

Economic and Political Drivers of External Debt: Insights from Developing and Transitioning Economies in Asia

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This study explores the economic and political determinants of external debt in 37 Asian developing and transition economies (ADTEs) over the period 1997-2020. Controlling for endogeneity and dynamic panel bias using fixed effects (LSDV), bias corrected LSDVC and Generalised Method of Moments (GMM) estimators, we find that economic growth, national savings, trade balance and strong institutional quality significantly reduce external debt. However, debt levels are exacerbated by investment, government consumption, inflation, interest rate, exchange rate, debt servicing and international reserves. The study underscores the importance of institutional quality in the pattern of borrowing, providing useful insights for policy-makers for sustainable debt management and long-term economic development.

Keywords: External Debt, Economic Growth, GMM, Institutional Quality, Asia

1. INTRODUCTION

Since the early 1970s, developing economies have faced a series of recurring economic shocks that have had a profound impact on their growth paths. These include the oil crises of the 1970s, the global recession of the early 1980s, the Asian financial crisis of 1997, the global financial crisis of 2008 and most recently the disruptions caused by the COVID-19 pandemic. Such shocks have resulted in persistent macroeconomic imbalances, high inflation and increasing dependence on external borrowing to maintain economic stability and development (Dawood, et al. 2025; Chudik, et al. 2017; Mensah, et al. 2019). External debt has been considered as a vital fiscal device for enhancing domestic savings and promoting investment particularly in resource constrained economies (Siddique, et al. 2015). However, the rising debt servicing burden has become a structural problem for many developing countries as evidenced by rising interest rates, falling capital inflows, falling domestic productivity, and limited access to modern technology (Baidoo, et al. 2021; Ofori-Abebrese, et al. 2021; World Bank, 2023).

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In Asia, developing economies have borrowed heavily externally to cover balance-of-payments deficits, support economic growth, reduce unemployment and fight poverty (Harsono, Kusumawati & Nirwana, 2024). But they have been unable to use these funds effectively because of repeated global and local shocks. The average debt-to-GDP ratio of Asian emerging and developing economies has risen significantly from 56 percent in 2019 to 75 percent in 2022, largely due to the economic impact of the pandemic (IMF, 2022; Gaspar, et al. 2021). The World Bank (2022) also reported that South Asia's external debt stock grew by 10.2 percent in 2021 to US\$900 billion, with India, Bangladesh and Pakistan leading the increase. In contrast, debt accumulation in East Asia and the Pacific, excluding China, slowed to 3.5 percent, reflecting both pandemic and climate-related challenges.

The existing literature has been largely focused on the macroeconomic impacts of external debt, with little consideration given to the economic and political factors that contribute to the accumulation of external debt (Dawood, et al. 2024; Beyene & Kotosz, 2020; Harold, 2019). Most studies have used country-specific time series approaches (Wahyuni, et al. 2019; Mahara & Dhakal, 2020; Ayesha & Emon, 2022; Baniata, et al. 2023), but only a few have used panel data analyses that allow for broader generalisation (Mijiyawa, 2023; İlhan, 2023; Gulcemal, 2022). The empirical evidence in the Asian context, however, is still limited to small panels of ASEAN countries (Rindi, et al. 2023) or to some sub-regions (Dawood, et al. 2021).

Based on this theoretical background, the present study puts external debt in a broader context of savings, investment and foreign financing. According to the Harrod-Domar (1939, 1946) model, sustained growth requires an important and necessary element of capital accumulation. Chenery and Strout's (1966) Dual-Gap Theory points to the savings-investment and foreign exchange constraints that developing economies frequently face, which compel them to borrow from abroad. Finally, Bacha's (1989) Three-Gap Model extends this framework by introducing fiscal constraints and argues that poor domestic resources, along with budgetary and trade imbalances, force countries to seek external financing. Taken together, the models provide a conceptual framework for the study of the impact of economic structures and institutional conditions on the debt accumulation of developing countries. The present study broadens the existing literature that has largely focused on macroeconomic variables by incorporating institutional and political governance indicators to the debt-growth framework.

Methodologically, the study employs a set of robust panel estimators, namely Least Squares Dummy Variable (LSDV), bias-corrected LSDVC and dynamic system Generalised Method of Moments (GMM) for consistency, controlling for endogeneity and capturing dynamic interactions. This holistic analytical approach is expected to give deeper insight into the joint effect of governance quality, political stability and economic fundamentals on external debt dynamics. This combination not only improves the theoretical understanding of debt accumulation, but also gives practical policy recommendations for sustainable debt management and economic stability in the Asian region.

The rest of this study is organised as follows. Section 2 reviews the literature on determinants of external debt; Section 3 provides details about data and methodology; Section 4 shows the empirical results and discussion; Section 5 concludes with key policy implications and directions for future research.

2. LITERATURE REVIEW

2.1. Theoretical Framework

The Three-Gap Model developed by Bacha (1989) is a useful framework for analysing the dynamics of external debt financing in developing countries as it emphasises three critical gaps that have a significant impact on a country's borrowing requirements: The savings-investment gap, the fiscal gap and the exchange gap. This model is built upon the basic ideas of Chenery and Strout (1966) in their Dual Gap Model, who first identified the savings-investment gap and the foreign-exchange gap as the main constraints in developing economies. The Three-Gap Model embeds the fiscal gap into the analysis, which provides a more comprehensive analysis of the economic determinants of external debt.

2.1.1. Saving-Investment Gap

The imbalance between savings and investment lies at the heart of the dynamics of external debt. Developing countries need external financing because they generally do not have enough domestic savings to meet the investment requirements for sustainable growth. This gap is defined as the difference between gross capital formation and national savings. Where national savings are not enough, governments have to look to the world market for external debt to finance investments necessary for economic growth. According to theoretical foundations, higher rates of investment tend to lead to higher productivity and growth and hence to an increase in the country's ability to service its debt in the long run (Rindi, et al. 2023). The saving-investment gap can be written as:

$$\Delta D_{ext}^{S-I} = I - S \quad (1)$$

where I is the level of investment, S is the level of domestic savings, and ΔD_{ext}^{S-I} represents the change in external debt due to the saving-investment gap. This equation indicates that the higher the investment-to-savings ratio, the higher the external debt. In this context savings are the difference between private income and consumption. This may be defined as home savings:

$$S = Y - C \quad (2)$$

where S for domestic savings, Y presents national income, and C stands for consumption.

