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The State of Pakistan's Economy 2024-25

Tapping the Economic Potential Strategies for Productivity and Growth



Editors

Heman Das Lohano

Lubna Naz

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List of Abbreviations

ADP	Annual Development Programme
BACI	Base pour l'Analyse du Commerce International (Analytical Database of International Trade)
BCI	Business Confidence Index
BCS	Business Consumer Survey
BE	Budget Estimates
CBCI	Current Business Confidence Index
CEI	Current Employment Index
CEPII	Centre d'Études Prospectives et d'Informations Internationales (Center for Prospective Studies and International Information)
CPEC	China-Pakistan Economic Corridor
CPPA	Central Power Purchasing Authority
CY	Calendar Year
DAP	Diammonium phosphate
DI	Diffusion Index
EBCI	Expected Business Confidence Index
ECP	Election Commission of Pakistan
EI	Expected Employment Index
EFF	Extended Fund Facility
EPR	Extended Producer Responsibility
EU	European Union
FBR	Federal Board of Revenue
FED	Federal
FY	Fiscal Year
GDP	Gross Domestic Product
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit
GoP	Government of Pakistan
GST	General Sales Tax
HDI	Human Development Index
HEC	Higher Education Commission
IBA	Institute of Business Administration
IEI	Inflation Expectations Index
IMF	International Monetary Fund
kWh	Kilo Watt hours

LDPE	Low density polyethylene
LFS	Labour Force Survey
LSM	Large Scale Manufacturing
LSMI	Large Scale Manufacturing Index
MPP	Marine plastic pollution
MW	Mega Watt
NAVTTCC	Pakistan's National Vocational and Technical Training Commission
PBS	Pakistan Bureau of Statistics
PIA	Pakistan International Airlines
PIDE	Pakistan Institute of Development Economics
PKR	Pakistani Rupee
PMI	Purchasing Manager Index
PMYSDP	Prime Minister's Youth Skill Development Program
PPA	Power Purchase Agreement
PSDP	Public Sector Development Program
PTI	Pakistan Tahreek-e-Insaf
PWD	Persons With Disabilities
RE	Revised Estimates
RLNG	Re-gassified Liquefied Natural Gas
SBA	Stand-by Arrangement
SBP	State Bank of Pakistan
SECP	Securities and Exchange Commission of Pakistan
SNGPL	Sui Northern Gas Pipelines Limited
SOE	State Owned Enterprise
SOFR	Secured Overnight Financing Rate
TED	Turtle Excluder Device
TVET	Technical and Vocational Education and Training
USD	U.S. dollar
VAT	Value - added tax
WITS	World Integrated Trade Solution

Foreword

Pakistan's economy in the last two years has been greatly influenced by political events. While many economic fundamentals have remained the same, political stability, even if defined loosely, has had an impact on key economic indicators.

A change in government in April 2022 at first, followed subsequently by a Caretaker government in August 2023 until March 2024 after the elections of 8 February 2024, has led to yet another government constituted primarily by two large parties in Parliament. Clearly, four governments amidst widespread political tension and political conflict and disputation, in a matter of just two years, for an economy which was always being compromised by the lack of any meaningful structural reforms, bodes ill for any sort of political or economic stability. The huge economic issues which had affected the wellbeing of citizens, many of them politically motivated, remained unaddressed through the end of the life of the last Parliament. The Caretaker government in August 2023 brought about a sense of stability in the political environment, albeit much of this was forced upon the electorate. Nevertheless, since then, there have been some indications that economic indicators have become less worse, perhaps even improved, although there has been little of substance in meaningful reforms.

As we move into the new financial year of 2024-25, basic economic indicators, such as GDP growth, the exchange rate, interest rates, even inflation, have all steadied and shown a better trend than a year ago, yet there have been few substantial economic reforms, of any kind. Much of the economic rhetoric under the guise of policy, remains the same. There is little investment, regulation or even discussion about new ideas. This volume of essays by members of the IBA economics community, offers some innovative ideas and interventions about thinking about ways forward. *Tapping the Economic Potential Strategies for Productivity and Growth* offers some fresh thought on old problems and is essential reading for students, policymakers and for those interested in understanding not what the problems are, but ways we can rethink ways of improving the economy.

S Akbar Zaidi
Executive Director, IBA, Karachi

Chapter 1

Introduction

Heman Das Lohano and Lubna Naz

Pakistan is endowed with a wealth of resources, encompassing human capital, natural assets, and a strategically advantageous geographical position within the region. The country has a large youth population, constituting a significant demographic dividend, which presents a unique opportunity for substantial economic growth. Moreover, the sustainable management of natural resources, such as agriculture, minerals, and energy, can provide a stable foundation for economic growth and development. Leveraging Pakistan's strategic geographical position can enhance trade and investment opportunities. Therefore, Pakistan holds immense potential for achieving sustained economic growth.

Despite its abundant resources, Pakistan faces significant challenges, including inflation, low economic growth, and high unemployment. These issues are compounded by fiscal deficits, energy shortages, low productivity, and political instability. With strategic planning and resource utilization, Pakistan can overcome these challenges and achieve sustained economic growth. The country should prioritize long-term economic stability and growth over the vested interests of the ruling class. By utilizing untapped resources, fostering innovation, and creating a business-friendly environment, the country can unlock new economic opportunities and drive sustainable growth.

This book presents analyses and proposes strategies for selected sectors of the economy to unlock Pakistan's potential, paving the way for a future characterized by prosperity and sustainable economic growth. Chapter 2 by Asim Bashir critically assesses the budget 2024-25 and the fiscal challenges facing the economy, such as circular debt, losses from state-owned enterprises, and inflationary pressure. Chapter 3 by Wali Ullah and Fatima Sadiq provides projections for GDP growth and inflation rates for the next three fiscal years. The GDP growth rate for FY25 is likely to stay in the range of 2.05 to 3.6 percent, and the inflation rate is expected to be from 12 percent to 16.88 percent. In Chapter 4, Aadil Nakhoda observes that the recent balance of payment crises and sluggish economic growth in Pakistan pose significant challenges on the economic front. One of the measures to curtail the outflow of dollars was to impose restrictions on imports. However, the import restrictions on capital goods and raw materials backfired by negatively impacting investment and production.

The business confidence survey is jointly conducted by the State Bank of Pakistan and the Institute of Business Administration Karachi. Chapter 5 by Aadil Nakhoda and Qazi Masood Ahmed presents the business confidence index (BCI), showing that the BCI moved into the negative zone between June 2022 and November 2023. It has recovered into the positive zone since December 2023. Chapter 6 by Shagufta Shabbar and Shujaat Hussain provides insights into Pakistan's unique untapped demographic dividend, with most trained youths unable to find placement in the job market, calling for providing employment opportunities to the skilled workforce and improving returns on education and skill development programs.

The issues relating to energy production and distribution are examined in Chapter 7 by Ammar Habib Khan. Despite significant generation capacity, power outages remain common due to inefficiencies. Fixed electricity tariffs create high costs for consumers, especially during peak demand. Pakistan is in dire need of energy reforms specifically addressing the efficient use of power, creating a competitive market, and speeding up the transition to renewable energy sources. General elections were held on February 8, 2024, in Pakistan. Chapter 8 by Javeria Abbas and Faiz Ur Rehman discusses the role of technology in elections. The recent elections of 2024 saw political parties in Pakistan using technology in their election campaigns; the use of technology proved to be an effective medium given the higher share of young voters compared to other age groups. Finally, the economic costs of marine plastic pollution for Pakistan are presented in Chapter 9 by Ghamz E. Ali Siyal and Fasih Zulfiqar, offering a detailed analysis of the contribution of marine plastic pollution to harming tourism, biodiversity, and economic development.

Chapter 2

Fiscal Challenges and Budget FY25

Asim Bashir Khan

Highlights

- Pakistan economy is facing economic slowdown, inflationary pressures, losses from state-owned enterprises, and circular debt.
- The tax target for FY25 seems over-ambitiously high at PKR 12.97 trillion (10.45 percent of GDP). The target for non-tax revenue has been set at PKR 4.85 trillion, which is 64 percent higher than the revised estimate of FY24.
- A debt and deficit driven fiscal equation might not have fiscal viability, but the situation will remain unchanged until a decent tax-to-GDP benefit taxation with fair tax incidence and equitable public spending system is in place.

2.1 Federal and Provincial Tax Targets and Tax Policy Framework

The planned outlay of PKR 24.38 trillion for budget FY25 is largely an expansionary fiscal policy, of which the planned Federal PSDP is PKR 2.02 trillion. The total planned development spending of the federal government and provincial governments is PKR 4.5 trillion. The federal tax target for FY25 set out to be PKR 12.97 trillion which is an increase of 38 percent from the target of FY24 (Table 2.1).

Pakistan's tax-GDP ratio is about 9.2 percent as reported by the Federal Board of Revenue, and is one of the lowest compared to peer income countries. The entire taxation framework is regressive and relies extensively on indirect taxation which is 60 percent of total taxes. On the other hand, 40 percent of direct taxes are largely comprised of withholding taxes to the extent of about 70 to 75 percent. The direct taxes are collected in withholding tax mode, which means no tax effort by tax authorities because withholding taxes are deducted, collected, and submitted by withholding tax agents.

The budget FY25 proposes stringent and distortionary measures against the filers, and the active taxpayers, leaving aside minimum space for broadening of the tax net. So, the policy is invoking horizontal inequity. An increase in sales tax and withdrawal of sales tax exemptions will lead to inflationary pressures in the economy. For instance, the Finance Bill proposes the withdrawal of the exemption of GST on formula milk products and to be taxed at the statutory rate of 18 percent.

To meet such ambitious tax targets, given that the track and trace system introduced by FBR witnessed failure, the documentation of the economy is still one of the biggest challenges. However, the current measures seem to be collection-focused and have overlooked the equity issues in taxation. The government has proposed a tax increase from 35 to 45 percent for the non-corporate business sector, which will significantly reduce the business individuals' take-home income, despite the fact the sector is substantially contributing to tax revenues.

Table 2. 1: Estimates of Federal Tax Collection

	BE-FY23 PKR billion	RE-FY23 PKR billion	Percent change	BE-FY24 PKR billion	RE-FY24 PKR billion	Percent change	BE-FY25 PKR billion
Direct Taxes	3,039	2,851	-6.2	4,255	3,721	-12.5	5,512
Indirect Taxes	4,431	4,349	-1.9	5,160	5,531	7.2	7,458
Total tax	7,470	7,200	-3.6	9,415	9,252	-1.7	12,970

Source: Annual Budget Statement, Ministry of Finance, Government of Pakistan, Islamabad.

Note: BE stands for Budget Estimates and RE stands for Revised Estimates.

Given that the past few years have been highly inflationary, moreover, salary income in Pakistan is taxed as the gross value of salary income, and no allowances and deductions are admissible for salaried individuals. Since the present limit of exemption has not been revised in the past five years, the limit of PKR 600,000 is inequitable, due to high inflation, and the corresponding decrease in purchasing power with a simultaneous increase in tax rates on salary during FY25. During the budget of FY19, this exemption limit was doubled to PKR 1.2 million which was later reversed during the budget of FY20. Therefore, during the past five years, the growth in income of the salaried class has been depleted due to high inflation. The present government kept the exemption limit to the existing standard of PKR 600,000. For historical details of exemption on salary income please refer to Table 2.2.

Table 2.2: Income Tax Exemption Limit for Salaried Taxpayers

	FY08	FY13	FY14	FY17	FY19	FY20	FY25
Exemption Limit (PKR)	180,000	400,000	400,000	600,000	1,200,000	600,000	600,000

Source: The Federal and Provincial Finance Acts

The proposed tax interventions broadly rely on increased tax rates, withdrawal or reduction in exemptions, and concessions. The proposed interventions might jeopardize the objectives of increasing the tax base. Other than changes proposed in tax rates, and schedules, certain streamlining measures have also been proposed of which, an association of people is required to submit audited financial statements if the turnover is more than PKR 300 million. Commissioners have been given the power to pass the best judgment assessment where a person liable to file a tax return fails to file the income tax return.

The Finance Bill proposes charging sales tax on DAP fertilizers which is presently exempted from sales tax. Also, the charging of sales tax at 18 percent for mobile phones having a value of less than USD 500. The Bill proposes charging FED on the first allotment of residential property as well as the first allotment/ subsequent transfer of commercial property. The Urban Immoveable Property Tax is the domain of provincial governments under the Constitutional Scheme. Although the Board of Revenues District Collector rates are low, there are transfer charges, stamp duties, capital gain tax, transaction tax, and then annual recurrent Urban Immovable Property Tax. Adding Federal FED to transactions of property is outside the scope of federal taxation and will be merely in addition to pre-existing so many tax distortions.

The tax expenditure for FY24 was PKR 3.8 trillion which is 3.66 percent of GDP. The tax expenditure has sharply increased from 0.86 percent of GDP in FY08 to a maximum of 1.38 percent in FY18. From FY19 the tax expenditure is more than 2 percent of GDP which stands the highest in history as of now, and the trend is expected to continue during FY25. The tax expenditure on income tax was a meager 3.37 percent of total tax expenditure during FY17.

The tax expenditure shows interesting trends from FY08 to FY13, the customs duty accounts for half of the tax expenditure, whereas from FY14 to FY18 sales tax accounts for half of the tax expenditures and the trend continues as of now (Table 2.3). The reason for such a radical shift is to contain the cost of development through foreign investment, therefore allowances, concessions to imports, and capital imports were generously granted during the first phase of CPEC which is from FY14 to FY18.

Table 2.3: Composition of Tax Expenditure

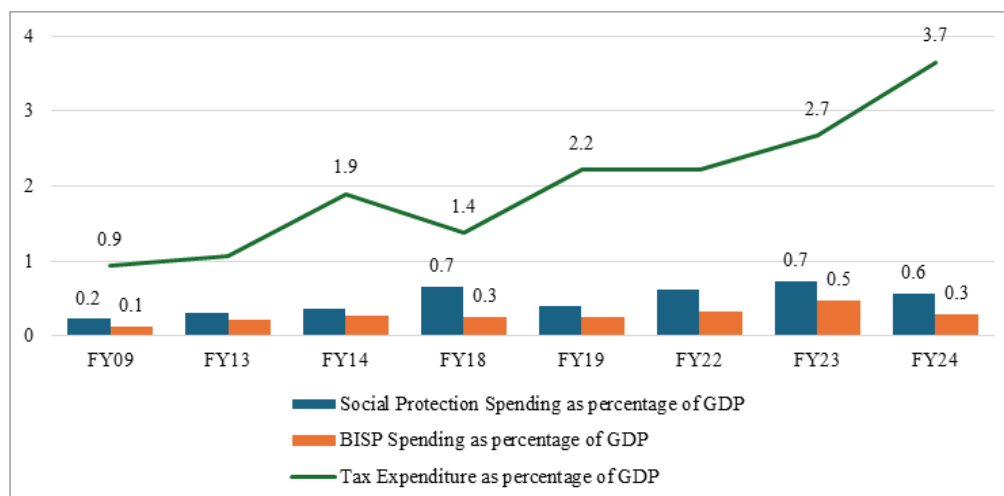
FY	Income Tax		Sales Tax		Custom Duty	
	PKR billion	Percent	PKR billion	Percent	PKR billion	Percent
08	27.7	31.9	17.6	20.3	41.4	47.8
09	40.9	34.2	17.5	14.6	61.3	51.2
10	46.5	31.6	27.4	18.6	73.2	49.7
11	46.5	26.5	33.8	19.3	94.9	54.2
12	69.6	33.8	24.3	11.8	112.0	54.4
13	82.4	34.4	37.4	15.6	119.7	50.0
14	96.6	20.2	249.0	52.2	131.5	27.6
15	83.6	20.3	225.4	54.7	103.0	25.0
16	67.3	17.1	207.3	52.5	120.0	30.4
17	14.0	3.37	250.1	60.1	151.7	36.5
18	61.8	11.4	281.1	52.0	198.2	36.6
19	141.6	14.6	597.7	61.5	233.1	24.0
20	378.0	32.9	518.8	45.1	253.1	22.0
21	488.0	36.0	578.5	42.7	287.8	21.2
22	399.7	27.0	739.8	49.9	342.9	23.1
23	423.9	18.9	1,294.0	57.8	521.7	23.3
24	477.0	12.3	2,858.7	73.7	543.5	14.0

Source: Author's computations from Tax Expenditure Report, Pakistan Economic Survey.

If tax expenditure is to be compared with social protection spending as a percentage of GDP, the tax expenditure stands many folds, and more alarmingly it is increasing steeply as shown in Figure 2.1. Whereas the social protection spending, specifically the spending on the Benazir Income Support Programme in proportion to the GDP has been almost the same over the past many years. The tax expenditure policy needs an objective revisit, and inefficient and inequitable tax expenditures should be curtailed.

In very beginning level ECON courses, the tax rate reduction and government spending multipliers are compared, and the conventional wisdom suggests that the magnitude of the government spending multiplier is higher than the tax rate reduction multiplier, however, the Government of Pakistan's tax expenditures are always higher than PSDP, and twice or thrice times of the social protection spending. Had the tax expenditures been cut down by at least 20 percent of their present magnitude, the social protection spending would have doubled. Either the government could double the existing unconditional compensation and make a pool of beneficiaries to graduate or keeping per capita spending constant the pool of beneficiaries may be doubled.

Figure 2.1: Tax Expenditure and Social Protection Spending as Percent of GDP



Source: Author's computations from Annual Budget Statements, Pakistan Economic Survey, various issues.

Similarly, the Provincial Revenues Authorities have shown little progress in real terms, and alarmingly the provincial taxes other than GST on services have the same share in total provincial taxes as it was before 2010, more than half of the Provincial taxes are collections are on account of GST on services.

Not only that GST on services is regressive, but the way it is being practiced has many tax distortions, compliance burdens, and reduced ease of doing for businesses, for instance, a nation-wide operating service provider must file sixty tax returns in a fiscal year. If the service provider is dealing in goods too, then it must file seventy-two tax returns annually, which obviously has legal and compliance cost for businesses. It has been a long overdue demand from the IMF to harmonize the GST on services and to increase it based on equity considerations.

Recently in Sindh Finance Bill 2025, the Government of Sindh has increased its statutory rate from 13 to 15 percent. Furthermore, the sales tax on education and health services has been imposed in the budget FY25, these services are exempt in the other three provinces, this decision was least expected from the Government of Sindh. The major challenge in terms of GST on services is the different taxability of the same services with different tax treatments and tax rates by different provinces. A complex legal framework for cross admissibility or non-admissibility of inputs has led to flying input invoices. Although the provincial sales tax on services laws is de-jure VAT mode taxation, the de-facto taxation is more likely a retail sales tax or sales tax on a single point, which should be discouraged. A national tax authority for harmonization and data sharing may lead to efficiency and reduced burden of assessment along with higher compliance.

So far, the budget books of Punjab, Sindh, and Khyber Pakhtunkhwa are publicized on their websites, which is why Table 2.4 provides the comparative revenue position of three provinces. The provincial resource pool has the single largest component as federal transfers of which the divisible pool is the largest category. The reliance on federal transfers dependency syndrome which means substituting federal transfers over own tax effort. The Provincial resource pools are dominated by federal transfers to an extent of 93.6 percent in Khyber Pakhtunkhwa, followed by Punjab at 79.9 percent and Sindh at 75 percent. Provincial own taxes in Sindh are 25 percent of the resource pool followed by Punjab 20 percent, Balochistan 7.1 percent, and Khyber Pakhtunkhwa at 6.7 percent. The overriding reliance on sales tax on services has resulted in a low appetite for reforms in the taxes already available before the devolution in 2010.

2.2 Federal and Provincial Budgeted Expenditures

Although the tax target of PKR 12.97 trillion is very ambitious, still the entire tax collection will be spent on debt servicing PKR 9.8 trillion which amounts to 75.4 percent of budgeted tax collection, followed by PKR 2.1 trillion (16.4 percent), and pensions PKR 1.01 trillion (7.8 percent of tax collection). The three expenditures will cumulatively expense out the entire tax collection by about 99.5 percent, which is alarmingly showing extreme fiscal stress.

The planned development outlays of provinces have shown expansion, that too based on extraordinary planned external support of development partners, for example, 34.8 percent of Sindh's ADP is financed under Foreign Project Assistance, followed by KP 31.4 percent, Punjab 12.3 percent, and Balochistan 8.8 percent, whereas the utilization rates of ADPs for FY24 was KP almost 100 percent, followed by Punjab 97.9 percent, Sindh 72.0 percent and Balochistan 59.7 percent (Table 2.5). Of overall outlay, the development spending ranges between 25 to 30 percent and this pattern has been consistent over the past many years. This is due to structural problems of the large footprint of the public sector, inefficiencies, and development being crowded out due to large recurrent spending and public debt. The debt is non-neutral and both the Federal and Provincial governments are simultaneously increasing the tax rates, and taxes with the increase in debt. Expansionary fiscal policy, with distortionary taxes, and large recurrent outlays will be a persistent threat to fiscal solvency.

Table 2.4: Comparative Revenue Position of Provinces

	Punjab		Sindh		Khyber Pakhtunkhwa		Balochistan									
	FY24RE	FY25BE	FY24RE	FY25BE	FY24RE	FY25BE	FY24RE	FY25BE								
Federal Transfers	PKR billion	Percent billion	PKR billion	Percent billion	PKR billion	Percent billion	PKR billion	Percent billion								
Revenue Assignment	2,665	84.7	3,683	79.3	1,264	67.2	1,747	66.0	859	67.3	1,014	69.9	481	80.8	647	81.6
Straight Transfers	12	0.4	12	0.3	97	5.2	106	4.0	216	16.9	198	13.7	41	6.9	21	2.6
Development Grants (PSDP & Foreign)	12	0.4	3	0.1	11	0.6	83	3.1	117	9.2	145	10.0	31	5.2	59	7.4
Other Grants (in Case of Sindh OZI)	6	0.2	4	0.1	34	1.8	47	1.8	-	-	-	-	-	-	-	-
Total Federal transfers	2,694	85.7	3,703	79.7	1,407	74.8	1,984	75.0	1,192	93.3	1,357	93.6	553	92.9	727	91.7
Provincial Revenue																
Sales Tax on services	225	7.1	294	6.3	230	12.2	350	13.2	32	2.5	39	2.7	26	4.4	36	4.5
Other tax receipts	115	3.7	178	3.8	167	8.9	269	10.2	24	1.9	24	1.7	5	0.8	11	1.4
Non-tax revenues	110	3.5	469	10.1	78	4.1	43	1.6	29	2.3	30	2.1	11	1.8	19	2.4
Total Provincial Revenues	450	14.3	941	20.3	475	25.2	662	25.0	85	6.7	94	6.4	42	7.1	66	8.3
Total Revenues	3,145	100	4,643	100	1,882	100	2,646	100	1,277	100.0	1,450	100	595	100	793	100

Source: Annual Budget Statements, Government of Punjab, Government of Sindh, Government of Khyber Pakhtunkhwa, Government of Balochistan.
Note: Figures are rounded up to the nearest billion. BE stands for Budget Estimates and RE stands for Revised Estimates.

Table 2.5: Federal and Provincial Budget Outlay and Development Spending

Federal and Provinces	FY24 Budgeted Vs Revised Estimates										
	Total Budget Outlay					Development Spending					Budget FY25
	BE PKR billion	RE PKR billion	Utilization percent (BE-RE)/BE	BE PKR billion	RE PKR billion	Utilization (BE-RE)/BE	Total PKR billion	Non- Development Recurrent Expenditure	Development Budget PKR billion	FPA PKR billion	FPA as percent of Development Budget
Federal	19,561	18,418	94.2	1,609	1,490	92.6	24,388	22,371	2,017	668	33.1
Punjab	2,729	2,679*	98.2	655	642	97.9	5,446	4,604*	842	103	12.3
Sindh	2,146	2,114	98.5	735	530	72.0	3,376	2,417	959	334	34.8
KP	1,360	1,363	100.2	301	301	100.0	1,654	1,238	416	131	31.4
Balochistan	750	624	83.2	313	187	59.7	930	609	321	28	8.8

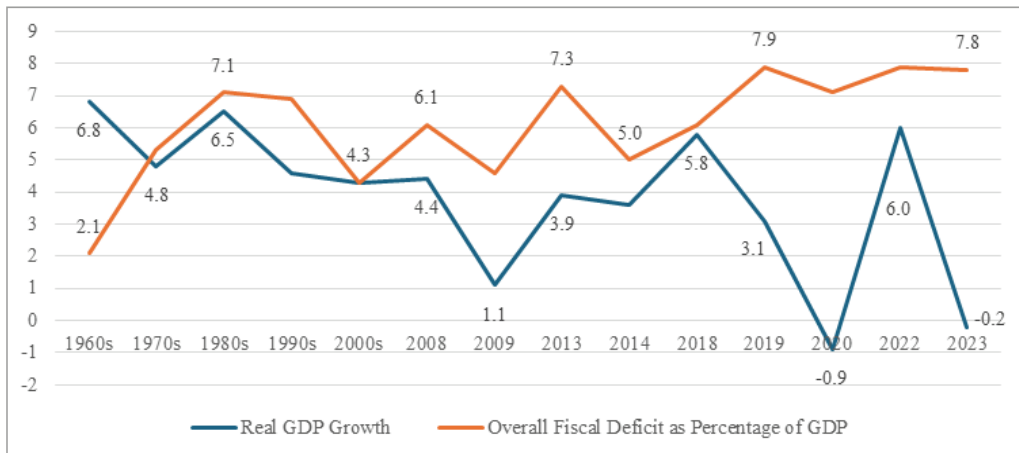
Source: Federal and Provincial Annual Budget Statements, Government of Pakistan, Government of Punjab, Government of Sindh, Government of Pakhunkhwa, and Government of Balochistan.

*Includes PKR 600.3 billion surplus and the last year's corresponding value of surplus was PKR 115.2 billion.

Note: BE stands for Budget Estimates and RE stands for Revised Estimates.

The target for economic growth for FY25 is set out as 3.6 percent of GDP, aiming to maintain the fiscal deficit at 5.9 percent of GDP. The Figure 2.2 compares the historical trend in economic growth and overall fiscal deficit. This is precisely considered as a fiscal solvency condition that the growth of debt or markup on debt is faster than the economic growth (national income growth). In this case, it reflects that during the initial decades, the gap between economic growth and fiscal deficit was minimal, over time this gap goes wider, and this is precisely the fiscal insolvency. Larger gaps represent the gravity of fiscal stress. Similarly, the structural nature of this gap continues during the present budget cycle too, although it has been a big challenge to bring stabilization to the economy specifically during the IMF Stand-by Arrangement from Jul-23 to Apr-24, still the government planned to opt for an expansionary fiscal policy with stringent tax measures, disproportionate reliance on indirect taxation and limited relief measures.

