



Panel Data Analysis of External Debt Drivers in Lower-Middle and Upper-Middle Income Countries

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ABSTRACT

In order to investigate the macroeconomic factors contributing to foreign debt in Lower Middle-Class and Upper Middle-Class countries, this study adopts a panel data approach that covers the years 2005–2020 for 16 countries in each income group. Using fixed and random effect techniques, the study determines significant variables that affect foreign debt. It is interesting to observe that foreign direct investment influences negatively on foreign debt in lower-middle-income countries but a positive significant impact in upper-middle income group economies. Moreover, the effect of exports is inverse and substantial on foreign debt in the lower-middle income group; in the upper-middle income group, the impact is negligible and positive. At the end, the impact of government spending is not meaningful on foreign debt in both income groups. Based on the findings, this research pinpoints the essential of policy formulation on the behalf of income classifications and also highlights the considerations to identify a variety of economic circumstances when investigating the factors influencing foreign debt.



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1. Introduction

Foreign debts play a significant role in the expansion of economic growth of developed and developing nations to bridge investment-savings and import-export gaps by focusing on the growth of infrastructure (Kolawole, 2024). In this context, various countries rely on foreign debts for maintaining the economic sustainability to control over fiscal and trade deficits. As per the report of (IMF, 2023), the external debts' management is more imperative for the economic position of a nation and they can also create alarming threats of financial crises if not managed wisely. Based on these crises, the countries face economic stagnation owing to inability to repay their debt obligations and they can create negative effects on macroeconomic indicators such as inflation, economic growth and employment level (Shen, Ur Rahman, Hafiza,

Meo, & Ali, 2024). Actually, the consequences of debt mismanagement transmit across borders and affect worldwide fiscal strength due to globalization (Bint Raza, Sheikh, & Rahman, 2024).

World Bank's statistics indicate that the foreign debt stocks have increased swiftly from US\$ 2,089 billion to US\$ 8,242 billion in lower middle-income countries (Haque, Iftikhar, & Rizvi, 2023). This external debt mismanagement has dwindled GDP growth rate to 3.68% from 4.23% in this tenure (Saeed, Rahman, & Sheikh, 2024). Furthermore, higher amount of external debt leads to higher borrowing costs and inflexible policy are the crucial elements to achieve sustainable economic development (Song, Anees, Rahman, & Ali, 2024; Zubair, Rahman, Sheikh, & Zafar, 2024). In case of upper middle-income group economies, the per capita gross national income is projected by the World Bank ranging from \$4,046 to \$12,535 Anonymous (2023) and they acquire the foreign loans for the development of infrastructure, economic stability, and crisis management. As per the report of IMF (2023), well managed investments encourage economic uplift to check the mismanagement of debt, control over unstable currency rates, and decrease public spending.

For the sake of economic growth, external debt and its repayment system rained the act as significant both rich and poor countries. For developing nations, in particular, managing external debt is crucial as it can severely impact their fiscal deficit and overall economic sustainability. To identify those challenges which trigger external debt accumulation in both developed and developing economies, this study contributes to highlight the key factors of foreign debts of different lower and upper middle income group nations (Huang, Rahman, Meo, Ali, & Khan, 2024). On the basis of these factors, this research can be effective to frame the debt management strategies for controlling fiscal discrepancies by maintaining sustainable economic growth in these economies (Abro, Abubakar, Shahid, & Fatima, 2024; Irfan, Azam, & Shahid; Maqsood, Shahid, Amir, & Bilal, 2023).

1.1. Research Hypothesis

The hypotheses of this study are as follows:

H1: The effect of Inflation on foreign debt is positive on all study related income groups.

H2: FDI impacts negatively on debts on these countries.

H3: Export affects negatively to external debt on both income group countries.

H4: The influence of government expenditures is positive on the foreign debt on all income group countries using current research.

1.2. Significance of Study

This study will fulfill the gaps of previous research studies of external debt. Firstly, the scope of external debts determinants was limited by focusing on a few or single countries analysis, which may not include meaningful elements influencing external debt dynamics. For this, an extensive analysis is required to encompass a diverse panel of countries on behalf of their financial position.

Secondly, the researchers did not focus on the external debts that varies regarding the income levels of countries. Precisely, lack of investigations were conducted to explore the different factors of external debt in high-income and low-income economies. To Bridge this gap, the current study is crucial to identify the factors of external debt accumulation on the basis of countries' income levels for designing effective foreign debt management policies.

In this study, we seek to overcome above-mentioned gaps by conducting a comprehensive panel data study by including both developed and developing economies. From the countries, we select upper and lower middle-income group countries to explore the distinct

components that drive foreign debt accumulation in each category. In this way, the current research will participate meaningful insights to the literature, giving a clear understanding of the factors that determine the external debts of different income groups. Also, it will be supported for policymakers to design policies to ensure fiscal sustainability and foster economic growth.