2.1.2. Foreign Exchange Gap

The foreign exchange gap is the difference between a country's exports and imports, which necessitates buying foreign currency to cover trade deficits. This is the gap that is represented by the trade balance, and on which the exchange rate and international reserves have their influence (Mijiyawa, 2023). When a country has a negative trade balance, it has to borrow from abroad to pay for its imports, and this can lead to an increase in its external debt. International reserves act as a buffer against currency fluctuations and as a safety net to manage debt repayments (Waheed, 2017). The theoretical motivation for this gap stresses the importance of trade balance in the determination of external financing needs, countries with large trade deficits are more vulnerable to external shocks. The foreign exchange gap is given by:

$$\Delta D_{ext}^{FX} = M - X \quad (3)$$

where ΔD_{ext}^{FX} is the change in the external debt due to the foreign exchange gap, M is imports and X is exports. Growth in external debt results from an excess of imports over exports.

2.1.3. Fiscal Gap

The fiscal gap is the difference between government revenue and government expenditure. The fiscal gap is further augmented by the requirement to service the debt already owed. It is a measure of the extent of excess of government expenditure over revenue and the need for external borrowing to meet the deficit (Shaharuddin & Edris, 2021). High levels of debt service, the periodic payment of interest and principal on existing debt, can severely limit a government's fiscal space, limiting its ability to invest in development and social programs (Sagdic & Yildiz, 2020). The fiscal gap is thus an important indicator of the financial health of a country, affecting its dependence on external debt to meet the budgetary needs of the economy and to retain economic stability. The fiscal-constraint gap is expressed as:

$$\Delta D_{ext}^{Fiscal} = G - T \quad (4)$$

where ΔD_{ext}^{Fiscal} refers to the change in external debt due to the fiscal gap, G is government expenditure and T is government revenue. Fiscal deficit is when expenditure exceeds revenue and it results in borrowing from external sources which in turn increases the external debt. The overall external debt equation is determined by the combined gaps:

$$\Delta D_{ext} = \Delta D_{ext}^{S-I} + \Delta D_{ext}^{FX} + \Delta D_{ext}^{Fiscal} \quad (5)$$

This expands to:

$$\Delta D_{ext} = (I - S) + (M - X) + (G - T) \quad (6)$$

2.1.4. Institutional Quality

Besides economic models, political determinants like the quality of institutions, governance structures and policy decisions also play a vital role in external debt dynamics (Chiminya, et al. 2018; Harold, 2019; Azolibe, 2020; Ibrahim, 2021). Recent studies have found that institutional quality and governance are key determinants of foreign debt accumulation. Besley & Persson (2018) emphasise the importance of good governance structures in improving creditor confidence and decreasing the costs of borrowing. They also stress the importance of state capacity in enabling sound borrowing practices. Dreher & Gassebner (2020) stress the significance of robust institutional safeguards in mitigating default risk and ensuring access to external financing, in their study on the impact of sovereign defaults on access to international financial markets. Hasan & Hossain (2021) provide a global perspective on governance and foreign debt and explain the complex interrelations between debt sustainability, fiscal management strategies and quality of governance. Together these studies underscore the significance of governance and institutional quality in determining borrowing conditions, debt management, and economic stability in an increasingly integrated global financial environment.

Economic growth increases the capacity of an economy to generate revenue and pay its debts as faster growth usually leads to increased investment opportunities and higher national savings which in turn reduces dependence on borrowing from external sources (Waheed & Abbas, 2021). In addition, good economic performance can attract foreign direct investment which can provide alternative sources of financing. On the other hand, high inflation reduces the real value of debt and makes it more difficult to manage

and service the debt (Dawood, et al. 2021) while high interest rates increase the cost of borrowing which could discourage investments and worsen fiscal deficits. These macroeconomic factors as a whole point to the interrelatedness of economic stability and external debt dynamics, and their significant impact on a nation's financial health.

We base our empirical model on the Three-Gap Framework (Bacha, 1989) and specify the following relationship. The savings-investment gap is proxied by investment (PFIN) and national savings (PSAV); the foreign-exchange gap by the trade balance (TDRA), the exchange rate (XRPD) and international reserves (IRGDP); and the fiscal gap by government consumption (PGCE) and debt servicing (TSPY). We supplement this core specification with standard macroeconomic controls—economic growth (RYPH), inflation (DCPI) and interest rates (EFIR). Most importantly, we augment the model with institutional quality (IQ) that we hypothesise to be a cross-cutting determinant that influences the magnitude of all three gaps. Our complete specification, illustrated in our conceptual framework (Figure 1), enables us to test whether superior governance moderates external borrowing needs after controlling for fundamental macro-economic pressures. We write the relationship to include economic and political determinants that affect the dynamics of external debt as:

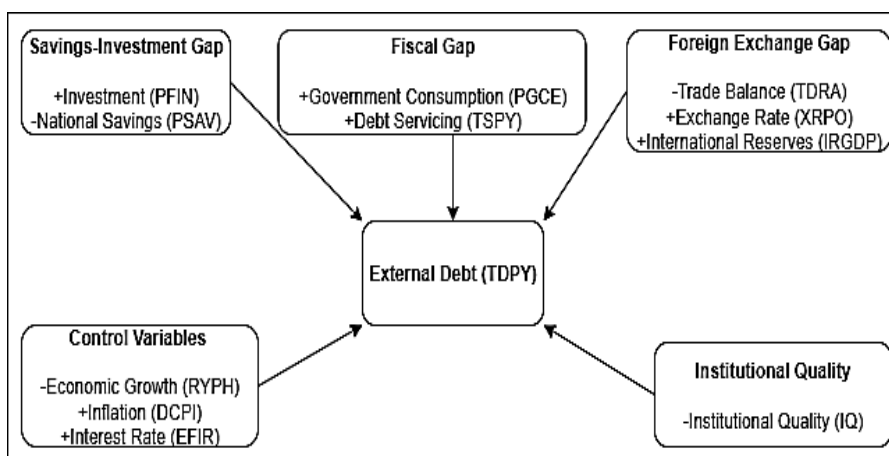
$$\Delta D_{ext} = f(I, S, M, X, G, T, IQ, EG, Inf, IR, DS, ER, InR) \quad (7)$$

where IQ is institutional quality, EG is economic growth, Inf is inflation, IR is interest rate, DS indicates debt service, ER denotes exchange rate, and InR represents international reserves and f is a function that takes into account the complex relationship of these variables with external debt. A general equation of the effects of economic and political factors is:

$$\Delta D_{ext} = \alpha + \beta_1 IQ + \beta_2 EG + \beta_3 Inf + \beta_4 IR + \beta_5 DS + \beta_6 ER + \beta_7 InR + \beta_8 (I - S) + \beta_9 (M - X) + \beta_{10} (G - T) + \varepsilon \quad (8)$$

Where α is a constant, β are coefficients attached to each variable and ε is the error term.

