacity are positively correlated. As explained by Khan et al. (2020), governments in several Asian nations with weak governance standards use unsustainable borrowing tactics to fund development initiatives, which increases debt loads.

Thus, it can be emphasized that significant discrepancies in the literature on public debt and governance capacity in Asian nations reflect the complex nature of these issues. Although theoretical frameworks offer significant insights, empirical research emphasizes the intricacy of dynamics found in the real world. Thus, the relationship between public debt and governance is crucial to promoting economic stability, responsibility, and sustainable growth in Asian nations.

3. Methodology

3.1 Empirical research model

In this paper, we observe the impact of governance capacity on public debt accumulation in Asian countries. As mentioned in the literature review, Kaufmann (2011) classified governance according to three aspects. Each aspect has two dimensions, resulting in six indicators of governance capacity: Voice and Accountability (VA), Political Stability and Absence of Violence/Terrorism

(PS), Government Effectiveness (GE), Regulatory Quality (RQ), Rule of Law (RL), and Control of Corruption (CC). Accordingly, we construct three empirical models to capture the relationship between governance capacity and public debt as follows:

$$\text{Model 1: Public Debt}_{i,t}^1 = \alpha_0^1 + \beta_1^1 \text{VA}_{i,t} + \beta_2^1 \text{PS}_{i,t} + \beta_3^1 \text{PE}_{i,t} + \beta_4^1 \text{IF}_{i,t} + \beta_5^1 \text{UEPT}_{i,t} + \varepsilon_{i,t}^1 \quad (1)$$

$$\text{Model 2: Public Debt}_{i,t}^2 = \alpha_0^2 + \beta_1^2 \text{GE}_{i,t} + \beta_2^2 \text{RQ}_{i,t} + \beta_3^2 \text{PE}_{i,t} + \beta_4^2 \text{IF}_{i,t} + \beta_5^2 \text{UEPT}_{i,t} + \varepsilon_{i,t}^2 \quad (2)$$

$$\text{Model 3: Public Debt}_{i,t}^3 = \alpha_0^3 + \beta_1^3 \text{RL}_{i,t} + \beta_2^3 \text{CC}_{i,t} + \beta_3^3 \text{PE}_{i,t} + \beta_4^3 \text{IF}_{i,t} + \beta_5^3 \text{UEPT}_{i,t} + \varepsilon_{i,t}^3 \quad (3)$$

Model 1 evaluates how the procedure for selecting, supervising, and changing the government affects the size of public debt through two indicators: Voice and Accountability (VA) and Political Stability and Absence of Violence/Terrorism (PS). The qualification of the government to formulate and execute policies efficiently is measured by Government Effectiveness (GE) and Regulatory Quality (RQ) in Model 2. Rule of Law (RL) and Control of Corruption (CC) in Model 3 are used to show the appreciation of civilians and government for the institutions that execute the activities in the economy and society and the interconnection between them. Public debt is the response variable in the three models and is measured by the proportion of public debt compared to the GDP of the country i in year t .

Besides indicators that present governance capacity, previous research documented other factors that might affect public debt. According to the public debt theory introduced by Barro (1979), public expenditure plays a crucial role in determining government debt. The author mentioned that deficits are adjusted to keep consistent tax rates, indicating a positive relationship between public spending and public debt. Furthermore, Tanzi and Davoodi (2002) demonstrated that an increase in government expenditure leads to expanded borrowing, contributing to higher levels of public debt. Meanwhile, the effect

of macroeconomic factors such as inflation is interpreted through interest rates and monetary policy, which could lead to a change in public debt (Reinhart & Sbrancia, 2011; Cherif & Hasanov, 2018). Also, the linkage of the unemployment rate as a burden for government policies and public debt is documented by Fedeli et al. (2009). Accordingly, we employ public expenditure (PE), inflation (IF), and unemployment (UEPT) as three control variables in each model.

