Impact of Inflation Rate, Remittance Income, and Public Loan on Government Expenditure: Evidence Derived from the Nepalese Economy

Arjun Kumar Dahal

Lecturer (Economics), Mechi Multiple Campus, Jhapa, Nepal

Email: arjun.dahal@memc.tu.edu.np

ORCID: https://orcid.org/0000-0003-4816-4576

Ghanshyam Dhakal

Lecturer (Management), Mechi Multiple Campus, Jhapa, Nepal

Email: gsdhakal50@gmail.com

Abstract

This study examines the impact of inflation rate, remittance income, and public borrowing on the government's annual expenditure. This study is based on the descriptive and exploratory research design. It follows the positivist research philosophy and quantitative characteristics. It uses secondary data collected from various economic surveys in Nepal and reports from the World Bank. It covers 33 data points from 1990 to 2022. Simple statistical and econometric tools like descriptive statistics, robust regression analysis, Normality test, and confidence interval test are used in this study. The inflation rate, public borrowing, and remittance income are responsible for increasing Nepal's government expenditure. The inflation rate is not individually significant in determining the spending in Nepal. Remittance income has a considerable positive impact on total expenditure in Nepal. One unit increase in remittance income results in a 0.109648 unit increase in government expenditure in Nepal. Likewise, public borrowing is highly significant in explaining government expenditure. One unit increase in public borrowing results in a 1.145037 unit increase in government expenditure in Nepal. Nearly 73.69 percent variation in total government expenditure depends on Nepal's inflation rate, remittance income, and public borrowing. Policymakers in Nepal should focus on bolstering remittance inflows and implementing prudent public borrowing management strategies to foster sustainable economic growth while recognizing the limited influence of the inflation rate on government expenditure.

Keywords: Borrowing, sustainable, monetarist, stability, robust regression

Introduction

The impact of inflation rate, remittance income, and public loans on government expenditure can vary depending on the specific economic conditions of a country. High inflation rates can pressure government expenditure as they may increase the cost of goods and services the government purchases. Governments may need to increase spending to offset the effects of inflation, such as providing subsidies for essential

goods or raising wages for public sector employees to maintain their purchasing power (Fosu, 2010). Inflation can also affect government borrowing costs. If inflation is high, lenders may demand higher interest rates on government bonds, increasing the cost of servicing public debt.

Remittances, funds sent by individuals working abroad to their home countries, can positively impact government expenditure (Dahal & Shrestha, 2023). Governments may indirectly benefit from remittance income through increased tax revenue from economic activities stimulated by remittance inflows. Remittances can also directly support government expenditure to finance public projects or social welfare programs (Gaudel, 2007). However, overreliance on remittance income may pose risks to fiscal stability if it leads to complacency in domestic revenue generation or if remittance flows become volatile.

The foreign sector's contribution to expenditure cannot be ignored, whether through loans or foreign direct investment (Dahal et al., 2014). Public loans can significantly impact government expenditure, as they provide a source of financing for various projects and programs. Increased borrowing allows governments to fund infrastructure projects, social welfare programs, and other initiatives that require substantial upfront investment. However, excessive reliance on borrowing to finance expenditures can lead to debt accumulation, posing risks to long-term fiscal sustainability. Governments must carefully manage their borrowing to ensure that debt levels remain sustainable and that borrowed funds are invested in projects that generate sufficient returns to repay the debt.

This study examines the impact of inflation rate, remittance income, and public borrowing on the government's annual expenditure. It further aims to search for the individual and joint effects of independent variables like inflation, remittance, and public loans on the dependent variables like government expenditure or the size of the budget in Nepal.

This study is divided into six segments. The remainder of the segments are as follows: Section two comprises the theoretical and empirical literature of the study. Part three includes materials and methods; part four consists of the main presentation and analysis part of the study. Segments five and six discuss the results and the study's conclusion.