Figure 2.2: Historical Trends in Real GDP Growth and Overall Fiscal Deficitst



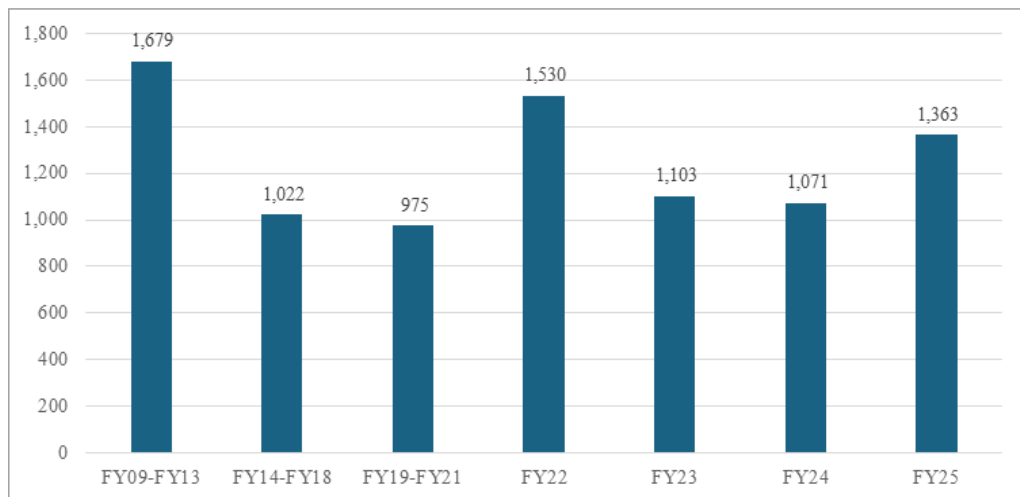
Source: Author's computations from Annual Budget Statements, Fiscal Policy Statements, various issues.

Other than structural constraints, there are certain policy decisions and determinants that help understand the gravity of present macro-fiscal crises which dates to the time of no-confidence movement. During the month of no-confidence movement, the then government granted generous consumption based blanket subsidies on electricity, gas, and petrol which increased the fiscal obligations, coupled with a current account deficit of USD 17.5 billion.

The cumulative sum of subsidies during 2008 to 2013 and 2013 to 2018 was PKR 1679 billion and PKR 1022 billion respectively, however, the subsidies alone for FY22, the year of vote of no-confidence amounted to PKR 1530 billion, resulting in non-compliance of conditions of IMF Extended Fund Facility 2019 to 2023.

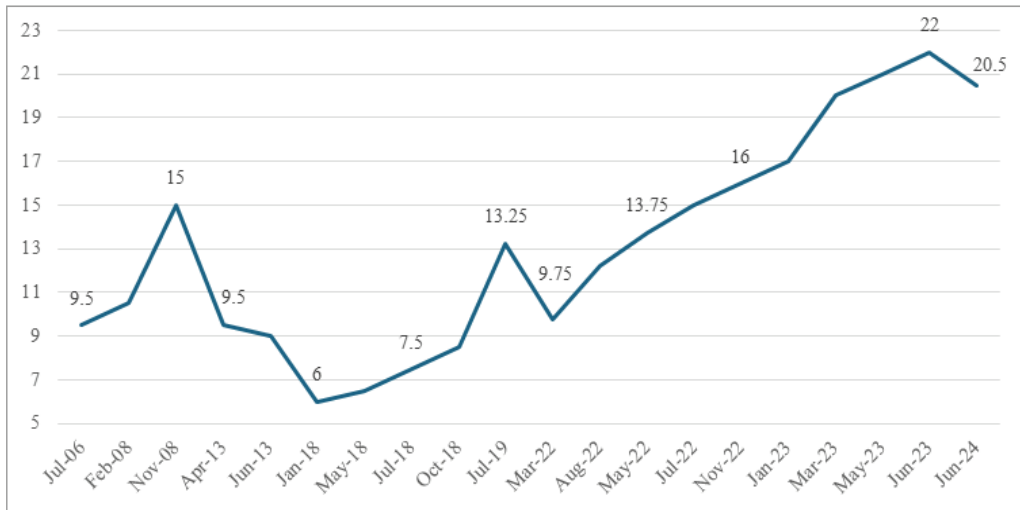
This move initiated a perpetual cycle of subsidies of PKR 1103 billion, PKR 1071 billion PKR 1363 for FY23, FY24, and FY25 respectively (Figure 2.3), coupled with a consistently high policy rate of 20.5 percent (Figure 2.4) resulting in crowding out, and productivity losses. Adding to the severity, FY22 witnessed massive torrential rains and floods resulting in huge socio-economic losses with a very slow recovery. With all these pressures a short IMF Stand-by Arrangement from Jul-23 to Apr-24 has been completed this year, with a focus on avoiding default and bringing sustainability. After the passage of the budget FY25, the government has entered into a staff level agreement with the IMF for an Extended Fund Facility 2024-27; of USD 7 billion. Under the EFF IMF required the provincial governments to shift the system of GST on services from a positive to a negative list, also the provinces are required to levy agriculture income tax at par with the other sectors of the economy.

Figure 2.3: Federal Subsidies FY09 to FY25 (PKR in billion)



Source: Author's computations from Annual Budget Statements, and Fiscal Policy Statements, various issues.

Figure 2.4: Policy Rate FY07 to FY24 (percent)



Source: Author's tabulations from Monetary Policy Statements various issues, State Bank of Pakistan.

The magnitude and pattern of SOE's losses are an unending fiscal nuisance, constraining the government's fiscal capacity. There are instances where many SOEs have made gross losses which signify that the cost of sales is more than the sales revenue. One of the highest loss-making SOEs, the Pakistan International Airlines (PIA), is on the top of the list for privatization and yet a deal is awaited. During the last two decades, PIA incurred a gross loss of PKR 10.3 billion during FY13, and this resulted in persistent losses despite many institutional reforms. Similarly, from FY01 to FY24, Sui Northern Gas Pipelines Limited (SNGPL) incurred a gross loss of PKR 9.7 billion during FY13 and it took about five years for SNGPL to regain the potential momentum of growth. The SOEs model of governance posed serious risk and threat to the fiscal solvency of the country.

Given the contextual understanding of fiscal challenges and budget FY25, the socio-economic problems of Pakistan will remain unaddressed given such adhoc resource measures and inequitable spending. Most subsidies in the country are untargeted and cover the system inefficiencies of the energy and power sector. The consumption based blanket subsidies favour those who consume more, therefore it is highly inequitable.

Pakistan is the fifth largest country in the world. The growth rates are very high which is evident from the fact that Pakistan's population per Census 1951 was 33.74 million, whereas during the past five years Census 2017 and Census 2023, the absolute addition to the country's population is 33.82 million, which is more than the baseline population as of 1951. As per United Nations Development Report 2022, the HDI ranking of Pakistan is 164 out of 193 countries. Pakistan's public debt is higher than 70 percent of its GDP, which is a gross violation of the Fiscal Responsibility and Debt Limitation Act which limits the government to restrict the public debt to a maximum of 60 percent of GDP. Most fiscal resources are used in debt servicing, the debt servicing is as high as more than 5 percent of GDP, which is higher than cumulative Federal and Provincial spending on education and health.

One of the major structural problems of the country is the balance of payment crisis, the exports are concentrated in three major baskets of goods cotton, rice, and leather to an extent of about 75 to 80 percent of total exports, so the country immensely need exports diversification in terms of commodities and markets. Due to such constrained fiscal space, the country spends merely 2.5 percent of its GDP on education, of which more than 90 percent is non-development recurrent spending. The IMF review reports reveal that the wage bill of Pakistan in the education sector is higher than high performing countries whereas the education indicators are amongst the poorest performers.

Pakistan hosts 22.64 million out-of-school children, which is one of the highest in the world. Although Pakistan is below the spending threshold of 4 percent of GDP as set out by the UN, the country signed the Incheon declaration with a commitment to spend 6 percent of GDP on education. The spending on health is even half of the education spending. The malnutrition rates are high, and the country's corresponding spending on nutrition is abysmally low. More importantly, the country's social protection spending is about 0.5 percent of GDP. Pakistan is a country with a very young population, and the median age ranges between 14 to 22 years across Pakistan. A youth bulge deprived of education and health will be a demographic disaster instead of generating demographic dividends.

The malnutrition and triple disease burden are causing massive annual losses in economic activity, so for a healthy revival of industrialization in Pakistan, it is high time to prioritize investment in education, health, and nutrition. On the other hand, the equity in taxation and spending framework would complement the objectives of industrial growth. The Global Urban Competitiveness Report 2019-20 by UN HABITAT presents the ranking of the top 200 cities of the world according to their economic competitiveness. Not a single city in Pakistan is placed on this list of the top 200 economically competitive cities. This warrants a careful revisit of economic, and tax policies of Pakistan to strengthen an efficient and effective governance framework.

Pakistan's rising public debt, low fiscal space, and weak financial capacity resulted in a persistently poor state of human development. Unequitable growth, high unemployment, and inequality, circular debt in the energy sector, the balance of payment crisis, massive losses of state-owned enterprises, and climate change have added to the governance problems and misery.

In the aftermath of the Eighteenth Amendment, with higher financial resources and powers, the social sector spending on education and health has been consistent over decades. However, provinces are very much aware of challenges and have pledged high priorities to education, health and nutrition, and child rights legislation. Given the magnitude of fiscal stress, for budget FY25, a debt and deficit led budget cannot have fiscal viability, but the situation will remain unchanged until a decent tax-to-GDP, benefit taxation with fair tax incidence and equitable public spending system are in place.

References

Government of Pakistan. (2024). Volume-I Annual Budget Statement 2024-25. Islamabad: Ministry of Finance.

Government of Punjab. (2024). Volume-I Annual Budget Statement 2024-25. Lahore: Finance Department.

Government of Sindh. (2024). Volume-I Annual Budget Statement 2024-25. Karachi: Finance Department.

Government of Khyber Pakhtunkhwa. (2024). Volume-I Annual Budget Statement 2024-25. Peshawar: Finance Department.

Government of Balochistan. (2024). Volume-I Annual Budget Statement 2024-25. Quetta: Finance Department.

Chapter 3

Future Landscape of the Economy

Wali Ullah and Fatima Sadik

Highlights

- Key factors contributing to underwhelming economic growth include low private sector investment, high interest rates, slow momentum in credit to the private sector, deteriorating law and order conditions, ongoing political uncertainty, and historically low global economic growth.
- Econometric projections of key macroeconomic indicators, including GDP growth rate and inflation, for the next three fiscal years are performed based on three scenarios.
- In FY25, the GDP growth rate is likely to be in the range of 2.05 to 3.6 percent and inflation will likely decline from 26 percent but stay between 12 and 16.8 percent, given the stated assumptions hold true.

3.1 Introduction

Yet again, Pakistan's economic performance in the outgoing fiscal year was subpar. The GDP growth target of 3.5 percent and inflation target of 21 percent set forth at the beginning of FY24 remain unattained as the reported growth rate stands at 2.38 percent and inflation stands at 26 percent. Key factors contributing to this underwhelming economic growth include low private sector investment, high interest rates, slow momentum in credit to the private sector, deteriorating law and order conditions, ongoing political uncertainty, and historically low global economic growth.

According to the recent Pakistan Economic Survey, Large Scale Manufacturing (LSM) has experienced negative growth for the second consecutive year. This can be attributed to persistently high interest rates, making it difficult for businesses to finance their activities due to soaring borrowing costs. The private sector investment grew by 15.8 percent in the fiscal year; however, the saving rate failed to increase, remaining steady at 13 percent.

Nonetheless, there are signs of recovery. The fiscal deficit dropped to 5.9 percent of GDP from 7.4 percent in FY23. The current account deficit showed signs of easing due to import management and lower domestic demand; the trade deficit declined from USD 21 million to USD 15.7 million. Moreover, after months of uncertainty, the stable exchange rate has helped maintain price stability and smoothen supply-chain disruptions. The improvement in foreign exchange reserves and the Stand-by Arrangement (SBA) with the International Monetary Fund (IMF) for USD 3 billion have also contributed to economic stability.

However, Moody's credit rating of Pakistan remains at Caa3. This underscores that Pakistan is not out of the woods yet. The ensuing political uncertainty, the delayed agreement with IMF for a bailout, vulnerability to extreme weather events, and high debt servicing requirements all indicate a tough upcoming year for Pakistan.

In this article, we make projections of major macroeconomic indicators under three possible scenarios and discuss the ramifications of government policies and budgetary allocations for the targeted growth rates.

3.2 Assumptions and Baseline Projections Scenarios

Here, we make projections of the major macroeconomic indicators under three different scenarios for the upcoming years, i.e., FY25, FY26, and FY27. The indicators include the real GDP growth, the prices, and the external sector. The common assumptions across all four scenarios are:

- The US economy's GDP growth rate, interest rate, and inflation forecasts for 2025-2027 are taken as reported by the IMF.
- Oil price forecasts are from the Environmental International Agency
- Data for all domestic variables in FY24 is from the Pakistan Economic Survey FY24, and the website (Easy Data) of the State Bank of Pakistan (SBP).

The projections are based on the following three different scenarios:

Baseline Scenario

Under this scenario, we assume that:

- The country will not go into a political crisis like the previous year, and there will be a moderate level of rain and flood (no severe flood like the previous year) in the upcoming monsoon season (July to September 2024, 2025, and 2026).
- The US economy will grow at the rate projected by the IMF and the international oil prices will grow at the rate given by the Economics Intelligent Unit.
- The IMF program will continue.

Scenario 1- The Budget FY24- Proposed Spending and Current Policy Rate Based Scenario

On June 12, 2024, the Government of Pakistan (GoP) released its annual budget for FY25. The federal government has set a GDP growth target of 3.6 percent and an inflation target of 12 percent. In addition, a revenue target of PKR 13 trillion and a targeted public sector development expenditure of PKR 3.792 trillion are set. This is a 58 percent increase as compared to only a 13 percent increase proposed in the last federal budget.

Using the budget FY25 and the facts and figures presented in the Pakistan Economic Survey FY24 for the projection of the future path of macroeconomic indicators, we assume in this scenario that:

- The baseline optimistic scenario prevails during FY25.
- The exogenous variables (policy variables, for instance, government expenditure, credit to the private sector, and State Bank policy rate, etc.) in the model are assumed to be the same as those released in the budget FY25 and Pakistan Economic Survey FY24.

Scenario 2- The Optimal Spending and Current Policy Rate Based Scenario

Here we assume:

- the baseline optimistic scenario prevails during FY25.
- the growth rates in the federal government investment expenditures, credit to the private sector, and policy rate during the upcoming three years are to be as follows (Table 3.1).

Table 3.1: Scenario-2 Optimal Policy Interventions (percent)

	Government Investment	Credit to Private Sector	Policy rate
FY25	41.25	32.50	16.75
FY26	35.25	25.05	14.75
FY27	25.25	18.00	12.75

Source: Authors' calculations

3.3 Growth Projections of Macroeconomic Indicators

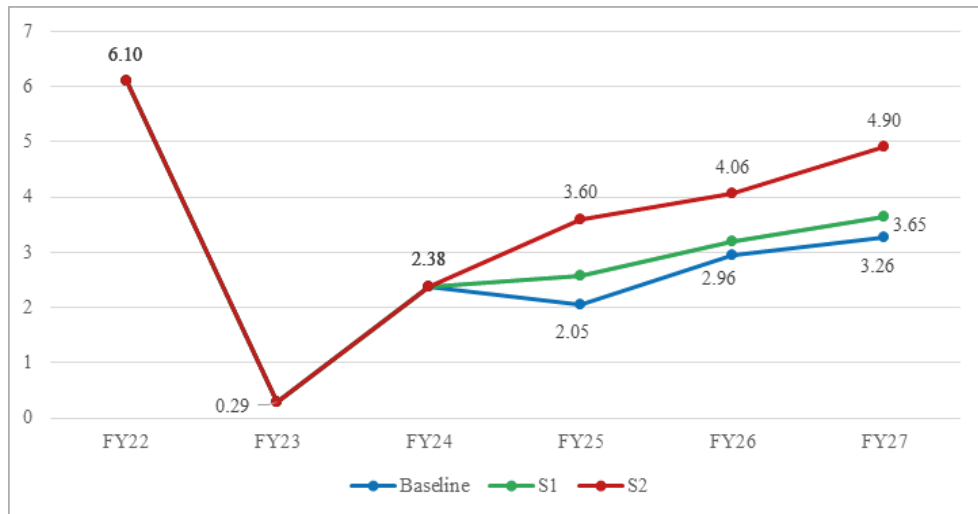
Using the scenarios defined above, the GDP, private investment, consumption expenditures, exports, imports, and price levels are projected for the upcoming three fiscal years. Using the macro-econometric model, we have estimated the growth path of major macroeconomic indicators using data from 1973-2024.

GDP and its Components Growth Projections

- The real GDP growth rate improved from 0.21 to 2.38 percent in the current fiscal year. This recovery can be attributed to:
 - Historically high growth of 6.25 percent in the agriculture sector.
 - Modest increments in public and private investment of 18.2 percent and 15.8 percent respectively.
 - An uptake in the Current and Development expenditure of 33.4 percent and 14.2 percent, respectively.

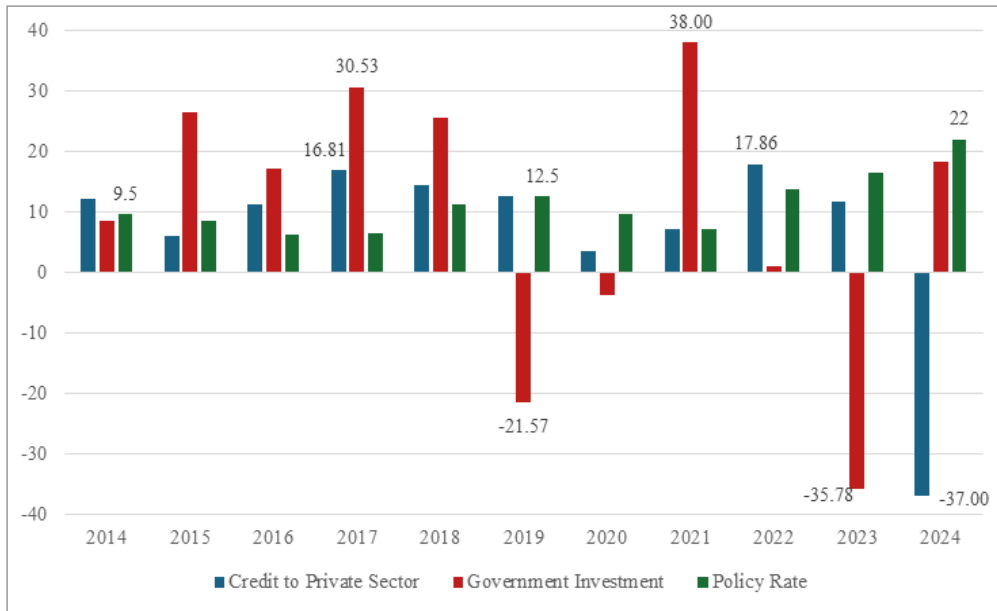
Figure 3.1 shows the GDP growth rate projections for the three upcoming fiscal years. The GDP growth rate for FY25 will remain positive and stay in the range of 2.05 to 3.6 percent, given the stated assumptions hold true. The growth target of 3.6 percent will be difficult to achieve under the current budget allocations. Our analysis suggests an optimal scenario with the implementation of key interventions (a 41.25 percent growth in government investment, a 32.5 percent increase in credit to the private sector, and a 16.75 percent policy rate), under which the targeted growth rate is attainable (Figure 3.2). These measures will help increase investment and create jobs, and the resulting multiplier effect will increase output by manifolds.

Figure 3.1. GDP Projected Growth Rate



Source: Authors' calculations

Figure 3.2: Policy Rate, Government Investment, and Private Sector Growth (percent)



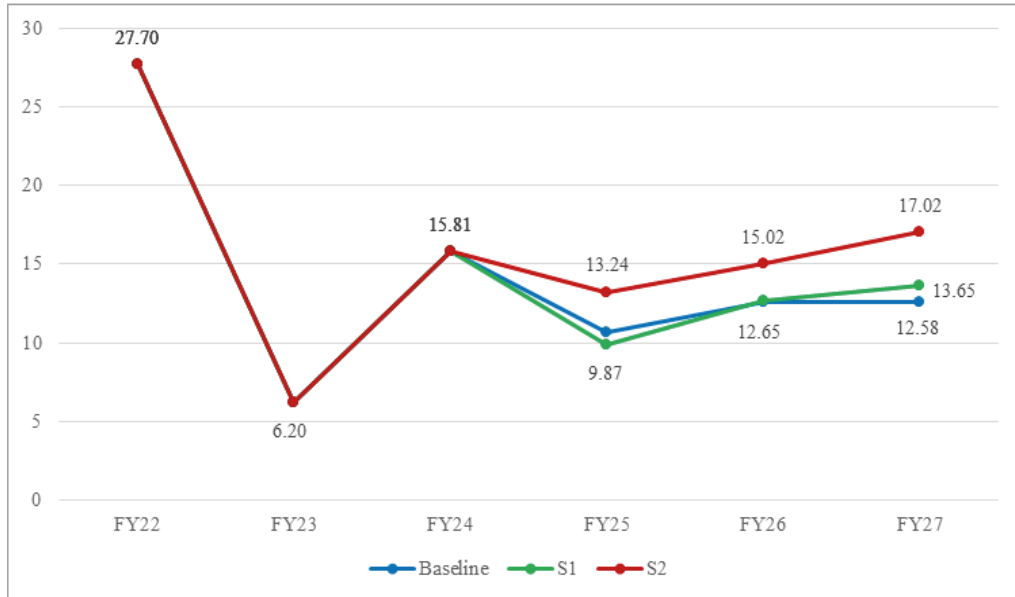
Source: Authors' calculations

Growth of Private Investment

Private sector investment shows a growth of 15.8 percent during the outgoing fiscal year. The projections show a decline in the growth of private investment for FY25 under all three scenarios (Figure 3.3). However, by lowering the policy rate to 16.75 percent, a 13.24 percent growth can be encountered which is the highest possible among the three scenarios. The rise in private sector investment in FY24 can be attributed to:

- Private sector investment in agriculture, forestry, and fishing is rising by 27 percent, fueled by imports of agricultural machinery.
- The higher exploration cost incurred by mining companies led to a 10.4 percent surge in the mining and quarrying segment.

Figure 3.3: Growth Projections for Private Investment (percent)

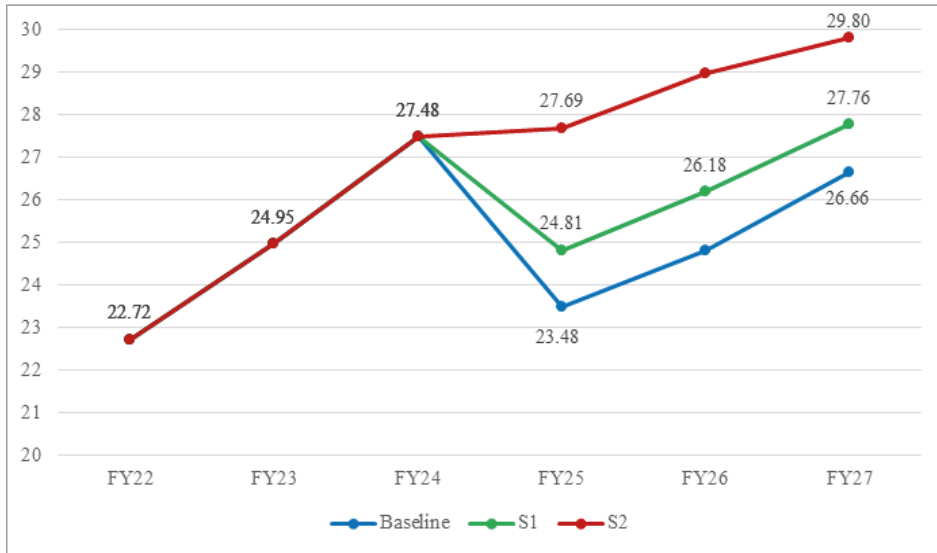


Source: Authors' calculations

Private Consumption Growth

Despite the high domestic inflation, tight monetary policy, and uncertain exchange rates, consumption has grown by 27.48 percent. Pakistan continues to be a consumption driven economy, as it constitutes more than 80 percent of the GDP. The projections suggest that consumption growth may slow down under the current policy mix (Figure 3.4). The proposed optimal policy mix will maintain the consumption growth at the FY24 levels. Similar to FY23, government cash transfers and inflows from overseas remittances helped sustain consumption levels in FY24.

Figure 3.4: Consumption Growth (percent)



Source: Authors' calculations

Prices Growth Projections

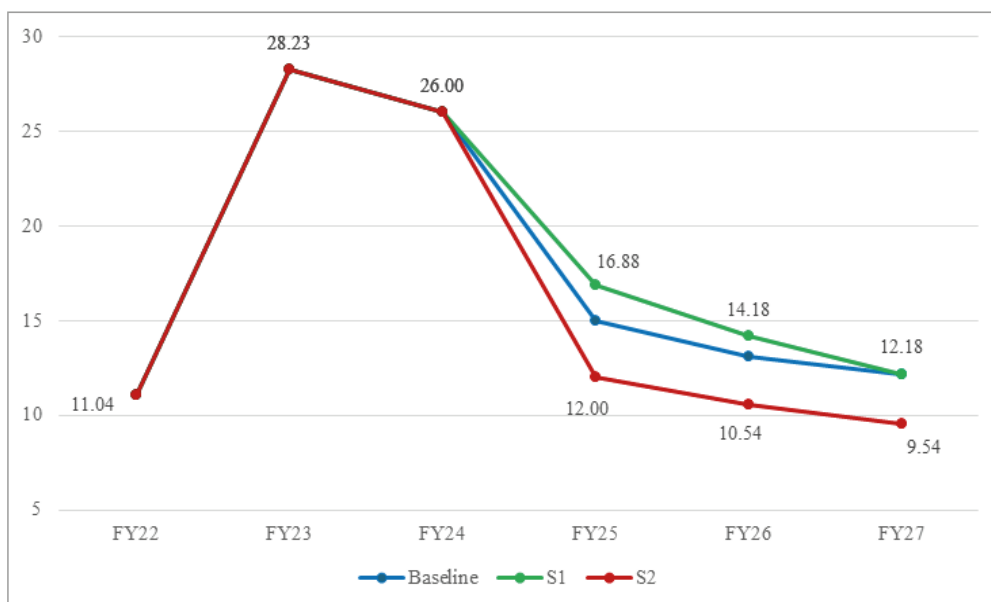
Since the pandemic subsided inflation has been the most pressing issue in the global as well as in Pakistan's economy. The situation was worsened by the ensuing Ukraine-Russia war and conflict in the Middle East. Inflation has eased slightly in the outgoing fiscal year, dropping to 26 percent compared to 28.2 percent the previous year. This decline could be linked to a combination of factors, including high interest rates and a restrictive monetary policy, and a stable exchange rate alongside potentially favorable global commodity prices.

As per our analysis, the inflation target for FY25 of 12 percent seems unattainable under the current policy mix (Figure 3.5). The baseline scenario suggests a possible 15 percent inflation rate, while scenario 1 depicts a 16.8 percent price increase. Only under the optimal scenario (S2), a 12 percent targeted inflation is attainable.

