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Overseas Capital Streams and Economic Growth Nexus: Pragmatic Insights from Nepal

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Abstract

The objective of the present research is to ascertain the impact of foreign capital inflows, including grants, loans, remittances, and income from tourism, on the economic growth of Nepal. This study utilizes secondary data acquired from several Nepalese economic surveys and World Bank reports. The data consists of 35 data points spanning from the fiscal years 1987/88 to 2021/22. The link between foreign capital inflows and GDP growth in Nepal is examined using fundamental statistical approaches like quantile regression, trace and Max-Eigen cointegration tests, and descriptive statistics. The results show that Nepal's grants, debt, foreign remittances, tourism earnings, and GDP growth co-integrate over the long term. Notably, 80.5 percent of Nepal's GDP growth fluctuation is accredited to foreign grants, loans, remittances, and tourism income. While foreign loans and grants are not statistically significant in and of themselves to measure GDP growth, foreign remittances and tourism income are. For every percentage increase in the median value of remittance and tourism income, the GDP grows by 0.251 and 0.816 percent, respectively. More revenue from tourism than from remittances goes towards Nepal's economic growth. Legislators can, therefore, enact suitable measures to encourage the expansion of the tourism industry.

Keywords: Quantile regression, portfolio investment, brain drain, symmetric quantile, pluralists

JEL Classification: F_{34}, F_{24}, F_{22}, L_{83}

Introduction

Foreign capital flows, like foreign direct investment, remittance income, foreign exchange earnings from tourism, foreign loans, or grants, have an incredible role in a nation's overall economic growth and development. Concepts and resources are essential for economic growth. The resource and idea deficit for economic growth can be closed with foreign capital flows, especially tourism and remittances (Romar, 1993). Many studies and discussions in international finance and economics have focused on the connection between foreign capital inflows and economic growth (De Gregorio, 1992). Depending on several variables, including the kind of capital flow, the regulations in place, and the financial circumstances of the receiving country, foreign capital flows can have positive and negative effects on economic growth (Borensztein et al., 1996).

Theoretically, neo-classical economists created the foreign capital-led growth hypothesis. The rationale for the claim is that foreign capital, particularly in economies with low levels of capital, makes funds available for the fruitful area (Ehigiamusoe & lean, 2019). The closing of the saving-investment gap in developing nations is why foreign capital flows are significant (Lipsey, 1999). Many developing countries can access foreign capital flows primarily through

technological transfer, managerial experience, and production efficiency that connect to the external market (Mankiw et al., 1992; Grossman & Helpman, 1991).

Foreign capital inflows can lower unemployment rates and raise local income by generating job possibilities. A nation's economy may flourish due to increased investment levels fueled by foreign money. Building new factories or undertaking infrastructure projects are common forms of foreign direct investment (FDI), which can stimulate the economy. FDI can boost economic growth and productivity in a host nation by introducing cutting-edge technologies and management techniques. The local workers may receive training and skill development from multinational firms. Access to international financial markets through grants and loans from outside can help nations raise money for various investments and development initiatives (Alfaro et al., 2004).

Over-reliance on foreign funding can increase a nation's susceptibility to outside economic shocks and volatility. Unexpected cash withdrawals or shifts in investor opinion can jeopardize the stability of the home economy. Significant inflows of foreign capital have the potential to cause an appreciation of the currency rate, which would raise the cost of the nation's exports and possibly hurt its export-oriented sectors. Not all social segments may profit equally from foreign capital flows, which could exacerbate income inequality if the gains are concentrated among a small number of people or industries.

Unchecked foreign capital inflows can sometimes lead to financial bubbles and ensue crises. A rapid reversal of capital flows might lead to economic instability in a particular nation. Terms or limits on policy imposed by lenders or investors on specific forms of foreign capital may limit a country's capacity to carry out its own economic policies. The kind and caliber of capital, the laws and rules in force, and the general state of the economy are some of the variables that determine how foreign capital flows affect economic growth. Policymakers must find a middle ground and foster an atmosphere that optimizes the advantages of foreign investment while reducing associated risks.

The impact of foreign capital flows on Nepal's economic growth is investigated in this study. It examines the separate and combined effects of foreign loans, grants, remittances, and tourism revenue on economic expansion. Additionally, the validity of the foreign capital-led growth theory is examined.