Literature review

Inflation can influence government expenditure through various channels. According to Keynesian economics, higher inflation may lead to increased government spending as a tool for demand management to stimulate economic activity during periods of low aggregate demand (Keynes, 1936). The Monetarist Hypothesis Milton Friedman developed argues that inflation is primarily a monetary phenomenon. According to this hypothesis, sustained inflation arises when there is an excessive increase in the money supply relative to the growth rate of actual output. High and unpredictable inflation can distort price signals, leading to inefficient resource allocation and hindering economic growth (Friedman, 1968). The Cost-Push and Demand-Pull Hypotheses focus on the causes of inflation and their effects on economic growth. Cost-push inflation occurs when production costs, such as wages or raw

material prices, rise, leading to an increase in the general price level. This can reduce output and economic growth if firms pay higher consumer costs. Conversely, demand-pull inflation occurs when aggregate demand exceeds aggregate supply, typically fueled by increased consumer spending or government expenditure. While moderate demand-pull inflation might initially stimulate economic growth, sustained high inflation rates can undermine growth prospects (Tobin, 1972).

Remittances can impact government expenditure through several channels. On the one hand, increased remittance inflows may lead to higher consumption and investment, stimulating economic growth and potentially increasing government revenue through indirect taxes (Phillips, 1958). On the other hand, remittances might reduce the pressure on the government to provide social services, leading to lower expenditure in these areas (Yang, 2008). The relationship between public loans and government expenditure can be complex. In theory, governments borrow to finance expenditures beyond current revenue, leading to increased spending in the short run. However, this might lead to higher interest payments in the future, constraining government expenditure in subsequent periods (Barro, 1979). Rodriguez & Rodriguez (2023) observed the nexus between remittance and the composition of government spending. They found the positive effect of public expenditure on income. Mina (2019) found the negative impact of remittance on pubic social protection expenditure. Doyle (2015) also found that remittance inflows are responsible for increasing government spending.

Hossian (1987) found that the inflation rate is compelled to adjust the government expenditure in Bangladesh. He found that government expenditure adjusts itself to inflation more rapidly than government revenue and increases the size of the fiscal deficit during inflation. Graytak et al. (1974) found that the inflation rate and local government expenditure change in the same direction. Zheng et al. (2023) found that the inflation hampered the financial development. In hyperinflation, government activities decrease because of the low tax and non-tax revenue collection. Tung et al. (2015) found that remittance inflows significantly increased inflation from 1985 to 2013 in 32 developing countries. Narayan et al. (2011), Ball et al. (2012), and Khan and Islam (3013) found the long-run positive impact of remittance income on inflation.

Nurudeen et al. (2022) found the long-run relationship between public expenditure and public borrowing in Nigeria. They concluded that public expenditure increases at the early stages of rising public debt but declines when it grows beyond a specific threshold. Del Monte and Pennacchio (2020) observed the positive impact of public borrowing on public spending. Quattri and Fosu (2012), Picarelli et al. (2019), Quattara (2006), Aladejana et al. (2021), and Omodero (2019) found the positive influence of public borrowing on government spending.

Research on the simultaneous impact of inflation, remittances, and public borrowing on government expenditure dynamics, particularly in the context of developing countries, remains scant. Existing studies often focus on individual factors in isolation, leaving a gap in understanding these variables' interplay and combined effects on government spending patterns and fiscal policy formulation. Additionally, limited attention has been given to the nuanced interactions between inflation,

remittances, and public borrowing. This highlights the need for comprehensive empirical investigations into their collective influence on government expenditure behavior.

Materials and methods

This study is based on the descriptive and exploratory research design. It follows the positivist research philosophy and quantitative characteristics. It uses secondary data collected from various economic surveys in Nepal and reports from the World Bank. It covers 33 data points from 1990 to 2022. In this study, total government expenditure or the size of the government's annual budget is taken as the dependent variable, and inflation rate, remittance income, and public loan are taken as independent variables. Government expenditure is impacted by inflation, remittance inflow, and public loan. In this sense,

Government Expenditure = f(Inflation rate, remittance income, public loan)   (1)

In symbol, LNTOLY =f(INFLR, INPBR, INNRY)   (2)

$NTOLY = \beta_0 + \beta_1 \times INFLR + \beta_2 \times INPBR + \beta_3 \times INNRY + \mu$ (3)

