THE IMPACTS OF REMITTANCES ON EXTERNAL DEBT, FOREIGN RESERVES AND ECONOMIC GROWTH IN PAKISTAN

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by

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LIST OF ABBREVIATIONS

AIC	Akaiki Information Criterion
ARCH	Auto Regressive Conditional Heteroscedasticity
ARDL	Auto Regressive Distributive Lag model
BoP	Balance of Payment
CA	Current Account
CARCOM	Caribbean Community
CPEC	China Pakistan Economic Corridor
DSSI	Debt Servicing Suspension Initiative
ECT	Error Correction Term
FATF	Financial Action Task Force
FDI	Foreign Direct Investment
GDP	Gross Domestic product
GMM	Generalized Method Of Moments
GNI	Gross National Income
GoP	Government of Pakistan
HIPCs	Highly Indebted Poor Countries
IFIs	International Financial Institutions
IMF	International Monetary Fund
KFA	Capital and Financial Account
LM	Lagrange Multiplier.
LMICs	Low and Middle Income Countries
LCs	Letter of Credits
MDG	Millennium Development Goals
MDRI	Millennium Debt Relief Initiative

MLT	Medium and Long Term
MoF	Ministry of Finance
MoL	Ministry of Labour
MNA	Member of National assembly
NATO	North Atlantic Treaty Organization
ODA	Official Development Assistance
OECD	Organization for Economic Co-operation and Development
PDM	Pakistan Democratic movement
PML(N)	Pakistan Muslim League.(Nawaz)
PNG	Private non Guaranteed.
PPG	Public and Publicly guaranteed
PTI	Pakistan Tahreek Insaaf.
SAP	Structural Adjustment program
SBP	State Bank of Pakistan
SDG	Sustainable Development Goals
SIC	Schwarz Information Criterion
SIDS	Small Island Developing States
SSA	Sub Saharan Africa
USA	United States of America
UAE	United Arab Emirates
UNCTAD	United Nations Conference on Trade and Development
UNDP	United Nations Development Program
UN	United Nations
USD	United States Dollar
USSR	Union of Soviet Socialist Republics

VAR	Vector Auto Regressive
VECM	Vector Error Correction Model
WTO	World Trade Organization

KESAN KIRIMAN WANG TERHADAP HUTANG LUAR, RIZAB PERTUKARAN ASING, DAN PERTUMBUHAN EKONOMI DI PAKISTAN

ABSTRAK

Pakistan, sebuah negara yang mempunyai lebihan tenaga buruh tetapi kekurangan modal, telah bergantung kepada pinjaman luar dan geran sejak tahun 1970-an untuk menangani defisit luaran dan dalaman yang semakin meningkat, produktiviti yang rendah, simpanan nasional yang tidak mencukupi, serta permintaan pelaburan yang semakin tinggi. Kebergantungan ini telah membawa kepada beban hutang luar yang besar, rizab pertukaran asing yang tidak stabil, serta krisis ekonomi yang berulang. Walaupun kiriman wang dari pekerja luar negara sering dianggap dapat mengurangkan kesan negatif defisit perdagangan dan fiskal serta kos perkhidmatan hutang luar, bukti empirikal yang menyokong andaian ini masih terhad. Kajian ini bertujuan untuk menyelidiki kesan kiriman wang terhadap hutang luar, rizab pertukaran asing, dan pertumbuhan ekonomi melalui pelaburan di Pakistan, dengan menggunakan data siri masa dari tahun 1976 hingga 2022 yang dianalisis melalui model Auto Regressive Distributed Lag (ARDL). Hasil kajian menunjukkan terdapat hubungan jangka panjang (co-integration) antara kiriman wang, hutang luar, rizab pertukaran asing, dan pertumbuhan KDNK. Secara khusus, kiriman wang didapati mempunyai hubungan yang positif dan signifikan dengan hutang luar, rizab pertukaran asing, dan pertumbuhan ekonomi. Sebaliknya, pertumbuhan KDNK, jumlah dagangan, dan rizab pertukaran asing menunjukkan hubungan negatif dengan hutang luar. Selain itu, pembentukan modal kasar dan perkhidmatan hutang luar mempunyai hubungan positif dan signifikan dengan hutang luar. Di Pakistan, kiriman wang nampaknya berfungsi sebagai jaminan bagi pinjaman luar, manakala

rizab pertukaran asing bertindak sebagai langkah berjaga-jaga. Tambahan pula, kiriman wang, eksport, pertumbuhan KDNK, dan pelaburan langsung asing (FDI) memainkan peranan penting dalam meningkatkan rizab pertukaran asing, manakala import dan perkhidmatan hutang memberi tekanan besar ke atas rizab ini. Terma interaksi antara remitan dan pembentukan modal kasar adalah positif dan signifikan, manakala pekali remitan adalah negatif. Ini menunjukkan bahawa jika remitan digunakan untuk pelaburan, pembentukan modal kasar akan mengurangkan implikasi negatif remitan terhadap pelaburan. Sebaliknya, kesan rizab asing terhadap pertumbuhan adalah tidak signifikan. Sementara itu, nilai error correction term (ECT) yang negatif dan signifikan dalam semua model regresi menunjukkan kestabilan sistem serta kadar penyesuaian yang konvergen ke arah keseimbangan jangka panjang. Berdasarkan dapatan kajian ini, disarankan agar Kerajaan Pakistan memperkukuhkan sistem penghantaran kiriman wang melalui saluran formal yang lebih kos efektif serta mengarahkan aliran masuk kewangan ke dalam pembentukan rizab pertukaran asing dan projek pelaburan berimpak tinggi. Menggalakkan golongan belia untuk mendapatkan pekerjaan yang menawarkan gaji tinggi di luar negara mungkin lebih bermanfaat berbanding kadar pengangguran yang tinggi dalam negara. Selain itu, usaha perlu ditingkatkan untuk mengurangkan bil import dan kos perkhidmatan hutang luar melalui pengharaman import barangan mewah serta perundingan semula beban hutang sedia ada.

THE IMPACTS OF REMITTANCES ON EXTERNAL DEBT, FOREIGN RESERVES AND ECONOMIC GROWTH IN PAKISTAN

ABSTRACT

Pakistan, a labor-abundant and capital-scarce country, has relied on external borrowings and grants since the 1970s to address growing external and internal deficits, low productivity, insufficient national savings, and rising investment demands. This dependency has led to a burdensome external debt, volatile foreign exchange reserves, and recurrent economic crises. While remittances have been presumed to mitigate the adverse effects of trade and fiscal deficits, as well as the costs of external debt servicing, empirical evidence supporting this assumption is limited. This study aims to investigate the impact of remittances on external debt, foreign reserves, and economic growth through investment in Pakistan, utilizing time series data from 1976 to 2022 analyzed through the Auto Regressive Distributed Lag (ARDL) model, the results indicate a long-run co-integration among remittances, external debt, foreign exchange reserves, and GDP growth. Specifically, remittances positively and significantly correlate with external debt, foreign reserves, and economic growth, while GDP growth, trade volume, and foreign exchange reserves exhibit a negative relationship with external debt. Additionally, gross capital formation and external debt servicing have a significant positive association with external debt. Remittances in Pakistan appear to act as collateral for foreign borrowings, and foreign reserves serve precautionary purposes. Furthermore, remittances, exports, GDP growth, and foreign direct investment are vital to bolstering foreign reserves, while imports and debt servicing exert substantial pressure on these reserves. The interaction term of remittances and gross capital formation is positive and significant, while the coefficient of remittances is negative.

It indicates that if remittances are used in investment, the gross capital formation would reduce the negative implications of remittances on investment. On the other hand the impact of foreign reserves on growth is insignificant. The negative significant error correction term in all regression models indicates system stability and convergence. Based on these findings, it is recommended that the Government of Pakistan enhance remittance transmission through cost-effective formal channels and direct financial inflows to build foreign reserves and support high-return investment projects. Encouraging the youth to seek well-paying employment abroad may be preferable to unemployment at home. Additionally, efforts should be made to reduce the import bill and external debt servicing through the prohibition of luxury imports and the renegotiation of existing debt burdens.

CHAPTER 1

INTRODUCTION

1.1 Introduction

The funds sent by expatriate communities living abroad, which exceed foreign direct investment and come close to matching export earnings, have been acknowledged as a potential means to help alleviate the external debt burdens and financial and economic crises faced by low and middle-income countries, including Pakistan during recent years (Gupta et al., 2007; Knomad, 2022; Mijiyawa, 2022; Mijiyawa & Oloufade, 2022). These remittances have proven highly beneficial by bolstering foreign reserves, mitigating the adverse consequences of current and capital account deficits, promoting stable consumption and investment, reducing poverty, fostering the development of human and physical capital, diminishing the dependence on foreign borrowing and ultimately contributing to development of those countries (Acosta et al., 2009; IOM, 2022; Iqbal & Sattar, 2010; Mol, 2023; Rashid & Samad, 2022; Sahu, 2015; Sutradhar, 2020).

In addition to their potential advantages, remittances could also expose the countries to specific challenges, including the emigration of skilled workers (brain drain), rising inflation, the Dutch disease phenomenon resulting from a stronger real exchange rate, potential moral hazards within immigrant families and a shift in the economy away from productive tradable sectors towards less efficient non-tradable sectors. These challenges could lead to increased foreign debt, diminished foreign reserves and greater volatility in GDP growth rates (Chami et al., 2005; Mijiyawa & Oloufade, 2022).

If handled with effectiveness and efficiency, remittances can be employed to boost domestic savings, alleviate foreign exchange constraints, address Balance of Payment crises and allocate funds to development-focused budgets. It is crucial to redirect these valuable resources through formal channels like banks and registered money transfer companies in order to maximize their potential impact and discourage the use of illegal informal methods like *"hawala and hundi,"* given that approximately half of remittances still flow through such unofficial channels (Ozaki, 2012). *Hawala and hundi* also known as *Coyotes* in Mexico is the informal and illegal method of sending remittances from destination country to family, friends or relatives of overseas workers in home country (Maimbo, S. M., & Passas, N. 2004).

Traditionally, neo-classical theory posits that migration patterns primarily involve movements from the Global South and East to the Global North and West. However, contemporary trends indicate a growing shift towards South-South migration, where individuals increasingly relocate between developing countries (Kurekova, 2011; Ratha & Mohapatra, 2007). This shift challenges the conventional understanding of migration dynamics and highlights the need for further exploration of the factors driving such movements.

Remittances play a crucial role in poverty reduction and economic development, particularly when unskilled and unemployed workers migrate and send remittances through formal financial channels. Such transfers contribute to self-interest-driven or profit-oriented investments, fostering economic stability. Conversely, migration may have adverse effects on the economy if highly skilled and highly qualified professionals leave the country, and their remittances are transferred through informal networks such as hawala and hundi for altruistic purposes. These informal transactions may bypass official financial systems, reducing their potential economic benefits (Carrasco et al., 2018; Sutradhar, 2020; Topxhiu & Krasniqi, 2017).

Conversely, foreign debt and the associated debt servicing have posed significant challenges for developing nations in various areas, encompassing Latin America, certain East Asian countries, Sub-Saharan Africa,South Asia, as well as Greece, Poland and some other Eastern European nations. These countries have amassed their external debt to levels that are no longer sustainable. Recent instances of sovereign debt defaults and financial obligations in countries like Sri Lanka, Argentina, Venezuela and Lebanon have raised serious concerns among researchers, policymakers, international development and financial institutions, national governments in debtor nations, lenders and donors at both the national and global levels (Kharas, 2020).

Nonetheless, certain nations like Mexico, Bangladesh, Vietnam, the Philippines and India, have effectively navigated their financial and economic challenges by skillfully managing substantial remittance inflows. They have used remittances as a substitute for external debt, bolstered foreign exchange reserves, covered trade deficits and serviced external debt commitments. In contrast, other countries like Pakistan and Egypt continue to grapple with the weighty burden of external debt and its accompanying servicing, declining foreign exchange reserves, erratic GDP growth, currency depreciation, rising unemployment and inflation, leading to recurrent financial and economic crises (Bank, 2022; Hassani et al., 2021).

On one hand, Pakistan, a nation abundant in labor, has been implementing a policy of sending its workforce abroad since the 1970s amid dearth of employment vacancies domestically. On the other hand, as a country with limited capital resources, Pakistan has relied on external capital to fund its ongoing twin deficits (trade and fiscal deficits), service its foreign loans, build reserves and stimulate growth and development of economy since its inception. Additionally, the Pakistan adopted trade and capital liberalization policies under the influence of the World Trade Organization (WTO) and the International Monetary Fund (IMF) by participating in their Structural Adjustment Program (SAP) in the 1980s. While these policies yielded some positive outcomes in the early years, Pakistan has struggled to keep foreign loans under sustainable level, stabilize foreign exchange reserves and consistent and stable economic growth rates, except during the early 2000s. Instead, it has become ensnared in a cycle of increasing external debt and its associated servicing, acute shortages of foreign exchange reserves and volatile fluctuations in GDP growth rates, leading to recurring socioeconomic and political-economic crises and turmoil in the country over the past three decades.

Pakistan finds itself in this predicament due to a combination of factors. These include ineffective economic management, the adoption of ill-conceived policies influenced by the IMF when it joined the Structural Adjustment Program in the 1980s; policies that often favored foreign interests over those of the country itself. Additionally, the dynamics of power among major superpowers in the region, particularly in Afghanistan, have played an indispensable role in creating politico-economic crisis in Pakistan. Pakistan participated in the Afghan conflict twice, first in 1979 and later in 2001, under the pressure of the United States, which had implications for its resources and priorities. Subsequently, a substantial portion of the budget has been allocated to defense, security, maintenance of law and order situation and non development side expenses; thereby leading to the current situation.

Consequently, Pakistan now stands on the verge of a sovereign default because its foreign exchange reserves have nearly run dry. The IMF and other lenders are reluctant to provide assistance; citing various lame excuses and imposing stringent conditions. These conditions include obtaining written guarantees and assurances from China, Saudi Arabia, Qatar and the UAE that they will provide the necessary funds to help Pakistan replenish its foreign reserves. Besides, they also allegedly demand to roll back the high-range missile program, raise energy prices, settle outstanding letters of credit (LCs) for imports and allow for further depreciation of the currency.

However, fortunately, overseas workers' remittances have to some extent supported Pakistan's economy by assisting in its balance of payments and the maintenance of foreign exchange reserves (Hassan & Holmes, 2016). However, the scale of the trade deficit and debt servicing has been so substantial that it has consistently exceeded the contribution of foreign worker remittances. Despite the significant influx of foreign exchange in the form of remittances, which is nearly equivalent to the country's exports, Pakistan's current account has usually been in deficit. Moreover, the country's capital account hasn't been in an ideal state, primarily due to minimal foreign direct investment and portfolio investment caused by deteriorating law and order, political instability, weak governance and a high cost of doing business.

Migration plays a vital role in Pakistan's economic advancement, highlighted by the significant remittances from the Pakistani diaspora, especially during the COVID-19 pandemic. Unlike some other countries where remittances are primarily sourced from one country (e.g., Russia for Tajikistan, the United States for Mexico, and Germany for Turkey), remittances to Pakistan are more diversified. However, the diaspora’s influence on the country extends beyond remittances. Pakistanis living abroad not only contribute to the economy by sending money but also stimulate business and investment, establish new startups and help shift spill over effects of know how, innovation and modern technology (IOM, 2022).

The substantial money remitted by overseas Pakistani from all over the world have had a critical impact on the country’s economy. They have enhanced people’s living conditions and provided relief during challenging economic periods, including energy shortages, food concerns and high external loan payments (Ahmed, 2021). Personal remittances represent the major source of external currency after exports for Pakistan and performs a pivotal contribution in addressing the country’s external deficit (Khan et al., 2021). Pakistan ranks as one of the leading global recipients of remittances (Bank, 2022). Surprisingly, recent research has demonstrated that remittance inflows to Pakistan remained robust and resilient to the adverse repercussion of recent health crisis in the form of Covid-19 and 2007-08 financial crisis, contrary to earlier predictions (IOM, 2022).

Recent trends and data show that the remittances during last five years started increasing exponentially from 2019 to 2022 despite Covid-19 pandemic in 2020 and massive floods in 2022. However, they have decreased in 2023 amid political instability, uncertainty and turmoil leading to creation of foreign exchange gray and black market offering higher exchange rates as compare to inter bank rate. The gray or black market for currency transfer and conversions refers to unofficial, unregulated, and often illegal channels for exchanging currencies. These markets operate outside the formal banking system, often to avoid taxes, regulations, or exchange controls (Ballard, R. 2005, Passas, N. 2003). Subsequently, the overseas Pakistanis started sending their remittances less through formal channels and more through informal channels of *Hawal and Hundi*. In 2019, USD 22 billions were sent while in 2020, they increased by 22.8% to reach to USD 26 billion. Keeping the same trend, they continued to increase to reach at USD 31 billion and USD 31.5 billion in 2021 and 2022 respectively. However, in 2023, they started decreasing to as low as USD 27.5 billion as shown in Figure 1.1.

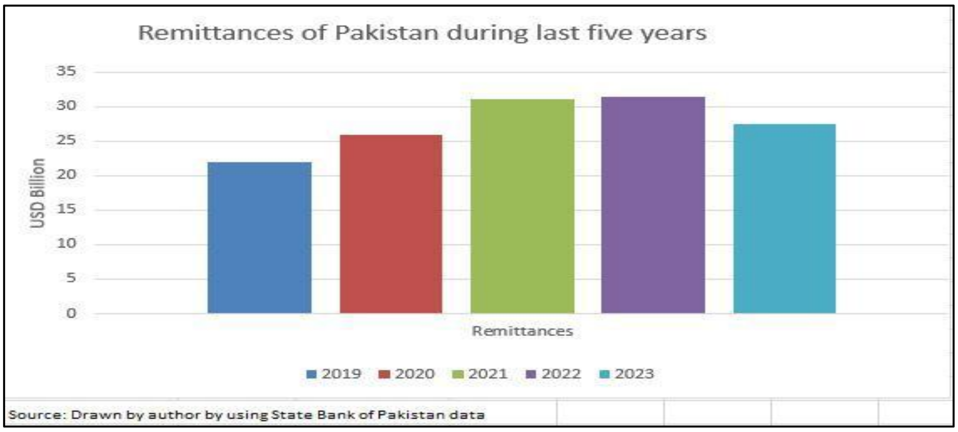


Figure 1.1 Remittances of Pakistan during last five years

As a result, remittances have garnered increased attention from researchers and international development and financial institutions in recent years due to their significance in relation to foreign loan sustainability, foreign reserves and GDP growth. The IMF and World Bank, in particular, have declared worker remittances as an important variable in their analysis of external debt sustainability since the global financial crisis of 2007-08. This recognition stems from the fact that remittances have shown greater resilience during and after crises. Consequently, when assessing the external debt sustainability of countries, these institutions now factor in the percentage of foreign loan to exports and remittances (Mijiyawa, 2022; Mijiyawa & Oloufade, 2022; Mohapatra et al., 2010).

Besides, the global media and the international community have expressed significant apprehension and unease regarding the potential sovereign default of Pakistan, a nuclear-armed nation and the fifth most populous country. The reason for this concern is that the consequences of a sovereign default by Pakistan would not be limited to its own borders; instead, they would have a spillover effect on the entire region and the broader global community.

Furthermore, recognizing the gravity and sensitivity of the external debt crisis, the United Nations Organization made the decision to incorporate the sustainable management of countries' debt into its sustainable development goals (SDGs). This decision was reached during a meeting in South Africa in September 2015, following the accomplishment of the 8 millennium development goals (MDGs).

Goal 17.4.1 of the SDGs states: "Assist developing countries in achieving long-term debt sustainability through coordinated policies aimed at promoting debt financing, debt relief, and debt restructuring as needed, and address the external debt of highly indebted poor countries to alleviate their debt-related distress" (UNDP, 2016)

Hence, it becomes a collective responsibility for all parties involved, whether they are debtors or creditors, as well as the global community, to reduce unsustainable levels of external debt in developing, less developed and highly indebted poor nations. This should be achieved through coordinated and collaborative efforts, ideally before these nations find themselves in a state of insolvency and bankruptcy. It's essential to act proactively rather than regret the situation after it has already occurred. Substantial debt relief measures, including debt forgiveness, restructuring and/or rescheduling of external debt and its associated servicing liabilities, are imperative for the survival of indebted developing and less developed countries worldwide. By taking these steps, the world can, not only achieve the goal of debt sustainability but also contribute to attaining other sustainable development objectives, including eradicating poverty, eliminating hunger, improving healthcare and education, ensuring durable GDP growth and responsible production and consumption. This can be accomplished by directing the funds saved from debt service suspension toward poverty and hunger alleviation, the provision of high-quality healthcare and education services and the promotion of sustainable growth through responsible production and consumption. This, in turn, will help maintain balanced trade, current account and fiscal discipline and environmental sustainability.

Currently, Pakistan's cumulative external debt and obligations stand at USD 130 billion, with the corresponding debt servicing payments averaging between USD 10 to USD 11 billion annually. Additionally, there is a trade deficit of USD 45 billion recorded during the fiscal year 2021-22 (MoF, 2022). Meanwhile, Pakistan's Central Bank, known as "The State Bank of Pakistan," currently holds less than USD 10 billion in foreign exchange reserves. If we take into account USD 31 billion in worker remittances, Pakistan still requires an additional USD 11 billion to cover its external obligations, assuming a balanced trade in the upcoming year. However, this appears to be quite challenging. According to the State Bank of Pakistan and former Finance Minister Dr. Miftah Ismail, Pakistan will need approximately USD 40 to USD 41 billion over the next 12 months to fulfill its external debt servicing and other obligations. This presents a formidable challenge for the new government led by Shahbaz Sharif, the younger brother of Muhammad Nawaz Sharif, particularly in light of the recent downgrade in the country's rating from stable positive to negative by the international rating agency Moody's on June 2, 2022.

The agency's decision is primarily rooted in the uncertainty surrounding Pakistan's capability to seek extra funds from abroad to fulfil its financial requirement, leading to a growing risk in its vulnerable external accounts. According to the agency's assessment, Pakistan has been assigned a B3 rating, placing it in a precarious category, due to concerns about its creditworthiness. The country is grappling with a significant inflationary surge, which is placing immense strain on its already depleted foreign exchange reserves, external balance, and the value of the Pakistani rupee. It is further exacerbated by the prevailing political, economic, and social unrest (Mangi, 2022).

In May 2022, Pakistan's headline inflation reached a peak of 17 percent, and the exchange rate has depreciated by 10 percent over the past period, declaring it one of the bad-performing currencies in the region. The foreign exchange exchange reserves held by the State Bank of Pakistan have plummeted to USD 4.7 billion in just a few months under the coalition government led by Muhammad Shahbaz Sharif. This amount is equivalent to covering only three weeks' worth of the import bill of Pakistan.

Pakistan's future macroeconomic policy remains uncertain, given the backdrop of weak institutional performance and governance issues. It is unclear whether the government will complete its term until August 2023 or if it will opt for fresh elections. The former Prime Minister, Imran Khan, has exerted pressure on decision-makers by mobilizing the public through political protests in various cities, particularly in response to the rising energy prices in the country, which have been influenced by IMF policies. The government's decision to either complete its term or engage with the IMF for an extension of the bailout package could further exacerbate price increases (Mangi, 2022).

Pakistan's external debt takes on three primary forms: the first and most substantial portion consists of public external debt, which is the government's indebtedness to international creditors. The second category encompasses publicly guaranteed loans, where state-owned enterprises and provinces are responsible for repaying international lenders. The third category includes debt owed by private sector enterprises to international lenders. Approximately 80% of Pakistan's external debt falls into the category of public and publicly guaranteed loans, while the remaining 20% is attributed to private sector entities (MoF, 2022).

Pakistan's external debt comprises four main components: 48% originates from multilateral sources, 30% from bilateral agreements, 9% from euro bonds and sukuk and 13% from commercial loans. Recently, the commercial borrowing components of Pakistan has been augmented, signaling a growing risk in the realm of external debt (MoF, 2022).

When we assess Pakistan's external debt position using the stress test methodology developed by the IMF, which relies on foreign reserves in relation to short-run foreign loan (payable within less than one year's time period), it becomes evident that the country's situation is not better than that of countries that have defaulted in the past. According to this test, if the ratio's value is less than 1 (unity), the country is considered to be under external debt stress, and there is a high probability that it may declare bankruptcy.

In addition to this test, factors such as capital flight and the current account deficit should also be taken into account. A country can navigate a debt crisis if its current account deficit remains within 30% of its foreign exchange reserves, and if the percentage of foreign reserves to short-run foreign loans is at least 130%. Moreover, if the reserves to short-run external debt percentage equals one, the nation can only manage to survive if its current account balance is zero, even if it has no access to the capital market. In such a scenario, the country would deplete reserves equivalent to its short-term external debt (IMF, 2020).

Currently, Pakistan's aggregate foreign reserves amount to USD 9.96 billion, while the short-run foreign loan set to mature by the end of December 2022 stands at USD 20 billion. As a result, the percentage of reserves to short-run foreign loan is approximately 0.5, which is less than one. Additionally, there is a current account deficit of USD 15 billion, equivalent to 150% of the country's reserves. These figures underscore the significant stress Pakistan is facing in terms of depleting its foreign exchange reserves (MoF, 2021).

Another set of criteria proposed by the IMF to assess the sensitivity and severity of a country's debt crisis involves two key ratios: the foreign loan to export ratio and the foreign loan to government revenue ratio. These ratios utilize the present value of medium and long-term public and publicly guaranteed external debt. According to these criteria, the acceptable thresholds are a public and publicly guaranteed medium and long-term external debt to export ratio of 150 percent and a public and publicly guaranteed external debt to government revenue ratio of 250 percent. These criteria have also been employed in providing external debt relief to highly indebted poor countries (HIPCs) (IMF, 2020).

As of the end of March 2022, Pakistan's medium and long-term public and publicly guaranteed debt amounted to USD 79.863 billion, while the country's exports reached USD 32.3 billion. In addition, the government's tax revenue stood at PKR 4,745 billion, which, when converted into dollars at a rate of PKR 200/USD, becomes approximately USD 23.725 billion (Mof, 2022).

When we compute the public debt to export ratio, it amounts to 342.75 percent, which is more than twice the established benchmark of 150 percent. Similarly, the foreign borrowing to tax revenue ratio has reached 336.61 percent, surpassing the benchmark of 250 percent by an additional 86.61 percentage points. This indicates that Pakistan falls into the category of highly indebted poor countries (HIPCs)

In summary, Pakistan is currently grappling with a severe economic and financial crisis, primarily stemming from its heavy foreign debt burden and the associated debt servicing obligations. This crisis is exacerbated by persistent twin deficits, capital flight, money laundering and smuggling, leading to frequent depletion of foreign reserves and volatile fluctuations in GDP growth, thereby increasing economic and political uncertainties. However, despite these challenges, there is a glimmer of hope in the form of the overseas diaspora and their remittances.

The leadership in both the civil and military sectors of the country is considering ways to harness the potential of remittances to alleviate the external debt burden, bolster foreign reserves and stabilize GDP growth. However, because of paucity of reliable scientific and empirical studies, they are hesitant to undertake major initiatives in this regard. Thus, the main purpose of this study is to empirically examine the impacts of remittances on external debt, foreign reserves and economic growth. The aim is to provide updated evidence and insights that can guide the formulation of appropriate policies to address these critical economic challenges.

1.2 Background of the Study

1.2.1 Brief history of Pakistan Economy

During 1947, Pakistan gained its independence from British colonial rule after more than 100 years. However, due to the lengthy colonial period and the circumstances surrounding the partition of British India, Pakistan faced significant challenges in terms of institutions, capital availability, skilled human resources, and foreign exchange reserves.

The colonial rule did not uniformly develop institutions and infrastructure across all regions of British India. There were instances where areas with non-Muslim majorities received more attention and investment in terms of development. Meanwhile, some areas with Muslim majorities, which later became part of Pakistan, did not receive the same level of investment and development focus from the British colonial administration.

During its colonial rule, Britain did exploit the resources and wealth of the subcontinent for its own benefit. Economic exploitation and resource extraction were prevalent, which had long-term implications for the economic conditions of the subcontinent, including Pakistan.

When Pakistan got independence, the country faced significant challenges. The population of Pakistan was around 37 million, including approximately 6 million Muslim migrants who had migrated from India to Pakistan. This migration brought not only a large influx of people but also created a strain on resources and infrastructure due to the sudden increase in population.

Pakistan lacked sufficient capital stock and modern technology, which were crucial for economic development and growth. The absence of these resources, along with the large population and lack of skilled labor, hindered Pakistan's ability to kick-start its economy effectively.

Furthermore, the distribution of assets, including physical and financial resources, during the partition was not equitable. The distribution of scarce resources between Pakistan and India was not on an even basis, and this disparity affected both countries' starting points as they began their independent journeys.

The military division between India and Pakistan also reflected an imbalance, with a ratio of approximately 65:35 in favor of India. This asymmetric distribution had implications for the defense capabilities of both countries.

In summary, Pakistan's struggle for independence was followed by significant challenges related to economic resources, population influx, and the distribution of assets and military resources. These challenges set the stage for Pakistan's early years as an independent nation and had lasting effects on its development trajectory. (Anjum & Sgro, 2017).

The State Bank of Pakistan, established in 1948, led to a currency conflict between India and Pakistan. The unresolved Kashmir territory also strained relations between the two nations. This conflict diverted resources from development to weapon production, leading to a nuclear arms race. Three wars were fought over Kashmir, pushing both countries to pursue nuclear capabilities. Political leadership issues hindered socio-economic development.Pakistan's agrarian economy experienced modest growth. The 1950s saw economic momentum due to the Korean War and export growth. In the 1960s, under General Ayub Khan's rule, Pakistan adopted a bureaucratic capitalist system, achieving higher growth rates during the first, second, and third five-year plans, despite the 1965 India-Pakistan war.

The 1960s marked a golden period due to the green revolution, aided by dam construction. In 1971, a third war with India led to East Pakistan's (Bangladesh's) separation after a military operation and the fall of Dhaka.

Pakistan faced trade deficits, with Rs. 2.35 billion in 1967-68 and Rs. 1.4517 billion in 1968-69. External borrowing, totaling Rs. 1.1053 billion in 1967-68, Rs. 1.1092 billion in 1968-69, and Rs. 0.4632 billion in H1 1969-70, was necessary due to deficits. Interest payments on foreign loans rose from Rs. 0.2246 billion in 1967-68 to Rs. 0.2909 billion in 1968-69. On the internal side, the Pakistan was relatively on safer side during fiscal years 1967-68 and 1968-69 as the country had revenues of Rs.5.8001 billion and expenditures of Rs.4.9307 billion hence budget surplus of Rs.1.4094 billion in 1967-68. while in 1969-70, revenue of Rs.6.7262 billion and expenditures of Rs.4.8830 billion hence budget surplus of Rs.1.8432 billion (GoP, 1980).

But the devastating situation and story started after 1970-1971 when there was paradigm shift in Politico economic philosophy of Pakistan led by late Zulifiqar Ali Bhutto then prime minister of Pakistan (1972-73 to 1976- 77), who decided to take private enterprises into government custody on the name of nationalization and economic reforms. The government took seven manufacturing and industrial tycoon groups and other banking, insurance and educational organizations into government custody that led to exponential growth in government spending by mid 1970s on the one hand and crowding out of private investment through capital flight on the other hand. Due to geometric increase in public sector spending amid adopting these private enterprises and offering various subsidies without substantial increase in public sector revenues; resulted in burgeoning of fiscal deficit. Besides, country's trade balance also started to be converted in to deficit due to heavily growing imports and stagnant exports resulting from locust attack on agriculture, oil price shocks in early 1970s and massive floods in 1974 (Anjum & Sgro, 2017).

In order to finance these sky rocketing twin deficits: the fiscal deficit of 5% of GDP and trade deficit of 3.276% of GDP during the period, external sources from middle east oil exporting countries with huge current account surpluses were approached who easily became willing to provide the external funds at concessional rates to Pakistan amid availability of huge surplus funds generated from the oil prices surges during 1970s. In this way, the country started accumulating external debt at accelerating pace. The growth rate of output during 1970s fell to 4.8% as compare to 6.8% during 1960s. However the GDP growth rate was maintained to 6.6% during the era of General Zia ul Haq during 1980s amid heavy inflows of foreign capital of USD 3.2 billion due to Soviet Afghan war in early 1980s. Nevertheless, the fiscal deficit during the period 1970-71 to 1990-91 remained 7% to 8% of GDP per year (IMF, 1992).

By 1987/88 the effects of expansionary demand management policies had culminated augmentation in the overall fiscal deficit, a widening external account deficit, and a reduced level of gross official reserves that were declining relative to imports. Gross official reserves had fallen to about 3 weeks of imports by June 1988 despite a sharp accumulation of short- term liabilities and a pickup in exports. To address these growing imbalances, the government initiated a medium-term macroeconomic and structural adjustment program supported by the International Monetary Fund and the World Bank. One of the important objectives of the program was to support comprehensive structural reform measures by strengthening demand management. To this end, policies were implemented to address the persistent problem of the fiscal deficit by improving domestic resource mobilization and tightening expenditure control. The equity and elasticity of the tax system were improved by the elimination of various exemptions, introduction of a general sales tax, and reduced reliance on taxes on foreign trade. On the expenditure side, several administered prices were increased; thus reducing the subsidy element of those prices and real wages in the public sector were allowed to decline (IMF, 1992).

The fiscal deficit may also remain an important policy issue, given the recent increase in the openness of the economy. If the government finds that its ability to borrow or to reduce spending is limited, it is left with only two choices: either to legitimatize the deficit and collect a higher inflation tax or to enhance revenues by other sources of taxation. However, the potential for collecting the inflation tax may now be reduced by the possibilities for currency substitution that have been created by the removal of restrictions on capital flows from Pakistan as well as on foreign currency holdings by domestic residents after adopting IMF's structural adjustment program (SAP) first in 1982 and then rejoining in 1987-88. The perception that the cost of servicing the stock of government debt represents a severe drain on government resources, together with perceived structural rigidity in government expenditure could lead economic agents to the expectation that the government would increase money financing. In anticipation of such taxation, currency substitution could increase, thus shrinking the inflation tax base. As a result, in the absence of a successful attempt at fiscal deficit reduction, inflation might tend to accelerate to higher levels than those observed in the past (IMF, 1992).

As Pakistan's saving rate in 1949-50 was 2% of GDP and investment rate was 4% of GDP. The difference between saving rate and investment rate was filled by borrowing externally (Anjum & Sgro, 2017). Majority of the researchers are agreed on the fact that Pakistan being capital scarce country required external sources from the very first day of its independence (Ali, 2014). From 1951 to 1955, the country received USD 121 million in first five year plan while during the second five year plan from 1956 to 1959, this amount was increased by three times as country out performed by joining the capitalist bloc against socialist bloc during cold war between United States of America and United States of Socialist Republic (USSR). Whereas the foreign debt touched the level of USD 2.7 billion up to 1969.

The foreign debt has been the top most economic issue of the country and it has been mother of all economic ill and evils in Pakistan. The Pakistan has been the fourth largest borrower from abroad in the South Asia region as its external debt has reached to 45% of GDP as compare to India's 21%, Bangladesh's 19% and Nepal's 23%. Pakistan usually borrows for debt repayment and for pleasure and pride (Asghar et al., 2022). It is noteworthy that in late 1990s, Pakistan's external debt to GDP ratio was 38% against Sri Lanka's 68%, Bangladesh's 65% and India's 36% (Chaudhary et al., 2000). However India and Bangladesh have succeeded in bringing down their external debt to GDP ratio to 21.2% and 21.8% respectively in 2021 but Pakistan's external debt to GDP ratio has unfortunately not been substantially decreased rather remained at same level to 35% of GDP in 2021 as shown in following Figure 1.2 which indicates the policy failure of Pakistan's economic managers.

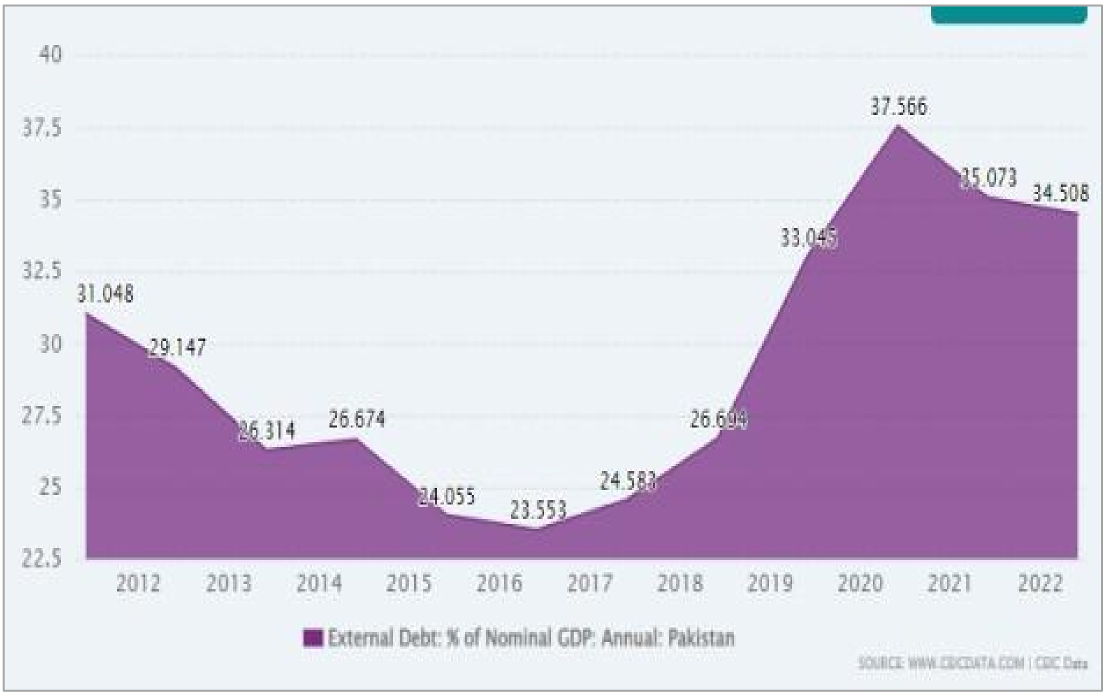


Figure 1.2 External Debt as percentage of GDP

A cursory examination of Pakistan's trade balance reveals a consistent pattern of trade deficits throughout its history, with the exception of a brief period in 2004-05 when it experienced a trade surplus. Consequently, Pakistan has repeatedly had to borrow from international bilateral and multilateral lenders, including the IMF, World Bank, Asian Development Bank, London Club and Paris Club, often under stringent conditions, to finance its ever-expanding trade deficit.