3.2 Econometric Method

Different from the previous studies that mostly evaluated the impact of socioeconomic factors on public debt by using the frequentist approach, this research aims to assess this impact by employing a non-frequentist method, Bayesian analysis. Compared to traditional frequentist methods, the dominant features of Bayesian analysis have been documented by Anh et al. (2018) and Kreinovich et al. (2019). Additionally, by applying non-frequentist probability, Bayesian analysis could assess the correlation rather than accept or reject hypotheses based on p-value in a linear regression model. The Bayesian model befits small data observations with robust econometric results. Generally, the Bayesian model is written below:

$$Posterior \propto Likelihood \times Prior \quad (1)$$

In principle, the prior input information is combined with the density of given data, resulting in parameters of the posterior distribution. This incorporation exerts robust inferential results of Bayesian analysis. Particularly, this equation could be expressed as Equation 2 with the assumption that parameter vector β is inferred from the given data vector y . Note that y and β are treated as two random vectors in Bayesian analysis.

$$p(\beta|y) \propto L(y; \beta) \times \pi(\beta) \quad (2)$$

In this equation, $p(\beta|y)$ denotes the posterior distribution of parameter β inferred from the data vector y ; $L(y; \beta)$ stands for the probability density function of y with informative β ; and $\pi(\beta)$ is the prior distribution of parameter β .

By applying Monte Carlo Markov Chain (MCMC) methods, posterior distributions in this research are specifically simulated through Metropolis–Hasting (MH) methods with informative prior and Gibbs sampling algorithm with uninformative prior. In the baseline analysis, we apply Zellner’s g-prior, a widely known informative prior for Bayesian normal linear regression. With *zellnersg* distribution provided by *bayesmh* and the variance parameter (σ^2) based on inverse-gamma distribution, our first estimation could be exhibited as follows:

$$\begin{aligned} \beta | \sigma^2 &\sim \text{zellnersg}(p, g, \mu_0, \sigma^2) \\ \sigma^2 &\sim \text{InvGamma}(v_0/2, v_0\sigma^2/2) \end{aligned}$$

where p is the number of the distribution, g stands for the information in terms of degree of freedom. μ_0 denotes the prior mean vectors, and v_0 is the prior degrees of freedom for the distribution of variance. Following Hoff (2009), the input informative prior would be: $g = 12$, $v_0 = 1$ and $\sigma^2 = 8$.

For a comparative purpose, in order to ensure the validity of baseline results, a Gibbs sample with uninformative prior is conducted in the robustness checking step. The observed variables in this estimation follow a normal distribution, while the *InvGamma* distribution is used for the variances:

$$\begin{aligned} \beta &\sim N(\mu_0, \sigma^2) \\ \sigma^2 &\sim \text{InvGamma}(v_0/2, v_0\sigma^2/2) \end{aligned}$$

The Gelman–Rubin convergence diagnostics test and effective sample size test are also taken into account to ensure the valuable outcomes of Bayesian analysis.

3.3 Data

This paper constructs a panel dataset of 41 countries in Asia, spanning from 2002–2019. These countries are selected based on the fulfillment of available data and will be listed in the Appendix.

Public debt, measured by the proportion of GDP, is the response variable in this research. The data were collected from the IMF and the general government debt of selected countries. In this research, we mainly focus on the influence of governance capacity on public debt. Hence, the predictor variables are measured following the Worldwide Governance Indicators (WGI) project conducted and published by the World Bank. Governance capacity includes six indicators: Voice and Accountability, Political Stability and Absence of Violence/Terrorism, Government Effectiveness, Regulatory Quality, Rule of Law, and Control of Corruption. These indicators have scores ranging from -2.5 (weak) to 2.5 (strong). The higher value represents better governance capacity in the public sector. As a control variable, public expenditure captures how the government allocates its budget and is measured by the share of GDP. Inflation and unemployment rates are also considered two control macroeconomic factors added to the empirical model. All the data on control variables were collected from the World Bank.

