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Balance of Payment and its Determinants

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Abstract

The Balance of Payments (BOP) is a critical measure of a country's economic transactions with the global economy, comprising the current, capital, and financial accounts. This study investigates the direct determinants of Nepal's BOP, focusing on exports, imports, foreign direct investment (FDI), and remittances from 2006 to 2019. Utilizing a quantitative research methodology, the study applies an Autoregressive Distributed Lag (ARDL) model to analyze the long-term and short-term relationships among these variables. The findings indicate that imports negatively impact the BOP, with a 1% increase in imports reducing the BOP by 0.72%. Conversely, remittances positively influence the BOP, where a 1% rise in remittances enhances the BOP by 1.06%. Although exports and FDI show positive correlations with the BOP, their impacts are not statistically significant, highlighting structural challenges in Nepal's export sector and investment climate. Diagnostic tests confirm the robustness of the ARDL model, indicating no serial correlation, heteroscedasticity, and normally distributed residuals. The present study highlights the need for strategies to manage imports, facilitate remittances, diversify and enhance exports, and attract foreign direct investment. Policymakers should focus on promoting domestic production, creating favorable conditions for remittance flows, improving export quality and market access, and fostering a conducive investment climate, while employing robust analytical techniques and considering long-term strategic planning for sustainable economic growth and BOP improvement.

***Keywords**: Balance of payments (BOP), direct determinants, remittances, ARDL model, economic stability*

Introduction

The Balance of Payments (BOP) is a fundamental concept in international economics, serving as a comprehensive record of a country's economic transactions with the rest of the world over a specified

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period, typically a year. It includes all transactions between residents of a country and non-residents and is a critical indicator of a country's economic health and stability. The BOP is divided into three main components: the current account, the capital account, and the financial account, each of which tracks different types of economic activities (Krugman, Obstfeld, & Melitz, 2018; IMF, 2022).

A country's balance of payments is a statement that shows the exchanges of goods and services between countries with the rest of the world (IMF, 2009). According to Pirlogeanu and Bulau (2018), the BOP shows changes in a nation's holdings of cash gold and Special Drawing rights as well as transactions involving products, services, income, unilateral transfers, receivables, and financial claims against and obligations to foreign parties.

The concept of the Balance of Payments (BOP) is a fundamental aspect of international economics, providing a comprehensive overview of a country's economic transactions with the rest of the world over a specific period (Mundell & Fleming, 1963). In this paper authors discuss the direct determinants of balance of payments. This article provides foundational insights into the concept of BOP, particularly regarding its interaction with capital movements, and remains a cornerstone in the field of international economics.

The years 2006 to 2019 were specifically selected for this study due to two key reasons: 2006 marked the establishment of a peace movement, initiating a period of political stability and economic reform in Nepal, while 2019 was notable for the occurrence of the COVID-19 pandemic, which had profound and far-reaching impacts on both global and domestic economic dynamics. By analyzing between these periods, we can comprehensively analyze the factors affecting the Balance of Payments (BOP).

The primary objective of the article is to analyze the direct determinants of Nepal's Balance of Payments (BOP) from 2006 to 2019. The study focuses on understanding how key variables such as exports, imports, foreign direct investment (FDI), and remittances directly influence the BOP. By employing a quantitative research methodology, specifically an Autoregressive Distributed Lag (ARDL) model, the research aims to identify both long-term and short-term relationships among these variables. The findings aim to inform policy measures to improve Nepal's BOP position by suggesting strategies for managing imports, promoting domestic production, supporting remittance inflows, diversifying exports, and attracting FDI.

Literature Review

There are several variables that can be taken into account in order to calculate a country's BOP. But one important consideration is the volume of trade a country's citizens, companies, and government have with other countries over the given period of time, generally one year. International trade in goods and services as well as shifts in national asset ownership is both characterized by the BOP (Bakaert and Holdrick, 2012).

