Pakistan's Debt: Politics and Intergenerational Burden



PIDE

PAKISTAN INSTITUTE OF DEVELOPMENT ECONOMICS

By

HUSNAIN SHEHZAD

PIDE2024FMPHILECO07

Supervisor

DR. SAUD AHMED KHAN

MPhil Economics

PIDE School of Economics

Pakistan Institute of Development Economics, Islamabad

2026

PAKISTAN INSTITUTE OF DEVELOPMENT ECONOMICS

Pakistan Institute of Development Economics, Islamabad

PIDE School of Economics

CERTIFICATE

This is to certify that this thesis entitled: **"Pakistan`s Debt: Politics and Intergenerational Burden"** submitted by **Mr. Husnain Shehzad** is accepted in its present form by the School of Economics, Pakistan Institute of Development Economics (PIDE), Islamabad as satisfying the requirements for partial fulfillment of the degree in Master of Philosophy in Economics.

Supervisor:	**Dr. Saud Ahmed Khan**	Signature:
Internal Examiner:	**Dr. Nadia Hassan**	Signature:
External Examiner:	**Dr. Mahmood Khalid**	Signature:
Director, PSE PIDE School of Economics:	**Dr. Iftikhar Ahmad**	Signature:

Author's Declaration

I, Husnain Shehzad, hereby declare that my MPhil thesis entitled **"Pakistan's Debt: Politics and Intergenerational Burden"** is my original work and has not been submitted previously, in whole or in part, for the award of any degree at the Pakistan Institute of Development Economics (PIDE) or any other institution.

At any time if my statement is found to be incorrect even after my graduation the University reserves the right to withdraw my MPhil degree:

Date: _____

Signature of Student: _____

Husnain Shehzad

Acknowledgment

I am thankful to Almighty Allah, whose infinite mercy and blessings made this work possible.

My sincere gratitude goes to Dr Saud Ahmed Khan for his guidance, insightful mentorship, and unwavering support throughout this journey.

I am also deeply grateful to my brother for his unwavering sacrifices and support, which made it possible for me to pursue my studies at the Pakistan Institute of Development Economics (PIDE).

Abstract

Public debt has become a key macroeconomic and political issue for developing economies, prompting serious concerns about fiscal sustainability. Pakistan's public debt reached Rs 81.3 trillion, or 70.7% of GDP, up 13% from FY 2024, sparking a heated debate and provoking curiosity to dig out insights. This study aims to precisely explore the political economy of Pakistan's public debt and quantify the transfer of the debt burden to future generations. This study employs two quantitative empirical approaches. Using an ANCOVA model to examine the political business cycle and regime, with time-series data from 1982 to 2024. In this model, the impulse and step dummies are combined with the potential macroeconomic covariate. Second, an overlapping-generations model is used to measure the transfer of the debt burden in terms of the welfare cost. The results revealed that Pakistan accumulates debt not only because of macroeconomic fundamentals but also because of political regimes and electoral incentives. The debt accumulation poses a significant welfare loss of Rs 7.7 trillion per year by 2050 under the given assumptions, which is significantly higher than Rs 2.7 trillion per year if debt servicing is excluded. Given the results of this study, advocates for a welfare-based ceiling on debt, alongside a debt-to-GDP limit, to account for the welfare costs of borrowing. The study also underscores the need for future-generation impact assessments in fiscal planning to address intergenerational losses. To mitigate high debt-servicing costs, the government should prioritize concessional borrowing and guard against politically driven fiscal expansions by establishing an independent fiscal council.

CONTENTS

LIST OF TABLES **6**
LIST OF ABBREVIATIONS **7**
CHAPTER 1. INTRODUCTION **8**
1.1 Background of the Study 8
1.1.1 Pakistan's Fiscal Position, Comparative and Legal Dimension ***9***
1.1.2 Pakistan's Political Economy of Debt ***15***
1.2 Problem Statement 16
1.3 Research Questions 17
1.4 Research Objectives 17
1.5 Significance of Study 17
CHAPTER 2. LITERATURE REVIEW **19**
2.1 Theoretical Review 19
2.1.1 Classical and Neo-classical View 19
2.1.2 Keynesian and Neo-Keynesian View 20
2.1.3 Monetarist View ***22***
2.1.4 Marxist View 22
2.1.5 Public Choice and extended theoretical view ***24***
2.2 Empirical Review 25
2.2.1 Debt Dynamics, and Political Economy ***25***
2.2.2 Intergenerational Debt Burden 27
2.2.3 Research Gap 29
CHAPTER 3. RESEARCH METHODOLOGY **32**
3.1 Research Strategy 32
3.2 Theoretical Framework 32
3.3 Econometric Model 33
3.3.1 Data and Variables 34
3.3.2 Empirical Model 35
3.4 Overlapping Generation Model 37
3.4.1 Model Setup 37
3.4.2 Households' Preferences ***38***
3.4.3 Firm Pricing and Reservation Wage 38
3.4.4 Equilibrium Price 39
3.4.5 Government Budget and Debt 39

CHAPTER 4. ANALYSIS AND DISCUSSION **44**
4.1: Analysis of public debt accumulation using an ANCOVA model 44
4.2: Analysis of intergenerational welfare cost using an OLG model 51
CHAPTER 5. CONCLUSION AND RECOMMENDATIONS **54**
5.1 Conclusion 54
5.2: Recommendations 55
5.3: Limitations 56
Reference **58**
APPENDIX **68**

LIST OF FIGURES

Figure 1: Global Public Debt 9
Figure 2: Pakistan's Public Debt **10**
Figure 3: Fiscal Burden 12
Figure 4: Debt to GDP Ratios 13
Figure 5: Comparative Debt Outlook 14
Figure 6: Perpetual Borrowing Burden on Successors 15
Figure 7: Debt Share by Regime 15
Figure 8: Public Debt and Disposable Income 41
Figure 9: Density Plots of Public Debt And Log Of Public Debt 45
Figure 10: Fitted Model 47
Figure 11: Parameter Stability Tests 50
Figure 12: Recursive Estimates 51
Figure 13: Parameter Stability Test (Appendix) 68
Figure 14: SIS (Appendix) 68

LIST OF TABLES

Table 1: Discussion on Variables 34
Table 2: Dummy Vector 36
Table 3: Descriptive Statistics 44
Table 4: Analysis of Log of Public Debt 46
Table 5: Analysis of Log of Public Debt (Appendix) 68

LIST OF ABBREVIATIONS

ANCOVA	Analysis of Covariance
FBR	Federal Board of Revenue
FDI	Foreign Direct Investment
FRDLA	Fiscal Responsibility and Debt Limitation Act
FY	Fiscal Year
GDP	Gross Domestic Product
GFNs	Gross Financing Needs
IIS	Impulse Indicator Saturations
IMF	International Monetary Fund
OECD	Organization for Economic Co-operation and Development
OLG	Overlapping Generation Model
OLS	Ordinary Least Square
RS	Pakistani Rupee
SIS	Step Indicator Saturations
UN	United Nations
USD	United States Dollar

CHAPTER 1. INTRODUCTION

1.1 Background of the Study

Debt, which was previously considered a last resort, has become a timeless feature of modern states, a vital tool for addressing financial shortfalls. Public debt, also known as sovereign or government debt, is borrowed by states and differs from private-sector debt. Sovereign debt is generally unsecured. Credit rating agencies often assess a sovereign's creditworthiness (Nelson, 2012).

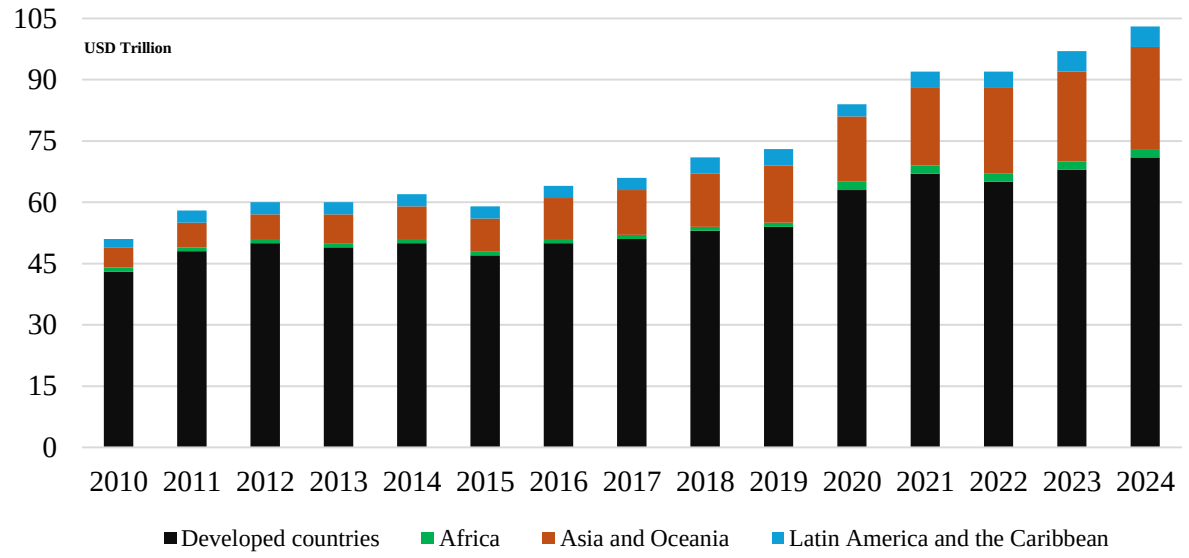
Countries mostly handle their fiscal imbalances through borrowing, which may serve as a countercyclical measure during demand deficiency, as it stimulates aggregate demand and creates employment, thereby generating income to offset future tax burdens (Ogawa & Ono, 2010). However, Public debt has major economic and political implications (Barreyre & Delalande, 2020). Politicians may create a political business cycle by increasing debt over time for strategic gain, leading to intentionally persistent debt bias to limit fiscal space for successor governments (Fatas et al., 2019).

Deficit spending also raises concerns, stressing that public borrowing shifts the cost to future generations (Cooper, 2021). Debt is debated as extending beyond statistics only to include real fiscal conditions, governance, and politics (Kotlikoff, 2017). Therefore, Fiscal economists analyse the intertemporal impact of debt financing, focusing on fiscal discipline to stabilize taxes and manage demand, while balancing these factors efficiently.

Global public debt has expanded dramatically in recent decades due to fiscal responses to major crises, including the 2008-09 global financial crisis and the COVID-19 pandemic (Ter□ Minassian, 2023). Global public debt reached USD 102 trillion in 2024, as shown in figure 1, with developing economies accounting for USD 31 trillion since 2010. These economies spent USD 921 billion on interest payments in 2024, restricting resources for critical development needs. Additionally, 61 countries dedicated over 10% of their government revenues to interest payments on debt (UNCTAD, 2025). Global corporate bond debt reached USD 35 trillion in 2024, while OECD sovereign bond issuance is expected to reach USD 17 trillion in 2025, with 40% of OECD debt maturing in 2027. Rising debt pressures are evident, with OECD countries' interest payments reaching 3.3% of GDP in 2024, the highest level since 2010 (OECD, 2025).

By GDP, global public debt is reaching 92.3%, with rising interest expenses, and is expected to reach 100% by the end of the decade, with the fiscal deficit reaching 5.1% (IMF, 2025).

Figure 1: Global Public Debt



Source: UNCTAD calculations based on IMF World Economic Outlook (April 2025).

Developing nations face a USD 4.3 trillion financing gap for sustainable development, resulting in rising debt (UN, 2023). Although the economies have recovered since 2020 amid high inflation, government debt remains high due to sustained fiscal deficits and ongoing government expenditure to support growth. Whereas the decrease in public debt has been only 8% of GDP, which is half the increase during the pandemic, the decrease in private debt is more pronounced at 12%, but remains above the pre-pandemic levels (Gaspar et al., 2023). The high debt burden for developing nations restricts them from responding to crises and investing in their citizens because interest payments are often high in nature, and 3.3 billion individuals are affected by it, which diminishes the prosperity of human and planetary well-being (UN, 2025).

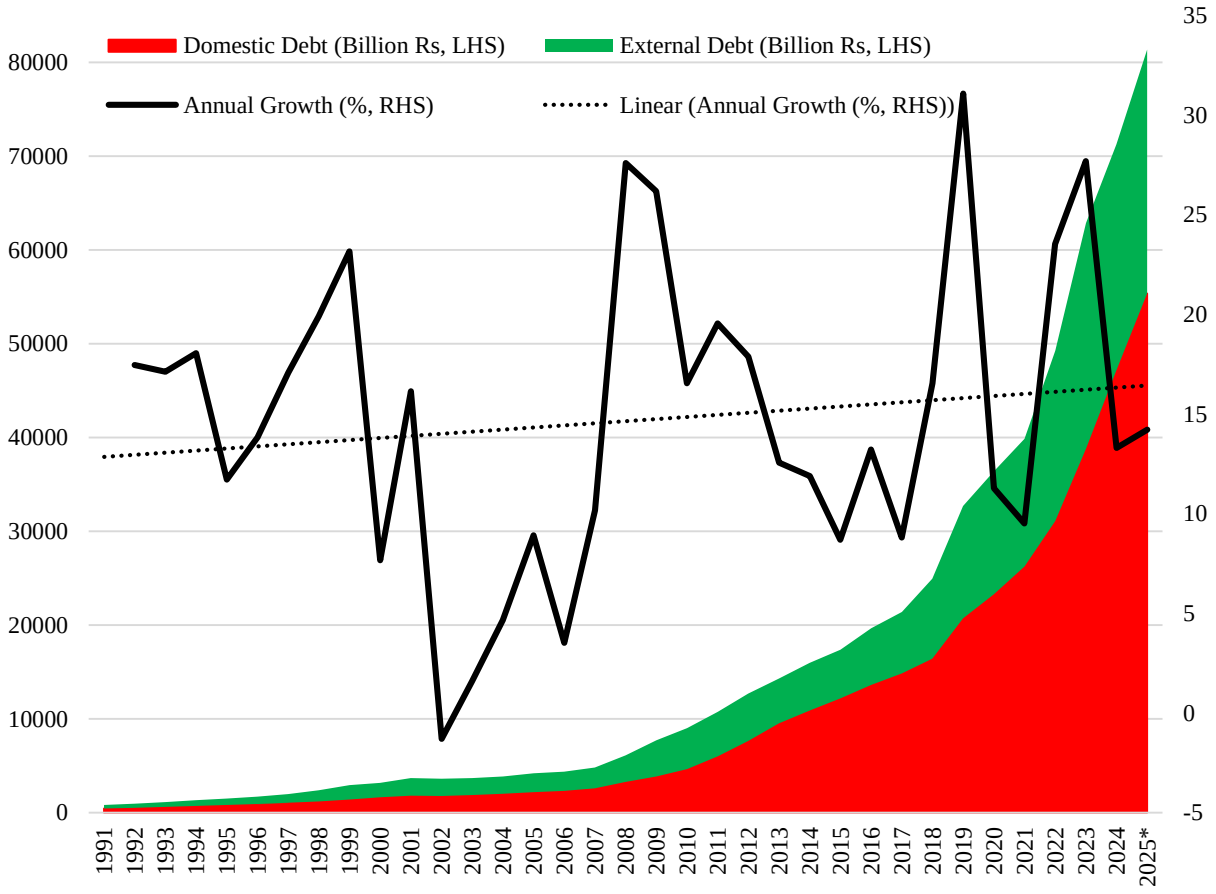
1.1.1 Pakistan's Fiscal Position, Comparative and Legal Dimension

Pakistan's fiscal sustainability is constrained by increasing public debt, substantial interest payments, and overall fiscal deficits compounded by external shocks and policy slippage (IMF, 2024). These vulnerabilities, closely linked to political and economic instability, are shaped by complex interactions among regional, international, and domestic interests (Khan, 2022). Elite

influence and cultural factors weaken institutions, while interest groups centralize financial authorities, creating an institutional gap and corruption that perpetuate fiscal inefficiencies, a chronic fiscal deficit, and growing debt, thereby weakening national interests (Tunio & Nabi, 2021). Enforcement of anti-corruption measures lacks consistency and is often influenced by powerful interests. A UNDP report highlighted that corporate elites gained around USD 6.4 billion through privileges, including subsidies, tax breaks, state contracts, and others (IMF, 2025). These privileges account for 77.4% of Pakistan's total IMF debt by FY 2024-25.

Pakistan provides a particularly important case study within this debt debate, with upward trends in overall debt growth, and figure 2, shows the exitance of a political business cycle with gross public debt reached Rs 81,374 billion (70.7% of GDP), comprising Rs 55,363 billion of domestic debt (47.8% of GDP) and Rs 26,046 billion of external debt (22.9% of GDP) by December 2025.