Where LNTOLY is the dependent variable, INFLR, INPBR, and INNRY are the independent variables. β_0, β_1, β_2, and β_3 are the coefficients (intercept and slopes), and μ is the error term. In this analysis, the robust regression analysis (RRA) is used to estimate the impact of inflation remittance and public borrowing on government expenditure. Robust regression analysis minimizes the effects of outliers using techniques like M-estimation or iteratively reweighted least squares to provide more reliable parameter estimates (Hadi,1992). Outliers indicate extreme values. Robust regression analysis aims to mitigate the influence of extreme values and other deviations from model assumptions like heteroscedasticity and non-normality of residuals (Heber, 1964). M-estimation minimizes a robust loss function, which reduces the impact of extreme values on parameter estimation, i.e., Huber-Loss and Turkey's Bi-weight loss are used. A simple Robust regression equation (Rousseeuw & Leroy, 1987) is specified as given below:

$Y_i = \beta_0 + \beta_1 X_{i1} + \beta_2 X_{i2} + \beta_3 X_{i3} + \beta_P X_P + \mu$ (4)

In equation (4), Y_i is the independent variable. X_{ij} dependent variable for observation i. β_0, β_1, β_2, β_3, ……. β_P are the estimated coefficients, μ is the error term. The subject is to minimize a loss function that has fewer sensitive outliers. The objective function is specified as:

$Min\ \beta \sum_{i=1}^{n} Hurber\ (Yi - Xi\beta)$ (5)

Where n indicates the number of observations, Xi is the vector of predictor variables for observation i, and β is the vector of the coefficient to be estimator. The Huber function is specified as:

$$Huber\ (z) = \begin{cases} \frac{1}{2}Z^2 & if\ |Z| \leq K \\ K|Z| - \frac{1}{2}K & Otherwise \end{cases}$$ (6)

K is the turning parameter determining the point at which the function transitions from quadratic to linear. An iterative reweighted least square is used to minimize the Huber loss function. The weighted least square estimate of β is given by (Wilcox, 2012):

$$\bar{\beta} = (X^TWX)^{-1}X^TWY \tag{7}$$

In equation (7), X is the designed matrix, W is the diagonal matrix of weights, and Y is the vector of observed values. For Huber loss, the weights are calculated below.

$$W_i = \begin{cases} \dfrac{1}{|Y_i - X_i\beta|} & if\,|Y_i - X_i\bar{\beta}| \leq K \\ \dfrac{K}{|Y_i - X_i\beta|} & Otherwise \end{cases} \tag{8}$$

In equation (8), β is the estimate of coefficients obtained from the previous iteration. The weights W_i is updated based on the residuals.

Presentation and analysis

Table (1) presents the descriptive statistics of the response variable (inflation rate, INFLR) and four predictor variables (INNRY, INPBR, and LNTOLY) for Nepal. The mean inflation rate (INFLR) is 7.263 percent, with a relatively high standard deviation of 3.634, indicating substantial variation in inflation over the observed period. The skewness values suggest that inflation, public borrowing, and total expenditure are positively skewed, while remittance income is negatively skewed. The kurtosis values indicate that the distributions of inflation are leptokurtic (more peaked than a normal distribution). At the same time, remittance income, public borrowing, and total expenditure are platykurtic, but the distribution of public borrowing is nearly mesokurtic (2.993). The coefficients of variation show that INFLR (50.03%) and INNRY (36.29%) have relatively high dispersion around their means compared to the other variables.

Table 1

Basic information on the response and predictor variables

Measurement	INFLR	INNRY	INPBR	LNTOLY
Mean	7.263	7.8153	10.388	11.948
Median	7.680	8.999	10.375	11.616
Maximum	21.061	11.232	12.212	14.086
Minimum	2.269	3.1045	9.001	9.886
Std. Dev.	3.634	2.836	0.892	1.311
Skewness	1.428	-0.266	0.159	0.221
Kurtosis	7.324	1.424	2.993	1.778
Coefficient of variation	50.03	36.29	8.59	10.97
Observations	33	33	33	33

Where INFLR represents Nepal's inflation rate, INNRY, INPBR, and LNTOLY represent the value of remittance income, total public loan, and total expenditure of the Nepal government in log-transformed form, respectively.

Robust regression analysis

Robust regression analysis is a form of regression analysis designed to resist outliers or violations of the assumptions underlying standard regression models, providing more reliable results when the data deviates from the idealized conditions

assumed by ordinary least squares regression. Table 2 displays the outcomes of the robust regression analysis.