4. Results and discussion

4.1 Descriptive statistics

Table 1 exhibits the summary statistics of all variables observed in the empirical model. The observation value of most variables is 738, while the missing value of public debt and inflation is trivial. Generally, the public debt level in Asian countries is moderately high, accounting for 49.245% of GDP. As an illustration of this, in 2019, Japan had the highest amount of public debt, about 237.96% of GDP. The descriptive statistics of control variables such as public expenditure, inflation, and unemployment are also mentioned in Table 1. In terms of governance capacity, the mean value of the six indicators is mainly around 0, which is the medium value of the range from -2.5 (weak) to 2.5 (strong). These numbers demonstrate that the capacity of governance in the public sector in Asian countries is not weak, but more efforts are needed to achieve better quality. In order to clarify this statement, we examine the changes in the average governance capacity in Asian countries in the period 2002–2019 (Figure 1).

Over seventeen years, four indicators, Government Effectiveness, Regulatory Quality, Rule of Law, and Control of Corruption, experienced an increasing trend in their value. However, the rising level of about 0.1 points is a small number. This proves the process of enhancing governance capacity takes place in the long term. In this context, Voice and Accountability and Political Stability seem to have a decreasing tendency with about 0.05 points.

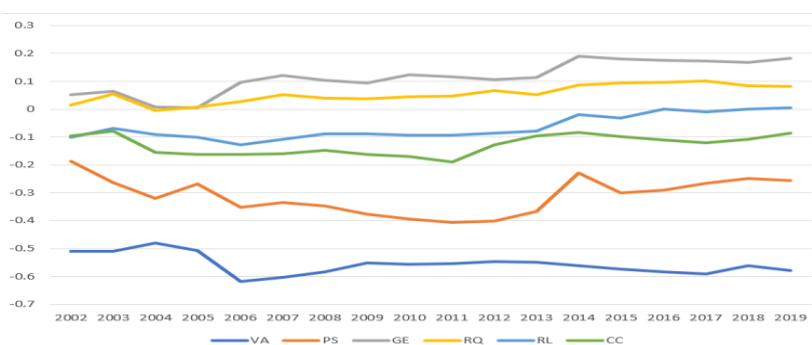
Table 1. Summary statistics

Variable	Measure	Mean	SD	Min	Max	Obs.
Public Debt	%GDP	49.245	40.388	0.288	237.955	737
Voice and Accountability	ranges from -2.5 (weak) to 2.5 (strong)	-0.55666	0.74334	-1.90720	1.11712	738

Political Stability		-0.31182	0.97273	-2.49927	1.61534	738
Government Effectiveness		0.05476	0.79677	-1.72011	2.26054	738
Regulatory Quality		-0.06574	0.79326	-1.79039	1.87856	738
Rule of Law		0.11503	0.81575	-2.27942	2.43698	738
Control of Corruption		-0.12887	0.89039	-1.68146	2.32558	738
Public Expenditure	%GDP	27.223	8.807	8.393	54.406	738
Inflation	consumer prices (annual %)	5.133	5.364	-18.109	44.964	730
Unemployment	% of total labor force	5.715	4.221	0.110	20.710	738

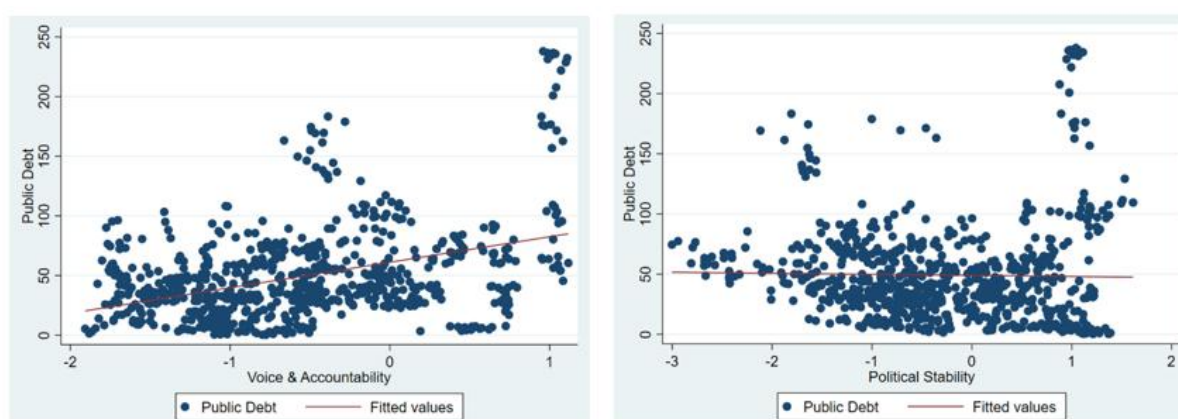
Source: Authors' calculations.