There are five sections in this article. The residual portion of this article is as follows: segment two summarizes the relevant theoretical and empirical literature. A reference to the research gap is made in the final paragraph. The third portion presents the research materials and techniques. The research findings are presented and deliberated in segment four. The study's shortcomings, policy implications, and conclusions are provided in the last segment.

Literature Review

The foreign capital-led growth hypothesis (FCLGH) is an economic theory suggesting that overseas capital, including foreign direct investment (FDI) and overseas collection outlay, can significantly encourage economic growth in developing countries (Blomstrom et al., 2003). This theory is predicated on the notion that recipient nations can gain from foreign capital inflows in several ways, which can then promote economic development (Alfaro et al., 2004). According to this theory, foreign direct investment (FDI) can result in favorable economic outcomes like higher investment, knowledge transfer, the creation of jobs, and better productivity (Carkovic & Rose, 2002).

Borensztein et al. (1996) studied the impact of FDI flows from developed to developing countries in 69 developing nations. They discovered that FDI only contributes to economic

growth when advanced technologies have sufficient adsorptive ability. Ehigiamusoe and Lean (2019) investigated the relationship between foreign capital inflows and economic growth in Nigeria. They discovered that portfolio investment (stocks, bonds, and other securities) favors economic growth. On the other hand, foreign loans negatively impact economic growth, whereas FDI and foreign aid have no impact.

Fashina et al. (2018) investigated if increasing foreign aid flows beyond a certain point hurts economic growth. Jana and Sethi (2020) discovered a long-term and short-term association between financial help and economic growth in South Asian countries. They also found a unidirectional correlation between foreign aid and economic growth.

Akinlo (2004), Dreher (2006), and Goh et al. (2017) found that FDI, foreign grants, loans, and foreign portfolio investment hurt economic growth, while Albulescu (2015), Dalgaard et al. (2004), Gomanee et al. (2005), and Li and Liu (2005) found the opposite to be true. Economic growth is not significantly impacted by FDI, foreign grants, or loans, as documented by Gunby et al. (2017) and Hameed et al. (2008).

According to the tourism-led economic growth theory, tourism-related revenue promotes economic growth. The growth of the tourism industry creates jobs, makes investments, boosts foreign exchange, generates income, and ultimately advances the economy. Gautam (2012) and Rasool et al. (2021) found that tourism earnings aid economic growth. They discovered the short- and long-term causal links between GDP growth and tourism receipts. Po and Huang (2008) and Henry and Deane (1997) have noted how tourism contributes to economic growth. However, Tang (2013), Katircioglu (2009), Young et al. (2018), and Liu (2017) found no evidence of a substantial relationship between the tourism industry's revenue and the expansion of the national economies of their respective countries.

The optimistic, pessimistic, and pluralist hypotheses are established to establish the link between remittance income and economic growth (Jushi et al., 2021). According to the optimistic hypothesis, remittance revenue is beneficial. Foreign employment boosts domestic income, investment, employment, capital formation, and economic growth. According to the pessimistic theory, foreign work slows economic growth and promotes dependency and brain drain. However, the Pluralist hypothesis states that it has positive and negative consequences, which may be empirically determined (Bucevska, 2022). Jawaid and Roza (2016), Ramirez (2013), Fayissa and Nsiab (2010), and Cames et al. (2018) all discovered that remittance money has a positive and statistically significant impact on economic growth in their respective countries. Remittances harm economic growth, according to Sutradhar (2020), Tolcha and Roa (2016), Gjini (2013), and Jahjah et al. (2013). According to Barajas et al. (2009), remittance income has little effect on economic progress.

In this section, several literary categories have been reviewed. Theoretical literature relates to economic growth: foreign loans, grants, remittances, and tourism income. The review covers the empirical literature on this subject. Most research examined the impact of tourism-related foreign direct investment (FDI) and remittance revenue from grants or loans abroad on economic growth. The relationship between and the combined effects of foreign borrowing, annuities, remittances, and tourism (in the form of foreign money) on Nepal's growth are investigated in this study. Therefore, an extensive research gap exists between earlier and more recent studies. The scope of this investigation is somewhat broader than that of the last.

Resources and Procedures

Research Design

The study explores the impact of overseas capital inflows on Nepal's economic growth. The descriptive and exploratory research designs are used to search the effects of predictor variables on economic growth. The exploratory research design is used to explore the relationship between independent variables like foreign loans, grants, remittance, and tourism income in the form of foreign currency on a dependent variable, i.e., GDP growth. The descriptive research design is used to describe and analyze the explored results.