Fig. 1. Conceptual Framework: The Three-Gap Model and Institutional Quality.



2.2. Empirical Literature

External debt is an important factor in the economic development of the countries. But the factors that determine the external debt are still a subject of debate

among economists and policy makers. An understanding of the causes and determinants of external debt is essential for the establishment of effective fiscal policies and the promotion of sustainable economic growth. The empirical work is largely concerned with the complex dynamics of external debt accumulation, and it is mainly economic. But the interplay of political and institutional factors has been paid comparatively less attention in the extensive literature on this subject. The majority of existing studies have focused on the determinants of external debt for individual countries using time-series analysis, but there is little research using panel data. Panel studies allow for more generalisable inferences to be made across multiple countries and therefore facilitate the development of generalised policy frameworks (Wooldridge, 2015).

Waheed (2017) in his study on macroeconomic factors affecting external debt, performed panel analysis of 12 oil exporting and 12 oil importing countries. The results showed that economic growth and reserves help to reduce the levels of external debt while deficits, inflation and investments tend to increase it. Similarly, Mensah, et al. (2017) used the VAR estimator and found that domestic borrowing, public investment and consumption expenditure are important determinants that lead to the increase in external debt among 24 African countries while economic growth, inflation and tax revenue have a diminishing impact on the levels of external debt. Furthermore, Abbas & Wizarat (2018) discovered that military spending is a factor in the external debt using the fixed-effect model, while domestic investment and trade have a mitigating effect.

Moreover, Sagdic & Yildiz (2020) by using the PCSE estimation method find that higher public expenditure and debt servicing increase external debt in the economies of Central Asia and the Caucasus. On the other hand, a positive current account balance, low inflation and high domestic savings are related to a decrease in external debt. Waheed & Abbas (2021) investigated the economic determinants of external debt in one oil-exporting and nine oil-importing countries. In oil-exporting countries, external debt levels are mitigated by factors such as economic growth, government revenue, foreign direct investment (FDI) and population size. On the contrary, government spending, trade openness, inflation and current account balance tend to worsen it. However, for oil importing countries, economic growth, government revenue, current account balance, domestic investment and labour force participation are associated with a decrease in external debt. Whereas, FDI and foreign exchange reserves are found to be positively related with external debt.

Dawood, et al. (2021) studied 32 Asian countries for the time period 1995-2019. From the GMM method, the authors found that inflation and economic growth are associated with a decrease in external debt, while trade, government expenditures and exchange rates are associated with an increase in external debt. Similarly, Shaharuddin & Edris (2021) used the Autoregressive Distributed Lag (ARDL) technique to investigate the determinants of external debt from 1870 to 1913 and found that economic growth has a negative impact on external debt while government expenditure positively contributes to the buildup of external debt. Gülcemal (2022) used several dynamic panel methods and found that total external debt is negatively related to economic growth. However, trade openness and the Consumer Price Index (CPI) are positively correlated with the accumulation of long-term foreign debt in six emerging market economies (EMEs) over the period 1990-2019.

Ilhan (2023) investigated the factors of external debt in emerging markets from the first quarter of 2005 to the first quarter of 2020 by applying a panel augmented mean group (AMG). The findings suggest that economic growth reduces external debt while trade openness, inflation and domestic credit increase external debt. Also, Mijiyawa

(2023) used fixed-effect and GMM models and found that economic growth, remittances, and the nominal exchange rate had a significant negative effect on external debt, while fiscal deficits, trade openness, and foreign direct investment were statistically insignificant. Furthermore, Rindi, et al. (2023) estimated a fixed effect model and reported that, across six ASEAN countries from 1997 to 2021, economic growth, inflation, and the exchange rate negatively affect external debt. In contrast, investment and capital withdrawal have a significant positive effect on external debt levels.

A growing body of literature, however, underscores the significance of non-economic factors influencing external debt, including political stability, the quality of institutions, and relationships with creditors. Chiminya, et al. (2018) examine economic and political determinants of external debt of the sub-Saharan African countries, with the focus of trade, economic growth and investment. Their results indicate that democratic regimes tend to accumulate higher debt levels than autocratic ones. This suggests that there is a relationship between the political regime type and debt accumulation. Similarly, the study of Harold (2019) used OLS and MRA regression models. He showed that democracy, political stability, control of corruption and quality of legal frameworks are key factors in determining the dynamics of external debt, especially in African countries in the Franc Zone.

The effect of debt servicing, import levels and growth rates of advanced economies in exacerbating external debt while exports play a mitigating role is explained by Beyene & Kotosz (2020). They also stress the importance of foreign direct investment and political stability in the context of reducing external debt burdens, especially in the case of Heavily Indebted Poor Countries (HIPC)s. Azolibe (2020) investigates the economic and political determinants of external debt in heavily indebted poor countries (HIPC)s. The study examines the main drivers of external indebtedness using static and panel fully modified ordinary least squares (OLS) models on data for 39 HIPC)s over the period 1996-2018. The findings reveal that corruption, dependence on foreign aid, government expenditure, population growth and unemployment rate are the drivers for increase in external debt. Conversely, external reserves and economic growth (GDP growth) hurt debt levels. In a related analysis, Harsono, et al. (2024) look at the determinants of external debt in developing countries in the ASEAN region. Their findings indicate that variables such as the inflation rate, interest rate, and institutional quality exert a negative influence on external debt. In contrast, the exchange rate and trade openness exert a positive influence. Amoh, et al. (2024) used a panel quantile regression analysis on data from 30 Sub-Saharan African economies (2000-2021). They revealed heterogeneous effects across the debt distribution. Increased foreign direct investment (FDI) inflows and trade openness were associated with a rise in external debt. Conversely, corruption exhibited an inverse correlation with debt from the 10th to the 80th quantiles, whereas gross fixed capital formation similarly exerted a debt-reducing influence.

The literature on external debt dynamics has mainly focused on economic determinants, such as growth, fiscal balance, trade and inflation. At the same time, political and institutional dimensions have been relatively under-studied empirically. This narrow focus limits a more holistic understanding of the processes of debt accumulation, especially in contexts where the quality of governance, institutional capacity and political stability have a significant influence on fiscal behaviour and borrowing patterns. Moreover, the bulk of the previous work has been done on African economies, creating a geographical imbalance that ignores the different structural and institutional features of Asian developing and transition economies. With the rapid economic changes, fiscal

decentralisation efforts and changing governance frameworks in Asia, there is a critical need to extend empirical inquiry into the region.