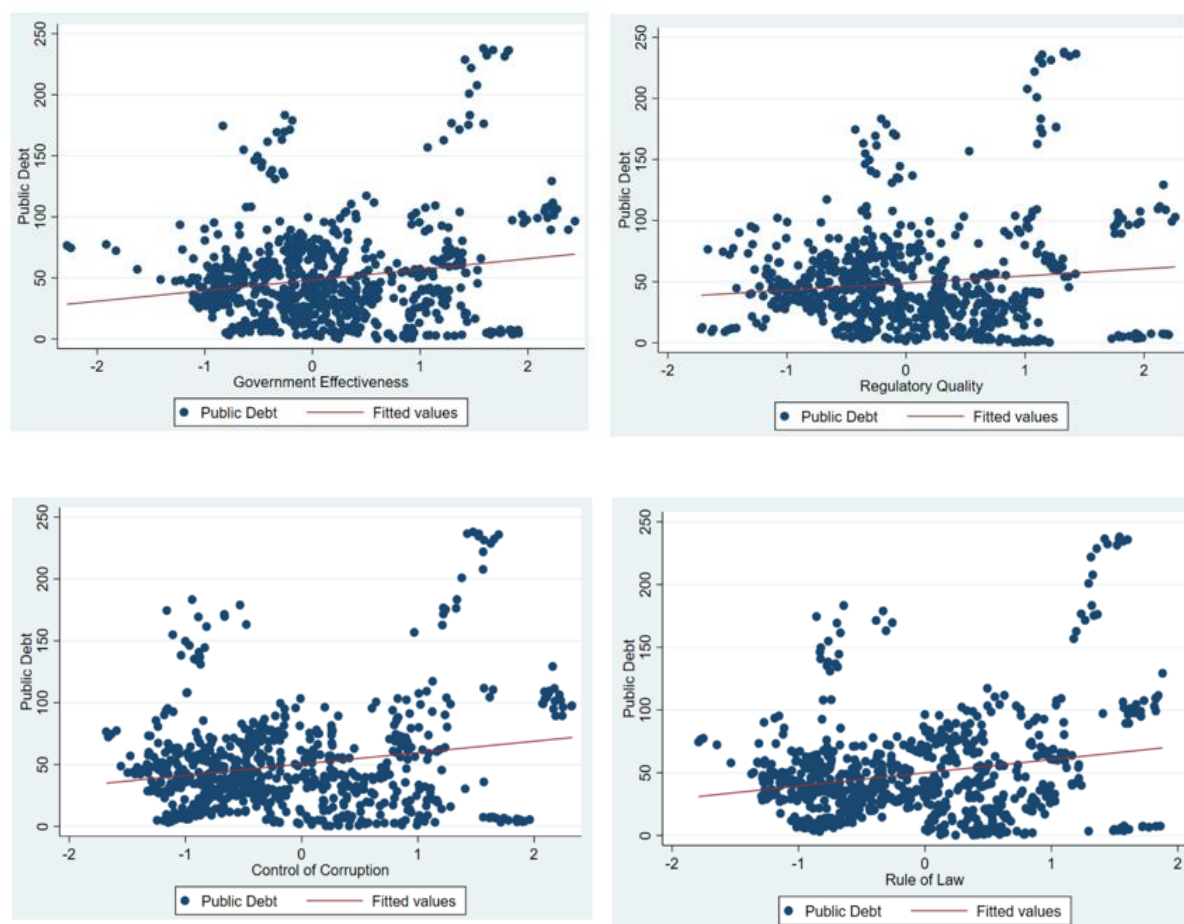
Figure 1: Governance capacity in Asian countries in the period 2002–2019



Source: Authors' calculations.