Data and Data Processing

This study is based on secondary data collected from various economic surveys in Nepal and reports from the World Bank. It covers 35 data points from 1987/88 to 2021/22. Simple statistical tools like descriptive statistics, Karl Pearsons' correlation analysis, Phillips-Perron unit root testing, cointegration test, and quantile regression are used to analyze the relation and impact of explanatory variables to response variables.

Variables and model specification

This study includes five variables: GDP, foreign loans, grants, remittances, and tourism income. The GDP growth is the outcome variable, and the rest are the predictor variables. It is based on the theoretical aspects that GDP growth is the function of foreign loans, grants, remittance, and tourism income from foreign currency. In this sense,

Economic growth = f (Foreign loan, grants, remittance, tourism income) (1)

In symbol,

PPGDP = f (EXTDEBT, GRANTS, REMT, TOURFR) (2)

The equation, after taking the log of variables,

LnPPGDP = f (LnEXTDEBT, LnGRANTS, LnREMT, LnTOURFR) (3)

Quantile regression is used to estimate the conditional quantiles of a response variable, as opposed to traditional regression methods that estimate the response variable's conditional mean (or expected value) (Yu & Moyeed, 2001). In other words, it allows to model different parts of the conditional distribution of a response variable, providing a more comprehensive view of the relationship between variables. The basic idea of quantile regression is to estimate quantile-specific coefficients, which capture how the predictors affect different quantiles of the response variable (Koenker, 2010).

The general form of the quantile regression model for a single variable is specified as follows:

$Q_\alpha (Y/X) = X^T\beta_\alpha$ (4)

Where $Q_\alpha (Y/X)$ is the α-th conditional quantiles of response variable Y. X is the vector or predictor variables, and β_α is the vector quantile-specific coefficients. The quantile regression estimates β_α for different values of α, allowing predictor and response variables to vary across the different quantiles (Machado & Santosh-Silve, 2005).

After introducing the study variables, the quantile regression equation for a specific quantile α can be written as:

Q_α (LNPPGDP) = $\beta_{0\alpha}$ + $\beta_{1\alpha}$*LnGRANTS + $\beta_{2\alpha}$*LnEXTDEBT + $\beta_{3\alpha}$*LnREMT + $\beta_{4\alpha}$ *LnTOURFR + μ (5)

Where: Q_α (LnPPGDP) is the α-th conditional quantile of the response variable. $\beta_{0\alpha}$ is the intercept for the α-th quantile. $\beta_{1\alpha}$, $\beta_{2\alpha}$, $\beta_{3\alpha}$, and $\beta_{4\alpha}$ are the quantile-specific coefficients for the predictor variables. μ represents the error term.

Presentation and analysis

Descriptive Statistics

Descriptive statistics is a collection of strategies and tactics used in data analysis to enumerate and characterize a dataset's salient features. These figures offer a clear and insightful summary of the facts, facilitating comprehension, interpretation, and preliminary conclusion-making. Descriptive statistics are essential for presenting and summarizing significant findings from datasets in data analysis. Table 1 shows the descriptive statistics of five concerned variables: gross domestic product, remittance income, grants, tourism income, and external debt of Nepal.

Table 1

Descriptive statistics of variables

Variables	PPGDP	REMT	GRANTS	TOURFR	EXTDEBT
Mean	1258462.	18471.52	17257.55	25172.81	280518.9
Median	589412.0	6550.000	12377.40	12167.80	220125.6
Maximum	4561239.	75447.10	44616.60	78744.00	945671.6
Minimum	155610.0	22.30000	1478.200	1675.700	20826.00
Std. Dev.	1364200.	24833.64	14701.04	23860.21	232413.1
Skewness	1.199892	1.154909	0.530713	1.063965	1.596954
Kurtosis	3.080880	2.873599	1.751219	2.706215	5.087371
Coefficient of variation	108.4022	134.4428	85.18614	94.78564	82.85114
Jarque-Bera	8.408031	7.803888	3.917200	6.729332	21.23067
Probability	0.014935	0.020203	0.141056	0.034574	0.000025
Observations	35	35	35	35	35

Where PPGDP= Gross Domestic Product of Nepal at producers' current price

REMT= Remittance income

TOURFR= Foreign currency earned from the tourism industry

EXTDEBT= External debt/borrowing obtained and accepted by Nepal.