Under the baseline scenario and scenario 1, the inflation is higher than the targeted levels. This could be because of:

- Upward revision in gas, fuel, and electricity tariffs, thus pushing up the cost of production.
- The demand and supply gap for food commodities increases due to rising demand and a slow opening up of supply chains, thereby leading to food inflation.

Figure 3.5: Inflation Rate



Source: Authors' calculations

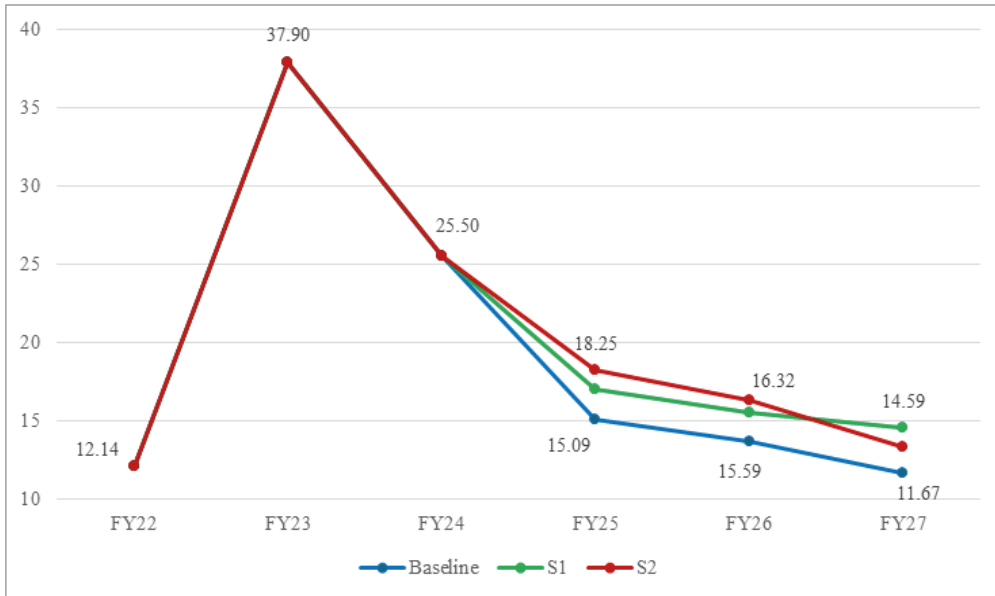
Food inflation

Lower world commodity prices and a good domestic crop yield have helped lower food inflation to 25.5 percent in FY24, providing a much-needed relief after FY23, where food inflation soared to 37.9 percent. Our analysis shows that under all three scenarios, food inflation will decline ranging between 15.09 to 18.25 percent (Figure 3.6).

The possible reasons for continued upward pressure on food prices are:

- beans, sugar, mash pulse, masoor pulse, and dry fruits prices have soared the most. However, prices of edible oil/ghee declined due to declining global prices of palm and soyabean oil.
- high transportation cost and margins charged by the middlemen contributed to high prices of fresh vegetables including onions, tomatoes, etc.
- poor storage facilities increase waste and disrupt seasonal price cycles.
- reliance on food imports due to domestic shortages.

Figure 3.6: Food Inflation (percent)



Source: Authors' calculations

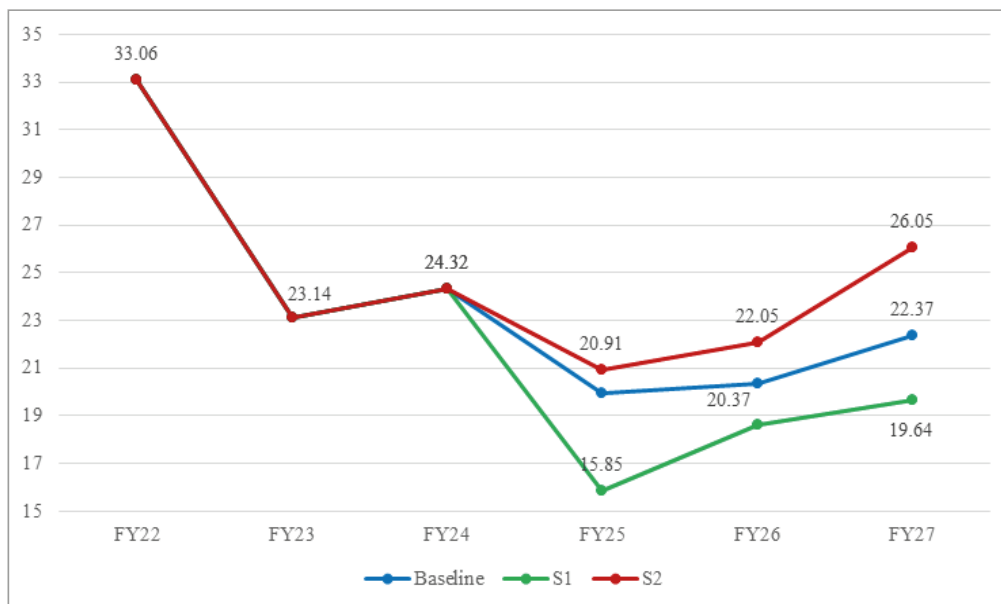
External Sector Growth Projections

Export Growth

FY24 shows a modest recovery in export growth of 24.32 percent. The recovery of competitive edge in textile exports, and increased rice exports contributed towards this uptake. However, the forecasts show a subsequent decline in growth in all three scenarios in FY25, with a 15.85 percent growth under the current policy mix (Figure 3.7). This is because of:

- sluggish global growth has hampered global demand. This has considerable impact on the demand for textile and apparel, which remains the backbone of Pakistan's exports.
- the US and EU ban on shrimp exports from Pakistan due to non-compliance with Turtle Excluder Device (TED) regulations.
- lack of diversification in exports. As only cotton, leather, and rice constitute 68.2 percent of total exports.

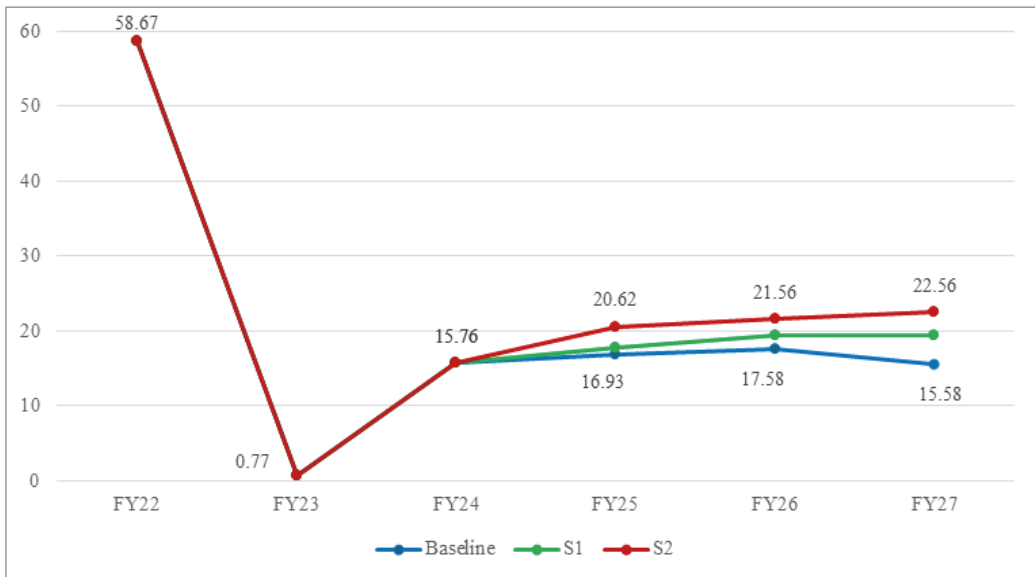
Figure 3.7: Exports' Growth Projections



Source: Authors' calculations

Import Growth

Pakistan's import sector witnessed a V-shaped recovery in FY24, with a surge of 15.7 percent. This growth can be linked to the government's decision to lift import restrictions, previously implemented to conserve foreign exchange reserves. The forecasts show that in all three scenarios import growth will be positive, ranging between 16.9 to 20.6 percent (Figure 3.8). Given that many export-oriented industries such as textile depend on imports, this outlook is logical. Moreover, remittance and CPEC-related inflows offset the trade imbalances, however, in the long-run import substitution and diversification of exports and finding new trading partners are required.

Figure 3.8: Imports' Growth Projections

Source: Authors' calculations

3.4 Conclusion

Pakistan's economy faces an intricate web of challenges and opportunities. While the GDP growth improved in FY24, it remains below targets. Inflation continues to be a major concern, despite a slight decrease. The upcoming year presents a daunting scenario with political uncertainty, the potential for extreme weather events, sluggish global activity, and a looming debt crisis.

The article explores three potential scenarios for the future. The baseline scenario suggests a continuation of current trends, with modest GDP growth and persistent double-digit inflation. Scenario 1, which is based on the proposed budget, is unlikely to achieve its growth target due to a significant fiscal gap of PKR 7.5 trillion. This gap stems from high debt repayments (PKR 7.3 trillion) and transfers to provinces (PKR 5.4 trillion), leaving little room for investment in critical areas. The situation is projected to worsen, with debt servicing costs exceeding PKR 9 trillion next year. Moreover, the proposed sky-high increase in PSDP expenditure is unsustainable and unattainable.

This heavy reliance on debt to finance current expenses, such as salaries, is unsustainable. It's like getting stuck in a crocodile's grip – the more we borrow, the harder it is to escape. Fiscal discipline is the need of the hour. Borrowing should be strategic, and focused on promoting growth through investment in export-oriented sectors, not just covering current spending.

To achieve sustainable economic growth, several key areas require attention:

- **Export Competitiveness:** The government needs to prioritize maintaining and enhancing the country's export base, particularly in the textile sector, which is the backbone of Pakistan's exports. However, diversification beyond traditional commodities like cotton, leather, and rice is crucial. It is time to invest in tech and renewable energy exports and explore regional trade agreements. This can be achieved by:
 - **Investing in research and development** to create new exportable and innovative products and improve existing ones.
 - **Providing targeted incentives and subsidies** to export-oriented industries, particularly for value-added products.
 - **Streamlining trade regulations** to reduce bureaucratic hurdles and expedite export processes.
- **Domestic Savings:** Despite high interest rates, Pakistan's saving rate remains abysmally low at 13 percent compared to regional neighbors like Bangladesh (34 percent), India (30 percent), and Iran (38 percent). This low saving rate hinders investment and economic growth.
 - **Developing a robust domestic Sukuk market** can incentivize savings and provide alternative financing options, particularly for individuals seeking Shariah-compliant investments. Sukuk, Islamic bonds, offer the potential for a wider range of the population to participate in the financial system.
 - **Encouraging a culture of saving** through financial literacy campaigns and tax breaks for retirement savings plans can also contribute to a rise in domestic savings.

- **Structural Reforms:** Broadening the tax base and implementing policies that encourage export growth are essential for long-term economic health.
 - **The government can broaden the tax base** by identifying and including currently untaxed sectors and individuals in the tax net. This can be done through improved tax administration and reducing reliance on indirect taxes, which disproportionately burden low-income earners.
 - **Export-oriented policies** should incentivize businesses to invest in and expand their export capabilities. This can include simplifying export procedures, establishing special economic zones with tax breaks for exporters, and negotiating favorable trade agreements with other countries.

The success of any economic strategy will crucially depend on political stability, effective implementation, and adaptation to external factors. By addressing these challenges and pursuing a balanced approach that prioritizes fiscal responsibility, export competitiveness, and domestic savings mobilization, Pakistan can navigate the rough waters and unlock its true economic potential.

References

Economic Adviser's Wing. (2022-23). Pakistan Economic Survey. Islamabad: Ministry of Finance.

Economic Adviser's Wing. (2023-24). Pakistan Economic Survey. Islamabad: Ministry of Finance.

Chapter 4

Giving imports a break? The impact of recent import restrictions

Aadil Nakhoda

Highlights

- The recent balance of payment crisis and sluggish economic growth rates in Pakistan created significant challenges on the economic front. One of the measures to curtail the outflow of dollars was to impose restrictions on imports in 2022, when the crisis was at its peak and the foreign exchange reserves were dwindling.
- The three common measures undertaken included in Pakistan were import tariffs, internal taxation of imports, and trade payment measures, which affected almost half of the imports into Pakistan.
- On one hand, Pakistan reported a decrease of 21 percent in the imports of products on which it imposed harmful government interventions. On the other hand, regional counterparts experienced a positive growth rate of imports, particularly of goods which were restricted in Pakistan due to government interventions.
- The largest impact was on the imports of capital goods, which decreased by about 40 percent, followed by a decrease of 20 percent in the imports of raw materials. The government restrictions have adversely impacted new investments into Pakistan and its productive capabilities. The impact on the imports of consumer goods was comparably lower.

4.1 Introduction

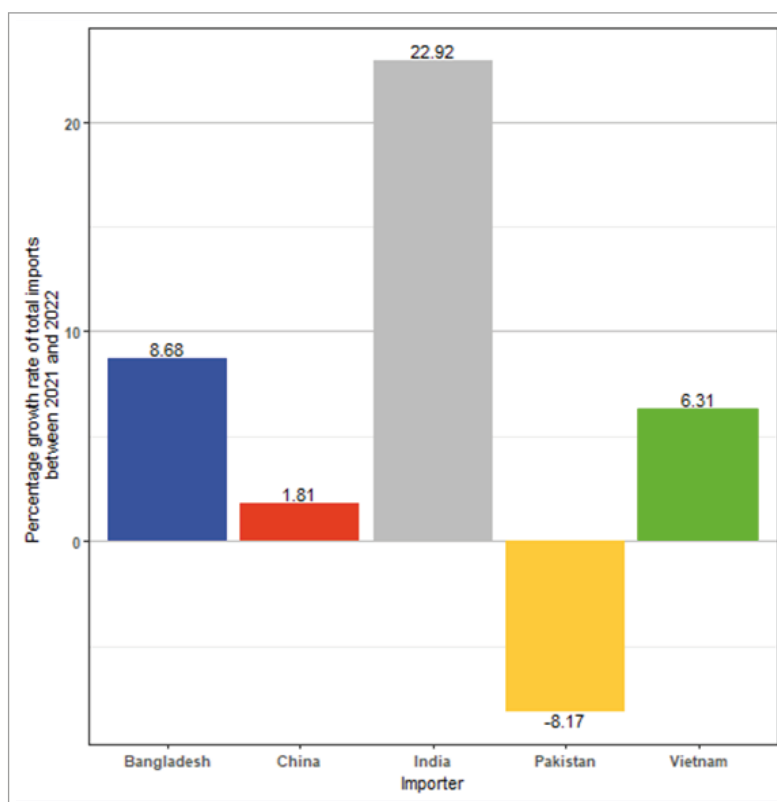
Pakistan faced significant challenges on the economic front in 2022. Not only did it report historically high inflation levels and low economic growth rates, but the balance-of-payment crisis also spiralled out of control as foreign exchange reserves dropped to alarmingly low levels. The government adopted measures to curtail imports to reduce the surmounting trade deficit. The current account deficit in the first two quarters of calendar year 2022 was approximately USD 8.5 billion. This was curtailed to USD 3.6 billion in the last two quarters. Payment on imports fell from USD 36 billion in the first two quarters of 2022 to USD 29.5 billion in the last two quarters of 2022.¹ The more common government interventions involved import tariffs, internal taxation of imports, trade payment measures, import licensing requirements, and anti-dumping duties. This study analysis the implications of the government intervention in 2022 on the import flow into Pakistan. The products are classified according to their respective stages of production, namely capital goods, raw materials, intermediate goods, and consumer goods.

The import trend is also compared across major regional counterparts. First, the number of interventions and the share of imports facing interventions is reported. Second, the trend of imports across the major regional counterparts, namely, Bangladesh, China, India, and Vietnam, for products on which the Pakistani government has imposed measures is reported.

4.2 Data

The data on import is extracted from the Center for Prospective Studies and International Information (CEPII) Analytical Database of International Trade (BACI) dataset and the data on import-related government measures is extracted from Global Trade Alert.² The data on product categories is borrowed from the World Bank's World Integrated Trade Solution.³

Figure 4.1: Growth Rate of Total Imports between 2021 and 2022 (percent)

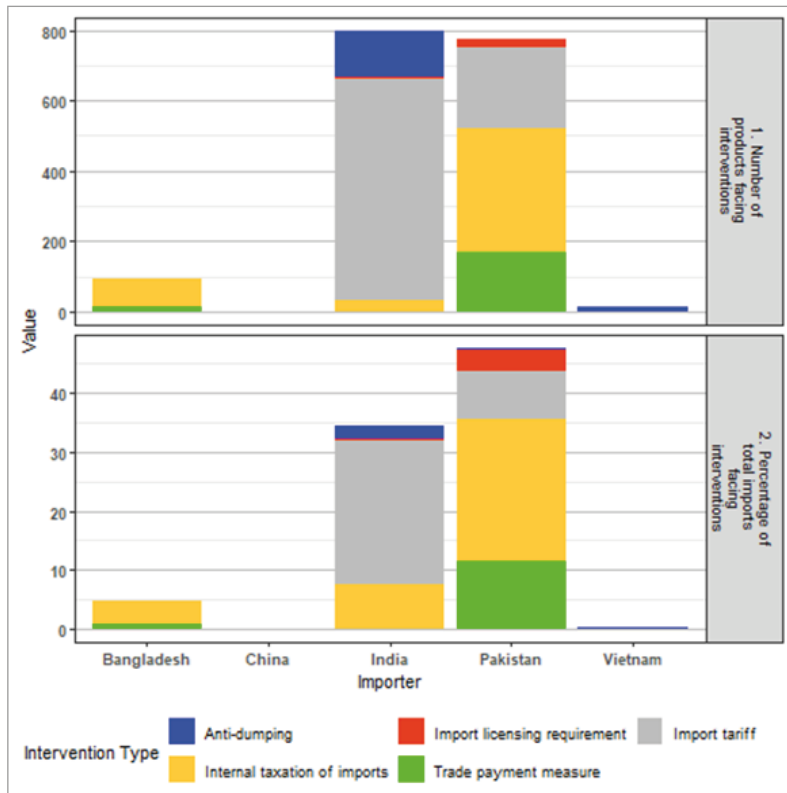


Data Source: Trade Data from CEPII's BACI dataset

The growth rate of total imports between 2021 and 2022 is presented in Figure 4.1. Imports into Pakistan decreased by 8 percent in 2022, while imports into the other regional countries increased. India reported an increase of approximately 23 percent, followed by 8.7 percent in Bangladesh, 6.3 percent in Vietnam, and 1.8 percent in China.

The number of products and the percentage of imports reporting different import-related harmful government interventions introduced in 2022 are presented in Figure 4.2. Different interventions were applied on 796 products in India and 775 products in Pakistan, followed by 95 products in Bangladesh. China only reported 1 such intervention and Vietnam reported 16. With approximately 47 percent of the imports reporting different government interventions in Pakistan, the three most common measures in Pakistan were import tariffs, internal taxation of imports, and trade payment measures. The most common measure in India was import tariffs as it restructured its tariffs on several imported items, while Bangladesh also applied tariffs on imports of machinery and transportation equipment. It is important to note that although India applied a larger number of interventions than Pakistan in 2022, primarily through its adjustment of import tariffs on the imports of its goods, the impact on its import flow was lower than in Pakistan. India reported a significant growth rate in its imports compared to Pakistan, where the flow of imports reported a downward trend.

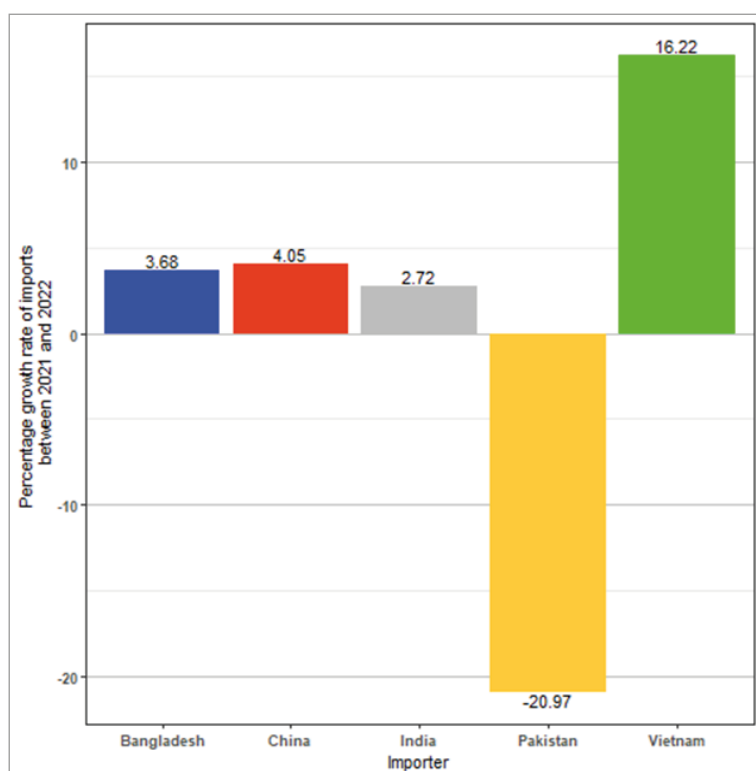
Figure 4.2: The Number of Products and the Percent of Imports Reporting Different Import Related Harmful Government Interventions Introduced in 2022



Data Source: Data for 2022. Trade Data from CEPII's BACI dataset.
Data on interventions from Global Trade Alert.

The growth rate of total imports into major regional counterparts between 2021 and 2022 of products for which import-related government interventions were introduced in Pakistan is presented in Figure 4.3. On one hand, Pakistan reported a decrease of 21 percent in the imports of products on which it imposed harmful government interventions. On the other hand, the other regional counterparts all experienced a positive level of growth in the imports of those products on which Pakistan had imposed harmful government interventions. Imports of these products into Vietnam increased by 16 percent, imports of the products into China increased by 4 percent, imports into Bangladesh increased by 3.7 percent and imports into India increased by 2.7 percent. It is interesting to note that although India reported an overall growth in imports of 22 percent, the products on which Pakistan imposed import restrictions only increased by 2.7 percent.

Figure 4.3: Growth Rate of Total Imports into Major Regional Counterparts between 2021 and 2022 of Products for which Import Related Harmful Government Interventions were Introduced in Pakistan (percent)

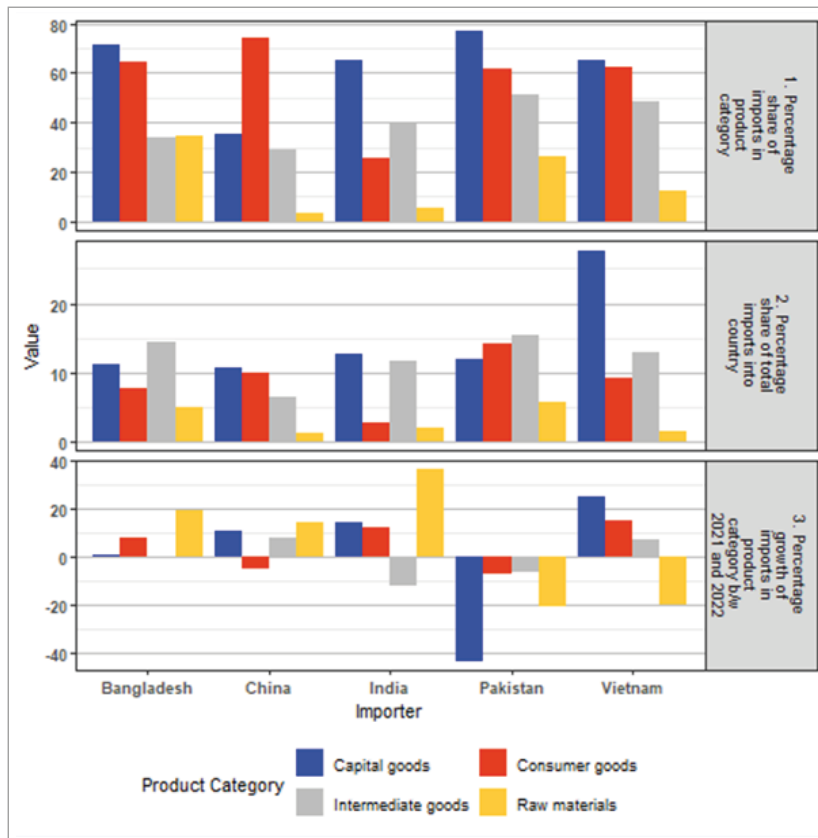


Data Source: Trade Data from CEPII's BACI dataset. Data on interventions from Global Trade Alert. Considers products facing government intervention in Pakistan

The trade indicators in the respective countries for products on which import-related harmful government interventions were introduced in Pakistan, in 2022, are presented in Figure 4.4. The first panel reports the share of those products in the total imports into the respective trading partner of each product category. The second panel presents the percentage share of total imports into the importing country affected by government interventions imposed by the Pakistani government by product category (this covers those products on which the Pakistan government imposes interventions and does not have to equal 100 percent) and the third panel presents the trade-weighted growth rate by product category. First, approximately 80 percent of the capital goods imported into Pakistan, in 2022, faced new harmful government interventions. More than half of the consumer goods and intermediate goods imported into Pakistan faced new government interventions in 2022. Further, these products constituted more than 60 percent of the imports of capital goods into other countries as well, except for China, for which it was less than 40 percent.

However, it is important to note that only a quarter of the imports of raw materials into Pakistan faced government interventions. The share was even lower in all other countries, except Bangladesh. Second, the imports of capital goods on which Pakistan imposed government interventions is more than a quarter of total imports into Vietnam. It was roughly 11 to 13 percent for the other countries. Those capital goods that faced government interventions in Pakistan are likely to be an important contributor to the import basket of Vietnam. Third, the most important contribution of this study, is that there was a secular decline across all product categories in the imports of goods on which harmful government interventions were imposed in Pakistan. Unfortunately, the largest impact was on the imports of capital goods, causing a 40 percent decrease in imports. The government restrictions have adversely impacted new investments in Pakistan. Next, there was a 20 percent decline in the imports of raw materials. Although the impact on the imports of intermediate goods and consumer goods was minimal, the analysis of government interventions also suggests that it was the investment and production capabilities that took a massive hit due to the government interventions rather than the imports of finished consumer goods, on which the impact was more subdued. Although certain product categories in the other countries may have declined, the drop was neither across all product categories nor was it as severe as it was for Pakistan.

Figure 4.4: Trade Indicators in the Respective Countries for Products in which Import Related Harmful Government Interventions were Introduced in Pakistan in 2022



Data Source: Trade Data from CEPII's BACI dataset. Data on interventions from Global Trade Alert.

Products categories borrowed from World Bank's World Integrated Trade Solution (WITS) products facing government intervention in Pakistan.