Figure 2: Public debt and governance capacity





Source: Authors' calculations.

In the preliminary step, the relation between public debt and each indicator of governance capacity is evaluated in Figure 2. We documented the positive effect of five indicators of governance capacity, while Political Stability had a weak negative correlation. The dimensions of these indicators will be concluded in the next estimations.

4.2 Informative Bayesian Analysis Results and Discussion

Before analyzing the simulation results of Bayesian estimation, we should consider two essential steps: the acceptance rate & efficiency and convergence of MCMC. According to Robert and Rosenthal (2001), the optimal range of acceptance rate for MH sampler is from 0.15 to 0.5, while Gelman et al. (1997) stated that the optimal acceptance rate for multivariate

distribution is 0.234. Table 2 indicates the acceptance rate results of Models 1, 2, and 3 are 0.35, 0.32, and 0.33, respectively. These numbers follow the optimal acceptance rate mentioned by Robert and Rosenthal (2001). The average values of efficiency in Models 1, 2, and 3 are 0.058, 0.062, and 0.061, respectively, and these values are greater than the benchmark value of 0.01. Thus, both acceptance rate and efficiency values in Models 1, 2, and 3 are effective for the MH algorithm.

In the next step, to ensure the validity of MCMC samples, we consider whether Models 1, 2, and 3 are converged. In essence, the convergence of the MCMC chain states its stationary distribution and presents the true value of the posterior distribution. Hence, the Bayesian inference based on converged MCMC samples is found to be cogent. Gelman and Rubin (1992) noted that the parameters have non-convergence when their diagnostic R_c values exceed 1.2. Nonetheless, in a large body of research, researchers tend to apply the convergence rule of $R_c < 1.1$. Since all the R_c values of parameters of Models 1, 2, and 3 in Table 3 are not greater than 1.1, we firmly conclude the MCMC chain of this model is convergent.

Table 2: Simulation efficiency of specified models

	Model 1	Model 2	Model 3
Acceptance rate	0.3518	0.3224	0.3296
Efficiency: min	0.02192	0.02257	0.02998
Avg	0.05776	0.06205	0.06091
Max	0.2115	0.2105	0.1987

Source: Authors' calculations.

Table 3: Convergence test results

	Model 1 Rc	Model 2 Rc	Model 3 Rc
Voice and Accountability	1.002187		
Political Stability	1.001169		
Government Effectiveness		1.00498	
Regulatory Quality		1.011715	
Rule of Law			1.001608
Control of Corruption			1.002133
Public Expenditure	1.003451	1.001211	1.005026
Inflation	1.000524	1.001414	1.003765
Unemployment	1.003155	1.001752	1.006279
_Cons	1.003843	1.000631	1.003413
Var	1.000499	1.000098	1.000596

Source: Authors' calculations.

The main results of the posterior simulation in Bayesian linear regression of Models 1, 2, and 3 are presented in Table 4. This table displays the mean coefficient of the six dimensions of governance capacity, and the value of 95% credible intervals is in parentheses. Each model also has a column for the probability of the coefficient. In general, all six indicators in three separate models represented governance capacity that exerts a strong relationship with public debt at a high level of probability.