Table 1 provides an overview of the different variables related to Nepal's economic growth. The standard deviation of GDP is approximately 1364200, indicating a relatively high degree of variability in the data. The standard deviation of grants is 14701.04, indicating a relatively low degree of variability in the data. The value of the coefficient of variation also supports it. The coefficient of variation of remittance income is 134.4428 percent, representing the relatively high inconsistency in the data set. All data sets are positively skewed because the value of skewness of all variables are positive, which indicates that there may be a longer tail on the right side of the distribution. The mean value of variables is greater than the median. The GDP and external debt data are platykurtic, and the rest of the variables are leptokurtic. The Jarque-Bera test is also a normality test; a lower P-value suggests that the data is not normally distributed. In this case, P-values are very low for most variables, meaning that these variables may not follow normal distribution.

Correlation Analysis

The degree and direction of a linear link between two variables are measured by correlation. The relationship between these economic variables is displayed in the correlation matrix. These correlations might illuminate possible dependencies or linkages between various variables for economic research and decision-making. The pairwise associations between the variables are displayed in Table 2 below.

Table 2

Calculation of pairwise association ship between variables

Variables	PPGDP	REMT	GRANTS	TOURFR	EXTDEBT
PPGDP	1.000	0.7499	0.8096	0.9823	0.9498
REMT	0.7499	1.000	0.7778	0.7787	0.574
GRANTS	0.8096	0.7778	1.000	0.8432	0.7117
TOURFR	0.9823	0.7787	0.8432	1.000	0.9169
EXTDEBT	0.9498	0.5740	0.7117	0.9168	1.000

Source: Calculated by authors by using EViews12.

According to Table 2, remittance income has a relatively weaker correlation with GDP at 0.7499, but it's still a positive correlation, indicating that as remittances increase, GDP tends to increase as well. Foreign grants have a strong positive correlation with GDP at 0.8096, meaning countries receiving more foreign grants tend to have higher GDP. Foreign Currency received from tourism income has a robust positive correlation with GDP at 0.9823, indicating that GDP also tends to increase as tourism revenue increases. External debt has a strong positive correlation with GDP at 0.9498, indicating that GDP also tends to increase as external debt increases.

Phillip -Perron Unit Root Testing

A statistical test used in econometrics to ascertain if a time series data set exhibits a unit root is the Phillips-Perron unit root. When a time series does not eventually revert to a constant mean and instead has a stochastic or random trend component, it is said to have a unit root. A unit root, then, suggests that a time series is non-stationary. The existence of a unit root, indicating that the time series is non-stationary, is the test's null hypothesis. The time series is stationary if, as the alternative hypothesis states, there is no unit root. The results of the Phillips-Perron unit root test of the relevant variables are shown in Table 3.

Table 3

Non-stationary and stationary Checking of Variables

Variables	Standards	Level		First Difference		Remarks
		Intercept	Trend and intercept	Intercept	Trend and intercept	
LnPPGDP	PP-t stati. Pb- value T_5- value	1.133 0.997 -2.951	-2.479 0.336 -3.548	-5.220 0.0001 -2.954	-5.408 0.001 -3.553	Stationary after the first difference
LnGRANTS	PP-t stati. Pb- value T_5- value	-0.959 0.765 -2.951	-2.024 0.567 -3.548	-7.188 0.000 -2.954	-7.544 0.000 -3.553	Stationary after the first difference
LnEXTDEBT	PP-t stati. Pb- value T_5- value	-2.455 0.134 -2.29	-3.346 0.059 -3.548	-4.1o5 0.003 -2.954	-4.228 0.011 -3.553	Stationary after the first difference
LnREMT	PP-t stati. Pb- value T_5- value	-1.119 0.697 -2.951	-1.136 0.907 -3.584	-6.934 0.000 -2.954	-7.031 0.000 -3.553	Stationary after the first difference
LnTOURFR	PP-t stati. Pb- value T_5- value	-1.848 0.352 -2.951	-3.066 0.1304 -3.548	-6.766 0.000 -2.954	-6.683 0.000 -3.533	Stationary after the first difference

Where, PP-t-Stati. = Phillips-Perron test statistic
Pb- value = Probability value
T_5- value = Critical value (at 5% level of Significance)
LnPPGDP = Gross Domestic Product at producers' price after taking a log
LnGRANTS = Foreign grants after taking a log
LnEXTDEBT = External debt of Nepal after taking a log
LnREMT = Remittance income after taking a log
LnTOURFR = Tourism income in the form of foreign reserve after taking the log.