Given the fact that the different government interventions imposed by the Pakistani government affected almost half of its imports, the consequences of the reduction in productive capabilities in Pakistan can be severe. It is essential that government policymakers consider the adverse impact of their strategies on the economy and devise more comprehensive trade-related strategies that take into account the effect on the productive sectors.

Table 4.1: Top products imported into Pakistan reporting new import-related harmful government interventions

HS Code	Product Description	Interventions	Total imports into Pakistan (USD in millions)	Growth rate of imports between 2021 and 2022	Product Category	Percentage share in total imports
151190	Vegetable oils; palm oil and its fractions, other than crude, whether or not refined, but not chemically modified	Internal taxation of imports	3683.29	12.54	Consumer goods	4.97
720449	Ferrous waste and scrap; n.e.c. in heading no. 7204	Import tariff, internal taxation of imports	1011.62	-28.90	Raw materials	1.36
120110	Soya beans; seed, whether or not broken	Internal taxation of imports	934.79	-27.12	Raw materials	1.26
851712	Telephones for cellular networks or for other wireless networks	Import licensing requirement, trade payment measure, internal taxation of imports	816.62	-60.16	Capital goods	1.10
390210	Propylene, other olefin polymers; polypropylene in primary forms	Internal taxation of imports	695.05	-3.24	Intermediate goods	0.94
90240	Tea, black; (fermented) and partly fermented tea, in immediate packing of a content exceeding 3kg	Internal taxation of imports	627.53	14.49	Consumer goods	0.85

Source: CEPII's BACI dataset. Interventions from Global Trade Alert. Product categories from WITS

The top products imported into Pakistan reporting new government interventions in 2022 are presented in Table 4.1. The purpose of the table is to present a brief description of the product list, their growth levels, and the type of interventions introduced. These products constitute approximately 10 percent of the total imports into Pakistan. While the imports of telephones for cellular networks, categorised as capital goods, decreased by more than 60 percent in 2022, imports of vegetable oils and tea, categorised as consumer goods, increased by 12.5 percent and 14.5 percent respectively. Imports of raw materials and intermediate goods listed in the table also reported a decline. As can be observed, internal taxation of imports was a common measure adopted by the government. This clearly suggests that the productive capabilities were more impacted as unfinished goods and capital goods reported a decline.

4.3 Conclusion

Several government interventions were introduced in 2022 to curtail the demand for imports and tackle the balance-of-payment crisis. The government interventions included trade payment related measures, import licensing requirements, internal taxation of imports and import tariffs. Although, the government interventions were successful in reducing imports since the imports decreased by 8 percent in 2022, the question remains whether they targeted the right set of products. Approximately 80 percent of the imports of capital goods were affected by the government interventions, while consumer goods were less affected. The capital goods on which Pakistani government-imposed interventions account for more than a quarter of the imports into Vietnam. The interventions severely hampered the imports of capital goods and raw materials into the country as the former decreased by 40 percent and the latter by 20 percent. Finally, it is important to mention that two consumer goods commonly imported into Pakistan, tea and vegetable oils, observed an increase in their imports in 2022. This signifies the fact that consumer goods have not reported a drop like imports of other products such as capital goods and raw materials. The key points of the study are as follows.

- Imports into Pakistan decreased by 8 percent in 2022, while imports into the other regional countries increased. India reported an increase of approximately 23 percent, followed by 8.7 percent in Bangladesh, 6.3 percent in Vietnam, and 1.8 percent in China.
- With approximately 47 percent of the imports reporting different government interventions in Pakistan, the three most common measures in Pakistan were import tariffs, internal taxation of imports, and trade payment measures.
- On one hand, Pakistan reported a decrease of 21 percent in the imports of products on which it imposed harmful government interventions. On the other hand, the other regional counterparts all experienced a positive level of growth in the imports of products on which Pakistan imposed harmful government interventions. The import demand for products on which Pakistan imposed government interventions increased in the major Asian counterparts.
- The analysis on government interventions on imports, in Pakistan, suggests that it was the investment and production capabilities that took a massive hit due to the government interventions rather than the imports of finished consumer goods, on which the impact was more subdued.
- While the imports of telephones for cellular networks, categorised as capital goods, decreased by more than 60 percent in 2022, imports of vegetable oils and tea, categorised as consumer goods, increased by 12.5 percent and 14.5 percent respectively. Imports of raw materials and intermediate goods listed in the table also reported a decline.

Notes

1. The trend in imports is highlighted in the chapter on the business confidence index in this report. Please refer to it for more details.
2. A recent study appearing in PIDE's Discourse magazine, titled "Driving Pakistan's Industrialisation Strategy: Rethinking Import of Capital Goods", focuses on the import restrictions imposed on the imports of capital goods into Pakistan in 2022.
3. Source for BACI data: Gaulier, G. and Zignago, S. (2010) BACI: International Trade Database at the Product-Level. The 1994-2007 Version. CEPII Working Paper, N°2010-23. Source for GTA data: Simon J. Evenett and Johannes Fritz (2020). The Global Trade Alert database handbook. Manuscript, 26 October 2022.

References

- Evenett, S., & Fritz, J. (2020). The Global Trade Alert Database Handbook, Manuscript, 14.
- Gaulier, G., & Zignago, S. (2010). BACI: international trade database at the product-level (the 1994-2007 version). Working Papers 2010-23, CEPII.

Chapter 5

Business Confidence Survey: Highlighting the Fragile Economic Conditions

Aadil Nakhoda and Qazi Masood Ahmed

Highlights

- The Business Confidence Index (BCI) moved into the negative zone between June 2022 and November 2023. It has recovered into the positive zone since December 2023. The employment index and the Purchasing Manager Index (PMI) plunged into the negative zone in the latter half of 2022 and recovered at the end of 2023.
- The business community felt less confident about its hiring and purchases, suggesting poorer business prospects in the economy for most of 2022 and 2023. However, since late-2023, all major indicators have recovered suggesting improved levels of confidence. The Inflation Expectation Index (IEI) has also reduced in recent months.
- The Large-Scale Manufacturing Industries (LSMI) index and the trading activities from Pakistan were showing a downward trend in 2022 and 2023 as the average values were lower than in 2021. However, the indicators have recovered in late 2023. This suggests that the BCI does well in explaining the economic trend in Pakistan as it correlates well with the trend in LSMI index and exports, particularly in explaining the economic slowdown in 2022 and the recovery in late 2023.

5.1 Introduction

Policymakers commonly use the Business Confidence Surveys (BCS) to gauge the perceptions of the business community and understand the conditions prevailing in the economy. In Pakistan, the BCS is conducted by the State Bank of Pakistan (SBP) in collaboration with the Institute of Business Administration (IBA), Karachi. Since August 2018, it has been carried out as a bi-monthly telephonic survey conducted in the even numbered months of the calendar year. Since February 2023, it has been conducted as a monthly survey. This change was made to better facilitate the economic policymakers given the volatility in the economic environment.

The survey targets firms belonging to the manufacturing, construction, financial services, retail and wholesale, and services sectors across Pakistan. More than 500 firms are surveyed in every wave. The sample of firms was extracted from the business registry provided by the Securities and Exchange Commission of Pakistan (SECP). Firms with the highest paid-up capital within selected sectors were selected.

The businesses surveyed share their perceptions on the current and expected (in the next six months) performance of the economy via several different indicators. Although all indicators provide critical information to policymakers, this study will focus on the following indicators:

- Current Business Confidence Index (CBCI)
- Expected Business Confidence Index (EBCI)
- Business Confidence Index (BCI)
- Current Employment Index (CEI)
- Expected Employment Index (EEI)
- Purchasing Manager Index (PMI) and
- Inflation Expectations Index (IEI)

The details of these and other indicators are available on SBP's website under the BCS.¹ In the analysis that follows, the trend in the above BCS indicators is compared to those of major indicators on economic activity that are easily available, namely the Large Scale Manufacturing Index (LSMI) and exporting activities.

5.2 The Methodology

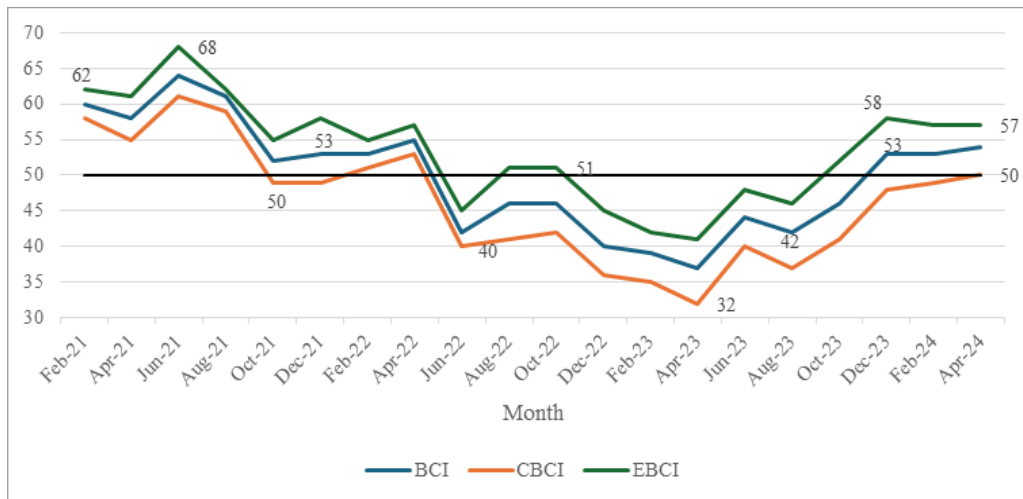
The results of the BCS are reported in the form of a Diffusion Index (DI), which is calculated based on the answers received on each indicator. The diffusion index shows the tendency of the respondents about a particular aspect gauged in a survey. The responses are collected based on five options, ranging from 'very positive' to 'very negative'. The DI falls between 0 and 100, with 50 indicating a neutral perception, greater than 50 indicating a positive perception, and less than 50 indicating a negative perception.

5.3 Main Results

The DI for major indicators are presented in Figure 5.1 and Figure 5.2. These include the BCI, EI, the PMI, and the IEI. Figure 5.1 presents the trend of the current and expected economic and business conditions using the CBCI, EBCI, CEI and EEI. Literature suggests that if the perceptions on the economy hold and are a good predictor of the actual conditions, the trend in the BCI should follow the trend in indicators that account for the actual level of production, i.e., LSMI and the exporting activities are likely to show similar trends as the BCI. BCI as determined in the SBP-IBA BCS does follow a similar trend to the LSMI and the level of exports from Pakistan. The data on the quantum index of LSM industries (base year 2015-16), total exports from Pakistan, and total imports into Pakistan are borrowed from the Pakistan Bureau of Statistics (PBS). The time period considered is February 2021, when the economy recovered from the COVID-19 related pandemic shock in the previous year to April 2024.² This period also includes the phase when measures, such as import controls, were undertaken to reduce the balance-of-payment related crisis in Pakistan and the subsequent phase around the general election when efforts were made to improve business and investment confidence. Therefore, the three years have included the period when economic challenges have been the most daunting in the history of Pakistan.

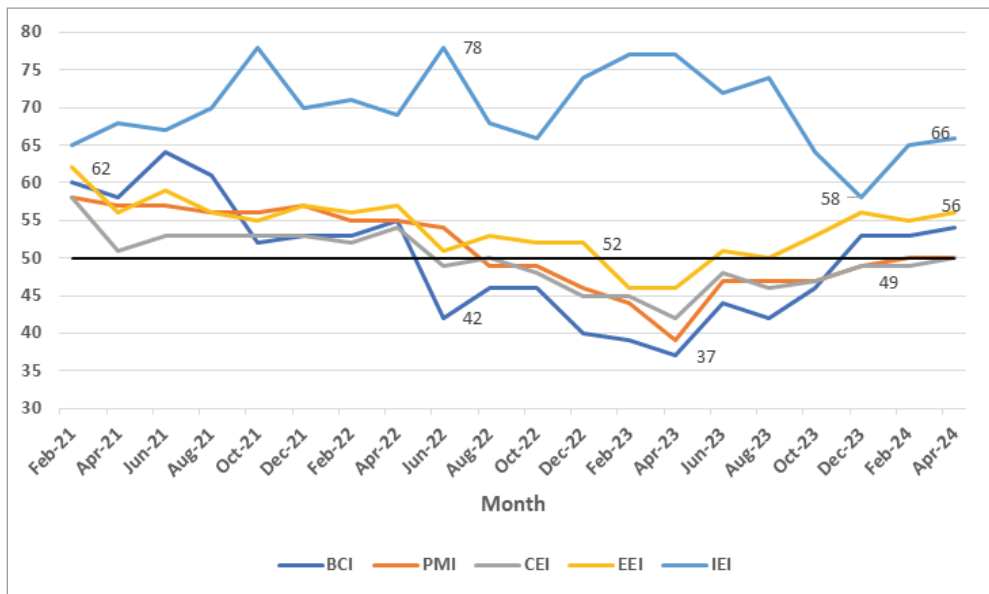
The two components of the business confidence, the current and the expected business confidence, were above 50 in February 2021 (Figure 5.1). The BCI increased from 60 in February 2021 to 64 in June 2021, before collapsing to 52 in October 2021. The expected business confidence increased to 68 in June 2021 and the current business confidence increased to 61. The indices reported their highest value in June 2021. The BCI decreased to 42 in June 2022 and remained in the negative zone, below 50, till December 2023 when it touched 50. The expected business confidence decreased to 45 in June 2022, recovered to 50 in August 2022 but decreased again to less than 50 in December 2022. It remained below 50 till October 2023. The current business confidence has always been lower than the expected business confidence. The current business confidence decreased to 40 in June 2022, decreased further to 32 in April 2023. It recovered to 50 in April 2024. The current business confidence has remained in the negative zone from June 2022 to April 2024. The business confidence index recovered to the positive zone in December 2023, driven by the stronger positive outlook in the expected business confidence since December 2023.

Figure 5.1: Business Confidence in Pakistan between February 2021 and April 2024 (index)



Source: IBA-SBP Business Confidence Survey

Figure 5.2: Recent Trends in Selected Indicators Suggesting the Level of Confidence in the Economy (index)

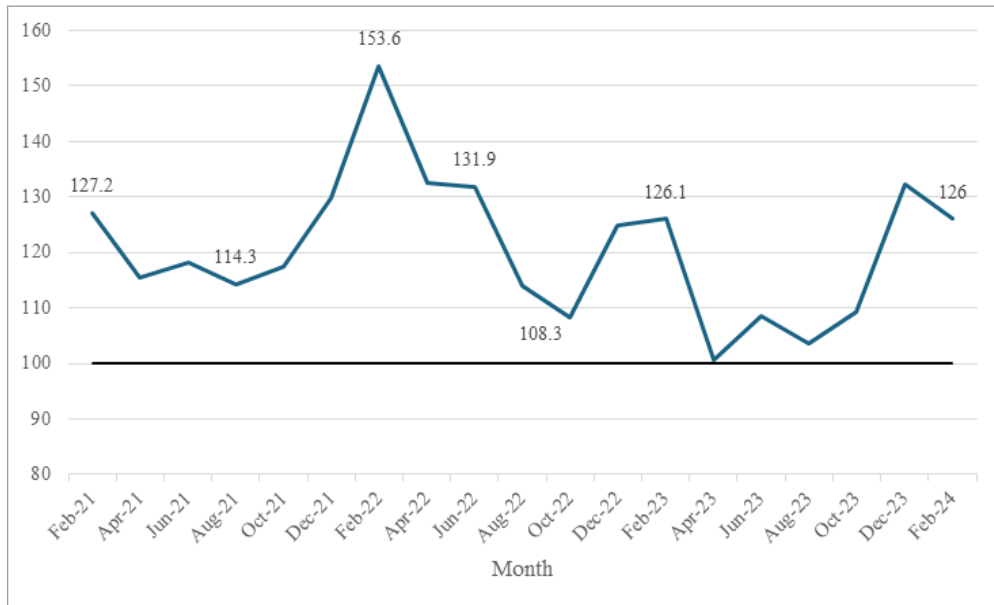


Source: IBA-SBP Business Confidence Survey

The recent trend in the BCI, the PMI, CEI, EEI, and IEI is presented in Figure 5.2. The trend in the PMI and the employment indices are correlated with the BCI. However, the trend in inflation expectations is inversely related to the trend in the other indicators. Inflation expectations peaked at 78 in June 2022, when the other indicators were on a downward trend. Inflation expectations hit a trough of 58 in December 2023 as the other indicators started to achieve their highest levels in recent months. The inflation expectation remained high through most of 2023 when most of the other indicators remained below 50. The purchasing manager index remained below 50 from August 2023 to December 2023. The current employment index showed a similar trend. However, the EEI performed relatively better, falling below 50 between February 2023 and June 2023. The expected levels are typically higher than the current levels, both for employment and for business confidence. In essence, the loss in business confidence is accompanied by low levels of purchasing manager's index and the employment indices but with higher levels of inflation expectations.

The trend for the LSMI (base year 2015-2016) is reported in Figure 5.3. The LSMI peaked in February 2022, at 153.6, and decreased to 100 in April 2023. It remained below 120 between April 2022 and October 2023, recovering to 132 in December 2023. The LSMI follows closely with the business confidence, purchasing manager, and employment indices reported in the earlier figures. The LSMI performed relatively poorly in 2023, similar to the indicators reported in the business confidence survey.

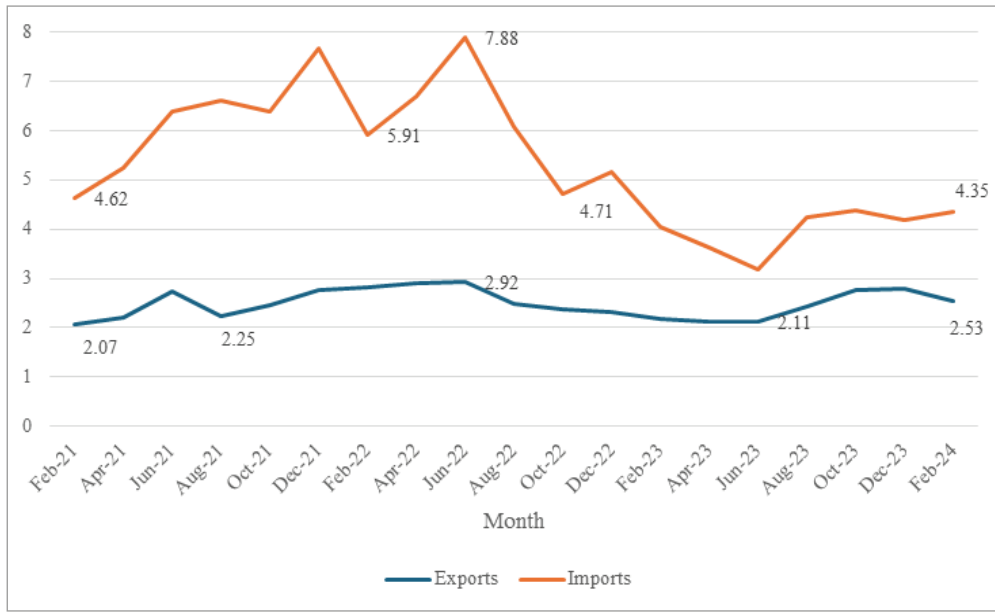
Figure 5.3: Large-scale Manufacturing Industries Index between February 2021 and February 2024 (index)



Source: Quantum Index of selected Large Scale Manufacturing items published by SBP

The trend in the exports from Pakistan and imports into Pakistan is reported in Figure 5.4. The imports into Pakistan peaked in June 2022, when USD 7.8 billion worth of goods were imported into Pakistan. However, the decline swiftly followed as Pakistan adopted strict measures to curtail import demand. The imports declined to USD 4.7 billion in October 2022. The declining trend continued into 2023, as imports bottomed out at USD 3.2 billion in June 2023. A slight recovery was observed in the second half of 2023 as imports increased to USD 4.2 billion in August 2023. This level was maintained till February 2024, as imports reported an amount of USD 4.4 billion. Although the purpose of the measures to reduce import demand is to reduce the trade deficit, the biggest casualty of the reduction in imports is the ability of the country to generate export revenues. Several exportable goods require imported inputs in their production. With import controls, the ability to produce exports is also impeded. Exports decreased from a peak of USD 2.9 billion in June 2022 to USD 2.1 billion in June 2023. As measures to curtail imports were relaxed in the second half of 2023, exports also started to show some recovery. Exports increased to USD 2.8 billion in December 2023. Again, the performance of the business confidence indicators is also closely related to the performance of trade indicators presented in Figure 5.4. The lack of economic activity in the first half of 2023 is clearly highlighted in the earlier figures and in the trends revealed by the figures on exports and imports.

Figure 5.4: Exports from Pakistan and Imports into Pakistan between February 2021 and February 2024 (billions of USD)



Source: Exports and Imports published by State Bank of Pakistan

5.4 Conclusion

Pakistan's economy faced one of its most daunting challenges in recent years in 2022 when the balance-of-payment related pressures plunged the business confidence into one of its lowest levels. The result was not only that the different components constituting the business confidence decreased in the latter half of 2022, the PMI, and the EEI all reported values below 50 for several months in both 2022 and 2023. The inflation expectations also peaked during this period as high inflation rates accompanied low business activities. The large-scale manufacturing index in 2022 and 2023 also performed poorly relative to the values reported in 2021. Monthly exports and imports also decreased relative to their subsequent values in 2021. However, it is also important to note that all variables have marked a recovery at the end of 2023. This clearly suggests that the BCI has done an excellent job of predicting the economic conditions in Pakistan. It is recommended that the results of the BCI is highlighted by the media to get a better understanding of the economic conditions that are likely to prevail in Pakistan. The key points of this study are as follows.

- The BCI, which is the average of the current BCI (CBCI) and the expected BCI (EBCI), remained mostly in the positive zone between January 2021 and April 2022. It fell into the negative zone since June 2022 to recover into the positive zone by the end of 2023. The EBCI has always performed more positively than the CBCI.

- Other than the BCI, the CEI and the PMI have both been in the negative zone since mid-2022. They plunged to their lowest level in mid-2023 and recovered close to the positive zone in early 2024. The business community felt confident about their hiring and their purchases, suggesting poor business prospects in the economy for most of 2022 and 2023. However, there are some signs of recovery around the general election period in 2024.
- The LSMI and the trading activities from Pakistan were also showing a downward trend in 2022 and 2023. The indicators have recovered towards the end of 2023, as the general elections in 2024 approached. This suggests that the BCI does well in explaining the economic trend in Pakistan as it correlates well with the trend in the LSMI index and exports, particularly in explaining the recovery post COVID-19 lockdown and in the last twelve months.

Notes

1. The website can be accessed through the following url:
<https://www.sbp.org.pk/research/BCS.asp>
2. It is not the purpose of this exercise to econometrically prove the validity of the BCI. The main purpose is to present the BCI and report on its trend along with that of major indicators on economic activity.

References

Business Confidence Surveys (various months). State Bank of Pakistan (SBP) and Institute of Business Administration (IBA).

Chapter 6

Youth Population and Employment: Skill Development Programs in Pakistan

Shagufta Shabbar and Shujaat Hussain

Highlights

- Pakistan has a large youth population, estimated at around 55 percent under 35 years, which signifies a potential demographic dividend. This window of opportunity can propel economic growth if this young population is equipped with the necessary skills.
- There are 963 technical and 2671 vocational training institutes in the country. Vocational training is required especially in the context of job market requirements, both nationally and internationally. But for those who do receive training the level of unemployment amongst them has continued to rise. This is due to the increasing mismatch between the skills acquired and the skills demanded in the job market.
- This unabsorbed trained youth results in losses to earnings, productivity, and economic growth, indicating an untapped demographic dividend.

6.1 Introduction

Pakistan has over 200 universities and 3,000 degree colleges. However, concerns linger regarding access, quality, and the alignment of the education and skillset imparted at higher educational institutions with the job market. This chapter explores these aspects, focusing on the role of the government in the skill development programs and employability of the trained youth from the lens of budgetary allocations. Using evidence from the Labour Force Survey (LFS) we show that the trained youth are not fully absorbed in the job market. This unabsorbed trained youth results in losses to earnings, productivity, and economic growth, indicating an untapped demographic dividend.

Pakistan represents a unique demographic situation. A large youth population, estimated at around 59 percent under 35 years (LFS, 2020-21), signifies a potential demographic dividend. Table 6.1 uses data from the LFS to indicate the number of people in each age group. This window of opportunity can propel economic growth if this young population is equipped with the necessary skills. However, with only 57.7 percent literate population, with gender disparities in literacy (males 73.4 percent and females 51.9 percent), according to LFS 2020-21, there are vast regional disparities in the access to higher education.

Table 6.1: Economically active population in different age groups (percent)

Age Groups	2013-14	2014-15	2017-18	2018-19	2020-21
15 to 35 Years	60.65	60.25	59.58	59.73	58.92
36 to 55 Years	28.66	29.27	29.23	29.35	29.21
56 and above	10.69	10.48	11.18	10.91	11.87

Source: Authors' calculations from Pakistan Labour Force Surveys

Despite significant development in the opening of new universities, institutes of skill formation, and scholarship opportunities for the needy and meriting youth over the past few decades, access to higher education remains highly unequal. Rapid university expansion, a common element of growth strategies, might prioritize quantity over quality. This results in a surplus of graduates lacking the critical thinking and technical skills employers seek. Increasing skill mismatches reported in the job market raise concerns about the quality of education imparted by the institutes of higher education. Graduates with qualifications that are not in demand remain unemployed despite holding degrees. Moreover, insufficient emphasis on vocational training, entrepreneurship, and industry-academic collaboration has led to a lack of practical skills and experience among graduates. Table 6.2 below shows that the number of unemployed is more than 10 percent for those who have pursued higher education. Unemployment in this category decreased in FY15 and continued to decrease over the years. But in FY21 it has again increased to 14.5 percent. This is mainly due to declining investment and poor growth in the country which has dampened the demand for labour in the labour market. Unemployment is low, 2.34 percent in 2020-21, for those who have never attended school because they are generally engaged in low-paying less skilled jobs (LFS 2020-21).

When the unemployment figures are disaggregated age-wise, it is noticeable that unemployment is highest among the youth. This is shown in Table 6.3. Although unemployment in the age group 15 to 35 years has decreased from 10.4 percent in 2013-14 to 7.3 percent in 2020-21, it is still considerably high. Government investment and growth policies, intended to boost job creation, have not delivered on their promise. Although the government has invested in higher education and various growth initiatives, such as infrastructure development and industrial growth, these efforts have not adequately focused on creating job opportunities that align with the qualifications of graduates. Policies focused on attracting large-scale industries, may not generate enough jobs aligned with graduates thus creating a skills gap. Consequently, these policies have fallen short of absorbing the educated youth into the labour market, exacerbating unemployment despite substantial investments.