The aim of this study is to investigate those factors that influence the external debt in both income groups individually. In the light of these findings, policymakers shall pinpoint significant insights to formulate context-specific policies to maintain the fiscal sustainability and economic growth.

This paper is organized into five sections; section two covers the previous studies, third section presents data collection and methodology, fourth section consists of results and discussions and last section comprises on conclusion, recommendation, and policy implications.

2. Literature Review

For economic growth and fiscal stability of a nation, external debts are crucial for a country's economic landscape. In the earlier studies, researchers' focal point was to identify the dynamics of external debt including economic, institutional, and political factors and several studies have conducted to explore the factors affecting external debt by utilizing various techniques on cross-section, time series, and panel data analysis (Awan, Anjum, & Rahim, 2014; Shahid & Rehman, 2023).

A study was conducted by Beyene and Kotosz (2020) on macroeconomic determinants of external debts for Ethiopia in 1981 to 2016. In this study, inflation was a significant contributor to external debt and it impacted negatively on external debts in the short run. In Asian economies, Zahra, Nasir, Rahman, and Idress (2023) examined that foreign debts and inflation were positively correlated in Pakistan in 1972 to 2012. The research of Harsono, Kusumawati, and Nirwana (2023) employed moderated regression approach in 05 developing ASEAN nations from 2008 to 2019 to evaluate the association among macroeconomic indicators, institutional quality, and external debt. The findings indicate that exchange rates along with trade openness are the favorable contributors of foreign debt and interest rate, inflation rate, and institutional quality impacted negatively on external debts. Particularly, institutional quality moderates the relationship between trade and foreign debt but the confliction arises in the predictions in its moderating effects on currency rate, inflation rate, and interest rate (Rahman, Chaudhry, Meo, Sheikh, & Idrees, 2022).

During the years 2004–2013, Waheed (2017) looked at the macroeconomic factors that affected the amount of foreign debt of oil exporting and importing countries. In exporting countries, inflation and the current account deficit surge the external debt, while economic growth, foreign reserves, domestic investment, and oil prices diminish it (Chaudhary, Nasir, ur Rahman, & Sheikh, 2023; mWaheed Muhammad Waheed, 2022). For importing nations, trade deficit, oil prices, interest payments affected the external debt, FDI, and domestic investment increase these debts, whereas, economic growth and gross domestic savings decrease it. Swamy (2015) analyzed the macroeconomic indicators of government debt in 252 sovereign states from 1980 to 2009. On the basis on generalized technique of moments, population growth, inflation, government spending, and real GDP growth rate contribute to the increase in debt. Additionally, trade openness, gross fixed capital formation, and final consumer spending have been found the factors of raising debt. In the light of the study of Ali, Akram, and Hafeez (2021), they found a positive correlation between Pakistan's foreign debt, trade, exchange rate, and fiscal deficit from 1976 to 2010 by using an error correction model. Furthermore, the study indicated a negative correlation between external debt and terms of trade (Dawood, ur Rehman, Majeed, & Idress, 2023).

Using the ARDL technique, Brafu-Insaidoo, Ahiakpor, Vera Ogeh, and William G (2019) found that trade drops the short-term external debt in Ghana. In Aladejare (2021) made an effort to demonstrate the growth of foreign indebtedness from internal and external sources with macroeconomic outcomes. They applied ARDL and Toda-Yamamoto causation methodologies to confirm long-term positive association among the growth of debt profile, import and export (Rahman & Bakar, 2019). In Al-Fawwaz (2016) expected that economic growth tends to lessen external debt while trade openness raises the debt burden and Lau and Lee (2016) found in Thailand that the real exchange rate and inflation increase foreign debt burden.

In oil-exporting nations, Waheed (2017) investigated the main factors of foreign debt, they also exposed that several macroeconomic indicators had an effect on the external debt of the countries. The study of Ibhagui (2018) was conducted in Sub-Saharan African nations and he found that trade openness leads to a current account deficit along with raise in external debt also. Moreover, trade openness encourages imports of consumption-oriented product in developing nations which created trade deficits, this can increase the importance of external debt from international organizations (Bakar, 2019).

Recent empirical research by Makun (2021) has indicated that, for the Pacific Island panels studied between 1980 and 2018, foreign debt had a more detrimental effect on economic growth. Using panel ARDL in the framework of neoclassical growth theory, the study concluded that foreign debt had a negative impact on economic development and suggested improving fiscal management and reducing wasteful spending.