Table 2

Outcomes of Robust regression analysis

Method: M-estimation

M settings: weight= Bi-square, tuning=4.685, scale=MAD (median centered)

Variable	Coefficient	Std. Error	z-Statistic	Prob.
INFLR	0.020084	0.019533	1.028211	0.3039
INNRY	0.109648	0.044490	2.464563	0.0137
INPBR	1.145037	0.148169	7.727921	0.0000
C	-0.955605	1.318971	-0.724508	0.4688
Robust Statistics				
R-squared	0.736850	Adjusted R-squared		0.709628
Rw-squared	0.961169	Adjust Rw-squared		0.961169
Akaike info criterion	55.45776	Schwarz criterion		58.66842
Deviance	2.232403	Scale		0.223521
Rn-squared statistic	385.7806	Prob (Rn-squared stat.)		0.000000
Non-robust Statistics				
Mean dependent var	11.94863	S.D. dependent var		1.311546
S.E. of regression	0.300564	Sum squared resid		2.619831

Dependent variable: Total expenditure (LNTOLY), Method: M-estimation

The analysis appears to have been conducted using robust regression with M-estimation, explicitly employing the bi-square weight function with a tuning parameter of 4.685 and the scale determined by the Median Absolute Deviation (MAD). The coefficients of the independent variables (INFLR, INNRY, INPBR, and constant C) indicate their respective impact on the dependent variable, Total expenditure (LNTOLY). The inflation is not statistically significant to explain the government expenditure in Nepal. The coefficient of remittance income is positive (0.1096) and statistically significant (p-value: 0.0137). One percent increase in remittance income results in a 0.1096 percent increase in government expenditure in Nepal. Public borrowing is also statistically significant in determining the government expenditure size in Nepal. One percent increase in public borrowing results in a 1.145 percent increase in government expenditure.

The robust regression equation can be formulated as follows:

$$\text{LNTOLY} = -0.955 + 0.020084 \times \text{INFLR} + 0.109648 \times \text{INNRY} + 1.145037 \times \text{INPBR} \quad (9)$$

The R-squared and adjusted R-squared indicate that the independent variables explain approximately 73.7 percent of the variance in total expenditure. Rw-squared provides a robust version of R-squared, which considers the influence of outliers. In this case, it's significantly higher than the traditional R-squared, indicating the robustness of the model against outliers. The Rn-squared statistic and its associated probability indicate the robustness of the R-squared statistic against potential outliers. The deviance of 2.232 means the discrepancy between the model and the observed data. The scale parameter is 0.224, reflecting the spread of the residuals around the regression line. Prob

(Rn-squared stat.) has a very low probability ($p < 0.0001$), suggesting that the robust R-squared statistic is significant. The robust regression analysis indicates that INNRY and INPBR are statistically significant predictors of total expenditure. At the same time, INFLR and the constant may not be reliable predictors in this model. Additionally, the model performs well in explaining the variance in total expenditure, with robust statistics indicating its flexibility against outliers.

Validity checking of the Model

Figure 1 shows the normality test of residuals of the model. The Jarque-Bera value is 0.982854, and its corresponding probability value is 0.611753. The Jarque-Bera probability value is more than 0.05. So, we fail to reject the null hypothesis that the data are typically distributed. Based on the Jarque-Bera test, there is insufficient evidence to conclude the residuals are not normally distributed.

Figure 1

Normality test of residuals of the model

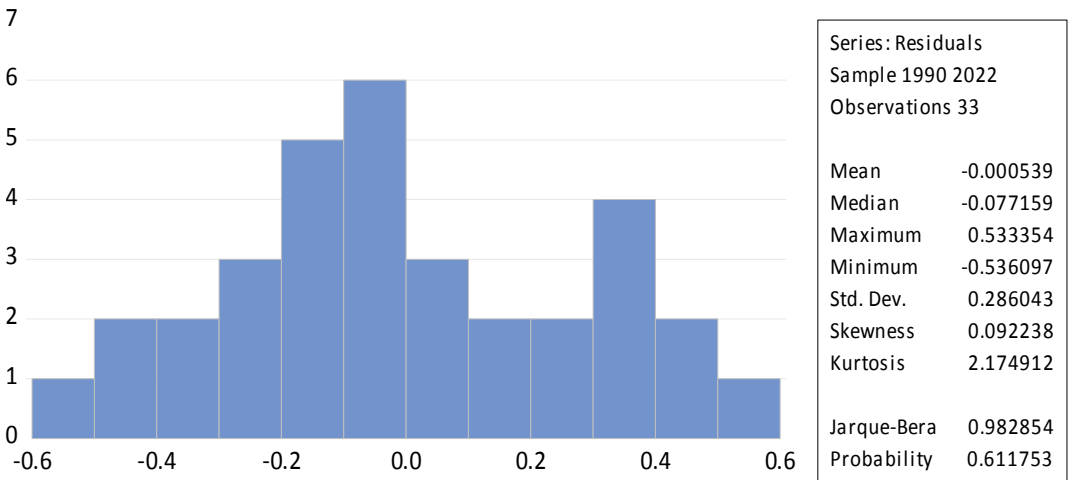| Series: Residuals	
Sample 1990 2022	
Observations 33	
Mean	-0.000539
Median	-0.077159
Maximum	0.533354
Minimum	-0.536097
Std. Dev.	0.286043
Skewness	0.092238
Kurtosis	2.174912
Jarque-Bera	0.982854
Probability	0.611753

