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The COVID-19 Pandemic Impact on the Remittances and Major Economic Factors of Nepal: A Retrospective Assessment

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Abstract

The COVID-19 epidemic has had a significant impact on Nepal, primarily due to the closure of businesses in key migrant labor destinations such as the Gulf countries, Malaysia, and South Korea. Remittances account for 26% of Nepal's GDP, but they have dropped significantly since COVID-19. This study examines the impact of a negative shock to remittances on macroeconomic variables and makes policy recommendations. The analysis finds that a drop in remittances correlates with slower growth in consumption (2.5%) and foreign exchange reserves (17.7%) over a 20-year period, using both quantitative and qualitative data. The result shows that the Nepalese migrant crisis, exacerbated by the economic downturn in destination countries, has led to a substantial decline in remittance inflows, causing a 15.33% monthly decrease. This poses a threat to Nepal's economy, affecting consumption, GDP growth, and key macroeconomic variables. The results thus emphasize the importance of immediate relief and bolstering economic recovery initiatives by investigating potential outcomes of the pandemic's impact on key economic indicators.

Keywords: COVID-19 Pandemic, Inflow of Remittances, Macro-Economic Variables, Nepalese Economy
JEL Code: J21, J61, F22, F24

1. INTRODUCTION

Remittances are more important than official development aid in developing countries, particularly in low- and middle-income countries (LMICs), and provide a more consistent source of funds than private transfers (Yoshino et al., 2020; Morrissey & Osei, 2004). With the exception of China, remittances have replaced foreign direct

investment as the primary source of foreign exchange earnings for LMICs (World Bank, 2019). Remittances to LMICs accounted for 77.6% of total flows in 2019, with South Asia contributing USD 140 billion to the global remittance flow trajectory of USD 714 billion (World Bank, 2020a). Remittances to Nepal have been steadily increasing year after year, with a notable achievement of USD 8.79 billion in the fiscal year 2018-19. Over this period, the remittance-to-gross domestic product (GDP) ratio has consistently been greater than 25%. According to Dash (2020), this places Nepal at the forefront of the global economy and makes it the top recipient of remittances in South Asia.

Remittances have a significant impact on the macro- and microeconomic levels in Nepal. According to a micro-level study, more than 56% of Nepalese families receive remittances, highlighting the critical role that remittances play as a major source of income on a national scale (CBS, 2011). The percentage of households receiving remittances has steadily increased across all consumption percentiles (Central Bureau of Statistics, 2011). Remittances are received by two out of every three families in the Terai region, making this economic lifeline critical (CBS, 2011).Remittances are becoming increasingly important for people of all income levels, according to data from 1995-1996 and 2010-2011 (Central Bureau of Statistics, 2011).

Despite a decade of civil unrest, Nepal saw a significant drop in poverty rates, from 42% in 1995/96 to 25% in 2010/11, owing primarily to remittances (Sapkota, 2013). However, a drop in remittances threatens household income and may push many people back into poverty (Ratha, 2003). This setback could have a negative impact on health, education, and food security (Moniruzzaman, 2022). Remittance consumption accounts for nearly 80% of remittances, influencing household spending patterns and a wide range of economic activities (Central Bureau of Statistics, 2011; Lubambu, 2014). The effects of the COVID-19 pandemic on the Nepalese economy are still difficult to assess because they vary across industries, provinces, and geographical areas. According to the National Planning Commission (2020), many factors, including early migrant returns, a freeze on new labor approvals, people unable to travel, a decrease in global demand, and an increase in risk and uncertainty, will lead to a decrease in remittances. Because of its reliance on remittances, Nepal's economy is extremely vulnerable to shocks from outside sources, emphasizing the importance of having effective response plans (Kapur, 2003; Karki Nepal, 2016). The severity of the virus and its national spread will also have an impact on the economy (National Planning Commission, 2020; Molloy, 2021).

The global economic downturn caused by the COVID-19 pandemic is expected to cause a 20% decline in worldwide remittances in 2020, a record decrease in recent

remittance growth rates (National Planning Commission, 2020). Despite the significant decline, remittances are expected to become an even more important source of external capital for LMICs, as FDI is expected to fall by 35% (World Bank, 2020a). According to projections, remittance inflows to South Asian countries will fall by 22%. This decline is expected to be caused by disruptions and economic slowdowns in high-income countries such as the United States and the European Union, as well as the impact of falling oil prices on remittance outflows from Malaysia and the GCC (Group of Gulf Cooperation Council) countries (World Bank, 2020b).

The global COVID-19 outbreak has caused widespread economic problems; however, it is unclear to what extent. Lockdowns and other pandemic-related disruptions have left Nepal grappling with the twin challenges of economic hardship and mass repatriation of its migrant labor force (National Planning Commission, 2020). The decline in remittance inflows, which account for more than 25% of Nepal's annual GDP, is a direct result of the high rate of unemployment experienced by hundreds of thousands of Nepali migrant workers abroad. This has a significant impact on the economy and the lives of millions of people in the country (Rasul et al., 2021; Joshi et al., 2021). This study aims to investigate the financial consequences of decreased remittance inflows, which are a critical source of income for many households. Furthermore, it attempts to make policy recommendations in order to mitigate the negative effects on Nepal's overall macroeconomic environment.

The remaining part of the paper is organized in three sections. In the next section, methods is discussed which is followed by results, and finally conclusion and way forward.