Figure 2: Pakistan's Public Debt

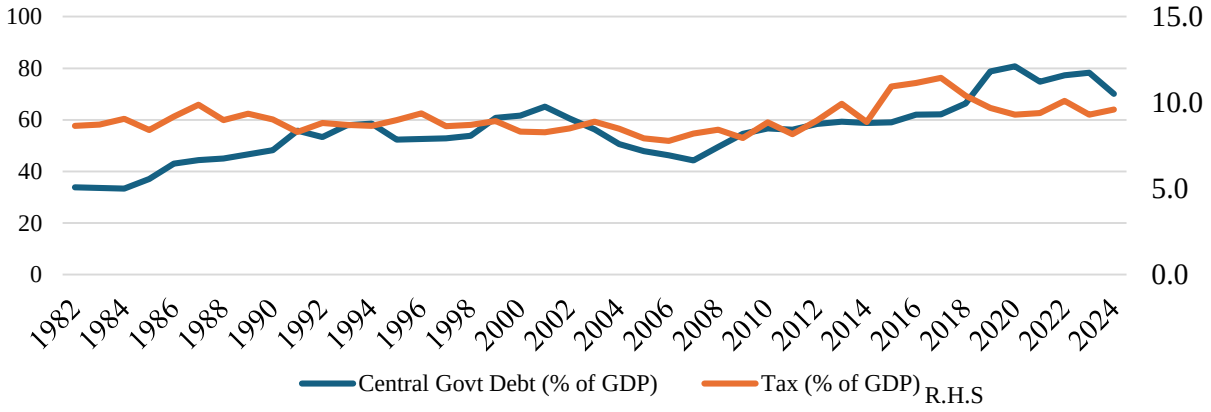


Source: Pakistan Economic Survey, 2025

The domestic debt structure shows a growing reliance on long-term borrowing, with permanent debt now constituting 78% of domestic debt, up from 70% in June 2024, while floating debt had dropped from 22% to 15% by March 2025. Around 6% remains unfunded. During the first nine months of the fiscal year, debt servicing remains high, with total mark-up expenditure amounting to Rs 6,439 billion (66 % of the full-year budget estimate of Rs 9,775 billion). Most of this was on domestic debt, which accounted for Rs 5,783 billion (66% of the annual allocation of Rs 8,736 billion). In comparison, interest on external debt reached Rs 656 billion (63% of the budgeted Rs 1,039 billion) from July to March of FY 2024-25. The first three quarters' consistent interest expense budget execution demonstrates disciplined debt servicing and efficient cash flow forecasting. As a move towards longer-term instruments gradually reduces short-term repayment constraints, it also underscores the importance of ongoing efforts to extend debt maturities (Pakistan Economic Survey, 2024-25). The economy's size for FY 2024-25 was estimated at USD 410.96 billion, with a per capita income of USD 1824 (National Accounts Committee Meeting, 2025), compared to the average per capita income of East and South Asia, which Focus Economics reports as USD 7,932

Pakistan faced continuous primary deficits from FY2008 to FY2023 due to weak revenue collection and high spending. However, the Pakistan Economic Survey shows a primary surplus over the last two years. Economists view this primary surplus positively but emphasize the need for sustained political commitment and structural reforms to maintain fiscal stability and restore investor confidence. The surplus occurred because of the National Fiscal Pact, under the IMF's 37-month, USD 7 billion Extended Fund Facility (EFF) approved in September 2024, which emphasizes fiscal solvency by promoting sustained consolidated primary surpluses and addressing the politically delicate NFC Award between federal and provincial governments. By FY25, the country had achieved an overall fiscal deficit of 5.38% of GDP, marking a nine-year low, aided by a significant increase in tax and non-tax revenues. The fiscal health was further indicated by a rise in the FBR tax-to-GDP ratio to 11.3%, a seven-year high. At the same time, Pakistan's tax-to-GDP ratio remains stagnant at around 10% over the last four decades, as shown in figure 3, despite donor-supported reforms. Between 2008 and 2021, 36% to 39% of revenue came from direct taxes, with the remainder from indirect taxes (Wani, 2023).

Figure 3: Fiscal Burden



Source: IMF, Various Pakistan Economic Surveys & UNU-WIDER's Government Revenue Dataset.

The FY26 federal budget data highlight significant dynamics within the pact, with debt servicing accounting for 50% of total expenditure. These figures mirror those from the revised FY 2025 budget. Provinces are expected to generate a combined surplus of Rs. 1.5 trillion, but this amount does not contribute to federal revenue, as provincial governments retain it for investment. Consequently, the federal government plans to borrow Rs. 6.4 trillion in FY26, equating to half its total expenditure or 5% of GDP, despite targeting a primary surplus of Rs. 3.2 trillion (2.4% of GDP) on paper. This indicates a persistent structural financing gap within the federal budget (Zubair, 2025). It has been grappling with fiscal deficits for a long time due to a flawed tax system and unproductive spending behavior by successive governments. This fiscal deficit financing threatens the sustainability of the fiscal framework, causing the accumulation of public debt over time (Khan, 2024).

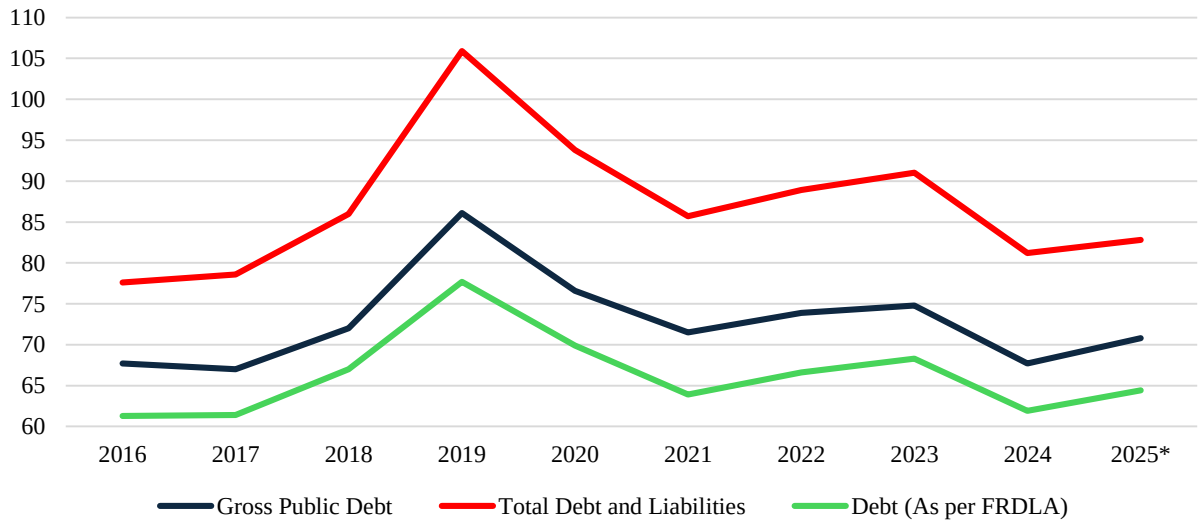
Legal tactics and wordplay reduce the debt to a set limit under the FRDL Act 2005[1] but only on paper, not in terms of actual burden. As shown in figure 4, after the 2016 change in the total public debt definition [2], the government is close to achieving the 60% debt-to-GDP benchmark set by the FRDL Act, 2005. However, in reality, it is still far from a sustainable level, with

[1] Debt it should not exceed 60% of the estimated GDP that year limit set under FRDL Act. The new statutory deadline for achieving the sustainable debt level of 60% is now FY 2026-27 against FY 2016-17 earlier (See NA panel approves amended FRDL Act 2021).

[2] FRDLA 2005, Amendment by Finance Act, 2016 (XXIX OF 2016), s.6 defines total public debt as the debt of the Government (including the Federal Government and the Provincial Governments) serviced out of the Consolidated Fund and debts owed to the IMF, later added by Finance Amendment Act, 2017 (XXVII OF 2017), s.5 Explanation. Total debt of the government is public debt less accumulated deposits of the federal and provincial governments with the banking system.

misleading improvement in debt ratios compliance. A PIDE study further determined that Pakistan's optimal public debt threshold is 58.5%, with domestic and external debt thresholds of 43.3% and 27.5%, respectively. All forms of debt hinder economic growth when their thresholds are exceeded (Ellahi & Ali, 2024). Debt sustainability also depends on macroeconomic fundamentals, institutional quality, debt management capacity, and long-term economic growth (Jalil, 2021). Pakistan's debt crisis is a systemic transfer of fiscal burdens to future generations, resulting in payback costs, compounding interest obligations, and limited growth opportunities. The local economy is bearing the burden, as domestic debt surpasses external borrowing, limiting budgetary flexibility and discouraging private investment. The country faces a fiscal moral hazard, with successive generations inheriting liabilities and no comparable productive assets. The political economy of fiscal decisions has led to politicized borrowing, entrenching debt dependence and deferring fiscal adjustment across successive administrations.

Figure 4: Debt to GDP Ratios

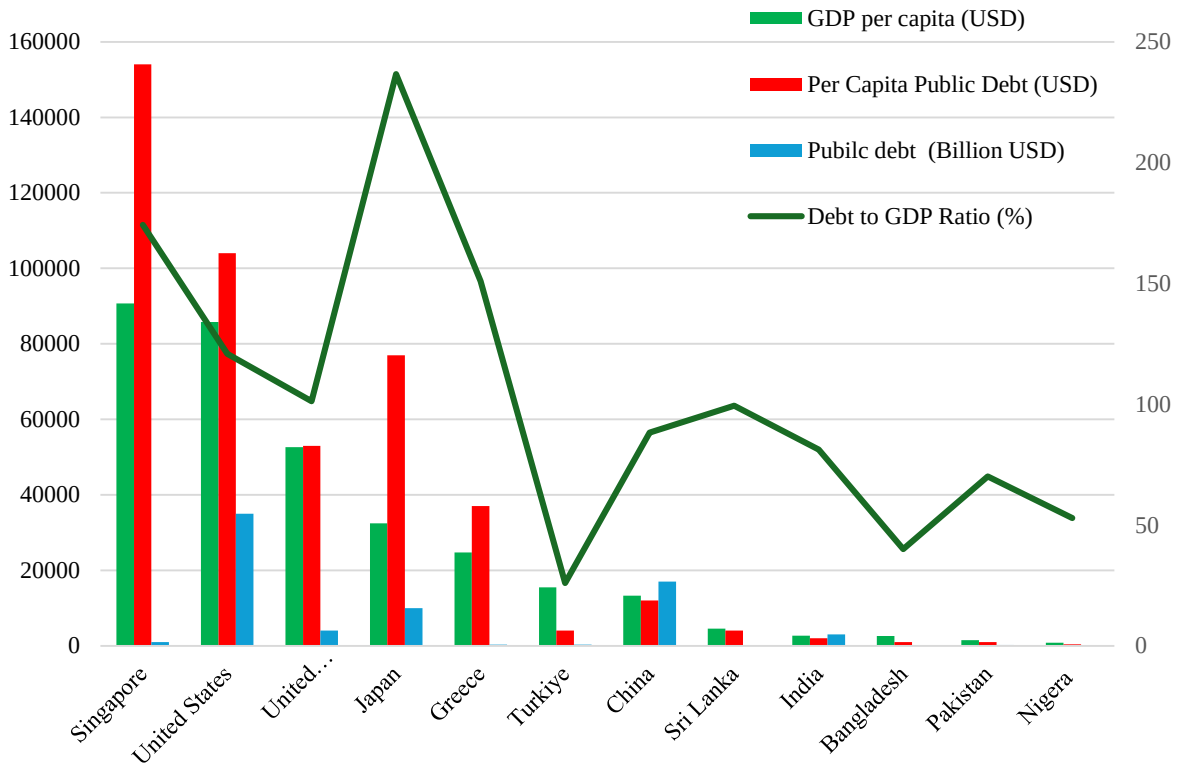


Source: Various Pakistan's Debt & Liabilities-Summary tables.

Comparing Pakistan's debt position with that of highly indebted nations and those with analogous economic conditions, as illustrated in figure 5, reveals that while Pakistan's absolute debt may be relatively modest, this does not necessarily imply a secure fiscal position. Most nations exhibiting elevated debt levels, as illustrated in figure 5, are advanced or emerging economies; however, Pakistan's situation is distinct. Figure 3 is particularly concerning, as it shows Pakistan's debt-to-GDP ratio has increased substantially. In contrast, the tax-to-GDP

ratio, which is intended to mitigate debt accumulation, has not kept pace. This discrepancy is a significant concern over the extent of debt that future generations of Pakistan will be obligated to assume.

Figure 5: Comparative Debt Outlook



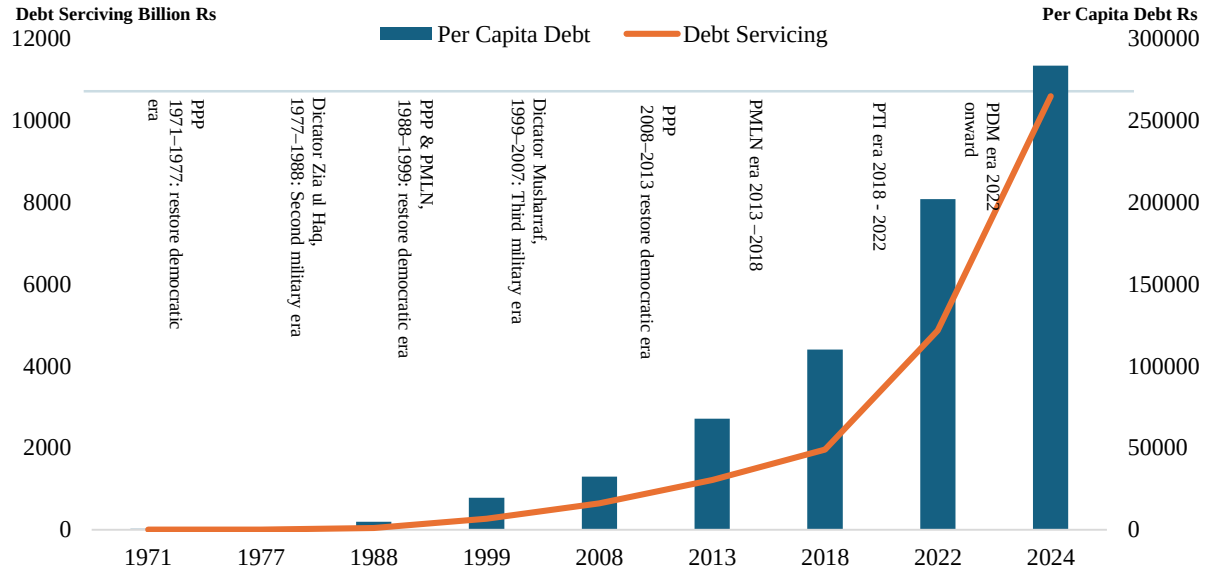
Source: WDI 2024 & UN Trade and Development 2025 (UNCTAD).

1.1.2 Pakistan's Political Economy of Debt

The skyrocketing debt-servicing costs cause a crisis and a threat of default in Pakistan every few years due to a domestic political-business cycle. Key political actors pursue goals inconsistent with macroeconomic stability and debt sustainability. The main reason for this is domestic politics, which involves rising public expenditure, increasing imports, and decreasing international reserves before elections (Iqbal, 2023). Historically, in the 1990s, Pakistan's government was unstable, which caused a debt crisis. The government's policies often led to more debt, which was passed down to the next government, further exacerbating the country's economic problems (Asif, 2025). All governments shared the growing debt, and each political party added to the financial problems, leaving a rising debt burden that undermined the

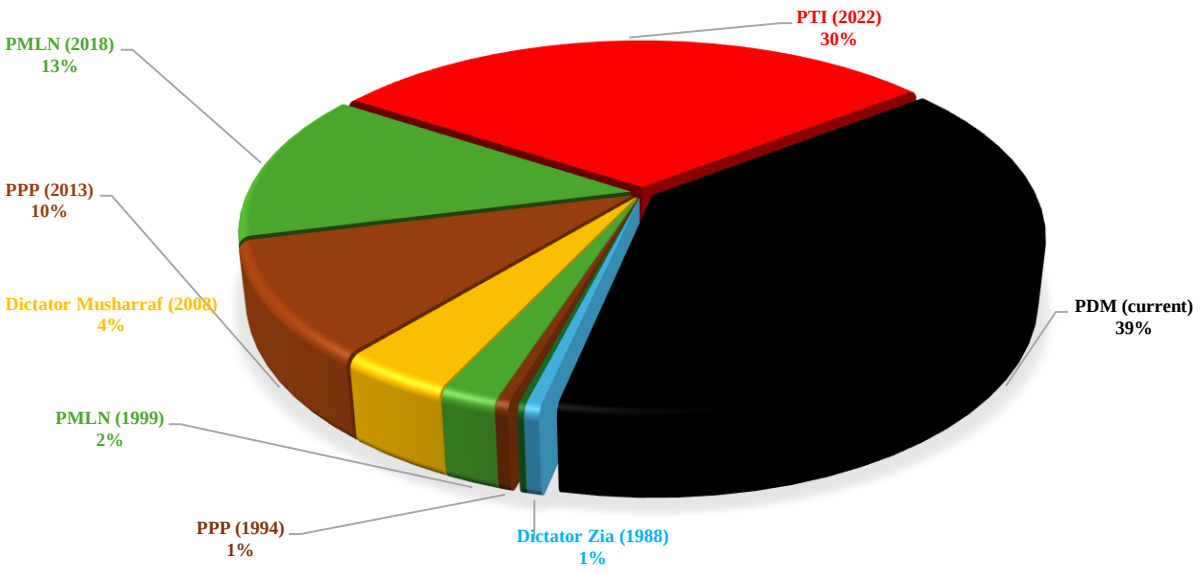
economy's long-term economic sustainability and put economic pressure on the next generation (see figures 6 & 7).

Figure 6: Perpetual Borrowing Burden on Successors



Source: Author's calculation from Pakistan Economic Survey 2024-25 & World Bank.

Figure 7: Debt Share by Regime



Source: Author's calculation from Pakistan Economic Survey 2024-25

High GFNs, high debt, reserve buffers, and uneven program implementation contribute to high sovereign stress in Pakistan. Political risks and insufficient financing are among the medium-term risks. Long-term risks are moderate, and public investment is slowing down the process of paying off debt. Although macroeconomic prudence is favorable, the existence of high GFNs covered by official financing has high vulnerabilities (IMF, 2025).

About 40% of Pakistan's population is under 14, and 33% is between 15 and 34 (UN, 2024). This youth bulge presents an opportunity to enhance national productivity. However, without substantial investments in long-term reforms, job creation, and political augmentation, these demographic pressures could intensify sovereign vulnerabilities. Ultimately, how Pakistan manages these demographic factors will shape the future of Pakistan's economy.

The dilemma of whether states have a moral right to prioritize the interests of current generations over those of future generations complicates the debate over fiscal justice (Pattison, 2024).

Building on this premise, the study will explore the role of politics in debt accumulation, emphasizing the impact of political regimes and business cycles on debt dynamics, and quantifying the transfer of debt policy burdens in terms of welfare for future generations in Pakistan.