3. RESEARCH METHODOLOGY

This study examines the determinants of external indebtedness using a panel data of 37 Asian developing and transitioning economies (ADTEs) for the period 1997–2020. The sample selection is consistent with the Three-Gap framework (Bacha, 1989) in theory, as these economies usually face savings-investment, foreign-exchange and fiscal gaps that lead to external borrowing. Although the study period was determined by data availability, it fortuitously covers the three major global shocks discussed above, providing natural variation in debt stress. Moreover, the large heterogeneity of the institutional quality of these countries (Harsono, et al. 2024; World Bank, 2024) provides a strong test for governance as an important determinant of debt accumulation. This full sample, constituting 90 percent of developing economies in the region (Appendix Table A1), in turn, provides a robust context in which to investigate external debt in settings where it is structural as opposed to discretionary to development.

The economic determinants were taken from the Economist Intelligence Unit (EIU) country database (2020) and the political and institutional determinants were taken from the Worldwide Governance Indicators (2021). Six variables were used to build a composite index of institutional quality, namely voice and accountability, control of corruption, regulatory quality, political stability, government effectiveness and rule of law. The composite index was derived from principal component factor analysis (PCA) and standardised to a range of –2.5 to 2.5 for ease of comparison. Higher higher scores on this index indicate better institutional quality and lower scores indicate worse institutional quality.

3.1. Model Specification

The study used a panel model to estimate the economic and political determinants of external debt in ADTE as follows:

$$TDPY_{it} = \pi_0 + \pi_1 X_{it} + \eta_i + \lambda_t + \mu_{it} \quad (9)$$

In this framework, TDPY refers to the external debt-to-GDP ratio and is the main dependent variable. X_{it} is the vector of explanatory variables, η_i captures country-specific effects, λ_t represents time-specific effects, and μ_{it} is the idiosyncratic error term that has zero mean and constant variance. The coefficients $\pi_1, \pi_2, \dots, \pi_{11}$ capture the effect of each explanatory variable on external debt, while π_0 is the intercept term. The indices i and t represent, respectively, between 1 and N (countries) and 1 and T (time periods).

$$TDPY_{it} = \pi_0 + \pi_1 RYPH_{it} + \pi_2 PFIN_{it} + \pi_3 PSAV_{it} + \pi_4 PGCE_{it} + \pi_5 TDRA_{it} + \pi_6 XRPD_{it} + \pi_7 DCPI_{it} + \pi_8 EFIR_{it} + \pi_9 TSPY_{it} + \pi_{10} IRGDP_{it} + \pi_{11} IQ_{it} + \eta_i + \lambda_t + \mu_{it} \quad (10)$$

The model above identifies ten economic factors attached to external debt, and they are mainly analysed by empirical research. RYPH is the proxy for economic growth and is defined as real GDP per capita. PFIN shows at the same time the gross fixed capital formation in percent of GDP, which is an indicator of investment. PSAV is Gross National Savings as a percentage of GDP, and PGCE is Government Expenditure as a percentage

of GDP. TDRA represents the trade balance as a share of GDP, and XRPD shows the exchange rate (national currency per US dollar, averaged over the period). DCPI measures the change in the general price level of goods and services in an economy over a period of time and is a proxy of inflation. EFIR, on the other hand, is a proxy for interest rates and measures the actual interest rate charged on loans or earned on investments, including the effect of compounding and other fees. TSPY is the ratio between the external debt service and the country's GDP. IRGDP is the ratio of a country's foreign exchange reserves to its GDP and shows its ability to meet external debt obligations. Finally, IQ is a summary index of political and institutional factors based on governance indicators such as voice and accountability, control of corruption, regulatory quality, political stability, government effectiveness and rule of law.

3.2. Estimation Strategy

The Fixed Effects (LSDV) and bias-corrected Least Squares Dummy Variable Corrected (LSDVC) estimators are commonly used in recent empirical studies addressing the economic and political determinants of public debt because they account for unobserved heterogeneity and dynamic panel bias. The results from these studies suggest the relationship between public debt and sovereign bond yields is non-linear; the cost of borrowing increases sharply once the debt-to-GDP ratio crosses a critical threshold. Moreover, independent fiscal institutions are important for reducing debt risk premiums by encouraging fiscal discipline and market confidence (Pappas & Kostakis, 2020). The quality of governance matters as well for the debt-growth nexus. While high public debt is likely to impair economic growth, good governance mechanisms can mitigate or even reverse this negative impact if the quality of institutions is above a certain threshold (Abbas, et al. 2021). In particular, the LSDVC estimator is useful for dynamic panels with a small number of time periods, since it corrects the small-sample bias of the usual fixed-effects estimators. Previous applications have validated its robustness in evaluating the negative impact of household debt on growth (Samad, et al. 2020), the effect of liquidity on bank lending (Dahir, et al. 2018) and the positive relationship between bank profitability and economic performance in West Africa (Koffi, 2024). In general, the estimators offer robust and unbiased views of the complex interrelationships between debt, governance and macroeconomic stability (Nwakuya & Ijomah, 2017).

Panel data regression models are widely adopted to evaluate the influence of variables like government revenue, expenditure, GDP growth, inflation and debt-to-GDP ratios on fiscal deficits and debt sustainability across countries and time (Mahmood, et al. 2025). To solve the endogeneity problems and simulate the effects of policy shocks, like fiscal expansion, exchange rate volatility and inflation on debt dynamics and macroeconomic stability, many structural macro econometric models with several behavioural equations are estimated with Generalised Method of Moments (GMM) (Fatimah & Haq, 2024). Nonlinear methods like Smooth Transition and Self-Exciting Threshold Autoregressive (SETAR) models are used to evaluate asymmetric responses of debt to macroeconomic fluctuations (Andrić, et al. 2024). Similarly, vector autoregression (VAR) models are employed to examine causal relationships between debt, inflation, and economic growth (Zhuravka, et al. 2023; Li, 2020). Bayesian Model Averaging (BMA) techniques further boost robustness by identifying the most influential political and institutional predictors of debt accumulation (Nagou, et al. 2021). Recent developments also include grouped fixed effects (GFE) and multinomial logit models that allow for heterogeneity in governance structures and regime types, offering a nuanced

understanding of how economic and political dynamics jointly determine public debt sustainability (Gómez-Puig, et al. 2022).