2. RESEARCH METHODS

2.1 Data Sources

This study employs a comprehensive methodological framework to examine the effects of the COVID-19 pandemic on remittance inflows and the Nepalese economy by integrating qualitative and quantitative datasets obtained from primary and secondary sources. The study relies heavily on secondary data gathered from reliable sources such as the Central Bureau of Statistics, National Planning Commission, Ministry of Finance, Nepal Rastra Bank, and a variety of government agencies. The primary goal is to carefully examine and quantify the potential effects of the pandemic on the current economy and future prosperity. This has been accomplished through the use of a variety of analytical techniques, including a literature review, descriptive statistical analysis, and inferential analysis using simple and multivariate regression methods.

To gain a thorough understanding of current remittance concerns, we methodically gathered primary sources of information from a diverse group of stakeholders, including academics, subject matter experts, representatives from the private sector, government officials, and civil society members intimately involved in the inflow of remittances and the complexities of foreign employment. We also diligently gathered secondary data from a variety of sources, including administrative records obtained from the Foreign Employment Information Management System (FEIMS), a labor approval archive, and the Department of Foreign Employment (DoFE). The dataset was improved by including records from the Department of Immigration, which provided information on Nepalese arrivals and departures at Tribhuvan International Airport. In addition, we supplemented the dataset with Nepal Rastra Bank macroeconomic indicators. In addition, to ensure a comprehensive and global perspective on the analytical procedure, an exhaustive review of reports and studies from prestigious international organizations such as the Organization for Economic Cooperation and Development (OECD), the International Monetary Fund (IMF), and the World Bank (WB) was conducted.

2.2 Data Analysis Techniques

To assess the potential effects of the COVID-19-induced shock on Nepal's remittance inflows, the current study employs a comprehensive analytical framework that includes a review of relevant literature, descriptive statistical analysis, and regression approaches. We use Ordinary Least Squares (OLS) regressions on time series data from fiscal years 2058/59 to 2075/76 (i.e., 2001/2002 to 2018/2019) to closely examine remittance inflows and a variety of macroeconomic variables. The regression model includes a temporal trend and other control variables gleaned from extensive literature research.

Unit root tests show that remittance inflows are not integrated in the same order as other variables, eliminating the need for further co-integration analysis. According to the analysis, remittance inflows fell 15.33% from NPR 71,812 million to NPR 60,800 million during the three-month average before and during the epidemic. The analysis provides four different scenarios in an attempt to investigate possible outcomes: a baseline with a 15.33% drop, a low variation with a 20% drop, a medium variant with a 25% drop, and a high variant with a 30% loss. The report acknowledges that estimating the magnitude of the decline is always difficult, but it does state that the COVID-19-caused economic slowdown will unavoidably affect migrant workers' ability to earn a living as well as demand for their labor.

The report emphasizes the serious consequences of COVID-19-related remittance losses and proposes various strategies for the economy's recovery following the

epidemic. These scenarios provide a thorough understanding of the potential economic consequences and guide decision-makers in developing practical plans to mitigate the negative effects of the epidemic on Nepal's economy (insert citations).

3. RESULTS

3.1 Status of Remittances in Nepal

Nepalese laborers entered the international labor market in the late 1990s, overcoming obstacles and drawn by better pay, which encouraged young people in particular to seek labor migration (Graner, 2001). Remittances from this movement have become an important source of income for Nepal, amounting to $879 billion in 2018-19 and accounting for more than 25% of the country's GDP since 1993-94. Nepal frequently ranks among the top five nations in the world in terms of remittances relative to GDP (gross domestic product). Households receive remittances from about 23% of all sources, with domestic remittances accounting for 44% of total remittance value (Graner, 2001). Remittance inflows to South Asia increased significantly, nearly doubling from 5.7% in 2017 to 12.3% in 2018. This spike was driven by strong economic conditions in high-income countries, most notably the United States, as well as rising oil prices, which encouraged outflows from several GCC countries. However, according to World Bank data from 2019, the growth rate has fallen to 6.1%.

Table 1: Remittance inflow in Nepal (in NRs. Million)