Table 4: Results from informative Bayesian linear regression

	Model 1		Model 2		Model 3	
	Mean coefficient	Probability of coefficient	Mean coefficient	Probability of coefficient	Mean coefficient	Probability of coefficient
Voice and Accountability	0.0161 (-0.06995; 0.09644)	0.9615*				
Political Stability	0.0049 (-0.0048; 0.0147)	0.9904*				

Government Effectiveness			-0.0131 (-0.08394; 0.05855)	0.9976**		
Regulatory Quality			0.00297 (-0.00971; 0.015688)	0.9915*		
Rule of Law					0.02956 (-0.05689; 0.12311)	0.9999*
Control of Corruption					0.00536 (-0.00527; 0.01594)	1.0000*
Public Expenditure	0.0839 (-0.0167; 0.1876)	0.9997*	0.08596 (-0.0144; 0.18732)	0.9998*	0.08182 (-0.02019; 0.18443)	1.0000*
Inflation	-0.00109 (-0.00288; 0.0007)	0.9905**	-0.001219 (-0.0031; 0.0008)	1.0000**	-0.001114 (-0.00297; 0.00074)	1.0000**
Unemployment	0.01606 (0.00419; 0.02755)	0.9951*	0.01619 (0.00418; 0.02827)	0.9897*	0.01661 (0.00486; 0.02834)	0.9944*
_Cons	-0.0146 (-0.04685; 0.01708)		-0.01606 (-0.04812; 0.01559)		-0.015199 (-0.04821; 0.01696)	
Var	0.01464 (0.01314; 0.01631)		0.01466 (0.01319; 0.01626)		0.01463 (0.013164; 0.016266)	

Note: The credible intervals in the parentheses are 95%; * denotes for the probability of coefficient > 0 while ** is the probability of coefficient < 0.

Source: Authors' calculations.

In Model 1, the results point out the positive effect of Voice and Accountability and Political Stability on the level of public debt. In particular, the mean coefficients of Voice and Accountability and Political Stability are 0.0161 and 0.005, respectively, while the probability coefficients of these indicators are 96.15% and 99.04%. This strongly demonstrates the higher quality of selecting the regime of the government, monitoring the government, and maintaining the political stability that would enlarge the size of public debt.

This finding is distinct from previous works documenting that Voice and Accountability and Political Stability do not impact public debt in high-income countries (Imaginário & Guedes, 2020) and transition countries (Nguyen & Luong, 2021). On the contrary, the negative nexus of Voice and Accountability and Political Stability and public debt is found in MENA countries (Tarek & Ahmed, 2017) and the Eurozone (Briceño & Perote, 2020). They support the idea that higher Voice and Accountability could push the transparency of public governance and then decrease the size of public debt. However, in this research, the results could be explained from the expenditure aspect that governments in Asian countries use external resources in their budget to underpin the government system and increase Voice and Accountability and Political Stability levels, resulting in higher public debt. In the case of Asian countries, the observed period in this research covers the time that Asian countries dealt with the ruins of wars, internal conflicts, and political instability. Therefore, a significant proportion of the government budget was used to maintain stability in terms of politics in the 2000s. After that, like the cycle of developed countries, in the 2010s, when Asian countries reached higher economic development, the expectations of citizens in government services were higher. Increasing governance capacity in terms of Voice and Accountability and Political Stability to meet the demands of people in society continues to be a burden for Asian governments. They tend to use debt securities and other types of debt, such as aid programs, to finance enhancing institutional quality. That results in higher levels of public debt in Asia countries caused by Voice and Accountability and Political Stability.

The different dimensions between Government Effectiveness and Regulatory Quality are found in Model 2. Government Effectiveness has a negative impact on the accumulation of public debt, while Regulatory Quality

has a positive one. In this case, the capacity of government measured by Government Effectiveness expresses the quality of public and civil services. This would prevent bureaucracy and corruption, thus maintaining the balance between government revenue and expenditure. In addition, Government Effectiveness also transmits the quality of creating and executing public debt policies. In particular, good institutions in the government sector lead to higher government effectiveness, as presented by the capacity for managing government funds to reduce over- or inefficient expenditure. Also, in the context of high corruption in Asia countries, effective governance is against rent-seeking and moral hazard issues. Regarding this, the government tends to reject large expenditures that contain risks related to a shortage in diligence processes and inadequate monitoring systems. On the side of tax revenue, better government effectiveness results in enhanced tax regulations and systems that enable improved tracking of tax records, detection of tax under-reporting, reduced size of the informal economy, and better tax collection facilitation.