The current research also highlights how exports and public spending influence the formulation of efficient fiscal and monetary policy. A possible way to lessen the burden of foreign debt is to strategically concentrate on export-oriented policies. Furthermore, wise government spending—especially in social domains like health and education—becomes essential to developing a long-term fiscal strategy that strikes a balance between responsible debt management and economic expansion. The study helps policymakers create effective ways to lessen the burden of foreign debt and foster economic resilience in both lower- and upper-middle-income group nations by illuminating these important drivers.

3. Data Collection & Methodology

This study's data were taken from the World Development Indicators database, which covered the years 2005 through 2020. This dataset offers a comprehensive array of macroeconomic indicators for 32 low- and upper-middle-income nations in table 1, making it suitable for investigating the determinants of external debt.

3.1. Theoretical Framework

The theoretical framework of the study serves as the foundational structure upon which the research is built. It establishes the theoretical underpinnings that guide the selection and interpretation of variables, as well as the expected relationships among them. The theoretical framework draws from economic theories and principles that elucidate the potential mechanisms through which macroeconomic variables influence external debt accumulation.

3.2. Variables Description

Numerous factors that influence foreign debt were examined in the literature after it was reviewed, but this study has included the most important indicators; the full details of these factors are noted below.

External Debt: In the present research, the dependent variable is external debt stocks, or ED. They provide an important statistic for evaluating economic indicators as they are measured as the percentage of total external debt stocks to gross national income. "Total external debt stocks to gross national income. Total external debt is debt owed to nonresidents repayable in currency, goods, or services. Total external debt is the sum of public, publicly guaranteed, and private nonguaranteed long-term debt, use of IMF credit, and short-term debt. Short-term debt includes all debt having an original maturity of one year or less and interest in arrears on long-term debt. GNI (formerly GNP) is the sum of value added by all resident producers plus any product taxes (less subsidies) not included in the valuation of output plus net receipts of primary income (compensation of employees and property income) from abroad."

Foreign Direct Investment: The independent variable is foreign direct investment, or FDI. They provide an important statistic for evaluating financial flows since they are expressed as a percentage of the gross national product. "Foreign direct investment are the net inflows of investment to acquire a lasting management interest (10 percent or more of voting stock) in an enterprise operating in an economy other than that of the investor. It is the sum of equity capital, reinvestment of earnings, other long-term capital, and short-term capital as shown in the balance of payments. This series shows net inflows (new investment inflows less disinvestment) in the reporting economy from foreign investors, and is divided by GDP."

Inflation: Inflation, or INF is an independent variable. They are measured as a yearly percentage of consumer prices, which is a crucial tool for evaluating buying power. "Inflation as measured by the consumer price index reflects the annual percentage change in the cost to the average consumer of acquiring a basket of goods and services that may be fixed or changed at specified intervals, such as yearly. The Laspeyres formula is generally used."

Government Expenditures: The General government final consumption expenditure or GE as control variable are measured in % of GDP which are crucial for the country's growth. The operational definition of general expenditures is as "General government final consumption expenditure (formerly general government consumption) includes all government current expenditures for purchases of goods and services (including compensation of employees). It also includes most expenditures on national defense and security, but excludes government military expenditures that are part of government capital formation."

Exports: Exports of goods and services being a control variable are calculated in % of GDP. Higher export revenues could mitigate the need for external borrowing. WDI defines it as "Exports of goods and services represent the value of all goods and other market services provided to the rest of the world. They include the value of merchandise, freight, insurance, transport, travel, royalties, license fees, and other services, such as communication, construction, financial, information, business, personal, and government services. They exclude compensation of employees and investment income (formerly called factor services) and transfer payments."

3.3. Conceptual Framework

The conceptual framework of the study delineates the causal relationships among the key variables in the model. The central premise of the conceptual framework is that macroeconomic determinants, specifically FDI, government expenditure, domestic exports, and inflation rate, impact the level of external debt. The proposed framework is guided by economic reasoning, where factors such as FDI and government expenditures are expected to influence borrowing decisions, while inflation rates and domestic exports are anticipated to impact external debt servicing and accumulation patterns. This conceptual foundation underpins the empirical analysis and guides the interpretation of results.