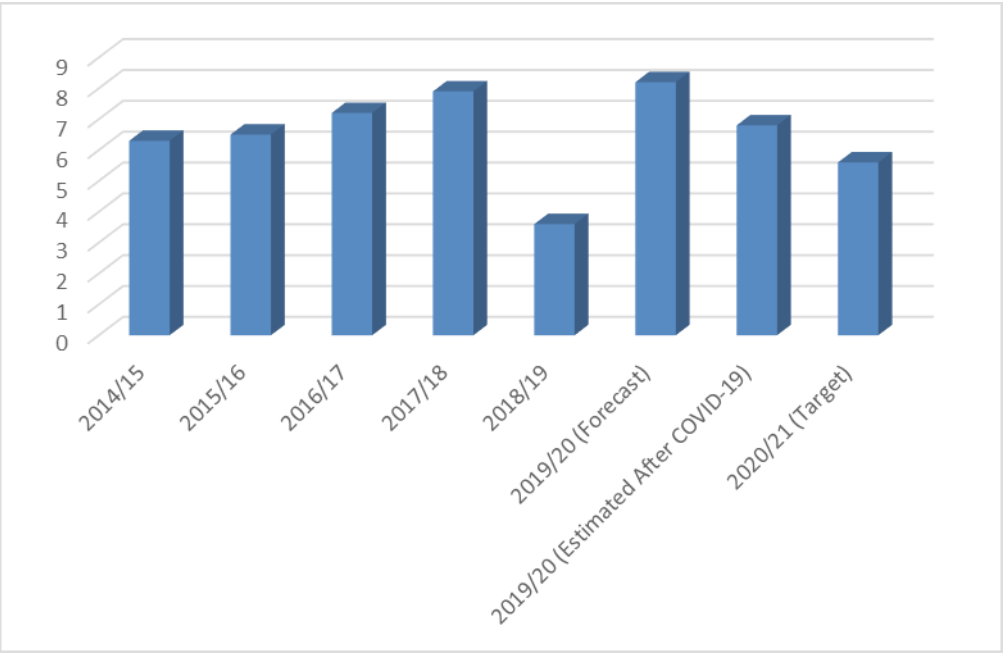
Month	**2014/15**	**2015/16**	**2016/17**	**2017/18**	**2018/19**	**2019/20**
Mid-Jul to mid-Aug	42193.5	53272.4	51940.2	55552.8	73954.2	75401.5
Mid-Aug to mid-Sep	42285.5	54396.0	62799.6	59998.9	80247.7	78331.2
Mid-Sep to mid-Oct	49722.0	58752.7	57057.1	60772.0	87969.8	76510.5
Mid-Oct to mid-Nov	46151.4	48966.8	60340.9	52626.0	70087.2	74722.3
Mid-Nov to mid-Dec	46862.4	55983.3	55526.4	56531.0	64332.1	72019.7
Mid-Dec to mid-Jan	48755.7	52321.3	54569.3	55062.8	66773.3	70273.3
Mid-Jan to mid-Feb	44975.2	51463.3	52333.6	60805.6	72190.5	65954.3
Mid-Feb to mid-Mar	50060.9	52217.2	55424.5	70506.4	66636.6	79208.7
Mid-Mar to mid-Apr	55194.4	54312.7	61939.9	68521.5	70996.6	34500.0
Mid-Apr to mid-May	62879.0	57187.7	55040.3	66303.1	72108.9	53900.0
Mid-May to mid-Jun	62673.3	60076.8	66447.9	73050.0	73719.6	94000.0
Mid-Jun to mid-Jul	65536.6	66114.0	62032.7	73327.6	80254.8	100209.0
Annual Total	**617287.8**	**665064.2**	**695452.4**	**755058.6**	**879271.3**	**875030.0**

The remittance inflow status in Nepal is divided into three stages: pre-COVID-19, COVID-19 onset, and post-pandemic prediction. Prior to the pandemic, remittances were NPR 47.22 billion in FY 2000/01 and NPR 879.27 billion in FY 2018/19. These

remittances were critical in alleviating poverty, advancing human development, increasing government revenue, and increasing imports (MoLESS, 2020; Azam et al., 2016). Despite a decline in labor migration outflows since 2014-15, remittances have been increasing. This growth has been fueled by factors such as increased migration, formal channel utilization, currency depreciation, and better earning prospects (Sapkota, 2013).

During the start of the COVID-19 epidemic, Nepal experienced a sharp 55% decrease in remittance inflows, totaling Rs. 34.5 billion, between mid-March and mid-April 2020. The implementation of lockdowns and strict travel restrictions are the primary causes of this decline. Remittances recovered significantly after that, with data reaching Rs. 100.2 billion by mid-July 2020. The National Planning Commission (2020) attributes this rebound to factors such as digital transfers, reduced unofficial transfers (Hundi), and currency depreciation.

Figure 1: Yearly Remittance Inflow and Forecast for FY 2019/20 and 2020/21



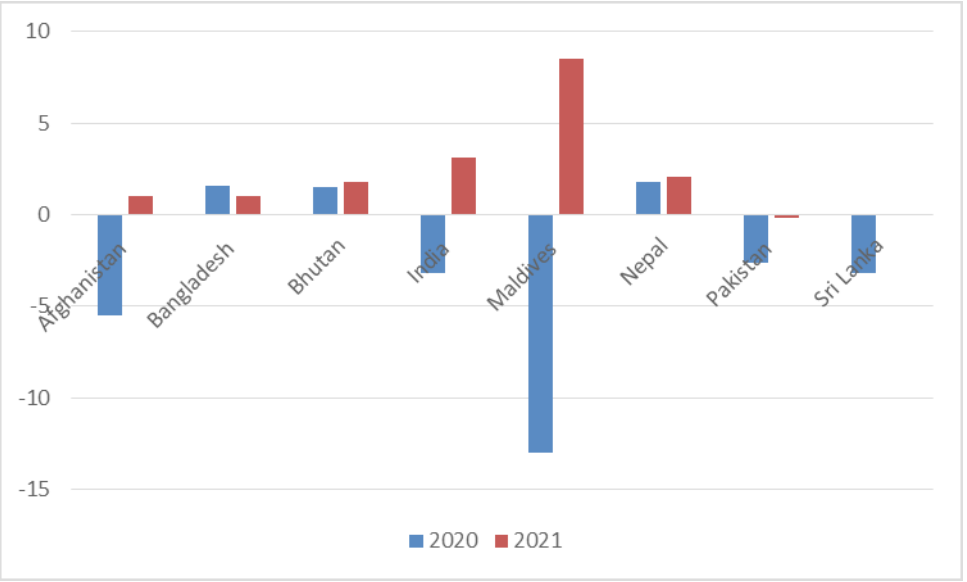
This study aims to forecast future remittance inflows based on conservative estimates and the Government of Nepal's (GoN) expectations for FY 2019-20. The GoN attributed the lower projection to the effects of COVID-19 and forecasted remittance inflows of NPR 800-820 billion. Early pandemic-related difficulties resulted in a 0.5% decrease

in remittances for FY 2019-20, but there has been an extraordinary spike in remittance inflows since mid-June, with a notable increase in mid-July. Some of the factors that have contributed to this spike include the reduction of lockdowns, the disruption of unofficial financial flow supply chains, migrants' preference for official routes, and the counter-cyclical nature of remittances (in which migrants frequently boost remittances during times of crisis). Another factor was the fall in the value of Nepal's currency in relation to the US dollar. The report does admit, however, that the 0.5% decrease is a significant departure from the previous five-year average growth rate of 10.6%. According to the report, remittance inflows will continue to fall in FY 2020-2021 due to job losses and the global economic downturn; the GoN has set a target of NPR 700.2 billion.