This explains that a higher Government Effectiveness value leads to a reduction in public debt. In terms of Regulatory Quality, though the magnitude of the coefficient is trivial (0.003), this indicator also supports the positive connection with public debt. This finding follows the romantic view of governance capacity, which states that when developing progress, a government tends to consume a high percentage of its budget in order to operate and monitor the regulatory system efficiently. In the research of Imaginário and Guedes (2020), Weingast (2009), and La Porta et al. (1999), the consistent viewpoint is also mentioned. The coefficients of both Government Effectiveness and Regulatory Quality reach a high value in the probability of 99.76% and 99.15%, respectively.

In Model 3, two indicators of governance capacity, Rule of Law and Control of Corruption, reflect the interaction between citizens and public institutions in economic and social aspects. Both Rule of Law and Control of Corruption have a strong positive effect on the size of public debt, with mean coefficients of 0.03 and 0.005 and probability coefficients of 99% and 100%, respectively. These results also support the romantic view of managing the public budget. In particular, high values of Rule of Law interpret the satisfaction of citizens with the rules of society and the law system. Hence, Asian countries have been financing huge amounts of their public revenue in order to enhance and maintain a better quality of Rule of Law, resulting in a higher value of public debt. This finding is in line with the research of Nguyen and Luong (2021) and Tarek and Ahmed (2017). Regarding Control of Corruption, though a small value of the coefficient is documented, the positive nexus supports the “grease on wheel,” as also applied to explanations by Egger and Winner (2005) and Nguyen and Luong (2020). As mentioned in the summary statistics, the level of Rule of Law and Control of Corruption in Asian countries is quite low, which demonstrates that Asian countries do not have a robust background in constructing an efficient law system and preventing activities in terms of corruption. To do this, on the one hand, a higher number in the fiscal policy of Asian countries have paid to enhance Rule of Law and Control of Corruption as an increasing trend in Figure 1. However, Control of corruption is a multifaceted issue for each country, especially developing countries in Asia. Hence, the connection between corruption in the governance capacity and its effect on public debt should be explored in further research.

Besides the six indicators of governance capacity, control variables such as public expenditure, inflation, and unemployment added to the three models also have a high proportion of reliability in their mean coefficient and are

consistent with the results in all the models. A high level of public expenditure and unemployment would increase the size of public debt while inflation exerts an adverse influence.

5. Robustness Check

The baseline results of this paper are obtained by using informative Bayesian estimation. Here, we conduct an alternative Bayesian estimation to examine whether our main results are robust enough by changing another prior input. The detailed methodology is mentioned in Section 3.2 with the application of Gibbs sample and uninformative prior. The simulation results of uninformative Bayesian linear regression are presented in Table 5. Consistently, the regression coefficients are similar to the mean coefficients of Models 1, 2, and 3 in Table 4. Although there is a small change in the magnitude, the disparity is trivial, and the dimension of all variables remains unchanged. For stability purposes, this estimation also considers its effective sample size (ESS), displayed in Table 6. Most of the values of ESS reach 10,000, and the efficiency of parameters is high at 1.0, demonstrating strong results when we compare with the baseline part. Therefore, we firmly state that governance capacity plays a significant role in determining the size of public debt in Asian countries.

Table 5: Results from uninformative Bayesian linear regression

	Model 1 Mean coefficient	Model 2 Mean coefficient	Model 3 Mean coefficient
Voice and Accountability	0.01751 (-0.02144; 0.05787)		
Political Stability	0.00548 (-0.0009; 0.0101)		
Government Effectiveness		-0.01041	