1.2 Problem Statement

Pakistan's chronic fiscal deficits have exacerbated macroeconomic imbalances, leading to a growing public debt burden and a rising public interest bill (Bilquees, 2003; Husain, 2024). By FY 2023-24, mark-up payments escalated alarmingly from 125% in 2022 to 202 % of net tax revenue (FBR tax revenue adjusted for NFC transfers to provinces), 52% to 88% of FBR tax revenue, and 40% to 61% of total revenue (SBP Annual Report FY24). Debt servicing is increasingly resembling a sort of output tax that influences private credit, investment choices, borrowing costs, and the future national output, which goes toward paying off debt instead of building productive capital (Hasan et al., 1999; Shah et al., 2016; Fatemah & Haq, 2024). Pakistan's budget shortfall is exacerbated by low revenue collection, which averages 12.8% of GDP, compared with 19.6% in South Asia over the past decade (World Bank, 2023). A narrow fiscal space, weak domestic mobilization, and persistent reliance on external debt characterize the fragile fiscal framework. These factors placed strain on the economy, which

hurts its long-term sustainability and autonomy (Chohan, 2019). Power-sharing arrangements and election-cycle concerns that influence budget content provide Pakistan with short-term electoral advantages. Periodic compromises result from politically driven sectoral allocations (Ahmad, 2025).

The youth population in Pakistan is at an historic peak and is projected to continue increasing until at least 2050 (Ahmad, 2018). Debt driven by short-term political ambitions rather than long-term sustainability may limit future generations' economic sovereignty, social cohesiveness, and growth potential. Addressing this issue requires fiscal wisdom, morality, and generational fairness. Without such understanding, policy actions prioritize immediate stabilization over generational justice and accountability.

1.3 Research Questions

- How has Pakistan's public debt evolved?
- How do political dynamics contribute to Pakistan's debt accumulation?
- How much of the current debt burden is being transferred to the next generation?

1.4 Research Objectives

- To examine the trends of Pakistan's public debt.
- To explore the role of political economy in debt accumulation.
- To quantify Pakistan's debt with the notion of intergenerational burden.

1.5 Significance of Study

Debt is not merely a figure, since it is a matter of government decisions and their impacts on current and future citizens. It is crucial to understand the political factors that have contributed to Pakistan's continuously increasing debt and to recognize that service costs currently consume a significant portion of the government's revenue. So, this study is important and necessary from both academic and policy perspectives.

The previous literature on Pakistan's debt is focused on fiscal imbalances, macroeconomic stability, and debt dynamics. Nevertheless, it lacks empirical evidence on the role of politics in debt dynamics and the burden of debt on future generations, which requires quantification. It presents a significant dilemma that challenges the equity of contemporary policymakers. This

study addresses this issue empirically, adding to discussions about political economy and intergenerational debt justice in Pakistan.

Policymakers will also be informed about Pakistan's political dynamics that affect the country's borrowing and the future of its generations. Given the high number of youths in a country, one should consider the extent to which current fiscal policies will affect the future. This study uses quantitative approaches to examine main questions 2 and 3, while question 1 supplements the study and is addressed through thematic analysis at the beginning. This methodological contribution guarantees normative, empirically derived outcomes that are applicable and transferable beyond Pakistan.

After discussing global debt trends and Pakistan's fiscal position, the next chapter reviews the theoretical and empirical literature on public debt, political economy, and intergenerational burden to contextualize it within existing studies. The chapter integrates conflicting theoretical viewpoints and empirical evidence to identify the research gap motivating the current study and to provide the intellectual foundation for the analytical framework adopted in the subsequent chapters.

CHAPTER 2. LITERATURE REVIEW

2.1 Theoretical Review

Public debt is characterized not merely as a fiscal aggregate but also as a political contract and an intergenerational transfer mechanism, embodying both economic rationality and political strategy. Various theoretical frameworks, including classical, Keynesian, monetarist, Marxist, and institutional, provide diverse but interrelated insights. By synthesizing these theories, the study also anchors its analysis with a rigorous theoretical tradition

2.1.1 Classical and Neo-classical View

Although classical economists devised comprehensive theories on public debt, these ideas have not gotten as much attention as those concerning distribution and value. These theories address both historical and contemporary challenges, particularly today's urgent taxes, deficit, and public debt crises.

David Hume (1741) first discussed public debt in his essay on Liberty and Despotism. He argued that public debt increased money circulation and fostered credit use, which ultimately requires intolerable taxation, potentially eroding the nation or public creditors. Adam Smith (1776) argues that governments borrow, exhaust capital, entrench debt, and increase taxes, making it difficult to find new sources of revenue. Smith believes that rising debt will eventually ruin nations, as states transition from short-term loans to risky, perpetual funding.[3].

For Smith, economic activity was embedded in political and social institutions. His analysis thus went beyond markets and state intervention to include governance, public finance, justice, and political stability. This view implies that, for Smith, public debt was not simply an economic problem but a political one with implications for the long-term prosperity and stability of the state (Winch, 1978). Smith thought that borrowing from the sinking fund is an easy way to escape difficulties but grows habit-forming, burdening future generations (Biggart, 2002).

[3] See an Inquiry into the Nature and Causes of the Wealth of Nations, Book V, Chapter III (PP 979, 981-982, 985-986, 992-993).

Smith argues against governments running budget deficits and criticizes the mercantilist notion that interest payments on public debt are "the right hand which pays the left." Smith believes that this would lead to increased taxation, a flight of domestic capital, and currency devaluation, negatively affecting domestic producers. He proposes balanced budgets in which all government expenditures are financed through taxation (Tsoulfidis, 2007). While Ricardo considered that perpetual borrowing and raising taxes allow for war spendings. (Sardoni, 2021). Neoclassical economist Barro (1974) emphasized that government expenditure does not have lasting economic effects.

Ricardian Equivalence implies public debt, and future tax burden can be substituted, as higher taxes detract from private savings and investment. Bad fiscal management reduces capital stock, while cutting taxes reduces public saving but raises after-tax income for households (Salmon, 2025).

Malthus (1803) believed that high public debt and taxation negatively impact the economy and food production. Malthus feared that Ricardo's plan to redeem debt from a massive capital levy would worsen the economy, leading to societal impoverishment. Mill, on the other hand, believed that public debt financing from funds engaged in production or employment could lead to pernicious consequences.

These perspectives show that relentless borrowing is harmful for Pakistan, especially when short-term political gains are more important than long-term growth. The problem is that people are getting into debt because of negligent fiscal decisions and institutional restraints. Pakistan's growing public debt and fiscal deficits mean that future generations will have to pay for inefficiency through higher taxes, inflation, and less investments.

2.1.2 Keynesian and Neo-Keynesian View

John Maynard Keynes advocated for government expenditure to combat sluggish economic growth after the 1929 crisis. He believed that government expenditure during period of insufficient demand is necessary to maintain high aggregate demand and sustain full employment. Keynes argued for governments borrowing money to invest and proposed fiscal

policy to maintain a high level of public or semi-public investment that balances out changes in private investment and maintains a quasi-boom economy[4].

Davidson believes that Keynes's challenge to the classical view that a market-based economy will naturally reach full employment is a major contribution, and he stresses that uncertainty, money's non-neutrality, and inadequate effective demand may result in economic instability and unemployment (Davidson, 2007). And here Keynesian economics suggests that public borrowing is a legitimate tool of policy for the purpose of stabilizing aggregate demand and assisting economic recovery during periods of economic downturn (Skidelsky, 1992).

Keynes argued that debt-financed spending does not always lead to higher interest rates; rather, it uses the multiplier process to generate private savings and tax revenues. Keynes, balancing optimism and caution, believed that authorities can influence interest rate expectations through measured policy and market communication, but caution is necessary given the potential for failure (Aspromourgos, 2018). Even crude Keynesianism argued that public debt is not a problem when governments run massive deficits, as the cost of taxes offsets the additional interest income from holding public debt. Keynesian extremists oppose legislation to reduce or stop debt growth. However, this position is not entirely satisfactory, as increasing tax rates to service increased debt results in taxpayers feeling the burden and the "excess burden," leading to a loss of national income and saving (Phelps, 2022).

Joan Robinson (1943) stated that a common argument against public expenditure on jobs is the national debt, which is sometimes mistaken for personal debt. While a nation in debt must pay interest to its citizens, an individual in debt pays interest to another party and repays the amount borrowed. Keynesian ideas help us to understand the Pakistan's political argument to borrow money, especially during elections, is that governments defend deficit financing as a growth tool even though Pakistan`s historical growth trajectory shows volatility and downward trend in the long run. There is a conflict between productive and unproductive borrowing.

[4] (See the General Theory of Employment, Interest, and Money: Book III (Chapter 10, VI)).

2.1.3 Monetarists View

Larry Summers (2019) argued that in today's world of low interest rates, there is a need to rethink some of the long-standing principles about fiscal policy. When interest rates are low, borrowing costs go down. If a country does not have any deficits, its debt-to-GDP ratio may go down to zero over time, which means that short-term deficits can be good, like when they pay for things like unemployment insurance during recessions. Blanchard (2019) says that debt can hurt the economy by crowding out private investments, raising the demand for loanable funds, and raising interest rates, even though it is cheaper, which leads to the suppression of private-sector projects, the off-beam use of resources, and slower economic growth. Even though interest rates are low, the more debt we take on now, the more it will cost to keep borrowing in the future. Eventually, we will have to pay back the debt (Fichtner & Carmody, 2019).

According to modern monetary theory (MMT), a government can print money to pay for its deficits without any adverse effects. This theory, on the other hand, does not consider the long-term limits on deficit spending that come from a government's ability to pay its debts. People who support MMT say that the central bank can keep public debt by making money. Short-term debt and cash can be substitutes, but long-term debt still has a term premium (Krause et al., 2025).

Monetarist frameworks clarify the shakiness of Pakistan's debt in the absence of currency sovereignty, intensify exchange rate volatility, monetization strategies, and external conditionalities. Pakistan's politics of easy borrowing has led to a cycle of economic fatigue, even with cheap debt becoming expensive inheritances, inflation, and depleted fiscal sovereignty.

2.1.4 Marxist View

Marx viewed the public debt as a powerful lever of primitive accumulation. He believed that modern people's national wealth is primarily their national debt, leading to the belief that a nation's wealth increases as it becomes more deeply in debt, with public credit serving as the capital credo. Marx stated that national debt has transformed barren money into capital, leading to joint-stock companies, negotiable effects, and arbitrage. This has led to stock-exchange gambling and the modern bank-ocracy. The debt is supported by public revenue, which covers

interest payments. The modern taxation system complements this system, making wage laborers submissive, frugal, and overburdened. The public debt and fiscal system have played a significant role in capitalizing wealth and expropriating the masses, leading many writers to seek it as the root cause of modern people's misery[5].

Marxist prospective viewed debt accumulation by dispossession suggests that financial systems and public debt can be used to move resources from the general population to the financial and political elite (Harvey, 2005), actually it turns unproductive money into capital without putting it at risk that uses large banks, financial speculation, and an international credit system that takes money from the poor and makes them rich. Poverty can be reduced through loans and microlending programs in poor countries that usually result in increased interest payments rather than the fundamental needs such as shelter, food, healthcare, and education, and can push people into debt (Neocleous, 2022).

The dominant feature of capitalism is the rise of finance capital over industrial capital and military spending has a dual purpose during this phase, protecting imperial interests and promoting aggregate demand through military spending to ensure the expansion of capitalist accumulation (Lenin, 1917/1963).

Hilferding (1981) believed that the capitalists settled their debts in the long-term markets on monopoly capital, and that was based on short-term bank loans with long-term bonds. It helped big companies get their finances in order and then use that power to take a big chunk of the economy's extra money. Harvey asserts that capitalist accumulation predicated on violence is an enduring process, predominantly propelled by financialization since the 1980s. As a result, money moved from poorer households to richer social groups, which happened during the US real estate bubbles of the 2000s, when people put their savings in banks, making these families give up their money to pay off their debts (Siddiqui, 2023).

From this point of view, Pakistan's public debt is a way for the rich to take money from the poor, turning their obligations into wealth for the rich. Political elites prefer borrowing to profitable investment because future generations must pay off. Following Marx's critique of

[5](Marx, Capital, Vol. I, p. 533 & 534).

capitalist financialization, this systemic debt redistributes societal responsibilities downward, perpetuating wage labour subservience and reinforcing inequality.

2.1.5 Public Choice and extended theocratical view

Public choice theory became well-known in 1986 because of Buchanan, who said that political decision-makers, such as voters, politicians, lobbyists, and bureaucrats, are only interested in their own interests, which replaced romantic ideas about government. Public choice economists assert that efficient decisions do not conserve politicians' financial resources or wealth, whereas interest groups derive significant benefits from governmental actions.

Buchanan (1964) stated that public debt burdens future taxpayers by postponing expenditure costs and delaying resource control transfer. He argued that bondholders lend voluntarily, but borrowing negatively impacts net wealth and future standard of living. Buchanan supported constitutional balanced-budget requirements to curb short-run expedient politicians' behaviour (Tempelman, 2007). Buchanan (1999) rejected the new orthodoxy of public debt and argued that future generations should bear most of the public debt, and that the analogy between public and private debt was accurate. He contended that Ricardian equivalence was invalid (Marciano, 2025).

Rawls' justice theory (1971) emphasizes fairness and intergenerational justice, addressing the debt owed to future generations. In 2008, Wolf views this responsibility as a financial debt, extending the definition of saving beyond monetary transactions. Zandi emphasizes the importance of using natural resources and wealth for sustainable and resilient systems, addressing the "problem of time" and rational decisions for future generations (Zandi, 2021).

Jensen and Raffelhuschen (1999) warn that welfare reform and tax burden transfer could discourage work, lead to distorted taxation, and threaten the welfare state's financial viability.

Wagner`s theory is closely tied to view of activist state. He justified public borrowing as a mean to fulfil expanding state function in growing economy especially if borrowing finance investment benefit multiple generation. However, Wagner emphasized need of responsible debt use and warned it`s use in unproductive and short-term goals. It needs to financed long capital projects (Szlichcinski, 2022).

Political fragmentation in government causes fiscal imbalances because budget decisions often prioritize individual needs over the tax burden. Common pool models show how different interests can be combined into one budget, which can lead to spending biases (Barra, 2014).

According to political economy theory, politicians use budget deficits to start the political business cycle, thereby limiting their ability to make policy decisions. Highly indebted governments rely on foreign bond markets, which changes the domestic reaction and creates fiscal discipline, particularly at the time of the elections (Kaplan and Thomsson, 2017).

Debt is political and fiscal, which is determined by internal power struggles and external dependence. It answers the initial question by demonstrating how Pakistan is in the trap of debt is more a political than an economic incentive.

2.2 Empirical Review

The empirical literature on public debt offers significant insights into its evolution, political determinants, and intergenerational implications, closely aligning with the principal research questions of this study.

2.2.1 Debt Dynamics and Political Economy

Since the Global Financial Crisis (GFC), global debt dynamics have exhibited unprecedented trends, marked not only by higher debt but also by unproductive borrowing, rising income inequality, and increased reliance on privately created money, which may result in economic instability and asset bubbles (Antoniades et al., 2018). While Middle-Income Countries (MICs) have already been facing significant debt and competitiveness challenges exacerbated by COVID-19, as Saliya noted, the UN and the World Bank emphasize the need for systemic adjustments and financial commitments. But such countries, including Argentina, Lebanon, Pakistan, Sri Lanka, and Angola, are severely vulnerable to debt, with Lebanon the most affected (Saliya, 2024).

Diving into specific countries, the situation becomes starker. In Ghana, public debt has exceeded the 60.0% of GDP sustainability threshold since 2013, driven by factors such as borrowing contributing to an increase in domestic credit to the private sector and issues with banks' credit allocation (Aimola & Odhiambo, 2018). Exploiting borrowing costs and fiscal dominance affect Nigeria's debt dynamics, leading to an expanding fiscal deficit and crowding

out private-sector credit (Akingbade & Nicholas, 2019). Serbia's public debt fluctuates, reflecting the effects of fiscal policies and economic reforms. It increased sharply until 2016, stabilized through 2019, surged in 2020 due to the pandemic, and then stabilized again (Petronijevic et al., 2024). This fluctuation shows a cycle that was followed by fiscal consolidation by 2017, then by public debt management, and then by SOE reforms.

In many developing countries of South Asia, public debt is a serious threat to economic growth. It is increasingly unsustainable without remedial measures, and growth is hampered when public debt exceeds about 61% of GDP (Saeed & Javid, 2015).

What is so intractable about debt in developing economies? A possible indication of strong persistence is given by using GARCH and GMM models on 1975-2016 data. It is well established that the debt-to-GDP ratio is strongly influenced by the country's history (Sikandar & Wahid, 2019). The relationship between political instability and economic uncertainty is, in this author's view, a positive one, as predicted by the positive theory of debt. It has been confirmed that fiscal indiscipline, currency depreciation, and higher interest expenses contributed to Pakistan's debt problems from 1975 to 2021 (Sundus et al., 2022).

Interplay between fiscal adjustments and political economy influences growth trajectories and policy effectiveness in Pakistan (Hussain et al., 2021). Not all fiscal adjustments fail; episodes in Pakistan from 1976 to 2017 identified 11 instances: 5 successful and 6 unsuccessful. Successful adjustments led to a 4.8% average reduction in the debt-to-GDP ratio, while unsuccessful ones resulted in a 9.9% increase. Successful adjustments often focused on spending under military regimes. Despite insights on debt reduction, other macroeconomic indicators, such as the current account balance, private investment, and inflation, did not show a correlation with effective fiscal consolidation. While primary fiscal balances were lower, budget deficits and short-term interest rates were slightly higher during successful episodes, and the domestic currency exhibited strength, which was also deemed insignificant. Categorical variables were introduced to account for the election cycle and regime changes (Hussain et al., 2022).

Ekouala brings more facts to these political forces. In a study of the CEMAC (Economic and Monetary Community of Central Africa) countries, Political constraints are an important explanatory variable for debt in presidential systems and account for a higher debt effect in

such systems than in parliamentary systems. In contrast, Competitive legislative elections fuel debt while Competitive presidential elections curtail debt due to political constraints (Ekouala, 2023).

2.2.2 Intergenerational Debt Burden

Sometimes fiscal policy is prone to failure, as Alesina and Passalacqua remind us that fiscal policy, as a tool for redistribution, faces inevitable conflicts across individuals, regions, and generations (Alesina & Passalacqua, 2016). A generational twist has been added by Brennan (2012), public debt reduces the taxes paid by those earning while increasing taxes for those who will earn in the future. Younger people might prefer to have debt as they pay less in this world, whereas older people, particularly those who wish to leave a bequest, might prefer to pay in this world. This age-based preference can affect debt outcomes in aging societies (Brennan, 2012).