The IMF committee's staff note on Balance of Payment Statistics (2000) explains that issues with the Balance of Payments (BOP) stem from imbalances in the physical flows of exports and imports of goods and services. Therefore, these problems can be analyzed by looking at the partial elasticities of exports and imports and examining how the exchange rate influences BOP adjustments in response to devaluation.

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Even though developed countries offer free-market access to Least Developed Countries (LDCs) and some developing nations, these countries face significant challenges in exporting goods that meet the required standards. LDCs struggle with poor infrastructure, outdated technology, lack of knowledge, insufficient skilled labor, corruption, and political instability (Akhter, 2015). They also depend heavily on a limited range of agricultural products and are susceptible to natural disasters like earthquakes (Biswas, 2018). LDCs mainly import essential goods and high-cost capital items with low customs duties, whereas developing countries' imports are dominated by industrial goods, machinery, and regulated customs duties.

Trade liberalization generally harms the balance of payments (BOP) of Least Developed Countries (LDCs) and low to middle-income developing nations, with the exception of some wealthier developing countries like China and India. Only countries with a suitable economic environment benefit from liberalization (Khan and Zahler, 1985). Therefore, free trade improves the BOP only in countries that have strong governance, good infrastructure, a favorable business climate, and adequate human capital.

Foreign Direct Investment (FDI) can enhance the balance of payments (BOP) through initial capital inflows and increased domestic production, which can replace imports or boost exports (Kennedy, 2013; Rana, 2014). However, FDI can negatively affect the BOP if investors import necessary inputs. In the long term, FDI harms the BOP if the recipient country fails to use it to reduce imports or expand exports, or if FDI is only used to purchase assets. Generally, FDI benefits the BOP of developing countries and LDCs, but its effectiveness depends on the availability of natural and human resources (Rana, 2014). Many LDCs and developing countries lack the economic, political, and social conditions to attract FDI from large multinational corporations due to poor infrastructure and resource market deficiencies. As a result, FDI is primarily directed towards the wealthiest developing countries.

Human capital impacts the balance of payments (BOP) in several ways i.e. in developing countries, an increasing population improves the BOP, while in LDCs, it leads to higher imports. A higher savings rate strengthens the BOP in both developing countries and LDCs. According to the life-cycle theory, younger populations save less and borrow more (Cheung et al., 2010), which pressures the BOP since most developing countries and LDCs have a high young-old population ratio. A low stock of educated and skilled labor worsens the BOP because it limits a country's ability to provide the human capital needed by foreign investors and new technologies. LDCs generally have unskilled and less professionally trained labor, whereas some developing countries have improved their human capital through investments in higher education. Both LDCs and developing countries need to invest more in higher education to build a sufficient skilled workforce. Remittances from the workforce abroad increase foreign currency inflow and improve the BOP in both developing countries and LDCs.

Research Methodology

The research employed a quantitative research methodology, using statistical techniques to analyze numerical data related to Nepal's economic indicators from 2006 to 2019. Secondary data on exports, imports, foreign direct investment (FDI), and remittances for the period 2006 to 2019 were collected from the macroeconomic dashboard of Ministry of Finance. An Autoregressive Distributed Lag (ARDL) model was applied to determine the long-run and short-run relationships between the BOP and its determinants. Variables were checked for their order of integration, with some being stationary