The diagram below illustrates Pakistan's trade deficit from 1972 to 2020, with the country experiencing a trade surplus only in 2004-05. In all other years, it has suffered from continuous trade deficit. While the deficit remained within certain limits to some extent up to 2005-06, it later deteriorated significantly, eventually reaching its historical peak at USD 35 billion in 2018. It began to recover in 2020 but has once again surged to USD 46 billion in 2021-22, as indicated in the Figure 1.3

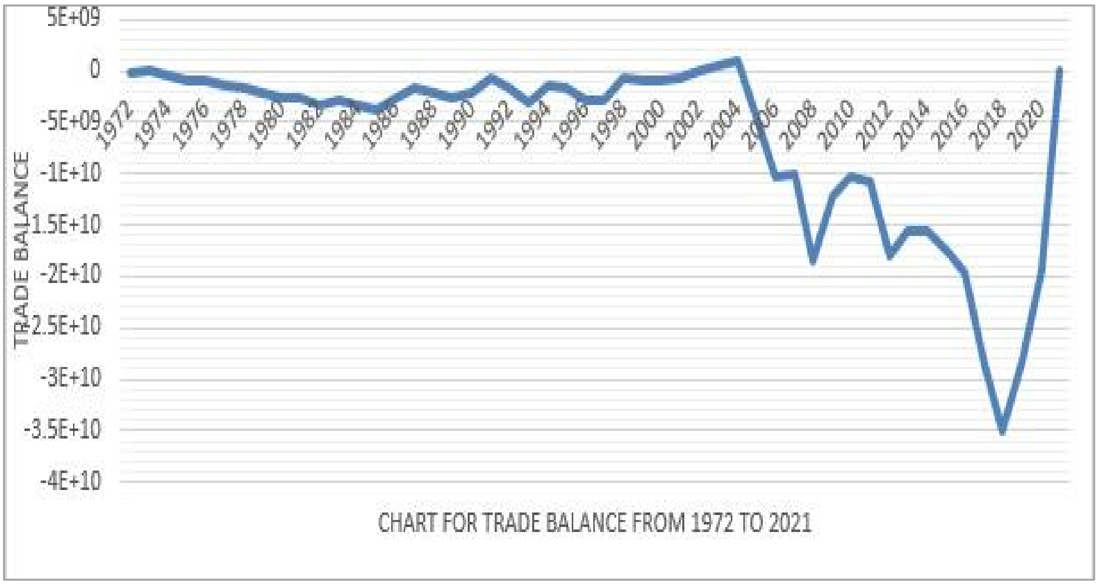


Figure 1.3 Trade Balance of Pakistan 1972-2020

The widening trade deficit can be attributed to the accelerated growth rate of imports compared to exports, particularly after the 2003-04 period, as illustrated below Figure 1.4.

Source: World development Indicator

Figure 1.4 Exports and Imports of Pakistan 1976-2021

In addition to the prolonged and persistent trade deficit, Pakistan has also contended with a prolonged fiscal deficit. To cover this fiscal deficit, governments have had three options at their disposal: first, they could finance it by borrowing domestically; second, they could finance it by borrowing from State Bank of Pakistan, essentially increasing the supply of money through currency printing; and third, they could borrow from foreign sources. Given the relatively high rates in the domestic financial sector compared to the international market, governments often leaned towards external borrowing. Furthermore, printing more currency carries inflationary implications, so governments were cautious about relying heavily on this option, instead opting for foreign grants and loans.

During the 1970s, 1980s, and 1990s, Pakistan faced an average fiscal deficit of 7% to 8% of its GDP. However, this deficit decreased to 3.5% of GDP from 2000 to 2007. As a result, the debt burden, which had stood at 102% of GDP in 1998-99, decreased significantly to 53% of GDP in 2007 (Bank, 2021). This underscores a robust correlation between the fiscal deficit and the country's debt burden, with implications for macroeconomic stability. However, as illustrated in Figure 1.5, the fiscal deficit began to rise once more. From 2008 to 2013, the average fiscal deficit increased to 6.767% of GDP. Subsequently, from 2014 to 2018, it slightly declined to 5.54% of GDP, only to surge again to 8.06% of GDP from 2019 to 2021.

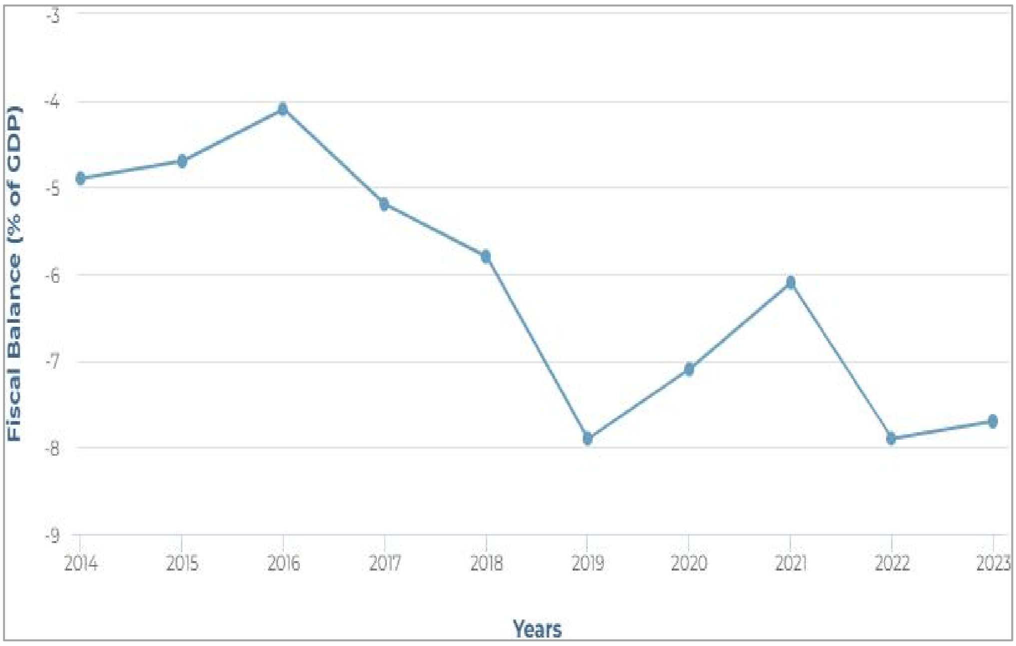


Figure 1.5 Fiscal Balance as percentage of GDP

In addition to the presence of twin deficits, Pakistan has consistently faced a severe shortage of foreign exchange reserves, coupled with more significant financial outflows compared to inflows. To ensure that foreign exchange reserves remain at a minimum threshold, equal to import bill of three months, successive governments in Pakistan have chosen to seek external financial assistance.

In July 1988, Pakistan's foreign reserves had dwindled to a level equivalent to only three weeks' worth of imports. Consequently, the Pakistani government found itself compelled to rejoin the SAP established by IMF and the World Bank. This program was initially launched in 1982 but Pakistan had to discontinue its participation due to substantial foreign inflows, particularly when Pakistan became a key foe of the USA in the war against the Soviet Union's invasion of Afghanistan. During the early 1980s, Pakistan received approximately USD 3.2 billion as part of this support.

Under the SAP program, Pakistan was required to liberalize its trade and financial transactions to and from the country, adopt a floating exchange rate regime, allowing its currency to be decided by the forces of demand and supply, and permit its residents to alter their domestic currency into external currency holdings, particularly in US dollars, as the US dollar is widely recognized as the global reserve currency (IMF, 1992).

As a result, Pakistan's trade balance began to deteriorate, primarily due to the rapid growth in imports compared to stagnant exports, a significant depreciation of its currency and substantial capital flight from the country. During the following years, residents' savings and wealth were increasingly held in dollars. The state of affairs turned to be worst in 1998-99 when Pakistan faced a severe financial crisis and fell short on its obligations. This crisis was triggered by heavy sanctions imposed by Western countries and the USA in response to Pakistan's atomic tests conducted on May 28, 1998.

The crisis escalated further when the then Chief of Army Staff, General Pervez Musharraf, declared martial law on October 12, 1999, following his dismissal from the post of Chief of Army Staff by then-Prime Minister Nawaz Sharif. The foreign exchange reserves plummeted to a mere USD 300 million, which was equivalent to only one week's worth of import bills.

Subsequently, Pakistan's fortunes took a turn, or perhaps misfortune, when the United States needed Pakistan's support in the war against terrorism in Afghanistan after ninth September attacks on the World Trade Center in 2001. This led to the removal of sanctions on Pakistan and the opening of new avenues for foreign currency inflows, including grants, loans and the Coalition Support Fund.

Pakistan also benefited from debt restructuring, rescheduling, debt service postponement, external debt waivers and significant inflows of FDI in the telecommunications industry and portfolio investment in the stock market. During the period from 2002 to 2018, Pakistan received approximately USD 33 billion from the USA.

While it is noteworthy that the cost incurred by Pakistan for its involvement in the USA's war against terrorism was far higher than the aid it received. The estimated cost of Pakistan's participation in the war from 2002 to 2011 amounted to USD 67 billion, not to mention the irreversible human losses in terms of deaths and disabilities was in addition. In contrast, the total aid inflow during the same period amounted to only USD 14 billion (MoF, 2011). In fact, the total loss incurred up until the cease of the war amounted to USD 150 billion in financial and economic terms, and it came at the cost of the lives of 70,000 individuals, along with the migration and resettlement of hundreds of thousands of souls from the northern areas of the country, a process that is still ongoing.

The substantial foreign inflows provided some resilience and relief to Pakistan's struggling economy during the era of General Pervez Musharraf, spanning from 1999 to 2006-7. During this period, several key foreign debt indicators saw improvements, including the debt-to-GDP ratio, debt servicing-to-export ratio, and debt servicing-to-foreign exchange reserves ratio. These improvements were a result of a dramatic enhancement in the country's economic performance, driven by the influx of foreign exchange. By 2008, Pakistan had managed to accumulate foreign exchange reserves of USD 16.5 billion, equivalent to six months' worth of imports at the time. The country's exports also surged by 100%, rising from USD 8.6 billion to USD 17 billion. Furthermore, the current account remained in surplus for three out of the seven years, and the external debt-to-GDP ratio dropped by 50%, decreasing from 47% of GDP to 27.8% during the period from 2002 to 2008. Additionally, foreign direct investment reached a historic level of USD 5 billion, and the average GDP growth rate exceeded 6% per year during the same period

In 2007-08, Pakistan once again teetered on the brink of bankruptcy as its foreign exchange reserves were rapidly depleted, largely due to political instability and hyperinflation, which had reached 25%. In 2008-09, foreign reserves again dipped to a minimum level of three months' worth of import bills due to political turmoil after the events of December 27, 2007, and the global financial crisis, leaving Pakistan with no choice but to seek aid from international lenders. This situation recurred in 2013-14 due to prolonged political protests and sit-ins by major political parties, leading to a depletion of foreign reserves caused by capital flight, money laundering, deteriorating law and order, outflows of hot money and decreased foreign investment. In 2018, foreign exchange reserves fell to USD 9 billion, equivalent to only 1.5 months' worth of import bills, primarily due to a historically high trade deficit of USD 35 billion and a current account deficit of USD 19 billion. Consequently, the newly formed government under Mr. Imran Khan sought financial assistance from various sources, including China, Saudi Arabia, the United Arab Emirates, overseas Pakistanis, the IMF, World Bank, Asian Development Bank, and international private creditors and bond markets. This effort raised foreign reserves to USD 24 billion until his government was toppled through a vote of no confidence, alleged horse trading and purported U.S. intervention. As a result, foreign reserves began to decline again from USD 24 billion to USD 9 billion, leading to a 60% depreciation of the currency, a 40% inflation rate, and a 21% interest rate within a few months in 2022-23. Subsequently, further increases in the prices of energy products and other goods are expected in the coming days. It has been observed in Pakistan that whenever there is a change in government, foreign exchange reserves vanish overnight, and the currency depreciates due to increased supply of Pakistani rupee and demand for the U.S. dollar. Many people convert their savings into dollars and transfer their wealth abroad amid political, social, and economic uncertainty and unrest

1.2.2 Emigration Policy of Pakistan

Pakistan's long-standing policy in favor of emigration is driven by the goal of decreasing unemployment and augmenting remittances through official set ups. Government of Pakistan has had been adopting the policy of exporting human resources to Middle East, Europe and United States of America instead of focusing to export goods and services since 1970s. From 1971-2010, total emigrants were 5.35 million people but the number has increased from 2011 to February, 2023 exponentially to reach at 12.58 million workers. Those who got nationality in UK and USA and have migrated informally and illegally are in addition to it. This year, the government is targeting to send one million more workers to abroad with over 99% of them being male. While one million Pakistani have left for abroad employment during 2023. (MoL, 2023).

Pakistan possesses a well-established system for managing migration, which includes the Ministry of Overseas Pakistani and Human Resource Development (MOPHRD), a dedicated federal ministry responsible for overseeing matters concerning Overseas Pakistanis, especially concerning labor emigration. While there isn't an official policy document in place, Pakistan has generally maintained a pro-emigration stance and has had institutional arrangements since the late 1970s. In the past decade (2010-2020), three attempts were made to create a National Emigration Policy for Pakistan. However, the first two attempts were unsuccessful due to changing government priorities. The third effort to formulate a policy for overseas Pakistanis commenced in 2017, and the draft is currently undergoing the approval process (Rashid & Samad, 2022).

The government of Pakistan has implemented several measures to encourage remittances from overseas Pakistanis, including Pakistan Remittance Initiative (PRI), foreign currency accounts and the premium prize bonds, a collaborative effort involving the Ministry of Overseas Pakistani, the Ministry of Finances and the State Bank of Pakistan. The PRI aims to facilitate safer, faster, and more rewarding money transfers to Pakistan.

Pakistani expatriates have various avenues to further bestow the country's economy by investing in Pakistan, involving in crowdfunding startups and buying government-backed diaspora bonds. Encouraging remittances for savings and investment can reduce Pakistan's reliance on foreign borrowing. The government of Pakistan has had invited the foreign residents of Pakistan to buy government of Pakistan's debt, equities, and mortgage markets with their funds.

During the period from 2001 to 2018, significant inflows of remittances lifted millions of Pakistanis out of poverty. However, overall social and economic advancements have been constrained. Human capital development, particularly in education, has fallen behind, evidenced by a high rate of learning poverty at 75%. Consequently, the sustained effectiveness of policies related to remittances necessitates robust coordination between monetary and fiscal policies, as well as political stability within the country (Jamil, 2023).

Despite Pakistan heavily relying on labor exports to generate remittances and provide employment opportunities, the country has encountered difficulties in diversifying the skill levels of its overseas workforce. Most of these workers are males with low skill levels, primarily engaged in professions related to transportation (such as mechanics and drivers) and construction (including carpenters, steel fixers, masons plumbers and electricians). The wide range of these emigrants are located in the Gulf and the Middle East, where approximately 97% of Pakistani workers abroad find employment. It's important to note that this migration is typically temporary, with laborers typically employed for two to three years at a time. Many choose to renew their agreements, and some even engage in circular migration. This aspect needs to be taken into account when analyzing migration data from Pakistan, as it can lead to repeated counts of migration (Christensen, 2016).

The policy draft revolves around four primary aims: 1.Promoting secure, well-organized, and consistent migration, 2. Ensuring the well-being and protection of expatriate emigrants and their families, 3. Encouraging active interaction with the emigrants and 4. Assisting in the reintegration of returning migrants. Additionally, the government has shown a strong interest in boosting and regularizing remittance flows by providing affordable method of sending money to home. However, the expenses related with those formal channels are usually more and involve more time than the most famous but illegal alternatives of *hawala and hundi* methods of sending money, which the government has officially prohibited (Rashid & Samad, 2022).

Pakistan holds the position of the second-largest sender of labor in South Asia, underscoring its pro-emigration stance. In 2017, the Ministry of Overseas Pakistani and Human Resource Development (MOPHRD) collaborated with technical support from the International Centre of Migration Policy Development (ICMPD) to complete a National Emigration and Welfare Policy for Overseas Pakistanis. However, this policy has yet to be formally endorsed. Previous draft iterations of this emigration policy were also prepared in 2008 and 2014, yet none of them secured approval from the Cabinet.

The institutional framework regarding emigration in Pakistan primarily focuses on four key areas: promoting emigration, safeguarding the rights of migrants, formalizing remittance flows and engaging with the diaspora. More recently, the Ministry of Overseas Pakistani and Human Resource Development (MOPHRD) has increased its efforts to address the adaptation of returning overseas workers. To achieve these objectives, MOPHRD operates through three main entities: the Bureau of Emigration and Overseas Employment (BEOE), the Overseas Employment Corporation (OEC) and the Overseas Pakistanis Foundation (OPF). Private agencies, known as Overseas Employment Promoters (OEPs), are registered with the OEC, which oversees the placement of Pakistani laborers abroad. The protection of emigrants' rights falls under the jurisdiction of the OEC's agency called the Protector of Emigrants. These structures are governed under the Emigration Ordinance of 1979 and the Emigration Rules of 1979 (most recently updated in 2019) (Rashid & Samad, 2022).

Pakistani embassies located overseas designate Community Welfare Attaches (CWAs) to serve as primary points of contact for resolving any conflicts or welfare-related issues that emigrants may encounter. Furthermore, the Overseas Pakistanis Foundation (OPF) is responsible for looking after the welfare of emigrants' families by administering a pension fund, delivering vocational and educational services, and offering housing programs, often at reduced costs (Christensen, 2016).

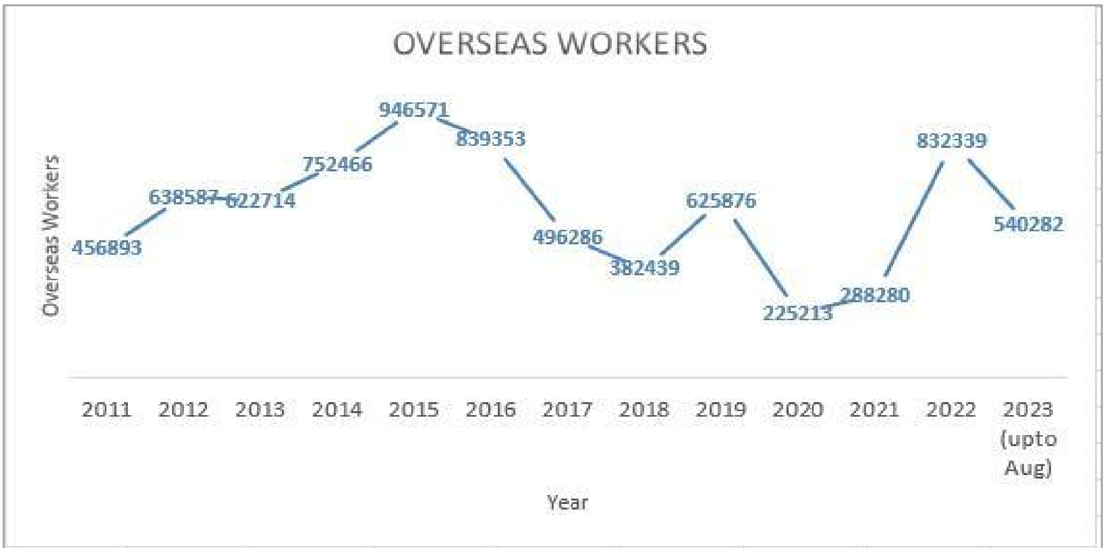
In 2009, a move was made to shift remittance transactions from informal methods such as hawala and hundi to legitimate channels. This initiative was a joint effort involving the Pakistan Remittance Initiative, the Ministry of Overseas Pakistanis, and the Ministry of Finance. The key aims were to reduce the expenses linked to remittance transfers, establish exchange rates based on market dynamics, enhance awareness about the formal routes for remittance transfers, and officially outlaw informal methods (Jawaid, 2020).

Pakistan has endorsed numerous international agreements concerning labor emigration, notably the Colombo Process and the Abu Dhabi Dialogue. It also participates in the Budapest Process, dedicated to developing an organized system for safe and controlled migration. In 2018, Pakistan passed two laws, the Prevention of Trafficking in Persons Act 2018 and the Prevention of Smuggling of Migrants Act 2018, with the objective of bolstering border security and law enforcement measures to combat undocumented migration, all while safeguarding the rights of human trafficking victims. The United Nations Office on Drugs and Crime (UNODC) provided support for enacting these laws. Additionally, the Federal Investigation Agency (FIA) manages an Integrated Border Management System (IBMS) at FIA checkpoints, linking various databases, including the National Database and Registration Authority (NADRA), for the monitoring of undocumented migrants (Rashid & Samad, 2022).

Recently, the interim government of Pakistan has allocated Rs 80 billion to promote the formal channels for remittances. Dr. Shamshad Akhtar, the Caretaker Finance Minister, has revealed that Rs 20 billion has been disbursed to the State Bank of Pakistan for this purpose. The government is urging overseas Pakistanis to utilize banks, financial institutions, and public entities for remittance transfers, ensuring a seamless process. Several initiatives have been introduced, including the waiving of fees for remittances exceeding USD 100, the Sohni Dharti Remittance Program (SDRP) with a unique smartphone app, incentives for exchange companies, and awareness campaigns. Furthermore, a lucky draw program offering cash prizes has been introduced for individuals who send high-value remittances (Zawya, 2023).

1.2.3 Trends in emigration from Pakistan

In the past, Pakistan's emigration of workers has mainly concentrated on low-skilled sectors. During the period spanning 1971 to 2023, approximately 42.3% of emigrants were classified as unskilled, while 51% fell into the semi-skilled and skilled categories. Highly skilled and highly qualified emigrants made up a mere 5.7% of the total. More than 13 million Pakistanis have been emigrated abroad while being most emigration of 946571 workers in 2015. More recently, in 2022, 832339 workers emigrated to foreign and from January, 2023 to August 2023, approximately, 540282 workers have moved abroad for employment purpose as shown in Figure 1.6 (Mol, 2023).



Source: Drawn by author by using data from BEOE, Pakistan

Figure 1.6 Overseas Workers of Pakistan from 2011 to August, 2023

Among them, 6.527 millions (52%) are located in Saudi Arabia, 4.2338 million (33%) are located in UAE, 0.966 million (8%) in Oman, 0.329 millions (3%) in Qatar and rest are located in other different countries of the World as shown in Table 1.1 and Figure 1.6.

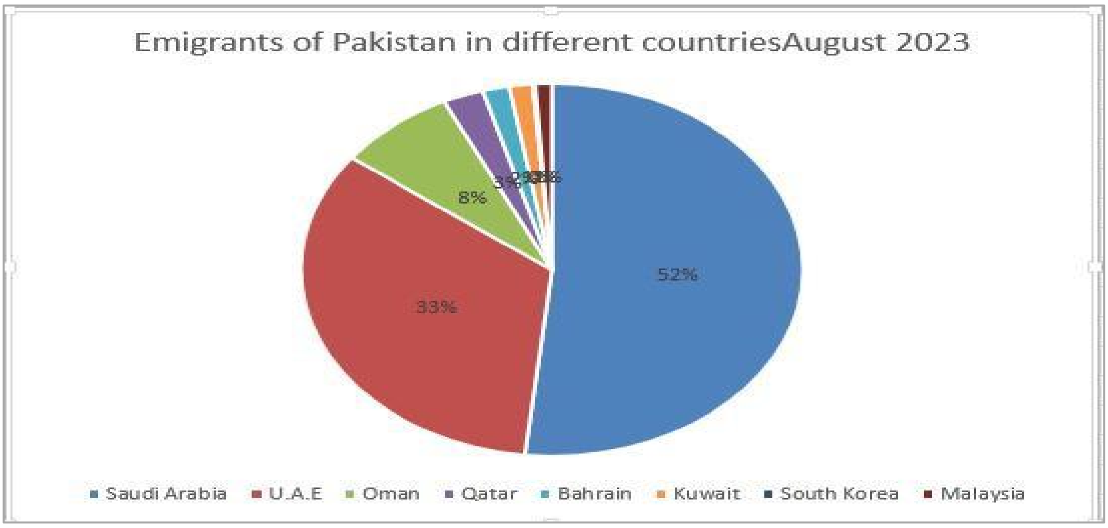


Figure 1.7 Emigrants of Pakistan in Various countries in percentage

Table 1.1 Emigrants of Pakistan in different countries by August 2023

Country	Emigrants
Saudi Arabia	6527862
U.A.E	4233842
Oman	966775
Qatar	329935
Bahrain	216695
Kuwait	189239
South Korea	19459
Malaysia	134871

Source: Bureau of emigration and overseas employment, Ministry of labor, Government of Pakistan

Recently, Pakistan has shifted its policy and institutional approach to emigration by placing greater importance on skill development. The goal is to export more skilled laborers who can earn higher remittances. To achieve this, the Ministry of Overseas Pakistani and Human Resource Development (MOPHRD) collaborates with organizations like the National Vocational and Technical Training Commission, the Technical Education and Vocational Training Authority (TEVTA), and the Skill Development Council to offer training and certifications that meet international standards. This shift towards skill development is partly influenced by Arab nations, especially UAE and KSA, implementing policies favoring the nationalization of their work forces, resulting in significant layoffs of foreign laborers. Consequently, Pakistan is exploring new labor markets and enhancing the skills of its workforce to fulfil the growing demand for skilled workers (Rashid & Samad, 2022).

The safeguarding and protection of the rights of individuals planning to emigrate and those who have already emigrated have become key policy concerns, both before they leave and after they have settled abroad. In the pre-departure phase, there is significant worry about the involvement of illegal and unregistered agents and recruiters who exploit potential emigrants by imposing high fees, using fraudulent documentation, failing to guarantee jobs, and, in some instances, engaging in labor smuggling. These workers are specifically at risk in destination countries because they lack official registration in their domestic nation, making them ineligible for safety. Besides, the growing instances of xenophobia and prejudice in foreign countries too pose threats to the well-being of emigrants.

The appointment of Community Welfare Attaches (CWAs) was a response to the increased risks of labor exploitation and violations of labor rights (Khan, 2020, Rafique Wassan et al., 2017).

1.2.4 Workers remittances

Overseas worker's remittances have provided some level of support to the Pakistani economy, particularly in terms of maintaining the BoP and foreign reserves. However, the scale of the trade deficit and debt servicing has been so substantial that it has consistently outweighed the contributions made by worker's remittances. Despite the substantial inflow of remittances, which is nearly equivalent to the country's exports, Pakistan's current account has often remained in a deficit. Furthermore, the country's capital account has not been in an ideal state due to limited foreign direct investment and portfolio investment, a situation exacerbated by deteriorating law and order conditions, political instability, governance challenges, and a high cost of doing business.

In the latter half of 2021, Pakistan received its largest share of remittances from the Gulf region and Europe, as indicated by the recent figures of Central Bank of Pakistan (SBP). Saudi Arabia continued to be the primary source of remittance inflows, contributing 26% of the total remittances, which amounted to roughly USD 4 billion during first six months of fiscal year 2021-22. The United Arab Emirates and the United Kingdom held the second and third positions, respectively, remitting USD 3 billion and USD 2.1 billion to Pakistan during that period (IOM, 2022). Table 1.2 shows the top ten sources of remittances in Pakistan in 2021. Saudi Arabia maintaining the historically the top first position, followed by United Arab Emirates, United Kingdom, United States, Kuwait and so on.

Table 1.2 Top ten Sources of Pakistan Remittances in 2021

Destination territory/territory of origin	Remittances sent from Pakistan	Remittances received in Pakistan	Net balance in Pakistan (remittances received minus remittances sent)
Worldwide	59.95	31,312	31,252.05
Saudi Arabia	0	8,045.08	8,045.08
United Arab Emirates	0	5,988.23	5,988.23
United Kingdom	0	2,941.89	2,941.89
United States	0	2,500.46	2,500.46
Kuwait	0	1,959.67	1,959.67
Qatar	0	1,584.99	1,584.99
Canada	0	1,208.96	1,208.96
Oman	0	1,191.69	1,191.69
Singapore	0	888.96	888.96
Italy	0	726.52	726.52
Australia	0	550.67	550.67

Source: State Bank Of Pakistan

The average inflow of remittances from 1976 to 1990 remained at approximately USD 2 billion per year. However, during the 1990s, this figure slightly declined to USD 1.43 billion per year. In contrast, from 2001 to 2010, it experienced a significant surge to USD 5.38 billion per year. Furthermore, from 2011 to 2020, there was a massive increase, reaching USD 18.7 billion per year.

Remarkably, in 2021 and 2022, worker's remittances saw a substantial rise, reaching USD 26 billion and USD 31 billion, respectively. This rise happened in spite of problems created by the COVID-19 pandemic, economic slowdowns, and lockdown. It demonstrates the immunity of worker's funds in the time of global health and economic crises, as depicted in the Figure 1.8.

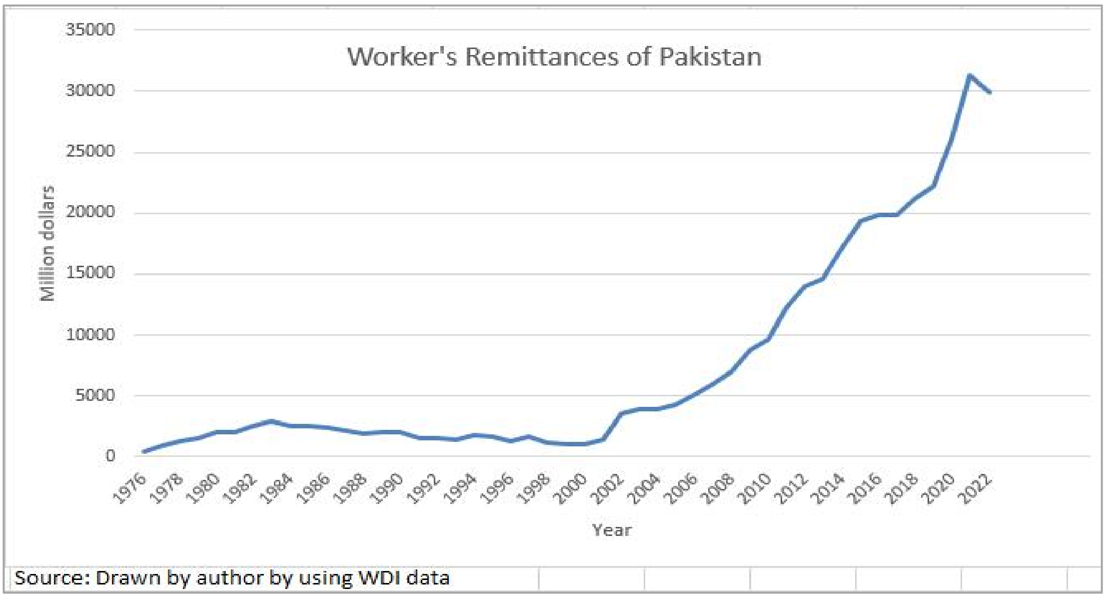


Figure 1.8 Worker's remittances of Pakistan from 1976 to 2022

Remittances began to experience exponential growth after 2001, primarily because workers began sending their remittances through formal channels. This shift was driven by the stringent compliance requirements imposed by the Financial Action Task Force (FATF) and an increase in the number of emigrants.

1.2.5 External debt and its associated debt servicing

Furthermore, the Government of Pakistan has heavily relied on external grants and loans, which has significantly eroded the Pakistan's capacity to meet its foreign debt liabilities. There is a growing concern that Pakistan is approaching insolvency, both formally and informally. In 1971, the country's external debt was at USD 3.621 billion, and within just six years, it nearly doubled to USD 6.7 billion by 1977. During the subsequent 11-year period of military rule under General Zia ul Haq, the external debt soared to USD 14 billion by 1988, more than doubling once again.

Following the tragic plane crash that claimed the life of General Zia ul Haq in August 1988, democracy was restored, and subsequent governments, led by both Mrs. Benazir Bhutto and Muhammad Nawaz Sharif, continued to borrow from foreign sources. By 1999, the external debt had surged to USD 28.2 billion, with both leaders collectively adding USD 14.2 billion to the country's external debt burden over an 11-year period.

The period from 1999 to 2007-08 saw the military rule of General Pervez Musharraf, during which Pakistan's foreign debt reached USD 40.63 billion. This increase occurred despite significant debt waivers, suspension of debt servicing and restructuring and rescheduling of foreign debt and liabilities. These measures were implemented due to General Musharraf's decision to participate in the war against terrorism in Afghanistan led by USA after the 9/11 attacks on the World Trade Center in New York in 2001. During his nine-year rule, General Musharraf added USD 12.43 billion to the nation's external debt burden.

In 2007-08, dictatorship of General Pervez Musharraf came to an end, and a new democratic government took power under the leadership of President Asif Ali Zardari. He assumed the presidency following the assassination of his wife, Mohtarma Shaheed Benazir Bhutto, in Liaquat Park, Rawalpindi, on December 27th, 2007. This tragic event led to severe political turmoil, unrest, historical violence, vandalism and loss of property and lives in the country.

As a consequence of this upheaval, as well as capital flight driven by a decline in portfolio investment and foreign direct investment, further exacerbated by the relocation of some textile industries to Bangladesh due to deteriorating law and order, electricity and gas shortages, Pakistan's foreign exchange reserves were depleted and the country was reached on the brink of insolvency.

In response, the newly established government of the PPP turned to the (IMF) for financial support, entering into an agreement with the IMF under stringent conditions. This period saw a significant increase in hyperinflation, reaching 25%, and a substantial currency depreciation, with the exchange rate going from RS 55/USD in 2007 to RS 92/USD in 2008-09. Despite these challenges, Pakistan regained access to the international financial market and began borrowing from abroad, resulting in the country's foreign debt reaching USD 44 billion by 2013, representing a 10% increase compared to 2008.

Following this, there was a change in government as PML(N), led by Mian Muhammad Nawaz Sharif, took over. During his leadership, political protests and sit-ins were launched by two political parties, Pakistan Awami Tahreek led by Dr. Tahir ul Qadri, and Pakistan Tahreek Insaaf led by Imran Khan, in 2014. These protests persisted for 126 days in Islamabad and further drained foreign exchange reserves due to more financial outflows than inflows. This was a result of decreased foreign direct investment, capital flight and money laundering.

Recognizing the severe financial position, the government got help from the (IMF) and initiated the China Pakistan Economic Corridor (CPEC) project, which is a part of China's Belt and Road Initiative (BRI). Under CPEC, China pledged to invest USD 56 billion in infrastructure and energy projects, resulting in increased capital and financial inflows into the nation.

During this government's tenure, the country's external debt surged to USD 67.3 billion in 2018, marking a substantial increase of USD 23.3 billion over five years, representing a 52.9% rise compared to 2013. In 2018, there was a change in leadership, with Pakistan Tahreek Insaf, led by former cricketer Mr. Imran Khan, winning a majority of seats in the national parliament. His government faced a severe shortage of foreign exchange reserves, with foreign exchange reserves dropping to USD 9 billion in 2018 due to a historically high trade deficit of USD 35 billion and a current account deficit of USD 19 billion.

The government's hesitation about engaging with the IMF caused significant uncertainty in the currency, capital and commodity markets. Consequently, the currency depreciated by 45% within one year, going from RS 115/USD to RS 160/USD in 2019, and inflation soared into double digits. Ultimately, the government decided to enter into an agreement with the IMF in 2020, securing a USD 6 billion bailout package that brought temporary financial stability. This agreement also opened doors to other international multilateral and bilateral creditors, including the World Bank, Asian Development Bank, China, the United Arab Emirates, the Kingdom of Saudi Arabia and the London and Paris Clubs. These additional sources of funding allowed the government to borrow from multiple avenues.

By the end of his three-year tenure, Pakistan's foreign debt had climbed to USD 96.31 billion in December 2021, indicating an increase of USD 30 billion in foreign debt during that period. It's important to note that the figures mentioned here pertain to the government's foreign loan, while the private sector's foreign loans of USD 34 billion is additional. Therefore, the total external debt for the country stands at approximately USD 130 billion (Bank, 2021) (GoP, 2022). Following Figure 1.9 shows the external debt and liabilities of Government of Pakistan in Current US dollar from 1976 to 2022.