Table 6.2: Employment Status by Education Level (percent)

Education Level	2013 -14		2014 -15		2017 -18		2018 -19		2020 -21	
	Unemployed	Employed	Unemployed	Employed	Unemployed	Employed	Unemployed	Employed	Unemployed	Employed
Never Attended School	10.18	89.82	10.26	89.74	10.55	89.45	9.61	90.39	2.34	97.66
Primary	12.59	87.41	16.64	83.36	24.65	75.35	13.42	86.58	2.92	97.08
Matric	8.14	91.86	9.35	90.65	9.77	90.23	7.38	92.62	6.45	93.55
FA/FSc	10.2	89.8	10.29	89.71	12.26	87.74	7.4	92.6	11.23	88.77
Bachelors or above	10.27	89.73	8.53	91.47	8.36	91.64	8.14	91.86	14.46	85.54
Pakistan	10.22	89.78	11.27	88.73	11.25	88.75	8.64	91.36	4.98	95.02

Source: Authors' calculation using Pakistan Labour Force Surveys

Table 6.3: Employment Status by Age Group (percent)

Age Groups	2013-14		2014-15		2017-18		2018-19		2020-21	
	Unemployed	Employed	Unemployed	Employed	Unemployed	Employed	Unemployed	Employed	Unemployed	Employed
15- 35 Years	10.44	89.56	10.85	89.15	11.57	88.43	10.09	89.91	7.25	92.75
36- 55 Years	5.18	94.82	5.29	94.71	6.35	93.65	4.72	95.28	2.14	97.86
56 & Above	7.72	92.28	8.91	91.09	7.49	92.51	4.86	95.14	1.25	98.75

Source: Authors' calculation using Pakistan Labour Force Surveys

6.2 Technical and Vocational Training

The annual budget allocation for higher education has been dwindling in Pakistan due to shrinking fiscal space and shifting towards quantity from quality, as the opening of new universities in the private sector is a new trend. Only in KPK, 34 universities have been chartered, to create jobs, mostly for political supporters, creating financial challenges for the province and HEC. The government prioritizes rapidly increasing the number of universities without ensuring a corresponding increase in the quality of education provided. New universities might struggle with faculty shortages, limited resources, and a curriculum focused on quantity over practical skills. This mismatch between educational offerings and employer needs creates a situation where graduates hold degrees but lack the relevant skills, leading to unemployment despite increased educational attainment. Additionally, a system with varying quality across universities can devalue the worth of a degree itself, making it difficult for employers to distinguish qualified graduates.

As a percentage of GDP, the expenditure on education has gone down from 2.1 percent in FY18 to 1.5 percent in FY23 (Pakistan Economic Survey 2023-24). From chartering the status of a university to hiring, subsidizing education facilities, and tuition fees involves the political economy of government policies (Richards, Ahmed, & Islam, 2022). While emphasizing the importance of education is on federal and provincial governments' agenda, the actual spending often falls short of international benchmarks. This limited budget directly impacts initiatives like vocational training. Given the limited access to quality higher education, the need for having vocational training institutes becomes even more so important. Vocational training institutes focus on practical skills directly relevant to specific jobs in trades, technology, or other in-demand fields. This can help address the skills gap created by a flawed higher education system. Additionally, for those who don't have access to quality higher education or can't afford it, vocational training institutes offer a quicker and more affordable path to acquiring employable skills. This can be particularly beneficial for individuals who learn best through hands-on experiences rather than traditional academic settings.

Pakistan's National Vocational and Technical Training Commission (NAVTTTC) is responsible for developing and implementing policies, strategies, and regulations for the country's Technical and Vocational Education and Training (TVET) system. There are 3634 TVET institutes in the country. Out of these 963 are technical and 2671 are vocational training institutes. Entities similar to the NAVTTTC operate at the provincial level. These include government-run vocational institutions, training centers, and apprentice programs administered by federal and provincial agencies (Chamadia & Shahid, 2018). Additionally, private technical training institutes and industry-specific training programs cater to specialized skill needs. Among these, the most significant is the Prime Minister's Youth Skill Development Program (PMYSDP). It was initiated to strengthen the quality of TVET. The main purpose of the program is to equip young people with market-driven conventional and high-tech skills required for career

progression, at par with international standards. Introduction of high-tech or high-end technologies and courses are the special feature of PMYSDP, which have been included considering the market need assessment, recommendations given by stakeholders, and lessons learned during the previous phases of the programme. High-tech or high-end technologies include trades that cater to advanced levels of conventional and non-conventional skills and advanced electronics, artificial intelligence, office automation, augmented reality, robotics, and innovation in traditional trades.

As of 2024, there are 85,838 students enrolled in PMYSDP. Besides, high-tech skills, the program has the opportunity for youth to get training in conventional as well as in hardcore skills, which is beneficial for local as well as overseas employment. A minimum of 35 percent quota is allocated for women specific skills like beauty therapy and textile designing (industrial), ensuring social inclusion and women empowerment, while a 5 percent quota is reserved for Persons with Disabilities (PWDs), enabling them to acquire decent sources of livelihood and contribute to the national economy. As of 2024, there are 41,347 students enrolled in this program nationwide. TVET comprises 1,647 institutes (Chamadia, & Mubarik, 2021). Despite these initiatives, some challenges persist, as follows:

1. The current focus primarily caters to blue-collar jobs, neglecting the need for mid-level technical skills.
2. Vocational training often carries a stigma, seen as an inferior option to traditional degrees.
3. Stronger partnerships between academia and industry are crucial to ensure training programs meet evolving market demands.
4. Inadequate funding limits the expansion and improvement of vocational training infrastructure and faculty development.

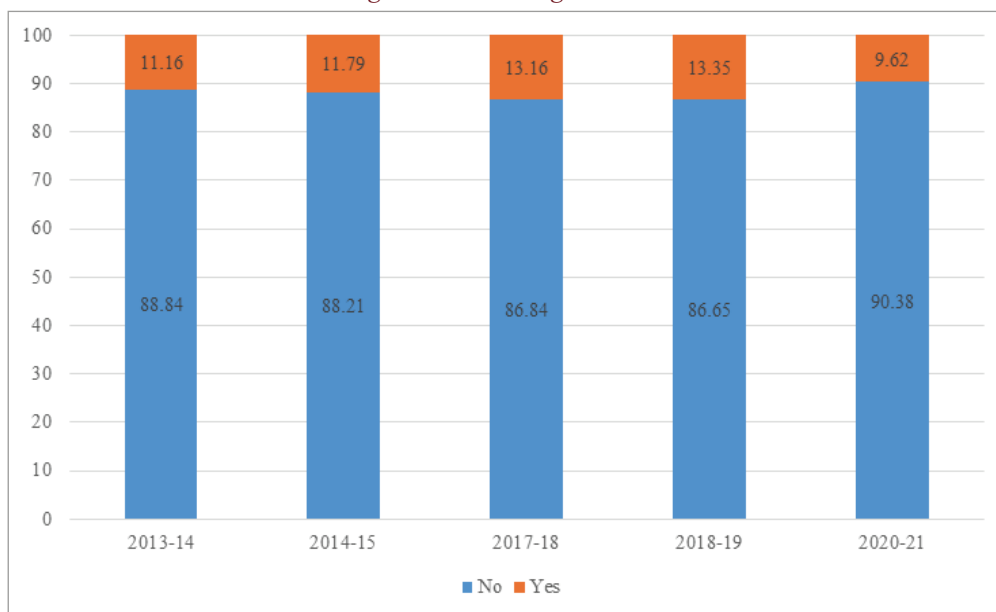
Pakistan has implemented a TVET support system with funding from international donor agencies such as the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ), the European Union (EU), and the Kingdom of the Netherlands. While several studies explore the current state and future prospects of TVET in Pakistan (Chamadia & Shahid, 2018; Raza & Khalid, 2017), there is a dearth of research specifically evaluating the program's impact on individuals within Pakistan. Studies suggest vocational training can ease the school-to-work transition compared to traditional academic education (Ryan, 1998). This is likely because vocational programs equip graduates with job-specific skills directly applicable to the workforce. Vocational education has been found to produce higher returns as compared to academic education (Weber, 2003).

TVET programs yield several benefits, impacting individuals, enterprises, and the broader economy (Nafhuko et al., 2004). These advantages cascade across various levels. TVET equips participants with coveted skills, translating into enhanced earning potential and improved job prospects. Graduates become more competitive in the labour market, leading to greater career satisfaction and financial security. Businesses that leverage a TVET-equipped workforce experience a significant boost in productivity. Skilled employees can contribute more effectively, leading to higher output and potentially superior product quality. This translates to increased profitability and competitiveness for the enterprise. From a macroeconomic perspective, TVET programs foster economic development by cultivating a skilled and adaptable workforce. This translates to a more productive and competitive national economy, capable of attracting investment and fostering innovation.

6.3 Employability and Technical and Vocational Training

Vocational and technical training is necessitated for meeting job market requirements, at national and international levels. Considering the country's high poverty and inequality rate, it deprives the young population of education, particularly with a skill development focus. The LFS 2020-21 data shows that 90.38 percent have received no training which is shown in Figure 6.1 below. This has increased slightly over the years. This is surprising because, with the establishment of NAVTTC in 2005 and so many other recent interventions by the government to train the youth, it was expected that the figures would have improved markedly over the years.

Figure 6.1: Training Received



Source: Authors' calculation using Pakistan Labour Force Surveys

To better understand who is receiving the training we analyzed the data in detail from the last five rounds of LFS. Training received by education level shows that there is a greater tendency to receive training after primary education. Training received by those who have completed secondary school has decreased from 17.5 percent in 2018-19 to 14.1 percent in 2020-21. The same trend is observed among those with higher education. Out of those with an undergraduate degree, 16.2 percent received training in 2014-15. This increased slightly to 17.7 percent in 2018-19 but decreased markedly in 2020-21 to 13.4 percent. This is shown in Table 6.4 below.

Table 6.4: Training Received by Education Level

Education Level	2014-15	2018-19	2020-21
Never attended school	10.47	11.32	6.93
Primary	9.32	5.75	8.62
Secondary	15.28	17.47	14.12
FA/FSc	15.16	14.7	14.11
Bachelor & Above	16.18	17.75	13.44
Pakistan	11.78	13.35	9.62

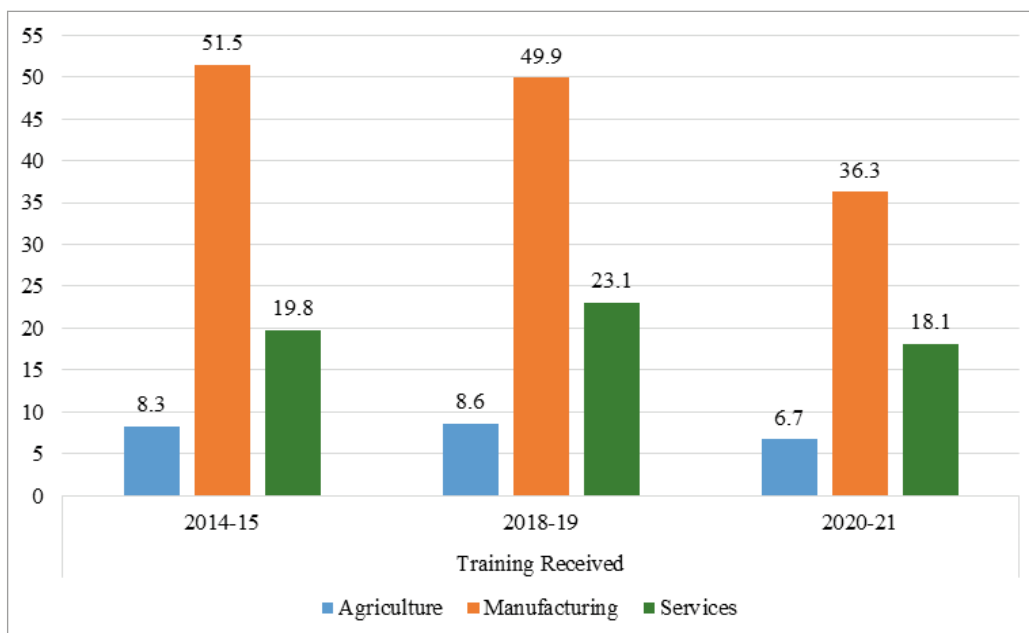
Source: Authors' calculation using Pakistan Labour Force Surveys

The 2020-21 LFS data shows that 84.7 percent of the unemployed have received no training. On the other hand, out of the employed workers, 15.4 percent have received some form of training. This is shown in Table 6.5. The number of trained people who are employed has decreased from 20.9 percent in 2018-19 to 15.5 percent in 2020-21. To further understand which sector employment has been affected more by receiving training, the data is disaggregated sector wise. Figure 6.2 shows that the manufacturing sector has more trained workers. In the agriculture sector, only 6.7 percent of workers have received training. The services sector has 18 percent of workers that are trained.

Table 6.5: Training Received by Employment Status (percent)

2013-14		2014-15		2017-18		2018-19		2020-21	
Unemployed	Employed	Unemployed	Employed	Unemployed	Employed	Unemployed	Employed	Unemployed	Employed
11.82	88.18	13.23	86.77	13.19	86.81	10.12	89.88	4.93	95.07

Source: Authors' calculation using Pakistan Labour Force Surveys

Figure 6.2: Sector Wise Training Received (percent)

Source: Authors' calculation using Pakistan Labour Force Surveys

A further disaggregation in age groups in Table 6.6 shows that the most training is received by workers that are in the age bracket of 36 to 55 years of age. The number of trained people continued to increase till 2018-19 but decreased in 2020-21.

Table 6.6: Training Received by Age Group (in Percent)

Age Groups	2013-14	2014-15	2017-18	2018-19	2020-21
15-35 Years	13.85	14.39	16.21	16.17	11.51
36-55 Years	15.08	16.08	17.82	18.46	13.14
56 & Above	7.26	9.01	9.62	9.84	6.6

Source: Authors' calculation using Pakistan Labour Force Surveys

6.4 Trained youth and loss in income

Trained labour not finding jobs translates to a significant economic loss. One of the primary losses is the underutilization of skills, which leads to decreased productivity. This loss in productivity directly translates to lower GDP growth. Amir, Khan, and Bilal (2015) establish that human capital is a key determinant of economic growth. A skilled population fosters innovation and productivity. Workers with strong problem-solving abilities can develop new ideas and improve processes, leading to businesses producing more with less. A well-educated population is more likely to produce entrepreneurs who create new businesses, driving competition and expansion. A skilled workforce can learn new skills and adjust to changing demands, ensuring long-term growth. When the workforce lacks the skills employers need, inefficiencies arise. Workers might take longer to complete tasks or produce subpar outputs. Without continuous learning and skill development, worker knowledge stagnates, hindering innovation and competitiveness. Studies estimate that a country with a low-skilled workforce experiences significant productivity losses compared to a country with a highly skilled workforce (Mason, O'Mahony, & Riley, 2018). Investing in human capital through skills training is an investment in economic prosperity. Building a skilled and adaptable workforce boosts innovation, productivity, and long-term economic growth.

The government and individuals invest heavily in education and training programs. When graduates remain unemployed, this investment goes to waste. Over time, skills can atrophy if not utilized, leading to a degradation of human capital and necessitating further retraining costs. Additionally, the opportunity cost of supporting the unemployed is high, as resources used for social safety nets could otherwise be invested in infrastructure development or other economic activities.

One of the most important economic losses stemming from unemployed trained youth labour is the loss of potential earnings. When young graduates with valuable skills cannot find employment, they are unable to earn a living wage. This translates to a loss of personal earnings, impacting their ability to afford necessities, contribute to household income, and participate fully in the economy. Multiply the individual loss by the number of unemployed skilled youth in Pakistan, and the national economic picture becomes grim. A large pool of untapped talent translates to a large decline in national income. This is because skilled labour contributes to higher productivity and ultimately, higher national output. Table 6.7 uses the nominal annual average wage to estimate the nominal total loss in income due to the unemployment of trained youth. This potential nominal income loss is given in both PKR and USD. This is based on the assumption that the number of unemployed remained constant throughout the year.

Table 6.7: Annual earning loss of trained youth

Year	Average annual income in PKR million	Unemployed Youth in percent	Potential Income Loss in PKR million	Average USD Value	Potential Income Loss in USD million
2013-14	131.76	10.44	623.73	101.56	6.14
2014-15	150.81	10.85	765.97	105.06	7.29
2017-18	189.76	11.57	991.69	105.29	9.42
2018-19	209.30	10.09	923.42	121.57	7.60
2020-21	232.83	7.25	1688.49	161.84	10.43

Source: Authors' calculation using Pakistan Labour Force Surveys

When a significant portion of a nation's young population remains unemployed, it signifies a vast pool of potential income and economic growth going untapped. This underutilization of human capital translates into a series of losses felt across various sectors. The unemployed youth represent lost tax revenue. As graduates enter the workforce, they begin contributing to the national income through taxes on salaries and future earnings. When they remain unemployed, this stream of tax revenue is cut short, hindering government efforts to fund public services, infrastructure development, and social programs. This, in turn, can create a vicious cycle, as limited public investment hinders job creation in the long run. Youth unemployment also represents a loss of consumer spending. Employed young adults with disposable income contribute significantly to consumer demand, driving economic activity across various sectors. When this portion of the population remains unemployed, it weakens consumer spending power, impacting businesses and potentially leading to production slowdowns and further job losses.

The loss of wages due to unemployed skilled youth goes beyond mere statistics. It represents a missed opportunity to unleash human potential and fuel economic growth. It is a social cost as well, as many graduates may experience frustration, discouragement, and a sense of wasted investment in their education.

Youth unemployment leads to a loss of innovation and productivity. Young adults often bring fresh perspectives, technological expertise, and a willingness to learn new skills. Their integration into the workforce fosters innovation and facilitates the adoption of new technologies. When they remain unemployed, businesses miss out on this valuable injection of creativity and dynamism. Additionally, the lack of skilled labour in specific sectors due to youth unemployment can hinder productivity growth, impacting the nation's overall economic competitiveness. The underutilization of young adults' potential can contribute to brain drain, as skilled individuals seek opportunities abroad, further weakening the nation's human capital base. By addressing the skill mismatch between education and labour market needs, promoting entrepreneurship among young adults, and investing in skills training programs, nations can unlock the potential of their young population and set the stage for sustainable economic growth. By empowering young adults to contribute their skills and knowledge, nations can transform a liability into an engine of economic prosperity and social progress.

6.5 Conclusion

World Bank (2019) reports that the skills that workers demonstrate in workplaces are overall low and basic. Technical and vocational training can positively impact the monthly earnings of participants compared to their academic counterparts, particularly when the training aligns with industry needs. Vocational training can enhance participants' motivation to pursue careers in their chosen fields. However, it's important to consider the limitations of a 'one size fits all' approach to technical and vocational training. Tailoring training programs to individual needs and educational backgrounds could potentially lead to even greater benefits. Several studies (Chamadia & Shahid, 2018; Mughal et al., 2019) have identified shortcomings in the current system. Public institutions often lack the necessary facilities and equipment to deliver effective technical and vocational training. The qualifications and practical experience of trainers may not adequately prepare students for the demands of the workforce. Course content might not reflect the latest industry needs and skills required for contemporary jobs. Insufficient interaction between public institutions and industry stakeholders hinders the alignment of training programs with real-world requirements. There is also a lack of coordination between national and provincial TVET authorities which can lead to inconsistencies and inefficiencies in program delivery.

Federal and provincial agencies overseeing TVET institutes have a critical responsibility to assess the quality, and content of training delivered in government vocational programs. These evaluations are essential for identifying areas for improvement and ensuring graduates are equipped with the most relevant skills. Further research is needed to explore the effectiveness of customized training programs. Pakistan with one of the highest concentrations of vocational training institutions globally, presents a valuable opportunity for such studies.

There is a further need for the government to allocate more resources to training programs to enhance the skills of the labour force. The HEC's vocational training policies are a step in the right direction but require greater resources, stronger industry partnerships, and a shift in public perception. By prioritizing these areas and investing strategically, Pakistan can harness the demographic dividend and build a skilled workforce that drives economic growth and prosperity. While opportunities exist with its young population, challenges remain in access, quality, and alignment with labour market needs. To leverage the demographic dividend and improve the higher education system, several recommendations can be considered. Firstly, increased public investment in higher education, with a specific focus on vocational training, is crucial. This targeted allocation of resources ensures graduates are equipped with the in-demand skills needed for immediate employment. Secondly, fostering public-private partnerships can expand access to training opportunities. Partnership with the private sector leverages industry expertise and provides real-world scenarios, enhancing the program's relevance to the job market. Thirdly, continual curriculum reform is essential to ensure alignment with current industry demands. This ensures graduates possess the necessary skills and knowledge employers

seek, minimizing the skills gap and improving employability. Fourthly, investing in faculty development, particularly through PhD qualifications, strengthens the quality of vocational training programs. Highly qualified faculty can deliver rigorous instruction and remain current on advancements in their fields. Fifthly, public perception of vocational training can be improved through targeted campaigns promoting its value and showcasing the success stories of graduates. Shifting societal views towards vocational training as a viable and rewarding career path can encourage more youth to pursue these programs. Finally, data-driven decision making is critical for program effectiveness. Utilizing data to identify skill gaps and tailor training programs accordingly ensures they remain relevant and address the specific needs of the labour market, leading to improved employment outcomes for graduates.

References

- Agrawal, T. and Agrawal, A. (2017). Vocational education and training in India: a labour market perspective. *Journal of Vocational Education and Training*, Vol. 69 No. 2, pp. 246-265.
- Ahmed, T. and Chattopadhyay, R. (2016). Return to general education and vocational education and training in Indian context. *International Journal of Educational Management*, Vol. 30 No. 3, pp. 370-385.
- Amir, H., Khan, M., & Bilal, K. (2015). Impact of educated labour force on Economic growth of Pakistan: A human capital perspective. *European Online Journal of Natural and Social Sciences*, 4(4), 814-831.
- ASER-Pakistan (2017). Annual status of education report, South Asian Forum for education development: Islamabad, available at: <http://aserpakistan.org/report>.
- Becker, G.S. (1964). *Human Capital: A Theoretical and Empirical Analysis*, National Bureau of Economic Research, New York, NY.
- Bellakhal, R. and Mahjoub, M.B. (2015). Estimating the effect of vocational training programs on employment and wage: the case of Tunisia. *Economics Bulletin*, Vol. 35 No. 3, pp. 1820-1833.
- Card, D., Ibarraran, P., Regalia, F., Rosas-Shady, D. and Soares, Y. (2011). The labour market impacts of youth training in the Dominican Republic. *Journal of Labour Economics*, Vol. 29 No. 2, pp. 267-300.
- Chamadia, S., & Mubarik, M. S. (2021). Assessing the effectiveness of vocational training programs in Pakistan: an experimental study. *Education+ Training*, 63(5), 665-678.
- Chamadia, S. and Shahid, M. (2018). Skilling for the future: evaluating post-reform status of 'skilling Pakistan' and identifying success factors for TVET improvement in the region. *Journal of Technical Education and Training*, Vol. 10 No. 1, pp. 1-14.

- Gray, K.C. and Herr, E.L. (1998), *Workforce Education: The Basics*, Allyn and Bacon, Boston, pp. 150-152
- Mason, G., O'Mahony, M., & Riley, R. (2018). What is holding back UK productivity? Lessons from decades of measurement. *National Institute Economic Review*, 246, R24-R35.
- Mughal, A.W., Aldridge, J. and Monaghan, M. (2019). Perspectives of dropped-out children on their dropping out from public secondary schools in rural Pakistan. *International Journal of Educational Development*, Vol. 66, pp. 52-61.
- Nafukho, F.M., Hairston, N. and Brooks, K. (2004). Human capital theory: implications for human resource development. *Human Resource Development International*, Vol. 7 No. 4, pp. 545-551.
- Richards, J., Ahmed, M., & Islam, M. S. (2022). *The Political Economy of Education in South Asia: Fighting Poverty, Inequality, and Exclusion*. University of Toronto Press.
- Ryan, P. (1998). Is apprenticeship better? A review of the economic evidence. *Journal of Vocational Education and Training*, Vol. 50 No. 2, pp. 289-325.
- Siddiqui, K., Hameed, A., Akbar, S. and Khan, M. (2019). An investigation into effectiveness of technical and vocational education in Pakistan. *Review of Economics and Development Studies*, Vol. 5 No. 2, pp. 261-268
- World Bank. (2019). *Pakistan: Skills Assessment for Economic Growth*.

Chapter 7

Watt's Next? Exploring Pakistan's Energy Quandary

Ammar Habib Khan

Highlights

- Despite having a substantial electricity generation capacity of 46,035 MW, Pakistan faces severe power outages, especially during the summer. The peak demand stands at 29,000 MW, and during winter, it drops to 12,000 MW, revealing a mismatch between supply and actual demand. Millions of households across the country suffer prolonged load shedding despite paying their bills. The root of this issue lies in the structure of the power sector.
- Electricity tariffs in Pakistan cover fixed costs including debt and equity payments, irrespective of demand. This structure, combined with a single-buyer model for electricity, leads to inefficiencies. High fixed costs persist, driving up consumer prices, particularly as demand fluctuates seasonally.
- The advent of solar power, though beneficial, introduces further complexities. Solar generation reduces grid demand during peak sunlight hours, yet the grid must still be maintained for use when solar power is unavailable.
- To address these challenges, reforms are necessary. Encouraging demand through incentives, implementing a late-night tariff, and creating a competitive market through wheeling could help. Additionally, smoothing cash flows by restructuring tariffs to include more fixed components may prevent seasonal financial mismatches. Transitioning towards low-carbon, baseload, and renewable energy sources while balancing evolution of technological advancements such as solar and storage solutions is crucial for sustainable energy security in Pakistan.

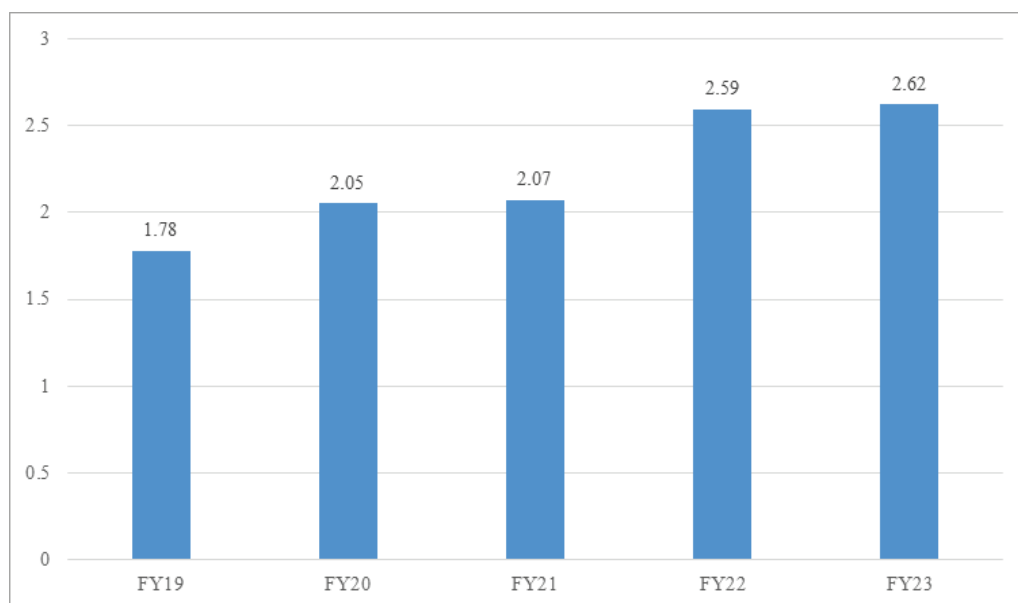
7.1 The Human Angle

Qari Abdur Rasheed, 51, is a teacher of holy scriptures and lives in Karachi, wherein his household income barely crosses the monthly minimum wage mark. During the peak summer season, in the sweltering heat, his area undergoes more than 6 hours of electricity load shedding, which has been kosher-ized as economic load shedding. Qari Abdur Rasheed is a lifeline customer of electricity, with a monthly electricity consumption of less than 200 kilowatt-hours (kWh). He pays his electricity bills regularly, but since his household is located in a high-loss

area, as marked by K-Electric, which is the electricity distribution company in Karachi, he is penalized for losses caused by other households. Such is the story of more than 20 million households in the country, who are exposed to extended hours of load shedding, often due to no fault of their own. The national weighted average and K-Electric average load shedding hours are given in Figure 7.1 and 7.2.