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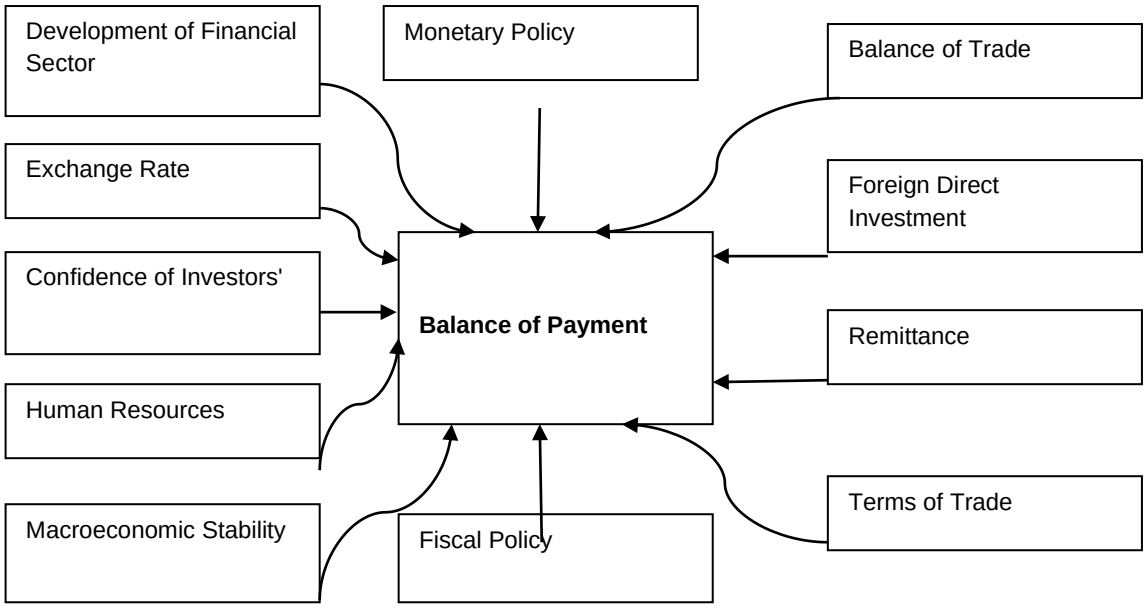
(I(0)) and others non-stationary (I(1)), justifying the use of the ARDL model. The ARDL model estimated the impact of exports, imports, FDI, and remittances on the BOP, using coefficients to quantify these relationships. To ensure the validity of statistical inference in regression analysis, tests for serial correlation, heteroscedasticity, and normality of residuals were conducted. These tests are essential for verifying the underlying assumptions of the regression model. Meeting these assumptions enhances the model's reliability and the credibility of its results. The results of this quantitative analysis provided empirical evidence on how direct determinants like exports, imports, FDI, and remittances influenced Nepal's BOP, highlighting the significance of remittances in offsetting trade deficits and ensuring economic stability.

In the balance of payment there are two determinants i.e. direct and indirect. Direct determinants are recorded in BOP account but indirect determinants are not recorded in BOP accounts. Export, Import, foreign direct investment, remittance etc. are the example of direct determinants whereas trade liberalization, exchange rate, fiscal policy, monetary policy, loss of investor's confidence etc. are the example of indirect determinants. In this article, we focused for modeling only direct determinant to analyze to balance of payment. Conceptual framework of determinants of BOP is shown below.



Author Construction Based on Literature Review

To analyze the major direct determinants of the Balance of Payments (BOP), we have selected data from the years 2006 to 2019. The rationale for this selection is twofold: 2006 marks the establishment of a peace movement, while 2019 is notable for the occurrence of the COVID-19 pandemic. These 13 years are considered a relatively stable period, free from extraordinary disruptions. Therefore, we have chosen to use this time frame for our analysis. To examine the direct determinants influencing Nepal's balance of payments, we incorporated export, import, foreign direct investment, and remittance.

$$BOP = \alpha_{+} \beta_1 EXP + \beta_2 IMP + \beta_3 FDI + \beta_4 REMT + \mu_i$$

Where, Y represent Balance of Payment, EXP is export, FDI is foreign direct investment, IMP is import, REMT is remittance and μi represents error terms. α, β_1, β_2 β_3, β_4 are the parameters.