3.2 Remittance Inflow and Economic Impact in Nepal

According to World Bank and International Monetary Fund (IMF) (2020) projections, the COVID-19 pandemic will shrink the global economy by 4.9%. According to projections, advanced economies will experience an 8% contraction, while emerging markets and developing economies will experience a 3% contraction. Because Nepal is a labor-exporting country with close ties to many important destination countries, the pandemic's financial and economic effects will have a significant impact on remittance inflows. Lockouts, business closures, and falling oil prices are expected to cause severe economic contractions in Gulf Cooperation Council (GCC) countries in 2020 and 2021. Government budget cuts are expected to reduce the demand for migrant labor. Malaysia is expected to face export challenges as a result of a 3.1% GDP contraction. However, its strong banking system and diverse economic structure position it for a relatively quick recovery, which may reduce the need for migrant labor. Despite effective virus management, South Korea's economy is expected to contract by 2.1%. However, industries such as exports, transportation, tourism, and entertainment may continue to influence Nepalese migrant labor demand. Estimates for India's GDP contraction range from 3.2% to 4.5%. Retail, travel, and hospitality industries, which employ a large number of Nepalese migrant workers, are expected to suffer. Given India's proximity to Nepal, efforts to contain the virus pose an additional risk of cross-border transmission.

Figure 2: The Expected Growth Rate During COVID-19 Pandemic



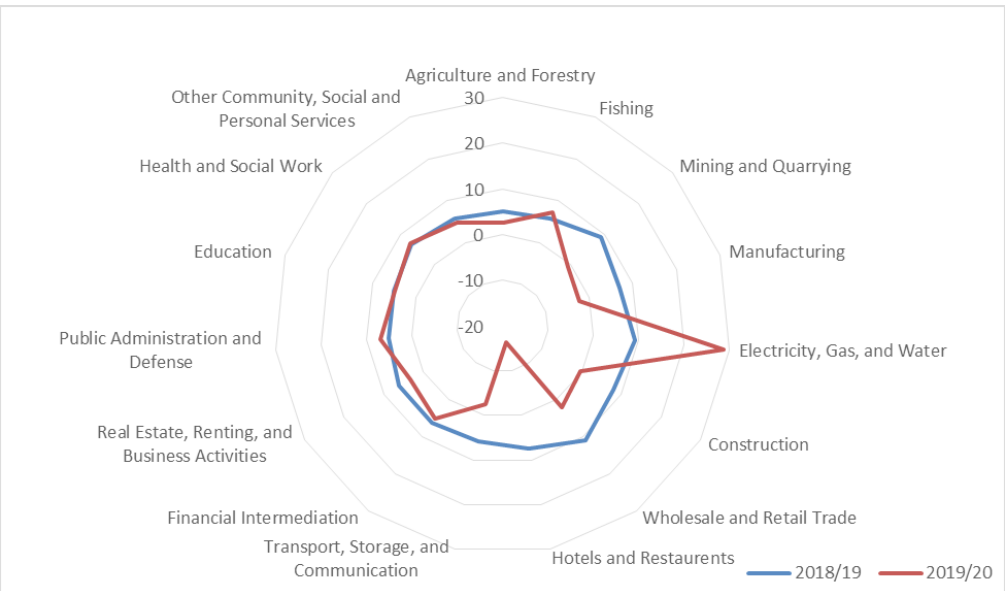
Economic downturns in the main countries where Nepali migrants settle have clearly impacted the country's remittance flow. Despite the difficult circumstances, Nepal, Bhutan, and Bangladesh are expected to experience rapid development during the epidemic. The Maldives, whose economy is heavily reliant on tourism, is expected to experience the greatest reduction in 2020, with a 13% decrease. Severe contractions are occurring in Pakistan, Sri Lanka, and Afghanistan. The destination countries' declining demand for migrant labor exacerbates Nepal's economic problems.

According to the International Monetary Fund (IMF), the COVID-19 pandemic will cause a 5% drop in the global economy in 2020. Due to Nepal's remittance-dependent economy, external shocks have had a significant impact on key destination countries for Nepali migrants, including the Gulf Cooperation Council (GCC) countries, Malaysia, India, and South Korea. These countries are dealing with rising unemployment, shrinking GDPs, and trade imbalances. Despite efforts to mitigate pandemic-related effects, Nepal is expected to see a significant decrease in demand for migrant labor from these important destinations. As a result, remittance inflows will fall, necessitating proactive economic planning and stimulus policies to reduce financial costs. It can cost millions of lives living both side of the border (Paudel et al., 2018).

3.3 The GDP Growth Rate Scenario in Nepal

The pandemic has had a significant impact on all sectors of Nepal's economy; the agricultural sector has grown by 2.6 percentage points less than the previous year, the industrial sector has shrunk by 4.5 percentage points, and the service sector has shrunk by 5.3 percentage points. In 2020, the Asian Development Bank (ADB) estimated that the industry would suffer economic losses ranging from NPR 1.7 billion to NPR 4.2 billion, while the service sector would suffer losses ranging from NPR 5.7 billion to NPR 9.98 billion. All industries are expected to suffer negative consequences, but mining and quarrying, manufacturing, construction, hospitality, and transportation are expected to be hit the hardest. The tourist industry, particularly hotels and restaurants, is expected to contract by 16.30%, while the transportation and communication, industrial, mining, and quarrying sectors are expected to grow at a negative rate. The situation may worsen if the lockdown is extended, and the economic standstill will last longer.