In order to ensure a robust identification, and to address possible econometric problems, we employ a battery of complementary estimators. To account for unobserved time-invariant country characteristics, we first estimate a static panel model using the Fixed Effects (LSDV) estimator, as supported by a significant Hausman test ($\chi^2 = 43.44$, $p\text{-value} = 0.0000$). To correct for potential small-sample bias of this estimator, we apply the bias-corrected LSDV (LSDVC) method developed by Bruno (2005). Moreover, given the persistence of external debt and the possible endogeneity of some regressors, we employ the two-step System GMM estimator (Blundell & Bond, 1998). This dynamic model uses internal instruments, namely the lagged levels from period $t-2$ and earlier for the differenced equation, and the lagged differences for the level's equation. To avoid overfitting we use a collapsed instrument matrix. The validity of these instruments is verified by the Hansen J test ($p = 0.588$), and the absence of second-order serial correlation is supported by the AR(2) test ($p = 0.500$). This multi-pronged approach guarantees the robustness of our findings to estimation techniques and that the estimated determinants of external indebtedness are reliable. The GMM estimator also accommodates heteroscedasticity and autocorrelation in the error structure through a consistent estimator and the inclusion of lagged internal instruments. In this study, instrumental variables are the year dummies with lags (up to 1 or 2 lags) and the lag of the dependent variable of the model in the sample.

4. RESULTS AND DISCUSSIONS

4.1. Descriptive Analysis

Table 1 shows the descriptive statistics of the variables used in the empirical analysis. The average external debt to GDP ratio (TDPY) for the sample is 52.97 percent, implying a large aggregate debt burden. The average values of the main economic variables are investment (PFIN) at 24.76 percent of GDP, national savings (PSAV) at 25.43 percent of GDP, and a marginally negative trade balance (TDRA) of -1.26 percent of GDP. The average of the index of institutional quality (IQ) is negative (-0.43), which is indicative of the governance challenges faced by many developing and transition economies. The high standard deviations and the broad ranges (minimum and maximum values) for most variables highlight the major heterogeneity across the sampled economies and over time. This applies in particular to the exchange rate (XRPD) and the external debt itself (TDPY) from 0.1 percent to 367.67 percent. This large variation is useful for panel data estimation as it enables the identification of the determinants of external debt in different macroeconomic environments.

4.2. Correlation Analysis

One of the most popular statistical measures is the Pearson correlation coefficient. It measures the strength of the relationship between two or more variables, whether that relationship is positive or negative. A correlation coefficient near $+1$ or -1 indicates a strong positive or negative relationship respectively and a coefficient near 0 indicates a weak relationship between the variables. A correlation of 0 means there is no relationship between the variables. The correlation matrix for the variables used in the

model estimation of this section is given in Table 2. In data analysis, it is important to avoid high collinearity between variables to ensure that statistical inferences are unbiased and accurate (Moreno-Brieva, et al. 2019). The matrix indicates that some variables are positively correlated with external debt and others are negatively correlated. Specifically, public consumption, government consumption, effective exchange rate, effective interest rate, and debt servicing ratio are positively related to external debt, while the five determinants of external debt are negatively related to external debt.

Table 1
Definitions and Descriptive Statistics

Variables	Symbol	Definitions	Sources	Mean	Std. Dev.	Min	Max
External Debt	TDPY	Total external debt as % of GDP	EIU	52.97	48.68	0.1	367.67
Economic Growth	RYPH	Real GDP per capita in \$USD	EIU	5.06	4.97	-30.9	34.47
Investment	PFIN	Gross Fixed Capital Formation as % of GDP	EIU	24.76	8.84	1.4	69.67
National Savings	PSAV	Gross national savings as % of GDP	EIU	25.43	13.16	-11.9	66.03
Government Expenditure	PGCE	Government expenditure as % of GDP	EIU	13.98	5.25	3.46	31.75
Trade Balance	TDRA	Trade balance as a % of GDP	EIU	-1.263	19.9	-58.82	54.81
Exchange rate	XRPD	Exchange rate as national currency per US\$, period average	EIU	1641	4586	0.27	42000
Inflation	DCPI	Annual %	EIU	6.94	7.92	-18.97	57.07
Interest Rate	EFIR	Effective interest rate % paid on external debt	EIU	3.29	2.31	0.02	26.1
Debt Service	TSPY	External debt servicing as a % of GDP	EIU	5.71	8.21	0.041	61.54
International Reserves	IRGDP	International reserves as a % of GDP	EIU	21.07	21.49	1.08	132.03
Institutional Quality	IQ	Institutional quality index	WGI	-0.43	0.6	-2	0.94

Source: EIU: Economist Intelligence Unit country database, WGI: World Governance Indicators.

Table 2
Correlation Matrix

Variables	RYPH	PFIN	PSAV	PGCE	TDRA	XRPD	DCPI	EFIR	TSPY	IRGDP	IQ
RYPH	1.000										
PFIN	0.227	1.000									
PSAV	0.163	0.426	1.000								
PGCE	-0.159	0.086	-0.010	1.000							
TDRA	0.066	-0.088	0.586	0.060	1.000						
XRPD	-0.009	0.007	0.077	-0.102	-0.005	1.000					
DCPI	-0.147	-0.144	-0.163	-0.168	-0.109	0.131	1.000				
EFIR	-0.043	0.048	0.153	0.252	0.258	-0.113	-0.132	1.000			
TSPY	-0.041	-0.055	-0.075	0.069	0.078	-0.088	-0.137	0.370	1.000		
IRGDP	-0.039	0.126	0.002	-0.020	-0.020	-0.024	0.125	0.098	0.047	1.000	
IQ	-0.014	0.256	0.398	0.294	0.296	-0.071	-0.474	0.322	0.155	-0.083	1.000

4.3. Estimation and Discussion

A static panel fixed effects (LSDV) methodology is applied in this analysis. We have examined the determinants of external debt in ADTE economies following Hausman test. Abbas, et al. (2021) and Bittencourt (2015) support this approach as the most reliable and efficient estimator among static panel models to estimate the equation 10. The results in Table 3 provide useful insights from the panel fixed effects (LSDV) and the bias-corrected LSDVC estimates. Our analysis shows a significant relationship between economic growth (RYPH) and external indebtedness which is in line with established economic theories. In particular, developing countries with high income or rapid economic growth tend to have higher national saving and investment. These countries have high income levels and can invest their savings, so they are better able to meet their external debt obligations. This shows the crucial role of economic activity in reducing external debt ratios and so allowing the rate of accumulation of external debt to be reduced. For instance, the static panel FE (LSDV) and LSDVC models imply that an increase of one dollar in economic growth is associated with annual decreases of 0.13 percent and 0.21 percent in external debt, respectively. The analysis of the growth model also shows that the interaction of consumption and income can give rise to two different outcomes. In the first case when income is greater than consumption savings increase, this means that savings can be invested or used for consumption later and this increases the ability to service debt and reduces dependence on external borrowing. On the contrary, high consumption and low income leads to low savings. In this situation, the country may have to depend on external financing or aid. The results of our study are in line with the findings of Shaharuddin & Edris (2021); Dawood, et al. (2021); Mijiyawa (2022); Gulcemal (2022) and Ilhan (2023) that economic growth has a negative impact on the accumulation of external debt.