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Analysis of Balance of Payment and its Determinants

Identification the Determinants of Balance of Payment

Balance of Trade

The balance of payments (BOP) and the balance of trade (exports and imports) are closely linked parts of a country's economic activities with the rest of the world. The balance of trade is an important part of the BOP's current account, showing the difference between what a country exports and imports. When exports are higher than imports, there is a trade surplus, which helps the current account and the overall BOP. When imports are higher than exports, there is a trade deficit, which hurts the current account and can lead to a BOP deficit. This deficit must be covered by borrowing, foreign investment, or using foreign currency reserves. Therefore, the trade balance greatly affects the overall BOP, indicating whether a country is a net lender or borrower internationally. Ongoing trade deficits can impact a country's currency value, economic stability, and policies, showing the important link between the balance of trade and the BOP (Gupta & Kumar, 2014).

Foreign Direct Investment: The relationship between the balance of payments (BOP) and foreign direct investment (FDI) is essential for understanding a country’s financial health and international economic interactions. FDI is part of the financial account in the BOP, showing investments from foreign entities into local businesses and assets. When a country receives a lot of FDI, it creates a financial account surplus, which can help balance a current account deficit caused by trade imbalances. This foreign capital supports economic growth by funding infrastructure, industry, and other sectors, and it stabilizes the BOP by balancing outflows from imports and other costs. On the other hand, if a country has high FDI outflows, it can lead to a financial account deficit, affecting the overall BOP. Thus, FDI is crucial in shaping the BOP, influencing a country's economic stability, currency value, and ability to participate in international trade and investment (Rana, 2014).

Remittance: Remittances play a crucial role in a country's balance of payments (BOP) by representing money sent by migrants working abroad back to their home country, recorded in the current account as "current transfers." These inflows positively contribute to the BOP's current account balance, bolstering foreign exchange reserves, and supporting domestic consumption and investment. Remittances also help mitigate trade deficits and enhance economic stability, reducing poverty levels and influencing government policies related to exchange rates and financial inclusion. However, fluctuations in remittance flows due to global economic conditions or migration patterns can impact a country's BOP, prompting careful monitoring by governments and policymakers to ensure sustainable economic growth and stability.

Terms of Trade: The terms of trade (TOT) and the balance of payments (BOP) are closely related, as changes in TOT directly affect a country's trade balance, which is a crucial part of the BOP. When TOT improves, with export prices rising relative to import prices, it usually boosts the trade balance by increasing export revenues, potentially leading to a current account surplus and a healthier BOP. Conversely, when TOT deteriorates, with export prices falling relative to import prices, it can harm the trade balance by decreasing export revenues, possibly resulting in a current account deficit and a less favorable BOP. Therefore, variations in TOT have a significant impact on a country's overall economic transactions with the rest of the world.

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Fiscal Policy: Fiscal policy, encompassing government spending and taxation decisions, greatly impacts the balance of payments (BOP). When a government boosts spending or lowers taxes, domestic demand can rise, potentially increasing imports and causing a trade deficit, negatively affecting the current account of the BOP. On the other hand, fiscal tightening through spending cuts or tax hikes can reduce domestic demand, potentially lowering imports and improving the trade balance, positively affecting the BOP. Moreover, fiscal policy can influence investor confidence and capital flows, further affecting the financial account of the BOP. Therefore, fiscal policy choices are crucial in shaping a country's BOP dynamics.

Monetary Policy: Monetary policy, which involves the regulation of interest rates and money supply by a central bank, significantly impacts the balance of payments (BOP) (Abomaye et al., 2016). Lowering interest rates can stimulate economic activity and increase imports, potentially leading to a trade deficit and negatively affecting the current account of the BOP. Conversely, raising interest rates can reduce economic activity and imports, improving the trade balance and positively influencing the current account. Additionally, changes in interest rates affect capital flows; higher rates can attract foreign investment, strengthening the financial account of the BOP, while lower rates can lead to capital outflows. Thus, monetary policy decisions are pivotal in shaping a country's BOP.