Figure 3: Sectorial GDP Growth Rate in FY 2018/19 and FY 2019/20



Experts predict that the pandemic will have less of an impact on Nepal's agriculture sector, which accounts for 27% of GDP, due to its seasonal nature and the completion of the majority of the 2019-20 fiscal year's operations prior to the outbreak. On the other hand, the construction industry, which is mostly active between April and June, is expected to experience a more significant decline than the previous year. It is expected

that the wholesale and retail trade sectors will experience a significant downturn in 2020, owing primarily to restricted consumption patterns focused on critical goods.

A member of approximately half of all families is either working abroad or has recently returned from working abroad, emphasizing the critical role that remittances play in Nepal's economy. Most Nepali families rely on remittances to meet their basic needs, with 78.9% of funds going toward daily family expenses and 66.5% going toward rent and food. Meeting basic needs through remittances fosters close relationships with a variety of economic sectors. A disruption in remittances is expected to have a domino effect on other industries, increasing its impact on the economy as a whole.

Table 2: Remittance Expenditure of Households in Nepal

Remittance Expenditures of HH in 2015/16		Remittance Expenditures of HH in 2011	
Factors	Average HH Expenditure (in %)	Factors	Average HH Expenditure (in %)
Food	53.8	Daily HH need	78.9
Rent Payment	12.9	Loan Payment	7.1
Education Expenses	4	Education Expenses	3.5
Alcohol & Tobacco	3.9	Local Business	0.5
Durable Assets	5.5	Durable Assets	4.5
Utility Bill Payments	2.2	Saving	0.6
Non-food Items	17.8	Others	2.5
		Capital Formation	2.4
Total	100		100

3.4 Sectoral GDP Growth Rate Scenario in Nepal

Impact on Real, Fiscal, Monetary and Finance Sector

Given the ongoing pandemic, it is critical to assess the expected effects of reduced remittance inflows on the country's macroeconomic landscape. This section examines the potential effects of the pandemic on key macroeconomic aggregates, focusing on the real sector, which includes production, the fiscal sector, and the monetary and financial sectors.

Table 3: GDP, GNI, Remittance and Other Indicators of Nepal (2000/01 - 2019/20)

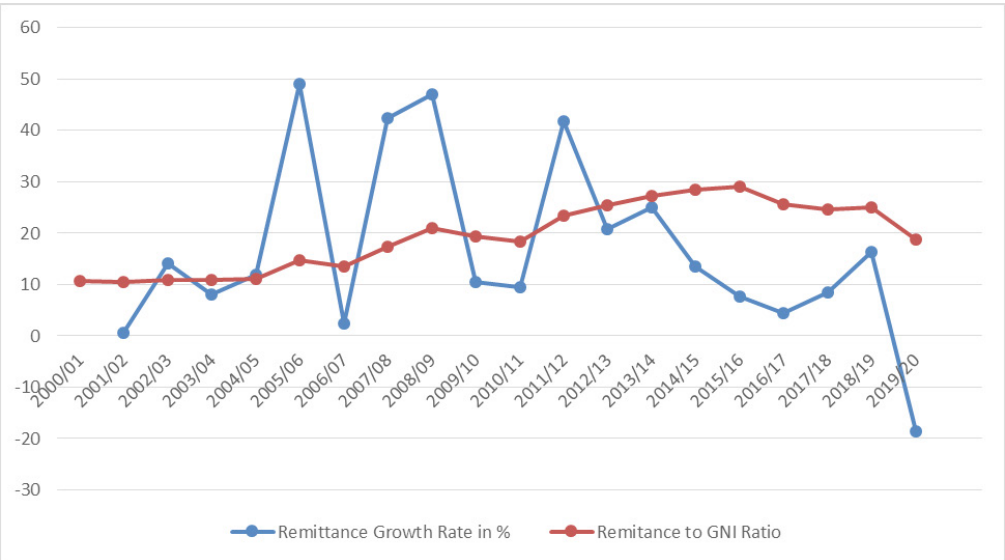
Year	GNI at Current Price	GDP at Current Price	Foreign Reserve	Remittance	Final Consumption Expenditure	Gross National Saving
2000/01	443	549	94	47.2	390	118.8
2001/02	459	600	106	47.5	415.8	111.2
2002/03	492	605	108	54.2	450.1	117
2003/04	535	633	130	58.6	473.7	146.3
2004/05	591	727	299	65.5	521.3	167.5
2005/06	659	813	165	97.7	595.3	189.9
2006/07	735	904	165	100.1	656.4	207.9
2007/08	824	1032	213	142.7	735.5	271
2008/09	1000	1254	287	209.7	895	354.5
2009/10	1202	1285	269	231.7	1056.2	428.4
2010/11	1375	1600	272	253.6	1176	506.3
2011/12	1540	2157	440	359.6	1359.5	602.9
2012/13	1708	2170	533	434.6	1516.1	689.7
2013/14	1997	2216	665	543.3	1730.3	898.5
2014/15	2164	2273	824	617.3	1934	940.3
2015/16	2287	2436	1039	665.1	2161.5	903.8
2016/17	2705	2452	1079	695.5	2315.3	1242
2017/18	3068	2897	1103	755.1	2802.6	1393.7
2018/19	3499	3311	1053	879.3	2802.6	1691
2019/20	3810	3418		716.1	3085.1	1733.9