Table 3 shows the confidence interval of the model. The coefficients of the 95 percent confidence interval for the variables in the model provide insights into the relationships between the predictors and the response variable. Beginning with the variable inflation rate (INFLR), its coefficient of 0.019437 suggests a positive association with the response variable, albeit with a relatively narrow confidence interval ranging from -0.018199 to 0.057074. Similarly, the coefficient for remittance income (INNRY) is 0.110353, indicating a positive impact, with a confidence interval spanning from 0.024628 to 0.196078. Moving on to public borrowing (INPBR), its coefficient of 1.142785 is substantially higher, indicating a stronger positive relationship, with a confidence interval between 0.857285 and 1.428284. However, it's noteworthy that the confidence intervals for all these coefficients include zero, implying a degree of uncertainty in their precise effects on the response variable. Lastly, the intercept coefficient C is -0.925970, with a wide confidence interval from -3.467431 to 1.615491, suggesting significant uncertainty regarding its impact.

Table 3

Coefficients of the confidence interval of the model

Variable	Coefficient	95% Confidence Interval	
		Low	High
INFLR	0.019437	-0.018199	0.057074
INNRY	0.110353	0.024628	0.196078
INPBR	1.142785	0.857285	1.428284
C	-0.925970	-3.467431	1.615491

Result and discussion

The inflation rate, public borrowing, and remittance income are responsible for increasing Nepal's government expenditure. The inflation rate is not individually significant in determining the spending in Nepal. However, Hossian (1987) found the direct impact of inflation on government expenditure. The findings of Graytak et al. (1974) do not also align with the findings of this research. Still, Zheng et al. (2023) findings indicate the negative relationship between inflation and public spending during hyperinflation. The inflation rate may not be individually significant in determining spending in Nepal due to structural constraints, fiscal policy priorities, and external influences on the economy. Remittance income has a considerable positive impact on total expenditure in Nepal. One unit increase in remittance income results in a 0.109648 unit increase in government expenditure in Nepal. The findings of Barro (1979), Doyle (2015), and Rodriguez and Rodriguez (2023) align with the findings of this study. Remittance income has a considerable positive impact on total expenditure in Nepal due to its role in bolstering household income, stimulating domestic consumption, and indirectly contributing to government revenue through increased economic activity.

Likewise, public borrowing is highly significant in explaining government expenditure. One unit increase in public borrowing results 1.145037 unit increase in government expenditure in Nepal. The conclusions of Nurudeen et al. (2022), Del Monte and Pennacchio (2020), and Aladejana et al. (2021) also align with the findings of this study. Still, the finding of Nurudeen et al. (2022) does not align with the conclusion of this research when public borrowing grows beyond a specific threshold. Public borrowing is highly significant in explaining government expenditure in Nepal due to the country's reliance on external financing to fund development projects and infrastructure investments, compounded by limited domestic revenue mobilization capacity. Additionally, the government's borrowing patterns are influenced by the need to address fiscal deficits, meet public service demands, and mitigate economic shocks, further emphasizing its significance in determining expenditure levels. Nearly 73.69 percent variation in total government expenditure depends on Nepal's inflation rate, remittance income, and public borrowing.