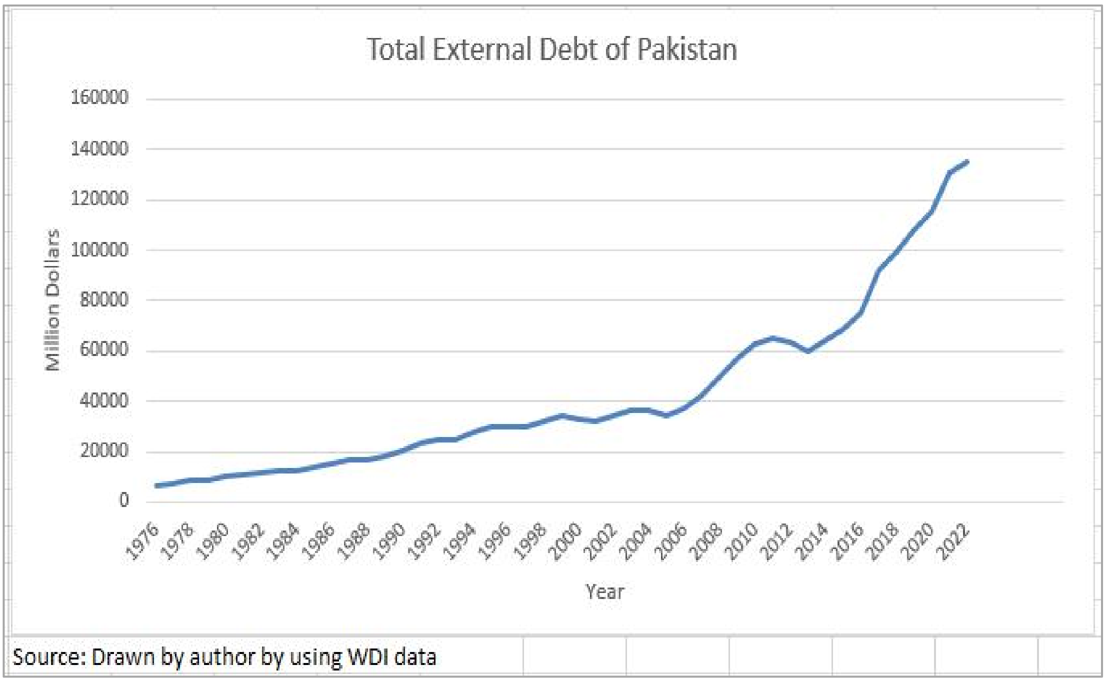


Figure 1.9 Total External Debt of Pakistan from 1976 to 2022

During General Zia ul Haq's regime from 1985 to 1988, the country secured loans of USD 4.6 billion from foreign sources over three years, averaging USD 1.534 billion per year. When the Pakistan People's Party, led by Mohtarma Benazir Bhutto, held power from 1988 to 1990, foreign loans taken amounted to USD 4 billion in 2.5 years, averaging USD 1.6 billion per year. During Pakistan Muslim League's tenure, under the leadership of Mian Muhammad Nawaz Sharif from 1990 to 1993, the country received foreign loans totaling USD 6.1 billion in three years, averaging USD 2.34 billion per year. During the subsequent term of Pakistan People's Party from 1993 to 1996, they borrowed USD 7.3 billion from abroad over three years, averaging USD 2.433 billion per year.

However, during General Pervez Musharraf's rule from 1999 to 2008, Pakistan accumulated foreign loans amounting to USD 17.9 billion over nine years, averaging USD 1.98 billion per year, in addition to receiving substantial grants totaling USD 5.06 billion. Following this period, during the third tenure of the

Pakistan People's Party, led by Asif Ali Zardari from 2008 to 2013, foreign lenders disbursed USD 11.6 billion over five years, averaging USD 2.32 billion per year, alongside receiving USD 2.03 billion in grants. Similarly, during the third tenure of Pakistan Muslim League (N), foreign creditors extended loans totaling USD 49.762 billion over five years, averaging USD 9.95 billion per year, marking the highest historical level of external borrowing.

Subsequently, during the government of Pakistan Tahreek Insaaf, led by Mr. Imran Khan from 2018 to March 2022, foreign loans disbursed to the country amounted to USD 38.8 billion in 3.5 years, averaging USD 11.08 billion per year. In a span of 37 years, Pakistan has accumulated a total foreign debt of USD 139.562 billion as depicted in 1.3. While the country has repaid nearly USD 100 billion in external debt servicing over the past 50 years (from 1971 to 2020), it still has a substantial debt of USD 130 billion owed to international lenders. This debt is predicted to rise more, as the Pakistan's Central Bank and Finance Minister have announced a need for an additional USD 41 billion over the next 12 months.

Table 1.3 Comparative borrowings of different Governments from 1985-2022

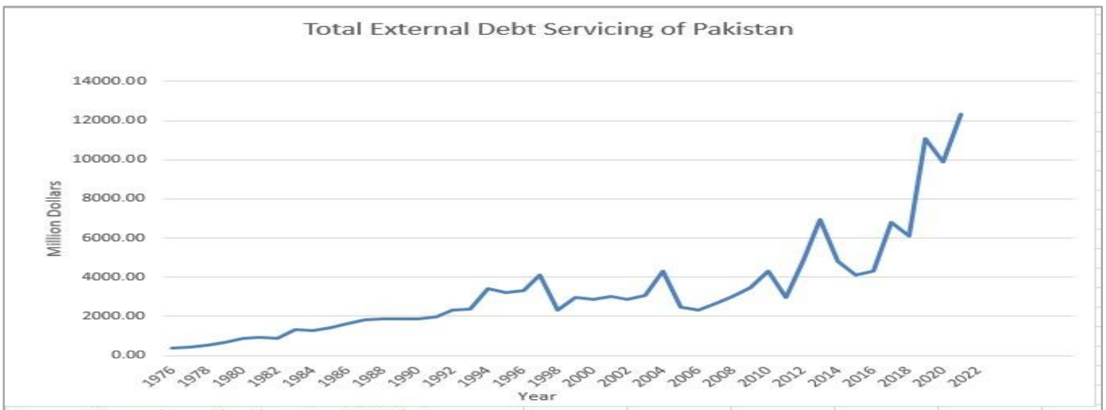
S.No:	Period	Loan	Grant	Total
1	1985-88	USD4.6 billion	USD1.07 billion	USD6.37 billion
2	1988-90	USD4.0 billion	USD1.11 billion	USD5.11 billion
3	1990-93	USD6.1 billion	USD1.04 billion	USD7.05 billion
4	1993-96	USD7.3 billion	USD804 million	USD8.01 billion
5	1999-2008	USD17.9 billion	USD5.06 billion	USD23.0 billion
6	2008-2013	USD11.6 billion	USD2.03 billion	USD14.0 billion
7	2013-2018	USD 49.762 billion		

8	2018-2022	USD 38.8 billion
	Total in 37 years	USD139.562 billion

Source: CADTM committee for abolition of illegal debt Belgium 21 December 2013 Abdul Khalique

It is clear that every successive administration, be it democratic or autocratic, has found itself borrowing more than the previous one. This pattern is likely to continue unless the Pakistani government undertakes substantial structural and transformational changes at both micro and macroeconomic levels. These reforms should focus on decreasing the nation's trade and fiscal deficits by promoting exports, limiting imports, boosting tax revenue, reducing non- development government expenditure and encouraging the formal channels for remittance inflow.

Beside skyrocketing burden of foreign loans, the country is also grappling with rapidly increasing debt service payments, which have been growing exponentially over the last three decades: the 1990s, 2000s, and 2010s, as depicted in Figure 1.10. In 1971, foreign debt servicing amounted to USD 171.5 million, which increased to USD 329 million by 1977, nearly doubling in just six years. During this time, the average debt servicing per year stood at USD 269 million. Subsequently, it surged to USD 1264 million, nearly four times higher than in 1977, with an average annual foreign debt service of USD 857 million in 1988.



Source: Drawn by author by using WDI data

Figure 1.10 External Debt Servicing of Pakistan from 1976 to 2022

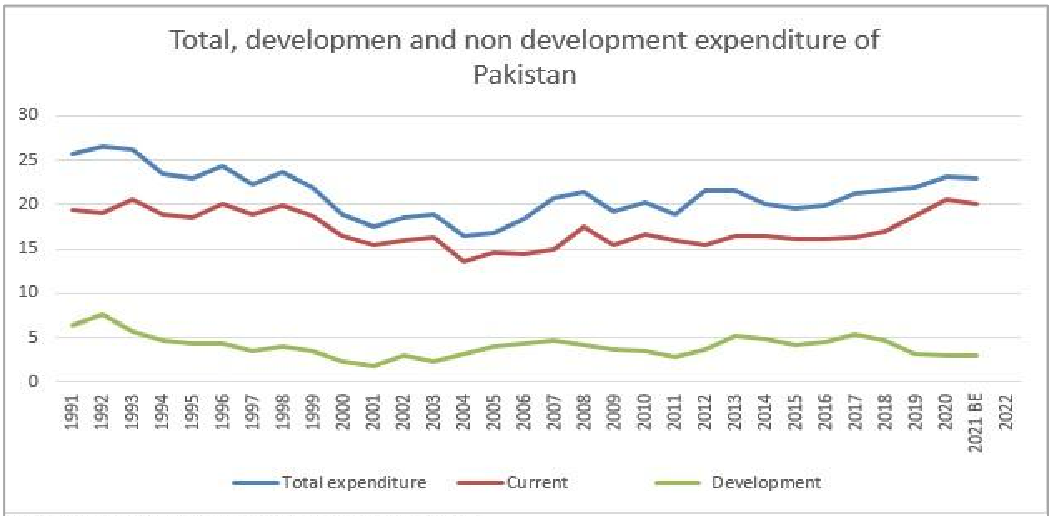
In 1999, foreign debt servicing reached USD 1710 million in absolute terms, but the average annual foreign debt servicing from 1989 to 1999 (11 years) remained at USD 1950 million. From 2000 to 2008, external debt servicing increased to USD 2200 million in absolute terms, with an average annual figure of USD 2080 million during this period. By 2013, it had risen to USD 2520 million in absolute terms and averaged USD 2420 million per year from 2009 to 2013.

However, in 2018, it surged to USD 4630 million in absolute terms, with an average annual external debt servicing of USD 3980 million from 2014 to 2018. It further increased to USD 11075 million and USD 8388 million in 2019-20 and 2020-21, respectively, despite the Debt Service Suspension Initiative (DSSI) by the G-20 and other bilateral and multilateral lenders as a response to the COVID- 19 pandemic (GoP, 2022).

It appears that in Pakistan, the loans obtained and remittances received were not effectively utilized for productive and profit-oriented projects. Instead, a significant portion has been directed towards external debt servicing, import financing, and dollar hoarding, while also facilitating capital flight and money laundering (State Bank of Pakistan, Various Years; World Bank, 2022; IMF, 2023). Empirical evidence suggests that remittance inflows have often been used for consumption rather than investment, with informal financial networks playing a role in fund misallocation (Amjad, 2010; Farooq & Ahmad, 2019; Javaid, 2021). When examining the composition and distribution of government spending in Pakistan over the past three decades, a concerning pattern emerges. On average, only 20 to 25 percent of total spending has been allocated to development, while the remaining 75 to 80 percent has been directed towards non-development expenses, including debt servicing, defense, and recurrent expenditures.

For instance, in 1991, government total expenditure amounted to 25. In 2011, total government expenditures were 19.9% of GDP, with development expenses accounting for only 2.8%, or 15.3 percent of the total, while non-development current spending reached 86.7%. Finally, in 2021, total government spending stood at 22.9% of GDP, with a meager 2.9% allocated to development, equivalent to 12.6% of total spending. The remaining 87.4% was channeled to non-development areas. This trend reveals that development has consistently taken a backseat in government priorities over the past three decades, with development spending continually declining from 1991 to 2021.

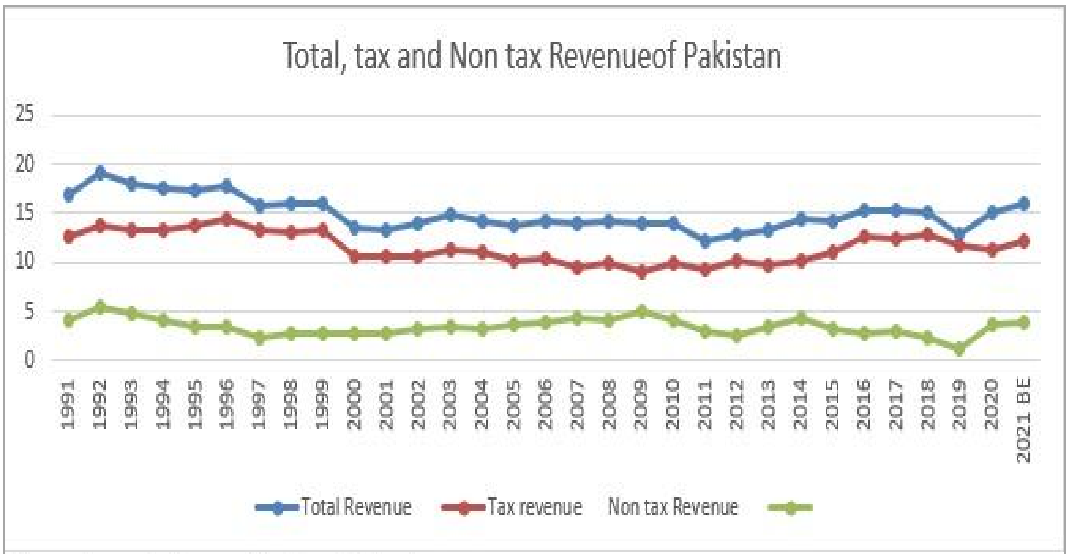
In addition, the government has not been in position to raise its tax revenue significantly, with the tax-to-GDP ratio standing at 12.7% in 1990. Unfortunately, this figure has decreased slightly by 0.6 percentage points to 12.1% of GDP in 2021. For Details see Figure 1.10 and Figure 1.11



Source: Economic Survey of Pakistan Various issues

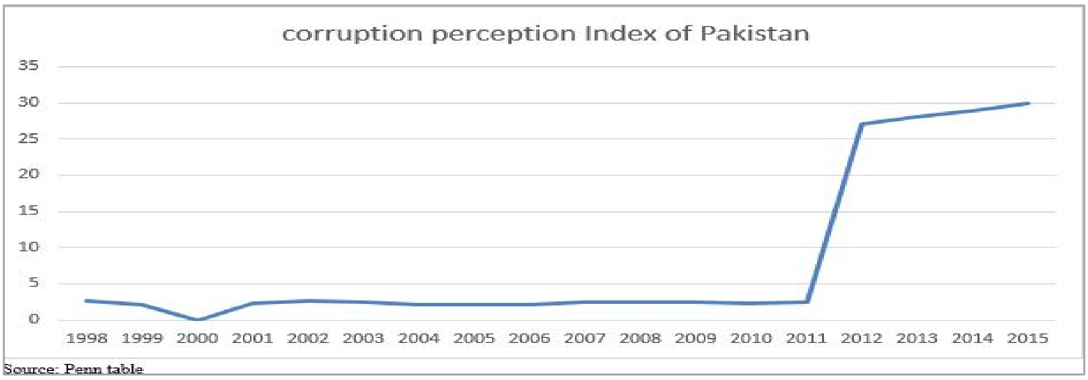
Figure 1.11 Government Development and non Development Expenses percentage of GDP from 1991-2021

In addition to very negligible allocation of resources to development side, the country has remained involved in rent seeking, kickbacks and corruption. This has culminated in market failures and multi equilibrium in the form of moral hazards, adverse selection, negative externalities and lose-lose situation. According to corruption perception index, Pakistan was moderately corrupt country up to 2011, as average value of corruption perception Index was 2.36 whereas it drastically increased 27, 28, 29 30 in 2012,2013, 2014 and 2015 respectively as shown in Figure 1.12.



Source: Economic Survey of Pakistan Various issues

Figure 1.12 Tax and non-tax Revenue of Pakistan percentage of GDP



Source: Penn table

Figure 1.13 Corruption Perception Index

1.2.6 Foreign Exchange Reserves

Due to the explosive nature of foreign loan servicing, rapidly growing imports, stagnant exports, declining foreign direct investment, and frequent fluctuations in unilateral transfers, Pakistan's foreign exchange reserves have consistently remained volatile and under pressure. Consequently, the country has often been forced to seek assistance from international bilateral and multilateral organizations, as well as private commercial financial creditors in international bond markets, which are considered as highly-risky and costly due to their relatively high interest rates and shorter maturity periods.

For instance, in 1987-88, Pakistan's foreign exchange reserves reached a historic low, equivalent to only three weeks' worth of import bills, leading to the country rejoining the International Monetary Fund's (IMF) structural adjustment program (SAP). In 1998-99, foreign reserves plummeted to just USD 300 million, equal to only one week's worth of import bills, following nuclear tests and a military coup, resulting in international embargoes and the freezing of Pakistani residents' and nonresidents' accounts totaling USD 11 billion.

In 2008-09, foreign reserves again dipped to a minimum level of three months' worth of import bills due to political turmoil after the events of December 27, 2007, and the global financial crisis, leaving Pakistan with no choice but to seek aid from international lenders. This situation recurred in 2013-14 due to prolonged political protests and sit-ins by major political parties, leading to a depletion of foreign reserves caused by capital flight, money laundering, deteriorating law and order, outflows of hot money and decreased foreign investment.

In 2018, foreign exchange reserves fell to USD 9 billion, equivalent to only 1.5 months' worth of import bills, primarily due to a historically high trade deficit of USD 35 billion and a current account deficit of USD 19 billion. Consequently, the newly formed government under Mr. Imran Khan sought financial assistance from various sources, including China, Saudi Arabia, the United Arab Emirates, overseas Pakistanis, the IMF, World Bank, Asian Development Bank, and international private creditors and bond markets. This effort raised foreign reserves to USD 24 billion until his government was toppled through a vote of no confidence, alleged horse trading and purported U.S. intervention. As a result, foreign reserves began to decline again from USD 24 billion to USD 9 billion, leading to a 60% depreciation of the currency, a 40% inflation rate, and a 21% interest rate within a few months in 2022-23. Subsequently, further increases in the prices of energy products and other goods are expected in the coming days. It has been observed in Pakistan that whenever there is a change in government, foreign exchange reserves vanish overnight, and the currency depreciates due to increased supply of Pakistani rupee and demand for the U.S. dollar. Many people convert their savings into dollars and transfer their wealth abroad amid political, social, and economic uncertainty and unrest as depicted in Figure 1.14.

Since early 2000- 2001, Pakistan experienced a significant increase in its foreign exchange reserves, rising from approximately $1.2 billion in October 1999 to $10.7 billion by June 2004. This remarkable growth can be attributed to several key factors: 1.**Economic Reforms and Liberalization**: The government implemented structural policies aimed at economic liberalization and improved economic management, which accelerated growth between 2002 and 2007. These reforms included the privatization of state-owned enterprises and the liberalization of various sectors, attracting foreign investment and enhancing economic performance.

2. **Debt Reduction and Fiscal Management**: During this period, Pakistan's debt-to-GDP ratio was reduced from 100% to 55%. This improvement in fiscal health was achieved through prudent debt management strategies and fiscal consolidation measures, which bolstered investor confidence and contributed to reserve accumulation.

3. **Increased Foreign Aid and Remittances**: Following geopolitical developments, particularly Pakistan's alliance with the United States in the global war on terror, the country received substantial foreign aid. Additionally, there was a notable increase in remittances from overseas Pakistani workers, further augmenting the foreign exchange reserves.

4. **Trade Agreements and Export Growth**: The implementation of trade agreements, such as the China–Pakistan Free Trade Agreement (CPFTA) in 2006, facilitated export growth by providing Pakistani goods with greater access to international markets. This expansion in trade contributed to higher foreign exchange earnings. Collectively, these factors played a pivotal role in enhancing Pakistan's foreign exchange reserves during the early 2000s, contributing to economic stabilization and growth.

Figure 1.14 Foreign Exchange Reserves of Pakistan from 1976 to 2022

1.2.7 GDP growth rate

The major economic indicator for any economy is its GDP growth rate, which provides a comprehensive measure of economic performance. Pakistan's GDP growth rate has seen fluctuations over the years. In the 1950s, the average annual GDP growth rate was 3.1%, but it improved significantly in the 1960s, reaching 6.7% per year. This improvement was attributed to substantial foreign aid, a focus on agricultural development, the introduction of the Green Revolution through the construction of dams, mechanization in the agricultural sector, improved performance in manufacturing and services, import substitution policies, and better economic planning.

During Zulfikar Ali Bhutto's government from 1971 to 1977, the average GDP growth rate dropped to 3.6% per year, primarily due to various factors such as the loss of East Pakistan (now Bangladesh), massive floods, nationalization of private enterprises, oil price shocks, locust attacks on crops, and political unrest.

However, during the dictatorship of General Muhammad Zia ul Haq from 1978 to 1988, the GDP growth rate averaged around 6.68% per year. This improvement was partly due to significant foreign aid, particularly from the United States, as Pakistan became a front-line fighter in the conflict against the USSR in Afghanistan.

In the democratic times of Mohtarma Benazir Bhutto and Mian Muhammad Nawaz Sharif from 1989 to 1999, the average GDP growth rate decreased to 4.06% per year due to political instability, corruption, politicization of state institutions, and inconsistent economic policies.

During General Pervez Musharraf's military regime from 2000 to 2008, the average GDP growth rate increased to 4.73% per year, reaching a peak of 7.5% in 2004. This improvement was attributed to substantial foreign inflows, support from the United States in the war on terrorism, and various economic measures. The return of democracy in Pakistan in 2008, with Pakistan People's Party coming to power, saw the GDP growth rate decline to 3.01% per year due to natural disasters, energy crises, and rising terrorist attacks. Subsequently, Pakistan Muslim League (N) took office from 2013 to 2018, and the average GDP growth rate improved to 5.26% per year, mainly driven by significant Chinese investments under the China Pakistan Economic Corridor (CPEC).

From 2019 to 2022, under the government of Pakistan Tehreek Insaaf, the GDP growth rate fell to 3.26% due to the COVID-19 pandemic and global recession. However, the economy started recovering in 2021 and 2022, achieving growth rates of 5.6% and 6% respectively.

Unfortunately, this government was ousted through a vote of no confidence in April 2022, leading to political and economic instability, a 40% inflation rate, a

60% depreciation of the currency, and an 80% reduction in foreign exchange reserves within the last year.

Overall, the GDP growth rate in Pakistan has experienced significant fluctuations over the years, influenced by both domestic and international factors as mentioned in Figure 1.15.

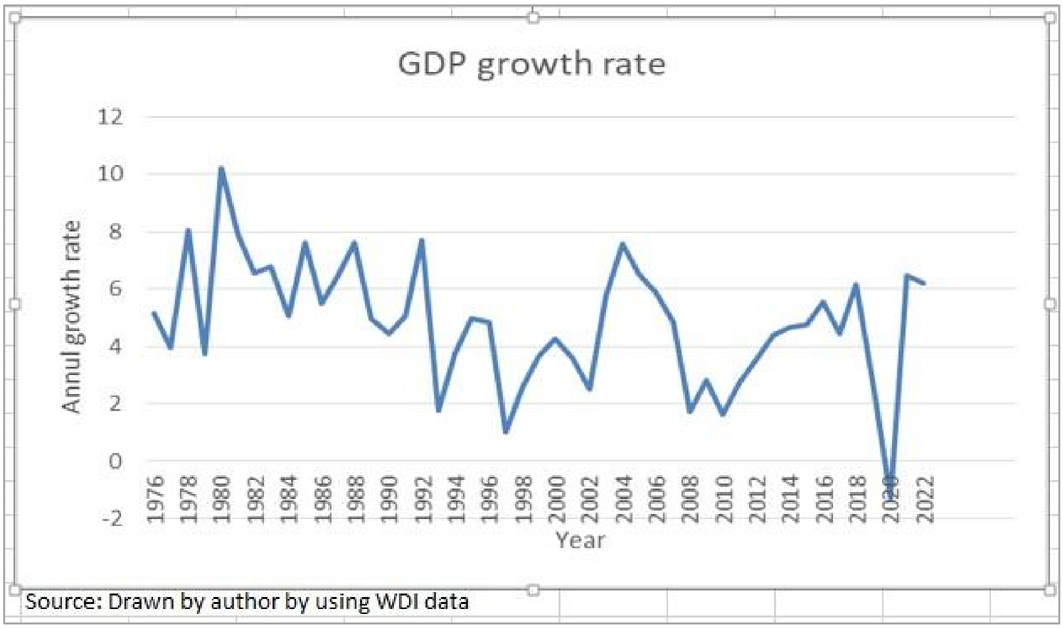


Figure 1.15 GDP growth rate of Pakistan from 1976 to 2022

Pakistan's heavy reliance on external borrowing stems from multiple interrelated economic and structural factors. One of the primary reasons is the **saving-investment gap**, as the country's domestic savings remain insufficient to meet its investment needs. This imbalance necessitates external borrowing to finance development projects and economic activities. Additionally, **Pakistan's persistent trade deficit**—where imports consistently exceed exports—places immense pressure on foreign exchange reserves, further increasing the demand for external financing. Another major contributing factor is the **fiscal deficit**, which is aggravated by a stagnant or volatile **tax-to-GDP ratio** and rising government expenditures, particularly in **debt servicing**. The **decline in foreign direct investment (FDI)** has also limited the inflow of much-needed foreign capital, exacerbating the external debt burden. Furthermore, **capital flight, corruption, and volatile GDP growth rates** have worsened economic challenges, leading to uncertainty in the financial markets. The **depreciation of the exchange rate** has further strained external finances by increasing the cost of servicing foreign debt and raising import prices. Additionally, rising **non-development expenditures**, particularly in defense, have added to fiscal pressures. The continuous **accumulation of foreign debt** remains a significant concern, with high borrowing costs and repayment obligations limiting fiscal space for development spending. Fluctuations in **global oil prices** have also significantly impacted Pakistan's economy, as a large portion of the import bill consists of energy-related expenses. Moreover, **depleting foreign reserves**, especially during periods of external shocks, pose a serious risk to economic stability. Finally, **political instability and frequent changes in government** have led to inconsistency in economic policies, deterring investors and further exacerbating financial vulnerabilities.

Given these challenges, worker remittances have played a crucial role in mitigating the negative impacts of trade deficits, current account deficits, and capital outflows. They have contributed to domestic consumption, poverty reduction, and maintaining foreign reserves and preventing the country from defaulting on its obligations. To address these issues, there is a pressing need to develop transparent and efficient mechanisms and systems based on scientific research to manage remittance inflows effectively. This will help safeguard the country from the negative repercussions of significant foreign financial inflows.

1.3 Problem Statement

Remittances have become an essential source of external finance for many developing economies, including Pakistan, particularly during periods of global economic turmoil such as the 2007–08 financial crisis and the COVID-19 pandemic. Despite the steady inflows of remittances, their broader economic implications remain insufficiently understood. This research investigates the multifaceted role of remittances in shaping Pakistan's economic landscape by examining three key channels: their impact on external debt, their contribution to bolstering foreign exchange reserves, and their potential to drive economic growth through productive investments.

Pakistan has long grappled with high external debt levels that challenge its fiscal sustainability and economic stability. Preliminary evidence suggests that remittances may help ease debt pressures by providing a consistent influx of foreign currency, which in turn can reduce the need for external borrowing and support debt servicing. Simultaneously, remittances have the potential to strengthen foreign exchange reserves—a critical buffer against external shocks—yet the precise mechanisms behind these effects are under-explored. By quantifying the relationship between remittance inflows and both external debt and reserve accumulation, this study aims to provide nuanced insights into how remittances contribute to macroeconomic stability in Pakistan.

Moreover, while remittances are often used to meet immediate household consumption needs, a significant opportunity lies in channeling these funds into productive investments that promote long-term economic growth. Understanding the conditions under which remittances can be effectively transformed into capital for investment is crucial, especially in an era marked by economic uncertainty and volatile capital flows. This research will analyze the transmission mechanisms that convert remittances into growth-enhancing investments, identifying potential policy levers that could optimize this process.

In summary, this study addresses the overarching question: How do remittances shape the economic landscape of Pakistan by influencing external debt, enhancing foreign exchange reserves, and fostering economic growth through investment? By bridging these research gaps, the project seeks to contribute to the existing literature and provide policymakers with evidence-based strategies to leverage remittance inflows for sustainable economic development

1.4 Research Questions

This thesis intends to answer following specific research questions:

1. How do remittances affect the external debt of Pakistan?

2. What are the contributions of remittances in building foreign exchange reserves in Pakistan?

3. To what extent do remittances contribute to economic growth through transmission channel of investment in Pakistan?

1.5 Objectives of the Study

The main objective of this study is to assess the effects of remittances on external debt, foreign reserves and economic growth through investment of Pakistan. However, the specific objectives of the study are:

1. To investigate the effects of remittances on the external debt of Pakistan.
2. To analyze the impacts of remittances in building foreign exchange reserves of Pakistan.
3. To assess the contribution of remittances to stimulate economic growth through transmission channel of investment in Pakistan.

1.6 Significance of the Study

This research holds significant value for several reasons, particularly in addressing critical gaps in the existing literature regarding the role of remittances in Pakistan's economy. Despite the increasing volume of remittance inflows, the nuanced relationships between remittances, external debt, foreign exchange reserves, and economic growth in Pakistan remain under explored.

Addressing Research Gaps: Several studies have examined the economic impact of remittances in various contexts, but specific investigations focused on Pakistan are limited. For instance, while studies like those by Hassan and Holmes (2016), Ahmad and Khan (2021) and Islam (2022) have highlighted the positive impacts of remittances on economic growth, they often fail to explore how these inflows interact with external debt dynamics. Understanding this relationship is crucial, as high levels of external debt could negate the benefits derived from remittances.

Furthermore, the contribution of remittances to foreign exchange reserves is often mentioned in passing but lacks rigorous analysis. Research by Ahmad et al. (2020) and Khan et al. (2005) indicates the importance of remittances for reserve accumulation, yet it does not delve deeply into the implications for economic stability or policy formulation.

Additionally, the transmission mechanisms through which remittances foster economic growth via investment in Pakistan have not been adequately examined. While some studies suggest a correlation between remittance inflows and investment (see Khan et al., 2020), the causal pathways remain unclear, highlighting the need for more comprehensive analyses.

Policy Implications: By addressing these gaps, this study will provide valuable insights for policymakers. A better understanding of how remittances affect external debt levels can lead to more informed fiscal and monetary policies. Similarly, elucidating the role of remittances in building foreign exchange reserves can guide strategies for managing exchange rates and ensuring economic stability.

Contribution to Economic Theory: The findings of this research will contribute to the broader economic literature on remittances and development economics. By exploring the interdependencies between remittances, debt, reserves, and growth, this study will enhance theoretical frameworks that inform how remittance-dependent economies can navigate their unique challenges.

In conclusion, this research will fill critical gaps in the literature regarding the economic implications of remittances in Pakistan, ultimately contributing to more effective policy development and implementation aimed at leveraging remittances for sustainable economic growth

1.7 Scope and limitations of the Study

This research will be carried out in case of Pakistan from 1976 to 2022 by covering the effects of Workers' remittances on foreign debt and their impacts on foreign exchange reserves and economic growth of Pakistan along with some other control variables such as GDP, exports, imports, government expenditure, foreign direct investment, gross capital formation and foreign debt servicing. Pakistan is selected for this study because it has been a worst case of being trapped in external debt snare, dwindling foreign exchange reserves and volatile and fluctuating economic growth despite having lots of natural resources and foreign inflows in the form of remittances, external borrowing and foreign gifts and grants. Moreover Period from 1976 to 2022 is selected because Pakistan started sending its human resources abroad from 1970s who began to sent remittances after mid 1970s. In the future, similar research could be undertaken in different contexts, either at the country level or regional level, using time series data or panel data and employing comparable methodologies. Additionally, it is suggested to supplement the study with primary data analysis to gain further insights through qualitative investigation.

1.8 Operational definitions:

The important term ad their definitions and sources are given in the table 1.4.

Table 1.4 Operation Definitions of important terms

Terms	**Definition**	**Source**
Remittances	Amount of money that is sent by overseas workers in cash or kind to their families, relatives and friends during a given period of time, generally one year.	(Sutradhar, 2020)
External debt	The amount of money owed to foreigners by domestic economic agents of a country that needs to be repaid along with interest amount at any particular point of time in future	(Mijiyawa and Oloufade, 2022)

Foreign exchange reserves:	Reserves assets in the form of foreign currencies, foreign bonds including gold with central bank of the country .	(Ali, 2014)
GDP growth rate:	Percentage change in the market value of all final goods and services produced within the boundaries of a country during given time period	(Abel and Bernheim, 1988).
Dutch Disease:	Negative impacts of foreign currency inflows on various macroeconomic indicators such as GDP growth rate foreign exchange reserves, inflation of non tradable products and trade balance through appreciation of real exchange rate and change in moral values and pattern of consumption in foreign currency inflows recipient economic agents	(Chami et al., 2005).
Debt Overhang	Negative implications of unsustainable and heavy debt in the form of decrease in quality and quantity of investment and thereby fall in economic growth of the country	(Krugman, 1988).
Trade deficit	if imports are greater than the exports of a country, the country is said to be suffering from trade deficit	(Chaudhary et al., 2000)
Budget deficit	If Government expenditures exceed the Government revenue	(Bilquees, 2003)

Primary deficit	If Government expenditures excluding interest payment on debt exceed Government revenue	(IMF, 2020)
Inflation	increase in general price level	(Tiruneh et al., 2004).

1.9 Organization of the Study

The proposal contains three sections followed by references and appendix. chapter 1 one includes introduction, background, problem statement, research questions, objectives and significance of the study followed by operational definitions and scope and limitation of the study. Chapter 2 two consists on literature review containing theoretical review, empirical review, methodological review and research gaps. Chapter 3 encompasses the theoretical Framework, methodology, data sources, variables used, and their descriptions, econometric techniques and their relevant diagnostic and robustness checks. Chapter four is about the discussion of results and their interpretation. Chapter five is about the implications, recommendations and conclusion of the Study followed by references and appendices.

CHAPTER 2

LITERATURE REVIEW

The purpose of this research is to ascertain the impacts of remittances on foreign loans, foreign reserves and economic growth of Pakistan. The literature on the topic consists on theoretical review, empirical review, methodological review and research gaps. The theoretical review contains various theories about the role of remittances on foreign loans, foreign reserves and economic growth. The empirical review contains various studies that have been conducted in various context and using various time spans and econometric methodologies. Due to difference in context, time periods and methodology, their findings are also different. The theoretical review encompasses the various theories which have been advocating various channels and mechanisms about the impacts of remittances on external debt, foreign reserves and economic growth and their expected relationships. Subsequently, this chapter starts from the theoretical review then empirical review, methodological review and then proceeds to identify research gaps by analyzing, evaluating and synthesizing it critically.

2.1 Theoretical review

2.1.1 Remittances and external debt

2.1.1(a) Neo-Liberalism Theory

After 1970s oil shocks, Global North suggested Neo-Liberal political and economic doctrine (Washington Consensus) for crisis hit Global South by implementing Structural Adjustment Program (SAP) through International Monetary Fund (IMF), World Bank, World Trade Organization (WTO) and other international institutions. According to them the Developing and under developed countries should adopt democratic political system and liberal economic policies by minimizing role of state in economic management. Indeed, they asked to privatize the state owned enterprises, remove restrictions from international trade, labor, capital and currency markets, remove welfare subsidies and programs, deregulate and decentralize the markets by embracing free market mechanism.

Following the legacy of Neo-liberalism theory, the restrictions from labor and capital markets were removed. Resultantly, the developing countries including Pakistan that were labor abundant but capital scarce countries started exporting more human resources on the one hand for foreign exchange earnings and borrowing heavily from abroad on the other hand amid growing trade deficits that were exerting pressure over their foreign exchange reserves and exchange rates. However, Ncube and Brixiova (2013) and Fullenkamp et al. (2008) argue that workers' remittances play crucial and pivotal role in public debt sustainability as their availability increases the tax revenue through consumption tax and inflation (seigniorage revenue) on the one hand and primary surplus on the other hand thereby increasing the debt sustainability and creditworthiness of the countries. In addition, the availability of remittances reduce the risk premium of government borrowing.

The remittances may be substitute of external borrowing. Increase in remittances receipts may dampen the demand for external borrowing as they can be used to finance the trade and fiscal deficits and overcome foreign exchange constraints. However, remittances may sometimes increase the external debt as they may increase the credit worthiness of the countries and reduce the premium risks thereby increasing the willingness to lend and borrow of lenders and borrowers respectively. Resultantly, the country may accumulate more external debt.

2.1.1(b) Dependency theory

This theory explains the supply side of external debt. The lenders become more willing to lend to those countries which are strategically located and have Geo-economical and geopolitical importance. It elaborates that why developed countries and their institutions kept on providing loans to developing countries despite their falling credit worthiness and ratings. According to this theory of leftist wing led by Karl Marx, the rich global north countries (center or core) have trapped the poor global south (periphery) countries deliberately in external debt burden in order to use them for their own national and personal gains. According to this theory, the political elite in less developed and developing countries serve the interests of rich countries in pursuance of their individual personal gains. Hence, both the developed countries and political elite of developing and less developed countries squeeze and embezzle the resources and wealth of the poor indebted countries and shift them to advanced developed countries' safe heavens through corruption, capital flight and money laundering by getting more and more loans (Ikejiaku, 2008). It explains how Pakistan's reliance on external borrowings and remittances perpetuates economic dependency rather than fostering sustainable development. According to this theory, developing nations like Pakistan remain structurally dependent on external financial flows due to trade imbalances, weak industrialization, and financial vulnerabilities. The findings align with this perspective, as Pakistan's persistent external debt burden reflects a reliance on foreign loans that are often used for debt servicing rather than productive investments. Similarly, while remittances contribute to economic stability and foreign reserves, they primarily finance consumption rather than industrial growth, reinforcing dependency on labor migration. Additionally, the country's trade deficit, driven by high imports and limited export capacity, further depletes foreign reserves and necessitates external borrowing, keeping Pakistan financially vulnerable. Dependency theorists argue that such reliance on external capital and trade structures prevents self-sufficiency and deepens economic subjugation. The thesis recommendations—such as channeling remittances into investment, reducing luxury imports, and renegotiating debt—reflect the broader need for structural reforms to break free from financial dependence and establish long-term economic resilience.