Debt is not a merely economic factor; it's a moral contract between generations. The Singapore case is an interesting one. Pawa and Gee investigate whether its debt policy is fair for intergenerational equity. They discover that debt-financed long-term infrastructure is consistent with the 'benefit principle' (those using the infrastructure should pay for it). But the issue of well-being and reciprocity is also an equity issue. They stress that the intergenerational welfare cost of debt can be lowered by a combination of low interest rates and productive investments, but they also lack a more general moral element (Pawa & Gee, 2021)

Do individuals care about debt by age? Several theoretical frameworks, although not empirically tested, suggest that government debt reduction decreases with age. A study using a large survey sample identifies a non-linear correlation between age and interest in national debt, with middle-aged individuals the most concerned and the young and elderly less concerned about debt burdens. It is interesting to note that the worry about debt diminishes up to age 53, then increases until age 80, after which there is a remarkable reversal in the age group 90-100. Moreover, welfare generosity also plays a significant role in this relationship, with countries that are more concerned about debt becoming increasingly so as people age. (Aspide et al., 2023). Nevertheless, factors such as GDP per capita and historical conditions may also influence perceptions of debt, which are not only personal but also shaped by national context.

In modern societies, GE is a crucial economic agent, and 14 Asian-Pacific debt-strapped developing countries show that development-oriented GE significantly improves a country's economic performance and the welfare of its citizens. On the other hand, the citizens of debt trap countries (DTCs) bear a threefold burden of debt and face welfare losses even in the absence of tax reform. Resource shifting from development to debt servicing harms the economy, decreasing per capita income and welfare, indicating a unique debt shift in DTCs. An average of 30 years of data was sufficient to support trends. The trend in socioeconomic indicators in DTCs also supported the assumptions (that the debtor country is in a debt trap and faces a higher debt service obligation that creates a resource allocation problem in its national budget, under ceteris paribus) (Alam & Taib, 2012). Shift focus to local government debt that significantly affects enterprise tax burdens, necessitating a balance between tax collection and debt repayment. Increased debt leads local governments to modify tax collection practices, heightening the tax burden on enterprises. Regional disparities exist; areas with strong institutions enforce stricter tax policies, while those with weaker institutions adopt lenient approaches to stabilize revenues. The study indicates that a 1% rise in the local government debt-to-GDP ratio increases the corporate income tax burden by 4.6% and the comprehensive tax burden by 5.4%. Notably, this debt expansion primarily impacts non-state-owned enterprises, with no significant effect on state-owned enterprises' income tax levels (Tang et al., 2023).

Turning to developed economies, the USA's tax system, characterized by high individual tax rates, adversely affects disposable income and savings, leading to negative savings rates and increased personal debt. The decline of the middle class poses a significant threat to economic stability and societal well-being, necessitating tax reform and policies that foster economic growth. Corporate taxes hurt government revenue. Consequently, tax revenue can grow with increases in the money supply (inflationary finance), corporate profits, tariffs, and the market value of financial assets, and with declines in interest rates (Kallianiotis, 2022).

In five European countries (France, Germany, Italy, Spain, and the UK), fiscal pressures from the COVID-19 pandemic and the war in Ukraine necessitate changes to income tax schedules to address rising public debt. While optimal tax schedules become less progressive under fiscal stress, as evidenced by lower marginal and average tax rates, this necessitates significant

reductions in lump-sum transfers, particularly in countries under greater fiscal pressure. A harmonized fiscal pressure scenario indicates that average tax rates could rise by up to 16% for low-income groups and 3% for high-income earners during a 5-year debt repayment period. The need for rapid fiscal consolidation shifts taxation policies towards greater regressivity, reduced universal transfer payments, and higher marginal taxes on lower incomes, raising concerns about distributional equity amidst substantial public debt (Ayaz et al., 2023).

2.2.3 Research Gap

The empirical literature provides extensive evidence, but it also faces methodological and empirical shortcomings. Previous research generally falls into two broad categories: the political economy of debt and the consequences of debt burdens. However, these strands have largely emerged in isolation and have employed methods that are not always adequate for reflecting the multidimensionality of public debt.

The studies on the dynamics of debt and political determinants mostly use OLS, GLS, and Generalized Method of Moments (GMM) estimators (Sikandar & Wahid, 2019; Hussain et al, 2022; Ekouala, 2023). Both persistence and endogeneity are problematic in debt processes, and their most important contribution is to deal with these issues. Dynamic GMM estimators, in particular, account for the strong influence of previous debt levels on the debt observed at the time of the analysis and allow for reverse causality between fiscal and political variables. The proposition of path-dependent debt accumulation, rather than a set of discrete fiscal events (Sikandar & Wahid, 2019; Fatemah & Haq, 2024).

However, GMM estimates are quite sensitive to instrument selection and specification tests. This limitation is likely to lead to biased estimates, especially in small samples, and is a major drawback of the Hansen test. GMM most often focuses on the total volume of debt generated and pays little attention to its intergenerational distribution.

By contrast, recent research on debt sustainability and macroeconomic interactions has adopted time-series methods, such as ARDL models (Hussian et al., 2021; Sundus et al., 2022). The main benefit of ARDL is that it can jointly model macroeconomic variables as endogenous and detect dynamic feedback using impulse response functions. However, the fundamental requirement for ARDL is an autoregressive process in the data; we are unable to identify any

AR process, which is why it is not applicable, following Ziliak & Wasserstein (2023), to let the data speak.

Some existing contributions are based on normative analysis (Pawa & Gee, 2021), a cross-sectional survey design (Aspide et al., 2023), a descriptive account of debt-trap economies (Alam & Taib, 2012), and a standard regression framework focusing on tax incidence (Tang et al., 2023). While these methods can provide insights into perceptions of indebtedness and tax effects, they offer little empirical evidence and do not distinguish between the effects of debt burden and other structural features of high-indebtedness economies that may cause the observed welfare differences.

The literature review identifies significant research gaps in both methodological and empirical domains, which this study addresses by using more robust methods, ANCOVA with the impulse and step indicator saturation, and the overlapping generations framework to bring a new empirical perspective on the political economy of public debt and its intergenerational implications in developing economies. Moreover, the justification for these methods, providing policy-oriented outcomes, is discussed in detail in Chapter 3.

Concluding this chapter, according to classical, neoclassical, and monetarist theorists such as Hume, Smith, Ricardo, Barro, and Blanchard, high debt levels reduce savings, crowd out investment, increase future tax burdens, and ultimately burden future generations. Keynesian and neo-Keynesian perspectives, however, argue that spending to generate demand and jobs can not only be financed with debt, but also through productive investment to create jobs, although long-run deficits are considered inefficient. Critical political economy and Marxist viewpoints on the issue consider public debt as a vehicle for wealth extraction, financialization, and class domination. Other views, such as public choice, political business cycles, and Wagner's law, demonstrate that the accumulation of debt is more the result of institutional incentives, fragmented politics, and time-inconsistent decision-making than of economic necessity. Empirically, the existing literature indicates that political instability, corruption, electoral competitiveness, and fiscal institutions play a significant role in determining debt trajectories, and effective debt adjustments have frequently relied on expenditure-led consolidation. It has also been shown that high debt burdens can corrupt taxation, increase corporate taxation, cut welfare, and divert resources to development, particularly in developing

economies and debt-trap countries. In general, the literature affirms that the issue of debt sustainability is highly political and contextual, as well as being intertwined with the way's societies distribute the costs and benefits across generations.

CHAPTER 3. RESEARCH METHODOLOGY

3.1 Research Strategy

This study follows a methodology that emphasizes objective measurement and the analysis of numerical data to yield robust findings based on debt accumulation and burden transfer. It is a combination of an econometric-based method for question 2 and an overlapping-generations model to address question 3, which combination is essential to comprehend and maintain the standard of this thesis.

3.2 Theoretical Framework

Public Choice Theory, as asserted by Buchanan and Tullock (1962) and Buchanan (1975), advocates that policymakers prioritize immediate political survival over long-term fiscal sustainability. More briefly, Buchanan (2003) said that public choice is politics without romance. He was careful to define 'politics' as a means of exchange or achieving cooperative outcomes and mutual gains. Buchanan believed that future generations should bear most of the public debt.

The Political Business Cycle (PBC) theory complements this view by outlining the processes and timing through which incentives affect fiscal decisions. PBC theory, first developed by Nordhaus (1975), holds that incumbent governments use fiscal policy to increase their re-election prospects during election cycles. When voters prefer short-term economic conditions that are good for the market but poor for fiscal sustainability, such policies become attractive tools for providing the conditions voters desire. So Public Choice Theory helps explain why politicians have an interest in borrowing, and Political Business Cycle Theory helps explain why borrowing might be greater during politically sensitive times, such as election time.

Accordingly, this study posits that debt accumulation is shaped by political factors (significant dummies at individual points in time indicate additive outliers) and macroeconomic fundamentals (covariates). This accumulation shifts the burden to future generations in both ways. Debt accumulation therefore not only serves to fill budget deficits or address economic instability, but it also supports spending driven by political considerations. When making budget decisions, borrowing money is crucial because it reveals the current government's political priorities. Ricardo (1821) believed that public debt is a redistribution of funds between

the taxpayer and the debt holder, as every act of borrowing implies future tax liabilities, resulting in social conflict, and that debt-funded expenditure has no real income implications because taxes are offset in the future. Lerner (1946) also discusses debt redemption as a harmless internal flow, though he is more optimistic because of his functional finance. Barro (1974) uses the same reasoning across generations by invoking the Ricardian equivalence argument, which holds that households bear future tax burdens. Such selflessness, however, is not realistic given today's intergenerational tensions.

This paper investigates the politics of debt accumulation and transfer of debt burden by examining the effects of debt issuance and redemption on intergenerational welfare in an imperfect-employment economy using the dynamic multiplier theory by Otaki (2007), which demonstrates that the value of money and the level of prices are determined by people's expectations rather than the amount of money circulating. The theory permits government expenditure financed by debt to increase current disposable income and welfare, but the extent of the increase depends on how spending is allocated.

3.3 Econometric Model

To get profound insights into the phenomenon and to achieve the objective of the question, we need a reliable and, as per data requirements, econometric model that would enable us to measure, quantify, and statistically prove these relationships.

It is possible to do this by employing data that is based on theoretically sound covariates and significant additive outliers as time-specific dummies, following the philosophy of letting the data speak (Duyvesteyn & Kaymak, 2005; Ziliak & Wasserstein, 2023), to attempt to capture and explain the influences of dummies and covariates on debt. The use of econometric techniques not only assists in establishing the relevance and orientation of these political impacts but also allows the findings to be utilized in a broader fiscal policy framework sense.

The categorical variable and the quantitative covariate will be successfully incorporated into the model in this research. So, the ANCOVA model is used in a statistically valid and methodologically justified way. The ANCOVA model is suitable because it allows the inclusion of both categorical (qualitative) and continuous (quantitative) variables in the same analysis (Kim, 2018; Chatterjee & Simonoff, 2020).

ANCOVA integrates ANOVA and regression by introducing quantitative covariates into the ANOVA framework. These covariates account for additional variation in the response variable, reducing error variance and enhancing analytical precision. Consequently, ANCOVA is a specialized form of regression analysis (Syam et al., 2022; Jung et al., 2025). Following General-to-Specific modeling, Ox Metrics software is used to convert IIS and SIS into an auto metrics approach. This saturation is a useful tool for detecting outliers. To avoid losing crucial information, it ought to account for the influence of outliers using IIS techniques rather than altering the data to accommodate them (Khan, 2024). Outlier detection involves an initial specific-to-general approach that identifies potential outliers sequentially, followed by backward elimination. The IIS test, introduced by Hendry (seminal work, 1999/2000), detects an unknown number of structural breaks with varying durations and magnitudes, and Doornik et al. (2013) consider SIS to model interventions. Additionally, pulse and step dummies are highlighted as effective methods for modeling these structural changes (Marczak & Proietti, 2016).

3.3.1 Data and Variables

This study uses up-to-date time-series data from 1982 to 2024, collected from a credible source. I take the log transformation of the variables because their standard deviation is proportional to the trend, which improves the smoothness of the data and the interpretability of the results.

Table 1: Discussion on Variables

Variable	**Definition**	**Source**
Public Debt	Total Public Debt is the debt owed by the Government (including the Federal Government and Provincial Governments), serviced out of the consolidated fund, and debts owed to the IMF. This series is expressed in billion local currency units.	Pakistan Economic Survey
Debt Servicing	Debt servicing refers to the total amount a government pays to lenders for its debt obligations during a given period, including interest payments and foreign debt repayments. This series is expressed in billion local currency units.	Pakistan Budget Books

Population Density	Population density is calculated by dividing the midyear population by the land area in square kilometers. The population count includes all residents, regardless of legal status, excluding non-permanently settled refugees. Land area refers to the total area of a country, excluding inland water bodies, continental shelf claims, and exclusive economic zones.	WDI
Exchange Rate	Official exchange rate refers to the rate established in the sanctioned market or by national authorities, representing the ratio of local currency units (LCU) to USD, derived as an average over a specified reference period.	WDI
Taxes less subsidies	Taxes less subsidies on production includes taxes payable less subsidies receivable on goods or services produced as outputs, including other taxes or subsidies on production such as those payable on the labor, machinery, buildings or other assets used in production. This indicator is expressed in current prices, meaning no adjustment has been made to account for price changes over time. This series is expressed in billion local currency units.	WDI
Dummy	Significant dummies at specific time points indicate additive outliers. The regime (dictatorship or democracy) and the election cycle should be the primary focus of analysis as political factors.	

3.3.2 Empirical Model

Fisher's (1925) introduction of analysis of variance gained widespread recognition. The basic ANCOVA model is shown by equation 3.3.2.1, which is discussed in detail by Montgomery (2017) and McLouth (2018) with one covariate for a one-way layout, as follows:

$$\boldsymbol{y_{ij} = \gamma + \alpha_j + \beta_1 X_{ij} + \varepsilon_{ij}} \qquad \textbf{(3.3.2.1)}$$

where $\boldsymbol{y_{ij}}$ is the response variable of the i_{th} individual in the j_{th} group, $\boldsymbol{\gamma}$ is the overall true mean, $\boldsymbol{\alpha_j}$ is the effect of group j, $\boldsymbol{\beta_1}$ is the linear regression covariate effect of Y, $\boldsymbol{X_{ij}}$ is the covariate for the i_{th} individual in the j_{th} group, and $\boldsymbol{\varepsilon_{ij}}$ is the error associated with the i_{th} individual in the j_{th} group.

Equation 3.3.2.2 is the main equation of our model with multiple covariates, explained by the following:

$$\boldsymbol{LD = \alpha + \beta_1 LDS + \beta_2 LPD + \beta_3 LER + \beta_5 LTLS + \beta_6 KD + \varepsilon_{ij}} \qquad \textbf{(3.3.2.2)}$$

Equation (3.3.2.2) specifies the log of public debt (LD) as a function of several covariates and a dummy vector. In particular, the dependent variable LD is debt, and the independent variables are debt service (LDS), population density (LPD), the exchange rate (LER), and tax-less subsidies (LTLS). It also includes a vector of dummy variables (KD) to represent structural or categorical effects. Identifying dummies at individual points in time indicates additive outliers using the automated technique, in which I first identify the IIS and SIS, then identify significant dummies and introduce them into the model, as shown in table 2, rather than the traditional manual induction of dummies $\boldsymbol{\varepsilon_{ij}}$ is the error term representing unobserved effects.

Table 2: Dummy Vector

IIS (Impulse Indicator Saturations)								SIS (Step Indicator Saturations)
I:1986	I:1992	I:1993	I:1995	I:1996	I:1997	I:1998	I:1999	S1:2002
I:2000	I:2001	I:2002	I:2003	I:2004	I:2005	I:2006	I:2007	S1:2014
I:2008	I:2009	I:2010	I:2011	I:2012	I:2013	I:2014	I:2015	S1:2023
I:2016	I:2017	I:2018	I:2019[6]	I:2020	I:2021	I:2022	I:2023	
I:2024								

The potential covariates incorporated into the ANCOVA model are presented in table 1, along with their definitions. When servicing public debt creates a fiscal burden, it limits the government's ability to issue new debt, thereby constraining public spending and potentially leading to future debt accumulation, confirming that debt servicing drives future debt dynamics

[6] Highest Debt to GDP ratio.

(Riblier, 2023). Debt accumulation is a dynamic version of the government budget constraint $[Bt = (1 + i_t)B_{t-1} + G_t - T_t]$ that shows today's debt depends on past debt and current primary balance, providing a theoretical foundation for debt servicing as a significant factor of debt accumulation (Romer, 2018). While fiscal pressure in Pakistan is also captured by population density, rapid urbanization and high demographic concentration translate into resource requirements (Yuen & Choi, 2012) and, therefore, affect the borrowing requirements regardless of the regime ruling.

The debt stock of Pakistan is sensitive to foreign currency debt, and thus, exchange rate fluctuations directly influence the domestic value of the public debt (specifically external debt), independent of new borrowing (Arsh et al., 2024). When the exchange rate is controlled, the model can isolate politically based accumulation of debt and valuation effects that may have resulted due to external sector stress.

Taxes, less subsidies, are essential for modeling public debt in developing countries like Pakistan, as they highlight the primary balance's impact on debt accumulation. Increased net tax revenue can enhance fiscal space and decrease borrowing requirements, whereas extensive subsidies may exacerbate deficits and debt levels. This variable captures both automatic stabilizers and discretionary fiscal policies, differentiating structural efforts from political and cyclical effects. It also reflects the government's capacity to mobilize revenue against price intervention obligations. Its inclusion in econometric models ANCOVA improves estimation efficiency and mitigates omitted variable bias, clarifying the effects of political regimes and macroeconomic factors on Pakistan's public debt dynamics.

3.4 Overlapping Generation Model

We use a two-period OLG Model with an infinite time horizon, followed by the Keynesian approach, to examine the debt burden on future generations. This model was developed (2007) and generalized (2015) by Otaki.