Exchange Rate: The exchange rate, which determines the value of a country's currency relative to others, has a significant impact on the balance of payments (BOP). A depreciation of the currency makes exports cheaper and imports more expensive, potentially improving the trade balance and positively affecting the current account of the BOP. Conversely, an appreciation of the currency makes exports more expensive and imports cheaper, which can lead to a trade deficit and negatively impact the current account. Additionally, exchange rate fluctuations can influence capital flows, as a stronger currency might attract foreign investment, strengthening the financial account, while a weaker currency might lead to capital outflows. Thus, exchange rate movements are crucial in shaping a country's BOP dynamics (Rashidin et al., 2016).

Investors' Confidence: Investor confidence plays a crucial role in influencing the balance of payments (BOP). High investor confidence can attract foreign investments, leading to an inflow of capital that strengthens the financial account of the BOP. Conversely, low investor confidence can cause capital outflows as investors withdraw their investments, weakening the financial account. Additionally, shifts in investor confidence can affect exchange rates and economic stability, further impacting trade balances and the current account. Thus, the level of investor confidence is pivotal in shaping a country's BOP by influencing both capital flows and economic perceptions (Geda & Yimer, 2016).

Human Resource: Human resources, especially workforce skills and productivity, greatly influence the balance of payments (BOP). A highly skilled and productive workforce can boost a country's export competitiveness, enhancing the trade balance and positively impacting the current account of the BOP (Seguino, 2010; Eita, et al., 2018). Moreover, a robust human resource base can attract foreign direct investment, strengthening the financial account. On the other hand, a workforce with low skills can reduce export competitiveness and deter investment, adversely affecting both the current and financial accounts. Thus, the quality of human resources is essential in shaping a country's BOP by affecting export performance and investment flows.

Macroeconomic Stability: Macroeconomic stability, characterized by low inflation, stable exchange rates, and sustainable fiscal and monetary policies, plays a critical role in shaping the balance of

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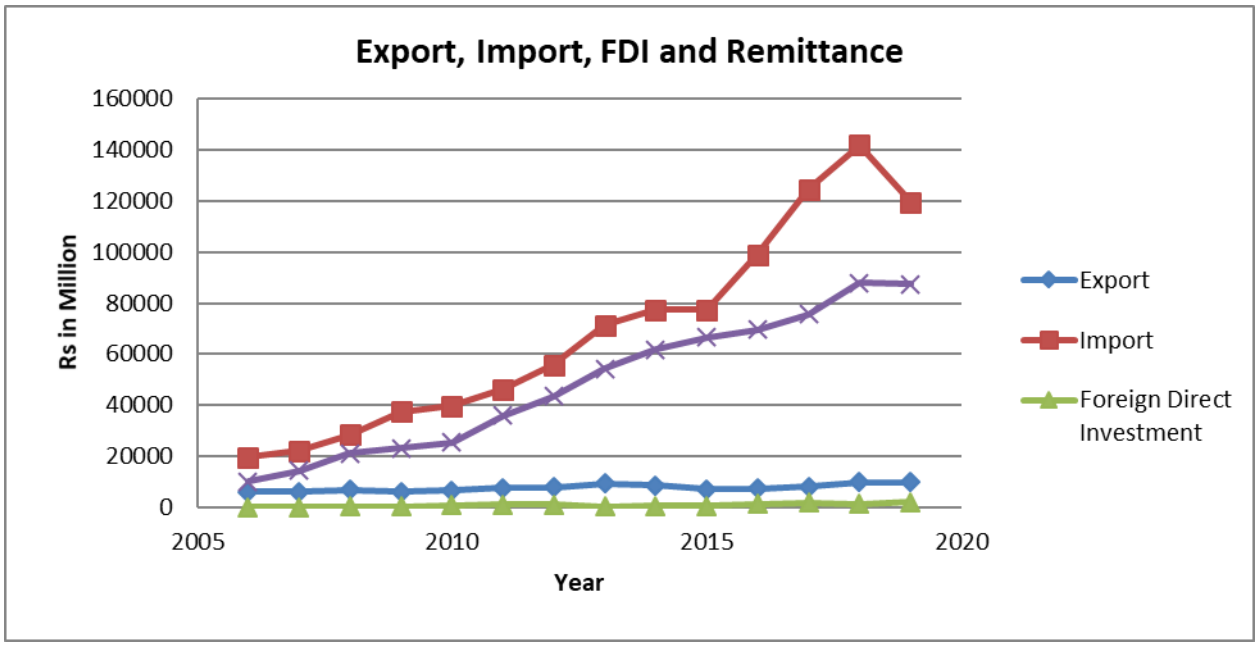
payments (BOP). A stable macroeconomic environment can enhance investor confidence and attract foreign investment, thereby strengthening the financial account of the BOP. It can also support export competitiveness by providing a predictable economic backdrop for businesses, potentially improving the trade balance and positively affecting the current account. Conversely, macroeconomic instability, such as high inflation, volatile exchange rates, or unsustainable fiscal policies, can deter foreign investment and lead to capital outflows, weakening the financial account. It can also undermine export competitiveness and worsen the trade balance, negatively impacting the current account. Therefore, maintaining macroeconomic stability is crucial for fostering a favorable balance of payments position through its influence on investment flows, trade dynamics, and overall economic confidence.