Table 4: Augmented Dickey-Fuller Unit Root Test Results

	No lag			Lag 1			Lag 2			Lag 3			Growth Rate Variable		
	N	Zt	P-value	N	Zt	P-value	N	Zt	P-value	N	Zt	P-value	N	Zt	P-value
Per Capita GNI	17	0.512	0.98	16	0.151	0.96	15	0.268	0.97	14	0.076	0.96	16	-3.732	0.00
Consumption	17	6.893	1.00	16	2.184	0.99	15	1.551	0.99	14	0.809	0.99	16	-2.567	0.09
Remittance	17	2.895	1.00	16	1.529	0.99	15	1.463	.099	14	1.643	0.99	16	-4.060	0.00
Export	17	-0.552	0.88	16	-1.028	0.74	15	-0.552	0.88	14	-0.450	0.90	16	-3.754	0.00
Import	17	4.151	1.00	16	2.297	0.99	15	4.683	1.00	14	3.703	1.00	16	-3.610	0.00
Total Govt. Revenue	17	13.307	1.00	16	3.211	1.00	15	4.251	1.00	14	2.634	0.99	16	-3.089	0.02
Broad Money Supply	17	15.935	1.00	16	3.661	1.00	15	1.995	0.99	14	0.793	0.99	16	-3.129	0.02
FOREX Reserve	10	-0.536	0.88	9	-1.603	0.48	8	-2.334	0.16	7	-1.391	0.58	9	-2.376	0.14
Deposit	12	3.902	1.00	11	2.417	0.99	10	2.090	0.99	9	1.726	0.99	11	-2.514	0.11
Inflation	17	-2.370	0.15	16	-1.873	0.34	15	-1.577	0.49	14	-1.278	0.63	16	-5.006	0.00
GVA	17	5.704	1.00	16	2.882	1.00	15	2.905	1.00	14	1.584	0.99	16	-3.027	0.03
GNI	17	6.509	1.00	16	3.344	1.00	15	2.772	1.00	14	1.805	0.99	16	-3.097	0.02
Real GDP	17	3.399	1.00	16	2.480	0.99	15	2.452	0.99	14	3.312	1.00	16	-3.442	0.00

Note: The presence of a unit root in the variable is hypothesized by the null hypothesis (H0). There are just two cases in which this null hypothesis is rejected, and these have been clearly indicated. In contrast, the growth rates of the Balance of Payments (BOP), Consumer Price Index (CPI), Foreign Exchange Reserve, Deposit, and Agricultural Growth Rate do not refute the null hypothesis. Additionally, the null hypothesis is expressly highlighted in these particular circumstances.

Figure 4: Remittance Growth Rate, and Remittance to GNI Ratio



a) Impact on Real Sector

Previous research has called into question the impact of remittances on economic growth. Remittances can promote economic growth and reduce poverty by increasing investment, savings, and consumption (Ratha, 2013; Giuliano and Ruiz-Arranz, 2009; Catrinescu et al., 2009). Fayissa and Nsiah (2010) discover a link between remittances and GDP per capita growth in African countries. However, remittances may cause the Dutch disease, which may impede long-term growth by driving up wages for unskilled workers and foreign currency rates (Hassan and Holmes, 2013; Lartey et al., 2012). The influence also extends to labor supply decisions, as seen in Nepal, where outmigration modifies labor market dynamics, particularly for women, and influences pay rates (Phadera, 2019).

Scholars have different perspectives on Nepal's situation. While Sapkota (2013) highlights the consequences of the Dutch disease, Uprety (2017) claims that remittances may stifle economic growth due to increased imports and constrained investment

channels. Dahal (2014) discovers a link between remittances and entrepreneurship. Despite contradictory results, Nepal's GDP, GNP, and remittance inflows have all increased steadily. The potential impact of a negative remittance shock on GDP, GNP, GNP per capita, and GVA growth rates was investigated using regression models.

Table 5: Impact of Remittance Growth on Macroeconomic Indicator Growth Rate

	Real GDP	Real GDP	GNI	GNI	GNI Per Capita	GNI Per Capita	GVA	GVA
	1	2	3	4	5	6	7	8
Remittance Inflow	0.019 (-0.55)	0.037 (-1.36)	0.050 (-0.60)	0.030 (-0.40)	-0.193 (-1.27)	-0.239* (-1.86)	-0.040 (-0.50)	0.100 (-0.60)
Time	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Constant	No	Yes	No	Yes	No	Yes	No	Yes
R2	0.15	0.59	0.07	0.37	0.13	0.52	0.04	0.20
N	17	17	17	17	17	17	17	17

Note: The numbers in parenthesis indicate the corresponding t-values, and the significance levels are *<0.1, **<0.05, and ***<0.01, respectively. The regression model includes control variables, namely a proxy measure of gross capital creation represented as a percentage of GDP and trade openness, which is measured as the ratio of the total of imports and exports to real GDP. By include these variables, extra variables that can affect economic development are controlled for.

b) Impact on Fiscal Sector

The effects of a remittance shock on the fiscal sector are most visible in how it affects government revenue, because remittance inflows significantly shape investment and consumption, which in turn directly affect revenue dynamics. A regression analysis was performed to determine the potential impact of a remittance shock on overall government income. In these investigations, relevant linkages and impacts were identified by matching the growth rates of government revenue and remittance inflow. Although the association was positive, it was not statistically significant, as shown in Table 5. However, empirical evidence suggests that remittance inflows benefit government tax collection due to their allocation to consumption, particularly in countries that use the value-added tax (VAT) system. Simionescu and Dumitrescu (2017) and Ebeke (2013) conducted studies in developing countries that support the positive relationship between remittances and government revenue stability. Given the undeniable link between remittances and consumption in Nepal, where VAT has been a vital source of income since 1977, the COVID-19 epidemic is likely to have a significant impact on remittances, negatively impacting consumption levels and government revenue.

c) Impact on Monetary and Financial Sector

The financial and monetary sector serves as a vital middleman in the distribution of resources, bridging the gap between the surplus and deficit sectors of the economy. Despite the positive impact of remittances on financial sector growth, Nepal has not fully realized this potential due to difficulties in integrating remittance transfers with official financial services (Maimbo & Ratha, 2005). Despite this, a decrease in labor migration and an increasing trend in remittance inflows suggest a better integration with formal financial services, especially given the ongoing digitalization of bank services (Shrestha, 2020).