2.1.2 Remittances and foreign exchange reserves

Foreign reserves serve as a crucial macroeconomic indicator for any nation, essential for stabilizing exchange rates and buffering against external and internal shocks like supply disruptions, trade imbalances, speculative attacks, sudden capital flows and reversals. A higher reserve stock signifies greater security for a country. However, maintaining foreign reserves carries financial and economic costs such as opportunity cost (lost investments due to holding reserves), adjustment costs (expected expenses in speculative scenarios and insolvency) and increased external debt. Hence, determining the optimal reserve level that meets these criteria is vital, yet challenging, for central banks (Shijaku, 2012).

There are generally four main motives guiding foreign exchange reserve holdings: 1. transaction motive, 2. precautionary motive (acting as self- insurance), 3. collateral motive and 4. monetary mercantilism (Mijiyawa & Oloufade, 2022, Nor et al., 2008).

The literature identifies two primary theories explaining the reasons and mechanism behind the maintenance of foreign reserves: the buffer stock theory and the monetary approach of Balance of Payments (Huang & Shen, 1999).

2.1.2(a) Buffer Stock Theory

The buffer stock theory, introduced by Frenkel and Jovanovic (1981), pertains to strategies adopted by central banks or governments to hold an sufficient amount of foreign reserves, mitigating potential risks and uncertainties associated with international trade and financial transactions. It’s also known as the "precautionary demand for reserves theory," emphasizing the need to hold reserves as a precaution against volatile capital flows, such as sudden stops and reversals due to financial integration (Aizenman & Marion, 2004, Calvo, 1998). Additionally, the mercantilism approach suggests that holding foreign reserves can boost a country’s exports and direct internal and external investments towards export-oriented industries (Aizenman & Lee, 2007).

The buffer stock theory proposes that central banks accumulate foreign exchange reserves during favorable times to finance international transactions such as reverse flows, trade deficits, terms of trade deterioration, speculative runs and sudden stops of financial inflows during challenging periods. In this way, these reserves act as a hedge against ups and downs in external accounts and currency value. For instance, during the East Asian financial crisis of 1997-98, countries with substantial reserves were able to protect their currencies from significant depreciation.

The Buffer Stock Theory is highly relevant to this thesis as it provides a theoretical framework for understanding the role of remittances in stabilizing foreign reserves and managing economic shocks in Pakistan. According to this theory, countries accumulate foreign reserves as a precautionary buffer to safeguard against external shocks, currency volatility, and balance of payments crises. This research findings align with this perspective, as remittances serve as a critical source of foreign exchange that helps Pakistan maintain reserve adequacy in the face of persistent trade deficits and external debt obligations.

In Pakistan's case, remittances function as a stabilizing mechanism, supplementing foreign reserves when export earnings and foreign direct investment decline. This aligns with the buffer stock theory's argument that reserves should be accumulated during periods of strong inflows and drawn upon during economic distress. Additionally, this thesis highlights that remittances act as collateral for foreign borrowings, reinforcing the idea that reserve accumulation through remittances can enhance a country's creditworthiness and reduce financial vulnerability. However, if reserves are not effectively managed and are instead depleted for import financing, debt servicing, or speculative activities, their role as a buffer diminishes.

The policy recommendations—such as encouraging remittance inflows through formal channels and strategically utilizing reserves for investment rather than consumption—align with the theory's emphasis on reserve accumulation as a means of economic stability. By incorporating the buffer stock theory, this thesis strengthens the argument that remittances play a crucial role in Pakistan's external sector resilience, but their impact depends on effective policy measures to optimize their use in reserve management and economic growth.

2.1.2(b) Monetary Approach to Balance of Payment Theory

The monetary approach to the balance of payment theory, developed by Robert Mundell and Marcus Fleming in the 1960s, elaborates on balance of payment transactions, exchange rates, and foreign reserve dynamics based on the quantity theory of money. According to this theory, exchange rates, trade balances, and foreign reserves are determined by money demand and money supply. It posits that reserves increase with higher demand for aggregate money ($M3$), while the opposite occurs with a rise in the supply of aggregate money. Since a stable exchange rate is crucial for trade and economic stability, most central banks maintain stable foreign reserves to shield their currencies from large fluctuations stemming from changes in money supply and demand. This is achieved through buying or selling domestic currency in open market operations. Remittances can positively affect foreign reserves, similar to other foreign capital and financial inflows, by increasing demand for aggregate money. This can lead to exchange rate appreciation. Consequently, the country's central bank is expected to buy foreign currency from the market by increasing the money supply, thereby accumulating foreign reserves to prevent Dutch disease effects on the economy.

Conversely, remittances may have inverse impact on foreign reserves if the country suffers from Dutch disease effects. In this scenario, remittances cause appreciation of the real exchange rate due to increased demand for domestic currency, leading to reduced competitiveness in international markets. This may result in decreased foreign exchange reserves. However, excessive devaluation of the currency due to a rise in aggregate money supply may not be desirable for the economy, as it can culminate expensive imports and inflation. In such cases, the country's central bank is expected to protect its domestic currency by using foreign reserves.

Similarly, domestic currency may come under speculative attacks, especially when investors anticipate significant depreciation due to currency overvaluation. Consequently, they begin purchasing foreign currency and foreign assets, enhancing the supply of domestic currency. To counteract this, the central bank is likely to interfere in the market by buying domestic currency using foreign reserves, thus protecting the currency from significant depreciation.

Furthermore, external adverse shocks and financial crises can lead to falling commodity prices and deteriorating trade balances. To mitigate these shocks, central banks step in to finance deficits using available foreign reserves.

Moreover, foreign reserves are also maintained to build confidence and credibility in the exchange rate and monetary policies of the country. The knowledge that a country has sufficient foreign reserves to intervene in the market if necessary can deter speculative runs and enhance market confidence.

Additionally, foreign reserves are built up to ensure timely import payments by issuing and honoring letters of credit (LCs) and to prevent disruptions in supply chains while maintaining economic stability. Thus, the monetary approach to the Balance of Payment theory argues that maintaining an appropriate level of foreign reserves is a strategic tool for mitigating balance of payment and currency crises. By utilizing foreign reserves, countries can mitigate exchange rate fluctuations, protect against speculative attacks and defend the economy against external shocks that could otherwise disrupt economic stability. The required strategy and level of foreign reserves may change from one economy to another, depending on its specific circumstances and policy objectives.

2.1.3 Remittances and Economic growth

Various theories and models have emerged to elaborate the relationship between remittances and economic growth. These theories gained prominence after World War II when institutions like the International Monetary Fund and the World

Bank were established under the Bretton Woods system, following the United Nations' creation in 1944-1945. This was in response to the League of Nations' inability to maintain global peace and prosperity during the tumultuous early decades of the twentieth century, marked by two World Wars and the Great Depression of the 1930s.

Many development models have emphasized the critical role of factors such as savings, investment, capital accumulation, technological advancement, structural transformation, economic and institutional reforms, and overall economic performance in driving economic growth and development. Prominent examples include the Harrod-Domar model (1939-1946), the Solow steady growth model (1956), and the Romer endogenous growth theory (1989).

Remittances, in particular, perform a vital role in augmenting several of these key factors. They contribute significantly to savings, investment, the formation of both physical and human capital, the financing of imports of modern technology, the acquisition of knowledge and expertise (brain gain) and expenditures on human capital development, including education, healthcare, and skill enhancement. Consequently, remittances have a proportional effects on the economic growth of the remittance recipient countries..

2.1.3(a) Harrod-Domar Model

The Harrod-Domar model, formulated by economists Sir Roy Harrod and Evsey Domar in 1939 and 1946, suggests that sustained economic growth relies on the national savings rate and capital productivity. This model illustrates a positive link between savings rates and economic growth, as shown in Figure 2.1, and highlights a negative association between the capital-output ratio and economic growth.

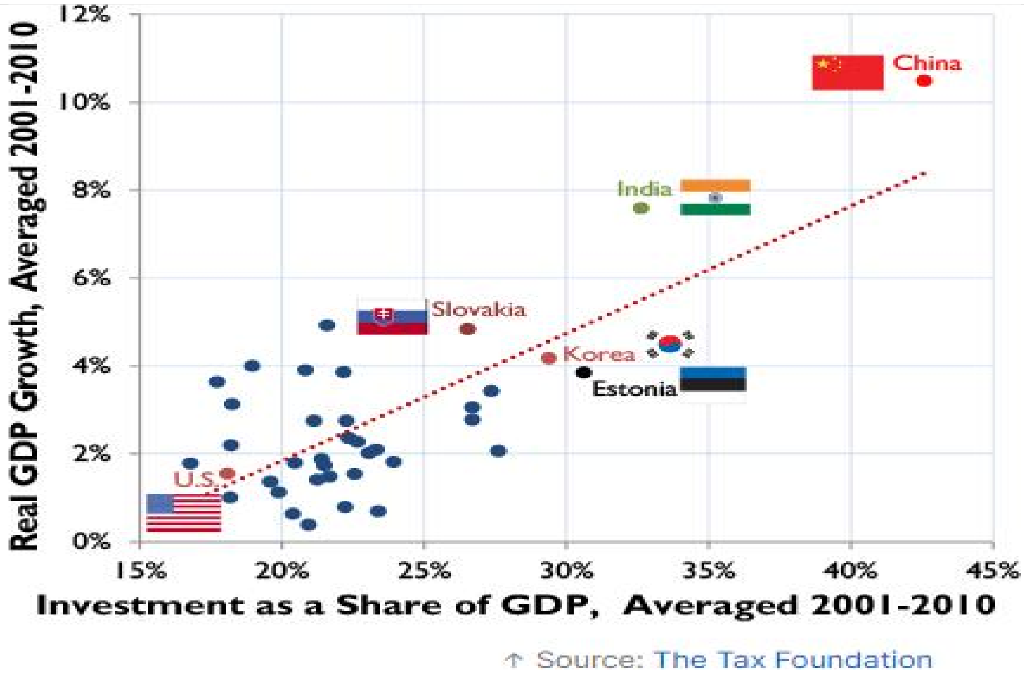


Figure 2.1 Saving and Economic growth in OECD and BRICS

Mathematically it is given as:

$$\Delta Y/Y = s/k \tag{2.1}$$

Where economic growth depends on saving rate (s) and capital output ratio(k).

Remittances are sent to the home country with two primary objectives: altruism and self-interest. Consequently, their impacts on economic growth can vary accordingly. When remittances are sent for altruistic reasons, they tend to be spent on conspicuous consumption, luxurious items such as large houses, expensive cars, jewelry and non-tradable luxury goods. Consequently, their effects on economic growth are negative. However, when remittances are sent for self- interest motives, they are more likely to be utilized in highly profitable and productive businesses, physical and human capital development and off-farm activities. As a result, they positively influence economic growth.

According to Fullenkamp (2008), remittances, being substantial foreign inflows, have significant impacts on the economic growth of recipient countries. However, there is a concern that remittances may have inverse impacts on economic growth if not managed properly. Policymakers and scholars need to be keen to understand the macroeconomic effects of remittances and how to leverage their developmental potential. It is worth noting that remittances may not always be efficiently invested in high-return projects. Recipients often view unearned remittances as their labor income and substitute it with own earned income by decreasing the labor working hours. Since labor and capital are complementary factors of production, a decrease in labor inputs can lead to lower production levels.

2.1.3(b) Solow growth model

Nobel laureates Solow and Swan introduced their theory of economic growth and development in 1956. According to their framework, economic growth hinges on labor, capital, and technology. They posited that economies tend to gravitate towards a state of steady growth in the long run and potentially converge in terms of having similar levels of labor, capital, and technology. In their model, they assumed that once an economy reaches this steady state, further growth relies on exogenous technological advancements, as illustrated in the Solow growth diagram Figure 2.2.

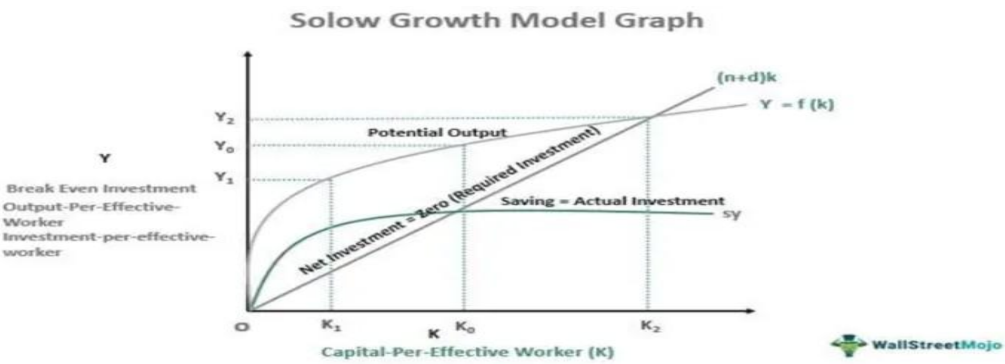


Figure 2.2 Solow model of Economic growth

Solow argued that an economy reaches its steady state when the rate of saving and investment equals the rate of capital depreciation. This equilibrium is represented by the point where the "s(Y)" line intersects the 45-degree line denoted as "(n+d)K." Beyond this point, economies require technological improvements to enhance output levels, given a fixed amount of labor and capital. The Remittances play a vital role in increasing savings and investments, consequently leading to higher levels of output.

The Harrod-Domar model provides an alternative perspective to the Solow growth model in certain aspects. While the former assumes constant returns to scale, the latter assumes decreasing returns to scale. Another point of differentiation between the two models is their perspectives on the influence of the savings rate on economic growth. Solow argued that the savings rate has temporary and short-term effects on economic growth. In contrast, Harrod and Domar posited that the savings rate has permanent and long-term effects on economic growth through capital formation and investment. According to the Harrod-Domar model, a higher savings rate leads to increased investment and a larger capital stock, ultimately resulting in higher economic growth. Conversely, lower savings rates may lead to the opposite outcome, as depicted in Figure 2.3.

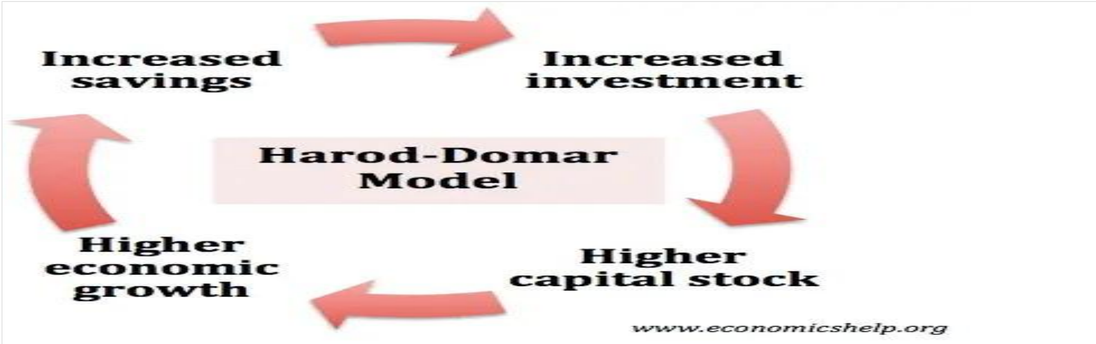


Figure 2.3 Saving and Economic growth

Mathematically, Solow model is given as under:

$$Y = AF(L, K)$$

where Y is output, A is technology, L is labor and K is capital.

Furthermore, remittances represent foreign currency inflows that can be employed for the import of advanced technology, ultimately contributing to higher output growth rates. Nevertheless, economic growth might be diminished as a result of a decline in the domestic labor supply and labor force participation rate, which could occur due to an increase in emigration to foreign countries and potential moral hazards among the family members of immigrants. As a result, the overall impact on economic growth will be contingent on the net effects of both these variables.

2.1.3(c) Endogenous growth theory

In contrast to the Solow growth model, the endogenous theory of growth posits that internal factors, such as innovation, research and development, human and physical capital formation, knowledge and modern technology, which are key drivers of growth and development, are not external forces governed by supply and demand but rather originate from within a country. According to this theory, a nation's productivity is enhanced through investments made by both the government and private sectors in human capital, innovation, research and development, and the creation of knowledge through experiential learning and expertise. Three growth and development models—Arrow model, Uzawa-Lucas model and Romer model—were developed based on the principles of endogenous growth theory. This theory places great importance on investment in research and development, job training and skill acquisition. It advocates providing incentives, such as intellectual property rights and copyrights, to firms engaged in research and development to promote innovation, human capital development, knowledge creation and the adoption of modern technology.

(i) Arrow Model

Arrow and Frankel in 1962 developed this model. This model regarded the innovation and technology as a main factors behind economic growth. It urged on the environment of learning by doing to promote human capital, innovation and technology for augmenting productivity.

Mathematically, it is given as under:

$$Y = AK$$

Where A is any positive value, K is stock of capital and Y is output that is proportional to capital stock.

(ii) Uzawa-Lucus Model.

Uzawa, in 1965 recommended to invest in human capital for long run economic growth. In 1988, Lucus proposed to invest in education is inevitable to increase human capital and productivity. He emphasized on the internal on job training of workers to enhance the human capital's productivity.

Mathematically, it is represented as under:

$$Y_i = A(K_i)(H_i)H^e$$

Here Y_i is output, K_i is capital stock, H_i is human capital, H^e is average level of human capital of nation and A is technology coefficient .

(iii) Romer Model.

In 1990, Paul Romer introduced the concept of endogenous technological change in the Journal of Political Economy. He contended that sustained economic growth is driven by the efforts of entrepreneurs and researchers who bring about innovation and technological advancements. Romer underscored the crucial role of knowledge, learning and the generation of fresh ideas in the process of economic growth. Additionally, he acknowledged the vital role of government in facilitating and promoting new and innovative knowledge and ideas.

Mathematically, it is given by:

$$\Delta A = F\,(K_A, H_A, A)$$

Where ΔA is change in Technology, K_A is capital investment in advancement of technology. H_A is human capital used in research and development and new ideas creation, A is current technology and F is the production function for technology. Emigrants and the remittances they send contribute to economic growth through three distinct avenues.

First, when remittance-receiving households allocate these funds to the education, healthcare, and skill development of their children, they create a more skilled and productive labor force, which positively impacts the economy. Second, if these funds are invested in import of modern technology, it may help boosting the productivity of available resources such as land, labor, capital, and entrepreneurship. Third, remittances can generate spill-over effects and brain gain when emigrants return to their home country, leveraging the modern skills and management techniques they acquired abroad to initiate and grow businesses. This, in turn, contributes to the economic growth of the home country. Pakistanis residing abroad not only bolster the economy through remittance transfers but also stimulate trade and foreign investment, establish businesses, and facilitate the transfer of skills and knowledge. (IOM, 2022).

2.2 Empirical Review

Empirical review includes empirical studies on remittances and external debt, remittances and foreign exchange reserves and remittances and GDP growth rate.

2.2.1 Factors affecting external debt including remittances:

There are various factors including workers' remittances that have an important role in determining external debt of developing countries like Pakistan; such as three gaps (saving-investment gap, export-import gap and Government revenue- expenditure gap) (Bacha, 1990, Chenery & Strout, 1968) GDP growth rate, investment (Dawood et al., 2021) (Mensah et al., 2017), inflation (Bittencourt, 2015), foreign direct investment and debt servicing (Karagol, 2012), capital formation, exchange rate, interest rate (Abdullahi et al., 2015), foreign exchange reserves, oil prices (Waheed, 2017), trade openness (Bölükbaş, 2016) , corruption (Azolibe, 2021), military spending and internal ethnically conflicts (Dunne et al., 2019; Shahbaz et al., 2016; Anfofum et al., 2014), geopolitical and Geo-strategic relationships, colonial relationships, volume of trade , terms of trade etc (Al-Fawwaz et al., 2016) , financial deepening and trade liberalization Policy (Mughogho & Alagidede, 2021), worker's remittances (Bilquees, 2003, Mijiyawa, 2022, Mijiyawa & Oloufade, 2022, Ncube & Brixiova, 2013). While leftist wing believes that Neo liberalism and dependency theory along with power game are the responsible for heavy indebtedness of poor developing countries (Ikejiaku, 2008). Besides, three gap model, original sin theory is also regarded as a main factor behind the huge accumulation of foreign debt (Augustine & Kumar, 2020).

These various empirical studies have been carried out in diverse contexts, employing different econometric models and types of data, including cross- sectional, panel and time series data. These studies aim to research the factors influencing external borrowing in underdeveloped and developing countries. Some of these analyses have utilized aggregate measures like budget deficit, trade deficit and saving-investment gaps, while others have considered government spending, revenue, exports, imports, saving and investment separately as independent variables within their models. The majority of the literature reviewed here comprises peer-reviewed articles, working or discussion papers, as well as reports from institutions such as the International Monetary Fund and the World Bank. By investigating the causes of foreign borrowing in Pakistan, Bilquees (2003) asserted that the persistent budget deficit, leading to a primary fiscal deficit, was the primary factor behind public debt in the country. Bilquees employed the three-gap model, analyzing the revenue expenditure gap, export-import gap, and saving-investment gap to assess the impact of the budget deficit on Pakistan's debt. She discovered that during the 1980s and 1990s, the main reason for Pakistan's external public debt was the government's lack of priorities to utilize own home resources due to the easy accessibility of foreign resources and substantial inflows of remittances from workers abroad. According to her findings, the ratio of external debt service to foreign exchange earnings surged from 20.4% in 1980-81 to 31.6% in 1984-85 and remained at an average of 18% per annum throughout the 1990s. Bilquees also demonstrated that the composition of Pakistan's debt has consistently fluctuated, with domestic debt accounting for 51% in 1983-84, increasing to 56% in 2002-03.

Similarly, while discussing the influence of the three gaps on determining Pakistan's external debt, Ahmad and Ahmed (1998) demonstrated that historical trends in resource scarcity and limited domestic borrowing were the primary factors contributing to Pakistan's foreign debt. They argued that low domestic savings, consistent internal and external deficits and the aspiration for growth and development compelled Pakistan to resort to external borrowing during the 1950s and 1960s to finance essential productive projects crucial for economic growth. This policy, aimed at achieving higher growth rates in the 1960s, created more expectations that external borrowing would further stimulate economic growth, increase saving rates and enhance input productivity, leading to surplus production of exportable goods and foreign exchange earnings necessary to repay external debt and interest payments in the future. Consequently, Pakistan continued to borrow extensively from abroad based on these expectations, but this approach proved to be more challenging in practice.

According to Ahmad and his colleagues, the debt situation remained manageable during the 1970s despite a declining growth rate due to its relatively small size and favorable terms and conditions. However, by the 1980s, Pakistan was on the verge of default. The country was temporarily spared from defaults due to significant inflows of foreign capital, prompted by Pakistan's decision to align itself with the United States against the Soviet invasion in Afghanistan. Through simulations, they illustrated that Pakistan's external debt situation would worsen in the future even if interest rates on foreign loans, GDP growth rates, productivity, saving rates, money supply, foreign exchange reserves and exchange rates remained constant. Their recommendation was for Pakistan to transition from short and medium-term external borrowing to long-term external debt immediately.

The body of research on the factors contributing to external debt in Pakistan reveals several macroeconomic indicators, including the government's decision to fund its current expenses through foreign borrowing and the increasing burden of servicing external debt, coupled with twin deficits. In the case of Pakistan, Cheema (2004) conducted a study that analyzed these macroeconomic indicators from 1997 to 2003. His findings indicated that the primary driver behind the significant foreign borrowing by the government was its choice to cover its current public expenditures through external loans. He identified factors such as the escalating non-development public expenditures, including debt servicing and military outlays, persistent twin deficits, consistently low economic growth rates and economic mishandling as the key contributors to the substantial and unsustainable pile up of foreign loans in the economy during the 1990s. Additionally, he highlighted that a substantial portion, specifically 63.5%, of the total public expenditure in 1998-99 was allocated solely to debt servicing.

The existing literature highlights that in heavily indebted countries, non-development expenditures in general, and defense spending in particular, are primary drivers of substantial foreign loan accumulation. Shahbaz et al. (2016) conducted research that demonstrated a direct nexus between military budget and foreign borrowing, both long term as well as short term in Pakistan. They employed an econometric ARDL bound test model using data from 1973 to 2009 and concluded that the GDP growth rate had an inverse relationship with external borrowing.

A similar type of study was conducted by Anfofum et al. (2014), who also observed a strong positive connection between defence budget and short-term foreign loans in Nigeria. They indicated that military expenditure had a causal relationship with foreign debt by applying Granger Causality test while the impulse response function showed positive effects extending up to five periods between military spending and external debt. Furthermore, the variance decomposition test revealed that the shock from military expenditure consistently increased external debt.

However, Mijiyawa (2022) carried out a research study aiming to uncover the factors behind the increasing external debt-to-GDP ratio in Heavily Indebted Poor Countries (HIPCs) subsequent to the HIPCs initiative and Multilateral Debt Relief Initiative (MDRI) during the period spanning from 2005 to 2016. This investigation utilized panel data from 18 HIPCs that had achieved the completion point by 2005. He employed a fixed-effects model following the results of the Hausman test. The findings unveiled that the GDP growth rate, nominal exchange rate, and remittances exhibited negative and notable impacts on the external debt-to-GDP ratios of these 18 HIPCs. However, the institutional and management index variable, CPIA, made a positive contribution to the external debt-to-GDP ratios of HIPCs subsequent to the HIPCs and MDRI initiatives. Meanwhile, foreign direct investment, fiscal deficit-to-GDP ratio, and terms of trade displayed negative coefficients but lacked statistical significance.

In another study, Mijiyawa and Oloufade (2022) examined the influence of remittances and foreign reserves on the external debt of low and middle-income countries (LMICs). This research utilized the System Generalized Method of Moments (GMM) and analyzed four-year average panel data from 50 LMICs covering the period from 1970 to 2017. The study outcomes suggested that remittances positively impacted external debt, while international reserves had a negative effect, indicating the presence of the Dutch disease effect of remittances and the self-insurance mechanism of foreign reserves in LMICs. Furthermore, factors such as GDP growth rate and the saving-investment gap were observed to negatively influence external debt. Nominal exchange rates and USA lending interest rates were found to exert a positive impact on external debt. The study also subjected the findings to various robustness tests, revealing that the political index variable related to democracy and autocracy was positive but statistically insignificant. Similarly, Ncube and Brixiova (2013) found that remittances have been directly contributing in Public external debt sustainability of Egypt.

Utilizing the three-gap model, another study was conducted within the context of Ethiopia by Beyene and Kotosz (2020). They used the data from 1981 to 2016 and applied the ARDL model. The findings of their research indicated a positive relationship between the saving-investment gap, fiscal deficit, and trade deficit with external debt, while trade openness, GDP growth rate, and inflation exhibited a negative association with Ethiopia's external debt.

Additionally, Gokmenoglu and Rafik (2018) researched the primary factors of foreign borrowing in Malaysia using the data from 1970 to 2013. They applied co-integration analysis, Vector Error Correction Model (VECM), and Granger causality tests. Their research revealed that there is a long-term relationship among the foreign borrowing and other included variables. However, VECM results indicated no significant short-term relationships between the variables. Granger causality tests showed that external debt Granger-caused exchange rate depreciation, recurrent expenditure, and capital expenditure, while GDP preceded foreign loans. The study concluded that GDP growth, recurrent expenditures, capital expenditures, and exchange rates were the principal drivers of foreign borrowing in Malaysia due to the established long-run relationships among these variables.

Furthermore, Lau and Lee (2016) conducted a research study on the causes of foreign loans in Thailand and the Philippines. They utilized the data from 1976 to 2013 and employed various econometric techniques, including the Johanson and Juselius co-integration test, Granger causality, and impulse response functions, following unit root tests of the series. They found that there is long-run co-integration between foreign borrowing and GDP, real interest rate, inflation, and money supply M2 in both Thailand and the Philippines. However, in the short run, Granger causality results revealed that inflation and real interest rates significantly influenced external debt in Thailand. Conversely, for the Philippines, short-run Granger causality results indicated no linkage between GDP, inflation, real interest rates, and money supply with external debt. Additionally, they emphasized that money supply was the most exogenous variable, exerting a substantial influence on other variables in both countries. Furthermore, external debt and the consumer price index were highly interactive and endogenous variables in Thailand and the Philippines, respectively, with their dynamics being significantly explained by other variables in the long run beyond the sample period.

Similarly, Brafu-Insaidoo (2019) delved into the determinants of external debt in Ghana, broadening the scope of analysis to include additional variables. Brafu employed the ARDL bound test and the Error Correction Term (ECT) to explore both short-term and long-term relationships between the short-term stock of external debt and factors such as the intensity of restrictions index and interest rate differentials (domestic-foreign). The study utilized time series data from 1970 to 2012. The findings unveiled a negative correlation between the short-term external debt stock and the restriction index, coupled with a positive correlation between short-term external debt and interest rate differentials, GDP per capita growth rate, and domestic financial deepening in both the short and long run. Conversely, trade openness negatively affected external debt in the short run. Notably, the study also observed a decrease in short-term foreign debt in response to international debt reduction and relief initiatives by multilateral institutions in the long run.

Additionally, Al-Fawwaz (2016) illustrated that in Jordan, trade openness and terms of trade have a positive and statistically significant impact on foreign loans, whereas GDP per capita shows a significant negative correlation with foreign borrowing. The study utilized the data covering the period from 1990 to 2014 and conducted an analysis by employing the ARDL bound test.

In another investigation, Bölükbaş (2016) explored the effects of trade openness and exchange rates on Turkey's foreign borrowing. Utilizing quarterly data from Q1 1998 to Q4 2011 and employing co-integration techniques, the study uncovered that trade openness positively and significantly contributes to Turkey's increased foreign borrowing, while the exchange rate is inversely and significantly correlated with foreign borrowing. Additionally, the dummy variable representing the financial crisis of 2008 is positively associated with the external loans of the Turkish government.

Developing countries often go for foreign borrowing as a strategy to bolster their foreign reserves, thereby instilling confidence in foreign investors. Pyeman

(2016) investigated the factors of foreign loans in Malaysia, utilizing data from 1972 to 2012 and employing multiple regression and Granger causality models. Their findings indicated that both GDP and (FDI) have a significant inverse impact on external loans, while exports positively and significantly affect external debt. Notably, this result deviates from the theoretical expectation of a inverse nexus between foreign borrowing and exports. One plausible elaboration for this discrepancy is the positive effect of exports on foreign reserves, which, in turn, enhances creditworthiness and increases Malaysia's external debt. This could be attributed to foreign borrowed funds being allocated to the development of export-oriented industries. He found that GDP does not granger cause foreign loans. However, there is bidirectional causality between foreign loans and FDI, and there is one sided causality from foreign loans to exports. Likewise, in their analysis about the causes of the foreign loans in Turkey, Karagol (2012) employed co-integration and Granger causality regression models for both the long-term and short-term perspectives. Their research, based on data spanning from 1980 to 2017, identified GDP, (FDI), debt service to exports, and foreign reserves as the most significant variables influencing Turkey's foreign loans. They observed a unidirectional causal relationship from foreign reserves to external debt and another one sided causal nexus from foreign loans to exports.

However, within the literature, there is also the "original sin" theory, which aims to elaborate the fundamental causes of foreign loans in less developed, developing, and emerging economies. Augustine and Kumar (2020) found that the depreciation of the currency is the primary factor contributing to the increase in foreign loans of India when denominated in rupee terms. This holds true for both the short and long run, particularly for the larger portion of foreign loans of India, as approximately 63%, is denominated in foreign currency. Their findings show that a one-rupee depreciation in the exchange rate against the USD leads to a 1.25% increase in India's foreign loans when measured in domestic currency. Additionally, factors like interest rates, budget deficits, foreign reserves, and trade openness have a direct and significant impact on foreign loans, while GDP growth rate negatively influences it. Augustine's research utilized quarterly data from Q1 2001 to Q2 2018 and applied the ARDL model based on the original sin theory.

The literature also highlights the role of bad governance and corruption as key factors of the unsustainable accumulation of foreign loans in highly indebted poor countries. Azolibe (2021) showed a direct and significant nexus among foreign loans, corruption, unemployment, and foreign aid, while there was an inverse and significant nexus with foreign reserves and GDP growth rate. To effectively manage external debt in these countries, Azolibe recommended a focus on good governance and the control of corruption to ensure that borrowed funds are directed towards productive projects rather than luxury items.

Similarly, in their working paper, Alesina and Weder (2002) discovered that governments with lower levels of corruption tend to receive less foreign aid, while more corrupt governments receive more foreign aid, both in bilateral and multilateral terms. This suggests that foreign aid allocation is not primarily based on the economic viability and institutional performance of recipient countries but rather on factors like colonial history, geopolitical relationships, and the strategic location of these countries, which serve the vested interests and power dynamics of donor nations.

Conversely, there is another perspective, championed by the leftist wing influenced by Karl Marx, which argues that wealthy countries (the center or core) intentionally ensnare poorer countries in the South (the periphery) with external debt burdens. This view is aligned with dependency theory and the Neo- Liberalism model. According to these theories, the political elites in developing and less developed countries prioritize their personal gains and serve the interests of affluent countries. Consequently, both developed nations and the political elites of developing and less developed countries exploit the resources and wealth of heavily indebted nations, diverting them to secure havens in advanced developed countries through capital flight and money laundering. Ikejiaku (2008) posits that institutions like the IMF, World Bank, and other Western international financial institutions, along with corrupt rulers, bear responsibility for the debt crisis in Africa, particularly in Nigeria. This perspective is grounded in an analysis of the historical colonial and neocolonialist policies of affluent Northern (center or core) countries.

While many research papers have identified a direct nexus between foreign loans and fiscal deficit, one research done by Abdullahi et al. (2015) showed an inverse association between exchange rate, interest rate, and budget deficit with external debt in in the short as well as long term. This unexpected inverse influence of budget deficit on foreign loans could potentially be attributed to a shift in the government’s approach, where it prioritizes financing its deficit through domestic borrowing rather than foreign borrowing. However, it’s worth noting that this adjustment process appears to be relatively weak in the short run. Abdullahi et al. conducted their research on the primary determinants of foreign debt in Nigeria, employing an Auto Regressive Distributive Lag Model and bound test, analyzing data spanning from 1980 to 2013. Their findings suggest that governments should exercise caution when entering into foreign debt agreements to avoid repeating past negative experiences.

In contrast to time series data models, several studies have utilized panel data models to explore the factors of foreign loans in underdeveloped and developing/emerging economies. Tiruneh et al. (2004) examined the causes of overseas borrowing in heavily indebted poor countries (HIPCs) and non-HIPCs by analyzing panel cross-sectional data from the 1980s and 1990s. Using pooled panel models and fixed effect and random effect models, Tiruneh identified debt servicing, capital flight, per capita income, GDP growth rate, and imports to GDP ratio as the main determinants of foreign debt in the pooled panel regression results. However, for HIPCs, the panel model indicated that foreign exchange reserves demand, slow GDP growth rate, income instability, and high debt servicing were the primary factors influencing external debt. Tiruneh emphasized the responsibility of developed rich countries in reducing the debt burden of poor nations, suggesting debt relief measures and smarter allocation of foreign funds in productive projects.

Greenidge et al. (2010) examined the variables influencing foreign loans in the Caribbean Community (CARICOM) using panel data models and Dynamic Ordinary Least Squares from 1987 to 2005. They discovered that GDP growth rate, export earnings, real effective exchange rate, and real interest rate were negatively correlated with external debt liabilities, while government spending deviation from the average level was positively related to external debt. They recommended focusing on export-led growth, reducing government expenditures, and increasing government tax revenue in CARICOM countries.

Bittencourt (2015) researched the factors of foreign borrowing in South American countries using panel data from 1970 to 2007 and a dynamic panel model. Despite including variables like economic growth, government and external debt, inflation, inequality, trade openness, money supply, population, and urbanization, Bittencourt found that only GDP growth have inverse and significant impacts on foreign loan ratios in the region; while other variables had no any substantial significant impact on it.

Mensah et al. (2017) explored the major drivers of external debt in highly indebted poor countries (HIPCs) in Africa using a panel Vector Auto Regressive (VAR) model with data spanning from 1980 to 2010. He discovered that the growth rate of foreign loans granger caused government consumption, government investment, inflation, tax revenue, and domestic debt. Interestingly, GDP growth rate did not granger cause external debt, but the reverse was true. There was bidirectional causality between government consumption and external debt as well as tax revenue and external debt. External debt responded positively to shocks in government investment, government consumption, and domestic borrowing over the long term but negatively to tax revenue, inflation, and GDP growth rate in the medium term.

Waheed (2017) identified nine variables as a determinant of foreign borrowing in oil exporting and importing countries, using panel data for 12 oil exporting countries and 12 oil importing countries from 2004 to 2013. He emphasized the need to avoid generalizations about external debt determinants as they vary from country to country.

Dunne et al. (2019) found a strong and significant nexus between defence spending and foreign borrowing in Sub-Saharan African countries, especially during conflicts. They recommended improving security situations and reducing military spending to address the debt crisis in these countries. Their study covered the period from 1960 to 2016, employing a Dynamic Panel model.