Qari Abdur Rasheed pays his electricity bills on time, but in order to avoid the heat, he has also procured a rechargeable battery, which can provide back-up power. Due to frequent load shedding, he is also not able to recharge his battery, and has to pay extra in the secondary market to recharge the battery, for back-up power. This is the ground reality through a micro lens. Even though Qari Abdur Rasheed pays his electricity bills regularly, he still has to spend extra on back-up power – effectively pushing up household expenditure on energy.

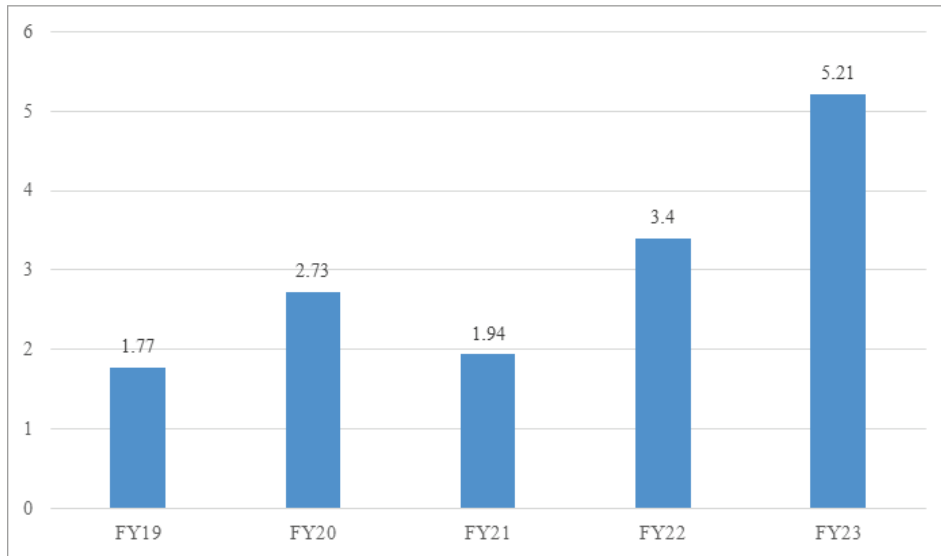
Figure 7.1: Weighted Average Reported Load Shedding Hours (National)



Source: NEPRA Performance Evaluation Report of Distribution Companies

7.2 Surplus Generation Capacity

On a macro level, there is surplus electricity generation capacity. As of 2024, total generation capacity is in the range of 46,035 MW, while peak demand is around 29,000 MW. Moreover, there is significant variation between peak demand during summer and the lull during winter. It is estimated that during summer, on a typical day, demand peaks at 29,000 MW, while during winter, demand peaks at 12,000 MW. The difference between seasonal demand suggests that core demand, which includes industrial, commercial, and household demand is only 41 percent of peak demand. Effectively excess capacity has been installed to cater to peak demand.

Figure 7.2: Average Reported Load Shedding Hours (K-Electric)

Source: NEPRA Performance Evaluation Reports of Distribution Companies

Such capacity has been installed over the last eight years with a premise to eliminate load shedding – however, despite the availability of excess capacity, millions of households in the country continue to suffer from load shedding. Power generation projects are long tailed, with front-loaded costs. Such projects are largely funded through a mix of debt, and equity – wherein debt makes up 70 to 80 percent of the capital structure, while equity makes up 20 to 30 percent of the capital structure. The tariff that is structured for electricity generated from the power plant is a function of the fuel cost (variable cost), variable operations & maintenance cost (variable cost), principal repayment (fixed cost), interest payment (fixed cost), and shareholder return (fixed cost) (Table 7.1). The Power Purchase Agreement (PPA) is structured as a take-or-pay arrangement, in which the power purchaser is an agency of the sovereign government – which guarantees that either it will purchase power, or it will cover the fixed costs associated with the project. Effectively, demand risk is eliminated, and the only risk that remains is execution, and counterparty risk of the sovereign government.

Table 7.1: Break-up of Tariff Components

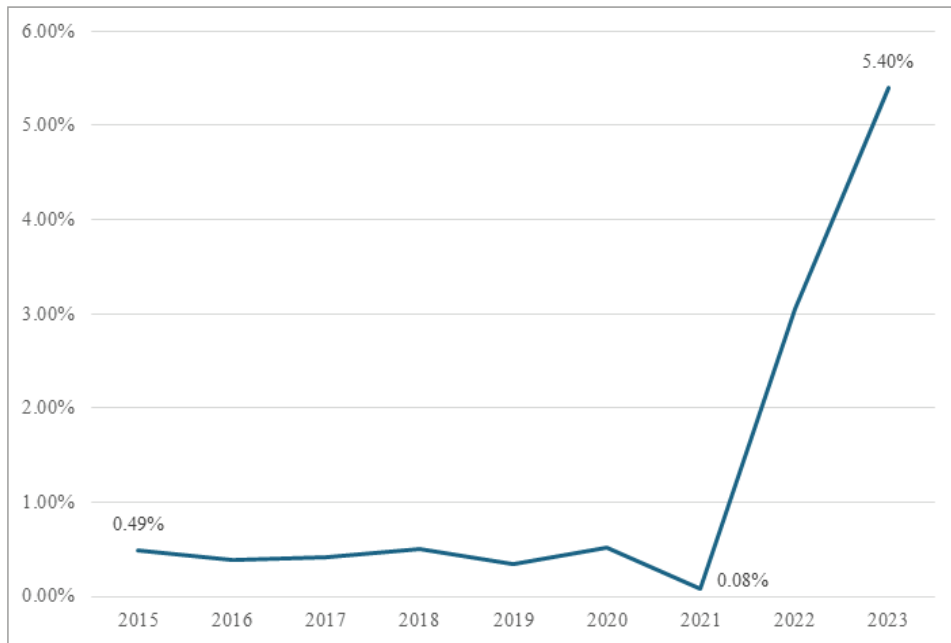
Type of Cost	Nature of Cost	Description	Indexation
Fuel Cost	Variable Cost	The cost at which fuel is procured for power generation	Primarily priced in USD, and linked to prevailing market prices
Variable O&M Cost	Variable Cost	Variable operations & maintenance costs for power generation	Can have a local, and foreign component. Local components are priced in PKR, whereas foreign components are priced in USD. Both currencies are linked to respective Consumer Price Index, for quarterly indexation
Fixed O&M Cost	Fixed Cost	Fixed operations & maintenance costs of the unit	Can have a local, and foreign component. Local components are priced in PKR, whereas foreign components are priced in USD. Both currencies are linked to respective Consumer Price Index, for quarterly indexation
Working Capital Interest	Fixed Cost	The interest expense paid on short-term debt raised to support working capital requirements	Linked to prevailing Karachi Inter-Bank Offer Rate
Insurance	Fixed Cost	Annual insurance cost	Actualized on annual basis in USD
Debt Repayment Principal Component	Fixed Cost	The principal component of debt that needs to be repaid to lenders	Primarily in USD -- principal repayments are indexed to changes in PKR-USD parity
Debt Repayment Interest Component	Fixed Cost	The interest component of debt that needs to be repaid to lenders	Primarily in USD -- principal repayments are indexed to changes in PKR-USD parity, as well as changes in interest rate of long-term debt, which is either linked to SOFR, or LIBOR
Return on Equity	Fixed Cost	The guaranteed equity return component for shareholders	Primarily priced in USD, with an Internal Rate of Return (IRR) component linked to prevailing policy at the time of establishment. Mostly in the range of 15 to 21 percent.
Return on Equity During Construction	Fixed Cost	The guaranteed equity return component for shareholders, for capital injected at different stages of construction pre commercial operations	

Source: Tariff Petitions as published by NEPRA

7.3 The Death Spiral

In a scenario where the expected demand of electricity does not materialize, the sovereign government remains obligated to cover the fixed costs – largely debt, and equity payments, which were part of the capital structure. As these fixed costs are part of the electricity tariff, they are inadvertently paid by the electricity consumer. Also important to note here is that the debt raised for such projects was also primarily in USD, locked at near-zero interest rates (Figure 7.3). However, as monetary tightening took root post pandemic, interest rates increased to their seventeen years high, eventually leading to higher debt servicing costs. As the cost increased, so did electricity bills, as the higher cost of debt servicing had to be borne by the electricity consumer. On a macroeconomic level, the sovereign also has the responsibility of arranging necessary foreign currency to service debt – further stressing an already precarious foreign exchange reserves position, pushing the sovereign towards a foreign currency liquidity crisis.

Figure 7.3: USD Based Interest Rates (LIBOR)



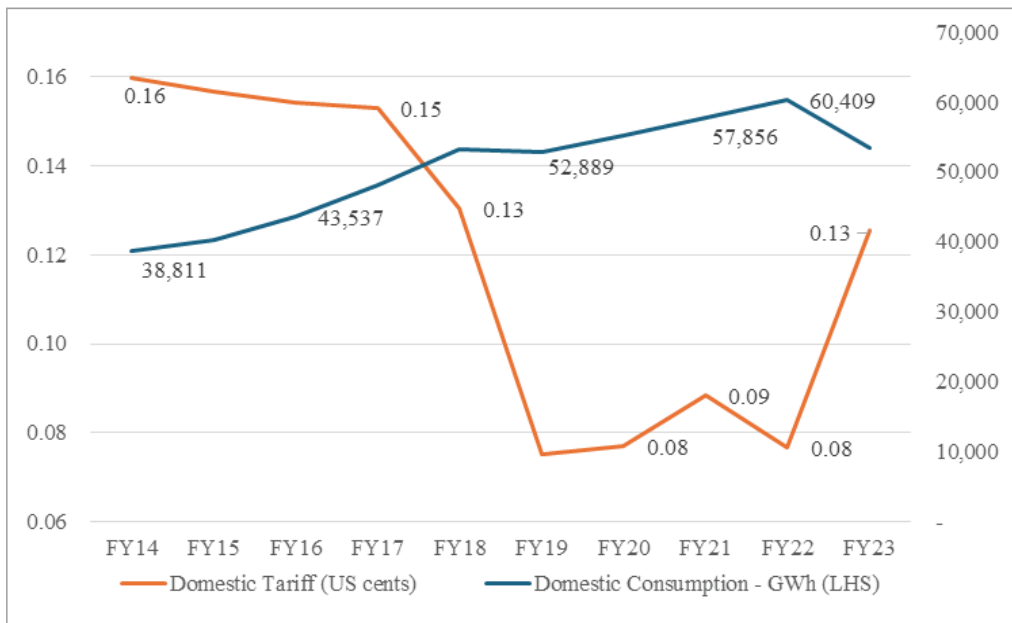
Source: Bloomberg

It is important to note here that these fixed costs are spread over an expected number of electricity units (kWh) generated – as the demand decreases, the number of electricity units (kWh) generated also reduces, which inadvertently increases the fixed cost per kWh. Effectively, as demand reduces, this leads to the electricity getting more expensive because the same fixed cost now needs to be covered by a lesser number of electricity units (kWh).

Taking a few steps back, excess capacity was installed to meet demand in the future. However, as extraneous shocks led to a slowdown in demand, electricity kept on getting more expensive because the fixed cost still needed to be paid. As electricity got more expensive, that triggered demand elasticity, resulting in a further reduction in demand, thus triggering the death spiral.

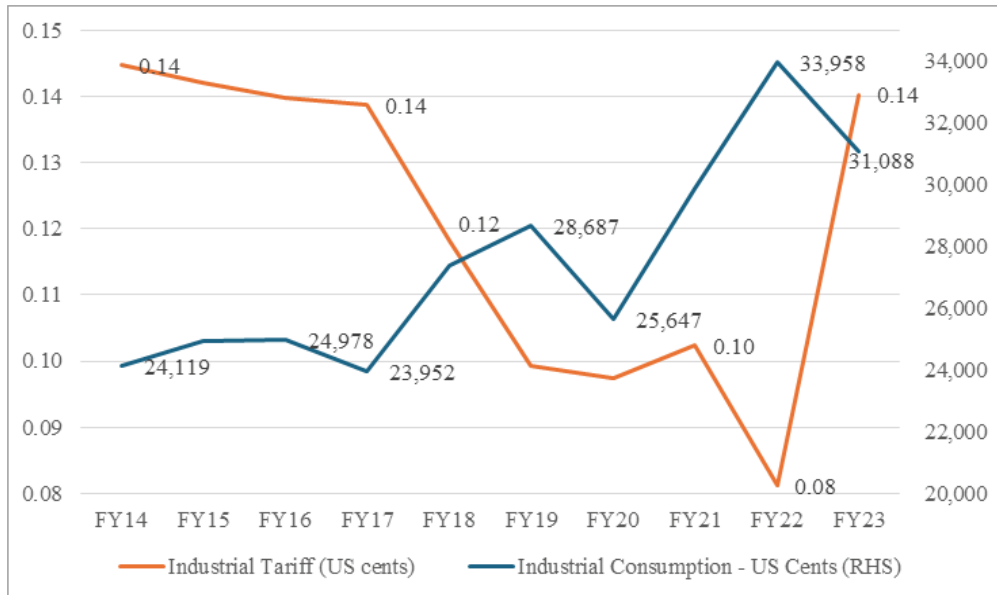
Over the last five years, electricity consumption per household has stayed flat, while prices have increased by more than 100 percent in PKR terms, effectively implying a reduction in consumption on a per capita basis (Figure 7.4). Similarly, during the same time, electricity consumption by industries has increased by only 8.4 percent, while prices for the same have also increased by more than 100 percent in PKR terms (Figure 7.5). Such significant flattening in industrial consumption can be attributed to either substitution of electricity with other energy sources mainly gas or solar, improvement in efficiency, or de-industrialization. The latter is more pronounced, considering how Large-Scale Manufacturing (LSM) growth has not been able to reach its pandemic-stimulus linked peak in 2021. Moreover, electricity consumption for industrial usage continues to slack behind post-pandemic peak in 2021.

Figure 7.4: Household Electricity Consumption



Source: Data as published by NEPRA

Figure 7.5: Industrial Electricity Consumption



Source: Data as published by NEPRA

7.4 Affordable Energy & Economic Growth

Electricity consumption has a very strong correlation with overall economic growth. Access to affordable energy remains a prerequisite for broad-based economic growth. In the case of Pakistan, over the last twenty years, electricity consumption has grown by 1.1 percent for every 1 percent growth in real GDP. The unavailability of affordable electricity remains a constraint on overall economic growth. A critical factor for industrial growth is the availability of affordable energy, such that goods produced may be competitive with the rest of the world – inaccessibility to such a critical factor inadvertently makes most producers (if not all) uncompetitive. Similarly, elevated energy prices simply make many process and energy intensive industries uncompetitive, and unscalable, further constraining growth. Enabling access to affordable electricity remains one of the most crucial elements for broad-based sustainable economic growth.

It is imperative to note here that an increase in electricity prices can be passed on by local producers, in local prices, triggering inflation in the process. However, this makes exporters uncompetitive, as their product pricing, in that case, is done at a global level – wherein other markets may capture Pakistan's already minuscule share of exports through better pricing, mainly through better energy costing. Adjusting the electricity prices for inflation, the price elasticity of demand for household consumption is 0.38 over the last ten years. Similarly, the price elasticity of demand for industrial consumption is 0.38 during the same period. This

demonstrates that even though electricity demand is relatively inelastic, over longer time periods, substitution effect does kick in. The substitution effect can be through a switch towards other energy sources, such as solar, or gas, moving away from the grid – or through a shift in jurisdiction for industrial production, eventually resulting in a permanent drop in demand for electricity. A recent example in this case is Germany, where it had developed an industrial base lately based on low-cost Russian gas. Following the war in Ukraine, as the gas dried up, energy prices started to increase – resulting in an exodus of industrial units towards jurisdictions with lower costs of energy.

7.5 Fixed-Variable Conundrum

A fundamental disconnect between the cost of supplying electricity, and the price that is charged is the split between fixed and variable costs. Due to front loaded capacity costs, almost 75 percent of the cost structure of generating, transmission, and distributing electricity is fixed in nature, while only 25 percent is variable in nature. Effectively, even if not a single electron is generated, the 75 percent cost component will continue to be incurred.

On the flip side, the pricing of electricity is predominantly variable, wherein only 2 percent of consumer tariff is fixed in nature, while 98 percent of the same is variable. Effectively, if a consumer does not consume electricity, they only must pay a very small fee for treating the grid as a back-up. Such a discrepancy between cost, and revenue structure has led to a situation where there is a severe cash flow mismatch following the peak summer season.

During winter, as residential consumption drops to its lowest ebb, the fixed capacity costs continue to be incurred, while revenue generated from consumers, which is variable in nature, is not sufficient to cover these costs. This leads to cash flow mismatches, which are then covered through subsequent increase in consumer tariff.

Moreover, even in the case of residential consumers, the variation between electricity bills in summer, vis-a-vis electricity bills in winter is significant. There exists a case to smoothening out cash flow, through introduction of a fixed component, while reducing the variable cost of electricity. Through such a maneuver, the peaks and the troughs can be flattened, while achieving cash flow smoothening for the residential consumer. More importantly, sufficient cash flow can be generated during winter, to cover a significant proportion of fixed costs, to avoid any cash flow mismatch driven increases in tariff adjustments.

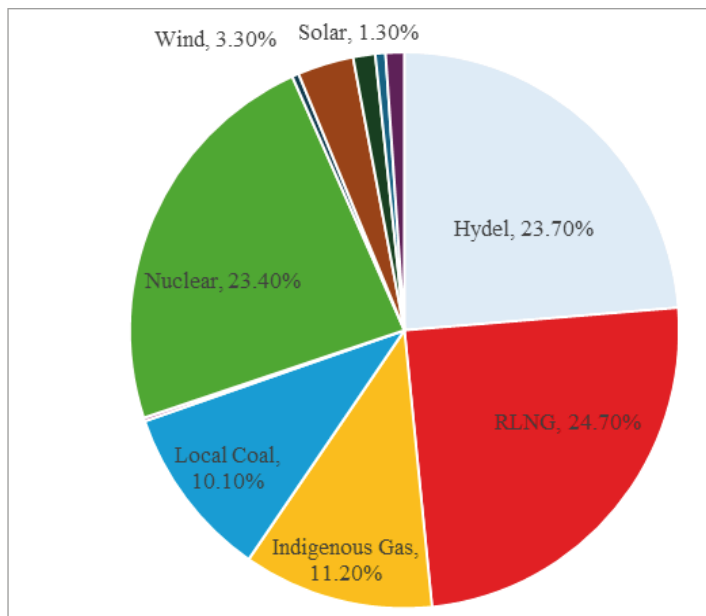
7.6 An Enviably Generation Mix

Over the last few years, the generation mix has gradually transitioned towards a low carbon mix, largely reliant on indigenous resources (Figure 7.6). Almost 23.7 percent of electricity is generated through hydel resources, followed by 23.4 percent through nuclear energy. The remainder is through a mix of indigenous gas (11.2 percent), Regassified Liquefied Natural Gas (RLNG) (24.7 percent), and coal (10.3 percent) – which provide the necessary base load. Effectively, less than 25 percent of electricity is generated through imported fuel. Going forward, most capacity additions are through various hydel projects, which will further skew the mix towards low-carbon resources.

Although utility scale solar makes up only 1.3 percent of total electricity generated, explosive growth in rooftop, and distributed solar has led to a significant spike in electricity generation through renewables. On the cost front, the cost of generating electricity (variable cost) has been gradually declining, and as of April, 2024 was in the range of PKR 9.2 per kWh (or US 3.3 cents).

Over the next few years, the transition towards low-carbon resources will only accelerate, as more hydel comes in, and dated furnace oil fired plants are retired. A carefully calibrated policy that harnesses the power of distributed solar can also play a crucial role in accelerating a green transition and reducing reliance on imported fuels for generation of electricity.

Figure 7.6: Pakistan Energy Mix (April, 2024)

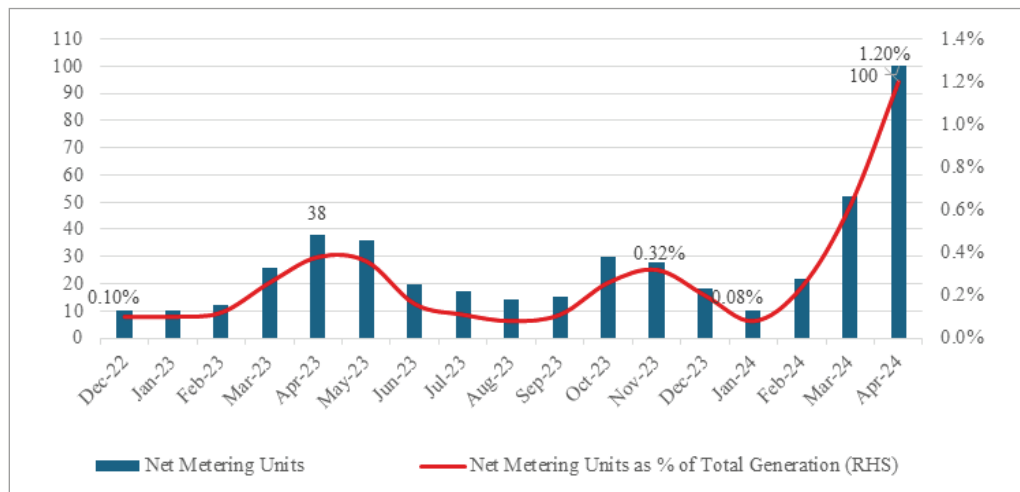


Source: Monthly Power Purchase Data as published by NEPRA

7.7 Fighting the Sun

The reduction in price of solar panels is an example of how technology can disrupt legacy operating models, and pose challenges that could never be conceived. Solar panels followed a learning curve, such that for every doubling of production capacity, prices were reduced by 20 percent. There has been an accelerated decline in price of solar panels over the last one decade – and the same has been more pronounced during the last one year, when prices dropped by more than 50 percent. This has led to a sudden surge in the adoption of solar, shocking grids across the world in the process (Figure 7.7). As of June 2023, it was estimated that 600 MW of solar connections had net metering with the grid in Pakistan. The same increased to more than 2000 MW by May 2024. This was largely driven by a significant reduction in the price of solar panels, which made it cheaper to install rooftop solar.

Figure 7.7: Growth of Solar Net Metering (GWh)



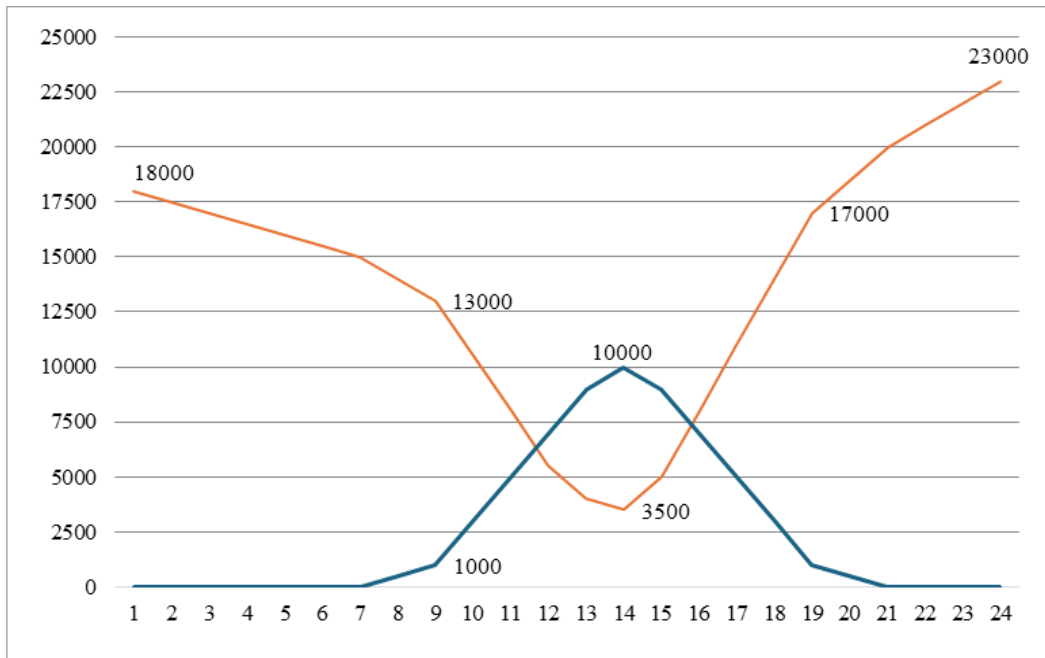
Source: Data as published by NEPRA

Adoption of solar creates a phenomenon called duck curve – which effectively means that demand for electricity from the grid reduces during peak sunlight hours (Figure 7.8). As demand from the grid reduces, so does the price in a competitive market. It is called a duck curve because as demand from the grid drops during peak sunlight hours, the grid demand curve resembles a duck. The same phenomenon is now apparent in many different countries, and only recently has started to shape up in Pakistan. As solar adoption picks up, the emergence of a duck curve is a natural consequence. However, Pakistan does not have a competitive market for electricity, and the market structure is such that there is only one buyer of electricity. In such a scenario, as demand during peak sunlight hours is absorbed by solar, capacity payments for capacity that is not utilized will continue to be incurred. This creates a conundrum where moving away from a single-buyer to a multiple-buyer model remains crucial.

More importantly, it is also important to understand that peak sunlight hours would only be for 6 to 8 hours on a typical summer day. The remaining 16 to 18 hours would need to be serviced by the grid. This implies that distributed solar generators may have to pay a certain fixed cost to have back-up infrastructure in place that can provide them with electricity when the sun is not shining. If the same users shun away from paying a fair charge for infrastructure cost, the same will have to be paid by those consumers who do not have distributed solar installed – and would effectively be subsidizing the rooftop solar users, for their access to the grid during the hours when the sun doesn't shine.