3.4.1 Model Setup

a) Output markets are under monopolistic competition.

b) Non-atomistic firms monopolistically produce z differentiated goods spread continuously over the interval [0,1], using a one-for-one labor technology, with CES demand elasticity $\eta > 1$.

c) Labor is the only factor of production; for simplicity, one unit of labor produces one unit of differentiated good.

d) Each firm employs its attached individual for the interval [0,1]. Individuals are born at a continuous density on [0, 1] × [0, 1]. This assumption implies that, in each period, they live for two periods: the young (can supply one unit of labor only) and the old (spending savings).

3.4.2 Households preferences

Individuals possess the same utility function U;

$$U\left(X_t^{\alpha}, X_{t+1}^{1-\alpha}, \varphi_t, \gamma\right) \equiv u\left(x_{t,} x_{t+1}\right) - \varphi_t . \gamma \qquad (3.4.1)$$

$$X_t^i \equiv \left[\int_0^1 [c_t^i(z)]^{1-\eta^{-1}}\, dz\right]^{\frac{1}{1-\eta^{-1}}}, \quad \eta > 1 \qquad (3.4.1.1)$$

Where u is a concave and homothetic function with γ denotes disutility of labor and φ_t is defined as 0 if the individual is unemployed and 1 when employed. $c_t^i(z)$ is an individual's consumption of z goods at ith stage of life (X_t^1 for the first stage when young t and X_{t+1}^2 for the second stage $t+1$ when old).

Budget Constraint is;

$$P_t X_t, P_{t+1} X_{t+1} \leq \varphi_t . w_t + \tau_t \qquad (3.4.2)$$

Where τ_t is profit distributed equally among individuals. P_t is the price index. w_t is equilibrium nominal wage.

3.4.3 Firm Pricing and Reservation Wage

The following indirect utility function (IU) about consumption and the associated price index is derived from (3.4.1) and (3.4.2) by maximizing lifetime consumption.

$$IU_t(P_t X_t, P_{t+1} X_{t+1}, W_t, \tau) = A.\frac{\varphi_t . w_t + \tau_t}{P_t^{\alpha}, P_{t+1}^{1-\alpha}} \qquad (3.4.3)$$

In a dynamic labor supply, the nominal reservation wage cap W sub t to the cap R is influenced by both current and future price indices. This analysis focuses on an imperfect employment

equilibrium characterized by persistent unemployment, where the equilibrium nominal wage W_t equals the nominal reservation wage W_t^R, defining the labor market conditions under these circumstances.

Using equations (3.4.3), the nominal equilibrium wage obtains, but it must satisfy $IU_t(P_tX_t, P_{t+1}X_{t+1}, W_t, \tau) - \gamma = IU_t(P_tX_t, P_{t+1}X_{t+1}, \tau)$

$$W_t = W_t^R = A^{-1}P_t^{\alpha}, P_{t+1}^{1-\alpha}\,\gamma \qquad (3.4.4)$$

The symmetric Nash equilibrium assumption can be derived formally as follows. Each firm z chooses its output price $P_t(z)$ to maximize its nominal profit $\pi_t(z)$, taking the pricing decisions to maximize its profit $\pi_t(z) = [P_t(z) - W_t^R]$. $c_t^i(z)$ against the CES demand curve $c_t(z) = \left(\frac{P_t(z)}{P_t}\right)^{-\eta} \cdot \left(\frac{y_t^d}{P_t}\right)$.

Now by substituting $c_t(z)\ into\ \pi_t(z)$ by applying the first-order condition, it yields a constant markup price $P_t(z) = \frac{W_t^R}{1-\eta^{-1}}$ for every firm z. Because each firm faces identical marginal cost W_t^R, every firm chooses the identical best-response price; the profile in which every firm charges this price is therefore a Nash equilibrium in the pricing game. By the symmetry of the CES aggregator, $P_t(z) = P_t$ for all firms, confirming that the equilibrium is symmetric and all firms face the same price level $P_t(z)$. This symmetry is the Nash equilibrium condition that underlies

$$P_{t=}\frac{W_t}{1-\eta^{-1}} \text{ for all z} \qquad (3.4.5)$$

3.4.4 Equilibrium Price

Substituting (3.4.4) into (3.4.5) yields an equilibrium price difference because every firm face same $\eta\ and$ marginal cost W_t^R;

$$P_{t=}\frac{A^{-1}P_t^{\alpha}, P_{t+1}^{1-\alpha}\,\gamma}{1-\eta^{-1}} \qquad (3.4.6)$$

$$\frac{P_t}{P_{t+1}} = \frac{A^{-1}\gamma}{1-\eta^{-1}} \text{ where } \frac{P_t}{P_{t+1}} = \pi_t{}^{*}\ equilibrium\ inflation\ rate \qquad (3.4.6.1)$$

3.4.5 Government Budget and Debt

In the economy, money and public debt are the primary assets serving as stores of value. Public debt offers a monetary return at a gross interest rate (θ) set by the government and f is a

monotonously increasing and invertible function. In the absence of uncertainty, individuals prefer to save in debt; however, the supply of such debt is insufficient to satisfy total saving demand, limiting individuals' ability to hold it. This limitation does not affect the generality of the analysis, even when interest is paid on money, as indicated in prior studies. Additionally, the model posits that only firms are subject to taxation.

It is assumed that goods markets operate under a symmetric Nash equilibrium, leading to the establishment of an optimal pricing rule:

$$P_{t=}\frac{W_t}{1-\eta^{-1}} = \frac{P_t\emptyset(\pi_t).f^{-1}(\gamma)}{1-\eta^{-1}} \leftrightarrow \emptyset(\pi_t) = \left[\frac{1-\eta^{-1}}{f^{-1}(\gamma)}\right] \equiv \emptyset(\pi_t{}^*) \qquad (3.4.7)$$

Over time, the equilibrium inflation rate becomes constant. Additionally, the aggregate consumption function C_t, can be obtained by applying Roy's identity to Equation (3.4.2).

$$C_t = c(\pi_t{}^*)y_t^d \qquad (3.4.8)$$

The current cost of consuming is inflation, not the actual interest rate, because effective demand is anticipated to exceed public debt. To close the model, we specify the government's budget constraint. To get an actual measure of the effects of issuing/redeeming public debt, we eliminate the effect of inflation changes in real money balances that lead to the government budget constraint used below.

$$\frac{M_t-M_{t-1}}{P_t} = g = \left[1-\frac{1}{\pi^*}\right]m; \quad m = \frac{M_t}{P_t} = \frac{M_{t-1}}{P_{t-1}} \qquad (3.4.9)$$

g denotes real government expenditures on wasteful projects. m is real cash assumed to be constant over time. The debt timeline started in period *t-1*, when only asset money exists. In period *t*, the government issues debt of value *D* and transfers the proceeds to the older generation. The debt is repaid in full at the beginning of period *t+1,* with no rollover, and is funded by a tax *D* on the young.

The equilibrium condition of the aggregate goods market and real GDP can be classified into three scenarios:

Scenario 1: ***Period t-1***

$$y_{t-1} = c(\pi^*)y_{t-1} + g + \frac{M_{t-1}}{P_t} = c(\pi^*)y_{t-1} + m \qquad (3.4.10)^7$$

$$y_{t-1} = y_t^d = \frac{m}{1-c(\pi^*)}$$

Scenario 2: ***Period t***

$$y_t = c(\pi^*)\left[y_t + (\rho - 1)\frac{D}{P_t}\right] + m + \frac{D}{P_t} \qquad (3.4.11)^8$$

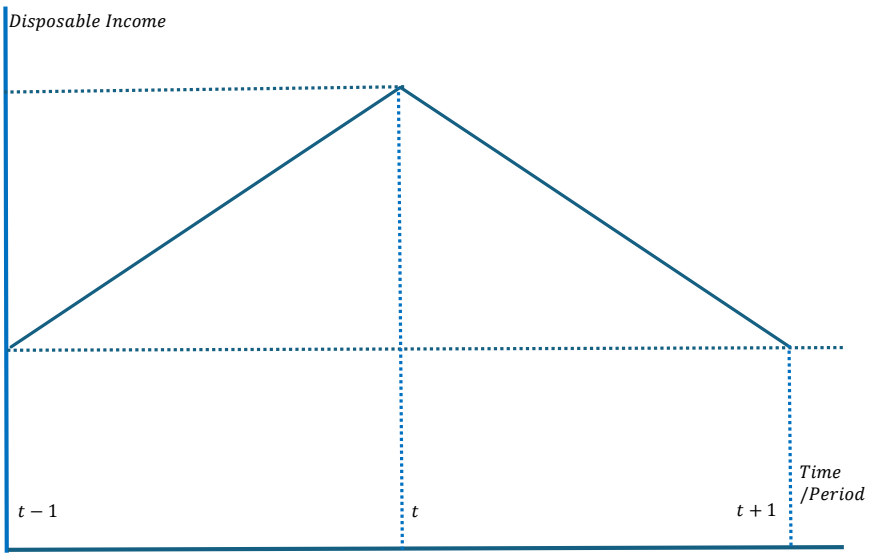
$$y_t = \frac{[1+c(\pi^*)\,(\rho-1)]\frac{D}{P_t}+m}{1-c(\pi^*)} \rightarrow y_t^d = \frac{(\rho)\frac{D}{P_t}+m}{1-c(\pi^*)} \qquad (3.4.11.1)^9$$

Scenario 3: ***Period t+1***

$$y_{t+1} = c(\pi^*)\left[y_{t+1} - \frac{\rho}{P_{t+1}}\,D\right] + m + \frac{\rho}{P_{t+1}}\,D \qquad (3.4.12)^{10}$$

$$y_{t+1} = \frac{m}{1-c(\pi^*)}\frac{\rho}{P_{t+1}}\,D \rightarrow y_{t+1}^d = \frac{m}{1-c(\pi^*)}$$

Figure 8: Public Debt and disposable income



[7] $\frac{M_{t-1}}{P_t}$ *Old generation consumption*

[8] $\left[y_t + (\rho - 1)\frac{D}{P_t}\right]$ is Real aggregate disposable income in terms of current good. $\frac{D}{P_t}$ is Transfers to old generation.

[9] $[(\rho - 1)]\frac{D}{P_t}$ Income accrued from the interest on the public debt.

[10] $\left[y_{t+1} - \frac{\rho}{P_{t+1}}\,D\right]$is Real disposable income of young generation. $\frac{\rho}{P_{t+1}}\,D$ is Real expenditure of old generation born at beginning of t.

Figure 8 makes two things clear. First, real disposable income doesn't change before or after the debt is issued; it only rises in the period when the debt is created. Second, both the old and the young gain during that period, which makes running a deficit look attractive every time. But as the next section shows, this habit can be dangerous when we care about long-term sustainability. Before asking whether public debt truly burdens future generations, we need to be clear about what we mean by a 'burden' in welfare terms.

Definition: This study defines public debt as a burden on future generations whenever it leaves the next generation worse off than the one living when the debt was issued. Using this definition, if we compare the welfare of the generation born at the beginning of the period $t + 1$ with that of the generation born in the period $t - 1$. However, both end up with the same level of real disposable income because the $t + 1$ generation faces the same balanced-budget expansion carried out in period $t - 1$ extra consumption enjoyed by the old when the debt is repaid is matched by an equal tax on the young in period $t + 1$.

This does not mean that welfare is unchanged at the period. t. The $t + 1$ generation must produce more, requiring a higher GDP to achieve the same income. In other words, they must work harder to stay even. By this definition, the debt issued in the period t clearly imposes a burden on future generations. Formally, this leads to the following theorem**.**

Theorem: The issuance of public debt at time t imposes a burden on future generations, according to Definition 1.

In the context of an equilibrium nominal wage equal to the nominal reservation wage, a worker's utility remains constant regardless of employment level. To demonstrate this theorem, one can analyze changes in a firm's profit using the lifetime indirect utility function (3). According to the optimal pricing rule (5) and the symmetry in goods market equilibrium, the net profit after tax deductions for the redemption SUR_{t+1} is aligned with the total economic surplus of generation $t + 1$. This highlights the relationship between wage equilibrium, worker utility, and firm profitability within the economic framework.

$$SUR_{t+1} = \eta^{-1} y_{t+1} - T \qquad (3.4.12)$$

From Equations (8) and (10), the economic environment in period $t + 1$ is essentially the same as in period $t - 1$, except for an added balanced-budget fiscal expansion equal to $\frac{\rho}{P_{t+1}} D$.

Because the balanced-budget multiplier is one, differentiating Equation (11) gives the required result.

$$dSUR_{t+1} = [\eta^{-1} - 1]dT \qquad (3.4.13)$$

Having established the empirical strategy, variable construction, and modeling framework, the next chapter presents the empirical findings. The first section examines the political drivers of public debt accumulation using the ANCOVA model with structural-break indicators. In the second part, the intergenerational welfare cost of public debt in the OLG model is estimated. Together, these analyses offer evidence on the political origins and future implications of debt accumulation in Pakistan.

CHAPTER 4. ANALYSIS AND DISCUSSION

4.1: Analysis of public debt accumulation using an ANCOVA model

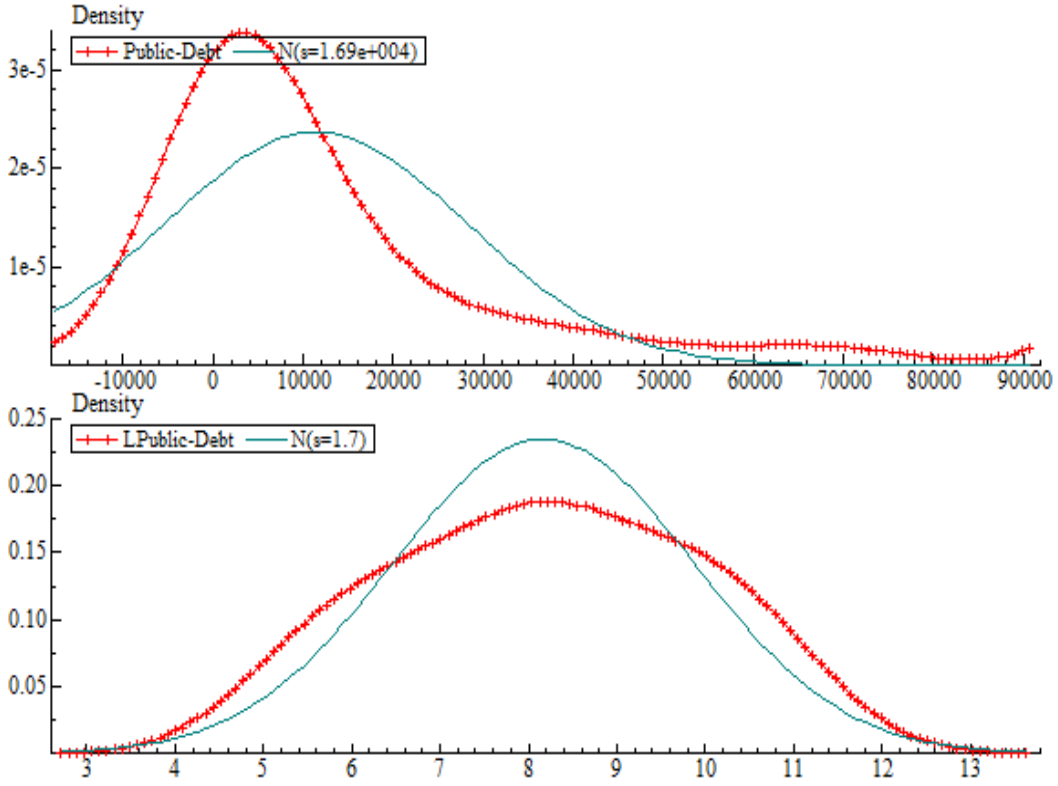
Table 3: Descriptive Statistics

	Mean	Median	Maximum	Minimum	Std.Devn.	Observations
Public Debt	11681	3694	71246	189	16990	43
Debt Servicing	1225.5	308.1	10598	9.1	2192.6	43
Population density	218.5	216.8	326	115.6	63.9	43
Exchange Rate	75	59.5	280.4	11.8	64	43
Taxes Less Subsidies	946.8	319.2	5553	32	1303.2	43

Table 3 represents descriptive statistics of macroeconomic variables. The public debt descriptive statistics show that the large gap between the mean and median indicates a rapid increase in public debt in later years, and the wide range between the maximum and minimum reflects the structural expansion of fiscal borrowing. Debt Servicing statistics show episodic spikes and fiscal stress, with debt service consuming a large proportion of public resources. Population density indicates stabilization, reflecting the slow-moving nature of the demographic variable. The exchange rate has shown currency crisis dynamics in recent years, indicating high volatility, a critical channel for debt servicing. Tax-less subsidies imply divergence, suggesting revenue contraction in later years. Standard deviation in

macroeconomic variables shows very high dispersion, which means macroeconomic volatility, reinforcing the need for a log transformation in the regression. At the same time, population density shows a gradual change over time.

Figure 9: Density plots of Public Debt and Log of Public Debt



The density plots of public debt shown in figure 9 become more platykurtic (smooth) after log transformation. After descriptive statistics, the econometric analysis begins with impulse and step identification. Under the full-rank assumption, the number of observations (n) must be at least as large as the number of parameters (k), although $n > k$ is preferable (Gujarati, 2004; Greene, 2018). In this study, $n > k$ satisfies the full-rank assumption, allowing the study to proceed. Using IIS and SIS, a total of 36 impulses and steps were identified, of which 13 remain significant related to public debt. Following the principle of letting the data speak, these significant dummies, introduced at individual points in time, indicate additive outliers to explore the politics of debt accumulation. All the analyses are conducted at a 5% significance level.