Dawood et al. (2021) investigated the determinants of foreign loans in Asian developing and transitioning economies using panel data from 1995 to 2019 and a Generalized Method of Moments (GMM) model. They concluded that GDP and inflation had inverse and significant impacts on foreign borrowing, while investment had a inverse effect but was statistically insignificant. Trade openness, exchange rates, and government expenditure, however, had positive and significant impacts on external debt.

In their study, Park and Sung (2020) divided 180 countries into two categories: OECD and non-OECD, and subjected them to analysis using panel data from 1980 to 2015 employing a panel unit root model. The findings indicated that non-OECD countries, facing restricted access to international financial markets, exhibited greater fiscal sustainability and solvency in comparison to OECD countries. However, enhanced access to international credit and liquidity didn't necessarily lead to improved fiscal sustainability in non-OECD nations; rather, it could elevate fiscal instability. Conversely, OECD countries with substantial levels of international debt stood a better chance of achieving fiscal sustainability compared to those with lower levels of international debt.

Recently, Nawshin, N., Imtiaz, A., & Sarker, M. S. (2024) established that external debt is a major contributor to financial crises in developing nations across Asia and Latin America. A recent case of near bankruptcy in Sri Lanka has heightened economists' concerns about managing and mitigating external debt risks. Bangladesh, too, has experienced challenges such as declining export revenue and rising import costs due to global economic shocks. However, its international reserves have never dropped to the critical levels observed in Sri Lanka. Their study explores the interplay between remittance inflows, international reserves, and external debt in Bangladesh and Sri Lanka. Econometric analysis indicates that remittances influence external debt both directly and indirectly through their impact on international reserves in Bangladesh. Moreover, evidence of a Dutch Disease effect in the remittance–reserves relationship has been identified. The findings suggest that Bangladesh leverages its international reserves as collateral to secure additional external borrowing, whereas Sri Lanka, like many other developing economies, accumulates reserves mainly for use in economic downturns. Ultimately, remittances have played a crucial role in shielding Bangladesh from sovereign default, a crisis that Sri Lanka was unable to avoid.

The available literature on the topic demonstrates different variables that have the major contribution in determining excessive debt burden and rescheduling of sovereign debt in developing countries like Pakistan; such as are small savings rate, (Ahmad & Ahmed, 1998) and (Burki and Naseem, 1996), unnecessary public expenditure, deteriorating export, growing imports, corruption and inappropriate use of loans (Papanek & Naseem, 1996) , poverty, unemployment and declining growth, excessive interest payments/debt servicing and inflation (Chaudhary et al., 2000) and (Hussain, 2003), instability of capital flows (Khan, 1996), political and national strategic priorities such as defense, dearth of resilience of public revenues , foreign exchange reserves and workers' remittances. (Mijiyawa, 2022, Mijiyawa & Oloufade, 2022, Ncube & Brixiova, 2013)

2.2.2 Remittances and foreign exchange reserves.

Various factors can influence foreign reserves, including remittances, foreign loans, foreign investment, external debt services, exports, imports, terms of trade, exchange rates, inflation, foreign aid, trade balance, and current account balance. Some of these factors have a direct effects on foreign reserves, while others have a inverse effect. Different studies have considered various factors in their research and have arrived at diverse conclusions.

For instance, Mijiyawa and Oloufade (2022) discovered that in low and middle-income countries (LMICs), remittances negatively affect foreign exchange reserves due to the Dutch disease phenomenon. He applied a system generalized method of moments model and analyzed panel data from 1970 to 2017.

Mahidud et al. (2021) conducted research in Bangladesh, using (ARDL) on data from 1986 to 2019. They aimed to establish nexus among foreign reserves, remittances, trade openness, and currency rates. Their findings revealed both long and short-run nexuses. Specifically, they identified a direct and significant nexus between foreign exchange reserves,personal remittances, and trade openness. While, the impact of the exchange rate on foreign exchange reserves was positive but statistically insignificant. Additionally, they observed unidirectional causality from remittances to reserves and two way causality between trade openness and exchange rates, while no granger causality between trade and reserves.

Similarly, Ahmad et al. (2020) conducted research in Pakistan, utilizing the Chow test for structural break point analysis and a dynamic ordinary least squares model with data from 1980 to 2016. They aimed to delve the effects of workers' remittances and other variables on foreign exchange reserves. Their findings suggested that surplus exports and an underutilized labor force, along with their remittances, can help mitigate vulnerabilities in the foreign reserves of developing countries like Pakistan. They considered structural breakpoints in their data analysis and identified that remittances, GDP, and money market rates positively and significantly affected foreign reserves. Conversely, trade openness had negative and significant impacts on foreign reserves due to increasing imports and stagnant exports.

On the other hand, Khan et al. (2005) declared that workers' remittances had a inverse short-term effects on Pakistan's foreign exchange reserves. Balance of payment variations and imports were positively and significantly related to foreign exchange reserves, while the money market rate had a inverse and significant effects. They believed that in the short run, the autonomy of the central bank and a monetary approach to balance of payments positively influenced the holdings of foreign exchange reserves in Pakistan. They used Johnson co-integration and vector error correction models with quarterly data from 1982:1 to 2003:3.

Additionally, Elbadawi (1990) was among the first to include remittances in a study of Sudan's vulnerabilities in foreign exchange reserves. He found that exporting surplus or underutilized human resources can help maintain a desirable level of foreign reserves and avoid vulnerabilities in foreign exchange reserves.

In a separate study conducted by Andriyani et al. (2020) focusing on Indonesia, an ARDL model was employed to analyze monthly data from January 2016 to December 2018. The findings suggested that external debt and exports had a positive and notable influence on Indonesia's international reserves, whereas the exchange rate exhibited a inverse and significant impact on these reserves. However, the impact of inflation on foreign exchange reserves was deemed statistically insignificant.

Furthermore, Jena and Sethi (2021) conducted research on the factors of foreign reserves in Brazil. They employed Granger-causality, Johnson Juselius Co-integration, and auto-regressive distributed lag models using data from 1960 to 2018. Their findings demonstrated that the current account balance to GDP ratio, per capita GDP, trade to GDP ratio, deposit to credit ratio for the private sector, and real interest rates had a direct impact on Brazil's foreign reserves. Conversely, the debt to GDP ratio inversely affected these reserves. However, the effects of exchange rates and inflation were positive and negative, respectively, but statistically insignificant. Additionally, their co-integration analysis demonstrated the presence of nine co-integration equations, and Granger causality tests indicated bidirectional causality between several variables.

On the contrary, Irefin and Yaaba (2011) argued that foreign exchange reserves in Nigeria were primarily determined by the income earned from oil exports and the country's imports. They applied a modified "Buffer Stock Model" originally developed by Frenkel (1980) and incorporated additional independent variables such as income level, monetary policy rate, imports, and exchange rates. ARDL bound test results showed the existence of long-term co-integration among these variables.

Meanwhile, Sanusi et al. (2019) argued that the determination of international reserves in southern African countries was influenced by factors such as capital inflows, imports, exports, exchange rates, and inflation over the long term. They employed a Panel ARDL model using panel data spanning 26 years from 1990 to 2015. In the short term, none of the variables except for the exchange rate were significant in determining reserves holdings. Their conclusion suggested that it was the "fear of floating" rather than the "fear of capital" that played a role in shaping foreign exchange reserves in southern African countries.

Similarly, Gereziher and Nuru (2021) concluded that foreign exchange reserves in Ethiopia, a foreign exchange-constrained economy, were significantly negatively impacted by inflation and exchange rates in the short run. However, in the long run, inflation and external debt positively and significantly affected foreign exchange reserves, while the effect of exchange rates remained consistently negative and significant. They applied an ARDL model on data spanning from 1981 to 2017.

In contrast, Lane and Burke (2001) emphasized that financial deepening, trade openness, the size and volatility of the economy also played a crucial role in influencing international reserves. They posited that small and volatile countries tended to accumulate more foreign exchange reserves compared to larger, less volatile, and less indebted countries. Similarly, more open economies maintained higher reserves than less open or closed economies. However, more indebted developing countries were likely to have fewer international reserves.

On a different note, Nor et al. (2008) established that there was co-integration between foreign exchange reserves and GDP per capita, imports to GDP ratio, exports variability, short-term debt, and current account balances in Malaysia. They utilized an ARDL model and data from 1970 to 2004. The direct nexus between short-term foreign loans and foreign exchange reserves indicated that Malaysia maintained foreign exchange reserves for collateral purposes.

However, there are other ways which can be utilized to bring stability in economy instead of accumulating huge foreign exchange reserves. Arslan and Cantú

(2019) emphasizes that prudential macroeconomics policies and currency swaps between central Banks can be implemented instead of accumulating huge foreign exchange reserves, as there is relatively higher costs of unnecessarily accumulating foreign reserves at domestic as well as global level. They pointed out that the higher reserves accumulation has played major role in reducing the long term interest rates in united States of America; thereby bearing very low return as compare to their costs in the form of opportunity costs and adjustment costs. They concluded that beside the predominantly precautionary motive, there is also major role of of goals associated with monetary policy and exchange rate policy behind the overwhelming accumulation of foreign reserves in emerging market economies.

Besides, Verma and Bhakri (2021) are of the view that foreign exchange reserves in India have been dependent on exports, foreign direct investment, exchange rate and short term and long term external debt of India. They incorporated data from 1991 to 2019 and multivariate regression model to analyse the effects of these variable on foreign exchange reserves. They found that FDI, exports and external debt are positively related with international reserves while the nominal currency rate negatively affect the reserves of India. In other words, if Indian rupees starts depreciating against US dollar, Indian Reserve Banks starts accumulating more foreign reserves.

Similarly, Khomo et al. (2018) by applying Buffer stock model through ARDL model over the time series data from 1990 to 2014 of Eswatini found that GDP per capita and nominal exchange rate contribute positively in building up the foreign exchange reserves. While, Current account deficit and government spending affect negatively and significantly to foreign reserves in long run as well as short run.

Regarding the maximum level of international reserves adequacy, there is debate among the economists and academicians; as there is no any universally acceptable level of reserves adequacy. Some focus over the import bill equivalence of at least three months; while others suggest that having reserves equal to import bill of six months is safe. However some believe that it should be equivalent to twelve months' import bill; specially for low income countries which are more exposed to external account shocks and are deprived of access to international capital market (Sahu, 2015; Verma & Bhakri, 2021).

However, The famous Greenspan-Guidotti rule, named after Alan Greenspan and Pablo Guidotti suggest that appropriate level of reserves adequacy must consider the short term external debt obligations; that are expected to be mature with in less than next one year's time period. But this does not encompass the trade related requirements of reserves, so is expected to underestimate the required need for foreign reserves accumulation. However, this rule can be expanded to consider financial needs of any country for one year measured by short term external debt minus current account deficit (Arslan & Cantú, 2019).

An other measure for international reserves adequacy is the reserves to $M2$ ratio. it is considered an appropriate measure for those countries which have developed financial market and have open capital account. 5% to 20% is considered as a bench mark. However, Wijnholds and Kapteyn (2001) have developed an other measure for foreign exchange reserve adequacy by considering the potential pressure on reserves; emanating from non rollover of foreign loans and resident's capital flight. This consists aggregate addition of short term foreign loans and adjusted M2. The adjustments of M2 depends on the country risk and exchange rate regime. They recommended 100% coverage for more vulnerable countries with liberalized current and capital account and floating exchange rate regime.

International Monetary Fund (IMF) has also developed to assess the reserves adequacy for the countries. it is the weighted metrics which includes short term external debt, export incomes, money supply (M2) and other liabilities. Export incomes and other liabilities are related with the terms of trade shock and other capital outflows portfolio respectively. If the country is dollarized, has capital control and/or commodity exporter/importer, the measure is adjusted accordingly. It recommends the 100 percent to 150 percent of reserves cover.

In addition, Jeanne and Ranciere (2011) also developed the measure for optimal reserves level on the basis of marginal cost and marginal benefit to rationalize the reserves accumulation at optimal level. They tried to equalize the opportunity cost with the expected gains that may be realized from smoothing absorption by the country; resulting from sudden stops of financial inflows. The level of reserves may change from country to country on the basis of probability of sudden stops, risk aversion and expected output losses.

Recently, Bindu, S., et.al (2024) are of the view that International reserves serve as an indicator of a country's economic stability and its ability to meet financial obligations. Their study examines the impact of remittances and financial development on international reserves in the BRICS economies—Brazil, Russia, India, China, and South Africa—over the period 1960 to 2022. Econometric analysis reveals that both remittances and financial development have a significant positive effect on international reserves. Additionally, a strong long-term relationship is identified among remittances, financial development, and reserves. In the short run, financial development also exhibits a significant linkage with international reserves.

Similarly, Naima, J., Mony, P. D., & Lalon, R. M. (2025) studied to enhances the existing literature by examining the factors that influence Bangladesh's foreign exchange reserves from 1972 to 2023. Using an ordinary least squares (OLS) regression model, it assesses the impact of key macroeconomic indicators, including exports, imports, economic growth, trade balance, remittances, external debt, foreign direct investment (FDI), broad money, real interest rates, exchange rates, and trade openness. The findings reveal that trade balance, real interest rates, and trade openness negatively affect foreign exchange reserves, whereas exports, imports, economic growth, remittances, external debt, FDI, and broad money have significant positive effects. With an R^2 value of 0.9877, the model demonstrates strong explanatory power, indicating that the selected variables account for nearly all variations in foreign exchange reserves. Diagnostic tests confirm the model's reliability, showing no signs of heteroscedasticity, multicollinearity, or autocorrelation. The results emphasize the importance of maintaining balanced trade policies and fostering favorable conditions for exports, remittances, and FDI to ensure a steady accumulation of foreign exchange reserves, thereby strengthening Bangladesh's economic stability.

However, Talhaoui, O., & Bouali, A. (2024) examined the role of financial remittances from Algerian migrants in sustaining the country's foreign exchange reserves, recognizing them as vital sources of foreign currency inflows. The findings indicate that remittances have had a limited impact on strengthening Algeria's reserves. This is largely due to their relatively low volume and the influence of the country's banking system, particularly its level of flexibility and development.

2.2.3 Remittances and Economic growth

The research illustrates the significant contribution that workers' remittances perform in fostering economic growth and development in developing and emerging countries by providing crucial support to their external accounts. Hassan and Holmes (2016) revealed that workers' remittances not only help in balancing the current account in nations with persistent imbalances but also stimulate private sector national savings, which can potentially be channeled into investments in productive and socially beneficial projects. This infusion of funds can ultimately lead to the economic growth and development of these countries. Their findings contradicted existing literature showing concerns about the "Dutch Disease" phenomenon associated with substantial inflows of remittances. Furthermore, they argued that the availability of substantial workers' remittances increases the likelihood of high co-integration between a country's exports and imports.

Additionally, Ahmad and Khan (2021) concluded that foreign direct investment and foreign remittances significantly and positively contribute to Pakistan's economic growth in the long run. Their analysis, conducted using the ARDL model with data spanning from 1990 to 2018, revealed that all series were stationary at first difference, indicating them as I(1). The model demonstrated no issues related to auto-correlation or heteroscedasticity, and various tests confirmed that the error terms were normally distributed.

Similarly, Islam (2022) conducted a study across four prominent remittance-receiving countries in South Asia, namely India, Pakistan, Bangladesh, and Sri Lanka.

Their research explored the effects of remittances on economic growth while controlling for variables such as trade openness and foreign direct investment.

Moreover, Ahmad et al. (2013) conducted their study focusing on Pakistan, employing an OLS multiple regression model with time series data spanning from 1978 to 2011. The findings indicated that remittances and foreign direct investment had direct relation with economic growth, while inflation and exchange rates had significant inverse effects.

Similarly, Javid et al. (2012) established a direct and substantial nexus between remittances, economic growth, and poverty reduction in Pakistan. They utilized the ARDL model and analyzed the data from 1973 to 2010. Their research also demonstrated that human development index and investment had direct and significant influence on economic growth and poverty reduction, although the effects of trade openness was negative.

Besides, Dilshad (2013) also conducted research in Pakistan to delve the impacts of remittances on economic growth. They employed an OLS regression model with data ranging from 1991 to 2012. Their findings highlighted a strong positive impact of remittances and employed labor force on economic growth. However, the effects of gross capital formation on economic growth was established to be inverse and significant. They recommended that the government should formulate policies to encourage immigrants to send money through formal channels.

In contrast, Khurshid et al. (2023) applied a Markov regime switching model to quarterly data from 2000 to 2020. Their research revealed that personal remittances, FDI, and external debt had direct and significant effects on economy of Pakistan. Additionally, economic growth was more pronounced during periods of dictatorship and election periods. The authors conducted various tests to ensure the robustness, validity, reliability, unit root, and linearity of their model before and after estimation.

Employing the GLS panel model, FMOLS model, and Dumitrescu–Hurlin (D–H) approach on balanced panel data from 1986 to 2019, after ensuring the data's suitability through tests for cross-sectional dependency, unit roots, and endogeneity, they found that remittances significantly and positively influenced economic growth. Conversely, foreign direct investment had a inverse and significant effect on economic growth, while trade openness made a positive and significant contribution to the economic growth of these selected South Asian countries.

Furthermore, Ellahi and Omer (2020) argued that remittances represent a form of interest-free foreign exchange finance that plays a pivotal contribution in the economic growth of both Muslim and non-Muslim nations. Their research, conducted using generalized method of moments (GMM) analysis on time series data from 1976 to 2017, aimed to mitigate issues related to endogeneity and simultaneity bias. They discovered that remittances directly related with Pakistan's economic growth by boosting both consumption and investment within the country. Additionally, foreign direct investment and fiscal deficits exerted direct and substantial effects on economic growth, while population growth rates negatively affected growth. Inflation also had a negative impact, although statistically insignificant.

Additionally, Chowdhury et al. (2023) investigated the impacts of remittances on economic progress in three South Asian countries: Bangladesh, Vietnam, and Sri Lanka. They used pooled OLS, fixed effects, and random effects models for grouped data, as well as VECM and Granger causality for country-specific data analysis over the period from 1990 to 2019. Their study showed that remittances had an inverse and significant impact on economic progress in the panel system. However, in country-specific cases, remittances did not show an inverse linkages with economic growth in either the short or long run. In Vietnam, remittances only affected economic growth in the short run, while in Sri Lanka, there was two way causality between remittances and economic growth in the short run. The negative effects of remittances on economic growth in these economies were attributed to the allocation of received remittances towards unproductive consumption and investment.

Conversely, Sutradhar (2020) analyzed panel data from four Asian countries, including India, Pakistan, Bangladesh, and Sri Lanka, spanning from 1977 to 2016. Their research, which employed pooled OLS, fixed effects and random effects models, revealed that remittances had an inverse and significant impact on economic progress in the combined analysis. However, in the case of India, the effects were positive and significant in country-specific analysis.

Similarly, Hassan and Shakur (2017), Karagöz (2009), Tolcha and Rao (2016) also found negative impacts of remittances on economic growth in long run in various context by employing various time periods data and various methodologies.

Besides, Roy (2023) has recently found the negative impacts of external debt and remittances while positive impacts of oil price on economic growth of India by applying various econometric techniques such as ADF, PP and KPSS for unit root and ARDL, DARDL for long run and short run and Toda-Yamamoto causality for causation on data ranging from 1990 to 2020. They also applied the reliability,, validity and robustness tests after estimation and established that the data and error term are free from abnormality, auto and serial correlation, heteroscedasticity and model mis-specification

However, Shaikh et al. (2016) revealed that there is no any significant impact of personal remittances on economic growth of Pakistan. Whereas, foreign direct investment and gross capital formation and foreign aid substantially contribute in economic growth of Pakistan. They applied Johnson co-integration and VECM to analyze the data ranging from 1980 to 2014 since all the series were I(1). The remittances if used in investment become pro-cyclical like other investment expenditure especially in poor developing countries. The remittances in India and Bangladesh are more counter cyclical while they are pro-cyclical in Jordan and Morocco (Sayan, 2006). The remittances in Turkey and Philippines were more oscillating and pro-cyclical during 1990s than in 1980s (Ratha & Mohapatra, 2007). The worker's remittances have been more stable in Sub Sahara Africa as compare to official development aid and foreign direct investment (Gupta et al., 2007).

Conversely, Gupta et al. (2007) warned that huge and continued remittances inflows may result an increase in the currency's real value of recipient country that may ultimately adversely affect the export competitiveness in international market. Consequently the cost responsive sector especially cash crops and manufacturing industry would be less profitable leading to fall in production and exports of these sectors. This is the indication of "Dutch Disease" a country would be suffering from. Although the empirical evidence about adverse effects of remittance inflows on exchange rate, terms of trade and growth is limited but it is source of great concerns; particularly for small economies receiving large remittances inflows. For example Moldova, El Salvador and Kenya are worried about the impacts of heavy remittance inflows on the value of their currencies.

However, Kireyev (2006) carried out the working paper at IMF for Tajikistan where he established the positive and beneficial effects of remittances inflows that worker's remittances can have on economy. He was of the view that remittances would have helped to mitigate the effects of huge trade deficit on exchange rate in the form of depreciation. Moreover, the cheap labor and other inputs in Tajikistan as compare to her trading partners might have meaningfully offset the adverse effects of remittance inflows on competitiveness in international market through real exchange rate.

Similarly, Al Mosharrafa, R., Sahabuddin, M., & Saha, N. (2024) are of the view that role of migrant workers and remittance inflows has gained significant attention in global economic research, particularly as remittances have become a key driver of economic growth in many developing nations. Their study employs a time–frequency-based wavelet approach to analyze the dynamic causal relationship between migration, remittances, and economic growth in Bangladesh. The results indicate a time-varying causal link among these variables within the time–frequency framework, with a strong long-term association. Notably, significant correlations are observed across the 5–16 band scales for migration and remittances (MIG-REM), migration and economic growth (MIG-GDP), and remittances and economic growth (REM-GDP). These findings suggest that Bangladesh's economic indicators are closely interconnected over the long run, with fluctuations in these variables demonstrating low volatility over time.

On the other hand Azizi, S., Aftabi, A., Azizkhani, M., & Yektansani, K. (2024) examined the influence of international remittances on economic growth in 113 developing countries from 1990 to 2015, addressing potential endogeneity using a novel instrumental variable approach. By estimating bilateral remittances and constructing weighted indicators for remittance-sending countries, the analysis reveals that remittances positively impact growth only in countries with high human capital, while their effect is insignificant in those with low human capital. Further, remittances do not alter labor supply in high-human-capital countries but reduce it in low-human-capital ones. Additionally, they promote investment in physical capital only in economies with higher human capital. This study contributes to the literature by employing an innovative methodology and exploring the indirect channels through which remittances influence economic growth.

Likewise, Zaarour, F., Haddad, G., & Ajimi, A. (2024) also investigated the role of remittances as a key financial source for developing countries and analyzes their impact on economic growth through various transmission channels. Using a Panel VAR model on data from 1980 to 2016, the findings indicate that remittance inflows contribute to economic growth and tend to rise in response to economic shocks. While the analysis does not provide conclusive evidence regarding the consumption and population growth channels, it confirms that remittances play a significant role in boosting investment.

2.2.4 Remittances-Economic Growth moderation effects

Literature shows that the impacts of remittances on economic growth are not direct. However, they are through mediation of other various factors such as investment, savings, consumption, investment, exchange rate, financial development and institutional quality. Sobiech, I. (2019) investigated the impacts of remittances on economic growth via financial development. He used the newly developed index for financial development as mediating/moderating variable between remittances and economic growth. He found that the remittances affect economic growth positively but at the lower level of financial development. He regarded the remittances as a substitute for financial development. He suggested that while the remittances have vital role in reducing poverty in immediate time period, however, the government should focus to augment the financial development in the long run.

However, Catrinescu, N., Leon-Ledesma, M., Piracha, M., & Quillin, B. (2009) ascertained the impacts of remittances on economic growth through transmission of institutional quality. They found that remittances affect economic growth positively and significantly via the institutional quality improvements. They are of the view that better institutions facilitate the transfer of remittances smoothly and direct the remittances in high return investment and business start ups.

Likewise, Lartey, E. K. (2013) also found investment and financial development as moderating variable by including interaction term in the model. He established that the effects of remittances on economic growth accrue through transmission channel of investment and financial development in African countries. He applied dynamic panel data and model for econometric analysis.

Similarly, Ur Rehman, N., & Hysa, E. (2021) found the positive nexus between remittances, financial development and investment with economic growth of western Balkan Countries (WBCs) by applying fixed effect and system GMM models. However, the interaction term of remittances and financial development has negative and significant coefficient. IT is because of less developed financial system in WBCs.

However, Genevieve, G., Frimpong, J. M., & Kwame, M. (2023) analyzed the impacts of remittances on economic growth through moderating of exchange rate. The study uses partial and bi-wavelet coherence techniques to analyze the time-frequency dependence of international remittance inflows on economic growth, considering the moderating role of exchange rates. It examines the co-movements between remittances and economic growth from 1980 to 2020, revealing varied patterns across different timescales. The bi-wavelet coherence analysis shows strong co-movements at high frequencies, indicating that exchange rates can negatively affect the remittance-growth relationship. Partial wavelet coherence findings highlight the significant role of exchange rates in shaping the connection between remittances and economic growth in emerging and frontier African economies. In periods of drastic exchange rate fluctuations, policy responses in these countries appear to influence the co-movements. The study emphasizes the need for sustainable exchange rate policies to manage the risks posed by exchange rate volatility on remittance inflows, particularly during economic crises. Effective exchange rate mechanisms are deemed crucial for maintaining parity and mitigating potential risks.

While, Karim, N., Tariq, M., & Khan, M. A. (2024) investigates that how the financial sector and institutional quality moderate and mediate the relationship between remittances and economic growth in 68 developing countries from 2000 to 2018. Using fixed-effects and two-step system GMM techniques, the findings reveal a two-stage process. First, remittances enhance the financial sector and institutional quality, strengthening their interrelationship. Second, the financial sector mediates the positive impact of remittances on economic growth, with institutional quality complementing this process to drive growth in recipient economies. The analysis by income group shows that upper-middle-income countries experience the strongest moderated-mediation effects, indicating that robust financial and institutional frameworks amplify the growth impact of remittances. Institutional quality, measured through key indicators such as government effectiveness, rule of law, regulatory quality, and corruption control, plays a pivotal role. The study highlights the need to improve financial infrastructure, reduce transaction costs, promote financial inclusion, and enhance governance to channel remittances through formal mechanisms, fostering sustainable economic growth and development.

In a similar vein, Okunade, S. O, et, al. (2023) investigated the relationship between financial remittances, financial development, and economic growth in Nigeria, focusing on whether financial development mediates the impact of remittances on the country's economic performance. Using secondary data from 1984 to 2022, the study employs Dynamic Ordinary Least Squares (DOLS) and Fully Modified Ordinary Least Squares (FMOLS) methods. The results show that while remittances alone do not significantly boost economic growth, they become growth-enhancing when financial development is factored in. The findings reveal a positive, statistically significant interaction between remittances and financial development, confirming that remittances stimulate domestic investment and consumption. Additionally, the study highlights the mediating role of a well-developed financial sector, which amplifies the impact of remittances on economic growth. The study advocates for policies promoting financial inclusion, literacy, and access to formal financial services to enable remittance recipients to make informed, productive financial decisions and maximize the benefits of remittances.

Likewise, Sghaier, I. M. (2021) examined the conditional impact of remittances on economic growth in seven MENA countries—Tunisia, Morocco, Algeria, Egypt, Jordan, Lebanon, and Turkey—over the period 2000–2018. Using panel data and the system generalized method of moments (GMM) approach, the results reveal a strong positive relationship between remittances and economic growth. The findings also highlight that financial development complements the remittances-growth nexus, enhancing its impact. The study underscores the importance of understanding the mechanisms through which remittances drive growth, providing valuable insights for policymakers to design effective strategies for the MENA region.

Similarly, Ngoma, A. L., Ismail, N. W., & Law, S. H. (2021) conducted the study by employing a partial Gram-Schmidt orthogonalization procedure to assess whether the marginal impact of workers' remittances on economic growth depends on the level of financial development and institutional quality. Using a Pooled Mean Group (PMG) estimator on panel data from 15 remittance-receiving Asian countries over 1984–2010, the findings indicate that workers' remittances positively influence economic growth, with stronger effects in countries with higher financial development but weaker institutions. A 1% increase in per capita remittances leads to a long-term rise in per capita income by 0.103%. The marginal effect of remittances on growth increases with financial development, as shown by partial derivatives: 9.733 at the mean level, 1.355 at the minimum, and 32.087 at the maximum level of financial development. Conversely, the growth impact declines with improved institutional quality, with partial derivatives of –12.068 at the mean, –6.785 at the minimum, and –15.945 at the maximum level of institutional quality. The results suggest that remittances and financial development act as complements in fostering growth, while remittances and institutional quality function as substitutes. This highlights the importance of enhancing financial development to maximize the growth benefits of remittances in these countries.

However, Ogbuabor, J. E, et, al. (2023) examined the impact of international financial inflows—remittances, foreign direct investment (FDI), and foreign aid—on economic complexity in 31 African countries from 2010 to 2020, using the dynamic system GMM framework. The findings show that these financial inflows significantly drive economic complexity, with institutional quality playing a critical moderating role that enhances their effects. The study emphasizes the importance of fostering an enabling environment to attract these inflows, recommending policies that support sustainable investment and economic growth in Africa.

Ajide, F. M., & Osinubi, T. T. (2024) also explored the role of financial development and migrant remittances as policy tools for enhancing economic complexity in Africa. Using panel ARDL, method of moment - quantile regression (MM-QR), and Dumitrescu-Hurlin panel causality methods, the analysis covers 21 African countries from 1996 to 2017. The findings demonstrate that both financial development and remittances are effective in advancing economic complexity. However, they exhibit a substitutive relationship in this process. The study highlights that financial development fosters innovation and quality improvement in production by encouraging investments in research and innovation, ultimately increasing economic sophistication. The findings offer valuable policy insights, emphasizing the need for strategies that harness financial development and remittances to drive economic complexity in Africa.

However, Gniniguè, M., & Ali, E. (2021) are of the view that digital technologies play a vital role in driving economic growth and achieving Sustainable Development Goals, particularly during crises like COVID-19, where they facilitate the receipt of remittances. This study examines the impact of migrant remittances (MRs) on economic growth in ECOWAS countries, focusing on the role of digitalization, using simultaneous equations and the seemingly unrelated regression method with data from 1980 to 2017. The findings reveal that while digitalization does not directly mediate the effects of MRs on economic growth in ECOWAS, it acts as a catalyst in non-WAEMU countries. In contrast, in WAEMU countries, remittances contribute to human capital development, investment, and consumption but are less influenced by digitalization. The study underscores the importance of policies that enhance digital infrastructure to amplify the economic impact of remittances across ECOWAS, particularly within WAEMU.

Conversely, Delessa, K., Alemu, T., & Bane, J. (2024) This study addresses the challenge of achieving growth without development in many developing countries, particularly in Sub-Saharan Africa (SSA). It examines the relationship between capital inflows, remittances, and economic growth, focusing on the moderating roles of institutional quality and macroeconomic stability. Using balanced panel data from 24 SSA countries for 2005–2019, the study tests the hypothesis that the growth impact of capital inflows depends on institutional and macroeconomic conditions. Employing a DOLS panel-based cointegration approach, the study finds that variables are integrated of order I(1), with long-term relationships confirmed by Pedroni, Kao, and Westerlund cointegration tests. The analysis reveals heterogeneous slope coefficients and cross-sectional independence across panels. The results show a positive long-run relationship between per capita income and remittances when influenced by macroeconomic policy. The findings emphasize the critical role of institutional quality and macroeconomic stability in enhancing the effectiveness of remittance inflows on economic growth. Policymakers are urged to strengthen these areas to maximize the developmental impact of remittances in SSA.

However, Ofori, I. K. et, al (2023) analyzed how financial development influences the relationship between remittances and inclusive growth in 42 African countries, focusing on interactive and threshold effects. Using the system GMM estimator, the findings reveal that remittances do not significantly enhance inclusive growth in Africa. While remittances fail to promote economic growth, they exacerbate income inequality. Additionally, the underdeveloped financial sector in Africa weakens the positive impact of remittances on inclusive growth. Threshold analysis suggests that financial development must reach at least 14.5% to effectively interact with complementary policies and foster inclusive growth. The study highlights the need for targeted investments in financial development to ensure equitable income growth and distribution in the region.

Similarly, Saydaliyev, H. B., Chin, L., & Mohamed, A. (2022) explored the impact of remittance inflows on economic growth by examining the interaction between financial inclusion and human capital in developing and developed countries from 2007 to 2018. Using dynamic panel data analysis and System GMM techniques, the findings reveal that financial inclusion and human capital are key drivers of economic growth in remittance-receiving countries. Improved financial inclusion enables remittances to be effectively channeled into productive activities, while developed human capital directly boosts economic performance. The study emphasizes the importance of regulatory frameworks that encourage remittance inflows to support financial inclusion and human capital development, leveraging these funds for sustainable growth.

Likewise, ELazhary, R., Eladham, F., & Elakkad, M. (2023) examined the influence of overseas workers' remittances on Egypt's economic growth, with financial inclusion as a moderating factor, using annual time-series data from 2004 to 2020. Applying the ARDL model and bounds testing, the findings reveal a U-shaped, non-linear relationship between remittances and economic growth. The positive impact of remittances on growth becomes significant only when their annual growth rate exceeds 41.37%, which occurred in 2005, 2007, and 2010. However, financial inclusion showed an insignificant positive effect on economic growth and did not enhance the remittances-growth relationship in either the short or long term. Despite these findings, the practical importance of the relationship between remittances and economic growth remains significant, regardless of whether the remittance growth rate surpasses the threshold.

While, Dada, J. T., & Akinlo, T. (2023) explored the role of financial development as an absorptive factor in the remittance-growth relationship in Nigeria from 1986 to 2017. Using an autoregressive distributed lag (ARDL) bounds test and vector error correction Granger causality, the study examines short-run, long-run, and causal links between remittances, financial development, and economic growth. Results reveal that both financial development and remittances positively contribute to economic growth. In the short run, financial development and remittances act as substitutes in driving growth, whereas they complement each other in the long run. Causality tests indicate a unidirectional link from economic growth to financial development and bidirectional causality between remittances and financial development in the short run. In the long run, both financial development and remittances Granger cause economic growth. These findings highlight the existence of time lags in the relationships among remittances, financial development, and economic growth, with important implications for policy design.

Likewise, Ogede, J. S. et, al. (2023) examines the roles of financial inclusion, governance, and remittances in promoting economic growth in Sub-Saharan African (SSA) countries, with a focus on the moderating effect of financial inclusion on the remittance-growth relationship. Using panel data from 1996 to 2020, sourced from World Bank and IMF reports, the study constructs composite financial inclusion (FI) indexes through principal component analysis. Methodologies such as cross-sectional dependence, slope homogeneity, and pooled mean grouping (PMG) are applied. The findings reveal that remittances have a significant positive impact on economic growth in SSA, and financial inclusion enhances the remittance-growth relationship. However, poor governance negatively affects economic growth. The study suggests that stakeholders should strengthen financial infrastructure to improve financial inclusion, implement consumer protection measures, and promote transparency. Governments are encouraged to advance global remittance initiatives, including leveraging remittances for consumer and business financing, exposure to international financial markets, and issuing diaspora bonds to enhance economic growth in SSA.

Research about the contribution -direct and through moderating variables- of personal remittances in economic development of capital scarce countries like Pakistan is emerging in diaspora of researchers, academicians, development economists and policy makers in order to architect desirable policies to channelize these received funds in productive and high return oriented investment. Worker's remittances have not only exerted the substantial effects on economic progress of Pakistan by minimizing the current account deficits and improving foreign reserves but they have also helped to reduce the foreign debt needs of the country. Besides, they have also played a pivotal role in off-setting the negative effects of oil shocks, decreased the unemployment rate and enhanced the living standard of recipient households in the country. (Sattar, 2005).

2.3 Methodological Review

Different studies have used different methodologies in their research. Some have used time series data models and others have used panel or cross sectional data and models (Bittencourt, 2015, Dunne et al., 2019, Park & Sung, 2020, Tiruneh et al., 2004, Waheed, 2017). Some studies have used ordinary least square methods (Greenidge et al., 2010, Kalim & Shahbaz, 2009, Malik et al., 2010, Verma & Bhakri, 2021, Zaman & Arslan, 2014) while others have used Johnson's co integration and granger causality test (Anfofum et al., 2014, Jena & Sethi, 2021, Karagol, 2012, Lau & Lee, 2016, Pyeman, 2016). Some have used vector ARDL and vector error correction models (Gokmenoglu & Rafik, 2018, Mensah et al., 2017) while others have used Auto Regressive Distributed Lag Model and error correction term for long and short term relationships (Abdullahi et al., 2015, Al-Fawwaz, 2016, Andriyani et al., 2020, Augustine & Kumar, 2020, Brafu-Insaidoo, 2019, Das et al., 2021, Gereziher & Nuru, 2021, Khomo et al., 2018, Mahidud et al., 2021, Nor et al., 2008, Sanusi et al., 2019). More recently studies are using system generalized methods of moments (GMM) (Dawood et al., 2021, Mijiyawa, 2022, Mijiyawa & Oloufade, 2022), Non Linear ARDL and augmented ARDL models (Sharaf, 2022) in their studies to overcome the endogeneity problems and structural breaks problems. Each methodologies has its own merits and demerits, pros and cons, assumptions and pre requisites, limitations and short comings. Ordinary least square regression has very unrealistic assumptions about data and variables that are very hard to satisfy due to theoretical, practical and methodological reasons. For example OLS model assumes that linear relationship between the included variables, however in real world situation, the relationships can be non linear. Besides, it assumes no auto correlation between the error term, error terms do not suffer from heteroscedasticity and they are not related with independent variable (no endogenity problem), However, in real world, these assumptions might be violated. In additions, it also assumes that data is correctly measured, free from unit root problems and available in large number, however, in real world there may be problems in measurement of data, unit root problem in time series data due to trend and seasonal impacts and its availability in sufficient number. On the other hand, the Johnson's co integration test requires all the series to be I(1) and give long run relationship, whereas the granger causality test just tells us about direction of the causality in short run. However ARDL model can be applied if the series are of mixed order of integration but it can not be applied if any of the series is I(2) (Pesaran et al., 2001).