The results of the Phillips-Perron unit root test for several variables, including their original and first differenced forms, are shown in Table 3. The PP test establishes the stationarity or non-stationarity of the variables. Every variable under consideration has a P-value greater than 0.05 at the level. As a result, the null with unit root, which indicates non-stationarity, can be rejected. The Phillips-Perron test has a P-value of less than 0.05. As a result, the null hypothesis that a unit root exists is rejected, showing stationary. More precisely, the data remains steady following the first difference, demonstrating the data's suitability for use in various regression analysis techniques.

Trace and Max-Eigen Test for Cointegration

Johnsen's Cointegration test includes the Trace and Max-Eigen tests. The trace and Max-Eigen tests are frequently employed to ascertain whether these variables have long-term associations. Table 4 shows the cointegration test results for both the trace and the Max-Eigen test.

Table 4

Fallouts of Trace and Max-Eigen test for Cointegration

Series: LNPPGDP LNREMT LNTOURFR LNGRANTS LNEXTDEBT

Imagined No. of CEq(S)	Eigenvalue	Trace Test of Cointegration			Max-Eigen Test of Cointegration		
		Trace statistic	Critical value	Prob.	Max-eigen statistic	Critical value	Prob
None	0.6973	88.935	69.818	0.001*	39.440	33.876	0.009*
At most 1	0.5186	49.495	47.856	0.034*	24.126	27.584	0.130
At most 2	0.3643	25.368	29.797	0.149	14.951	21.132	0.292
At most 3	0.2212	10.417	15.495	0.250	8.252	14.265	0.354
At most 4	0.0635	2.166	3.841	0.141	2.166	3.841	0.141

* Denotes refusal of the hypothesis at the 5 percent level of significance

Note: The trace test indicates two cointegrating equations, and the Max-eigenvalue test shows one cointegrating equation at a 5 percent level.

With a total of two cointegrating relationships according to the Trace test and an additional cointegrating relationship according to the Max-Eigen test, Table 4's test findings provide strong evidence of cointegration among the variables. The cointegrating relationships show that the economic variables have long-term relationships.

Analysis of Quantile Regression

The link between a set of predictor factors and a continuous outcome variable is examined using quantile regression. On the other hand, you can assess the association between different quantiles of the dependent variables and predictors using quantile regression. In contrast to conventional linear regression, quantile regression calculates conditional quantiles, such as the median or other percentiles, and the outcome variable's mean (or predicted) value. Table 5 presents the quantile regression results.

Table 5

Results of quantile regression (median) analysis.

Response Variable: LNPPGDP

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LNREMT	0.251	0.077	3.262	0.003
LNTOURFR	0.816	0.256	3.188	0.003
LNGRANTS	-0.276	0.233	-1.183	0.246
LNEXTDEBT	-0.182	0.318	-0.572	0.572
C	8.368	2.394	3.495	0.002
Pseudo R-squared	0.805	Mean dependent variation		13.445
Adjusted R-squared	0.779	S.D. dependent variation		1.135
St. Er. Regression	0.310	Quantile dependent variation		13.286
Quasi-LR statistic	142.425	Prob. (Quasi-LR stati.)		0.000

The quantile regression analysis for the median (50th percentile) of the dependent variable GDP is presented in Table 5. For each independent variable, it displays the coefficients and significance levels that explain the GDP median. Additionally, it provides model fit metrics and additional information unique to the quantile regression technique. Concerning remittance income, the quantile regression coefficient is 0.251, the standard error is 0.077, the t-statistic is 3.262, and the P-value is 0.003. It seems to be significantly boosting Nepal's economic expansion. The foreign exchange reserve derived from tourism revenue is a significant factor in Nepal's economic expansion. The dependent variable GDP growth cannot be adequately explained by either external debt or foreign grants alone. GDP is boosted by 0.251 percent in the median value if there is a one percent increase in remittance revenue. The influence of remittance money on economic growth in various countries is positive and statistically significant to Jawaid and Roza (2016), Ramirez (2013), Fayissa and Nsiab (2010), and Cames et al. (2018). Similarly, a 0.816 percent rise in GDP is obtained from a one percent increase in the median value of foreign currency acquired from tourism. Po and Huang (2008) and Henry and Deane (1997) have noted how tourism contributes to economic growth. More money from tourism than from remittances contributed to Nepal's economic growth.