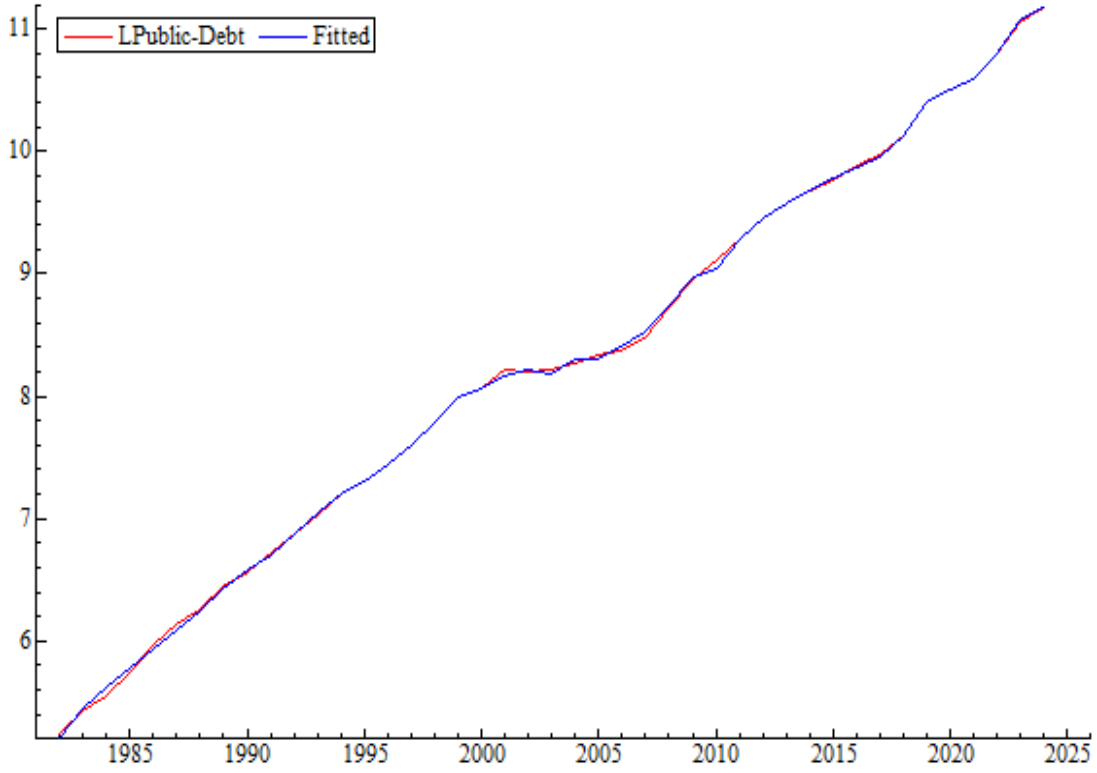
Table 4: Analysis of Log of Public Debt

	Coefficient	HACSE[11]	t-prob
Constant	-4.61667	0.4024	0.0000
I:1996	-0.0281888	0.008334	0.0024
I:1997	-0.0376435	0.007467	0.0000
I:1999	0.0856062	0.009911	0.0000
I:2011	0.171253	0.01634	0.0000
I:2012	0.225942	0.01631	0.0000
I:2013	0.191708	0.01693	0.0000
I:2014	0.204400	0.02111	0.0000
I:2018	0.0621047	0.01345	0.0001
I:2019	0.0922577	0.009045	0.0000
I:2020	0.0407773	0.008599	0.0001
I:2021	0.0941092	0.01048	0.0000
I:2022	0.0990358	0.01012	0.0000
S1:2014	-0.239247	0.02752	0.0000
Log Debt-Servicing	0.300320	0.02880	0.0000
Log Exchange-Rate	0.439458	0.06313	0.0000
Log Pop-density	1.68099	0.09551	0.0000
Log Taxes-less-subsidies	0.0933436	0.02472	0.0009

[11] HACSE use as alternative of traditional standard error to avoid heteroskedasticity issue.

SD (σ) of Log Public Debt [0.0342624]	RSS [0.0293478727]
Over all F test {F(17,25) = 5.854 [0.000]}	log-likelihood [100.459]
ARCH 1-1 test: F(1,41) = 1.7805 [0.1895]	Adj.R^2 [0.999698]
Normality test: Chi^2(2) = 2.9145 [0.2329]	

Figure 10: Fitted Model



The empirical results of the ANCOVA model estimated for public debt, incorporating structural break dummies (IIS and SIS) along with covariates, are presented in table 4, where the IIS dummies indicate the year-specific shock and the policy regime implies that during I:1996 and I:1997 there was a debt compression episode, with statistically significant effects. However, these were pre-election and election years, but consolidation in Pakistan during 1996 and 1997 stemmed from the rising risk of external debt default, which first emerged in 1996 under the second Benazir government and worsened following nuclear tests by India and Pakistan, leading to western sanctions in mid-1998 (Hasan et al., 1999). This led Pakistan to

freeze foreign currency deposits and enter technical default on external debt. Subsequently, expansion began with a new IMF agreement in January 1999, which allowed for substantial debt relief through rescheduled payments. In 1999, Pakistan was among the developing countries with a significant number of staff working for the IMF (Sial et al., 2023). While statistically significant dummies, I:1999, I:2011, I:2012, I:2013, I:2014, I:2018, I:2019, I:2020, I:2021 and I:2022 were expansionary debt episodes.

In election years, fiscal expansion manifests as both tax cuts and spending increases, and the political budget cycle occurs in both advanced and developing nations (Frankel, 2010). Pre-election economic expansion can succeed because voters do not fully observe an incumbent's competence and may interpret expansionary policies as a signal of good performance (Drazen, 2000; Steinreich, 2025). This idea was formalized by Rogoff and Sibert (1988) and Rogoff (1990) and later extended in subsequent studies. More importantly, all the significant impulses and steps represent the democratic era, while no findings for the dictatorship era. I:2012, I:2013, and I:2018 specifically indicate behavior consistent with the political business cycle in Pakistan. Recent political economy research explains opportunistic and partisan behavior by assuming that voters are rational and form expectations about future policies.

In 2022, the overthrow of the PTI government sparked widespread protests and intensified political divisions in Pakistan. The formation of opposition movements, including the Pakistan Democratic Movement (PDM), and the subsequent youth-led resistance exacerbated political polarization (Ali et al., 2025). I:2022 shows the highest debt accumulation, as this year was one of the most politically fragile years in Pakistan's history, adversely affecting the macroeconomic landscape. This reflects the extraordinary fiscal and macroeconomic stress in 2022, including post-COVID adjustments, severe floods, sharp exchange-rate depreciation, and rising global interest rates, all of which necessitated emergency borrowing.

There is only one SIS significant dummy that indicates a structural shift in debt accumulation. S:2014 is in line with the phase of macroeconomic stabilization and fiscal tightening, with IMF intervention, a stronger external balance, and comparative exchange rate stability, which were temporarily restrained and outgrown the next year, as shown in Figure 14 (appendix).

The evidence from existing studies indicates that Pakistan's sustained debt accumulation poses high macroeconomic costs and risks of long-term adverse impacts on economic performance.

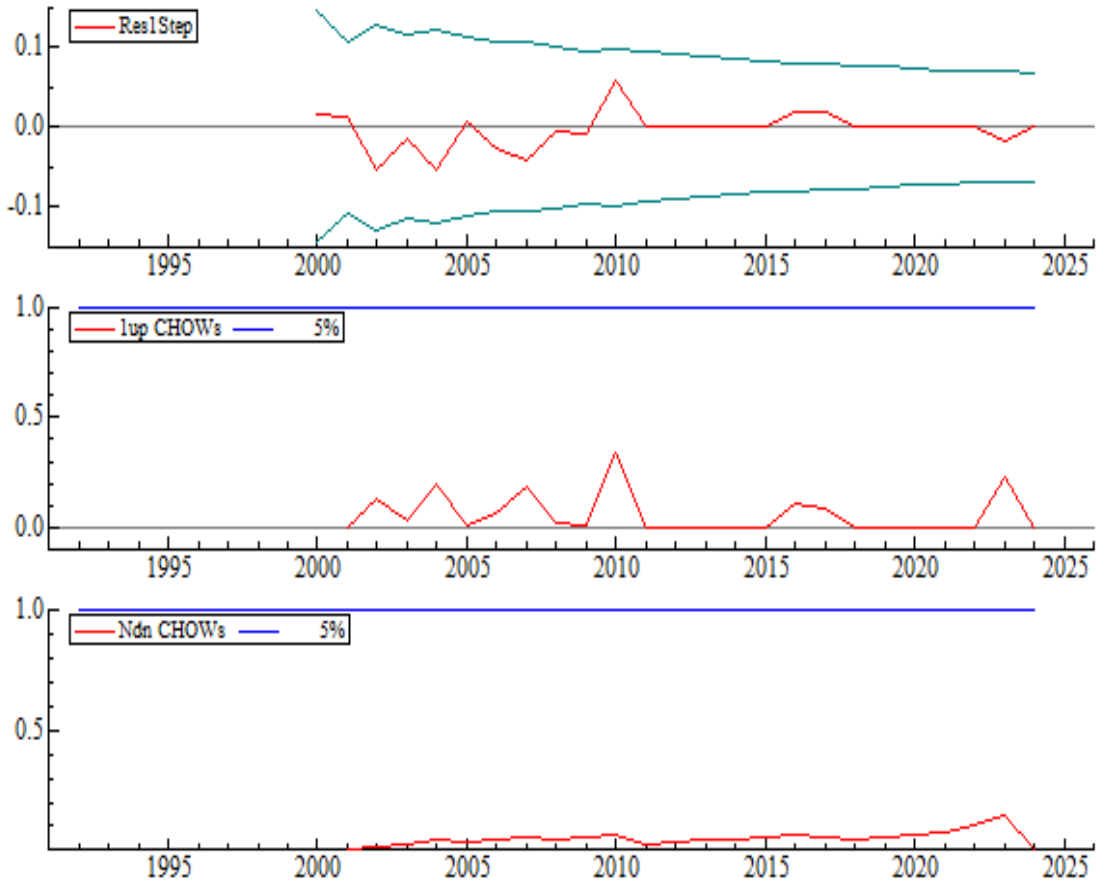
Public debt increases must negatively impact debt sustainability and economic growth, especially in the context of ongoing fiscal deficits and exchange rate depreciation (Sundus et al., 2022). Likewise, Pakistan's public debt should not exceed 58.5 percent of GDP, as the negative impacts of debt will be more severe (Ellahi & Ali, 2024). Further, a study demonstrates that higher public debt leads to higher debt-servicing costs, higher external debt, more constrained domestic credit, and lower savings and private capital inflows. While debt expansion can spur short-term imports and some aspects of financial activity, the long-term effects suggest greater macroeconomic fragility and lower future growth potential (Fatemah & Haq, 2024). These findings closely align with the empirical results of the present study.

The covariate analysis in table 4 shows that public debt responds strongly to macroeconomic and structural pressures. An increase in debt-servicing obligations by 1% is associated with about a 0.3% rise in public debt, reflecting the ongoing burden of interest payments and debt rollover. Exchange rate depreciation also has a notable effect: a 1% weakening of the currency raises public debt by roughly 0.44%, highlighting the vulnerability of foreign-currency-denominated debt. Population density plays an even larger role, with a 1% increase linked to a 1.68% increase in public debt, suggesting that urbanization and the demand for infrastructure and services place substantial fiscal pressure on the government. A 1% increase in tax-less subsidies (net tax collection on goods, services, labor, machinery, buildings, or other production assets more looks like indirect tax) is linked to an approximately 0.09% increase in public debt, suggesting that even though revenue is rising, it has not fully offset spending requirements or borrowing needs. This indicates that revenue mobilization alone is insufficient to reduce public debt pressures significantly.

The model represents a good overall fit (see figure 10 as well) and excellent explanatory power. The total F-test is significant ($F(17, 25) = 5.854$, $p < 0.001$), which means that the regressors together can explain variation in the public debt. The adjusted R^2 of 0.9997 indicates that the model explains almost 99.97% of the variation in public debt, and the small residual sum of squares (RSS = 0.0293) and standard deviation of residuals (s = 0.0343) indicate that a small amount of variation remains unexplained. Diagnostic tests prove that model follow the assumption of ANCOVA of homogeneity and normality of residuals, as the ARCH (1,1) test ($F(1,41) = 1.78$, $p = 0.1895$) does not indicate any conditional heteroskedasticity, the normality

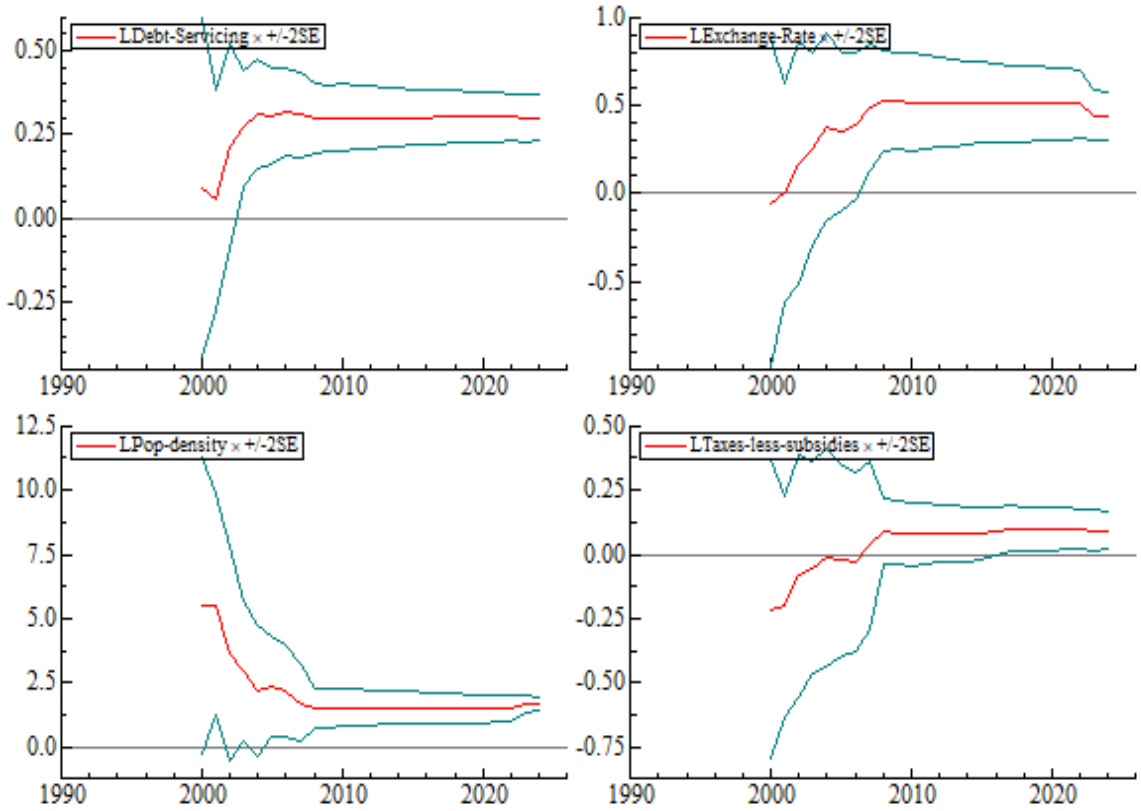
test (kh2(2) = 2.91, p = 0.2329) does not show evidence of non-normality of the residues, which are the major assumptions of the reliable inference.

Figure 11: Parameter Stability Tests



The log-likelihood 100.46 is also an important indicator used in likelihood-based comparisons. While I also took any other model as part of this study in which the dummies are manually introduced [(0 if democracy; 1 if dictatorship) (0 otherwise; 1 if pre-election year)], shown in Table 5 (Appendix), this model ended up with parameter instability, as shown in Figure 13 (Appendix). However, figure 11 explains parameter stability for model 1 under different tests. So, model 1 is the best explanatory theory and insightfully addresses the objective of the question. The recursive coefficient shown in figure 12 indicates that all regressors are highly volatile when fiscal stress is experienced in the late 1990s and early 2000s, but stabilize after that, which suggests a stable positive effect on the dynamics of public debt.

Figure 12: Recursive Estimates



4.2: Analysis of intergenerational welfare cost using an OLG model

Using equation (3.4.12) $[dSUR_{t+1} = [\eta^{-1} - 1]dT]$ and data from official sources, the welfare reduction caused by the minimum redemption can be estimated. It remains an approximate calculation. By March 2025, Pakistan's public debt stood at Rs 80.5 trillion, according to *the State Bank of Pakistan*. The population was 241.1 million as per the 7th Population Census 2023, and according to the French Institute for Demographic Studies, Pakistan's population is projected to be 255 million in 2025 and 372 million by 2050. To maintain the current per capita debt of Rs 317,600, total public debt would need to rise from Rs 80.5 trillion in 2025 to about Rs 118.15 trillion by 2050. Although such an enormous accumulation has reached a precarious point, let this level be regarded as the highest sustainable limit, and assume that the government strives to keep this critical level by issuing a fiscal deficit of Rs 7 trillion/year. To keep the per capita debt at its critical level, even if interest payments are neglected, the government would need to allow the debt to grow by Rs 1.51 trillion/year (Rs 37.65 trillion over 25 years).

Although this level of indebtedness poses serious fiscal and macroeconomic risks, let us, for analytical purposes, regard this as the upper bound of Pakistan's politically and economically bearable debt limit. This assumption enables us to examine how persistent deficit financing, near the edge of fiscal viability, transfers the burden to future generations and constrains long-term welfare in Pakistan.

Since $1-\eta^{-1}$ corresponds to the share of labor income. In Pakistan, it's 49.4% according to the *International Labor Organization*; using the formula (12), the loss of welfare in monetary terms is estimated as:

$$0.49[7-1.51] = 2.7\ (trillion\ Rs/year)$$

In Pakistan, Interest payments exceed tax revenue, so interest payments are now also being considered to reflect the actual burden. So, assuming interest payments of Rs 10.20 trillion/year[12]. Although the government is allowed to accumulate debt by Rs 1.51 trillion/year to maintain current per capita debt, when we add interest payments, the picture changes totally, and an additional tax of Rs 8.69 trillion/year should be imposed on future generations to offset debt (principal and interest payments). Using the formula (12), the loss of welfare in monetary terms is estimated as:

$$0.49[7+8.69] = 7.7\ (trillion\ Rs/year)$$

So, the results show that if the current debt is treated as a baseline and increases to the same per capita level by 2050 under the given assumptions, the welfare loss by 2050 would be Rs 2.7 trillion/year, which is almost double the budgeted development expenditure in FY 2025-26. To estimate more accurately, if we add the interest payments at Rs 10.20 trillion/year by 2050, the welfare loss would skyrocket to Rs 7.7 trillion/year, which is 492% of the budgeted development expenditure in FY 2025-26. Alam & Taib (2012) support our results, showing that in Asian Pacific developing countries, debt-servicing responsibilities encourage policymakers to divert funds from development to debt servicing, resulting in a loss of people's

[12] Rs 6.4 trillion in interest payments were paid during the first nine months of FY 2025; I calculate Rs 8.59 trillion over 12 months on this basis. So that is 10.6% of total public debt. Given that the estimated Rs 10.20 trillion is an average of the interest payments of 2025 and 2050.

welfare. Another study indicates that 18 of 25 countries experience real output reductions due to public debt, which imposes potential welfare costs on the public (Chen, 2014).