Conclusion, policy implications and limitations

The impact of annual changes in price, remittance income, and public borrowing on government expenditure is observed from the Nepalese perspective. The mean of public borrowing is the most representative because it has the slightest standard

deviation. The coefficient of variation of public borrowing is smaller than other variables. So, the data is more consistent, but the inflation rate is more unstable than that of different variables. Nepal's government expenditure increase can be attributed to factors such as the inflation rate, public borrowing, and remittance income. The impact of the inflation rate on expenditure in Nepal is not statistically significant. The inflow of remittance income in Nepal has a notable and favorable influence on overall spending. The study reveals that a one-unit increase in remittance income in Nepal leads to a corresponding rise of 0.109648 units in government expenditure. Similarly, public borrowing holds great importance in elucidating government expenditure. A rise of one unit in public lending leads to a corresponding increase of 1.145037 units in government expenditure in Nepal. The overall government expenditure in Nepal is influenced by several factors, including the inflation rate, remittance income, and public borrowing, accounting for around 73.69 percent of the variation.

The research underscores the critical role of remittance income and public borrowing in driving government expenditure in Nepal, with statistically significant impacts observed for both variables. Given the substantial influence of these factors, policymakers should prioritize strategies aimed at enhancing remittance inflows and effectively managing public borrowing to stimulate sustainable economic growth and development in Nepal while also acknowledging the negligible impact of the inflation rate on government expenditure.

This study includes four variables: inflation rate, remittance income, public borrowing, and government expenditure. The annual inflation rate, remittance inflow, and public loans influence government expenditure in Nepal. It uses secondary data collected from various economic surveys in Nepal and reports from the World Bank. It covers 33 data points from 1990 to 2022. Simple statistical and econometric tools like descriptive statistics, robust regression analysis, Normality test, and confidence interval test are used. Therefore, further study is necessary using more variables, countries, data points, tools, and techniques.

References

Aladejana, S. A., Okeowo, I. A., Oluwalana, F. A., & Alabi, J. A. (2021). Debt burden and infrastructural development in Nigeria. *International Journal Academic Research in Business and Social Sciences, 11(1),* 419–432. https://doi.org?10.6007/IJARBSS/v11-i1/8518

Ball, C.; Lopez, C; & Reyes, J., (2012). Remittances, inflation and exchange rate regimes in small open economies. MPRA Paper No. 39852, University Library of Munich, Germany. https://mpra.ub.uni-muenchen.de/39852/2/MPRA_paper_39852.pdf

Barro, R. J. (1979). On the determination of the public debt. *Journal of Political Economy, 87(5),* 940–971. http://www.jstor.org/stable/1833077

Dahal, A. K., & Shrestha, R. K. (2023). Effect of tourism and remittance income on economic growth in SAARC countries. *Journal of Management, 6(1),* 15–30. https://doi.org/10.3126/jom.v6i1.58862

Dahal, A. K., Bhattarai, G., & Budhathoki, P. B. (2024). Impact of foreign trade and foreign direct investment on economic growth: Empirical insights from Nepal. *Problems and Perspectives in Management, 22(1)*, 390-400. https://doi.org/10.21511/ppm.22(1).2024.32

Del Monte, A., & Pennacchio, L. (2020). Corruption, government expenditure and public debt in OECD countries. *Comparative Economic Studies, 62(4),* 739–771.https:10.1057/s41294-020-00118-z

Doyle, D. (2015). Remittances and social spending. *The American Political Science Review*, *109*(4), 785–802. http://www.jstor.org/stable/24809510

Fosu, A. K. (2010). The external debt-servicing constraint and public-expenditure composition in Sub-Saharan Africa. *African Development Review, 22(3),* 378–393. https://doi.org/10.1111/j.1467-8268.2010.00252.x

Friedman, M. (1968). The role of monetary policy. *The American Economic Review, 58(1)*, 1-17. https://fraser.stlouisfed.org/title/1161/item/2352

Gaudel, Y. S. (2007). Remittance Income in Nepal: Need for Economic Development. *Journal of Nepalese Business Studies, 3(1),* 9–17. https://doi.org/10.3126/jnbs.v3i1.491

Greytak, D., Gustely, R, & Dinkelmeyer, R. J. (1974). The effects of inflation on local government expenditures. *National Tax Journal, 27(4),* 583–598. Http://www.jstor.org/stable/41861989