Different countries have solved this problem by restricting the load that can be net-metered with solar, and by also enacting a fixed cost based on load allocated to a particular user. This ensures that there is equity in the process, and users on the grid are not subsidizing users who are off the grid during peak sunlight hours. In the case of Pakistan, a net metering connection is only available, if a household has a three-phase connection – which is mostly in the case of affluent households. This already excludes 95 percent of grid users. Moreover, there are around 113,000 households with net metering connections, of which roughly 75 percent households have a load of 5 kW, or more – effectively making them among the more affluent households in the country, depending on their consumption patterns. In such a scenario, absence of a fixed charge is unfair for the remaining 99.7 percent of the grid, which is effectively paying the infrastructure cost of the top 0.3 percent of households (in terms of electricity consumption) in the country.

Figure 7.8: Duck Curve. Net Demand (MW) of Power at Different Hours of the Day



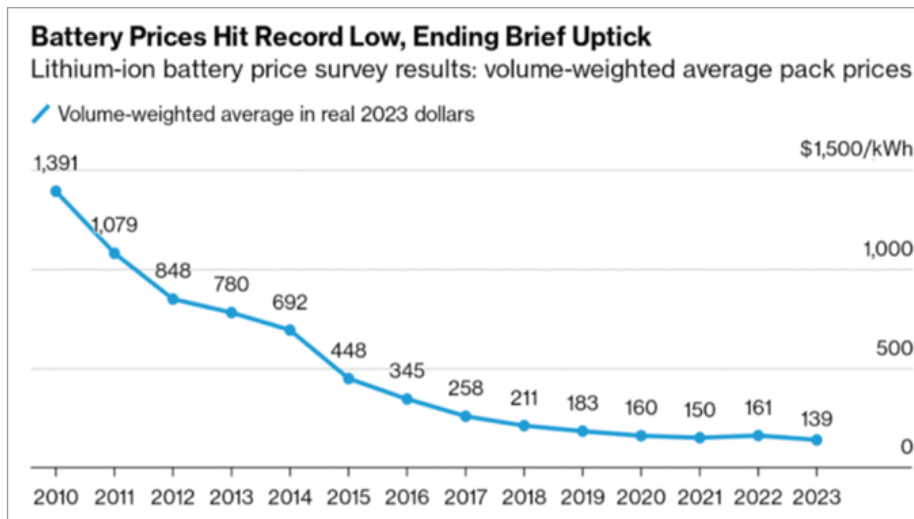
Source: Data as published by NEPRA

7.8 The Threat of Storage

Prices of power storage solutions have also been reducing rapidly. The learning curve of storage solutions is estimated to be 18 percent, which implies that for every doubling of production capacity, prices will fall by 18 percent. Over the last thirteen years, prices have fallen dramatically, and are now only one-tenth of the price in 2010 (Figure 7.9). As the adoption of Electric Vehicles, and other storage solutions increases globally, so will the capacity – kicking off further economies of scale. As price of storage solutions drops further, households will have a greater incentive to move away from the grid – utilizing their own solar panels, and storage solutions. This will exacerbate the already precarious stability of the grid. As more consumers move off-grid due to better technology, the cost of servicing remaining consumers will continue to increase – further accelerating the death spiral.

The inability to adapt to technological advancement is a serious threat, and it will make the existing business model of electricity distribution unviable. There is a strong case here to adapt to the changing preferences of consumers, as well as technology, and create business models that encourage micro-grids, and induce more efficiency into the system. Disregarding the same will inadvertently lead to a mass exodus from the grid, as households, and industries alike adopt more efficient, cheaper, and technologically advanced solutions.

Figure 7.9: Battery Prices from 2010-2023



Source: As published by Bloomberg NEF

7.9 How to fix it all

There are no easy fixes. Multiple interventions need to be done, both in parallel, and sequentially, to reach a point where a complete collapse of the infrastructure can be avoided, and affordable electricity can catalyze industrial growth. Key reforms that must be considered are as follows:

- **Incentivizing Demand:** Pakistan does not have a supply problem; it has a demand problem. We need to incentivize more demand, and the same can be done through selling electricity at a marginal cost. Capacity charges are only going to increase as more capacity comes online – however, incentivizing demand such that the capacity charges are spread over more units of electricity consumed can effectively reduce tariffs for consumers across the board. The following key interventions can be done to incentivize demand:
 - i. Incremental consumption of industrial customers can be priced at marginal cost, such that consumption of electricity at marginal cost reduces the overall cost of production. This will incentivize industrial customers to produce more, at a progressively lower price – eventually catalyzing industrial growth
 - ii. The development of a late-night tariff can stimulate consumption of electricity during late hours of the night. Between 1 am and 8 am, the load on the power grid reduces by an average of 3,000 MW – opening space for more utilization. Incentivizing industrial utilization by selling electricity at a marginal price can stimulate industrial demand during late-night hours. Shift-based industries can create new shifts (thereby increasing employment), while process based industries can improve overall efficiency levels. Utilizing available capacity for maximum consumption is the principle that should be driving all policy decision
- **Creating a Competitive Market through Wheeling:** The market structure for electricity in Pakistan is a single-buyer, and multiple-seller model, wherein the Central Power Purchasing Authority (CPPA) is the single-buyer representing the government, buying power from generators. This is a grossly inefficient model as pricing of the power is done through a cost-plus mechanism, which eliminates any incentive to induce efficiency in the system and reduces prices. The same can be done through inducing competition in the market. Wheeling is a process through which a power generator can sell electricity to any party through utilization of existing grid infrastructure, while paying a wheeling cost for the same. There is a case to allow existing power plants to move away either complete or partial capacity from central procurement to private bilateral sales.

Through such a maneuver the power generators can negotiate a market-determined price with other private parties, as well as better payment terms relative to central procurement. This will also incentivize power generators to improve efficiency, such that they can compete on price with other private sellers, thereby reducing the overall average cost of generation. This can lay the foundations of a competitive market for electricity – while also enabling both buyers and sellers to agree on a stable long-term pricing structure for better strategic, and product planning

- **Restructuring Fixed-Variable Component of Tariffs:** The cost of generating electricity has a disproportionate component of fixed costs (75 percent), relative to variable costs (25 percent) – where, billing is done with variable costs making up 98 percent of total revenue, while only 2 percent is fixed cost. Such a lopsided pricing structure needs to be flipped, enabling revenue to have a higher fixed cost component.

Currently, residential users do not have any fixed costs – adding a fixed cost component relative to their consumption, and load levels, while reducing variable costs concurrently can enable cash flow smoothing for the consumers. The structure needs to be designed in a way that the overall annual electricity bill does not change, while monthly variances are smoothed out. This will not just improve cash flow stability for households, but also improve the ability to generate cash flows by the grid during winters.

- **Monetizing Power Sector Debt:** The power sector has around USD 8 billion of debt that is currently outstanding and needs to be repaid over the next ten years. Similarly, another approximately USD 4 to 5 billion of project debt will be added over the next six years as new power capacity come online. The debt is largely priced at a Secured Overnight Financing Rate (SOFR) and a certain spread. The principal and interest repayment component of this debt is effectively a part of capacity payments and is paid by the electricity consumers of the country. As consumption reduces, the amount paid by remaining consumers increases on a per unit basis. As the debt is in USD, any depreciation of PKR further compounds the effect, and the impact of depreciation is directly paid by the consumers. It is estimated that debt related payments make up around 65 percent of total capacity payments.

As long as the electricity consumer continues to make debt repayments, and remains exposed to a depreciation of PKR, the ability to increase consumption will remain compromised, hence constraining economic growth in the process. Effectively, the debt has been socialized through a structure that directly constrains economic growth, since electricity prices are the key driver of electricity consumption, which has a strong correlation with economic growth.

As radical as it may sound, the debt component needs to be removed from the electricity tariff. The power sector debt is already guaranteed by the sovereign, whilst repayment in foreign currency of the principal, and interest payments of the same is also the responsibility of the government. There exists a case to move this debt from the balance sheets of power plants to that of the sovereign – such that it becomes sovereign debt. As the same is already guaranteed by the government, it is already quasi-sovereign – however, the front-loaded nature of the same is constraining economic growth in the process.

Moving the debt to the sovereign balance sheet would improve the overall credit risk of the debt, enabling the sovereign to negotiate for better terms, both in terms of interest rate, and principal repayments, aligning with other sovereign debt obligations. Such a structure

would also appeal to lenders as it would ensure timely interest and principal repayments, which currently are made with considerable delay – as payments are first released by the government to the power plants before the same can be repatriated. Such a structure would drastically reduce tariffs, and kick start consumption of the same, removing a key roadblock for economic growth in the process.

- **Revamping Business Model of Distribution Companies:** Since electricity distribution scaled up during the early years of the twentieth century, electricity distribution companies have largely operated as a monopoly, or as an oligopoly. This was largely due to significant infrastructure costs associated with the establishment of the grid and the regulated nature of pricing for the same. In the case of Pakistan, privatization is the first step in the process – how the electricity distribution companies are revamped will determine their sustainability for the future.

Technology is changing the same. The learning curve of both solar panels and storage solutions continues to demonstrate that prices for both will continue to reduce significantly over the next decade. The price of solar panels has already reduced to a point where its adoption is considered a threat to the grid, as the electricity load on the grid is reduced creating the duck curve. As prices of storage solutions reduce, households will be incentivized to buy private storage solutions, and effectively go off-grid. As more households go off the grid, the business model of the grid would be threatened. Multiple households with private generation and storage solutions can group together and create micro-grids through a market based pricing mechanism, completely eliminating the need for a utility-scale grid in the process.

In the case of Pakistan, households consuming up to 200 kWh of electricity make up more than 60 percent of total consumers. These are also the consumers that are exposed to frequent load shedding. Such households will be the first to defect from the grid and do so in droves. Such households are already doing the same, through a mix of a single solar panel, and a small battery. As prices continue to reduce, so will the incentive to go completely off-grid. As the number of households that utilize the grid reduces, the economic viability of the grid will be threatened.

References

Haider, E.A., 2020. Disempowered: Electricity, Citizenship, and the Politics of Privatization in South Asia (Doctoral dissertation, Georgetown University).

NEPRA, 2023. State of Industry Report, 2023

NEPRA, 2023. Performance Evaluation Report of Distribution Companies, 2023

Bloomberg NEF, 2023. Battery pack prices hit record low. Available from: <https://about.bnef.com/blog/lithium-ion-battery-pack-prices-hit-record-low-of-139-kwh/>

Chapter 8

Technology and Elections: A tech-powered democracy

Javeria Younas Abbas and Faiz Ur Rehman

Highlights

- The critical role that technology may play in the political sphere, particularly the electoral process, has garnered momentum in the last decade. The recent elections of 2024 noticed political parties in Pakistan using technology in their election campaigns.
- The use of technology proved to be an effective medium given the fact the share of young voters was higher as compared to other age groups. In Pakistan, 45 percent of the registered voters were in the age group of 18-35 years.
- Due to the low transaction costs generated by technology, we will likely see a rise in competition at both the candidate and party levels which will consequently strengthen participatory democracy.

8.1 Introduction

The use and deployment of technology in political markets and specifically in the electoral process have recently received a considerable amount of attention. The discussion is more pronounced in countries with elections marred with electoral malpractices and procedural shortcomings, hence the use of technology is seen as a possible solution (Cheeseman, Lynch & Willis, 2018). However, the deployment of technology seems to be receiving a mixed response: a few enthusiasts supporting and a few outright rejecting the notion (Imran & Masood, 2020; Cheeseman, Lynch & Willis, 2018; Enwere & Ladan-Baki, 2015). Ours is an attempt to add to the existing literature on the use of technology and its possible consequences for the electoral process in Pakistan. It is then imperative to point out that the use of the word 'technology' is all encompassing and does not refer to any one tool. Secondly, the use of technology can be employed at different stages of the electoral process, our focus will be on the use of technology for election campaigning in the political market.

The functioning of political markets is receiving attention from economists and political scientists alike. Political institutions like economic institutions have players, objective functions, and a political outcome to achieve (Caballero & Soto-Onate, 2016). It is then important to scrutinize a key political process, elections, from an institutional lens and study its impact on the political landscape and the institutional matrix of the country. Hence, in this light, the crucial role of technology in the political and economic sphere warrants attention.

‘Credible commitment’, ‘reputational capital’, and ‘organizational setup’ of the state are reflected via political institutions (Caballero & Soto-Onate, 2016). Consequently, in a democratic governance structure, elections are of paramount importance. The election process is held in a political market with players (political parties, government, bureaucracy), a set of objectives (timely and transparent conduction of elections, peaceful transfer of power), and a political outcome (achieving political stability, economic growth, and development).

A quick glance at Pakistan’s political market and its performance reveals that the efficiency of the ‘political market’ has repeatedly been undermined. Additionally, given that conducting elections is a complex macro-political exercise with far-reaching multi-dimensional implications and is a costly political activity, it is then important to ensure that the true will of the people is safeguarded. Any breach of this promise jeopardizes the credibility of elections and undermines the democratic process in Pakistan.

One of the fundamental challenges truncating the electoral process in Pakistan is election malpractices such as election rigging (Al-Kubaisi et.al, 2023; Javid & Mufti, 2022; Islam, Zubair & Muhmmad, 2019; Lashari & Mirza, 2013). As per reports, the general elections of 2024 in Pakistan were marred with both pre-election and post-election malpractices. The recent elections of 2024 in Pakistan (like previous elections) not only undermined the democratic process in the country but raised questions about transparency, fairness, and independence of the electoral process (Javid & Mufti, 2022). Restrictions on political parties and their candidates, misuse of state resources, restrictive and biased media coverage, and campaigning disruptions were a few vocally stated problems by both the local and global media alike.

The election malpractices exert additional transaction costs for participation in the political market, distort the incentive structure, and greatly diminish the efficiency of the political outcome. Then, can political parties as players in the market take steps to reduce the increasing transaction cost and alter the incentive structure in their favor? Additionally, what role can technology play in helping curb the transaction cost? The following chapter endeavors to answer these questions using the general elections, in 2024 as a case in point.

8.2 Election Malpractices: High Political Transaction Cost

The election malpractices like rigging and election engineering in Pakistan are widely covered and documented in academic literature (Al-Kubaisi et.al, 2023; Islam, Zubair & Muhmmad, 2019; Lashari & Mirza, 2013) and media.¹ Election rigging can take many forms: before, during, and post-elections. Unfortunately, elections in Pakistan have a checkered history and have been marred with all forms of rigging and election engineering (Javid & Mufti, 2022).

The role of the army and bureaucracy has been conspicuous throughout the election history of Pakistan. Additionally, the judiciary also played a key role in furthering election engineering and rigging.² Pre-election rigging included banning political parties, jailing candidates on flimsy charges, denying the use of the existing party symbols, restrictive and biased media coverage, a ban on public gatherings, and campaigning disruptions. The use of coercion and intimidation on political parties' candidates to abandon their party, and forcing them to either quit politics altogether or join rival party, was widely reported too. The state machinery, especially the Police, was also at the forefront of making arrests and using force against political parties' supporters.³

The rigging did not stop here and was rampant post-elections too. The changing of form 45, and 47⁴, and tempering of results were widely reported by multiple parties, on duty personnel, and global and local media. The bureaucracy together with law enforcement personnel was reported to temper with the election results.⁵ Other rampant rigging tactics included the suspension of internet services under the grab of security reasons. Blocking the internet caused hurdles in the dissemination of information. This was particularly troubling for people in locating their constituencies and accessing social media to name a few issues.

As rational efficient political players, any political party aims to maximize their votes by decreasing transaction costs. Hence, measures like familiarizing candidates with symbols, the correct way to vote, and aiding in locating their constituencies are all done with the aim of minimizing electoral transaction costs. With artificial barriers being erected, few political parties witnessed a significant increase in the transaction cost of participating in the political market and the electoral process.

Many analysts believe that given the changing dynamics of the social and political landscape in Pakistan, the establishment now finds it difficult to manipulate the voting process and many have termed this as election electioneering rather than rigging. Whether it is election engineering or rigging, the case in point remains the same: an increase in transaction costs for political parties.

8.3 Watershed Moment: Technology and Election Nexus in Pakistan

It is “rules of the games” that will determine the cost of carrying out the transaction (North, 1991). The level of transaction costs is determined by the characteristic traits of every contract along with the environment in which it is taking place. As discussed in the previous section, there was a hostile environment marked by unfair, and at times unlawful characteristics and traits that led to an increase in the transaction cost. The smart use of technology by political parties and their supporters acted as a crucial and defining trait that helped fight the unfair environment and consequently aided in the reduction of the cost of contesting elections.

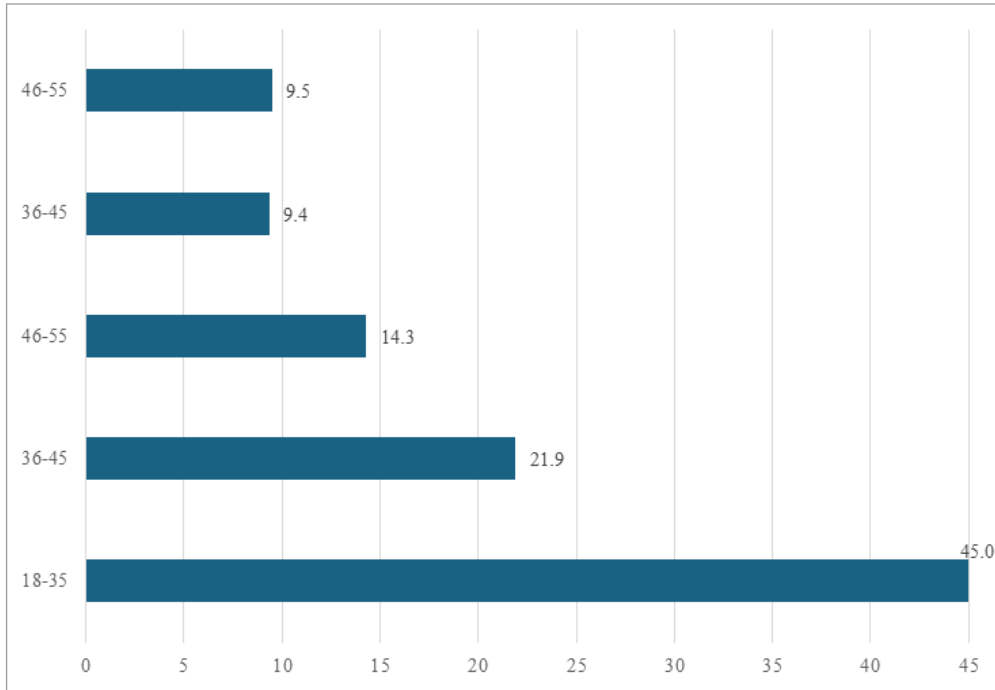
All the three largest political parties in Pakistan used technology for election campaigning. However, the use of technology by Pakistan Tahreek-e-Insaf (PTI), one of the three largest political parties, stood out. The PTI helped reduce its transaction cost of contesting elections via the use of technology. With the head of the party in jail, the party's election symbol being denied, some candidates being jailed, and other candidates being manipulated or forced to leave the party, all led to the creation of a hostile environment for the party to contest elections. Consequently, it added to the transaction cost of political activity, altered the incentive structure, and as a result, the desired political outcome of coming into power and making a legitimate government. It is not just the current election malpractices that added to the political cost. Even historically the price of campaigning involved huge financial expenses in the form of organizing rallies, political mobilization, and other miscellaneous expenditures.

Using technology, the party reduced the voters' information costs and hence the transaction cost of electoral participation. A website was launched and was dedicated to PTI backed candidates with all the relevant and required information. Further, the party leader's large followers on Facebook were channeled to the messenger where an auto-reply option containing all the information of candidates backed by PTI was fed into system. This information was further disseminated by supporters via other social media platforms like X (formerly known as Twitter), Facebook, WhatsApp, Instagram, TikTok etc. The use of hashtags also helped garner more support for their candidates and aided in shaping the discourse and political narrative on social media. A community led mini election management system relied on open source and cloud technologies was functioning— therefore digitizing the election data using community efforts.

Political activity is a perpetually dynamic activity marked with incomplete and imperfect information taking place both in real time and history. This perpetual dynamic activity was evident during the election campaign of political parties where technology was used as a strategic tool to further electoral agendas. Virtual rallies, AI-powered addresses, and regular virtual engagements of party members helped update voters and supporters about the latest developments.

It is important to consider the changing social, political, and economic dynamics of elections in Pakistan. The young population cohort occupies a major share of voters, and the fact that it is a generation that is active on social media is a reality that came in handy for the party to fight the hostile election environment. One can argue that in the age of technology, PTI had a distinct advantage over other parties as an early adopter and aggressive users of the new media.

The demographic analysis of the trends in elections reveals how the young population of the country is at the forefront of political participation. The age wise comparison shows that most of the voters, approximately 45 percent, fall in the age bracket 18 to 35. Figure 8.1 shows that as the population ages, the number of voters decreases. This trend indicates the changing dynamics of the political voters and political engagement and must be factored into the future election analysis of the country.

Figure 8.1: The Age Wise Comparison of the Electoral Rolls in Percentage

Source: Election Commission of Pakistan

The transformative power of technology was apparent in this year's elections. Many analysts were skeptical about the online efforts being translated into actual votes; nevertheless, the tech-powered change went above and beyond behind the screens and translated into actual votes on election days.

8.4 The Future of Democracy and Technology

The rapid advancement in technology has had a profound impact on democracies around the world. With a multitude of technological tools at people's disposal, freedom of expression has found a new meaning, in the form of dissemination of information and civic mobilization. The significant role of technology was evident during Pakistan's general elections of 2024. Historically, the transaction cost of taking part in elections has been significantly high. The high cost of contesting in a democratic process, apart from a host of other reasons, has acted as an impediment to participatory democracy taking root. With technology playing a crucial role in raising voices and in dissemination of information, the country can experience a surge in grass

root participation, which will help strengthen the fragile democratic process in the country. Both at the macro level (political parties) and micro level (candidate level) the technology will aid in significantly reducing the transaction cost of elections by saving time and valuable resources. A decreased reliance on funding of election campaigns by different stakeholders will also help free the political parties from furthering economic agendas beneficial for the public rather than a particular stratum of society. Technology will also significantly impact the voter turnout. The Election Commission of Pakistan (ECP) also deployed different forms of technology from advertising to creating awareness about the elections of Pakistan. Given the large scale of the political activity of elections, the ECP relied on text messages to inform voters about their constituencies and election venue. This points out the beneficial use of technology to further voters' turnout. With the younger population of the country entering the election age, using technology to strengthen democracy seems like the only plausible solution. Nonetheless, there are certain caveats to this optimism.

A country of 240 million people has experienced multiple authoritarian governments and has had a troubled history with democracy in Pakistan. While technology offers a sustainable solution, there are two colossal problems with it. First, in this age of technology and democracy, multiple governments have resorted to censorship, surveillance, control, and exploitation of the internet and technology. It is not just the governments but multiple anti-democratic forces in the country that use force and/or authoritarian means to control the tools of technology. Secondly, with freedom of expression and civic mobilization, we have the danger of technology being manipulated by a few people thereby ruining the very spirit of democracy that it promises to promote. Further, there is a looming threat of misinformation, disinformation, and data privacy issues which have the potential to greatly undermine the democratic process in the country. Given the inherent rent seeking extractive institutional structure in Pakistan, the true spirit of technology will always be undermined and underplayed. Irrespective of the outcome, the political landscape in Pakistan has and will continue to change; whether it will be for good or worse only time will tell.

8.5 Conclusion

The performance of political institutions has far-reaching economic impacts, especially with respect to the economic policies that are pushed forward by the political parties. Hence, elections give legitimacy to the economic policies being implemented in the country.

Timely and transparent elections aid in establishing a culture of participatory democracy whereby citizens can participate and exercise their role in the formation of the political landscape. Therefore, having free and fair elections forms an integral part of delivering on the promise of strengthening the quivering democratic process in Pakistan by ensuring a peaceful transfer of power.

Increased voter turnout and political participation, aid in building trust in the political system which then translates into a robust economic structure. The electoral process hence is of paramount importance, particularly given the historical context where the military- as an actor and one of the strongest institutions- has interfered in the elections, seriously undermining the electoral process in the country. The plausible question then is: does technology have the power to keep in check the authority of the anti-democratic forces that are adamant about undermining the democratic process in the country? Even so, with the changing social, political, demographic (the rising share of the young population below the age of 30), and economic landscape the future of technology and democracy offers hope. The general elections 2024 paints an optimistic picture as it was a contest between technology and tradition, with technology emerging as the clear winner.

Notes

1. Pakistan's surprising and marred 2024 election, and what comes next? What Are Key Takeaways from Pakistan's Understanding Pakistan's Election Results? Brookings.
2. PTI loses battle for 'bat' as ECP prevails in SC. DAWN.
3. PTI protesters baton-charged, arrested. 25 arrested as PTI workers, police clash in Karachi during election rally. DAWN.
4. Why Forms 45 and 47 are at the heart of Pakistan's election rigging controversy. PTI alleges Form 47 of 18 NA seats 'falsely changed' by returning officers. The Indian Express.
5. Rawalpindi commissioner says poll results 'manipulated' under his watch; ECP rejects claims. DAWN.

References

- AL-Kubaisi, H. A. R., Shah, F. A., Siddiqui, A. H., & Ahmed, S. (2024). Electoral Politics in Pakistan: Trends, Issues, and the Role of Political Parties. *Remittances Review*, 9(1), 854-890.
- Caballero, G., & Sotooñate, D. (2016). Why transaction costs are so relevant in political governance? A new institutional survey. *Brazilian Journal of Political Economy*, 36, 330-352.
- Cheeseman, N., Lynch, G., & Willis, J. (2018). Digital dilemmas: The unintended consequences of election technology. *Democratization*, 25(8), 1397-1418.
- Enwere, C., & Ladan-Baki, I. (2015). Understanding the Role of Technology in Free and Fair Elections in Developing Countries. *Journal of social and administrative sciences*, 2(3), 135-143.
- General Elections 2024 (15th May 2016). <https://ecp.gov.pk/general-elections-2024>
- Islam, S., Zubair, M., & Muhammad, I. (2019). An analysis of 2018 general elections in Pakistan. *Journal of the Research Society of Pakistan*, 56(2), 191.
- Javid, H., & Mufti, M. (2022). Electoral manipulation or astute electoral strategy? Explaining the results of Pakistan's 2018 Election. *Asian Affairs: An American Review*, 49(2), 65-87.
- North, D. C. (1991). Institutions, ideology, and economic performance. *Cato J.*, 11, 477.

Chapter 9

Marine Plastic Pollution: Total Economic Losses to Pakistan's Economy

Ghamz E Ali Siyal and Fasih Zulfiqar

Highlights

- Marine plastic pollution (MPP), the presence of plastic particles of different sizes in rivers, seas, and oceans, is a cause for concern not merely for biodiversity and ecology, but also for economic development. This is even more so true for Pakistan, a country in desperate need of growth and development.
- Based on the total volume of plastic pollution on Karachi's beaches, the estimates show the damage caused by each marginal unit of plastic pollution. This total economic loss comprises of loss to three different sectors: tourism, fisheries, and cleanup costs.
- Comparing the result of the total economic cost with other countries, Pakistan does not seem to be facing exceptional costs. However, Pakistan is capable of drastically ameliorating MPP issue and boosting economic development.

