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Special Invited Lecture

Political Economy of Tax and Digital Transformations in Pakistan

EHTISHAM AHMAD

1. THE NEED FOR A COORDINATED TAX AND SUSTAINABLE GROWTH STRATEGY I

The 1985 National Tax Reform Commission (NTC) recommended a coordinated set of policies on tax policy, administration, and digital transformation to take the tax/GDP ratio from around 14 percent as it was then, to 20 percent by 1990, to underpin a sustainable growth path.[1] The interim report of the NTC called the CBR "the most corrupt of Pakistani institutions." The final report paid a great deal of attention to the interrelationships between tax evasion, smuggling and corruption.[2] The report emphasised a coordinated approach to reforming all taxes and administration, and that a tax-by-tax approach with tax administration determined separately would not do.

Unfortunately, the report was shelved as Pakistan extracted geographic rents from the war against the Soviets in Afghanistan. While the NTC could not have imagined that the tax/GDP ratio would decline after three decades of interactions and support from the IFIs, that the country would find itself on the brink of default consequently, or the depths to which rent-seeking and corruption might plumb.

A coordinated approach to multilevel tax policy and administration should also address key political economy challenges if Pakistan is to overcome the current economic crisis and move towards resilient and sustainable growth in the medium term. This is especially critical given the unprecedented "perfect storm" of the pandemic, climate shocks and once in a century floods, and ongoing disruptions in global value chains. The contrast with India is striking. With a general government tax/GDP ratio well above "the tipping point" of around 15 percent, India has been able to run a greater general deficit and much higher overall debt level than Pakistan (see Table 1 and Chart 1), without running into a potential debt crisis. It is important to stress that India by a Constitutional Amendment to harmonise the VAT across subnational jurisdictions has begun to address faults inherited from the pernicious 1935 Government of India Act, that still influences revenue assignments in Pakistan. The increasing geo-political importance of India, and the country's greater resilience and attractiveness for FDI provide important contrasts and lessons for policy makers in Pakistan.

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Author's Note: This paper benefitted from a Webinar arranged by the PIDE in January 2024, and comments from participants are greatly appreciated. The work on Pakistan dates to the 1980s, when the author along with Nicholas Stern made presentations to the 1985 National Taxation Reforms Commission. Insights on political economy and digital transformations are based on research directed by the author at the LSE on China and Mexico.

[1]1985-86 National Taxation Reforms Commission, *Final Report*, December 31, 1986.

[2]Qamar-ul Islam, 1986.

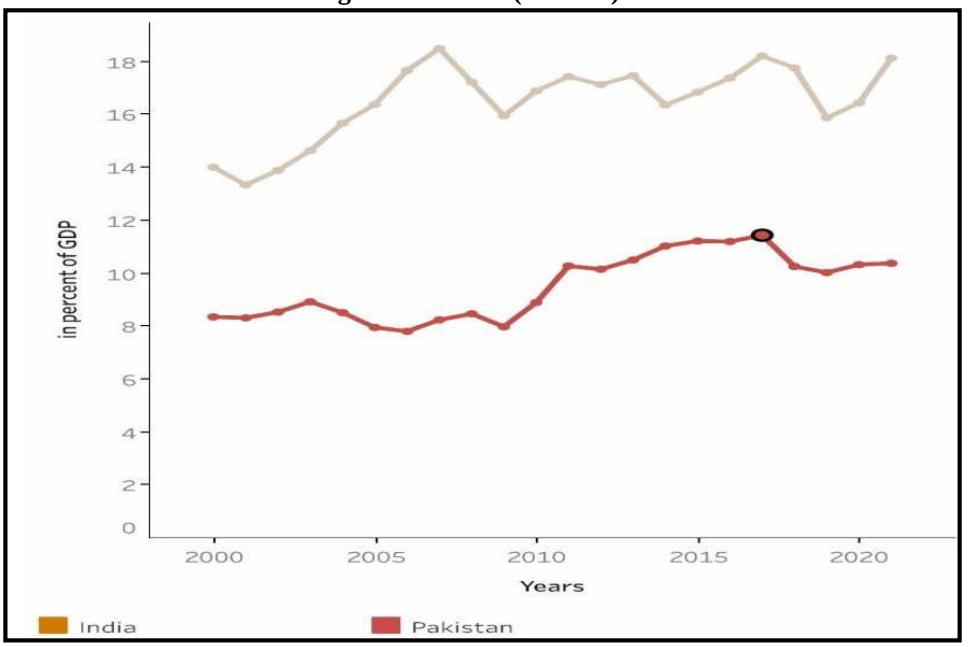
Table 1

Macro-fiscal Consequences of the Pandemic Responses: Why Pakistan Faces a Debt Crisis and India Does Not?