2.4 Research Gap and contribution of the study.

The impacts of remittances on reducing foreign loan burden and maintaining the external debt sustainability has been emerging area of research recently; specially after 2007-08 financial crisis when IMF and World Bank decided to include the remittances in external debt sustainability analysis. However, there are a few such type of the studies that have delved the effects of remittances on external debt empirically and explicitly; two studies conducted by Mijiyawa (2022) in case of HIPCs and Mijiyawa and Oloufade (2022) in case of LMIC economies and one conducted by Ncube and Brixiova (2013) in case of Egypt.

These studies found contradictory results in different contexts. In case of HIPCs the impacts of remittances on foreign loans were to be inverse and significant, while in case of LMICs, the remittances affected the external debt positively and significantly. Besides, the remittances were found to enhance the debt sustainability of Egypt. These opposite findings trigger a further need to explore these relationships not only in other regional contexts but also in different country specific cases due to heterogeneity among the different regional and country level contexts. As per our information, there is no any such research conducted in case of Pakistan previously. Thus. this study would be first ever study that would investigate the impacts of remittances on external debt of Pakistan to fill out this gap.

In additions, the effects of remittances on foreign reserves are found to be mix. The researchers face lack of consensus over the impacts of remittances on foreign reserves. Moreover, the studies that have been carried out to ascertain the impacts of remittances on foreign exchange reserves of Pakistan are very scarce and have used the out dated data and methodology. One study conducted by Khan et al. (2005) used quarterly data from 1982 to 2003 and applied co-integration and VECM model while other study conducted by Ahmad et al. (2020) used time series data from 1980 to 2016 and used dynamic ordinary least square model. However, the auto regressive distributed lag model has not been used by any previously conducted study. Therefore, this study would apply this most suitable and appropriate method to find out the short as well as long term effects of remittances on foreign reserves to fill out this gap.

Besides, the impacts of remittances on economic progress depends on some mediating and moderating variables such as savings, investment, financial development, institutional quality and politico-economic stability. However, previous studies have researched them by applying various techniques and methods on various time periods to reach at different findings without considering any of the moderating and mediating variables. This might led towards various biases, and spurious results and their implications. Besides, the mixed results and lack of consensus among the previous research studies instigate the further need of research in this dimension. Therefore, this study would fill this gap by including Investment as a mediating and moderating variables to delve the impacts of remittances on economic growth.

Subsequently, closing these gaps would not only help in comprehension of complex nexus between remittances and external borrowing, foreign reserves and economic growth but will also offer the viable policy implication for policy makers, practitioners and development economists to optimally harness the benefits of remittances to reduce external debt burden, stabilize the foreign reserves and stimulate the economic progress of the indebted developing countries specially the top recipient of remittance economies like Pakistan.

2.5 Theoretical Framework

2.5.1 Remittances and external debt

The justification behind the effects of remittances on external debt, foreign exchange and economic growth basically arises from three gaps such as internal deficit, external deficit and foreign exchange Constraints; demonstrating domestic and external limitations that compel the countries to opt for foreign borrowing(Bacha, 1990). External constraints are aroused from the international transactions related to balance of payments accounts (current and capital account); such as exports and imports of products, factor payments (remittances and interest on foreign loans and business profits payments), Net unilateral transfer payments (foreign grants and transfers), foreign loan amortization, FDI flows and foreign reserves. Domestic constraints can arise from low saving rate, low GDP growth rates, low tax revenues, high government expenditures higher interest rates and higher investment requirements. As we know that GDP in open economy is given by

$$Y = C + I + G + NX$$

Where Y denotes GDP, C stands for consumption, I represents Investment, G shows government expenditure and NX is net exports

So solving for “I” will yield;

$$I = Y - C - G - NX$$

And National saving is given by;

$$S = Y - C - G + NFP$$

Here S stands for national saving, NFP stands for net factor payment, rest of the variables are already defined above.

So;

$$S - I = NX + NFP$$

Assuming NFP = 0 our equation will become:

$$S - I = (X - M)$$

So whenever trade balance < 0 (deficit) it means National savings are less than Investment requirement and in order to fill this Saving Investment Gap, the country will have to borrow from abroad. This shows the two gap model.

Moreover, Government Budget is given by;

$$FB = TR - GE$$

Where FB is fiscal balance, TR is tax revenue and GE is government expenditures. Resultantly, extending the two gap to three gap model will give us:

$$I = (Y_p - C_p) + (T - G_c) + (M - X)$$

Where $(Y_p - C_p)$ is private saving, $(T - G_c)$ is government saving or fiscal balance and $(M - X)$ are net exports or trade gap: it means that open economy faces three gaps.

If Government has deficit and is borrowing debt then fiscal constraint is given by:

$$T_t + D_t - D_{t-1} = G_t - rD_{t-1}$$

Where $T_t, D_t\, D_{t-1}, G_t$ and r are the government tax revenue, current debt, past debt, government spending and interest rate on debt respectively.

Solving the above equation for debt we get:

$$D_t = G_t - T_t + 1 + r(D_{t-1})$$

Where $G_t - T_t$ is the primary fiscal balance. Increase in government spending and interest rate increases the debt burden of the country and increase in the tax revenue decreases the debt burden of the country.

If government expenditures are greater than government revenue, the government would be running fiscal deficit or budget deficit, then the government will have to fill that gap by borrowing either from inside the country or from abroad. If interest rate in international capital and financial market is lower than domestic interest rate, the government is likely to borrow from abroad.

From the perspective of balance of payment the debt equation can be developed as:

$$CA + KFA = 0$$

$$CA = X_t - M_t + WR_t - r(D_{t-1})$$

$$KFA = (D_t - D_{t-1}) + (R_t - R_{t-1}) + (FDI_t - FDI_{t-1})$$

Where CA and KFA are current account balance and capital and financial account balance respectively, WR_t is workers' remittances in current time period R_t and R_{t-1} are reserves in current and previous time periods respectively, FDI_t and FDI_{t-1} are the current and previous values of foreign direct investment respectively. Rest of the variable are already defined.

Putting the value of CA and KFA in balance of payment equation and solving for current debt gives:

$$D_t = M_t - X_t - WR_t + (1 + r)D_{t-1} - \Delta R - \Delta FDI \qquad (2.2)$$

In above equation if imports and interest rate or debt servicing are increased, the debt will also increase while if exports, workers remittances and foreign exchange reserves are increased, the country is likely to borrow less from external sources provided remittances are considered as a substitute or alternate of external borrowing and foreign reserves serves as a self insurance mechanism and precautionary motive holds behind their build ups. Similarly, if more foreign direct investment comes in the country then a country is likely to borrow less from abroad. However, if country suffers from Dutch disease and remittances and foreign reserves serve as a collateral motive, the foreign debt may increase depicting the positive relationship between external borrowing and workers' remittances, foreign exchange reserves, foreign direct investment and other foreign capital inflows(Mijiyawa, 2022) as shown in Figure 2.4.

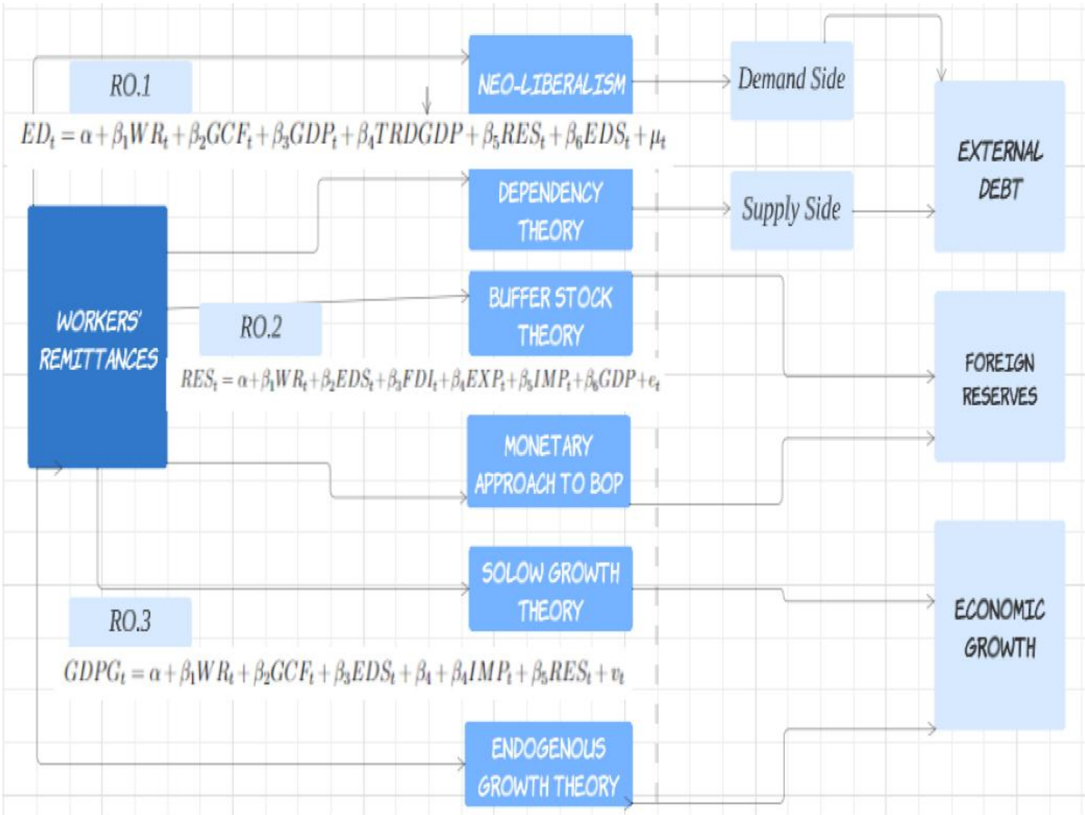


Figure 2.4 Theoretical Framework

In Figure 2.4, there are two theories that explain the remittances and external debt. Neo-Liberalism theory elaborates the demand side of the remittances and external debt. This theory emphasizes on minimization of barriers from the movements of goods and services, capital, labor and currency rate. The countries adopting this paradigm especially over populated developing, can suffer from trade deficit and capital flight thereby pressure over their international reserves and the value of currency. In order to overcome these problems, they become compel to borrow from abroad and/or send their workers abroad for arranging the foreign exchanges.

If remittances work as a substitute for external debt, they minimize the Saving-Investment, Revenue-Expenditure gap and foreign exchange constraints. Subsequently, the remittances are used to finance the export-import gap instead of borrowing from abroad, Revenue-Expenditure gap by collecting more taxes on remittances and build up the foreign exchange reserves through remittances instead of borrowing. Consequently, the increase in remittances leads towards the lower demand for external borrowing. Resultantly, the remittances affect external borrowing negatively.

Conversely, if remittances are considered as a collateral by borrowers and lenders for external debt, they become more willing and able to borrow and lend. The borrowers start increasing their spending (imports) on the expectation to receive more remittances thereby increasing the internal and external deficits and eventually suffer from foreign exchange constraints. Consequently, these gaps are increased to such a level that they outweigh the magnitude of remittances inflows thereby increasing the demand for external borrowing. The lenders also become more willing to lend on the expectation that more remittances inflows would enable the borrower to payback their liabilities in future time period without any tension. Resultantly, the relationship and effect of remittances with/on the external debt becomes positive.

Whereas, the Dependency theory explains the supply side of external debt. The countries with Geo-political and strategic location sought huge foreign aid in the form of grants and loan from United States of America, Western couturiers, international financial and development institutions and United States of Soviet Republic during the Cold War period between USA and then USSR. In order to contain the USSR and China in the region, the USA and Western countries took the Pakistan in their bloc due to its strategic location and started helping Pakistan from every perspective by giving grants and loans despite its decreasing creditworthiness on the one hand and facilitating civil and military elite of Pakistan to make assets and businesses in the West and USA. Subsequently, Pakistan fought American and

NATO war two times in Afghanistan first, from 1979 to 1991 and secondly, from 2001 to 2021. Resultantly Pakistan's dependence on Western powers kept on increasing and it could not focus on the real development of domestic economy rather trapped into external debt overhang.

2.5.2 Remittances and Foreign exchange reserves

Figure 2.4, also shows that remittances and foreign reserves nexus is explained by two theories one The Buffer Stock Theory and other Monetary approach to BoP theory. The buffer stock theory given by (Frenkel and Jovanovic, 1980) emphasize to accumulate foreign reserves in good times and use them in bad times. The workers send more remittances during favourable conditions, the Central Banks buy those foreign currencies and build up their foreign reserves stocks for precautionary or self insurance motives.

While, Monetary approach to BoP theory, given by Robert Mundell and Murcus Fleming, states that when workers send their remittances to their home country, then the demand for domestic currency increases. Subsequently, the domestic currency is likely to be appreciated thereby decreasing the country's competitiveness in the international market. Resultantly, the country may loose its export earnings. In order to avoid the loss in export earnings, the Central Banks intervene in the market by purchasing the foreign currency and pile up the foreign reserves as per mercantilism motive through increasing the money supply to stabilize the exchange rate and maintain/enhance the export earnings.

So far as the impact of remittances on foreign reserves is concerned; it can also either be positive or negative. The remittances can build up foreign reserves like other financial inflows if there is no prevalence of Dutch disease. Dutch disease is the situation when foreign financial inflows lead towards the rise in value of currency and subsequent fall in competitiveness of the country in international market. In addition, the reserve wage rate of recipient household workers is increased due to fall in labour supply leading to contraction of exportable products and expansion of non tradable sector and importable products such as real estate and luxurious consumption. Consequently the country's export earnings fall and import bill is enhanced culminating a drop in foreign exchange reserves; showing negative impact of remittances on foreign reserves (Mijiyawa, 2022; Bank, 2005; Acosta et al., 2009; Bourdet & Falck, 2006; Lartey et al., 2012)

However, the remittances may increase the foreign exchange reserves like other international inflows due to conversion of foreign currency into domestic currency emerging from more inflows of remittances; showing direct nexus between foreign reserves and remittances.

It is the main reason that some of the countries like El' salvadore, Rwanda, Ethiopia, Philippines, Sri- Lanka and Nepal are mulling over or have initiated to issue diaspora bond in order to attract the more remittances from overseas diaspora (Ratha & Mohapatra, 2007; Mohapatra et al., 2010). Besides these benefits, according to Frenkel and Jovanovic (1980) holding foreign exchange reserves also presume two type of costs: Opportunity cost and adjustment cost. opportunity cost includes the forgone benefits that could have been materialized alternatively, if these funds were spent on other development projects. While the adjustment costs include the costs that may emerge due to risk or probability of possible default.

2.5.3 Remittances and Economic Growth

Figure 2.4 demonstrates that remittances and economic growth relationship is explained by both Solow Growth theory and Endogenous growth theory. According to Solow Growth theory, economic growth is function of saving and investment. Savings, if transmitted into investment result more capital formation that ultimately leads to higher output level. The remittances affect the economic progress directly by raising the saving, investment and thereby stock of capital goods. However, remittances may affect the economic growth negatively if remittances cause to decrease the labour supply from the family members of emigrants and develop non trade-able product consumption among remittance recipient households.

The remittances are sent to home country with two motive 1. Altruistic motive 2. Self-Interest oriented motive. Consequently, they are utilised for consumption smoothing of non durable and non- trade able products by relatives and friends of the emigrants if sent for altruism motive. However, they are spent on higher return oriented projects of human and physical capital formation if sent with self- interest oriented motive. Subsequently, their impacts on economic growth become negative if sent and utilized for altruism objectives because such type of remittances will augment the demand and prices of non durable and non- trade-able products culminating the switch of scarce resources from production of tradable / exportable to that of non-durable and non-trade able products. Besides it may also lead to moral hazards in the form of decreasing the working hours and increasing leisure hours by remittances recipient households. The research studies that are raising the concern about negative implication of emigration and remittances have demonstrated various mechanism through which these negative impacts are observed such as change in the consumption pattern of remittances recipient households that prefer to spent on the status oriented products such as housing, expensive cars and jewellery, brain drain, lethargic attitude towards productive working hours, over dependency, extravagant spending, increase in inflation, increase in the value of currency in real terms, and dwindling international reserves; which is an indication of "Dutch disease" (Lipton, 1980; Adams Jr & Cuecuecha, 2013; Amuedo-Dorantes & Pozo, 2014; Chami et al., 2005)

The endogenous growth theory states that the knowledge, experience, research, innovation and improved/modern technology are the essential endogenous factors that can impact the economic growth positively. If Overseas workers remittances are sent with self interest oriented motives to spent on higher return oriented investment and entrepreneurial projects of human and physical capital formation and production of trade able products, the economy of the recipient country will grow exponentially. The empirical studies that argue about proportional impacts of remittance on economic progress identify various channels such as; increase in saving, investment in human and physical capital, brain gain, technological advancement, diaspora's involvement in various development activities, change in spending behaviour of recipient household and communities, agricultural intensification and carrying out business and entrepreneurship activities in rural setting (McDowell & de Haan, 1997; Ellis, 2000; Sutradhar, 2020; Yadeta & Hunegnaw, 2022)

Thus it can be concluded that there are both possibilities that impacts of remittances on economic progress can either be direct or inverse and even no effect at all. It depends on how they are spent/utilized and what patterns they develop among the immigrant's relatives and other family members and economy of home country. if remittances are allocated for consumption (investment), they will thwart (stimulate) economic growth; if they are spent on non durable and non tradable(durable and tradable), they will have negative (positive) impacts on economic progress and if they instigate leisure, truancy and over dependency (work ethics), the effects of remittance on economic progress will be negative (positive) (Bettin & Zazzaro, 2012; Yadeta & Hunegnaw, 2022).

CHAPTER 3

DATA AND METHODOLOGY

3.1 Introduction

Main objective of this study is to ascertain the impacts of remittances on external debt, foreign reserves and economic growth through transmission channel of investment. Several studies have examined the economic impact of remittances in various contexts, but specific investigations focused on Pakistan are limited. For instance, while studies like those by Hassan and Holmes (2016), Ahmad and Khan (2021) and Islam (2022) have highlighted the positive impacts of remittances on economic growth, they often fail to explore how these inflows interact with external debt dynamics. Understanding this relationship is crucial, as high levels of external debt could negate the benefits derived from remittances.

Furthermore, the contribution of remittances to foreign exchange reserves is often mentioned in past studies but lacks rigorous analysis. Research by Ahmad et al. (2020) and Khan et al. (2005) indicates the importance of remittances for reserve accumulation, yet it does not delve deeply into the implications for economic stability or policy formulation.

Additionally, the transmission mechanisms through which remittances foster economic growth via investment in Pakistan have not been adequately examined. While some studies suggest a correlation between remittance inflows and investment (see Khan et al., 2020), the causal pathways remain unclear, highlighting the need for more comprehensive analyses. Thus in this chapter, data sources, time period of the study, included variables in the study and their description, econometric models for each objective, preliminary diagnosis, ARDL method and its specifications for each objectives along with hypothesis and various post estimation diagnostic tests such as normality, serial and auto correlation, heteroscedasticity, model specification and stability test for residuals are discussed to achieve the objectives of the study.

3.2 Data type and Source

The annual data from 1976 to 2022 for relevant variables in the model is obtained from World Development Indicators data base of the World Bank. The included variables, their description, abbreviation and sources are mentioned in the Table 3.1

Table 3.1 Included Variables in models, their abbreviations, description and sources

Variable	**Abbreviation**	**Description**
External debt	ED	ED as % GDP
Foreign Direct Investment	FDI	FDI as a % of GDP
Gross capital formation	GCF	GCF as a % of GDP
Gross Domestic Product	GDP	GDP growth rate
Worker's remittances	WR	WR as a % of GDP
Foreign Exchange Reserves	RES	RES as a % of ED
External debt servicing	EDS	EDS as a % of GDP
Exports	EXP	EXP as a % of GDP
Imports	IMP	IMP as a % of GDP
Trade	TRDGDP	Trade as % of GDP

Note: Data is sourced from WDI, World Bank

3.3 Preliminary diagnosis

First of all, the descriptive statistics has been calculated and analyzed to check the distribution, trends and outliers of the series if any to confirm that there is no any abnormality or problem in the data set. Afterwards, the coefficient of correlation is also be estimated to check the degree of association between the variables.

3.4 Research Framework

3.4.1 RO.1: Remittances and External Debt

In order to delve the impacts of remittances and other (control) variables on foreign loans Equation 3.1 is run by following Mijiyawa, (2022) and Ncube & Brixiova, (2013) where they have researched the impacts of remittances, foreign reserves and GDP on foreign debt and it's sustainability. Other variables such as trade, foreign reserves and external debt servicing are included by following Bölükbaş (2016), Waheed (2017), Mijiyawa & Oloufade (2022) and Tiruneh et al. (2004) respectively.

$$ED_t = \alpha + \beta_1 WR_t + \beta_2 GCF_t + \beta_3 GDP_t + \beta_4 TRDGDP + \beta_5 RES_t + \beta_6 EDS_t + \mu_t \qquad (3.1)$$

In Equation 3.1 above, the GDP growth rate is expected to be negatively related with external debt while the GCF and EDS are predicted to have direct and positive nexus with external debt. The volume of trade to GDP ratio is predicted to have both direct as well as inverse impacts on foreign borrowing. if impacts of exports dominates, its effect will be positive while if impacts of imports dominate, then effects will be negative on external debt. Similarly, Workers' remittances (WR) and foreign reserves (RES) are expected to have both possibilities to have either positive or negative coefficients. If reserves are maintained for precautionary motives, its coefficients will be negative, otherwise positive if maintained for collateral purpose. Similarly, remittances may have both positive or negative relationship with external debt. If remittances serve as a substitute of external debt, it will have inverse impacts on foreign debt. However, if remittances are considered as a collateral and increased creditworthiness, it will have direct impacts on external debt. Figure 3.1 shows the conceptual framework for RO 1. External debt is dependent variable, whereas, workers' remittances, foreign reserves, gross capital formation, external debt servicing, GDP growth and trade volume are the independent variables.

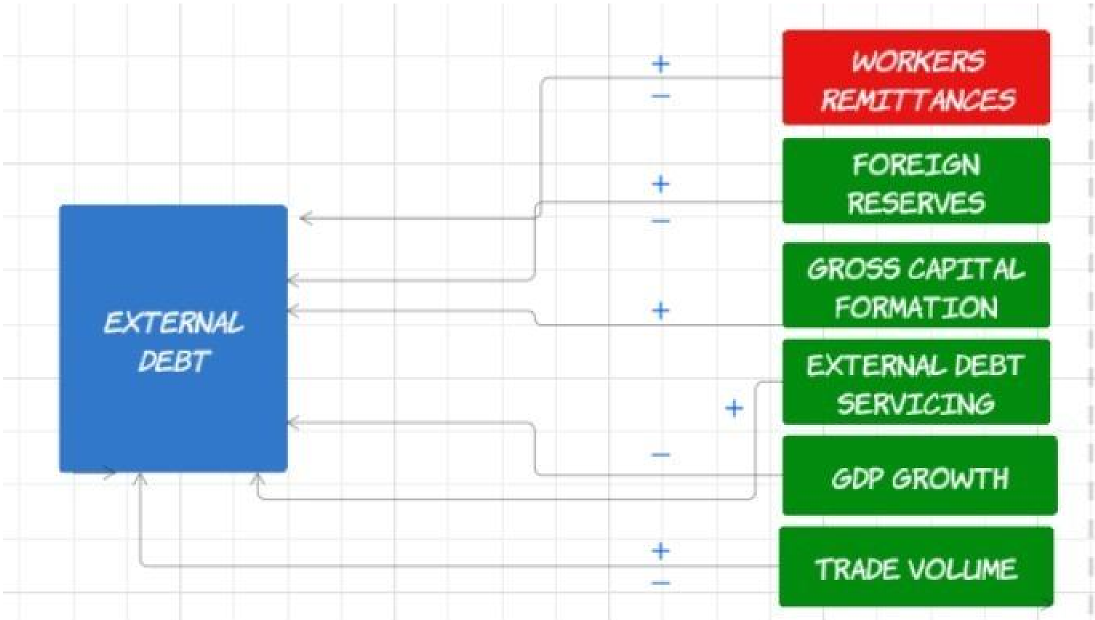


Figure 3.1 Conceptual Framework Remittances and External Debt

3.4.2 RO.2: Remittances and Foreign Reserves

Since, the foreign reserves is a macroeconomic indicator, so it can only be better determined by macroeconomic variable such as external debt, economic growth, capital and financial flows like remittances and debt servicing, exports imports and some monetary variables such as money demand, money supply, interest rate, exchange rate and inflation etc in the future (Shijaku, 2012). The impacts of remittance and other (control) variables on foreign reserves are estimated through regressing Equation 3.2 by following Shijaku, (2012), Mahidud et al., (2021), Khan et al., (2005), Elbadawi, (1990) and Ahmad and Khan, (2021) who ascertained the effects of remittances and GDP, imports and other variables on foreign reserves. Other variable such as foreign direct investment, exports and external debt servicing are included by following Verma and Bhakri, (2021), Andriyani et al., (2020) and Sanusi et al., (2019).

$$RES_t = \alpha + \beta_1 WR_t + \beta_2 EDS_t + \beta_3 FDI_t + \beta_4 EXP_t + \beta_5 IMP_t + \beta_6 GDP + e_t \qquad (3.2)$$

In Equation 3.2, external debt servicing (EDS) and imports (IMP) are expected to have negative signs while foreign direct investment(FDI) and exports (EXP) are expected to have positive one. However, remittances (WR) is expected to have ambiguous effects on foreign reserves (RES). Remittances will affect foreign reserves positively if the country is not suffering from Dutch disease whereas it is expected to affect the foreign reserves negatively, if the country is suffering from Dutch disease. Whereas, GDP growth rate (GDP) is predicted to affect the foreign reserves positively. Figure 3.2 shows the conceptual framework for RO 2. Foreign reserves is dependent variable while workers' remittances, foreign direct investment, exports, external debt servicing, GDP growth rate and imports are independent variables

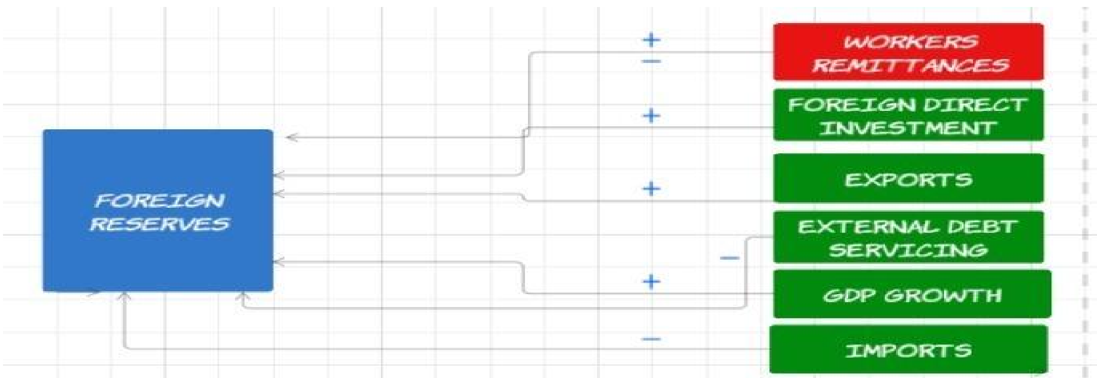


Figure 3.2 Conceptual Framework Remittances and Foreign Reserves

3.4.3 RO.3: Remittances and Economic Growth

For investigating the effects of remittances and other (control) variables on GDP; the following Equation 3.3 has been estimated by including the interaction term of remittances and investment variable considering the investment as a moderating variable between remittances and economic growth by adapting with Ahmad and Khan, (2021), Islam, (2022) and Ellahi and Omer, (2020) who established the impacts of personal remittances on economic growth. Other variables such as gross capital formation, import, external debt servicing and foreign reserves are included by following Dilshad, (2013), Shaikh et al., (2016), Topxhiu and Krasniqi, (2017) and Sutradhar, (2020).

$$GDPG_t = \alpha + \beta_1 WR_t + \beta_2 GCF_t + \beta_3 WR_t * GCF_t + \beta_4 EDS_t + \beta_5 IMP_t + \beta_6 RES_t + v_t \tag{3.3}$$

In Equation 3.3, gross capital formation (GCF) and foreign reserves (RES) are expected to have positive coefficients while imports (IMP) and external debt servicing (TDS) are expected to have negative one. However, workers remittances (WR) are expected to have ambiguous linkages with GDP growth rate. Remittances will affects the GDP growth rate positively if remittances are spent on high return oriented investment projects (No Dutch disease effects) while they affect the GDP growth rate negatively if spent on luxurious, non tradable and show off products such as real estate, jewellery luxurious cars (Dutch disease effect) etc. For β_1 and β_3, there are various possibilities and interpretations by considering the partial differentiation of equation 3.3.

$$\partial GDP/\partial WR = \beta_1 + \beta_3 GCF \qquad eq\text{-}3.4$$

Given an *priori* that $\beta_1 >0$, $\beta_3>0$ and GCP has positive values, equation 3.3 allows for testing the various forms of *WR - Growth* nexus *viz:*

(i) β_1 and $\beta_3 > 0$; *GCF* enhance the impacts of *WR* on economic growth,

(ii) $\beta_1 > 0$ and $\beta_3 < 0$; *GCF* reduces the positive impacts of *WR* on economic growth,

(iii) $\beta_1 < 0$ and $\beta_3 >0$; *GCF* reduces the negative impacts of *WR* on economic growth,

(iv) $\beta_1 < 0$and $\beta_3 < 0$; *GCF* worsens the negative impacts of *WR* on economic growth,

(v) $\beta_1 >0$ and $\beta_3=0$; *GCF equals* positive marginal effect of *WR* on economic growth,

(vi) $\beta_1<0$ and $\beta_3=0$; *GCF* equals negative marginal effect of *WR* on economic growth,

(vii) $\beta_1 =0$ and $\beta_3>0$; *GCF* enhances the effect of *WR* on economic growth,

(viii) $\beta_1 =0$ and $\beta_3<0$; *GCF* worsens the impacts of *WR* on economic growth,

(iX) $\beta_1 =0$ and $\beta_3=0$; *GCF implies* a constant effect of *WR* on economic growth,

For computing net/conditional effects, let the eq 3.4 = 0

$$\partial \mathrm{GDP}/\partial \mathrm{WR} = \beta_1 + \beta_3 \, GCF = 0$$

β3 gauges the interaction or moderation effect and the statistical significance of β3 is relevant in the computation of the conditional effect of WR on GDP as a statistical significant β3 is factored into the calculation. However, an insignificant β3 is statistically not different from zero. It implies that the conditional effect equals to marginal effect. But if either β1 or β3 = 0 (that is, statistically not significant, then the conditional effect is inconclusive). According to Cohen & Cohen and supported by Aiken & West (1991), the moderator variable can be evaluated by using three values: Mean, Minimum and/or Maximum values. Figure 3.3 demonstrates the conceptual framework for RO 3, where economic growth is the dependent variable whereas gross capital formation is moderating variable. However, workers' remittances, foreign reserves, external debt servicing and imports are independent variables.

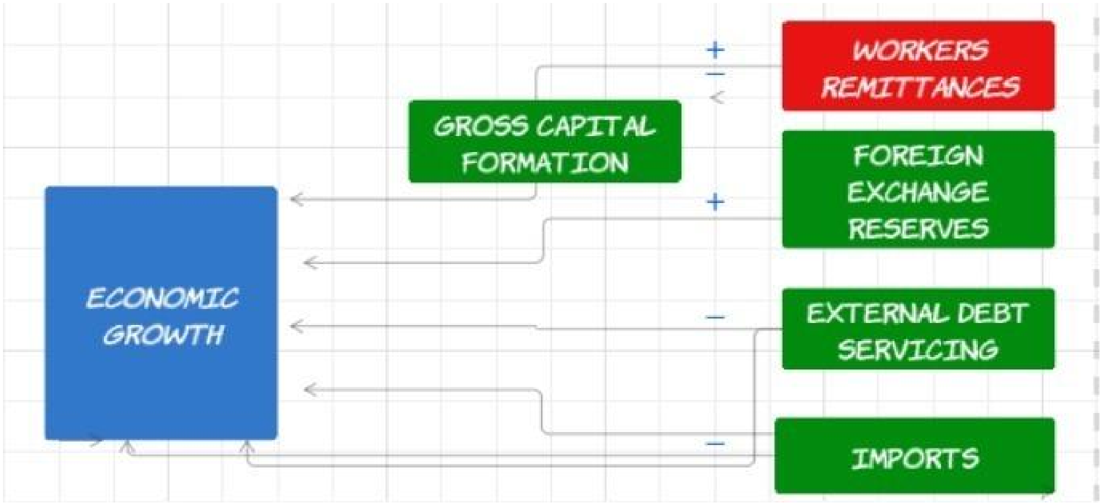


Figure 3.3 Conceptual Framework Remittances and GDP growth

3.5 Coefficient of Correlation and Its Interpretation

The coefficient of correlation is a statistical measure that quantifies the strength and direction of the linear relationship between two variables. It is commonly represented by Pearson's correlation coefficient (r), which ranges from -1 to +1. A correlation value close to +1 indicates a strong positive relationship, meaning that as one variable increases, the other also increases. Conversely, a value close to -1 signifies a strong negative relationship, where an increase in one variable corresponds to a decrease in the other. If the correlation coefficient is close to 0, it suggests little to no linear relationship between the variables.

In research, correlation analysis is crucial for determining associations between independent and dependent variables before proceeding with regression analysis. However, correlation does not imply causation; a strong correlation between two variables does not necessarily mean that changes in one variable directly cause changes in the other.

Rule of Thumb for Interpreting Correlation Strength：

To provide a standardized interpretation, researchers often use the following rule of thumb to categorize correlation strength:

- **Very Weak/Negligible Correlation**: $0.00 \leq |r| < 0.10$
- **Weak Correlation**: $0.10 \leq |r| < 0.30$
- **Moderate Correlation**: $0.30 \leq |r| < 0.50$
- **Strong Correlation**: $0.50 \leq |r| < 0.80$
- **Very Strong Correlation**: $0.80 \leq |r| \leq 1.0$

If $|r|$ **exceeds 0.90**, the correlation is often considered excessively high, indicating possible multi col-linearity, which can distort regression results. In such cases, **Variance Inflation Factor (VIF)** should be used to assess multi co-llinearity in regression models.

In applied economics and finance research, correlation analysis is particularly useful for **examining relationships between economic indicators**, such as remittances, external debt, foreign reserves, and GDP growth. Understanding the correlation between these variables helps in identifying key economic patterns and ensuring that variables selected for regression analysis do not suffer from severe multi co-llinearity.

3.6 Unit root test

Before applying any model on time series data, it is needed to check the stationarity of the series because running any regression on non stationary series produces spurious results and statistical inference can lead to in appropriate inferences and conclusions. There are many tests through which unit root can be checked such as Dickey fuller, Augmented Dickey fuller, Philips and Peron and KPSS. Each and every tests has its own merits and demerits. The ADF is very sensitive and fragile to structural breaks and outliers in the data. However, this study has used KPSS along with ADF and PP test to carry out stationary test to support KPSS test results, as it checks stationary around deterministic trend and unlike ADF, it is not fragile and sensitive to structural breaks and outliers in data. Augmented Dicky Fuller ADF test is done either excluding intercept or trend (random walk) or by including the intercept (Drift) or intercept and trend (drift and deterministic trend).

Consider the Dicky fuller specification which is given as under:

$$Y_t = \rho Y_{t-1} + u_t$$

where Yt is any time series data, ρ is coefficient and ut is a white noise error term with zero mean and constant variance and co-variance.

If ρ= 1, the series is said to be suffering from non stationarity problem. However, if ρ < 1, the series is said to be stationary.But it cannot be estimated directly to test the hypothesis that ρ = 1 by the usual t test because that test is severely biased in the case of a unit root. Thus subtracting Y_{t-1} on both sides, it can get:

$$Y_t - Y_{t-1} = Y_{t-1} - \rho Y_{t-1} + u_t$$

which can alternatively be written as:

$$\Delta Y_t = (1 - \rho) Y_{t-1} + u_t$$

or

$$\Delta Y_t = \delta Y_{t-1} + u_t$$

where $\delta = (1 - \rho)$

Here testing $\rho = 1$ is similar to testing $\delta = 0$.

If delta = 0; the series is said to be suffering from non stationary. However, if it is less than zero, it will be a stationary.

There are three different formats to write above equation.