Hadi, A. S. (1992). Identifying multiple outliers in multivariate data. *Journal of the Royal Statistical Society. Series B (Methodological), 54(3),* 761–771. http://www.jstor.org/stable/2345856

Hossain, MD. A. (1987). Impact of inflation on fiscal deficits in the Bangladesh economy. *The Pakistan Development Review, 26(2)*, 179–200. http://www.jstor.org/stable/41258888

Huber, P. J. (1964). Robust estimation of a location parameter. The Annals of Mathematical Statistics, 35(1), 73-101. https://doi.org/10.1214/aoms/1177703732

Keynes, J. M. (1936). The general theory of employment, interest, and money. Macmillan. https://shorturl.at/fkmo0

Khan, Z. S.; Islam, S. (2013). The effects of remittances on inflation: Evidence from Bangladesh. *Journal of Economics and Business Research, 19(2)*, 198-208. https://www.uav.ro/jour/index.php/jebr/article/view/94

Mina W. (2019). Diaspora and government welfare spending: Do migrant remittances increase public social protection? *Economic Notes. 48*, e12141. https://login.research4life.org/tacsgr1doi_org/10.1111/ecno.1214

Narayan, P., Narayan, S. & Mishra, S. (2011). Do remittances induce inflation? Fresh evidence from developing countries. *Southern Economic Journal, 77(4)*, 914-933. http://dx.doi.org/10.4284/0038- 4038-77.4.914

Nurudeen, A., Joseph, D., Mohammed, G. A. A., & Obi, B. (2022). Non-Linear effect of government debt on public expenditure in Nigeria: Insight from Bootstrap ARDL procedure. *Organizations and Markets in Emerging Economies, 13(1),* 163-182. https://doi.org/10.15388/omee.2022.13.75

Omodero, C. O. (2019). External debt financing and public capital investment in Nigeria: A Critical Evaluation. *Economics and Business, 33(1),* 111–126. https://doi.org/10.2478/eb-2019-0008

Phillips, A. W. (1958). The relation between unemployment and the rate of change of money wage rates in the United Kingdom, 1861-1957. *Economica, 25(100),* 283-299. https://doi.org/10.2307/2550759

Picarelli, M. O., Vanlaer, W., & Marneffe, W. (2019). Does public debt crowd out public investment in the EU? ESM Working Paper Series, 36. https://doi.org/10.2852/795853

Quattri, M. A., & Fosu, A. K. (2012). On the Impact of External Debt and Aid on Public Expenditure Allocation in Sub-Saharan Africa after the Launch of the HIPC Initiative. Proceedings of the International Association of Agricultural Economists (IAAE) Triennial Conference. Foz do Iguaçu, Brazil. https://doi.org/10.22004/ag.econ.126879

Rodríguez, R. A. P. & Rodríguez, B. A. P. (2023). Remittances and the size and composition of government spending. *The Mexican Journal of Economics and Finance 18(4),* 1-23, e745. https://doi.org/10.21919/remef.v18i4.745

Rousseeuw, P. J., & Leroy, A. M. (1987). Robust regression and outlier detection. John Wiley & Sons. https://doi.org/10.1002/0471725382

Tobin, J. (1972). Inflation and unemployment. *The American Economic Review, 62(1/2),* 1-18. https://www.aeaweb.org/journals/subscriptions

Tung, L., Ly, P. T. M., Nhu, P. T. Q., Pham, T., Anh, L. T. & Phung, T. T. P. (2015). The impact of remittance inflows on inflation: Evidence in Asian and the Pacific developing countries. *Journal of Applied Economic Sciences. 10 (7).* 1076-1079. https://shorturl.at/jkqHM

Wilcox, R. R. (2012). Introduction to Robust Estimation and Hypothesis Testing. Academic Press. https://www.sciencedirect.com/book/9780123869838/

Yang, D. (2008). International migration, remittances, and household investment: evidence from Philippine migrants' exchange rate shocks. *The Economic Journal, 118(528),* 591-630. https://doi.org/10.1111/j.1468-0297.2008.02134.x

Zheng, S., Liu, H., Hafeez, M., Wang, X., Fahad, S. & Yue, X. G. (2023). Testing the resource curse hypothesis: The dynamic roles of institutional quality, inflation and growth for Dragon. *Resources Policy, 85(A)*, 103840. https://doi.org/10.1016/j.resourpol.2023.103840