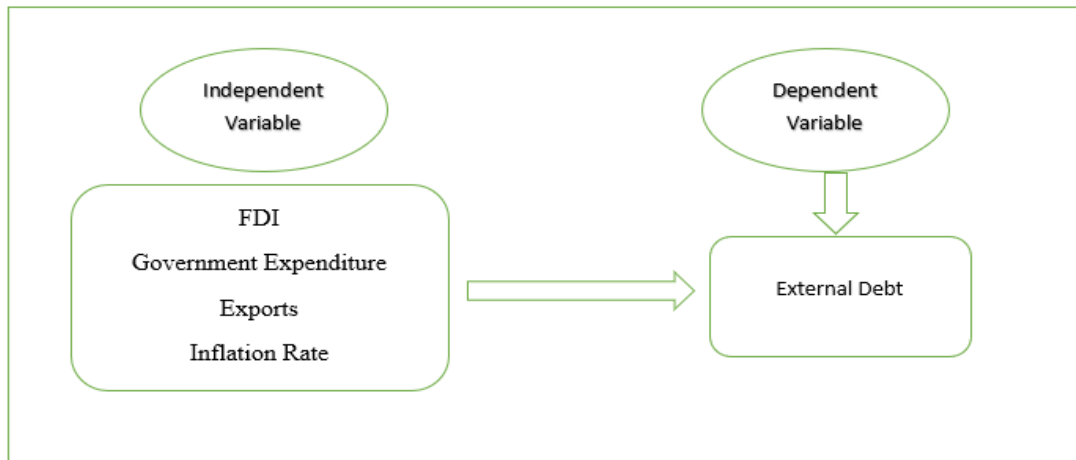


Figure No. 1 Conceptual Framework

Source: Created by Author from MS Word

The external debts of lower- and upper-middle-income nations are shown in the above figure as a dependent variable, and they are expected to be influenced by our independent variables, exports, FDI inflows, inflation rate, and government expenditures.

Two different econometric models have been used, one for nations in the lower middle-income group and another for those in the upper middle-income group.

From the given equation (1), we evaluate impact of independent variables on the external debt in the lower middle-income group nations.

$$ED_{it} = \alpha_0 + \alpha_1 FDI_{it} + \alpha_2 X_{it} + \alpha_3 INF_{it} + \alpha_4 GE_{it} + U_{it} \quad (1)$$

In the above equation, the letters "i" and "t" in this model represent for nations and time periods, respectively. Moreover, the α_1 , α_2 , α_3 and α_4 are parameters, α_0 indicates the intercept, and U_{it} is the error term.

The following model is used to evaluate the factors influencing the foreign debt of countries that are categorized as upper-middle-income economies.

$$ED_{it} = \beta_0 + \beta_1 FDI_{it} + \beta_2 X_{it} + \beta_3 INF_{it} + \beta_4 GE_{it} + V_{it} \quad (2)$$

In the equation 2, the terms "i" and "t" in the above equation stand for countries and eras, respectively. Furthermore, it is defined that the parameters β_1 and β_2 are positive, whereas the values β_3 and β_4 are negative. The intercept is shown by β_0 , while the error term is shown by V_{it} .

3.4. Cross-Sectional Dependence

In panel data study, we conduct cross-sectional dependence test to understand the nature and degree of dependency, this test cannot not be overlooked for avoiding serious repercussions (Shahbaz, Shahzad, Mahalik, & Sadorsky, 2018). Thus, it is crucial to examine the existence of CSD before performing the tests like Panel unit roots, cointegration, and other estimation techniques (Hasan, 2019). To check cross-sectional dependence, Pata, Dam, and Kaya (2023) has been used the following equation of the Pesaran's CD test:

$$CD = \frac{\sqrt{\frac{2}{N(N-1)} \sum_{i=1}^{N-1} \sum_{j=i+1}^N \hat{\rho}_{ij}}}{\sqrt{\hat{\sigma}_p}} \quad (4)$$

3.5. Panel Unit Root Test

After checking cross-sectional dependence, we apply unit root tests to examine the stationary of variables. For this, Westerlund (2006) and the Pesaran (2021) are employed as most popular to assess stationary.

The equation of LLC test is as follows:

$$y_{it} = \rho_i y_{it-1} + \alpha_i + \varepsilon_{it} \quad (5)$$

Where, $i = 1, 2, \dots, N$, $t = 1, 2, \dots, T$

ρ_i = Individual-specific autoregressive coefficient

α_i = Individual intercept

ε_{it} = Error term of independent distributed across individuals

$H_0: |\rho_i| = 1$, for all individuals i

$H_1: |\rho_i| \neq 1$

If the time period (t) is very small, and number of countries (i) is very large, then current panel data test will be suitable for very general temporal correlation patterns (Hsiao, 2022). Econometric equation of Im, Pesaran and Shin tests is given below:

$$y_{it} = \alpha_i + \rho y_{it-1} + \delta_t + \varepsilon_{it} \quad (6)$$

Here, α_i denotes individual-specific fixed effects, δ_t shows time-specific fixed effects and ρ is the coefficient of the lagged dependent variable.

$H_0: \rho = 1$ (There is Unit Root.)