9.1 Introduction

Marine plastic pollution (MPP) is a grave ecological and economic issue that torments not just a select few countries but the entire global economy. Before exploring the magnitude of the issue, a definition of MPP is warranted. Plastic is a synthetic, organic polymer formed from fossil fuels, commonly gas, and petroleum. More than 460 million metric tons of plastic are produced annually, according to the United Nations Environment Program (2021). MPP is mismanaged plastic due to lack of or poor quality of solid waste management in different countries. This mismanaged plastic waste reaches seas and oceans from rivers and streams where it is thrown. Population size and quality of waste management of a country determine the contribution of plastic to the ocean. For instance, Jambeck et al., (2015) estimated 4.8 to 12.7 million metric tons (MT) entered oceans out of 275 million metric tons of plastic waste generated by 192 coastal countries globally in 2010.

As compared to other categories of debris, including glass, cloth, paper, metal, rubber, medical/personal hygiene-related items, smoking/firework items, and wood (Nualphan, 2013; Rosevelt et al., 2013), plastic trash persists in ocean basins. This is due to the unique characteristics of plastics, particularly the potential of ready transportation by water current and wind due to long shelf-life. However, one particular type of plastic is rampant in the oceans.

Plastics in the ocean basins can be categorized into four levels based on their sizes: mega-plastics (>50cm), macro-plastics (5 to 50 cm), meso-plastics (0.5 to 5cm), and micro-plastics (<0.5 cm) given in Du and Wang, (2021). Microplastics are usually manufactured in commercial products such as personal care and cosmetic products. Often, microplastic particles form through in-situ environmental degradation and the subsequent fragmentation of larger-size plastics through intricate physical, chemical, and biological processes (Browne et al., 2010; Wang et al., 2018). More so than any other type of plastic, microplastics are rife in marine and coastal systems, while synthetic pollutants chemically interact with organic pollutants and metals (Guo and Wang, 2019a).

These plastics can cause a lot of damage to any ocean. It is expected that by the year 2050 if plastic pollution is not reduced, there will be more plastic debris than fish in the water (Jong, 2018). The damage can have multiple dimensions including economic, biological, historical, ecological, and psychological. Along with other coastal countries, Pakistan also shares a coastal length of 1046 km (650 miles) to its south facing Arabian Sea (Schultz, 2023). According to the World Bank report (2022), the Indus River contributes 10,000 tons annually of plastic waste flowing from Kotri Barrage to the Arabian Sea (World Bank, 2022). In this report, the focus will be on the quantifiable economic loss that Karachi faces from MPP. Not only is Karachi one of the biggest cities in Pakistan, in terms of economic output, but also the final offshoot of the major coastline of 90 Km from where plastic can enter the Arabian Sea (Afsar et al., 2013). The report will particularly focus on Pakistan's fishing industry, the troubles it faces due to MPP, and how that translates into economic loss for Pakistan and its growth.

The report will base its methodology of calculating economic loss on the literature in this field. In particular, the report will refer to the methodology and economic loss per ton of plastic pollution used in Xia et al., (2023) and Beaumont et al., (2019). To do so, the report employs data from several studies in Pakistan that calculate the total weight of plastic floating on the sea surface and the sea floor on Karachi's coastlines. The data also has the length of Karachi's coastline, which will allow us to calculate the marine plastic pollution density.

9.2 The Growing Threat: Marine Plastic Pollution in Pakistan

Pakistan's MPP situation has worsened significantly over the years thanks to Pakistan's continuously growing population that has a strong consumption-based lifestyle. For instance, major cities in Pakistan are facing a rising urban population and waste to deal with. For overall country, 20 million tons of municipal solid waste are generated approximately and have annual growth rate of 2.4 percent (Qaimkhani, 2018). Evidence of plastics in the Indus River were found in the recent World Bank report. In this report, samples of litter booms and passive samples around riverbanks were collected at nine different hotspots. Their study concludes that over 11,977 tons per annum of plastic travel to reach its end. According to this report, 10,000 tons of plastic are responsible for coastal and marine wildlife (World Bank, 2022).

Pakistan's beaches and oceans are not dominated by any one particular form of plastic pollution. The sources vary by not only the type but size as well. The major one is land-based sources, which include municipal waste are low-density polyethylene (LDPE), sanitary products, and multi-layered packaging (World Bank, 2022). The other main source encompasses fishing and agricultural activity, which includes nets, ropes, fertilizers, and more. The data for this source of pollution has been documented in different research papers, for instance, Ali and Shams, (2015), Neelam et al., (2018), and Suhail et al., (2024). These studies also state that an important source of pollution is improper waste disposal by beachgoers, particularly cigarette waste.

On a relative scale, it seems clear that plastic-related pollution constitutes most of the pollution on Karachi's beaches, but it is important to note the total volume of this trash and debris. According to Neelam et al., (2018), there is a total of 385.04 kg of plastic-related trash on Karachi's beaches (which includes Hawksbay, Sandspit, Paradise, Clifton, Ghizri, and Korangi Creek). Conversely, there is a total of 1.01kg of smoking-related debris and only 0.505 kg of fishing-related debris on Karachi's beaches.

The objective is to compute how this volume of trash translates to economic loss. It is plausible the damage would be quite grave for Pakistan, considering MPP's significant contribution to a reduction in gross domestic product (GDP), estimated at up to USD 7 billion (globally) for 2018 alone (Dewit et al., 2021).

9.3 Methodology and Data

To estimate the economic loss that the fishing industry is facing we need to follow certain steps. First, we needed the total volume of plastic items floating on and under the sea surface on the coastal shoreline of Karachi. Since we are not working on the collection of debris and trash, we are relying on literature. Recent studies have quantified debris on the beaches of Karachi along with their composition (Ali and Shams, 2015; Neelam et al., 2018; Suhail et al., 2024). Using the total weight (in grams and then later converted to tons) of plastic items from studies, we divided it with the total coastal shoreline of Karachi, that is 90 Km (Afsar et al., 2013), to estimate the density of plastic trash on beaches. After getting the numbers, following Almroth and Eggert (2020), we know that 5 percent of total marine plastic pollution reaches the beaches, 1 percent floats on the sea surface, and the rest sinks to the sea floor. From the density of plastic pollution on Karachi's beaches, we worked on estimating how much of the total plastic must be under the sea surface or floating on it.

After having both numbers, we estimate economic loss following Beaumont et al., (2019), and Xia et al., (2023), which provide the most accepted and researched estimate of the economic loss caused by marine plastics. The authors estimate a natural capital loss ranging from USD 3,300 to USD 33,000 per ton of plastic waste each year. The reported loss in value included only marine natural capital impacts, implying that the full economic cost could be larger. In the economic loss, there must be considerable components of the reduction in GDP due to the loss of tourism and due to the loss of biodiversity and heritage.

In the report, we use this range of economic loss to come up with an estimate of Karachi's loss in economic value due to MPP. The approach therefore is straightforward, but the methodology that went into these authors' paper for calculating this range of loss is not. However, there is a complication that the range, from USD 3,300 per ton to USD 33,000 is quite wide. Which figure makes the most sense in the case of Karachi and Pakistan? Pakistan does not have a very strong fisheries market, is not too engaged in international trade of fisheries, nor are Pakistan's beaches globally known for their beauty. Therefore, we can imagine Pakistan might take the lower end of the estimate as the per ton damage value for the fisheries industry. However, rather than making any presumptions, it is better to provide an upper estimate (based on USD 33,000) and a lower estimate (based on USD 3,300).

Once the total economic natural capital loss is estimated for Karachi, we can extrapolate a figure for Pakistan. Karachi is not the only city in Pakistan with beaches; several other cities do too. And while it is true that Karachi encompasses the majority of Pakistan's GDP, it is certainly not the only contributor to the nation's total output. For extrapolation, the report uses population size, and availability of beaches to estimate how much economic loss other cities in Pakistan must have due to MPP.

After explaining the details of the above methodology, we would like to add three limitations. First, we are using a limited number of studies based on plastic collection from Karachi beaches that have different sites of trash collection and timings. Second, we use economic loss based on literature and our intuition to estimate economic losses. Because of these limitations, our results may vary from future studies that use different methodologies and data.

9.4 The Economic Burden: Counting the Cost of Plastic

In this section, we are providing weights of plastic trash density, and economic losses given in the following table 9.1 and 9.2, respectively. Now that we have the total volume of plastic-related trash (386.6 kg or 0.4262 US tons) that is on the surface of the sea or floating on the surface or ending up on the beaches, we can estimate the total economic loss to fisheries and then the total economic loss to Karachi's GDP. This is done below, but to calculate the total economic loss we need to consider also the economic loss in the form of direct costs of cleanup and the impact on tourism. For this, there is an insightful study, (Deloitte's 2019 Price Tag of Plastic Pollution study (Viool et al., 2019)), which uses a novel assessment model to estimate the economic costs of marine litter. The study shows that the direct costs of cleaning coastlines, waterways, marinas, and ports constitute between USD 5.6 and USD 15.0 billion in government expenditures, whereas the loss to tourism due to polluted beaches and stranded debris is estimated to be between USD 237.8 million and USD 2.4 billion.

Table 9.1: Summary of Facts of Trash Density from literature

Debris	Location	Ali and Shams (2015)	Neelam et al., (2018)	Suhail et al., (2024)
Plastic items	On the sea surface	3484.99 grams per kilometer	42.79 grams per kilometer	
	On the seafloor	6551789 grams per kilometer	4021.56 grams per kilometer	
Fishing items	On the sea surface		0.059 grams per kilometer	
	On the seafloor		5.56 grams per kilometer	
Plastic and fishing (combined)	On the sea surface		42.85 grams per kilometer	30.31 grams per kilometer
	On the seafloor		4027 grams per kilometer	2849 grams per kilometer
Smoke items	On the sea surface		0.11 grams per kilometer	
	On the seafloor		10.54 grams per kilometer	

Source: Author's estimation

9.5 Calculating the Ratio of Loss to Different Sectors

The cost to fisheries and aquaculture, and the communities that depend on them, adds up to between USD 114.4 million and USD 1.9 billion annually. Through this, we can calculate the ratios of economic loss to different sectors and come up with a joint figure. To do so, the report will use the midpoint of each range as the figure for loss to each sector. That is, we presume the direct cost of cleaning up the trash is USD 10.3 billion, the loss to tourism is USD 1.3 billion, and the cost to fisheries is USD 1.01 billion. Thus, the percentage of losses to these individual sectors (based on a total loss of USD 12.61 billion) is 81.7 percent, 10.3 percent, and 8 percent, respectively. All final currency figures in the calculations below are rounded off to the nearest dollar and are also given in Table 9.2.

Calculating Total Economic loss to different Sectors from Ratio

- Economic loss to Karachi's fisheries industry due to plastic-related trash: upper estimate = $0.4262 \times 33000 = \text{USD}14,064$ (where 0.4262 is the total ton of MPP found on Karachi's coastline, as shown above; USD 33,000 is the upper estimate of the damage caused per ton of MPP); lower estimate = $0.4262 \times 3300 = \text{USD}1,406$ (where USD 3,300 is the lower estimate of the damage caused per ton of MPP). This is shown in Table 9.2.

- Now that we have the economic loss of the fisheries industry, which suffers 8 percent of the total economic loss (as shown by the ratios obtained above), we can deduce the upper bound and lower bound of the estimated total loss to Karachi's GDP. The upper bound is USD 175,808 (if the USD 14,064 loss to the fisheries industry is merely 8 percent of the total loss, then the total national loss is $14064/0.08 = 175807.5$) and the lower bound is USD 17,581 ($1406/0.08 = 17581$). This is outlined in Table 9.2.
- Breaking down the total loss into a loss for each of the concerned sectors in Karachi, we can see the upper estimate of the total loss to tourism, which as a sector suffers 10.35 percent of the total national loss. As shown by the ratios obtained above, due to MPP it is USD18,108 (175807.5×0.103 , where 175,807.5 is the upper estimated value of the total national loss) and the lower estimate is USD1,811 (17581×0.103 , where 17581 is the lower estimate of the total national loss obtained above). These estimates are shown in Table 9.2.
- Lastly, the estimated total loss to Karachi in the trash cleanup (an industry that suffers a loss tantamount to a whopping 81.7 percent of the total national loss, as shown above in the ratios obtained), assuming it is cleaned up eventually, is USD 143,635 (175807.5×0.817 , where 175,807.5 is the upper estimated value of the total national loss) as an upper bound and USD 14,364 (17581×0.103 , where 17581 is the lower estimate of the total national loss obtained above) as a lower bound. This takes the lion's share of the economic loss, as shown in Table 9.2.

It is now clear that MPP's cost to Karachi's GDP is quite serious amounting to a total of anywhere from USD 17,581 to USD 175,808. This does not take into account multiple other sources of damage due to MPP. The report considers only the 3 types of damages in the form of cleanup costs, costs to tourism, and costs to the fisheries industry.

9.6 Using Karachi's Total Economic Loss to Calculate Total Economic Loss to Pakistan

Now, it is possible to estimate a figure for the total national loss to GDP. To extrapolate the cost to Pakistan from the economic cost to Karachi, it is sensible to use Karachi's contribution to Pakistan's GDP and use that percentage to come up with a national economic loss value. According to the World Bank Group, Karachi contributes 20 percent of the national GDP (Ellis, 2020). Therefore, if the total economic loss in Karachi is between USD 17,581 to USD 175,808, then the total national economic loss due to MPP must be between USD 87,905 ($17581/0.2$ where USD 17,581 is the lower bound of Karachi's total economic loss) or PKR 24,437,704 to USD 879,038 ($175808/0.2$, where USD 175,808 is the upper bound of Karachi's total economic loss) or PKR 244,373,707 (using official currency exchange rate on June 10, 2024)—shown in Table 9.2 below.

*Table 9.2: Economic Loss faced by Fisheries, Tourism, and Government Clean up
(all figures in USD)*

Sector (Incurring Costs)	Karachi	Pakistan (Using GDP Extrapolation)	Pakistan (Using Population Extrapolation)
Fisheries	1,406 - 14,064	7,032 - 70,323	16,884 - 168,842
Tourism	1,811 - 18,108	9054 - 90,541	21,738 - 217,385
Government (Cleanup Costs)	14,364 - 143,635	71,819 - 718,174	172,434 - 1,724,307
Total Costs	17,581 - 175,808	87,905 - 879,038	211,056 - 2,110,534

Source: Authors' estimation

Alternatively, as an estimation for the total national economic loss, it is also plausible to use Karachi's population as a proportion of Pakistan's population. Karachi's population is 20.3 million according to the latest census in 2023, while Pakistan's current population is 243.8 million according to the United (United Nations, 2022). Thus, Karachi's population makes up 8.33 percent of Pakistan's population. According to this, if the total economic loss in Karachi is between USD 17,581 to USD 175,808, then the total national economic loss due to MPP must be between USD 211,056 ($17581/0.0833$ where USD 17,581 is the lower bound of Karachi's total economic loss) or PKR 58,673,842 (using official currency exchange rate on June 10, 2024) to USD 2,110,534 ($175808/0.0833$, where USD 175,808 is the upper bound of Karachi's total economic loss) or PKR 586,731,195, as shown in Table 9.2.

The latter approach makes more sense than the former because pollution is something that is caused by the people and their actions. Pollution and MPP levels between cities are likely to vary according to population sizes rather than their economic outputs. Regardless, of considering both approaches, the total economic loss, if taken as the midpoint, is USD 481 million or USD 0.480 billion by the GDP approach and USD 1.16 billion by the population approach. Both figures are concerning. For some perspective, the lower estimate of USD 0.48 billion is more than the GDP of the Marshall Islands, estimated to be USD 0.31 billion by the IMF, and a little less than the GDP of Tonga, estimated to be USD 0.58 billion by the IMF (World Economic Outlook, 2024).

9.7 A Global Comparison: How Pakistan Fares and Implications

It is important to compare Pakistan's MPP and economic loss situation with that of other countries having similar socioeconomic, demographical, and ecological status (Table 9.3). This will allow us to gain some perspective on the analysis and the economic loss figures. For the sake of simplicity, rather than considering the entire range of values for economic loss, the report will take the upper estimate of each range since a lot of the data and plastic pollution have not been considered. The national economic loss to fisheries using the GDP extrapolation method is taken as USD 70,323, tourism as USD 90,541, and the government as USD 718,174. The damages sum to USD 879 million. For comparison with the economic loss due to MPP of other countries, this report refers to the estimates developed by Deloitte for The Ocean Cleanup (Viool et al., 2019).

Table 9.3: Comparative Analysis of the Total Economic Loss of Pakistan versus Other Countries (all figures are in million USD)

Total Economic Loss	Bangladesh	Costa Rica	India	Iran	Libya	Pakistan
Upper Estimate	62.90	2.37	18200	20.94	1.36	2.11
Lower Estimate	14.98	0.540	9.59	2.04	0.14	0.88

Source: Deloitte: The Price Tag of Plastic Pollution

Deloitte has used a generous factor for coming up with its upper estimates; therefore, the majority of their upper estimates (for countries) seem quite inflated, but it is to account for uncertainties and missing data. In the case of Pakistan, where there is a major issue of missing data, this report considers only the plastic volume that is documented for. Therefore, the actual upper estimate values might even be 10 times higher. However, we have not taken the same approach as Deloitte and are therefore using the actual given figures, even if not complete, for calculating the upper estimate.

Pakistan suffers more economic loss as compared to Costa Rica and Libya, but the economic loss nations like Bangladesh and India suffer trumps what Pakistan does. Bangladesh, although smaller than Pakistan in terms of population, has a much higher economic output level and a much bigger fishing industry. To be more specific, Bangladesh has a GDP of USD 411 billion, compared to Pakistan's GDP of USD 347 billion (Euro-Asia Foundation, n.d.) Therefore, it makes sense that it might suffer more economic losses than Pakistan. As for India, there is perhaps not even a comparison considering how big, both economically and demographically, India is as a nation compared to Pakistan. The economic loss India suffers due to MPP will naturally be much more than what Pakistan suffers.

Finally, it seems clear that Pakistan's level of MPP is not far above the standard of economies with comparable socioeconomic and sociodemographic conditions, but the economic loss Pakistan suffers is concerning regardless, especially considering the economic difficulties the country is going through and how important each value of economic output is. Speaking of which, reducing MPP in Pakistan is likely to have significant benefits for the country – benefits that are not just economic but also ecological, political, and sociological. The next section covers all the potential benefits the nation can enjoy if it reduces its MPP.

9.8 Potential Benefits of Reducing MPP in Pakistan

To start with, Pakistan will be able to reduce its huge economic losses by reducing MPP. Marine plastic pollution causes significant economic losses in Pakistan, primarily due to the damage it inflicts on the country's marine ecosystems and the industries that rely on them. By reducing plastic pollution, these losses can be minimized thus leading to increased economic stability and growth. In connection to this, Pakistan can also enjoy increased tourism (Mukheed and Alisha, 2020). Pakistan's marine ecosystems, particularly those of Karachi, are a significant tourist attraction. Reducing plastic pollution can enhance the aesthetic appeal of these areas, leading to increased tourism revenue and job creation in the tourism sector.

Further, as the report has shown, there are also significant losses for the fishing industry because of MPP. Plastic pollution harms marine life, including fish populations. By reducing plastic pollution, the health and biodiversity of these populations can be maintained, ensuring a sustainable source of income for the fishing industry and related businesses. Reducing plastic pollution can also lead to improved public health by reducing the risk of exposure to toxic chemicals and pollutants that are often associated with plastic waste.

Additionally, since marine ecosystems provide various environmental services, such as coastal protection, water filtration, and carbon sequestration, Pakistan can, by preserving these ecosystems, maintain these services, which are essential for the country's economic and environmental well-being (Mukheed and Alisha, 2020). Due to this and other factors, Pakistan can also attract foreign investment by demonstrating its commitment to environmental sustainability and reducing marine plastic pollution. This can lead to increased economic growth and job creation.

Speaking of job creation, the reduction of marine plastic pollution can create new job opportunities in industries related to waste management, recycling, and environmental conservation (Rana and Nisar, 2018, Mukheed and Alisha, 2020). This can further boost the country's growth. Lastly, due to job creation and because of reducing plastic pollution (something that can contaminate food sources and pose health risks to consumers), Pakistan can ensure a safer and more sustainable food supply, contributing to increased food security and economic stability.

9.9 Conclusion & Recommendations

Pakistan suffers significant economic losses due to MPP, estimated to be between USD 211,056 and USD 2,110,534 annually, based on the proportion of Karachi's population to the total population of Pakistan. Although Pakistan's MPP levels may not be far above the standard of economies with comparable socioeconomic conditions, the economic losses are concerning given the country's current economic difficulties. Such a figure should be an alarm of concern for a country that is cash strapped and desperately needs high economic growth and a high employment rate.

Thus, addressing MPP is crucial for Pakistan's sustainable development, as it impacts various sectors such as tourism, fisheries, and marine ecosystems, just to name a few. Urgent action is needed to implement comprehensive policies and measures to mitigate MPP and its associated economic losses. By adopting the following policy recommendations and prioritizing the predicament of marine plastic pollution, Pakistan can work towards abating its economic losses, protecting its marine environment, and promoting sustainable development.

To bring about all the potential benefits mentioned in the previous section, Pakistan needs to formulate and implement strong policies. To begin with, Pakistan should implement robust regulations and enforcement measures to curb plastic pollution at its source, e.g., banning single-use plastics, imposing taxes on plastic production, and promoting the use of biodegradable alternatives.

Secondly, Pakistan should invest in waste management infrastructure to improve collection, sorting, and recycling of plastic waste, particularly in coastal areas. One potentially prudent way to do so could be through collaborating with the private sector to develop innovative solutions for plastic waste management, such as extended producer responsibility (EPR) schemes and incentives for recycling.

Lastly, the Government of Pakistan should also focus on public relations and awareness. It should strengthen international cooperation to address the transboundary nature of MPP, share best practices, and access funding for mitigation efforts. Similarly, it should promote public awareness campaigns to educate citizens about the environmental and economic impacts of MPP and encourage behavioral changes toward responsible plastic consumption and disposal.

References

- Afsar, S., Masood, H., & Bano, S. (2013). Monitoring of the shoreline change and its impact on mangroves using remote sensing and GIS: a case study of Karachi coast, Pakistan. *International Journal of Biology and Biotechnology*, 10(2), 237-246.
- Ali, R., & Shams, Z. I. (2015). Quantities and composition of shore debris along Clifton Beach, Karachi, Pakistan. *Journal of coastal conservation*, 19, 527-535.
- Beaumont, N. J., Aanesen, M., Austen, M. C., Börger, T., Clark, J. R., Cole, M., ... & Wyles, K. J. (2019). Global ecological, social and economic impacts of marine plastic. *Marine pollution bulletin*, 142, 189-195.
- Browne, M. A., Galloway, T. S., & Thompson, R. C. (2010). Spatial patterns of plastic debris along estuarine shorelines. *Environmental science & technology*, 44(9), 3404-3409.
- DeWit, W., Burns, E. T., Guinchard, J. C., & Ahmed, N. (2021). *Plastics: the costs to society, the environment and the economy*. Worldwide Fund for Nature: Gland, Switzerland.
- Du, H., & Wang, J. (2021). Characterization and environmental impacts of microplastics. *Gondwana Research*, 98, 63-75.
- Ellis, P. (2020). Karachi. Initial Assessment of Karachi Economy and Role as a Growth Center | Korea Green Growth Trust Fund
- Euro-Asia Foundation, (n.d). Bangladesh and Pakistan – Two Very Different Trajectories. Bangladesh and Pakistan - Two Very Different Trajectories.
- Guo, X., Chen, C., & Wang, J. (2019). Sorption of sulfamethoxazole onto six types of microplastics. *Chemosphere*, 228, 300-308.s
- Jambeck, J. R., Geyer, R., Wilcox, C., Siegler, T. R., Perryman, M., Andrady, A., ... & Law, K. L. (2015). Plastic waste inputs from land into the ocean. *Science*, 347(6223), 768-771.
- Jong, F.J. de (2018) More plastic than fish in the sea by 2050. Will advertising be the solution?: The effects of ambient advertising on attitudes and recycling behavior.
- Qaimkhani, A. M. (2018). *The Marine Litter Action Plan-Status Report (Pakistan)*. Government of Pakistan: Islamabad, Pakistan, 36.
- Mukheed, M., & Alisha, K. (2020). Plastic pollution in Pakistan: environmental and health Implications. *J. Pollut. Effects Contr*, 4, 251-258.
- Neelam, A., Salih Hussain, F., Alamgir, A., & Kanwal, S. (2018). Quantification and Composition of Solid waste abundance on the beaches of Karachi, Pakistan. *Current World Environment*, 13(2).

Nualphan. Chulalongkorn University; Thailand: 2013. Types and Sources of Marine Debris in BangSaen Beach. Chonburi Province, Master Thesis.

Rana S., & Nisar M.A. (2018) Plastic pollution in Pakistan: policy analysis. Term Project, Suleman Dawood School of Business

Rosevelt C., Los Huertos M., Garza C., Nevins H.M (2013). Marine debris in central California: quantifying type and abundance of beach litter in Monterey Bay, CA. *Mar. Pollut. Bull.* 2013;71:299–306

Schultz, B. (2023). Pakistan. Lelystad, BataviaLand.

Suhail, B., Kanwal, H., & Arsalan, M. (2024). Composition and relative abundance of plastic debris along Manora and Sandspit beaches, Karachi, Pakistan. *Journal of Coastal Conservation*, 28(1), 9.

United Nations Environment Programme (2021). Drowning in Plastics – Marine Litter and Plastic Waste Vital Graphics.

United Nations (2022). World Population Prospects. World Population Prospects - Population Division - United Nations

Viool, V., Gupta A., Petten, L., & Schlaekamp, J. (2019). The price tag of plastic pollution. The price tag of plastic pollution (Deloitte).

Wang, J., Zheng, L., & Li, J. (2018). A critical review on the sources and instruments of marine microplastics and prospects on the relevant management in China. *Waste Management & Research*, 36(10), 898-911.

World Bank. 2022. “Plastic Waste: A Journey down the Indus River Basin in Pakistan. Washington, DC: The World Bank.”

World Economic Outlook (2024). International Monetary Fund.

Xia, C., Cai, L., Lam, S. S., & Sonne, C. (2023). Microplastics pollution: Economic loss and actions needed. *Eco-Environment & Health*, 2(2), 41.

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This year's edition of "The State of Pakistan Economy 2024-25," with a special focus on economic potential, productivity, and growth, offers an insightful and comprehensive analysis of the current economic landscape. It serves as an invaluable resource for policymakers, academics, and anyone interested in the complexities of economic growth and development. The combination of rigorous research, clear presentation, and practical insights makes this book a must-read for those looking to understand the dynamics shaping our economy today. It is a commendable effort by the faculty and students of the Department of Economics to bridge the gap between theory and real-world economic challenges.

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