An indicator of the model's goodness of fit is Pseudo R-squared. The Pseudo R-squared in this instance is 0.805, suggesting that the model can explain a sizable percentage of the variance in the dependent variable. The score indicates that independent variables influence 80.5 percent of the variation in dependent variables. An alternative to R-squared that accounts for the quantity of independent variables in the model is called adjusted R-squared. In this analysis, it is 0.779. This indicates that 77.9 percent of the variation in dependent variables is due to independent variables. Several studies, including those by Albulescu (2015), Dalgaard et al. (2004), Gomanee et al. (2005), and Li and Liu (2005), have found that foreign capital inflows, including foreign direct investment (FDI), loans, grants, and portfolio investments, have a beneficial effect on economic growth. The regression's standard error measures the average error of the model's predictions. At 0.310, the regression's standard error is negligible. That suggests that this model is now error-free. The probability linked to the quasi-likelihood ratio statistic, or Prob (Quasi-LR stat), can be used to evaluate the model's overall fit and constraints. It finds the quantile regression:

LNPPGDP = 8.368 + 0.251*LNREMT+ 0.816*LNTOURFR - 0.276*LNGRANTS - 0.182*LNEXTDEBT (6)

Quantile Process Estimates

Quantile process estimates are a statistical method used to estimate various quantiles (percentiles) of a probability distribution. It helps to understand and predict different points in a dataset's distribution, median, or other specific percentiles. The quantiles process estimates show the relationship between a set of predictor variables and specific quantiles of target variables. The outcomes of the quantile process estimate from 0.20 to 0.80 are presented in Table 6.

Table 6

Fallouts of Quantile Process Approximations

Specification: LNPPGDP LNREMT LNTOURFR LNGRANTS LNEXTDEBT C

Estimated equation quantile tau = 0.5

Variables	Quantile	Coefficient	Std. Error	t-Statistic	Prob.
LNREMT	0.200	0.126	0.265	0.475	0.638
	0.400	0.252	0.078	3.236	0.003
	0.500	0.251	0.077	3.261	0.003
	0.600	0.273	0.087	3.146	0.004
	0.800	0.032	0.127	0.249	0.805
LNTOURFR	0.200	0.374	0.554	0.675	0.504
	0.400	0.886	0.263	3.373	0.002
	0.500	0.816	0.256	3.188	0.003
	0.600	0.478	0.271	1.762	0.088
	0.800	0.987	0.275	3.587	0.001
LNGRANTS	0.200	0.306	0.932	0.328	0.745
	0.400	-0.285	0.240	-1.187	0.245
	0.500	-0.276	0.233	-1.183	0.246
	0.600	-0.354	0.222	-1.589	0.122
	0.800	-0.109	0.275	-0.398	0.693
LNEXTDEBT	0.200	0.132	1.811	0.073	0.942
	0.400	-0.258	0.325	-0.796	0.432
	0.500	-0.182	0.318	-0.571	0.572
	0.600	0.264	0.285	0.922	0.363
	0.800	0.085	0.248	0.341	0.735
C	0.200	4.161	18.295	0.227	0.821
	0.400	8.704	2.379	3.658	0.001
	0.500	8.368	2.394	3.495	0.002
	0.600	6.811	2.466	2.761	0.009
	0.800	3.889	1.512	2.572	0.015

Table 6 shows the results appear to be from a quantile regression analysis. It explains how different quantiles, like the 20^{th}, 40^{th}, 50^{th}, $60^{th,}$ and 80^{th} quantiles of dependent variables (GDP), are influenced by various independent variables. At the 40^{th}, 50^{th}, and 60^{th} quantile of GDP, a one percent increase in remittance income is associated with a 0.252, 0.251, and 0.273 unit increase in GDP, respectively. At the 40^{th}, 50^{th}, and 80^{th} quantiles of GDP, a one percent increase in foreign exchange from tourism income is associated with 0.886, 0.816, and 0.987 unit increases in GDP, respectively. In different quantiles, adverse impact is observed of foreign grants and external debt on different quantiles of GDP. For example, at the 40^{th} and 50^{th} quantiles, a unit

increase in foreign grants and debt is associated with a -0.285, -0.276 -0.258, and -0.182 unit decrease in GDP, respectively.