$H_1: \rho \neq 1$ (No Unit Root)

3.6. Model Specification

The stationary characteristics of the variables determine the method to use for further estimation either fixed or random effect model are appropriate or not. If panel data are stationary at level then we apply fixed effect or random effect models. The main technique for selecting the suitable panel data analysis is the specification test. This test helps determine which model is more suited for drawing reliable conclusions. The random effects model is advised if the coefficients are thought to be meaningless. On the other hand, the fixed effects model is the better option if the coefficients are thought to be significant (Hausman & Taylor, 1981). This deliberate choice guarantees that a model is applied that best fits the fundamental properties of the data, improving the precision and dependability of the analytical results.

4. Results and Discussion

This part presents descriptive analysis of the variables, multicollinearity among regressors, cross sectional dependance in different panels, model specification and final results.

4.1. Descriptive Analysis

The Summary of all the determinants of foreign debts of the current study are outlined in below-mentioned table 03. The table is divided into two sections: the lower middle-income group's descriptive data are shown in the first section, and the upper middle-income group's countries are shown in the second.

Table 3
3 Summary Statistics of the determinant of External Debt

Lower Middle-Income Group					
Variable	Obs	Min	Max	Mean	Std. Dev.
ED	256	2.551361	283.2539	53.77	49.69
FDI	256	-37.17265	43.91211	03.72	06.14
INF	256	-3.749145	84.86433	06.28	06.68
X	256	7.003361	68.59325	32.73	12.32
GE	256	3.460336	22.51106	12.74	04.81
Upper Middle-Income Group					
Variable	Obs	Min	Max	Mean	Std. Dev.
ED	256	03.895006	132.263	47.12	25.88
FDI	256	-01.219389	31.22753	03.57	03.35
INF	256	-07.113768	59.21974	05.05	05.90
X	256	12.21995	78.77691	39.84	16.80
GE	256	07.430067	36.14305	14.99	04.97

Source: Author's calculation by STATA 12

In table 3, we record the mean values of ED, FDI, INF, X and GE based on 256 observations for 16 nations in the lower middle-income group are 53.77, 03.72, 06.28, 32.73 and 12.74 respectively. In contrast, the results of average values of ED, FDI, INF, X and GE for 16 economies in the upper middle-income group are noted as 47.12, 03.57, 05.05, 39.84 and 14.99 respectively of 256 observations. Additionally, the 16 lower-middle-income group economies' standard deviations for the variables ED, FDI, INF, X, and GE are determined to be 49.69, 06.14, 06.68, 12.32, and 04.81 respectively. In the meanwhile, the 16 upper-middle-income group countries' standard deviations for the variables ED, FDI, INF, X, and GE are 25.88, 03.35, 05.90, 16.80, and 04.97, respectively.

4.2. Multicollinearity Analysis

The pairwise correlation test and Variance Inflation Factor test are mentioned in table 4 to evaluate multicollinearity.

Table 4
Pair-wise Correlation & Variance Inflation Factor (VIF)

Lower Middle-Income Group						
Variable	FDI	ED	X	INF	GE	VIF
FDI	1.0000					1.18
ED	0.3036	1.0000				-
X	0.3710	0.2231	1.0000			1.23
INF	0.0669	0.0899	-0.0601	1.0000		1.03
GE	0.0100	0.3038	0.2133	-0.1583	1.0000	1.08
Upper Middle-Income Group						
Variable	ED	FDI	X	INF	GE	VIF
FD	1.0000					-
FDI	0.3509	1.0000				1.04
X	0.3087	0.1653	1.0000			1.08
INF	0.0793	0.0950	0.1379	1.0000		1.03
GE	-0.2921	-0.0677	0.1566	-0.0666	1.0000	1.04

Source: Findings for multicollinearity by Author's workings

Table 4 highlights multicollinearity among independent variables through two tests i.e., association between two people and the variance inflation factor (VIF). The correlations between the variables that make up the dependent variables (DVs) and independent variables

(IVs) that were examined in the study are shown in this table in two sections: countries belonging to the top and lower middle-income groups. The correlation coefficient between the independent variables in the lower middle-income group part like FDI, X, INF & GE are low that is the indication of no multi-collinearity in estimation. On the other hand, there is no multi-collinearity among regressors owing to low correlation.

For the verification of above test of multi-collinearity, we perform another test i.e., Variance Inflation Factor (VIF). The study of Ashurov, Othman, Rosman, and Haron (2020) explores that VIF values are less than 5 to 10 which is the indication of no multi-collinearity. For this, we can see that the findings of VIF from table 4 of these two types of economies that are less than 5 which verify the 1st test results that there is no multi-collinearity exists in these variables.

4.3. Cross-Section Dependency Test

Currently, testing for spatial correlation—a technique made popular by Breusch and Pagan's Lagrange multiplier approach—is one of the best approaches to examine cross-sectional dependency in panels (Pesaran, 2021). In order to prevent spurious findings, we utilize this method prior to performing further major panel analyses.