Financial Sector Development: Financial sector development, including the depth, efficiency, and stability of financial markets and institutions, is closely intertwined with the balance of payments (BOP). A well-developed financial sector can facilitate capital mobilization and allocation, attracting foreign investment and strengthening the financial account of the BOP. It can also enhance access to finance for businesses, promoting export competitiveness and potentially improving the trade balance and current account. Conversely, a less developed financial sector with limited access to credit and investment opportunities may constrain capital inflows and hinder export growth, negatively impacting both the financial and current accounts. Moreover, financial sector stability is crucial; financial crises or instability can lead to capital flight and financial outflows, worsening the BOP position. Therefore, the development and stability of the financial sector are essential factors influencing a country's BOP dynamics through their effects on investment flows, trade performance, and overall economic resilience.

Figure 1:

Export, Import, FDI and Remittance



Source: Ministry of Finance (MOF)

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Figure 1 portrays the trends in Nepal's Export, Import, Foreign Direct Investment (FDI), and Remittances from 2005 to 2019, measured in millions of Nepali Rupees (Rs). During this period, imports exhibit a notable and continuous rise, reaching a peak around 2019 before slightly declining. This trend signifies an increasing dependency on foreign goods and services. Conversely, exports remain consistently low and stable, indicating limited growth in the international market for Nepali products.

Remittances show a steady upward trend, indicating growing financial contributions from Nepalese abroad, which are crucial to the economy by ensuring a regular inflow of foreign currency. FDI, though relatively lower, demonstrates minor fluctuations but generally remains stable, pointing to a modest but steady level of foreign investments in Nepal.

In summary, the figure highlights a significant trade deficit, with imports far exceeding exports. Remittances play a crucial role in offsetting this deficit and supporting the balance of payments. The limited growth in exports and FDI suggests challenges in boosting Nepal's export capacity and attracting substantial foreign investments.

Model Interpretations

The variables which are used in this articles are different orders of integration, i.e., some are stationary (I(0)) and some are non-stationary (I(1)). Hence, ARDL model is applied in this article.

Result of ARDL estimation is explained below.

Dependent Variable D(BOP)

Selected Model: ARDL (1, 0, 0, 1, 1)

Case 2: Restricted Constant and No Trend

Table 1: ***ARDL Long Run Form and Bounds Test***

Variable	Coefficient	Std. Error	t-Statistic	Prob.
EXP	0.663272	1.027354	0.645612	0.547
FDI	2.346986	1.678998	1.397849	0.221
IMP	-0.718901	0.069809	-10.2981	0.0001
REMT	1.064846	0.08538	12.47188	0.0001
C	-1411.152	5291.58	-0.26668	0.8004