Investment and savings are key determinants of external debt and their variations greatly affect external debt levels. The difference between investment and savings may result in an increase or decrease in the accumulation of external debt. If there are excess domestic savings in the economy, it can finance investment without recourse to foreign funding and hence avoid the build-up of external debt. Or, when the desire to invest is greater than the available domestic savings, economies may resort to borrowing from abroad to fill the gap. Empirical evidence from the Fixed Effects (LSDV) and LSDVC models provides that developing economies are likely to resort to external financing in the event of a savings shortfall. The analysis shows that for every 1 percent increase in

investment, the external debt increases by 2.1 percent and 0.25 percent. In contrast, a 1 percent increase in savings is associated with a 0.12 percent and a 0.21 percent reduction in external debt. Sagdic & Yildiz (2020) have found similar results on the negative impacts of domestic savings on external debt. Rindi, et al. (2023) have found similar results as well showing a positive relationship between investment and external debt. The dynamics of external debt accumulation, and in particular the interaction of savings and foreign exchange constraints, is better understood in comparison with the dual gap model of Chenery & Strout (1966). The model argues that borrowing is warranted when there is a difference between domestic savings and investment. The savings-investment gap theory posits that in the absence of adequate savings, economies can resort to borrowing to meet investment needs and spur growth. Economies are often left with no other option but to borrow from abroad in case of imbalances in domestic savings-investment gap. Developing economies, in general, tend to have limited capacity to finance the investments required to achieve targeted rates of growth out of domestic savings. The absence of domestic savings, often forces these economies to seek external financing, thus helping to increase the level of debt.

One of the most important determinants of external debt is government expenditure. If the government increases its spending without a similar increase in revenue, it will run a budget deficit. This means that the government will be forced to look for external sources of finance to cover its budget deficit and other short-term financial needs. The coefficient attached to government consumption has a positive association with external debt. That is, a 1 percent increase in government consumption respectively leads to 0.86 percent and 0.086 percent increase in external debt. Empirical studies have consistently shown a positive relationship between government expenditure and external debt, supporting our findings (Waheed, 2017; Adamu, 2019; Beyene & Kotosz, 2020; Mahara & Dhakal, 2020).

The trade balance, the difference between a country's imports and exports, is a critical factor in external debt accumulation. If we take the trade balance as a percentage of Gross Domestic Product (GDP), an increase in this ratio means less external debt. Moreover, a trade surplus leads to large inflows of foreign currency, particularly dollars, boosting domestic capital and savings and thus reducing dependence on foreign financing. Conversely, a trade deficit, which is characterised by low exports, forces an economy to seek external financing to pay for its imports, as high imports require more currency. Table 3 shows that the trade balance coefficient suggests that a 1 percent increase in the trade balance leads to a decrease of 0.12 and 0.10 percent in the accumulation of external debt, respectively. These results are consistent with the work of Butkus & Seputience (2018) and Beyene & Kotosz (2020). Even though other studies have found trade openness to be a determinant (Amoh, et al. 2024), it is worth noting that the trade-to-GDP ratio is an effective measure of how this gap contributes to external debt accumulation, in line with gap models.

Differential in exchange rate between the local currency and the US dollar (USD) is important in affecting the level of external debt. If the domestic currency appreciates relative to the USD, then the external debt ratio falls. A depreciation of the domestic currency (an increase in the exchange rate) means that the external debt ratio rises. This is due to the fact that the gross domestic product (GDP) is calculated in local currency and then converted into USD at the current rate. So if the exchange rate goes up, the GDP in USD decreases, while the external debt is still in USD. Hence, the relationship between exchange rate and external debt ratio is significantly positive with the positive coefficient of exchange rate. Ozata (2017) and Dawood, et al. (2021) researches support

a positive relationship, as a 1 percent increase in the exchange rate leads to an increase in external debt by 4.66 percent and 0.22 percent.

There are several factors influencing the relation between the inflation rates and the external debt. Moderate inflation can help local economic growth, which can in turn help reduce the foreign debt as the economy grows. On the other hand, high inflation rates may impede economic growth, leading to insolvency, a fall in real GDP and a drop in the standard of living, all of which may reduce the capacity to service foreign debt. Holders of external debt usually want to be paid in a stable currency (e.g., the US dollar). Thus, countries have to increase their export activity, attract foreign direct investment, or both. The relationship between inflation and external debt also depends on the currency denomination of the debt, which is frequently the US dollar. If domestic inflation and the purchasing power parity (PPP) principle are at play, countries may have higher domestic-currency costs for interest payments and debt repayment. The case establishes a positive correlation between inflation and external debt as evidenced by the positive coefficient of inflation. The LSDV model indicates that an increase of 1 percentage point in inflation is associated with an increase of 4.74 percentage points in the external debt. In addition, inflation has a significant impact on external debt in large-scale debt-vulnerable countries (LSDVC), where a one percentage point increase in inflation leads to a 0.03 percentage point rise in external debt. The positive relationship between inflation and external debt is particularly significant in economies operating under fixed exchange rate regimes (Waheed, 2017). Under these conditions, increasing inflation exerts pressure on the exchange rate and necessitates the need for foreign exchange to keep rates fixed. This can only be done by taking foreign loans, thus leading to the build-up of external debt.

In gap models, the effective interest rate is a key factor affecting external debt, and it is a measure of the cost of external borrowing. In developing countries, it is the standard to borrow in U.S. dollars, which are subject to swings in international capital markets. Higher interest rates mean higher costs of debt, thus there is a positive relationship between the effective interest rate and the level of external debt. The coefficient attached to the interest rate is positive so that a change of one percentage point in the effective interest rate is associated with an increase in the external debt of 0.96 and 0.83 percentage points respectively. This correlation is empirically supported by Vighneswara (2015). Harsono, et al. (2024) find a negative relationship between interest rates and external debt accumulation.