Despite the lack of a statistically significant relationship, it is worth noting that all of the coefficients in the regression models that aligned the growth rates of remittance inflows with those of deposits, the broad money supply, and the inflation rate produced positive results (see Table 5). As a result, the pandemic-induced decline in remittance inflows is expected to put downward pressure on deposits as well as the overall money supply. Because remittances play a significant role in providing deposits, their decline could result in a liquidity constraint, restricting access to bank credit, raising interest rates, and worsening the effects on the economy. Furthermore, the potential deflationary pressures caused by the remittance shock must be considered. Although beneficial to consumption, these pressures may raise real debt values, limiting credit availability and worsening the consequences for economic development.

Impact on External Sector

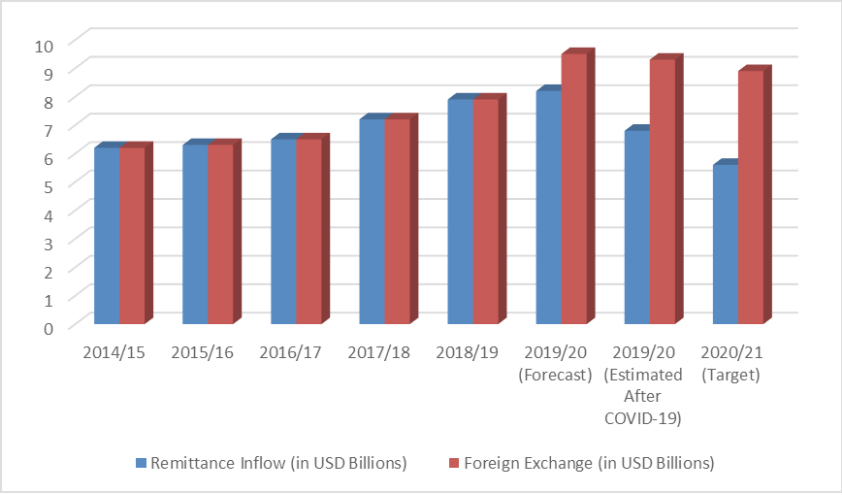
Remittances and the external sector are inextricably linked, with the former serving as an important conduit for foreign investment. Remittances, as the primary source of foreign currency, are critical for funding imports and influencing the overall balance of payments. Reduced remittances are expected to have a significant impact on the external sector, affecting foreign exchange reserves, import-export dynamics, and the overall balance of payments. These reserves are critical to ensuring stability and meeting international obligations. Reduced remittances can have an impact on these reserves, affecting the global economy and currency values. Any decrease in remittances, which are essential for funding imports, disrupts the balance of imports and exports and alters the nature of commerce. In

a) Foreign Exchange Reserve and Remittance

Given the importance of remittances as a source of foreign currency, there has been a clear relationship between foreign exchange reserves and remittances in Nepal over the last 20 years. It is reasonable to expect a significant negative shock to remittances to have an impact on foreign reserves. Prior to the COVID-19 outbreak, Nepal's total

foreign exchange reserves were NPR 1.136 trillion in February 2020, and by mid-April, they had increased to NPR 1.155 trillion. The estimated average annual growth rate of foreign exchange reserves over the last five years has been 9.6%, as shown in Figure 5 (see Table 3).

Figure 5: Snapshot of the Foreign Exchange Situation



COVID-19 Pandemic Post-Emergence: Following the COVID-19 outbreak, Nepal's foreign exchange reserves were significantly impacted by a noticeable decrease in remittance inflows in mid-April. In particular, as of mid-April, total reserves had fallen from USD 9.60 billion to USD 9.49 billion. As of April 2020, these reserves accounted for 29.6% of the total money supply, 30.7% of GDP, and 78.8% of all imports. In comparison, the same figures from July of the previous year were 30.0%, 64.9%, and 29.0%, respectively. Despite a sharp drop in remittances in April, the country maintained large reserves, far exceeding the level required by the Nepal Rastra Bank to cover imports for at least seven months. Furthermore, the analysis predicts an increase in reserves in 2020, despite the fact that the value in dollars has fallen due to the depreciation of the Nepalese currency relative to the US dollar (Nepal Rastra Bank, 2020).

Potential Consequences of a Negative Shock to Remittance Inflows: Despite a tendency toward an increasing trade deficit, Nepal has significant foreign exchange reserves, owing primarily to labor migration and remittance inflows. However, remittances decreased by 15.33% during the first three months of the epidemic. To understand the consequences of this negative shock, we ran a regression analysis. In this study, we regressed the growth rate of remittance inflows, the explanatory variable, against the growth rate of foreign exchange change, the dependent variable. The specific results are shown in Table 6.