Source: Author's calculation from E-Views

Table 1, demonstrates the long-run coefficient from the selected ARDL model. Export and foreign direct investment have positive related with balance of payment but these two variables are not statistically insignificant. The coefficient of explanatory variable i.e. import has negative and statistically significant. The coefficient of import is -0.719901 indicates that with one percent increase in import, balance of payment decreases by 0.7718 percent. Similarly, coefficient of remittance has positive and statistically significant. The coefficient of remittance is 1.0648846 which demonstrates that one percent increase in remittance, balance of payment increases by 1.0648 percent. This proves that there is negative relationship between import and balance of payment in Nepal and positive association between remittance and balance of payment.

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The insignificant impact of FDI and exports on Nepal's BOP could be due to low levels of FDI and export growth, structural challenges like limited production capacity and competitiveness, and inconsistent economic policies and an unattractive investment climate.

Table 2: Result of F- Bound test

Test Statistic	Value	Significant	I(0)	I(1)
F-statistic	8.00867	10%	2.2	3.09
k	4	5%	2.56	3.49
		2.50%	2.88	3.87
		1%	3.29	4.37

Source: Authors calculation from E-Views

The table 2 shows the bound test result regarding the co-integration relationship between variables of the model. From the table estimated F-statistics is 8.00867 which is greater than upper bound of critical value at one percent level of significance. This confirms that the rejection of null hypotheses of no co-integration. So there exists a long- term relation between the selected variables and there exist a co-integration among the selected varialbes.

Table 3 ***Information of Diagnostic Tests Result of ARDL output***

Breusch-Godfrey Serial Correlation LM Test:			
Null hypothesis: No serial correlation at up to 1 lag			
F-statistic	0.454781	Prob. F(1,4)	0.537
Obs*R-squared	1.327147	Prob. Chi-Square(1)	0.2493

Heteroskedasticity Test: Breusch-Pagan-Godfrey			
Null hypothesis: Homoskedasticity			
F-statistic	0.423344	Prob. F(7,5)	0.8534
Obs*R-squared	4.837668	Prob. Chi-Square(7)	0.6798
Scaled explained SS	0.757714	Prob. Chi-Square(7)	0.9979

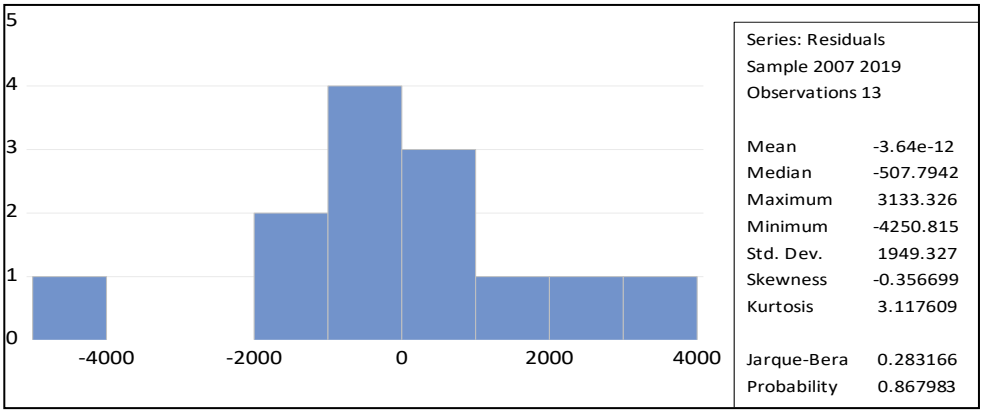

Table 3 shows the diagnostic test of the model. In table the value of F- statistics of LM- test and the hetroskedasticity test p- values are 0.537 and 0.8534 respectively. This exhibits that the p- value both

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test is more than 5 percent level. This means the model is free from serial correlation and heterosedasticity. Finally, the estimate p- value of normality test is 0.8679, which is more than 5 percent level demonstrates that the residual is normally distributed.