Similarly, a robust work by Otaki (2015), considering Japan as a case study, provides empirical evidence that Japan will face Yen 22.4 trillion/year welfare loss due to debt burden transfer. The developmental impact of debt depends on its use, showing that borrowing directed towards productive public investment can enhance debt sustainability and support economic performance (Ciaffi et al., 2024).

The robust empirical results have important implications for fiscal governance, debt management, and intergenerational justice in Pakistan. Based on the findings, the last chapter concludes the main findings and outlines policy implications and recommendations for policymaking.

CHAPTER 5. CONCLUSION AND RECOMMENDATIONS

5.1 Conclusion

The thesis investigates the accumulation of public debt in Pakistan as a politically induced phenomenon and how much of a veritable economic cost it is to future generations. The econometric ANCOVA model and overlapping-generations (OLG) model based on the Keynesian theory of dynamic multipliers help the study to provide both empirical and theoretical evidence to answer such questions altogether.

The econometric model shows that the dynamics of public debt in Pakistan cannot be described solely by macroeconomic fundamentals. Although debt servicing, exchange rate depreciation, population pressure, and the fiscal structure are major factors in debt accumulation, the presence of many statistically significant impulse and step dummies indicates a political dimension. Such additive outliers are observed in conjunction with democratic regimes, which empirically support the Public Choice Theory. Policymakers are seen as more inclined toward short-term political goals than toward longer-term fiscal sustainability, which confirms Buchanan's idea of politics without romance. Significantly, no similarly statistically significant impulses can be identified during periods of military rule, which means that debt acceleration is not regime-neutral but is politically driven.

These political impacts can be particularly isolated using the ANCOVA framework because categorical political shocks can be jointly included with continuous macroeconomic covariates. The diagnostic tests demonstrate good model fit, parameter stability, and compliance with the major assumptions, which guarantee that the deduction is reliable. The results indicate that debt servicing is a self-reinforcing cycle, that exchange rate depreciation magnifies debt through valuation effects, and that demographic pressure imposes structural fiscal stress that cuts across political regimes. Taxes less subsidies have not played out sufficiently to offset strains, which highlights the shortcomings of taxation as a strategy of debt containment.

The OLG analysis addresses the intergenerational impact of issuing debt. Although the issuance of public debt temporarily increases real disposable income and welfare during the issuance period, the model indicates that this benefit is offset over the intertemporal period. Future generations will have to work even harder to achieve the same level of real income, which means lower welfare and greater hardship. The public debt in Pakistan is evidently a

burden on future generations, as defined by the study in terms of welfare. Maintaining the status quo in per capita debt amounts, even under conservative assumptions that exclude interest payments, would result in a loss of about Rs 2.7 trillion in welfare every year by 2050. When interest payments are added (a practical requirement in the fiscal structure of Pakistan), the welfare loss is enormous, in the form of Rs 7.7 trillion per annum, which is several times higher than the development spending, and the long-term growth possibilities are highly limited. Findings from this study put the Ricardian equivalence to the test in Pakistan in the current time frame and point to the insufficiency of the assumption of selfless intergenerational transfers in a politically disjointed and financially restrictive economy.

Before moving towards recommendations, there are progress steps taken for fiscal sustainability that are linked with debt accumulation, including that the IMF and Pakistan agreed that there will be no more supplementary grants from 2023-24 instead of technical supplementary grants, which will be used in case of requirement and as per commitment, there are no supplementary grants reported for FY 2023-24 and 2024-25[13]. Secondly, direct tax collection rose from 34.3% of total collections (average for 2000-09) to 48.7% in 2024 (SBP Annual Report FY24). Given the public debt's sensitivity to exchange rates, debt management needs to focus on reducing foreign-currency exposure by gradually rebalancing towards longer-maturity domestic-currency debt. The Pakistan Economic Survey 2025 shows that longer-maturity, overall permanent debt accounts for nearly 78% by March 2025 of the total domestic debt, up from around 70% in June 2024.

5.2: Recommendations

In general, the paper concludes that public debt in Pakistan is not merely a fiscal tool but a politically mediated process that redistributes generational welfare, undermines fiscal sustainability, and institutionalizes long-term economic vulnerability.

Pakistan would do well to replace high-cost borrowing, which leads to further borrowing and indebtedness, with concessional and semi-concessional loans, since Table 4 shows that indebtedness creates further indebtedness. The ANCOVA model detected 10 fiscal expansionary dummies, all statistically significant, with most falling during the democratic era

[13] See IMF Technical Assistance Report for Pakistan, December 2025, (Budget Execution page 54 onward).

and several during the election years. In contrast, under the military regime, the fiscal impulses were negligible. This asymmetry is exactly what an independent fiscal council with a prior evaluation of budget and borrowing plans and transparent fiscal rules would counteract, and, by doing so, help protect fiscal decisions from the pre-election pressures that have led to fiscal expansions for political gains in Pakistan.

Moreover, the welfare-based ceiling on debt has an explicit, direct link to OLG outcomes: the debt level of Rs 2.7 trillion per capita (Rs 7.7 trillion, including interest payments) per annum by 2050 would lead to a welfare loss that the debt ceiling alone could not account for. A legally binding intertemporal fiscal framework that emphasizes intergenerational justice is needed. These long-run welfare costs must therefore be considered in all important fiscal and borrowing decisions and must be reflected in a future-generation impact assessment. Debt ceilings should be set using a broader set of fiscal sustainability indicators rather than relying exclusively on the conventional debt-to-GDP ratio. The National Bureau of Economic Research demonstrates that alternative measures of government indebtedness, including debt-to-GDP, interest-to-GDP, and debt-to-equity ratios, can yield markedly different assessments of fiscal sustainability, highlighting the limitations of relying on a single indicator (Berk et al., 2026). They therefore advocate developing more theoretically grounded measures of sovereign indebtedness. Similarly, balanced fiscal frameworks that recognize both excessive public debt and chronic underinvestment as threats to long-term sustainability have been argued (Foreman, 2025). Such frameworks emphasize that a government's fiscal capacity depends not only on the size of its debt but also on the quality of its human capital, infrastructure, and social cohesion. Building on these insights, this study recommends that debt ceilings complement traditional debt-to-GDP thresholds with per capita and welfare-adjusted indicators to capture better the intergenerational distribution of fiscal burdens and the government's capacity to sustain long-term economic and social welfare.

5.3: Limitations

Despite its contribution, this study has some limitations that should be acknowledged. First, the OLG model used in this study is a two-period model with a representative agent and several simplifying assumptions, specifically a constant equilibrium inflation rate. Second, the public debt measure employed in this study includes federal government debt and obligations under

the IMF but does not include sub-national (provincial) borrowing. Both limitations offer future research directions, including provincial debt dynamics and robust testing of the OLG results across different inflation scenarios (sensitivity analysis).

Reference

Ahmad, H. (2025). *Revisiting the Budget Cycle: Fixing the Foundation for Fiscal Discipline*. PIDE Discourse, https://pide.org.pk/research/revisiting-the-budget-cycle-fixing-the-foundation-for-fiscal-discipline/

Ahmad, H. (2025). *Revisiting the Budget Cycle: Fixing the Foundation for Fiscal Discipline*. PIDE Discourse, https://pide.org.pk/research/revisiting-the-budget-cycle-fixing-the-foundation-for-fiscal-discipline/

Ahmad, S. (2018). *Unleashing the potential of a young Pakistan*. UNDP, https://hdr.undp.org/content/unleashing-potential-young-pakistan

Aimola, A.U. & Odhiambo, N.M.. (2018). *The Dynamics of Public and Private Debt in Ghana*. Studia Universitatis „„Vasile Goldis" Arad – Economics Series, 28(4), 24-44. https://doi.org/10.2478/sues-2018-0018

Akingbade U. A., & Nicholas M. O., (2019). *A Review of Public and Private Debt Dynamics In Nigeria.* Scientific Journal for Theory and Practice of Socio-economic Development, 2018,7(14), 1–18.

Alam, N., & Taib, F. (2012). *Debt Burden Shifting and Welfare loss in countries under debt trap*. European Scientific Journal, 8(22).

Alesina, A., & Passalacqua, A. (2016). *The political economy of government debt*. Handbook of Macroeconomics, 2, 2599-2651. Elsevier.

Ali, K., Ullah, S., Khan, M. Y., & Rehman, S. (2025). *Waves of Instability: Mapping Pakistan's Political Instability and Social Unrest (2021–2025):* https://doi. org/10.55966/assaj. 2025.4. 1.082. ASSAJ, 4(01), 1406-1417.

Antoniades, A., Griffith-Jones, S., & Griffith-Jones, S. (2018). *Global debt dynamics: the elephant in the room.* The World Economy, 41(12), 3256–3268. https://doi.org/10.1111/TWEC.12623

Arsh, S., Sarwar, J., & Iftikhar, S. (2024). *An Empirical Analysis of Short Run and Long Run Association between Debt Servicing and External Debt in Pakistan*. Bulletin of Business and Economics (BBE), 13(2), 109-116.

Asif, M. (2025). *The Economic Legacies of Pakistan's Military and Civilian Rulers: From Zulfiqar Ali Bhutto to Pervez Musharraf*. Journal of Political Stability Archive, 3(3), 1135-1146. https://doi.org/10.63468/jpsa.3.3.77

Aspide, A., Brown, K. J., DiGiuseppe, M., & Slaski, A. (2023). *Age and support for public debt reduction.* European Journal of Political Research, 62(4), 1191-1211. https://doi.org/10.1111/1475-6765.12577

Aspromourgos, T. (2018). *Keynes, public debt, and the complex of interest rates*. Journal of the History of Economic Thought, 40(4), 493-512. https://doi.org/10.1017/S1053837217000578

Ayaz, M., Fricke, L., Fuest, C., & Sachs, D. (2023). *Who should bear the burden of COVID-19 related fiscal pressure? An optimal income taxation perspective*. European Economic Review, 153, 104381. https://doi.org/10.1016/j.euroecorev.2023.104381

Barra, C., Bimonte, G., & Spennati, P. (2014). *The common pool problem of intergovernmental interactions.* Munich Personal RePEc Archive, https://mpra.ub.uni-muenchen.de/57062/

Barreyre, N., & Delalande, N. (2020). *A world of public debts*. *A political history*. Palgrave Macmillan,

Barro, R. J. (1974). *Are government bonds net wealth?*. Journal of political economy, 82(6), 1095-1117.

Berk, J. B., & van Binsbergen, J. H. (2026). *Why care about debt-to-GDP?* (NBER Working Paper No. 34629). National Bureau of Economic Research. https://doi.org/10.3386/w34629

Biggart, W. N. (2002). *An Inquiry into the Nature and Causes of the Wealth of Nations.* Readings in economic sociology, 6-17.https://doi.org/10.1002/9780470755679.ch1

Bilquees, F. (2003). *An Analysis of Budget Deficits, Debt Accumulation, and Debt Instability.* The Pakistan Development Review, 42(3), 177–195. http://www.jstor.org/stable/41260539

Boz, E., & Tesar, L. (2021). *Debt: The Good. The Bad. The Ugly*. IMF Economic Review, 69(1), 1. https://doi.org/10.1057/s41308-021-00133-9

Brennan. G., (2012). *The political economy of public debt*. Science + Business Media, 23(3), 182–198. doi:10.1007/s10602-012-9124-5

Buchanan, J. M. (1975). *The limits of liberty: Between anarchy and Leviathan* (No. 714). University of Chicago press.

Buchanan, J. M. (2003). *Politics without romance.* Policy, 19(3), 13-18.

Buchanan, J. M., & Tullock, G. (1965). *The calculus of consent: Logical foundations of constitutional democracy*. 100. University of Michigan press.

Chatterjee. S., & Simonoff. J. (2020). *Analysis of Covariance. Handbook of Regression Analysis with Applications in R. Chapter 7.* Wiley Series,

Chen, S. S. (2014). *Public Debt and Its Impacts on Output: A Long-Horizon Perspective*. Available at SSRN 2396292.

Chohan, U. W. (2019). *Fiscal Sustainability: A Historical Analysis of Pakistan's Debt Conundrum.* CASS Working Paper, 3406537. http://dx.doi.org/10.2139/ssrn.3406537

Ciaffi, G., Deleidi, M., & Di Domenico, L. (2024). *Fiscal policy and public debt: Government investment is most effective to promote sustainability*. Journal of Policy Modeling, 46(6), 1186-1209.

Cooper, M. (2021). *A burden on future generations? How we learned to hate deficits and blame the baby boomers.* The Sociological Review, 69(4), 743-758. https://doi.org/10.1177/0038026121999211

Davidson, P. (2007). *John Maynard Keynes.* Palgrave Macmillan

Doornik, J. A., Hendry, D. F., & Pretis, F. (2013). *Step-indicator saturation*. University of Oxford, Department of Economics.

Drazen, A. (2000). *The political business cycle after 25 years.* NBER, 15, 75-117.

Duyvesteyn, K., & Kaymak, U. (2005). *Genetic programming in economic modelling*. In 2005 IEEE Congress on Evolutionary Computation (Vol. 2, pp. 1025-1031). IEEE.

Ekouala, U. M. (2023). *The role of socio□political factors in public debt accumulation: Evidence from CEMAC countries*. International Studies of Economics, 18(3), 306-325. DOI: 10.1002/ise3.17

Ellahi, N., & Ali, H. (2024). T*he Dynamic Analysis of Public Debt Sustainability for Pakistan.* PIDE Theses, https://thesis.pide.org.pk/thesis/the-dynamic-analysis-of-public-debt-sustainability-for-pakistan

Fatas, A., Ghosh, M. A. R., Panizza, U., & Presbitero, M. A. F. (2019). *The motives to borrow*. IMF, https://doi.org/10.5089/9781498312103.001

Fatemah, A., & ul Haq, A. (2024). *Targeting debt in Pakistan: a structural macro-econometric model*. iRASD Journal of Economics, 6(2), 285-312. https://doi.org/10.52131/joe.2024.0602.0208

Fichtner, J. J. & Carmody, K. (2019). *Does the National Debt Matter? A Look at Modern Monetary Theory, or MMT.* Bipartisan Policy Centre,

Foreman, M. (2025). *The Debt Ceiling and its Discontents*. Policy Quarterly, 21(4), 3–13. https://doi.org/10.26686/pq.v21i4.10325

Frankel, J. (2010). *Monetary policy in emerging markets.* In Handbook of monetary economics, 3, 1439-1520 Elsevier.

Gaspar. V, Poplawski. R.M. Yoo. J, (2023). *Global Debt Is Returning to its Rising Trend*. IMF, https://www.imf.org/en/blogs/articles/2023/09/13/global-debt-is-returning-to-its-rising-trend

Greene, W. H. (2018). *Econometric Analysis (8th ed.).* Pearson Education.

Gujarati, D. N. (2004). *Basic Econometrics (4th ed.).* McGraw-Hill.

Harvey, D. (2005). *A brief history of neoliberalism*. Oxford University Press.

Hasan, P., Chaudhri, F. M., & Ahmad, E. (1999). *Pakistan's Debt Problem: Its Changing Nature and Growing Gravity*. The Pakistan Development Review, 38(4), 435-470. https://www.jstor.org/stable/41260185

Hasan. P., (1999). *Pakistan's Debt Problem: Its Changing Nature and Growing Gravity (The Distinguished Lecture).* The Pakistan Development Review, 38(4I), pp.435-470. https://doi.org/10.30541/v38i4Ipp.435-470

Hembruff, J. (2013). *Critical Review: the politics of sovereign debt.* Third World Quarterly, 34(4), 710–725. https://doi.org/10.1080/01436597.2013.786293

Hendry, D. F. (2000). *Econometrics: Alchemy or Science? Essays in Econometric Methodology (Rev. ed.).* Oxford: Oxford University Press.

Husain, A. M (2024). *Resolving Pakistan's debt problem*s. Finance for Development Lab, Policy Note 19 https://findevlab.org/wp-content/uploads/2024/10/FDL-_Policy-Note-19_Resolving-Pakistans-Debt-Problems_Oct24_FINAL.pdf

Hussain I, Hussain J, Bilal H (2022) *An analysis of the success of fiscal adjustment in reducing public debt: Evidence from Pakistan*. PLoS ONE 17(6): e0269536. https://doi.org/10.1371/journal.pone.0269536

Hussain, I., Hussain, J., Ali, A., & Ahmad, S. (2021). *A dynamic analysis of the impact of fiscal adjustment on economic growth: Evidence from Pakistan*. Sage Open, 11(2), 21582440211027167.

IMF (2024). Pakistan: *Technical Assistance Report-Improving Budget Practices.* IMF, (099) 2024, https://doi.org/10.5089/9798400293481.019

IMF (2025). *Pakistan.* IMF Country Report, 2025/109. https://doi.org/10.5089/9798229011310.002

IMF Annual Report (2025). *Rising Debt Levels and Fiscal Adjustments*. IMF, https://www.imf.org/external/pubs/ft/ar/2025/pdfs/english-imf-annual-report-2025.pdf

IMF Technical Assistance Report (2025). *Pakistan: Governance and Corruption Diagnostic Assessment,* Technical Assistance Reports 2025, 098 https://doi.org/10.5089/9798229029759.019

Iqbal., F. (2023). *Pakistan's Political Business Cycle and External Debt Dilemma*. PIDE Discourse, https://file.pide.org.pk/pdfpideresearch/discourse-2023-03-03-pakistans-political-business-cycle-and-external-debt-dilemma.pdf

Jalil, A. (2020). *Debt sustainability: Economic growth is the panacea*. Macro Policy Lab. https://macroeconomicslab.org/knowledge-brief/debt-sustainability-economic-growth-is-the-panacea

Jung, W., Lee, K., Kim, H. H., & Lim, C. (2025). *How to construct analysis of covariance in clinical trials: ANCOVA with one covariate in a completely randomized design structure*. Korean Journal of Anesthesiology, 78(4), 315-320.