Debt service, consisting of principal and interest payments due at maturity, exerts a substantial influence on external debt in developing economies. Such economies generally have difficulties in servicing their debts and pay more in debt service than they can afford. In some cases they may even resort to taking on additional debt to service existing debt thereby creating a positive correlation between debt servicing and the accumulation of external debt. The analysis shows that a 1 percent increase in debt servicing is associated with 3.65 percent and 0.02 percent increase in external debt accumulation respectively. This finding is in agreement with the findings of Beyene & Kotosz (2020) and Sagdic & Yildiz (2020).

Moreover, even though they are incorporated into the theoretical framework, international exchange reserves are a crucial variable that scholars often ignore in the analysis of the determinants of external debt. The present study confirms the results of Wahyuni, et al. (2019) that international reserves and external debt accumulation have a positive relationship. In particular, the coefficient on reserves is positive, implying that a 1 percent increase in international reserves is associated with an increase in external debt accumulation of 1.80 and 0.01 percent, respectively. These results were in line with the

results of Waheed & Abbas (2021) but were not in line with the results of Waheed (2017); Azolibe (2020) and Chiminya, et al. (2018).

The results show that institutional quality has a significant negative impact on external debt accumulation, implying that an improvement in institutional quality is associated with a decline in external borrowing. In particular, economies with low levels of corruption, political stability and effective governance are better able to channel the resources they have to productive sectors, thus reducing the need for more debt. The results show that one unit increase in the institutional quality is associated with a decrease in external indebtedness by 0.5 percent and 0.4 percent from the LSDV and LSDVC estimation respectively. The results are in line with the studies of Harold (2019); Beyene & Kotosz (2020); Harsono, et al. (2024) and Amoh, et al. (2024).

Table 3
Least Squares Dummy Variable and Bias-Corrected LSDV

Variables	Fixed Effect (LSDV)			Bias-Corrected (LSDVC)		
	Coef.	Std. Err.	Sign	Coef.	Std. Err.	Sign
ln-TDPY	-	-	-	0.953	0.016	***
RYPH	-0.128	0.080	**	-0.207	0.086	***
PFIN	2.080	1.882	**	0.249	0.023	***
PSAV	-0.119	0.064	**	-0.206	0.076	**
PGCE	0.855	0.259	**	0.086	0.165	**
TDRA	-0.131	0.061	**	-0.033	0.026	**
XRPD	4.747	1.657	***	0.027	0.008	***
DCPI	0.248	0.068	***	0.236	0.087	***
EFIR	0.964	0.250	***	0.834	0.221	***
TSPY	3.648	0.920	***	0.017	0.016	*
IRGDP	1.802	0.685	**	0.001	0.001	***
IQ	-0.468	0.724	**	-0.383	0.541	**
Constant	-13.503	5.681	***	-	-	-
Hausman test. chi2(6)	43.44			Prob>chi2=		
=				0.0000		
R-squared	0.549			Number of obs		
F-test	7.736			851.000		
				Prob > F		
				0.000		

Note: Dependent variable TDPY: Total external debt to GDP; LTDPY: Lag of TDPY; *, **, and *** represent significance at 10 percent, 5 percent, and 1 percent, respectively.

4.4. Diagnostic Tests and Robustness Check

The study employs a two-step generalised method of moments (GMM) to ensure robustness of its empirical findings. As shown in Table 4, the GMM estimates are consistent with the fixed-effects model (LSDV) and the LSDVC in terms of the direction and statistical significance of the coefficients. However, the GMM coefficients are generally larger than those obtained from the LSDV model. The analysis also reveals a significant positive coefficient for the lagged dependent variable (external debt), indicating that external debt is persistent among the selected developing and transitioning economies in Asia. Results also reveal a significant negative relationship between economic growth and external debt at 1 percent level of significance which implies that increase in economic growth leads to decrease in external debt. In particular, a 1 percent increase in economic growth causes a 0.40 percent reduction in external debt as also identified by previous studies (e.g., Waheed & Abbas, 2021; Dawood, et al. 2021; Azolib, 2022; Ilhan, 2023). The coefficients of investment and savings also have opposite signs as expected in the context of the savings-investment gap. Higher savings reduce external debt, while higher investment leads to its accumulation. These results corroborate those

reported in Table 4 and are in agreement with previous studies by Waheed (2017), Chiminya, et al. (2018); Sagdic & Yildiz (2020); Waheed & Abbas (2021) and Amoh, et al. (2024).

The GMM results show a strong positive relationship between external debt and government expenditure. The regression coefficient indicates that 1 percent increase in government expenditure results to 9.81 percent increase in external debt other things being equal. This result indicates that increased government spending without proper financing will lead to increased borrowing which will worsen the level of external debt. On the contrary, the results reveal a significant negative relationship between the trade balance and external debt revealing that an increase in trade to GDP ratio reduces the accumulation of external debt. In more specific terms, a one percentage point improvement in the trade balance results in a 0.20 percentage point reduction in external debt. This is logical as a trade surplus, where exports exceed imports, enables the spending gap to be financed by export earnings rather than borrowing. These results are consistent with Chiminya, et al. (2018) but contradict the findings of Vighneswara (2015) and Belguith & Omrane (2017).

The results indicate a positive statistically significant Relationship between the exchange rate and external debt. The coefficient indicates that 1 percent increase in exchange rate results in 6.07 percent increase in external debt. This result shows higher exchange rates mean a weaker domestic currency and that more local currency is needed to service foreign debt. Importantly, this result from the Generalised Method of Moments (GMM) analysis is consistent with the results of the baseline model. This evidence supports the earlier work of Harsono, et al. (2024) but disagrees with the work of Mijiyawa (2023) and Rindi, et al. (2023) and highlights the challenges that external debt presents to developing economies, especially those that have floating exchange rate regimes, open capital accounts and more involvement in global financial markets. As foreign currency borrowers, such economies have historically been vulnerable to external shocks. For example, in the event of commodity price collapses, external debt obligations are generally serviced from export revenues or other income flows. However, the influence of exchange rate fluctuations on export performance and external debt burdens may be inconsistent. The depreciation of the local currency against major currencies can increase export earnings if the volume of exports is sufficient to offset the decrease in local prices in dollar terms. But it also raises the local value of foreign-currency-denominated debt.