Table 5
Breusch-Pagan Lagrange Multiplier (LM) Method

Group	Chi-bar Statistic	p-value
Low Middle-Income	495.44	0.1200
Upper Middle-Income	822.68	0.0900

Source: Author's findings by using STATA 14 at 5% level of significance

Table 5 displays the outcomes of the pre-estimation cross-sectional dependence test using the Breusch-Pagan Lagrange Multiplier (LM) method for the variables under consideration. The findings of this test reveal that all variables exhibit significance at the 5% level. Consequently, the null hypothesis of cross-sectional independence is accepted. Instead, the alternative hypothesis is rejected, affirming the absence of cross-sectional dependency among these countries.

4.4. Stationary Test

The use of stationary tests is essential in panel data studies since it is a vital diagnostic tool that guarantees the validity and reliability of econometric analysis.

Table 6
First Generation Panel Unit Root Test

Variable	Lower Middle-Income Group Stationary at Level I(0)		Upper Middle-Income Group Stationary at Level I(0)	
	Levin-Lin-Chu	Im-Pesaran-Shin	Levin-Lin-Chu	Im-Pesaran-Shin
FDI	-5.3625 (0.0000) ***	-1.9548 (0.0253) **	-6.7598 (0.0000) ***	-5.1717 (0.0000) ***
ED1	-9.5255 (0.0000) ***	-2.5442 (0.0055) ***	-4.6764 (0.0000) ***	-4.2274 (0.0010) ***
INF1	-8.1986 (0.0000) ***	-4.5037 (0.0000) ***	-9.9510 (0.0000) ***	-5.9131 (0.0000) ***
X	-2.1493 (0.0158) **	-3.2109 (0.0007) ***	-3.5254 (0.0002) ***	-3.1132 (0.0003) ***
GE	-3.0201 (0.0013) ***	-0.4883 (0.0127) **	-3.3051 (0.0005) ***	-3.1802 (0.0004) ***

Note: For all possible p-values: ***1%; ** 5%.

The assumption of stationarity is crucial because panel data, which mixes time-series and cross-sectional data, presents the possibility of individual-specific effects and time-specific trends. In order to accurately estimate parameters and make meaningful conclusions, researchers need to determine if the variables under examination display a stable mean and variation across time. Researchers may determine the time-series features of their variables by using stationary tests, including unit root tests. This helps them make suitable modelling decisions, deal with endogeneity problems, and improve the general robustness of their panel data analysis. In this regard, we use two popular first-generation panel unit root tests like Levin- Lin-Chu and Im-Pesaran-Shin to check the stationary in the variables and the findings of tests are given in table 6.

Using first-generation unit root tests such as LLC and IPF, Table 6 presents the findings of unit root tests conducted in nations belonging to the lower and higher middle-income groups. All variables are stationary at the 1% and 5% level of significance.

4.5. Model Specification Test

Model specification verification is done using the Hausman specification test after unit root testing. According to Alodat, Salleh, Hashim, and Sulong (2022), the Hausman specification test is used to evaluate which of the two panel regression models that have been considered is the most suitable for panel analysis: a fixed effects model or a random effects model.

Table 7
Hausman Test Results

Model	Chi-square Statistic	p-value
Lower Middle-Income Group	10.44	(0.0336) **
Upper Middle-Income Group	07.55	(0.1095)

Note: For possible p-value: ** 5% and ***10%

In table 7, the panel model is subjected to a thorough analysis using the Hausman test during the post-estimation stage, which facilitates the differentiation of fixed and random effect models. As such, the test unequivocally supports the fixed effect model's adoption in this investigation for lower middle-income group. In addition, the test that was performed reveals a chi-square value of 7.55 along with a probability value that is higher than 0.05 ($p > 0.1095$). Notably, this statistical insignificance clearly supports the null hypothesis, which states that there is no link between the error term and the independent variable. As a result, the results clearly support the use of the random effect model in the upper-middle-class group inquiry.

Table 8
Panel Regressions Results on External Debt for Lower & Upper Middle-Income Group

Lower Middle-Income Group (Fixed Effect Model)				
Dependent Variable (ED)	Coefficient	Standard Error	t-statistic	p-value
Intercept	78.10327	17.95096	4.35	0.000***
FDI	-1.088918	0.3318823	-3.28	0.001***
X	-0.48642	0.280337	-1.73511	0.051**
INF	0.28121	0.163341	1.721615	0.052**
GE	-0.5702461	0.9849718	-0.58	0.563
Upper Middle-Income Group (Random Effect Model)				
Intercept	48.72199	10.50457	4.64	0.000***
FDI	0.7265449	0.2681457	2.71	0.007***
X	0.014857	0.1241810	0.12	0.905
INF	-0.0723919	0.1674047	-0.43	0.665
GE	0.474809	0.276086	-1.71978767	0.0523**

Note: For all possible p-values: ***1%, ** 5% and *10%

As per the findings of Hausman tests, the fixed random effect is suitable for lower middle-income group whereas random effect is appropriate for upper middle-income group. The results of these two income groups are displayed in table 8. This tabular presentation comprises of regression results in which different slope co-efficient of independent variables show the positive and negative impact on external debts.