Kallianiotis, I. (2022). T*ax Reform Imperative: Alleviating Financial Burden and Fostering Middle-Class Prosperity in the US Economy.* Journal of Business and Economic Options, 5(1), 48-57.

Kaplan, S. B., & Thomsson, K. (2017). *The Political Economy of Sovereign Debt: Global Finance and Electoral Cycles.* The Journal of Politics, 79(2), 605-623. https://www.jstor.org/stable/26551015

Khan S. A. (2024). *Microcovariates of Savings in Pakistan*. Pakistan Economic Review, 7:2, 48-65. https://eco.qau.edu.pk/per/wp-content/uploads/2025/07/3_PER-72-Page-48-65.pdf

Khan, D. (2022). *Articulated Imperialism in Pakistan: A Dialectic of 'Strategic'and 'Dependency'Fixes.* Journal of Labor and Society, 26(1), 39-61. DOI: 10.1111/dech.12798

Khan, K. (2024). *A Review on Fiscal and Debt Policies in Pakistan.* Munich Personal RePEc Archive, 122427. https://mpra.ub.uni-muenchen.de/122427/

Kim, H. Y. (2018). *Statistical notes for clinical researchers: analysis of covariance (ANCOVA)*. Restorative dentistry & endodontics, 43(4). https://doi.org/10.5395/rde.2018.43.e43

Kotlikoff, L. J. (2017). *Measuring Intergenerational Justice*. Intergenerational Justice Review, (2). https://doi.org/10.24357/igjr.11.2.630

Krause, M., Lubik, T., & Rhodes, K. (2025). *MMT and Government Finance: You Can't Always Get What You Want.* Richmond Fed, https://www.richmondfed.org/publications/research/economic_brief/2021/eb_21-12

Lenin, V. I. (1917/1963). *Imperialism, the highest stage of capitalism*. In Selected works (Vol. 1, pp. 667–766). Progress Publishers.

Lerner, A. P. (1946). *The economics of control. Science and Society*, 10(4).

Lucke, B., & Meyer, D. (2025). *Germany's New Constitutional Rules on Public Debt An Analysis of Debt Sustainability and Intergenerational Fairness*. International Journal of Financial Research, 16(2). https://doi.org/10.5430/ijfr.v16n2p30

Mahboubi, P. (2019). *Intergenerational fairness: will our kids live better than we do*. CD Howe Institute Commentary, 529.

Marciano, A. (2025). *Buchanan and the writing of Public Principles of Public Debt.* Journal of Public Finance and Public Choice, 40(2), 150-173. https://doi.org/10.1332/25156918Y2024D000000017

Marczak, M., & Proietti, T. (2016). *Outlier detection in structural time series models: The indicator saturation approach. International Journal of Forecasting*, *32*(1), 180-202. https://doi.org/10.1016/j.ijforecast.2015.04.005

McDonald, I. (2005). *Intergenerational Equity*. Agenda: A Journal of Policy Analysis and Reform, 12(1), 3-18. http://www.jstor.org/stable/43199297

McLouth, C. J. (2018). *Analysis of Covariance with Heterogeneity of Regression and a Random Covariate*. University of New Mexico

Mishra, D.K. (1985). *Public debt and economic development in India.* Print House (India),

Montgomery, D. C. (2017). *Design and analysis of experiments*. John wiley & sons.

Musgrave, R. A. (1997). *Reconsidering the Fiscal Role of Government*. The American Economic Review, 87(2), 156-159. http://www.jstor.org/stable/2950904

National Accounts Committee Meeting (2025). *Press Release*. Pakistan Bureau of Statistics, https://www.pbs.gov.pk/sites/default/files/press_releases/2025/Press_release_for_113th_NAC_Meeting.pdf

Nelson, R. M. (2012). *Sovereign Debt (SD) in Advanced Economies: Overview and Issues for Congress.* Congressional Research Service Report for Congress,

Neocleous, M. (2022). *Debt as pacification*. Journal of World-Systems Research, 27(1), 58-76. DOI 10.5195/JWSR.2021.1017

Nordhaus, W. D. (1975). *The political business cycle*. The Review of Economic Studies, 42(2), 169–190.

OECD (2025), *Global Debt Report 2025: Financing Growth in a Challenging Debt Market Environment,* OECD Publishing, Paris, https://doi.org/10.1787/8ee42b13-en

Ogawa, T., & Ono, Y. (2010). *Public Debt Places No Burden on Future Generations under Demand Shortage*. Social Science Research Network. https://doi.org/10.2139/SSRN.1680693

Ono, T. (2015*). Intergenerational politics, government debt, and economic growth*. Discussion Papers In Economics And Business, 14-23.

Otaki, M. (2007) *The Dynamically Extended Keynesian Cross and the Welfare Improving Fiscal Policy.* Economics Letters, 96, 23-29 https://doi.org/10.1016/j.econlet.2006.12.005

Otaki, M. (2015). *Public debt as a burden on the future generation: A Keynesian approach.* Theoretical Economics Letters, 5(05), 651.

Pakistan Economic Survey (2024-25). *Public Debt.* Finance Division, https://www.finance.gov.pk/survey/chapter_25/9_Public_Debt.pdf

Pattison, J. (2024). *State borrowing and global responsibilities.* Journal of Applied Philosophy, 41(4), 590-611. https://doi.org/10.1111%2Fjapp.12717

Pawa, K., & Gee, C. (2021). *Public Debt and Intergenerational Equity in Singapore*. Institute of Policy Studies, IPS Working Papers, 38

Petronijevicć, J., Dimitrov, N., & Vesić, T. (2024). Analysis of public debt dynamics of the Republic of Serbia in the period 2012-2023. Employment, Education and Entrepreneurship 2024, Belgrade. 621–627. https://doi.org/10.5937/eee24057p

Phelps, E. (2022). *Public debt: My dissent from "Keynesian" theories*. Journal of Government and Economics, 5, 100029. https://doi.org/10.1016/j.jge.2022.100029

Ramanan, V. (2020). *Joan Robinson on public sector deficits and debt.* Economic Reform Australia, https://era.org.au/joan-robinson-on-public-sector-deficits-and-debt/

Riblier, V. (2023). *The Fiscal Cost of Public Debt and Government Spending Shocks*. Cornell University, https://doi.org/10.48550/arxiv.2309.07371

Ricardo, D. (1821). *On the principles of political economy.* London: J. Murray.

Romer, D. (2018). *Advanced macroeconomics (5th ed.).* McGraw-Hill Higher Education. ISBN 9781260231250.

Saeed, Z., & Javid (2015), A. Y. *Threshold level of Public Debt for South Asian Countries*. PIDE Theses,

Saliya, C. A. (2024). External Debt Dynamics: Challenges for Middle-Income Countries in the Global Arena. *Available at SSRN 4742576*.

Salmon, J. (2025). *The Impact of Public Debt on Economic Growth: What the Empirical Literature Tells Us.* Mercatus Centre, George Mason University, https://www.mercatus.org/research/policy-briefs/impact-public-debt-economic-growth-what-empirical-literature-tells-us

Sardoni, C. (2021). *The public debt and the Ricardian equivalence: Some critical remarks*. Structural Change and Economic Dynamics, 58, 153-160. https://doi.org/10.1016/j.strueco.2021.05.006

Shah, M. I., Ullah, I., Rahman, Z. U., & Nadeem, J. A. N. (2016). *The debt overhang hypothesis: Evidence from Pakistan.* Studies in Business and Economics, 11(1), 140-151. DOI 10.1515/sbe-2016-0012

Sial, F., Jafri, J., & Khaliq, A. (2023). *Pakistan, China and the structures of debt distress: Resisting Bretton Woods.* Development and Change, 54(5), 1226-1263.

Siddiqui, K. (2023). *Marxian Analysis of Capitalism and Crises*. International Critical Thought, 13(4), 525-545. https://doi.org/10.1080/21598282.2023.2296167

Sikandar, M. J., & Wahid, F. (2019). *Debt and Economic Growth of Pakistan; Role of Uncertain Economic and Political Conditions*. Business & Economic Review, 11(2), 83-106. DOI: dx.doi.org/10.22547/BER/11.2.5

Skidelsky, R. (1992). *John Maynard Keynes: The economist as saviour*, 1920–1937 (Vol. 2). Macmillan.

Song, Z., Storesletten, K., & Zilibotti, F. (2012). *Rotten parents and disciplined children: A politico-economic theory of public expenditure and debt*. Econometrica, 80(6), 2785–2803. https://doi.org/10.3982/ECTA8910

State Bank of Pakistan`s Annual Report 2023-2024. *The State of Pakistan's Economy*,

Steinreich, D. (2025). *The political business cycle 50 years later*, Mises Institute.

Sundus, Naveed, S., & Islam, T. U. (2022). *An empirical investigation of determinants & sustainability of public debt in Pakistan*. Plos one, 17(9), e0275266.

Syam, T., Syam, M. M., Khan, A., Syam, M. I., & Syam, M. I. (2022). *Statistical analysis of car data using analysis of covariance (ANCOVA).* In International Conference on Mathematics and its Applications in Science and Engineering (1-11). Cham: Springer International Publishing. https://doi.org/10.1007/978-3-031-21700-5_1

Szlichcinski, K. (2022). *The Wagner's Law as a mirror picture of market failures?*. Marketing i Rynek, (2), 34-41.

Tang, W., Zhao, X., Zhai, S., & Cao, L. (2023). *Local government debt and corporate tax burden: A perspective based on the trade-off of government tax collection and management.* Plos one, 18(7), e0287763.

Tempelman, J. H. (2007). *James M. Buchanan on Public-Debt Finance*. The Independent Review, 11(3), 435-449. http://www.jstor.org/stable/24562381

Ter□Minassian, T. (2023). *Emerging research issues in sovereign debt management*. Edward Elgar Publishing, 300-324. https://doi.org/10.4337/9781800379718.00031

Tsoulfidis, L. (2007). *Classical economists and public debt*. International Review of Economics, 54(1), 1-12. DOI 10.1007/s12232-007-0003-8

Tunio. F.H. & Nabi. A.A, (2021). *Political decentralization, fiscal centralization, and its consequences in case of Pakistan.* Cogent Social Sciences, 7:1, 1924949, DOI: 10.1080/23311886.2021.1924949

UN (2024). *One UN Pakistan Annual report 2023.* UN, https://pakistan.un.org/sites/default/files/202406/OneUNReport2023_Pakistan_WEB_v5.pdf

UN Global Crisis Response Group (2023). *A WORLD OF DEBT A growing burden to global prosperity*. UN,

UN Trade and Development (2025). *A world of debt It is time for reform*. United Nations Conference on Trade and Development,

UNCTAD (2025). *Global public debt hit a record $102 trillion in 2024, striking developing countries hardest.*

Wani, S. (2023). *Why does Pakistan tax so little?*. International Growth Centre, London School of Economics and Political Science.

Winch, D. (1978). *Adam Smith's politics: An essay in historiographic revision*. Cambridge University Press.

World Bank (2023). *Pakistan Federal Public Expenditure Review*. World Bank Group, Report No. 181461 http://documents.worldbank.org/curated/en/099041223153536828

Yuen, B., & Choi, S. (2012). *Making spatial change in Pakistan cities growth enhancing*. World Bank, Policy Paper Series PK 11/12.

Zandi, S. (2021). *Sustainable and Resilient Systems for Intergenerational Justice*. arXiv preprint arXiv:2102.09122, https://arxiv.org/pdf/2102.09122

Ziliak, S. T., & Wasserstein, R. (2023). *One Thing About…the Rhetoric of Statistics*. CHANCE, 36(4), 55–56. https://doi.org/10.1080/09332480.2023.2290957

Zubair. M. A., (2025). *Pakistan's Fiscal Trap: Breaking Free from Endless Consolidation.* PIDE Discourse,

APPENDIX

Table 5: Analysis of Log of Public Debt (Appendix)

	Coefficient	**JHCSE**	**P-value**
Log Debt Servicing	0.318990	0.1024	0.0036
Log Population Density	1.34692	0.3029	0.0001
Log Exchange Rate	0.373830	0.1870	0.0532
Log Tax Less Subsidies	0.248283	0.0464	0.0000
Dictatorship	- 0.0168075	0.0427	0.6962
Pre-election-year	- 0.00207725	0.0346	0.9526
Constant	- 3.74457	1.280	0.0059
log-likelihood [55.677] $F(6,36) =$ 3.705 [0.000]** *RSS* [0.188944298] *Adj.R^2* [0.998114]			
Normality test: Chi^2(2) = 2.0069 [0.3666] *Sigma* [0.0724462] *SE* [1.66804]			

Figure 13: Parameter Stability Test (Appendix)

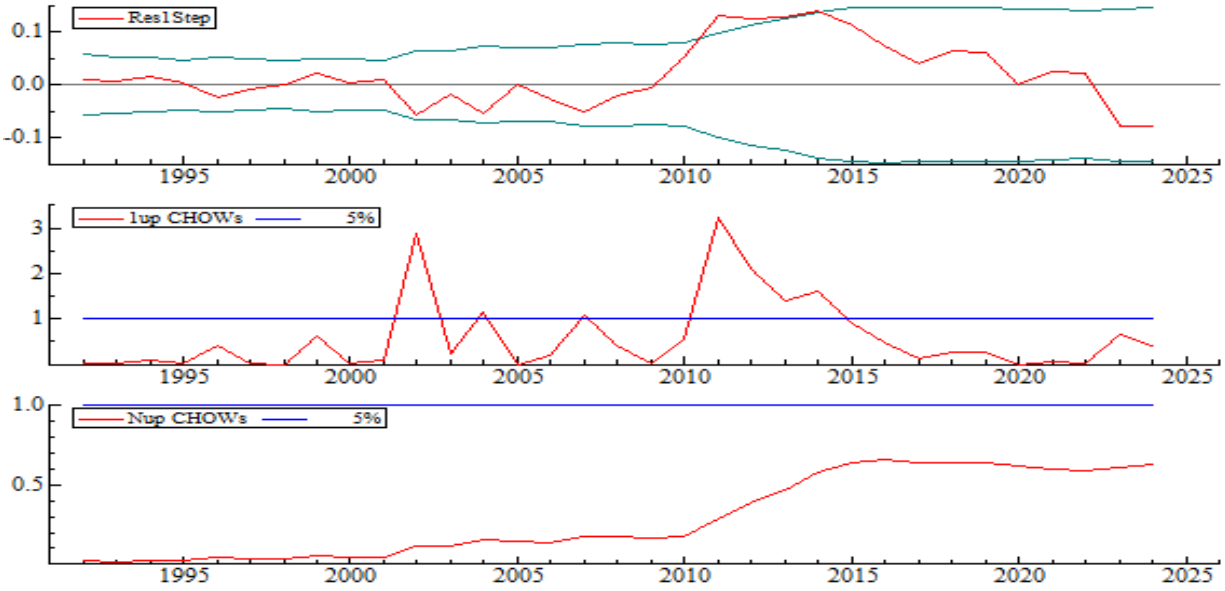
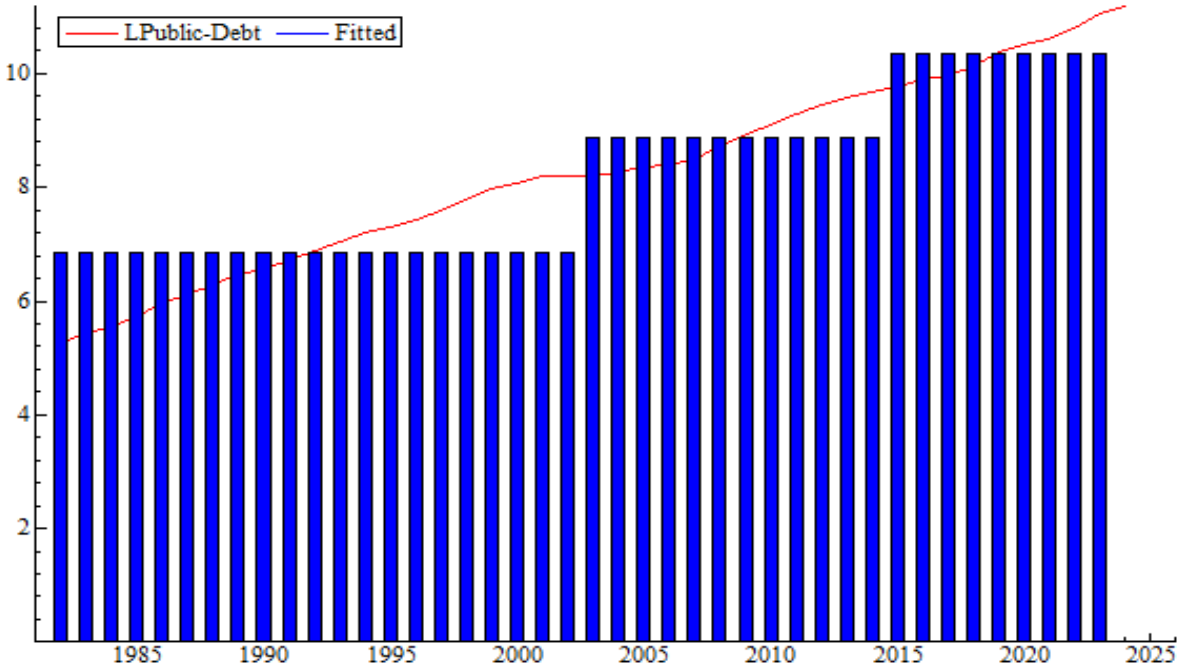


Figure 14: SIS (Appendix)


LPublic-Debt
Fitted
10
8
6
4
2
1985
1990
1995
2000
2005
2010
2015
2020
2025