Table 6: Potential Impact of a Negative Shock to Remittance Inflow

	Forex	Consumption	Total Revenue	Broad Money Supply	Deposits	Inflation Rate	Import	Export
Remittance Inflow	1.158** (3.02)	0.165** (2.41)	0.063 (-0.46)	0.199 (-2.08)	0.017 (-0.92)	0.448 (-0.68)	0.160 (-0.88)	0.329 (-1.66)
Time	-0.306 (-0.19)	0.094 (-1.00)	0.557 (-1.55)	0.456 (-1.82)	0.017 (-0.26)	-1.028 (-0.55)	0.500 (-1.05)	0.587 (-1.13)
Constant	-8.81 (-0.33)	7.986*** (3.18)	11.637** (2.31)	9.649* (2.75)	0.603 (0.58)	8.236 (-0.31)	8.581 (-1.29)	-8.26 (-1.13)
R2	0.68	0.29	0.15	0.32	0.11	0.06	0.10	0.20
N	9	17	17	17	10	17	17	17

Note: numbers in parenthesis are t-value, and significance level is ***<0.01, **<0.05, *<0.1

As expected, there is a clear and significant positive statistical association between the rates of increase in remittance inflow and the shift in foreign exchange (FOREX), detected at the 5% level. A 1% increase in remittance growth, for example, corresponds to a 1.16% increase in FOREX growth rate. Using this established relationship, we can calculate the marginal effect of the four scenarios presented in Table 7, which represent negative FOREX shocks. We expect the growth rate of the FOREX change to fall by 17.75% in the baseline scenario, which involves a 15.33% decline in remittances. Foreign currency reserves, trade deficits, and the balance of payments would all suffer as a result.

a) Import and Exports

Remittances significantly boost household purchasing power in countries such as Nepal, where a large portion of consumer goods are imported. The increase in remittance inflows leads to increased consumption of imported goods, which prolongs trade imbalances (Bhatta, 2013). Remittances are a good way to increase output and economic activity, but they can also make exports less competitive by strengthening the local currency's value. Over the last 20 years, the coordinated patterns in Nepal's trade deficit and remittance inflows have highlighted the relationship between remittances and trade dynamics. According to regression results (see Table 5), there is a positive correlation between remittance inflows and imports and exports; however, this correlation is not statistically significant. This could be explained by methodological issues and data limitations. A decrease in remittance inflows may lead to a decrease in imports, which may offset a decrease in export revenue and eventually narrow trade deficits. More empirical research is needed to validate this impact (Bhatta, 2013; Uprety, 2017; Sapkota, 2013).

d) Balance of Payments

Remittance inflows are an important component of Nepal's balance of payments (BoPs) and have a significant impact on the current account. Due to non-stationarity, abnormalities, and limited data availability, regression analysis was inconclusive. The graphic representation in Table 3 shows how the relationship between remittance inflow and BoPs can explain divergent patterns between the two. The inverse trend of the trade deficit suggests that lower remittances may raise the BoP by affecting imports. Because remittances are a component of the current account, a decrease reduces the current account's value. Because of the complexities of the relationships, the net influence on BoPs necessitates additional research (Bhatta, 2013; Uprety, 2017; Sapkota, 2013).

Impact on Household Sectors

Remittances have proven critical to Nepal's efforts to reduce poverty and increase consumption, particularly during times of civil unrest (Thapa and Acharya, 2017; Sapkota, 2013; Lokshin et al., 2010). As shown in Table 3, remittances exceeded final household consumption in 2015-16, indicating a rising trend in remittances and household consumption spending. Basic necessities account for the majority of funds in an average remittance-receiving household, with approximately 54% allocated to food, 15% to rent and utilities, and 4% to education (Table 2). Regression analysis (Table 6) reveals a statistically significant association between the growth rates of remittance inflows and consumption. According to these findings (Table 7), a 15.33% decrease in remittances could have a significant impact on household living standards by causing a 2.5% decrease in the rate of consumption growth. Because remittances are a major source of income for many households, the fall threatens their consumption and spending patterns.

Table 7: Impact of Negative Shock to Remittance Inflow on the Growth Rate of Change in FOREX

	Remittance Growth Rate (%)	Resulting Impact on the Growth Rate of the Change in FOREX (%)	Resulting Impact on Consumption Growth Rate (%)
Baseline	-15.33	-17.75	-2.53
Low Variant	-20	-23.16	-3.30
Medium Variant	-25	-28.95	-4.12
Hing Variant	-30	-34.74	-4.95

4. CONCLUSION

The COVID-19 epidemic has slowed global economic growth, posing a serious problem for Nepal, a country that relies heavily on remittances and has a sizable migrant labor force. As a result of the crisis, a large number of Nepalese labor migrants have returned home, contributing to job losses overseas and a drop in demand for migrant labor due to economic downturns in the countries of destination. This scenario predicts a significant drop in remittance inflows, which are a vital part of Nepal's economy and are closely linked to the financial sector. During the first three months of the epidemic, monthly remittance inflows decreased by 15.33%, raising concerns about the impact on many economic sectors. Remittances are an important source of income for many people, allowing them to meet basic needs; thus, their rapid decline is concerning. A 15.33% decrease in remittance inflows may result in a 2.5% decrease in consumption growth, affecting many industries and causing a domino effect within the economy. Even if remittances fall slightly, they may have a significant impact on GDP growth, consumption, investment, and government revenue. The analysis predicts that GDP growth will slow significantly, and it emphasizes the close relationship between remittances and key macroeconomic variables. In addition to the real sectors, the economic downturn affects government revenue, bank and consumer deposits, and the total amount of money in circulation. Because it raises concerns about firms' access to liquidity, a decrease in the money supply may result in higher interest rates and less availability of bank loans. Furthermore, there are concerns about worsening trade imbalances and potential effects on the balance of payments, as remittances decline directly affects foreign exchange reserves. Even if the government took immediate action, comprehensive financial, monetary, and fiscal policies are required for the economy to recover.

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