Result and Discussion

The application of the ARDL model to assess the long-term relationships among various determinants of Nepal's balance of payments (BOP) provides significant insights into the country's economic interactions with the global market. The findings reveal several critical aspects influencing Nepal's BOP, particularly emphasizing the roles of imports, remittances, exports, and foreign direct investment (FDI).

The analysis indicates that imports have a statistically significant negative impact on the BOP. Specifically, a 1% increase in imports leads to a 0.72% decrease in the BOP. This finding aligns with economic theories suggesting that higher imports drain foreign currency reserves, exacerbating the current account deficit. For Nepal, which has shown a continuous rise in imports, this result underscores the need to manage import levels through policies aimed at promoting domestic production and reducing dependency on foreign goods. Implementing import substitution strategies and encouraging local industries can help mitigate the adverse effects of high import levels on the BOP.

Remittances show a statistically significant positive impact on the BOP, with a 1% increase in remittances improving the BOP by approximately 1.06%. This highlights the crucial role remittances play in Nepal's economy, acting as a stabilizing force for the BOP. The steady inflow of remittances helps offset trade deficits and supports foreign exchange reserves. This finding suggests that policymakers should focus on creating conducive environments for overseas employment opportunities and ensuring efficient channels for remittance flows. Enhancing the financial inclusion of remittance-receiving households can further amplify the positive impacts of these funds on the broader economy.

Although exports and FDI have a positive relationship with the BOP, their impacts were not statistically significant in this study. This could be due to the relatively low levels of exports and FDI in Nepal during the study period. The limited export growth points to structural challenges in Nepal's production and export capabilities. To address this, efforts should be made to diversify export products, improve quality standards, and access new markets. Additionally, increasing FDI inflows requires improving the investment climate, simplifying regulatory procedures, and ensuring political stability. Attracting FDI can provide the necessary capital and technology transfer to enhance export competitiveness.

The diagnostic tests confirm that the ARDL model used in this study is robust. The absence of serial correlation and heteroscedasticity, coupled with normally distributed residuals, ensures the reliability of the results. This robustness strengthens the confidence in the policy implications derived from the findings.

The study by Haile (2021) identifies FDI as a positive influence on Ethiopia's BOP, aligning with our findings on Nepal. It suggests that increased FDI can stabilize the BOP by providing necessary capital and enhancing economic stability. Similarly, Jayaraman and Choong (2016) discuss the significant roles of trade balances and remittances in shaping the BOP in developing countries. Their research

confirms our findings on Nepal, where remittances positively impact the BOP, and underscores the importance of managing trade deficits for economic stability.

Conclusion

This study investigates the determinants of Nepal's Balance of Payments (BOP) from 2006 to 2019, highlighting the significant roles of imports, remittances, exports, and foreign direct investment (FDI). The Autoregressive Distributed Lag (ARDL) model reveals that imports negatively impact the BOP, with a 1% increase in imports reducing the BOP by 0.72%. Conversely, remittances positively affect the BOP, enhancing it by 1.06% for every 1% increase in remittances. Despite positive correlations, exports and FDI impacts are statistically insignificant, underscoring structural challenges in Nepal's export sector and investment climate. The ARDL model's robustness is confirmed through diagnostic tests, showing no serial correlation, heteroscedasticity, and normally distributed residuals. Policy measures suggested include managing imports, promoting domestic production, supporting remittance inflows, diversifying exports, and attracting FDI. Future research should incorporate more recent data and additional variables like tourism revenues to provide a more comprehensive analysis of Nepal's BOP determinants.

This study provides some major policy implications for improving Nepal's BOP position: Implement policies to promote import substitution and enhance domestic production capabilities. Develop policies that support and facilitate remittance flows, including enhancing financial inclusion and reducing transfer costs. Diversify the export base, improve product quality, and enhance market access through trade agreements and partnerships. Improve the investment climate by streamlining regulatory processes and ensuring political and economic stability to attract more FDI.

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