(1) Y_t is a random walk

$$\Delta Y_t = \delta Y_{t-1} + u_t$$

(2) Y_t is a random walk with drift

$$\Delta Y_t = \beta_1 + \delta Y_{t-1} + u_t$$

(3) Y_t is a random walk with drift around deterministic trend

$$\Delta Y_t = \beta_1 + \beta_{2t} + \delta Y_{t-1} + u_t$$

Above mentioned equations are Dicky - Fuller test specification which can not account for serial correlation problem if available, so Augmented Dicky- Fuller

(ADF) test is suggested to be conducted to avoid available serial correlation problems. ADF test specification is given as under:

$$\Delta Y_t = \beta_1 + \beta_2 t + \delta Y_{t-1} + \sum_{i=1}^{m} \alpha_i \Delta Y_{t-i} + u_t$$

The KPSS (Kwiatkowski-Phillips-Schmidt-Shin) test, unlike the Augmented Dickey-Fuller (ADF) test, is designed to assess stationarity and is based on a linear regression framework. It decomposes a time series into three components: a deterministic trend, a random walk, and a stationary error term. If the random walk component is present, the time series is classified as non-stationary. The null hypothesis (H_0) of the KPSS test assumes that the variance of the random walk component (σ^2) is zero, indicating that the time series yt is trend-stationary.

$$y_t = r_t + \beta t + \varepsilon_t.$$

where, r_t is random walk, βt is deterministic trend and, ε_t is stationary error with zero mean.

$$r_t = r_{t-1} + v_t$$

where v_t is iid $(0, \sigma^2)$.

In this context, the KPSS test examines whether there is a unit root in the random walk component (rt) when the trend coefficient (β) is nonzero. The hypotheses for the test are formulated as follows:

- **H_0**: The time series is trend-stationary.
- **H_1**: The time series contains a unit root.

If β = 0, the null hypothesis changes to imply that the time series is level-stationary. In a stationary series, the data either fluctuate around a fixed level (level stationarity) or exhibit a constant trend (trend stationarity).

The KPSS test employs Ordinary Least Squares (OLS) to estimate the relevant equation, with slight variations depending on whether the objective is to test for level stationarity or trend stationarity. If the series is stationary, it will have either a fixed intercept or oscillate around a stable trend

Null and alternative hypothesis are the same as above. However, the null hypothesis in KPSS is opposite to that of Dickey fuller, Augmented Dickey Fuller and Philips and Peron. This study employs first, KPSS test to check unit root properties. However, the results of KPSS are counter checked and complemented by ADF and PP test as well.

3.7 Method

Equation 3.1, Equation 3.2 and Equation 3.3 are estimated by applying ARDL bound test developed by Pesaran and Pesaran (1999) and Pesaran and Shin (2001) bound test in order to ascertain long run impacts (coefficients) of independent variables on dependent variable. If there exists a long run relationship between the variable, ECT is also to be generated in the model to find the speed of adjustment (convergence) once the economy is deviated from equilibrium position due to any shock. If ECT term is negative and statistically significant, the model is said to be stable and convergence is to be materialized; otherwise divergence is to be observed.

The main reason to use the ARDL model is because most of the macroeconomic series are in mixed order of integration. Some are I(0) while others are I(1). However, there is hardly any series that becomes stationary at second difference. Moreover ARDL has more advantages as compare to its competitive time series models. such as Johnson and Juselius (1990) co-integration test, Granger (1987) causality test and Philips and Hansen (1990) tests; as these models suffer from various short comings. For example: Johnson co-integration test only provides long term nexus among the variables. This can not show the direction and short run relationship between the variables. One of its limitation is that it can only be applied if only and only; all the variable are integrated of order one I (1). Moreover, its results are dubious and spurious if the sample size is small. Similarly, the Granger causality test also just shows the direction of causality that which variable granger cause which variables in short run. However, the results of ARDL model are more reliable, robust, persistent and efficiently unbiased even for small sample size (Pesaran et al., 2001). It can be applied if the series are integrated at level I(0), at first difference I(1) or mix of the two I(0) and I(1). It just requires some basic prerequisites such as: none of the series should be integrated at second difference I(2), model is not miss-specified, residuals are neither serially correlated nor heteroscedastic and model is stable on the basis of Ramesy test, CUSUM and CUSUM square tests (Harris & Sollis, 2003). Moreover, it is required to determine the lags of the variable included in the model on the basis of various information criterion: such akaiki information criterion (AIC), Shwarzin Information criterion (SIC) etc. Akaike's Information Criterion (AIC) is widely recognized as a robust tool for model selection, as it balances the model's goodness-of-fit against its complexity. Lower AIC values indicate a model that achieves a more precise and parsimonious fit to the data (Akaike, 1974; Burnham & Anderson, 2002). Moreover, ARDL model gives the various elasticity's if the series are used in log form along with the nexus between dependent and independent variables from respective signs of variables. Besides, the results of ARDL model are still unbiased and t-statistics are valid even though some of the variables have endogeneity problem (Harris & Sollis, 2003;

Kumar, 2010) as it can overcome endogeneity problem by using the lag values of level variables and differenced variables.

In the Auto-Regressive Distributed Lag (ARDL) framework, the long-run coefficients, short-run coefficients, and the error correction term (ECT) are estimated through a series of steps using the Bounds Testing approach to cointegration developed by Pesaran, Shin, and Smith (2001). The ARDL model is particularly useful for estimating both short-run and long-run relationships between variables, regardless of whether they are I(0) or I(1). The procedure involves the following steps:

3.7.1 Model Specification

The ARDL model for a dependent variable Yt and independent variables Xt can be written as:

$$Y_t = \alpha + \sum_{i=1}^{p} \beta_i Y_{t-i} + \sum_{j=0}^{q} \delta_j X_{t-j} + \epsilon_t$$

where:

- Yt is the dependent variable
- Xt represents explanatory variables
- α is the intercept
- βi and δj are coefficients
- ϵt is the error term

Before proceeding with the ARDL model, unit root tests such as Augmented Dickey-Fuller (ADF) or Phillips-Perron (PP) are conducted to ensure that none of the variables are I(2) because ARDL is valid only for I(0) and I(1) variables.

3.7.2 Bounds Test for Cointegration

To determine if a long-run relationship exists between variables, the Bounds Testing Approach is applied by estimating the following unrestricted error correction model (UECM):

$$\Delta Y_t = \alpha + \sum_{i=1}^{p} \beta_i \Delta Y_{t-i} + \sum_{j=0}^{q} \delta_j \Delta X_{t-j} + \gamma_1 Y_{t-1} + \gamma_2 X_{t-1} + \epsilon_t$$

where:

- γ1 and γ2 represent the **long-run relationship**
- Δrepresents first differences (short-run dynamics)
- The null hypothesis (H0:γ1=γ2= H_0: γ1=γ2=0) suggests **no long-run relationship**
- The alternative hypothesis (H1:γ1≠0,γ2≠ H_1: ≠0, indicates the presence of co-integration
- The F-statistic from the bounds test is compared with **Pesaran et al. (2001) critical values** to determine whether co-integration exists

3.7.3 Estimation of Long-Run Coefficients

If cointegration is confirmed, the **long-run coefficients** are obtained using the following equation:

$$Y_t = \alpha + \sum_{i=1}^{p} \theta_i X_{t-i} + \mu_t$$

where:

- θi represents the **long-run elasticities**
- **The long-run coefficients are derived by normalizing the coefficients of explanatory variables**

3.7.4 Estimation of Short-Run Dynamics and Error Correction Term (ECT)

Once the long-run relationship is established, the **short-run adjustments** are modeled using the **Error Correction Model (ECM)** as follows:

$$\Delta Y_t = \alpha + \sum_{i=1}^{p} \lambda_i \Delta X_{t-i} + \phi ECT_{t-1} + \epsilon_t$$

where:

- λi represents **short-run coefficients**
- ECT_{t_1} is the **error correction term**, which measures the speed of adjustment toward equilibrium
- ϕ is expected to be **negative and statistically significant**, indicating that deviations from the long-run equilibrium are corrected over time.

By following these steps, the ARDL framework generates both long-run and short-run coefficients. The long-run coefficients indicate the equilibrium relationship between variables, while the short-run coefficients capture immediate changes. The

ECT term shows the speed at which the dependent variable adjusts back to its long-run equilibrium after a short-run shock.

3.8 ARDL detailed specification

Objective 1: The ARDL model specification for long run and short run with ECT generation for Equation 3.1 is as: Equation 3.4

$$\begin{aligned}\Delta ED = \beta_0 + &\sum_{i=1}^{q} \beta_{1i}\Delta ED_{t-i} + \sum_{i=1}^{p} \beta_{2i}\Delta WR_{t-i} + \sum_{i=1}^{p} \beta_{3i}\Delta TRDGDP_{t-i} \\ &+ \sum_{i=1}^{p} \beta_{5i}\Delta TDS_{t-i} + \sum_{i=1}^{p} \beta_{6i}\Delta GDP_{t-i} + \sum_{i=1}^{p} \beta_{7i}\Delta RES_{t-i} \\ &+ \sum_{i=1}^{p} \beta_{8i}\Delta GCF_{t-i} + \gamma_0 ED_{t-1} + \gamma_1 WR_{t-1} + \gamma_2 TRDGDP_{t-1} \\ &+ \gamma_4 TDS_{t-1} + \gamma_5 GDP_{t-1} + \gamma_6 RES_{t-1} + \gamma_7 GCF_{t-1} + \mu_t\end{aligned} \tag{3.4}$$

ARDL Short run and ECT specification for Equation 3.1 is as: Equation 3.5

$$\begin{aligned}\Delta ED = \beta 0 + &\sum_{i=1}^{q} \beta_{1i}\Delta ED_{t-i} + \sum_{i=1}^{p} \beta_{2i}\Delta WR_{t-i} + \sum_{i=1}^{p} \beta_{3i}\Delta TRDGDP_{t-I} \\ &+ \sum_{i=1}^{p} \beta_{5i}\Delta TDS_{t-i} + \sum_{i=1}^{p} \beta_{6i}\Delta GDP_{t-i} + \sum_{i=1}^{p} \beta_{7i}\Delta RES_{t-i} \\ &+ \sum_{i=1}^{p} \beta_{8i}\Delta GCF_{t-i} + \delta ECT_{t-1} + \upsilon_t\end{aligned} \tag{3.5}$$

Objective 2: The ARDL model specification for long run and short run ECT term of Equation 3.2 is as Equation 3.6:

$$
\begin{aligned}
\Delta RES \; = \; \beta 0 + \sum_{i=1}^{q} \beta_{1i} \Delta RES_{t-i} \; + \; \sum_{i=1}^{p} \beta_{2i} \Delta WR_{t-i} + \; \sum_{i=1}^{p} \beta_{3i} \Delta EXP_{t-i} \\
+ \sum_{i=1}^{p} \beta_{4i} \Delta IMP_{t-i} \; + \sum_{i=1}^{p} \beta_{5i} \Delta TDS_{t-i} + \sum_{i=1}^{p} \beta_{6i} \Delta FDI_{t-i} \\
+ \sum_{i=1}^{p} \beta_{7i} \Delta GDP_{t-i} \; + \gamma_0 RES_{t-1} + \gamma_1 WR_{t-1} + \gamma_2 EXP_{t-1} \\
+ \gamma_3 IMP_{t-1} \; + \; \gamma_4 TDS_{t-1} \; + \; \gamma_5 FDI_{t-1} \; + \; \gamma_6 GDP_{t-1} \; + \; \mu_t
\end{aligned}
\tag{3.6}
$$

ARDL model specification for short run along with ECT term for Equation 3.2 is as Equation 3.7:

$$
\begin{aligned}
\Delta RES_t \; = \; \beta 0 + \; \sum_{i=1}^{q} \beta_{1i} \Delta RES_{t-i} \; + \; \sum_{i=1}^{p} \beta_{2i} \Delta WR_{t-i} \\
+ \; \sum_{i=1}^{p} \beta_{3i} \Delta EXP_{t-i} \; \sum_{i=1}^{p} \beta_{4i} \Delta IMP_{t-i} + \; \sum_{i=1}^{p} \beta_{5i} \Delta TDS_{t-i} \; [\\
+ \; \sum_{i=1}^{p} \beta_{6i} \Delta FDI_{t-i} \; + \sum_{i=1}^{p} \beta_{7i} \Delta GDP_{t-i} + \pi_0 ECT_{t-1} + \upsilon_t
\end{aligned}
\tag{3.7}
$$

Objective 3: The ARDL model specification for long run and short run ECT term of Equation 3.3 is as Equation 3.8:

$$\begin{aligned}\Delta GDP = \beta 0 &+ \sum_{i=1}^{q} \beta_{1i} \Delta GDP_{t-i} + \sum_{i=1}^{p} \beta_{2i} \Delta WR_{t-i} \\ &+ \sum_{i=1}^{p} \beta_{3i} \Delta IMP_{t-i} + \sum_{i=1}^{p} \beta_{4i} \Delta TDS_{t-i} \\ &+ \sum_{i=1}^{p} \beta_{5i} \Delta GCF_{t-i} + \sum_{i=1}^{p} \beta_{6i} \Delta RES_{t-i} \\ &+ \sum_{i=1}^{p} \beta_{7i} \Delta WR_{t-i} * GCF_{t-i} + \gamma_0 GDP_{t-1} + \gamma_1 WR_{t-1} \\ &+ \gamma_2 IMP_{t-1} + \gamma_3 TDS_{t-1} + \gamma_4 GCF_{t-1} + \gamma_5 RES_{t-1} \\ &+ \gamma_6 \Delta WR_{t-i} * GCF_{t-1} + \mu_t\end{aligned} \qquad (3.8)$$

ARDL model specification for short run along with ECT term for Equation 3.3 is as Equation 3.9:

$$\begin{aligned}\Delta GDPG_t = \beta 0 &+ \sum_{i=1}^{q} \beta_{1i} \Delta GDP_{t-i} + \sum_{i=1}^{p} \beta_{2i} \Delta WR_{t-i} + \sum_{i=1}^{p} \beta_{3i} \Delta IMP_{t-i} \\ &+ \sum_{i=1}^{p} \beta_{4i} \Delta TDS_{t-i} + \sum_{i=1}^{p} \beta_{5i} \Delta RES_{t-i} + \sum_{i=1}^{p} \beta_{6i} \Delta GCF_{t-i} \\ &+ \sum_{i=1}^{p} \beta_{7i} \Delta WR_{t-i} * GCF_{t-i} + \pi_0 ECT_{t-1} + \upsilon_t\end{aligned} \qquad (3.9)$$

3.9 Post estimation validity, reliability and robustness Checks

Before drawing conclusions/policy inferences from any estimated model, it is necessary to do relevant post estimation diagnostic tests to ensure the reliability of regression models. Thus, the specification of every econometric model should be thoroughly tested before we even tentatively accept it's results. These tests include: normality, serial correlation test, heteroscedasticity test, model specification test and stability test. These diagnostic tests are necessary to ensure the reliability of estimated coefficients. Hence, it may be the required to restructure the model considering the findings of diagnostic tests.

3.9.1 Normality test

One assumption regarding the error term is its normal distribution. If this assumption is not met, the regression estimates won't possess the minimum variance property within the class of unbiased estimators. To assess normality, the Jarque-Bera test is commonly used. This test determines whether the residuals from the equation violate the normality assumption. If the residuals conform to have a normal distribution, the histogram should display a bell-shaped curve, and the Jarque-Bera test would not yield a significant result.

Hypothesis:

H_0 = the error terms are normally distributed.

H_1 = Error terms are not normally distributed.

Mathematically, it is given as;

$$JB = \frac{n}{6}\left(S^2 + \frac{(K-3)^2}{4}\right)$$

where:

- S the skewness
- K is the kurtosis
- n is the sample size

- Under the null hypothesis of normality, **JB follows a chi-square distribution** $\chi 2$

3.9.2 Serial correlation test

This test aims to ascertain whether the consecutive error values are temporally independent. Ideally, the error term's values in any given period should be independent of its values in previous periods. If the error term values exhibit serial correlation, the predictions derived from the regression estimates may lack efficiency. Two commonly used tests for residual serial correlation are the Correlogram-Q-statistics and the Breusch-Godfrey LM test.

Hypothesis.

H_0 = error term do not suffer from serial correlation

H_1 = error term suffer from serial correlation

BG LM test checks for **higher-order serial correlation** by regressing the residuals on lagged residuals:

Step 1: Estimate the regression model and obtain residuals et.

Step 2: Run the auxiliary regression as under

$$e_t = \alpha + \beta_1 X_{t1} + \beta_2 X_{t2} + ... + \beta_k X_{tk} + \rho_1 e_{t-1} + \rho_2 e_{t-2} + ... + \rho_p e_{t-p} + u_t$$

Step 3: Compute the **LM statistic** as under:

$$LM = (n - p)R^2$$

where:

- n is the number of observations
- R^2 is the coefficient of determination from the auxiliary regression
- The LM statistic follows a **chi-square distribution** $\chi 2(p)$ **with p degrees of freedom**.

3.9.3 Heteroscedasticity Test

Ensuring the validity of regression results necessitates satisfying the assumption of heteroscedasticity. Under this assumption, each disturbance term is anticipated to possess identical finite variances. Consequently, a breach of this assumption suggests the existence of heteroscedasticity in the model. To assess whether the error term displays constant variance, a heteroscedasticity test is employed. Various tests, such as the Breusch-Pagan-Godfrey test, Harvey test, Glejser Test, ARCH Test, and the White test, are conducted to examine heteroscedasticity.

Hypothesis:

H_0 = error terms do not suffer from heteroscedasticity .

H_1 = error terms suffer from heteroscedasticity.

This test examines whether residual variance depends on independent variables:

Step 1: Run the original regression and obtain residuals et.

Step 2: Regress et on independent variables as under

$$e_t^2 = \gamma_0 + \gamma_1 X_{1t} + \gamma_2 X_{2t} + \dots + \gamma_k X_{kt} + v_t$$

Step 3: Compute the test statistic as under:

$$BP = nR^2$$

where nR2 ~χ2(k) If the test statistic is significant, heteroscedasticity is present.

3.9.4 Linearity or Model Specification Error Test

The purpose of the linearity test is to determine whether a linear relationship exists between the dependent and independent variables in the model. This serves as a broad test for specification errors that could arise from omitted variables, incorrect functional forms, or correlation between independent variables and the error term. To assess linearity or specification errors in the model, the Ramsey RESET Specification Error Test is utilized.

Hypothesis.

$H - 0$ = The model is correctly specified.

H_1 = The model is incorrectly specified.

This test detects **functional form misspecification** by adding higher-order terms of fitted values:

Step 1: Estimate the original regression model:

$$Y_t = \alpha + \beta_1 X_{1t} + \beta_2 X_{2t} + \dots + \beta_k X_{kt} + u_t$$

Step 2: Generate fitted values Y^ and include its squared and cubic terms in an auxiliary regression:

$$Y_t = \alpha + \beta_1 X_{1t} + \beta_2 X_{2t} + ... + \beta_k X_{kt} + \gamma_1 \hat{Y}^2 + \gamma_2 \hat{Y}^3 + v_t$$

Step 3: Compute the **F-statistic** for the null hypothesis:

$$H_0 : \gamma_1 = \gamma_2 = 0$$

A significant F-statistic suggests **model misspecification**.

3.9.5 The Stability Tests

The Cumulative Sum (CUSUM) and Cumulative Sum of Squares (CUSUMSQ) tests are utilized to evaluate the adequacy and stability of the model. In essence, these tests determine whether the model remains stable and is suitable for making long-term decisions. They assess whether all coefficients in the model remain stable over time. If the CUSUM and CUSUMSQ plots remain within the 5% critical bounds, the null hypothesis that all parameters are stable cannot be rejected. Thus, the model's parameters do not exhibit any structural instability. However, if either of the parallel lines is crossed, the null hypothesis of parameter stability is rejected at the 5% significance level. In other words, parameter instability exists if the cumulative sum extends beyond the area between the two critical lines.

3.10 Summary

Time series data of chosen variables for Pakistan has been sourced from WDI data base of the World Bank from 1976-2022. First of all, preliminary diagnostic tests are conducted and then data is analyzed by applying ARDL model for all the objectives. After estimating, ARDL, certain post estimation diagnostic tests are conducted to ensure the the reliability, validity and robustness of the findings.

CHAPTER 4

RESULTS AND DISCUSSIONS

4.1 Introduction

The primary goals of this research were to examine the effects of remittances on Pakistan's external debt, foreign reserves, and economic growth through moderation of investment. To achieve this, annual time series data has been sourced from the World Bank's World Development Indicator (WDI) database. The collected data underwent initial analysis using descriptive statistics, correlation coefficients, and KPSS, ADF and Philips Perron unit root tests for each objective individually. Subsequently, long-run and short-run coefficients, as well as error correction term (ECT) estimates, are computed for each objective. Finally, post-estimation diagnostics are conducted to assess the reliability, stability, and model specification for each objective and validate the findings.

4.2 Remittances and external debt

The primary aim of our study's first research objective was to examine the effects of remittances and other control variables on Pakistan's external debt. To accomplish this, time series data for the included variables was sourced from the World Bank's World Development Indicator (WDI). Initially, the data underwent analysis using descriptive statistics, correlation coefficients, and unit root tests. Subsequently, considering the data's characteristics and properties, the Auto Regressive Distributive Lag (ARDL) bound test developed by Pesaran et al. (2001) was applied to assess both short-run and long-run impacts of remittances and other variables on Pakistan's external debt. Following this, an Error Correction Term (ECT) was generated to evaluate the speed of adjustment and stability of the model. Finally, post-estimation diagnostic tests were conducted to verify the validity, reliability, robustness, stability, and model specification of the results.

4.2.1 Descriptive Statistics

Table 4.1 presents the normal distribution of all included variables, evident from the fact that the probability of JB statistics for each variable—namely external debt to GDP ratio, remittances to GDP ratio, reserves to external debt ratio, gross capital formation to GDP ratio, total external debt servicing to GDP ratio, trade to GDP ratio, and GDP growth rate—is greater than 5%, and the kurtosis values are close to or less than 3. The mean value of the external debt to GDP ratio is 40.57%, with maximum and minimum values of 55.9% and 24.35%, respectively. Similarly, the mean value of the remittances to GDP ratio is 5.37%, with maximum and minimum values of 10.24% and 1.31%, respectively. Likewise, the mean value of the foreign reserves to external debt ratio is 15.84%, with maximum and minimum values of 37.34% and 4.37%, respectively. Additionally, the mean value of gross capital formation to GDP is 17.42%, with maximum and minimum values of 20.68% and 14.12%, respectively.

Furthermore, the average value of the total debt servicing to GDP ratio is 3.57%, with maximum and minimum values of 6.814% and 1.40%, respectively. The average value of the trade to GDP ratio is 31.97%, with maximum and minimum values of 38.4% and 24.7%, respectively. However, the mean value of the GDP growth rate is 4.817%, with maximum and minimum values of 10.21% and -1.27%, respectively. These descriptive statistics indicate the absence of outliers in the data and affirm that the series are normally distributed.

Table 4.1 Descriptive Statistics

	ED	REM	RESED	GCF	TDSG	TRDGDP	GDPG
Mean	40.57098	5.375873	15.84219	17.42784	3.578208	31.97161	4.817434
Median	41.39115	5.469461	13.17011	17.66854	3.535628	32.86458	4.846581
Maximum	55.90091	10.24763	37.3423	20.685	6.814945	38.49932	10.2157
Minimum	24.34506	1.310692	4.379973	14.12063	1.402888	24.70158	-1.274087
Std. Dev.	9.447587	2.291491	9.269922	1.653207	1.384859	3.670549	2.168261
Skewness	-0.135665	0.043738	0.678955	-0.271525	0.279563	-0.270329	-0.198656
Kurtosis	1.737221	2.01621	2.283077	2.069971	2.459024	2.098931	3.372895
Jarque-Bera	3.266953	1.910344	4.617553	2.271389	1.185333	2.162462	0.581445
Probability	0.19525	0.384746	0.099383	0.321199	0.552851	0.339178	0.747723
Sum	1906.836	252.6661	744.5831	819.1086	168.1758	1502.666	226.4194
Sum Sq. Dev.	4105.817	241.5428	3952.846	125.7222	88.22041	619.7548	216.2624
Observations	47	47	47	47	47	47	47

4.2.2 Coefficient of Correlation

Table 4.2 displays the correlation coefficients among the included variables. There is a slight negative correlation between foreign loans and remittances, while there is negative and significant direct correlations between foreign borrowing and foreign reserves. Conversely, external debt and external debt servicing exhibit a strong positive relationship. Additionally, there is a mild positive correlation between external debt and gross capital formation. Furthermore, the GDP growth rate and trade to GDP ratio also display a positive and slight nexus with external debt.

Table 4.2 Coefficient of Correlation

	ED	REM	RESED	GCF	TDSG	TRDGDP	GDPG
ED	1	-0.3176	-0.7195	0.488	0.802	0.3671	0.0048
REM	-0.3176	1	0.1528	-0.2830	-0.2175	-0.1914	0.2796

RESED	-0.7195	0.1528	1	-0.3169	-0.6557	-0.2904	-0.0068
GCF	0.4888	-0.2830	-0.3169	1	0.4501	0.5784	0.2283
TDSG	0.8021	-0.2175	-0.6557	0.4501	1	0.4723	0.0623
TRDGDP	0.3671	-0.1914	-0.2904	0.5784	0.4723	1	0.0515
GDPG	0.0048	0.2796	-0.0068	0.2283	0.0623	0.0515	1

4.2.3 Unit root tests

Table 4.3 presents the results of the KPSS, ADF and Phillips Perron unit root test. In contrast to the ADF test, the null hypothesis in the KPSS test posits that the series is stationary, while the null hypothesis in the ADF test suggests that the series is non-stationary. The findings indicate that remittances are stationary at the level, whereas other variables such as external debt to GDP ratio, GDP growth rate, gross capital formation to GDP, foreign reserves to external debt ratio, Trade to GDP ratio and external debt servicing to GDP ratio are stationary at the first difference. Given the mixed order of integration among the variables, it is appropriate to utilize the ARDL bound test to examine the long-run impacts of independent variables on the dependent variable. If a long-run relationship exists, short-run coefficients should be estimated using the differences operator. Subsequently, an Error Correction Term (ECT) should be generated to assess the speed of adjustment in the long run if the system deviates from its equilibrium level.

Table 4.3 KPSS/ADF/PP Unit Root Test

Variable	KPSS unit root		ADF unit root test		Phillips perron		Order
	level	1st diff	Level	1st diff	level	1st diff	

ED	0.5559**	0.0859	-1.6454	-5.8384*	-1.6785	-5.8527*	I(1)
REM	0.1871		-1.4950	-6.0295*	-1.6994	-6.0295*	I(0)
RESED	0.3493*	0.1965	-2.0809	-6.1085*	-2.1704	-6.2905*	I(1)
GDPG	0.4488*	0.2363	-4.8433*		-.8464*		I(1)
TDSG	0.3858*	0.1318	-1.4624	-10.5515*	-2.2021	-10.5360*	I(1)
GCF	0.5876**	0.0828	-1.7936	-6.8523*	-1.8452	-6.8651*	I(1)
TRDGDP	0.3071		-2.5207	-6.4757*	-2.5207	-6.4395*	I(1)
Max: lag			9				
Bandwidth					Bartlett kernel		
Information criterion	SIC						

*,** & *** show the significance level at 10%, 5% and 5% respectively.

4.2.4 ARDL Long run, short run and ECT coefficients

The ARDL model with lag specifications (p,q,q,q,q,q,q) = (2, 0, 1, 1, 1, 2, 1) was chosen based on the evaluation of 1458 models using the Akaike Information Criterion (AIC), which yielded the minimum value. These lag lengths are for ED, REM, RESED, GDPG, TDSG, GCF and TRDGDP respectively. The optimum lag length, determined through various information criteria, was two.

Table 4.4 shows ARDL long run, short run and ECT coefficients. F statistic 10.77 is more than critical values of upper bound at 1% level of significance for six independent variables (K = 6). It implies that there is long run co-integration between the external debt and other independent variables.

More specifically, the remittances have direct and significant nexus with the foreign borrowing. It implies that, keeping other things constant, if remittances increase by one point percentage, the foreign loans to GDP ratio will increase by 0.95 point percentages. Positive coefficient of remittances indicates that remittances in Pakistan are considered as a collateral by government of Pakistan and lenders for external borrowing; as they are increasing the creditworthiness of the country. This finding is aligned with Mijiyawa and Oloufade (2022). Moreover, the foreign exchange reserves are inversely and significantly affecting the foreign borrowing of Pakistan in long run. It shows that if foreign exchange to external debt ratio rises by one point percentage, the external borrowing to GDP falls by 0.39 point percentages, all else equal. This is also matching with the findings of Mijiyawa and Oloufade (2022). This means, the foreign reserves in Pakistan are maintained for precautionary motives by accumulating them in better situation and utilizing them in worst situation.

Besides, the gross capital formation which is proxy for domestic investment contributes to external loans positively and significantly. This result is aligned with the prediction according to theory and results of Bacha (1990). A one point percent increase in gross capital formation leads to augment foreign loans to GDP ratio by 2.81 point percentages, keeping other things constant. This means that major portion of investment is financed through external sources/funds as domestic savings are very less in Pakistan. It confirms that Pakistan has been borrowing from abroad in order to finance the Saving-Investment gap.

However, the economic growth has negative and significant nexus with external borrowings. A one point percentage increase in economic growth culminates to decrease the foreign loans to GDP ratio by 1.89 *ceteris paribus*. This finding is aligned with the expectation as per theory and with the results of Dawood et al. (2021),Azolibe (2021) , Tiruneh et al. (2004) and Bittencourt (2015).

Likewise if trade to GDP ratio rise by one point percentage, the external loans to DP ratio will decrease by 0.402 point percentages and vice versa; keeping other things same. This finding is also as per expectation according to the theory and aligned with the finding of Beyene and Kotosz (2020) and Brafu-Insaidoo (2019). However, these findings are in contrast to the findings of Bölükbaş (2016).

While, foreign loan servicing to GDP ratio is positively and significantly causing the external debt of Pakistan. It implies that a one point percentage rise in external debt servicing to GDP ratio culminates to increase in external debt to GDP ratio by 3.86 point percentages; all else same. This result is matched with that of the results of Karagol (2012) , Tiruneh et al. (2004) and Chaudhary et al. (2000) This means, the Pakistan has been borrowing from abroad in order to pay back the already taken loans.

The short run results indicate that external debt problem of Pakistan is persistent as the lag value of dependent variable is significant. Economic growth affects negatively and significantly to foreign loans to GDP ratio in short run. While the foreign loan servicing to GDP ratio has direct and significant contribution in foreign loan burden of Pakistan in short run as well. However,the gross capital formation have direct nexus with foreign borrowing but statistically insignificant. Similarly, foreign reserves have also negative influence on foreign loans but statistically insignificant.

Negative and statistically significant coefficient of ECT implies that the system is convergent to equilibrium level after its deviation from the equilibrium conditions. More specifically, approximately 55% adjustment and convergence from disequilibrium to equilibrium occurs within one year's time period. R square and adjusted R square values demonstrate that change in foreign loans are explained by 78.7% and 74.6 respectively indicating the good fit of the model. Durban Watson test is around two which suggests that model is not suffering from the problem of auto correlation.

Since, the exponential growth in external debt despite huge inflows of remittances was puzzling and vexatious for researchers and Policy makers, it was necessary to conduct the empirical research about the phenomenon. The findings have shown that it is because of mismanagement and mishandling of remittances by considering them as a collateral rather than a substitute for/of external borrowing. Consequently, government of Pakistan kept on borrowing and lenders kept on lending. Moreover, the external debt problem is persistent in Pakistan as every successive government has had been borrowing more and more from abroad to pay back the previously taken loans. Due to poor economic performances and luxurious imports, the saving rate and trade balances have had been deteriorating day by day. Subsequently, the economy has had been facing twin deficits and in order to finance those twin deficits, the governments kept on borrowing instead of striving for self sufficiency achievement.

Besides, following the legacy of Neo-Liberalism paradigm, the government removed the restrictions on the movement labor, capital, currency and products market. Consequently, there was increase in the remittances on one hand and augmentation in the external borrowing, external debt servicing and imports on the other hand. FDI and exports could not be enhanced at the desirable level due to worsening law and order situation, energy crisis and closure of industries.

Moreover, pursuing the legacy of dependency theory, the external lenders from west and north kept on lending to Pakistan to make it dependent on them amid its decision to join Afghan war by USA two times; first in 1979 and second in 2001. American vested interests in South Asian region prompt more lending to Pakistan in order to keep Pakistan in its bloc. Now Pakistan has no choice but to stay in American's side because of huge dependency on them.

The findings align with dependency theory perspective, as Pakistan's persistent external debt burden reflects a reliance on foreign loans that are often used for debt servicing rather than productive investments. Similarly, while remittances contribute to economic stability and foreign reserves, they primarily finance consumption rather than industrial growth, reinforcing dependency on labor migration. Additionally, the country's trade deficit, driven by high imports and limited export capacity, further depletes foreign reserves and necessitates external borrowing, keeping Pakistan financially vulnerable. Dependency theorists argue that such reliance on external capital and trade structures prevents self-sufficiency and deepens economic subjugation.

Table 4.4 ARDL long run, short run and ECT coefficients

Long-Run results			**SR results and ECT**		
Variable	**Coefficient**	**Probability**	**Variable**	**Coefficient**	**Probability**
REM	0.956776*	0.0043	D(TED(-1))	0.165449***	0.0806
RESED	-0.391816*	0.0006	D(RESED)	-0.020456	0.7298
GCF	2.816292*	0	D(GCF)	0.228543	0.5576
GDPG	-1.895597*	0.0034	D(GDPG)	-0.518495*	0.0002
TDSG	3.864697*	0	D(TDSG)	0.759003***	0.0669
TRDGDP	-0.40213***	0.0905	D(TDSG(-1))	-1.551288*	0.0011

F-statistic	10.77263	D(TRDGDP)	0.148358	0.2467
K	6	ECT	-0.546713*	0
R-squared	0.78708			
Adjusted R-squared	0.746798	DW	2.055617	

*, ** and *** indicate significance level at 1%, 5% and 10% respectively.

4.2.5 Post estimation robustness, reliability and validity test

The residuals demonstrate normal distribution, as indicated by the Jarque-Bera test and its associated probability value exceeding the 5% significance level. Both the F-statistic and its probability value for the BG LM test and BPG test indicate the absence of serial correlation and heteroscedasticity among the current and past error term values. Additionally, the model passes the Ramsey test for correct specification, with the probability value of the F-statistic surpassing the 5% significance level, as depicted in Table 4.5. Therefore, we fail to reject the null hypothesis that the model is correctly specified. Moreover, the stability of the model is affirmed at the 5% significance level by the CUSUM and CUSUM square plots in Figure 4.1 and Figure 4.2.

Table 4.5 Reliability and Validity Test

Test	**JB- Statistic**	**Probability**	**F-Statistic**	**Probability**
Normality JB	0.533148	0.765999		
Serial correlation BG LM			0.063252	0.8031
Heteroscedacity BPG			1.304396	0.2617
Model specification Ramsey			1.057073	0.3121

Source: Author’s calculation by using data obtained from WDI world Bank

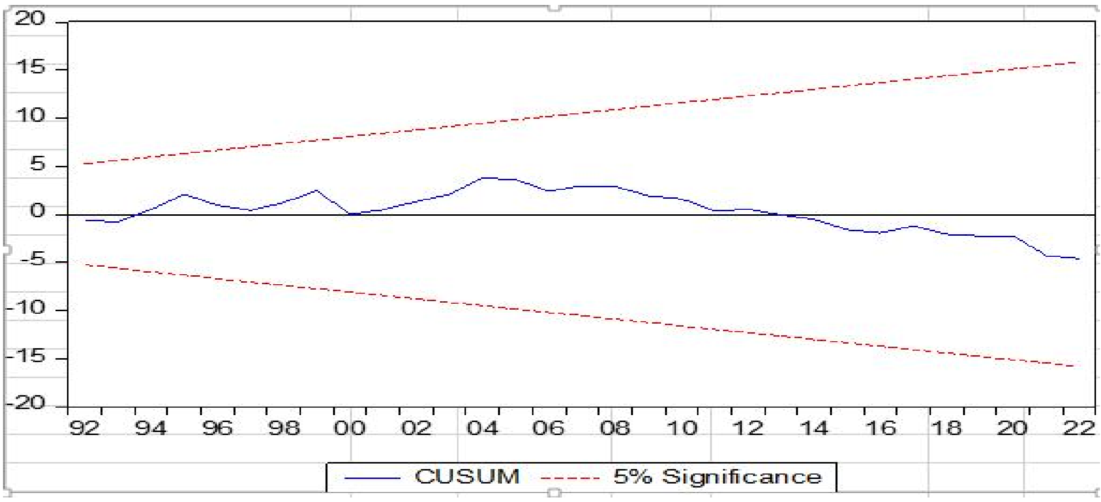


Figure 4.1 CUSUM

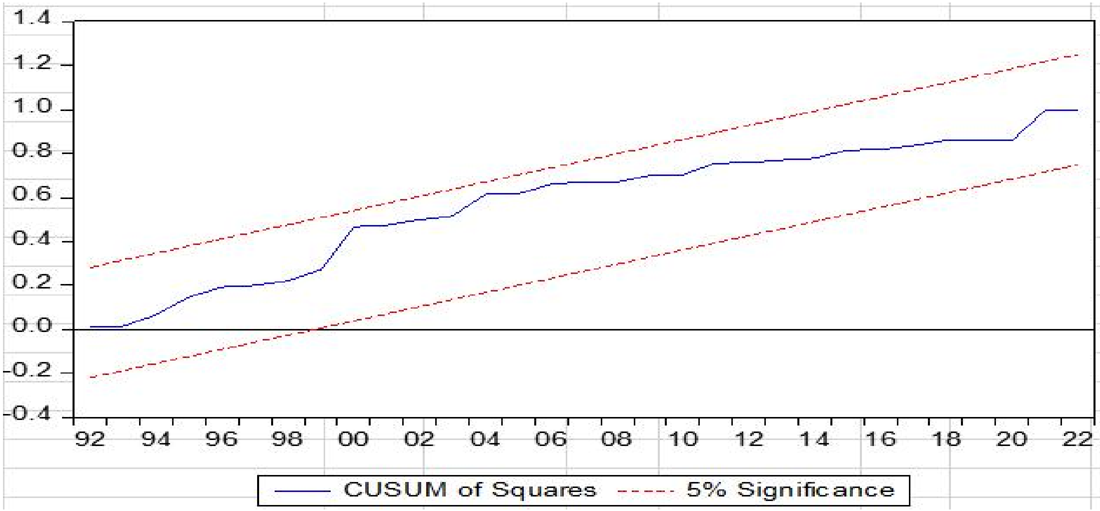


Figure 4.2 CUSUM square

4.3 Remittances and Foreign Reserves

Our second research objective aimed to investigate the influence of remittances and various macroeconomic factors, serving as controls, on Pakistan's foreign reserves. To accomplish this, we collected time series data for the relevant series from the WDI database provided by the World Bank. Initially, we conducted descriptive statistics, correlation analyses, and stationary test to examine the data. Subsequently, considering the data's characteristics, we applied the ARDL bound test developed by Pesaran et al. (2001) to assess both short and long-term effects of remittances and other variables on Pakistan's international reserves. Following this, we calculated an Error Correction Term (ECT) to evaluate the model's adjustment speed and stability. Finally, we conducted post-estimation diagnostic tests to ensure the validity, reliability, robustness, stability, and appropriate specification of the results and model.