In conclusion, this approach sheds light on the relative contributions of each independent variable to GDP at various distribution quantiles. More sophisticated than typical linear regression, it helps determine how the correlations between these variables evolve throughout different GDP levels.

Test of Quantile Regression Coefficients

The test of quantile regression coefficients is a statistical technique for assessing the importance of the coefficients estimated in a quantile regression model. The trial of quantile regression coefficients demonstrates that the connection between the dependent variable and the predictor factors differs throughout the quantiles of the outcome variable in the distribution. The symmetric quantile test and the quantile slope equality test are used to find the quantile regression coefficient.

Quantile Slope Equality Test Analysis

To ascertain whether the slopes (coefficients) of the relationships between explanatory variables and a response variable in a quantile regression model are statistically equal across various quantiles of the dependent variable's distribution, statisticians employ the Quantile Slope Equality Test. It looks at whether there are significant variations in the predictor factors' impact on the outcome variable across the distribution or if they are consistent. The quantile Slope Equality Test suggests that some predictor variables have distinct effects on the response variable at different points in the distribution if it shows that the slopes are unequal across quantiles. The quantile slope equality test results are shown in Table 7.

Table 7

Upshots of quantile slope equality test

Specification: LNPPGDP LNREMT LNTOURFR LNGRANTS LNEXTDEBT C

Estimated equation quantile tau = 0.5, no. of test quantiles =5

Null Hypothesis (H_0): The slope coefficients are equal across quantiles.

Alternative Hypothesis (H_1): The slope coefficients are unequal across quantiles.

Test Summary		Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Wald Test		17.526	16	0.352
Restriction Detail: $b(tau_h) - b(tau_k) = 0$				
Quantiles	Variable	Restr. Value	Std. Error	Prob.
0.2, 0.4	LNREMT	-0.126	0.239	0.599
	LNTOURFR	-0.511	0.496	0.303
	LNGRANTS	0.592	0.822	0.471
	LNEXTDEBT	0.391	1.692	0.817
0.4, 0.5	LNREMT	0.0005	0.046	0.990
	LNTOURFR	0.069	0.157	0.657
	LNGRANTS	-0.010	0.144	0.943
	LNEXTDEBT	-0.077	0.195	0.693
0.5, 0.6	LNREMT	-0.021	0.052	0.681
	LNTOURFR	0.337	0.172	0.051
	LNGRANTS	0.078	0.139	0.576
	LNEXTDEBT	-0.445	0.188	0.018
0.6, 0.8	LNREMT	0.241	0.111	0.030

LNTOURFR	-0.508	0.257	0.048
LNGRANTS	-0.244	0.228	0.285
LNEXTDEBT	0.178	0.251	0.477

The quantile slope equality test assesses whether the slope coefficients of different quantiles are equal or not. The test summary represents the value of the Wald statistic, which is 17.526 with 16 degrees of freedom after a p-value of 0.352. The p-value of 0.352 suggests no significant evidence to reject the null hypothesis that the slope coefficients are equal across quantiles. In other words, the slope coefficients likely do not significantly differ between the quantiles. The quantile-specific results evaluate specific quantile ranges (e.g., 0.2-0.4, 0.4-0.5, 0.5-0.6, 0.6-0.8) for each variable (LNREMT, LNTOURFR, LNGRANTS, LNEXTDEBT). The p-values are relatively high (greater than 0.05) for most quantile ranges and variables. This suggests that in these quantile ranges, the slope coefficients for these variables are not significantly different from each other.

Based on the quantile slope equality test, no substantial evidence supports the alternative hypothesis that the slope coefficients differ across quantiles. Therefore, it is reasonable to conclude that the slope coefficients are relatively consistent across quantiles for the specified variables.

Symmetric Quantile Test

A statistical technique called the Symmetric Quantile technique determines whether two data sets have the same underlying distribution. Being nonparametric, the test makes no assumptions regarding the distributional shapes of the data it compares. Instead, it compares the two dataset's quantiles to see if there are any statistical differences. The outcomes of the symmetric quantile test under various quantiles of the independent and dependent variables are displayed in Table 8.