		(-0.04501; 0.02361)	
Regulatory Quality		0.00341 (-0.00245; 0.00944)	
Rule of Law			0.03035 (-0.01208; 0.07266)
Control of Corruption			0.00605 (0.00095; 0.01124)
Public Expenditure	0.0891 (0.04075; 0.13677)	0.0937 (0.04542; 0.14187)	0.09052 (0.04194; 0.13797)
Inflation	-0.00121 (-0.00206; -0.0003)	-0.001335 (-0.00225; -0.0004)	-0.00115 (-0.00202; -0.00027)
Unemployment	0.01771 (0.01201; 0.02338)	0.01767 (0.01195; 0.02343)	0.01797 (0.01222; 0.02371)
_Cons	-0.01524 (-0.03035; -0.0001)	-0.01768 (-0.03277; 0.00261)	-0.01721 (-0.03194; -0.00207)
σ	0.00303 (0.00271; 0.00337)	0.00305 (0.00274; 0.00339)	0.00302 (0.00272; 0.00336)

Note: The credible intervals in the parentheses are 95%.

Source: Authors' calculations.

Table 6: Sample size test results

	Model 1		Model 2		Model 3	
	ESS	Efficiency	ESS	Efficiency	ESS	Efficiency
Voice and Accountability	10000.00	1.0000				
Political Stability	10000.00	1.0000				
Government Effectiveness			10000.00	1.0000		
Regulatory Quality			10000.00	1.0000		
Rule of Law					10000.00	1.0000
Control of Corruption					10000.00	1.0000
Public Expenditure	10000.00	1.0000	10000.00	1.0000	10000.00	1.0000
Inflation	10000.00	1.0000	10000.00	1.0000	10000.00	1.0000
Unemployment	10000.00	1.0000	10000.00	1.0000	10000.00	1.0000
Cons	10000.00	1.0000	10000.00	1.0000	10000.00	1.0000
σ	10000.00	1.0000	9501.46	0.9501	10000.00	1.0000

Source: Authors' calculations

6. Conclusion

In this study, we empirically tested the effect of governance capacity on the accumulation of public debt using a panel of 41 Asian countries from 2002–2019. The results from informative Bayesian linear regressions demonstrate a positive connection between governance capacity and the accumulation of public debt. These findings clarify that increasing the capacity of governance related to a higher value of Voice and Accountability, Political Stability, Regulatory Quality, Rule of Law, and Control of Corruption could lead to a higher level of public debt. In this context, government spending should be an explanatory factor. The majority of Asian countries are developing and emerging economies. Hence, they have not reached the optimal pattern of public governance. Sharpening and maintaining government institutions efficiently requires a significantly large government budget. Consequently, this boosts the accumulation of public debt. On the contrary, governance capacity, which is represented by Government Effectiveness, indicated a negative relation. A country that has a more efficient government could manage its budget deficit and diminish public debt well.

To check the robustness of results, this paper also offers a comparison method, the uninformative Bayesian linear regression. Although we documented a slight difference in the magnitude of the indicators' coefficient, government capacity indicators did not change the dimension and significant correlation with the dependent variable. Therefore, the baseline results of this paper are statistically robust and stable.

Although this research produced substantial evidence for the effect of government capacity on public debt in Asian countries, some limitations might still exist. We documented that better governance capacity in terms of Voice and

Accountability, Political Stability, Regulatory Quality, and Rule of Law leads to higher public debt possibly due to rising government expenditure. This issue could be investigated in further research by examining whether governance capacity positively affects public spending for constructing institutional quality. In terms of Control of Corruption, this research is limited in observing one aspect of this indicator while the multifaceted nature of corruption and its influence on public debt should be more taken into account in future research. The causal linkage between governance capacity and public debt could be explored in further works.

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Appendix

The list of 41 countries in this research is as follows: Armenia, Azerbaijan, Bahrain, Bangladesh, Bhutan, Brunei Darussalam, Cambodia, China, Cyprus, Georgia, Hong Kong SAR, India, Indonesia, Iran, Israel, Japan, Jordan, Kazakhstan, Korea, Kuwait, Kyrgyz Republic, Lao, Lebanon, Malaysia, Maldives, Mongolia, Nepal, Oman, Pakistan, Philippines, Qatar, Russia, Saudi Arabia, Singapore, Sri Lanka, Tajikistan, Thailand, Turkey, United Arab Emirates, Vietnam, Yemen.