4.3.1 Descriptive Statistics

Table 4.6 presents the descriptive statistics concerning the second research objective, focusing on the effects of remittances and other variables on Pakistan's foreign reserves. The table indicates that all series exhibit normal distribution and are devoid of outliers, as evidenced by their kurtosis values being less than or equal to three and the probability values of the JB statistic for all variables being greater than 5% significance level, except for foreign direct investment to GDP ratio. The mean value of reserves to external debt stands at 15.84, with maximum and minimum values of 37.34 and 4.37, respectively. Similarly, the mean value of remittances to GDP ratio is 5.37, with maximum and minimum values of 10.24 and 1.310. The average exports to GDP ratio is 12.80, with maximum and minimum values of 17.27 and 8.22, while the mean imports to GDP ratio is 19.16, with respective maximum and minimum values of 23.3 and 13.24. Additionally, the average GDP growth rate from 1976 to 2022 is 4.817 percent, with maximum and minimum values of 10.21 percent and -1.27 percent, respectively. The mean total external debt servicing to GDP ratio is 3.578, with maximum and minimum values of 6.81 and 1.40, respectively. However, the mean value of foreign direct investment to GDP ratio is 0.80, with maximum and minimum values of 3.66 and 0.062, respectively. Notably, this variable appears to be right-skewed, with a skewness value of 2.37, and it deviates from normal distribution as indicated by its kurtosis values significantly exceeding 3, along with the significant probability values of the Jarque-Bera statistic.

Table 4.6 Descriptive Statistics

	RESED	REM	XP	IMP	GDPG	FDI	TDSG
Mean	15.84219	5.375873	12.80829	19.16332	4.817434	0.807409	3.578208
Median	13.17011	5.469461	12.8352	19.42278	4.846581	0.616489	3.535628
Maximum	37.3423	10.24763	17.27073	23.3061	10.2157	3.668323	6.814945
Minimum	4.379973	1.310692	8.221612	13.24388	-1.274087	0.062428	1.402888
Std. Dev.	9.269922	2.291491	2.536843	2.561288	2.168261	0.76367	1.384859
Skewness	0.678955	0.043738	-0.034803	-0.600535	-0.198656	2.375769	0.279563
Kurtosis	2.283077	2.01621	2.04984	2.916005	3.372895	8.556689	2.459024
Jarque-Bera	4.617553	1.910344	1.77748	2.838849	0.581445	104.6805	1.185333
Probability	0.099383	0.384746	0.411174	0.241853	0.747723	0	0.552851
Sum	744.5831	252.6661	601.9898	900.676	226.4194	37.94821	168.1758
Sum Sq. Dev.	3952.846	241.5428	296.0364	301.769	216.2624	26.82685	88.22041
Observations	47	47	47	47	47	47	47

4.3.2 Coefficient of Correlation

Table 4.7 shows the association between the various variables, included in research objective two.The remittances and foreign direct investment have positive association with foreign reserves. However, the external debt servicing and imports are negatively associated with foreign reserves. Likewise, the GDP growth rate and exports also have negative nexus with foreign reserves.

Table 4.7 Coefficient of Correlation

	RESED	REM	GDPG	FDI	TDSG	IMP	XP
RESED	1	0.1528	-0.0068	0.4876	-0.6557	-0.2350	-0.1829
REM	0.1528	1	0.2796	-0.3732	-0.2175	0.3850	-0.6657
GDPG	-0.0068	0.2796	1	-0.2131	0.0623	0.1552	-0.0820

FDI	0.4876	-0.3732	-0.2131	1	-0.2866	0.0956	0.2519
TDSG	-0.6557	-0.2175	0.0623	-0.2866	1	0.1413	0.5407
IMP	-0.2350	0.3850	0.1552	0.0956	0.1413	1	0.0367
XP	-0.1829	-0.6657	-0.0820	0.2519	0.5407	0.0367	1

4.3.3 Unit root tests

Table 4.8 shows the unit test results of KPSS, ADF and Phillips Perron tests. According to results, the foreign reserves, total external debt servicing, GDP growth rate, imports and export are stationary at first differences means they are I(1). However, the remittances, foreign direct investment are stationary at level which means that they are I(0). Since the included variables are integrated of mix order, applying ARDL model is justified.

Table 4.8 KPSS/ADF/PP Unit Root Test

Variable	KPSS unit root		ADF unit root test		Phillips perron test		Rem
	level	1st diff	Level	1st diff	level	1st diff	
XP	0.2472		-1.5895	-6.3364*	-1.6494	-6.3251*	I(1)
REM	0.1871		-1.4950	-6.0295*	-1.6994	-6.0295*	I(0)
RESED	0.3493*	0.1965	-2.0809	-6.1085*	-2.1704	-6.2905*	I(1)
GDPG	0.4488*	0.2363	-4.8433*		-.8464*		I(1)
TDSG	0.3858*	0.1318	-1.4624	-10.5515*	-2.2021	-10.5360*	I(1)
IMP	0.2416		-2.6631	-6.7092*	-2.6631	-6.7112*	I(1)
FDI	0.2997		-3.0902**		-2.0278	-4.1993*	I(0)

Max: lag			9				
Bandwidth					Bartlett kernel		
Information criterion	SIC						

* and ** denote level of statistical significance at 1% and 5% respectively.

4.3.4 ARDL long run, short run and ECT results

The dependent variable in this analysis is the ratio of foreign reserves to external debt, while the independent variables include remittances, foreign direct investment to GDP ratio, GDP growth rate, exports to GDP ratio, imports to GDP ratio, and external debt servicing to GDP ratio. After evaluating 64 models, the ARDL (p,q,q,q,q,q,q) = (1, 1, 1, 0, 1, 1, 0) model was selected based on the minimum AIC value. These lags are for RESED, REM, XP, IMP, GDPG, TDSG and FDI respectively. The optimum lag length determined through majority of information criteria is one.

Table 4.9 shows the results for objective two. F-statistic 7.885 is higher than upper bound values for K=6 for all significant levels. It means that there is long run co integration between the dependent and independent variables.

More specifically, the remittances, exports, GDP growth rate and foreign direct investment are positively and significantly contributing in building international reserves. These results are as per expectation according to theory. They match to the results of Mahidud et al. (2021) , Ahmad et al. (2020) , Andriyani et al. (2020) but are in contrast with the results of Khan et al. (2005), Elbadawi (1990) and

Mijiyawa and Oloufade (2022). This means that Pakistan is not suffering from the negative impacts of external currency inflows like remittances and FDI in the form of so called Dutch disease.

However, the imports and external debt servicing are significantly putting pressure over the foreign reserves of Pakistan leading to time and again depletion and dwindling of its foreign reserves. These results are also as per expectations according to theory. These findings are opposite to that of the findings of Khan et al. (2005) and Elbadawi (1990)

More specifically, Keeping other things constant, if remittances to GDP ratio rise by one point percentage, the international reserves to external debt ratio soars by 5.063 point percentages and vice versa.

Similarly, if exports to GDP ratio augments by one point percentage, the foreign reserves to external debt ratio will also enhance by 4.692 point percentages and vice versa.

Likewise, if GDP growth rate increases by one point percentage, the foreign reserves to external debt ratio will also augment by 1.23 point percentage and vice versa.

Besides, if foreign direct investment to GDP ratio goes up by one point percentage, the foreign reserves to external debt ratio will also surge by 6.36 point percentage and vice versa. Conversely, if imports to GDP ratio rise by one point percentage, the international reserves will plume by 3.37 point percentage and vice versa; *cetrisperibas*.

In additions, if foreign loan service to GDP ratio hikes by one point percentage, the foreign reserves to external debt ratio will decline by 4.996 point percentages and vice versa in long run. So far as the short run impacts are concerned, the remittances and exports affect foreign reserves positively and significantly.

However, the external debt servicing is inversely and significantly associated with foreign reserves. The GDP growth rate has positive but insignificant effects over the foreign reserves in the short run. The ECT term is negative and significant which implies that speed of adjustment is very strong. Almost 54.89 percent adjustment occurs in one year if the system is deviated from equilibrium level. The Durban Watson value of 1.997 guarantees that model does not suffer from auto correlation problem. R-square and adjusted R square's respective values show that dependent variable is explained by 70% and 67% respectively by all included factors jointly.

Time and again depletion of foreign exchange reserves specially at the time of change of governments in Pakistan is vexatious for the researchers and policy makers. Therefore, this study intended to delve the main causes behind it. Results show that heavy imports bill and burgeoning external debt servicing are the main reasons behind the depletion of foreign reserves in Pakistan.

Although, the remittances, exports, GDP growth rate and FDI have direct impacts on foreign reserve's build up but the magnitude of import bill and external debt servicing is so huge that it outweighs the contribution of those factors. The findings also suggest that Pakistan has been maintaining the foreign exchange reserves by following "Buffer Stock" theory. Positive and significant coefficients of remittances, Exports, GDP growth rate and foreign direct investment signal that foreign reserves are accumulated in good times and depleted in bad times.

However, the negative coefficients of imports and external debt servicing demonstrate that monetary approach to balance of Payment theory is also applied by Central Bank of Pakistan. The negative coefficients of imports and external debt servicing also indicate that the foreign reserves in Pakistan are maintained for transactionary and precautionary motives.

Table 4.9 ARDL long run, short run and ECT coefficients

	Long-Run results			**SR results and ECT**	
Variable	**Coefficient**	**Probability**	**Variable**	**Coefficient**	**Probability**
REM	5.06348*	0	D(REM)	4.314718*	0
XP	4.62935*	0	D(XP)	1.873052*	0.0002
IMP	-3.373038*	0.0001	D(GDPG)	0.157859	0.411
GDPG	1.239658***	0.074	D(TDSG)	-1.142801**	0.0511
TDSG	-4.99654*	0.0001			
FDI	6.360969*	0.0011			
F-statistic	7.885884				
k	6		ECT	-0.548979*	0
R-squared	0.700485				
Adjusted R-squared	0.671264		DW	1.997643	

*, ** and *** indicate significance level at 1%, 5% and 10% respectively.

4.3.5 Post estimation diagnostic, validity and reliability tests

The results of post estimation diagnostic, validity, reliability and model specification are presented in Table 4.10. The probability of JB statistic is greater than 5% level of significance. It implies that the residuals are normally distributed. Moreover, the probability value of F-statistics for BG LM test is also insignificant; indicating that error terms are free from the serial correlation issues. Likewise, the probability values of BPG heteroscedasticity test is greater than 5% level of significance. It also indicates that the error terms are not suffering from heteroscedasticity problems. Similarly, the insignificant F statistic of Ramsey model specification demonstrates that model is not mis-specified. The CUSUME and CUSUME square in Figure 4.3 and Figure 4.4 respectively show that the model is bit unstable at 5% level of significance as in CUSUM square graph red line touches lower bound line. However, it is acceptable as it does not cross the line too much.

Table 4.10 Reliability and Validity Test

Test	JB- Statistic	Probability	F-Statistic	Probability
Normality JB	4.109776	0.128107		
Serial correlation BG LM			1.350816	0.273
Heteroscedacity BPG			1.129557	0.37
Model specification Ramsey			1.081720	0.3057

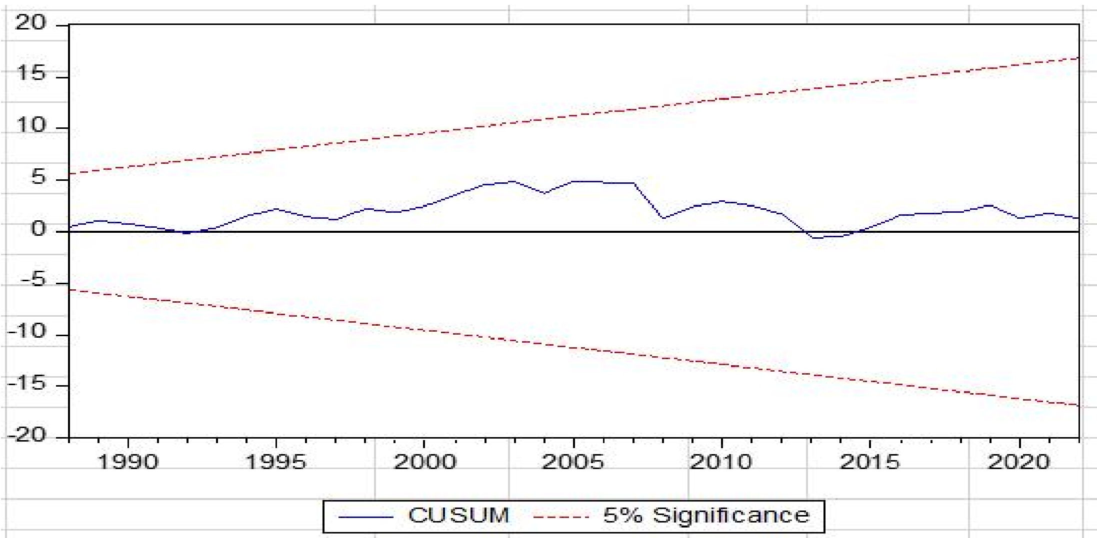


Figure 4.3 CUSUM

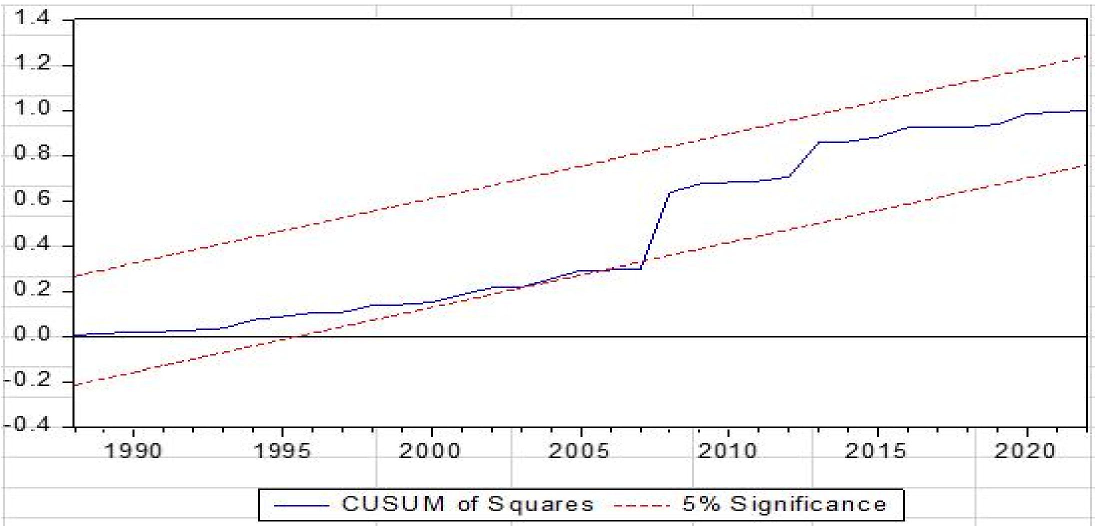


Figure 4.4 CUSUM square

4.4 Remittances and Economic growth

The purpose three of our research was to delve how remittances and various macroeconomic factors affect Pakistan's Economic growth through transmission channel of investment. We gathered time series data from the World Bank's World Development Indicator (WDI) for this analysis. Initially, we used descriptive statistics, correlation coefficients, and stationarity tests to analyze the data. Subsequently, we employed the ARDL bound test introduced by (Pesaran et al., 2001) to assess both short and long-run effects of remittances and other variables on Pakistan's GDP growth, considering the data's characteristics. We then generated an ECT to gauge the model's convergence process and stability. Finally, we conducted post-estimation diagnostic tests to validate and ensure the reliability, robustness, stability and confirm the model's specification and findings.

4.4.1 Descriptive statistics

The descriptive statistics for research objective three are shown in Table 4.11. The results indicate that all variables namely: GDP growth rate, remittances , gross capital formation, imports , external debt servicing ratio and foreign reserves to external debt ratio do not suffer from abnormality distribution, as evidenced by the Jarque-Bera test's probability value exceeding the 5% level of significance. Therefore, we cannot reject the null hypothesis that the series are normally distributed. The kurtosis value, being less than or around 3, suggests the absence of outliers in the series.

Examining the Economic growth rate from 1976 to 2022, the average value is 4.817 percent, maximum value is10.2175 and minimum values is -1.274 percent. Similarly, the average value of remittances is 5.375, with maximum value of 10.247 and minimum values of 1.310. On the other hand, the mean value of gross capital formation is 17.42, with maximum value of 20.685 and minimum values of 14.120. Additionally, the mean value of imports is 19.163, with maximum value being 23.306 and minimum values of at 13.243 percent of GDP.

Furthermore, the mean values of external debt servicing to GDP ratio and foreign reserves to external debt ratio are 3.578 and 15.842, respectively, while their maximum values are 6.184 and 37.342. Conversely, their minimum values are 1.402 and 4.379, respectively.

Table 4.11 Descriptive Statistics

	GDPG	**REM**	**GCF**	**IMP**	**TDSG**	**RESED**
Mean	4.817434	5.375873	17.42784	19.16332	3.578208	15.84219
Median	4.846581	5.469461	17.66854	19.42278	3.535628	13.17011
Maximum	10.2157	10.24763	20.685	23.3061	6.814945	37.3423
Minimum	-1.274087	1.310692	14.12063	13.24388	1.402888	4.379973
Std. Dev.	2.168261	2.291491	1.653207	2.561288	1.384859	9.269922
Skewness	-0.198656	0.043738	-0.271525	-0.600535	0.279563	0.678955

Kurtosis	3.372895	2.01621	2.069971	2.916005	2.459024	2.283077
Jarque-Bera	0.581445	1.910344	2.271389	2.838849	1.185333	4.617553
Probability	0.747723	0.384746	0.321199	0.241853	0.552851	0.099383
Sum	226.4194	252.6661	819.1086	900.676	168.1758	744.5831
Sum Sq. Dev.	216.2624	241.5428	125.7222	301.769	88.22041	3952.846
Observations	47	47	47	47	47	47

4.4.2 Coefficient of correlation

The correlation table (Table 4.12) presents the interrelations among the variables examined in research objective three. Here, the GDP growth rate serves as the dependent variable, while the independent variables encompass remittances, gross capital formation, imports, external debt servicing, and foreign reserves. The findings reveal positive correlations between the GDP growth rate and remittances, gross capital formation, imports, and external debt servicing. Conversely, a negative correlation is observed between foreign reserves and the GDP growth rate.

Table 4.12 Coefficient of Correlation

	GDPG	**REM**	**GCF**	**IMP**	**TDSG**	**RESED**
GDPG	1	0.2796	0.2283	0.1552	0.0623	-0.0068
REM	0.2796	1	-0.2830	0.3850	-0.2175	0.1528
GCF	0.2283	-0.2830	1	0.4005	0.4501	-0.3169
IMP	0.1552	0.3850	0.4005	1	0.1413	-0.2350
TDSG	0.0623	-0.2175	0.4501	0.1413	1	-0.6557
RESED	-0.0068	0.1528	-0.31695	-0.2350	-0.6557	1

4.4.3 Unit root test with KPSS test

The outcomes of the KPSS, ADF and Phillips Perron stationary test are shown in Table 4.13. As per the test findings, the GDP growth rate, gross capital formation, external debt servicing, imports and foreign reserves exhibit stationary at first differences, indicating they are I(1). On the other hand, remittances are stationary at the level, suggesting they are I(0). Given the mixed order of integration among the series, it is appropriate to employ the ARDL bound test to explore both long and short-run nexus between these factors.

Table 4.13 KPSS/ADF/PP Unit Root Test

Variable	KPSS unit root		ADF unit root test		Phillips perron test		Order
	level	1st diff	Level	1st diff	level	1st diff	
REM	0.1871		-1.4950	-6.0295*	-1.6994	-6.0295*	I(0)
RESED	0.3493*	0.1965	-2.0809	-6.1085*	-2.1704	-6.2905*	I(1)
GDPG	0.4488*	0.2363	-4.8433*		-.8464*		I(1)
TDSG	0.3858*	0.1318	-1.4624	-10.5515*	-2.2021	-10.5360*	I(1)
IMP	0.2416		-2.6631	-6.7092*	-2.6631	-6.7112*	I(1)
GCF	0.5876**	0.0828	-1.7936	-6.8523*	-1.8452	-6.8651*	I(1)
Max: lag			9				
Bandwidth					Bartlett kernel		
Information criterion	SIC						

* and ** denote level of statistical significance at 1% and 5% respectively.

4.4.3 ARDL bound test, long run, short run coefficients and ECT term

Table 4.14 presents the ARDL results regarding the effects of remittances on Pakistan's GDP growth. Our third research objective aimed to assess the influence of remittances on economic growth, considering investment as a moderating or mediating variable. After evaluating 486 models, the ARDL (p,q,q,q,q,q,) = (2,0,1,0, 0,2,2) model was selected based on the minimum AIC value. These algs are for GDPG, REM, GCF, REM*GCF, RESED, TDSG and IMP respectively. The optimum lag length determined through majority of information criteria is two.

To achieve this, the interaction term of remittances and gross capital formation (REM*INVT) has been included along with other control variables in the analysis. The findings of this study provide critical insights into the role of remittances in economic growth, particularly in the presence of gross capital formation (GCF) as a moderating factor. The long-run results reveal that remittances (REM) have a **negative and weakly significant** effect on economic growth. This aligns with concerns raised in previous studies (Chami et al., 2005; Acosta et al., 2009), which argue that remittances, when primarily used for consumption rather than investment, may not contribute to productive activities and could even lead to negative macroeconomic consequences such as reduced labor force participation and Dutch disease effects.

However, the interaction term between remittances and gross capital formation (**REM × GCF**) is found to be **positive and statistically significant**, suggesting that remittances can enhance economic growth when channeled into investment. It also shows that if remittances used in investment, its negative impacts on economic growth can be reduced. This finding is in line with Giuliano and Ruiz-

Arranz (2009), who emphasize that remittances serve as an alternative source of finance, particularly in countries with underdeveloped financial markets. Similarly, Fayissa and Nsiah (2010) provide empirical evidence that remittances contribute to economic growth only when invested in productive sectors. The results underscore the importance of **absorptive capacity**, reinforcing the argument that remittances alone are not a panacea for economic development but must be effectively utilized in capital formation to yield growth dividends (World Bank, 2016).

In the short run, the interaction term (**D(REM × GCF)**) remains **positive and highly significant**, further validating the importance of investment in leveraging the growth potential of remittances. The short-run findings are consistent with studies such as Catrinescu et al. (2009), who highlight the transitory benefits of remittances when combined with sound economic policies and investment opportunities. The significance of the **error correction term (ECT)** confirms that deviations from long-run equilibrium are quickly corrected, suggesting that policy interventions facilitating the productive use of remittances can yield immediate growth benefits.

Moreover, the **insignificance of gross capital formation (GCF) alone** in the long run implies that while investment is crucial, its effectiveness depends on external financial inflows such as remittances. This supports the notion proposed by Alfaro et al. (2004) that capital accumulation alone does not guarantee economic growth unless it is complemented by efficient financial systems and foreign capital inflows.

F-Statistic is higher than the upper bound suggesting the long run co-integration among the variables. R2 and adjusted R2 are .70 and .65 respectively ;

indicating the good fit of the model. Durban Watson is around 2 confirming the absence of auto correlation problem.

Table 4.14 ARDL long run, short run and ECT coefficients

Long Run Results			Short run results and ECT		
Variable	Coefficient	Probability	variable	Coefficient	Probability
REM	-1.6216***	0.057	D(GDPG(-1))	0.3992**	0.0139
GCF	-0.3728	0.266	D(REM*INVT))	0.1798*	0.0000
REMINVT	0.1165**	0.015	D(GCF)	0.4072	0.1291
RESED	0.0276	0.228	D(GCF(-1))	1.0237*	0.0023
TDSG	0.37570***	0.0722	D(TDSG)	-0.2870	0.3700
IMP	-0.3423	0.6487	D)TDSG(-1))	-0.5716***	0.0566
F-statistic	7.0606		ECT	-1.7488*	0.0000
R^2	0.70		DW	1.9452	
Adjus R^2	0.65		Observations	45	
K	6				

*, ** and *** indicate significance level at 1%, 5% and 10% respectively.

4.4.4 Post Estimation Diagnostic and stability tests

Table 4.15 presents the outcomes of various post-estimation diagnostics and validity tests for both models: The probability value of the JB normality test is substantially higher than the 5% level of significance, preventing us from rejecting the null hypothesis that error terms do not suffer from the issues of abnormal distribution. Similarly, the probability value of the F-statistic of BG LM serial correlation is also significantly higher than the 5% level of significance. Consequently, we cannot reject the null hypothesis that there is no serial correlation among the error terms. Likewise, the probability value of the F-statistic of BPG heteroscedasticity is considerably higher than the 5% level of significance, indicating that we cannot reject the null hypothesis that the residuals of the model are homeoscedastic. Additionally, the probability value of the F-statistic for the Ramsey model specification test exceeds the 5% level of significance. Consequently, we cannot reject the null hypothesis that the model is correctly specified.

4.4.5 Model Stability Test

Figure 4.5 shows the CUSUE and CUSUME square They show that both the models are stable at the 5% level of significance as the blue line lies within the red line boundaries. Therefore, it can be concluded that there are no structural breaks.

Table 4.15 Post estimation Diagnostic and Validity Test

Post estimation Diagnostic and Validity Test				
Test	**JB statistic**	**Probability**	**F-Statistic**	**Probability**
Normality JB	2.7992	0.2491	NA	NA
Serial Correlation BG LM	NA		0.8029	0.7211
Heteroscedacity BPG	NA		0.7234	0.7183
Model Specification Ramsey	NA		0.2.0506	0.1287

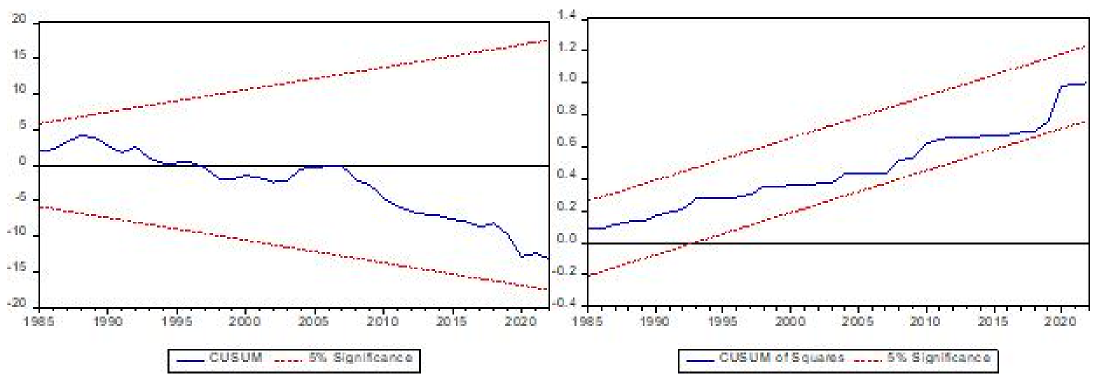


Figure 4.5 CUSUM and CUSUM

Summary of the Chapter

The objective of this study was to ascertain the impacts of remittances on external debt, foreign reserves and economic growth through transmission channel of investment in case of Pakistan. For this purpose the time series data from 1976 to 2022 was sourced from World Development indicators data base of the World Bank. The data was undergone first the pre estimation diagnosis and found normally distributed, having mild associations and mixed order of integration. On the basis of these findings, the data was further analyzed by applying ARDL model. The results showed the remittances if used to build up foreign reserves and gross capital formation, can help reduce external debt of Pakistan and stimulate economic growth. The results have been validated by applying post estimation diagnostic and stability tests such as JB test for normal distributions of residuals, BG LM test for auto and serial correlation, BPG test for heteroscedaticity , Ramesy test for model specification and CUSUM and CUSUM square tests for model stability and structural breaks.

CHAPTER 5

POLICY IMPLICATION AND CONCLUSION

5.1 Introduction

The basic research objectives of our thesis were to analyze the effects of remittances and various other variables on external debt, foreign reserves and economic progress of Pakistan from 1976 to 2022. For this purpose, the data of the included factors was downloaded from World development indicator data base of the Word Bank. Keeping in view the unit root properties of the data, the data was analyzed through Auto Regressive Distributed Lag (ARDL) bound test model given by (Pesaran et al., 2001). It is found that there is the long run co-integration among the external debt, remittances, foreign reserves, gross capital formation, economic growth, external debt servicing and trade openness. The remittances, gross capital formation and external debt servicing are directly and significantly affecting the foreign loans of Pakistan. However, the economic growth, foreign reserves and trade openness have inverse and significant effects on the foreign borrowing of Pakistan in long run.

So for as the short run effects are concerned, the foreign loans of Pakistan are directly and significantly influenced by gross capital formation and external debt servicing while it is inversely and significantly impacted by economic growth. The effects of foreign reserves and trade openness in short run are also negative but statistically insignificant.

Besides, there is also direct and significant influence of remittances, FDI, exports and GDP growth rate on the foreign exchange reserves of Pakistan. While the external debt servicing and imports have negative effects on the international reserves of Pakistan in long run. However, in short run the remittances and exports affect positively and significantly to foreign exchange reserves of Pakistan where as external debt servicing affects negatively and significantly to foreign reserves.

In addition, the GDP growth rate is positively and significantly affected by remittances and gross capital formation. The effects of international reserves and external debt servicing are also positive but statistically insignificant. However, the imports have negative impacts GDP growth rate but also insignificant.

The contemporaneous terms (lag values of dependent variables) are found to be positive and statistically significant. Moreover, the coefficients of error correction terms are also negative and statistically highly significant.

Additionally, the Durban Watson value around two indicates the absence of auto correlation issues. The R-square and adjusted R-square values are satisfactory. Post- estimation diagnostic tests including JB normality, GB LM serial correlation, BPG heteroscedasticity, Ramsey model specification, and CUSUM and CUSUM square for model stability yielded satisfactory results.

Based on the outcomes of research, it is deduced that remittances in Pakistan have been acknowledged and utilized as collateral for external borrowing, thereby enhancing Pakistan's creditworthiness. Furthermore, foreign reserves in Pakistan have been strategically maintained for precautionary and transactionary reasons, acting as a substitute for external borrowing.

Moreover, gross capital formation, along with the servicing of foreign loans and the pile up of past foreign loans, has been a significant factor contributing to the escalating external debt burden. Lenders have extended loans to Pakistan with the aim of recovering previous dues, while Pakistan has been borrowing to meet its outstanding liabilities.

Despite the essential roles played by, remittances, trade volume and economic growth in mitigating the foreign loans stress, the magnitude of external debt servicing, imports and other obligations has been so substantial that it has consistently exceeded the contributions of economic growth, remittances and exports.

5.2 Policy Recommendations

Based on the research results, it is advised that the government of Pakistan should take effective measures to streamline the transmission of remittances through proper and formal channels as approximately, 50% of remittances still coming through illegal channels of Hawala and Hundi Ozaki. M (2012). To achieve this, Pakistan's financial and banking system RAAST needs to be linked and integrated with key destination countries or region's banking and financial systems like BUNA of Arab league, SWIFT of USA and ECB in Europe etc. Additionally, the introduction of new money transfer facilities, centers, and mobile applications is advised to facilitate cost-effective and efficient methods of transferring money from abroad to Pakistan. Incentive packages should also be implemented for foreign workers who use formal banking channels for money transfers. Furthermore, efforts should be made to eliminate the exchange rate disparity between the market and banking rates, and stringent measures should be taken to prevent the emergence of gray or black markets for money transfer and currency conversion.

Given that Pakistan has a labor-abundant population, with 65% being youth, and limited domestic job opportunities, the government should focus on developing skills and techniques among the youth that are highly sought after in the international labor market. Special emphasis should be placed on fostering ICT and artificial intelligence- related skills. The cooperation and interaction between the Ministry of Labor and Foreign Affairs is essential to export these skilled workers at higher wages and under better terms and conditions of employment.

To alleviate the stress of foreign loans, the Pakistani government should strive to build international reserves through non-debt creating inflows, such as remittances, exports, and FDI. Negotiations with international lenders for the rescheduling and temporary suspension of external debt servicing are recommended to achieve stability. Once financial stability is attained, the government can then begin the process of gradually reducing external debt liabilities.

Control over imports is crucial for economic stability. The government should restrict imports to essential products like oil and gas, raw materials, machinery, equipment, and tools. Imports of final luxury products should be temporarily banned until financial stability is restored.

Similarly, the government should prioritize efforts to boost exports, attract foreign direct investment, and promote overall economic growth, given their positive contributions to the country's foreign reserves.

Furthermore, there should be a concerted effort to enhance Pakistan's economic growth by investing remittances in physical and human capital formation and research and development. This investment will contribute to increased productivity of labor and capital, resulting in higher income levels and domestic savings. This, in turn, will stimulate higher investment through domestic resources, leading to a multiplier effect that generates more output, employment, and exports for the country. Based on the findings from research, it is advisable for the

Government of Pakistan to implement necessary measures aimed at training the country's workforce according to emerging needs in the international labor market. The organizational cooperation between the Labor and Foreign Affairs departments should be emphasized for the legal exportation of the workforce.

5.3 Overall review of the research

The primary purpose of our research was to examine how remittances affected Pakistan's external debt, foreign reserves, and economic growth between 1976 and 2022. Pakistan was selected because it serves as a compelling case study, grappling with an unsustainable level of external debt, a severe shortage of foreign reserves, and inconsistent economic growth, despite being top fifth recipients of remittances globally. Subsequently, the Pakistan has repeatedly faced financial and economic crises due to mounting external debt service payments, trade deficits, and fiscal imbalances. While remittances were perceived as a positive amid these challenges, their potential benefits, along with other financial inflows like foreign aid and investment, have not been fully realized because of dearth of comprehensive studies in this dimension. This critical situation necessitated an in-depth and comprehensive study to address concerns shared by national and international stakeholders regarding Pakistan's deteriorating economic, social, and political conditions.

5.4 Limitations and Future Research Directions

This study, while providing valuable insights into the impact of remittances on external debt, foreign reserves, and economic growth in Pakistan, has certain limitations that should be acknowledged. Firstly, the research primarily focuses on

Pakistan's economic structure, which may limit the generalizability of the findings to other developing economies with different macroeconomic frameworks, financial systems, and remittance utilization patterns. Future studies can extend this analysis by comparing multiple remittance-dependent economies, particularly those with varying degrees of financial inclusion, institutional quality, and exchange rate regimes.

Secondly, this study employs the ARDL model to examine the long-run and short-run relationships among key macroeconomic variables. Although ARDL is well-suited for small sample sizes and mixed order of integration, it does not fully capture potential nonlinear dynamics or structural breaks that may arise due to external shocks, policy changes, or global economic crises. Future research could incorporate threshold regression models or nonlinear autoregressive distributed lag (NARDL) models to investigate possible asymmetric effects of remittances on external debt and foreign reserves.

Another limitation is the lack of disaggregated remittance data, as this study considers total remittances without distinguishing between formal and informal inflows. Given the prevalence of hawala and hundi systems in Pakistan, a more detailed analysis of formal versus informal remittances could provide deeper insights into their differential effects on economic growth and debt sustainability. Future studies may also explore the impact of digital financial inclusion and policy interventions in shifting remittance flows towards formal channels.

Additionally, the study does not explicitly account for the role of governance quality and institutional efficiency in shaping the remittance-debt nexus. Since weak institutions and poor fiscal management often lead to inefficient utilization of remittance inflows, future research could incorporate governance indicators such as corruption control, political stability, and regulatory quality to examine their moderating effects.

Finally, while this study highlights the importance of remittances in external debt management, it does not explore the micro-economic implications of remittance utilization, such as household-level investment decisions, human capital development, and poverty alleviation. Future research could employ household survey data to analyze how remittance-receiving families allocate funds between consumption, savings, and productive investments, providing a more comprehensive understanding of remittance dynamics.

By addressing these limitations, future research can offer a more nuanced perspective on the macroeconomic and micro-economic effects of remittances, contributing to more effective policy recommendations for remittance-dependent economies.

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