In table 8, we divide it into two parts; first part indicates about low middle-income group and upper middle-income group explains upper middle-income group. We can see that a one-unit rise in FDI corresponds to a 1.089-unit decrease in foreign debt. This emphasizes how important FDI is as a positive factor, providing these nations with a useful way to lessen the weight of foreign debt. Therefore, the results presented by Azolibe (2022) support the conclusions of this study on the connection between foreign debt and foreign direct investment (FDI). In this study, export is a significant negative contributor of external debt, one unit increase in exports leads to 0.149-unit decrease in external debts. Certainly, the study of Herzer and Nunnenkamp (2013) verified the result of current study and they found that higher export levels promote economic expansion and, as a result, lower the requirement for borrowing from outside sources. On the other hand, nations that rely significantly on a small number of commodity exports would have higher export income volatility, which would affect their debt dynamics (Anonymous, 2020). Exports' effect on debt is closely related to a number of variables, such as trade balance, foreign currency rates, state of the world economy, and policy actions. As a result, even while exports can be quite helpful in reducing debt burdens, the precise results depend on the larger economic landscape and the climate of policy.

In case of rising inflation leads to a rise in a nation's foreign debt, this determinant of external debt is seen as a positive and significant in this study. In this situation, inflation takes on a significant role in determining the dynamics of the build-up of foreign debt, reflecting its complex effects on borrowing rates and financial commitments. The findings of the relationship between inflation and external debt indicates that one unit increase in inflation brings 0.281-unit boost up in external debts which justify the results of (Waheed, 2017). Here, the low-income group perceives government spending as a negative and negligible indicator of foreign debt, indicating that more government spending does not substantially contribute to rising external debt. This can be the result of sound fiscal management, which matches revenue sources with expenses and lessens the need for debt financing. Prudent fiscal measures like revenue-generating programmes and budgetary limits can also lessen the effect of government expenditure on the growth of external debt. The lack of relevance suggests that other variables are more important in influencing the nation's foreign debt levels and that government spending has little impact on itself.

In the 2nd part of table 08, FDI is as a positive factor, providing these nations with a useful way to lessen the weight of foreign debt and a one-unit rise in FDI corresponds to a 0.72-unit increase in foreign debt. This complex link highlights how FDI has two roles: it may spur economic growth and contribute to the build-up of external debt. Whereas, export exerts positive and insignificant impact on external debts. The lack of statistical significance shows that other factors are more important in influencing the dynamics of foreign debt for the specific economic setting, even though the positive connection suggests that greater export levels could help to the reduction of external debt.

The absence of statistical significance implies that inflation has little effect on the dynamics of external debt in the observed economic environment. The link between inflation and external debt may depend more heavily on other variables. The impact of government expenditure on foreign debt is positive and statistically significant, suggesting that greater levels of external debt are a direct result of increasing government spending and the findings of this study were verified by the study of (Waheed, 2017). This implies that fiscal policies with high levels of public spending are linked to a significant increase in the amount of foreign debt. The statistically significant positive outcome highlights the possible effects of fiscal decisions

made by the government on the debt dynamics of the nation. It also emphasizes the need for smart fiscal management in order to minimize the influence on the buildup of foreign debt.

A distinct pattern emerges when examining the influences of key variables on foreign debt in lower- and upper-middle-income nations. The low-middle income group's external debt is significantly impacted negatively by foreign direct investment (FDI). This shows that lower levels of external debt are linked to higher levels of foreign direct investment. Conversely, foreign debt in the upper-middle income group is significantly and favorably impacted by FDI, underscoring the importance of FDI in the accumulation of external debt. Similar to this, exports have a negative and significant link with foreign debt in the lower middle-income group but a positive and minor influence in the higher middle-income group. Inflation affects foreign debt in lower-middle income countries positively and significantly, but negatively and hardly at all in upper-middle income countries. Furthermore, in the lower middle-income group, government spending has a negative and negligible influence on foreign debt; whereas, in the higher middle-income group, it has a positive and considerable effect. These little differences highlight the many variables influencing external debt in various income brackets.