Table 8

Upshots of Symmetric Quantiles Test

Specification: LNPPGDP LNREMT LNTOURFR LNGRANTS LNEXTDEBT C

Estimated equation quantile tau = 0.5

Number of test quantiles: 5

Test Summary		Chi-Sq. Statistic	Chi-Sq. df.	Prob.
Wald Test		5.678	10	0.845
Restriction Detail: b(tau) + b(1-tau) - 2*b (0.5) = 0				
Quantiles	Variable	Restr. Value	Std. Error	Prob.
0.2, 0.8	LNREMT	-0.344	0.260	0.187
	LNTOURFR	-0.270	0.614	0.659
	LNGRANTS	0.748	0.864	0.386
	LNEXTDEBT	0.581	1.704	0.733
	C	-8.684	16.915	0.607
0.4, 0.6	LNREMT	0.022	0.072	0.756
	LNTOURFR	-0.267	0.238	0.263
	LNGRANTS	-0.088	0.209	0.674
	LNEXTDEBT	0.368	0.287	0.199
	C	-1.220	2.178	0.575

The outcome of a Symmetric Quantiles Test is displayed in Table 8, specifically for the calculated equation with a quantile tau of 0.5, or the median. In this regression model, the Symmetric Quantile Test is run for multiple quantiles (0.2, 0.4, 0.5, 0.6, and 0.8) for various

variables (LNREMT, LNTOURFR, LNGRANTS, LNEXTDEBT, and C). The Wald test evaluates the model's overall significance for the given quantile. With 10 degrees of freedom, the Chi-Square statistic is 5.678, and the p-value is 0.841. The model may not be statistically significant for the median (quantile tau = 0.5) since the p-value is significant (higher than 0.05). The coefficient estimate for the remittance (LNREMT) variable is negative (-0.344 and -0.022, respectively) at quantiles 0.2 and 0.8; however, neither of these estimates is statistically significant (p-values > 0.05). It implies that remittance does not impact the dependent variable at these quantiles.

In conclusion, the coefficient estimates for the individual variables at different quantiles do not demonstrate high statistical significance, and the Wald test shows that the model is not statistically significant at the median (quantile tau = 0.5). This implies that the response variable's connection to the other variables may differ over different quantiles of the data distribution.

Conclusion, Policy Implication, and Limitations

This study has searched the effect of overseas capital streams like external grants, debt, remittance, and tourism income received from foreigners on the economic growth of Nepal. There is a high degree of positive connection between foreign grants and GDP (0.8096), foreign debt and GDP (0.9498), and tourism income and GDP (0.9823). Still, a relatively lower degree of correlation is found between remittance income and economic growth in Nepal. There is run co-integration between foreign remittance, debt, grants, tourism income, and GDP growth in Nepal. It is found that an 80.5 percent variation in GDP growth is dependent on foreign grants, debt, remittance, and tourism income in Nepal. Foreign grants and debt are not individually significant to explain Nepal's dependent variable, GDP growth, but foreign remittance and tourism income are statistically significant to justify GDP. A one percent increase in the median value of remittance and tourism income results in a 0.251 percent and 0.816 percent increase in GDP, respectively. The contribution of tourism income is more than the remittance income for the economic growth of Nepal. The quantile regression shows that the slope equality coefficients for the variables are not significantly different, and the response variables' connections to the other variables may differ over different quantiles of the data distribution.

The foreign grants and debt have no positive or significant impact on Nepal's economic growth. Therefore, it is necessary to analyze the effects of foreign debt on loan acceptance. It is only a burden for the economy. Foreign remittance and tourism income positively impact Nepal's economic development, but the contribution of tourism income is more substantial than remittance income. Therefore, policymakers can make suitable policies to help the tourism industry flourish.

This study is based on secondary data composed from various economic surveys of Nepal and yearly reports from the World Bank. It only covers the 35 data points of Nepal from F/Y 1987/88 to 2021/22. It only covers four variables, foreign grants, debt, remittance, and tourism income, as the determining factor of Nepal's economic growth. Key statistics, Karl Pearson's correlation coefficients, and quantile regression analysis are used to explore the relation and impact of explanatory variables on response variables. Therefore, further study is necessary by using more countries, data points variables, and data analyzing tools to derive comprehensive conclusions in the related field.

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