The empirical results reveal a significant positive relationship between inflation and the external debt as indicated by the LSDV and LSDVC coefficients. For example, a 1 percent rise in inflation is linked to a 0.15 percent increase in external debt. The effective interest rate is another important determinant, and it has a positive coefficient in the main estimator, implying that a one percentage point increase in the effective interest rate results in an increase of 1.53 percentage points in external debt. Moreover, the study finds debt servicing to be an important factor. The result shows that the more the borrowing, the more the debt servicing obligation, thus contributing to the rise in external debt. Moreover, positive coefficients on international reserves indicate that a 1 percent increase in reserves leads to a 3.11 percent increase in external debt. Also worth noting are the outcomes of the Generalised Method of Moments (GMM) estimation which corroborate

the findings of the LSDV and LSDVC models further strengthening the robustness of the analysis.

Table 4
Generalised Method of Moments Results

Variables	System GMM		
	Coef.	St.Err	Sign
TDPY	0.987	0.018	***
ln-TDPY	-0.397	0.043	***
RYPH	8.224	1.845	***
PFIN	-0.075	0.069	**
PSAV	9.810	4.291	***
PGCE	-0.199	0.064	***
TDRA	6.065	1.866	***
XRPD	0.149	0.035	***
DCPI	1.528	0.147	***
EFIR	3.160	0.470	***
TSPY	3.112	0.638	***
IRGDP	-0.435	0.457	**
IQ	-51.989	13.045	***
Constant			
Number of obs 851 No. Of the 37 countries. of instr 36 AR (2) [Pr0] 0.500 Hensen [Pro] 0.588			

Note: Dependent variable TDPY: Total external debt to GDP; LTDPY: Lag of TDPY; *, **, and *** represent significance at 10 percent, 5 percent, and 1 percent, respectively.

Moreover, the robust estimator results for institutional quality are consistent with the main estimation results. However, the credibility and consistency of the generalised method of moments (GMM) results are based on the validity of the used instruments and the absence of second-order autocorrelation (AR[2]). The tests used to check these assumptions are provided in the result section of Table 4 and suggest that the model is free of higher order autocorrelation and the instruments are valid. The p-values of the AR(2) test and Hansen J test for instrument validity are also above the conventional 5 percent significance level, which further indicates the robustness of the model. Thus, the results of the study are robust and can be used to inform policy-making. We conducted a battery of diagnostic tests to check the validity of our empirical strategy. Heteroskedasticity (Modified Wald test: $\chi^2 = 357.42$, $p < 0.001$) and cross-sectional dependence (Pesaran's test: $CD = 2.34$, $p = 0.019$) were found to be present in the data, which justified the use of robust estimation techniques. The Shapiro-Wilk test rejected normality of residuals ($W = 0.89$, $p < 0.01$), but our large sample size guarantees the asymptotic validity of our estimators. Variance Inflation Factors (mean $VIF = 2.17$) ruled out multicollinearity. Finally, Ramsey's RESET test ($F=1.24$, $p=0.292$) provided no evidence of model misspecification.

5. CONCLUSION AND POLICY IMPLICATIONS

This study investigates the economic and political determinants of external debt of Asian developing and transitioning economies (ATDE) for the period 1997–2020. This work adopts a mixed-method approach by combining panel fixed-effects (LSDV), bias-corrected LSDV and system GMM estimations to capture short- and long-term dynamics.

The bias-corrected LSDV estimator improves the efficiency of the estimation by correcting for the small sample bias that is present in the standard fixed effects models. At the same time, the system GMM approach further confirms the robustness of the results by alleviating the potential endogeneity and dynamic panel bias. Empirical evidence suggests that higher economic growth, higher national savings, favourable trade balances and stronger institutional quality are associated with lower external debt ratios. This highlights the ability of emerging economies with sound governance systems to mobilise internal resources, to enhance fiscal discipline and to reduce reliance on external financing.

Higher levels of external debt, on the other hand, are associated with increased investment, higher government consumption, inflationary pressures, exchange rate volatility and increased debt servicing costs. Such factors are pointers to the inherent weaknesses in fiscal management and macroeconomic stability. It implies that where domestic fiscal capacity is weak, the government resorts to external borrowing to fund both developmental and recurrent expenditures. External debt is also positively correlated with interest rates, reflecting the burden of debt servicing that can crowd out productive spending and slow long-term growth. The findings highlight the importance of macroeconomic stability, institutional integrity, prudent fiscal governance and policies for domestic resource mobilisation and external sector competitiveness for sustainable debt management. External financing is crucial to foster growth in developing economies. However, excessive dependence on foreign debt may result in crises associated with debt servicing, economic instability, risks of sovereign default, macroeconomic imbalances and long-term social and financial consequences. Driven by historical crises such as oil shocks, financial crises and the disruptions caused by the COVID-19 pandemic, these economies have become more dependent on external resources and have renewed the scholarly focus on the sustainability of external debt.

The policy implications of this study suggest that sustainable debt management in Asian developing and transition economies would require a balanced focus on economic and political determinants of external indebtedness. The findings highlight that fiscal and macroeconomic reforms will not be sufficient if institutional weaknesses and governance challenges and political instability keep eroding fiscal discipline. Thus policy-makers need to follow a comprehensive strategy for increasing national savings, promoting export diversification and enhancing fiscal transparency. These measures can help countries reduce their reliance on external borrowing by improving the efficiency of public spending, broadening the domestic revenue base and enhancing accountability in debt management institutions. Furthermore, fiscal expansion in the post-COVID-19 recovery needs to be balanced with long-term debt sustainability by prioritising productive investments in infrastructure, education and digital capacity that deliver economic returns. Strengthening governance frameworks and tackling politically motivated borrowing are equally important to avoid debt-driven vulnerabilities. Institutional reforms that promote transparency, rule-based fiscal policies, and independent debt oversight mechanisms can increase investor confidence and lower risk premiums. Hence, addressing structural and governance-related constraints can assist countries in developing a more resilient fiscal framework that can help them to manage external liabilities and support inclusive and sustainable economic growth in line with the core objectives of the study.

Table A1

List of Asian Economies

Transitioning Economies	Developing Economies		
Azerbaijan	Bahrain	Malaysia	Sri Lanka
Kazakhstan	Bangladesh	Maldives	Thailand
Kyrgyz Republic	Bhutan	Myanmar	United Arab Emirates
Tajikistan	Fiji	Nepal	Yemen
Turkmenistan	India	Oman	
Uzbekistan	Indonesia	Pakistan	
Cambodia	Iran	Papua New Guinea	
China	Jordan	Philippines	
Laos	Korea	Qatar	
Mongolia	Kuwait	Saudi Arabia	
Vietnam	Lebanon	Syria	

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