5. Conclusion, Recommendation & Policy Implication

Research highlights the crucial factors of outside debts in 32 economies comprising lower- and upper-middle-income groups spanning of 2005 to 2020 by employing panel data analysis. Several tests are applied to check the relationship among external debts, foreign direct investment, export, government expenditures and inflation in this study. First of all, we check the stationarity among the variables. Our results showed complex dynamics between the income categories using two different models that included foreign direct investment, export, and inflation. Significantly, in the lower-middle-income group, FDI had an undesirable influence on external debt; in the upper-middle-income group, however, the effect was both positive and substantial. In the lower-middle-income group, exports had a negative and substantial influence on foreign debt; in the upper-middle-income group, however, they had a positive and minor impact. In case of rising inflation leads to a rise in a nation's foreign debt, this determinant of external debt was seen as a positive and significant in this study in lower middle- income countries but the effect of inflation on external debts in upper middle-income group remained insignificant. Government spending affects foreign debt in the lower-middle class countries negatively and insignificantly, but on the upper-middle-income cluster positively and significantly. These results highlight the need of taking into account various economic situations when examining the factors that influence external debt.

5.1. Future Recommendations

Future studies can be expanded in many directions. Firstly, delving further into analyses that are region-specific would yield insightful information on the distinctive economic dynamics of various areas. Examining the ways in which various factors impact economic results in certain areas may improve the relevance and accuracy of policy suggestions. Secondly, although the focus of this study was economic, future research might include administrative and uncertainty-related components to cover a wider range of topics. Adopting a comprehensive approach will facilitate a deeper comprehension of the diverse factors influencing economic circumstances. Finally, by breaking down the external debt factors into categories that are both, as well as distinct currency compositions, a more thorough investigation might produce insightful results.

5.2. Policy Implication

Policymakers should adopt a multifaceted approach to mitigate external debt burdens, given the adverse consequences of price rises on outdoor debts in conjunction with the positive

effects of exports and (FDI) in lower middle-income countries. In the light of study findings, the investments in manufacturing sectors should be encouraged to contribute in long-term economic development and job creation. Furthermore, to guarantee that foreign direct investment (FDI) neither increases nor decreases the burden of external debt, oversight measures must to be reinforced. Strategically, the governments of these nations may lower their external debt by emphasizing export diversification. High growth potential industries should be supported by policy in order to promote a robust and sustainable economy. This focused strategy increases export revenue and helps reduce debt. Simultaneously, responsible debt management techniques and open negotiating tactics will guarantee fiscal stewardship and establish the groundwork for sustained economic stability. By employing counter-cyclical fiscal measures wisely, nations may capitalise on the favourable consequences of inflation. Inflation control measures should be in place during economic upswings, and expansionary policies can boost economic activity during downturns, which will increase the actual worth of debt.

The benefits of smart government spending and foreign direct investment (FDI) should be leveraged by upper-middle-income nations seeking to reduce their external debt loads. Through the adoption of investor-friendly laws, the promotion of innovation, and infrastructure spending, these countries may attract foreign direct investment. In addition, spending by the government on initiatives that increase productivity can promote economic expansion. Strict debt management procedures, openness during negotiations, and collaborations with international organisations will strengthen fiscal resilience and make a long-term decrease in foreign debt possible. These policies will be effective if they are regularly monitored and adjusted in response to shifting economic conditions. This will help upper-middle-income nations achieve long-term debt reduction while fostering economic development.

5.3. Study Limitations

This study is limited to 32 low-middle and upper-middle income group countries owing to non-availability of dataset of current study's variables.

Author's Contribution:

Humaira Beenish: Devise methodology and create Analysis part with result discussions.

Muhammad Rashad: Data collection & referencing.

Sidra Siddiqui: Create introduction part.

Nadia Sabir: Working on literature review.

Asif Khan: Contribute in Conclusion, recommendation, policy implication and research limitation

Conflict of interest/ Disclosures:

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Appendix No. 1

Table 1

List of Selected Countries for Current Study

Lower Middle-Income Group				Upper Middle-Income Group			
Sr. No.	Country	Sr. No.	Country	Sr. No.	Country	Sr. No.	Country
1	Algeria	9	Kyrgyz Republic	1	Belarus	9	Kazakhstan
2	Bangladesh	10	Lebanon	2	Botswana	10	Mexico
3	Bhutan	11	Mongolia	3	Brazil	11	Mauritius
4	Bolivia	12	Morocco	4	Bulgaria	12	Paraguay
5	Cambodia	13	Nepal	5	China	13	Peru
6	Haiti	14	Pakistan	6	Colombia	14	Thailand
7	India	15	Philippines	7	Gabon	15	Tonga
8	Jordan	16	Sri Lanka	8	Indonesia	16	Türkiye