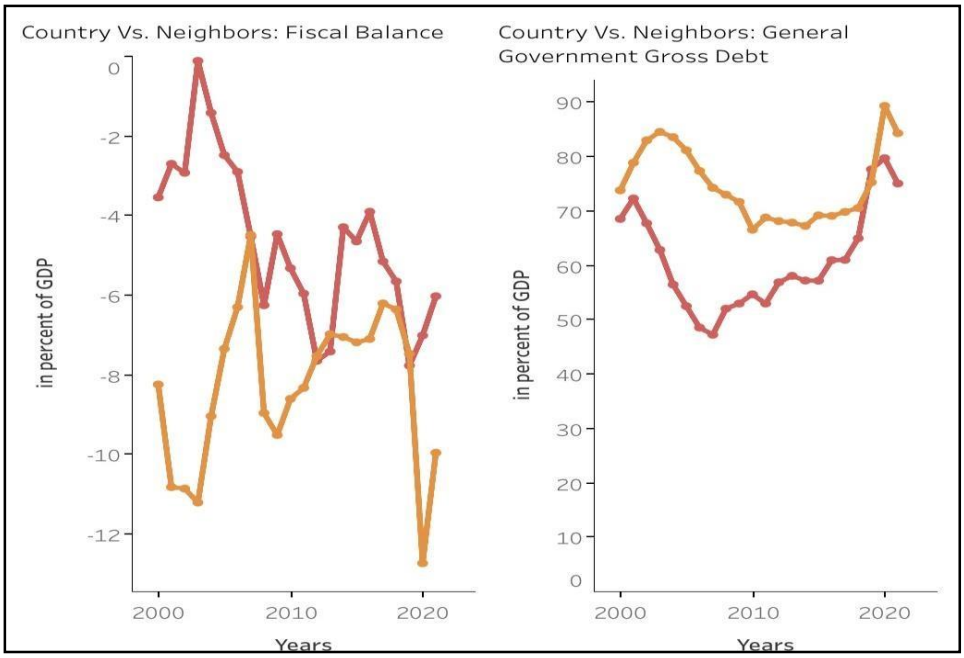
	General Government Balance						Gross General Government Debt					
	2015	2018	2019	2020	2021	2022	2015	2018	2019	2020	2021	2022
Singapore	2.9	3.7	3.8	–6.8	1.2	0.4	102.2	109.5	127.8	149	147.7	134.2
Indonesia	–2.6	–1.8	–2.2	–6.1	–4.5	–2.3	27	30.4	30.6	39.7	41.1	39
India	–7.2	–6.4	–7.7	–12.9	–9.6	–9.6	69	70.4	75	88.5	84.7	83.1
Pakistan	–4.7	–5.7	–7.8	–7	–6	–7.8	57	64.8	77.5	79.6	73.6	75.8
Philippines	0.5	–1.5	–1.5	–5.5	–6.3	–5.2	39.6	37.1	37	51.6	57	57.5
Sri Lanka	–6.6	–5.1	–7.5	–12.1	–11.6	–10.4	76.3	83.6	82.6	93.7	102.2	117.7
Thailand	0.4	0.1	–0.8	–4.7	–7	–5.5	42.6	41.9	41.1	49.4	58.4	60.5
Bangladesh	–3.3	–4.1	–5.4	–4.6	–3.8	–3.8	28.2	29.6	32	34.5	35.5	39.1
Cameroon	–4.2	–2.4	–3.2	–3.2	–3	–1.8	31.1	38.3	41.6	44.9	48.6	46.4
Lao PDR	–5.6	–4.7	–3.3	–5.6	–1.3	–1.6	53.1	60.6	69.1	76	92.4	126.5
Ghana	–4	–6.8	–7.5	–17.4	–12.1	–9.9	53.9	62	58.3	72.3	79.6	88.8

Source: IMF Fiscal Monitor, April 2023.

Chart 1. India vs. Pakistan: Stronger DRM Performance Permits Greater Ability to Manage Higher Deficits and Debt to Respond to Crisis without Risking a Debt Crisis (% GDP)



Note: India is the orange bar and Pakistan is shown in red.



Source: World Bank Tax Dashboard.
Note: India is the orange bar and Pakistan is shown in red.

This paper builds on earlier work on Pakistan during the 1980s (see Ahmad & Stern, 1991),[3] including for the 1985-86 NTRC. This paper also draws on the experiences of other multilevel countries, such as China[4] and Mexico, in deriving feasible policy options for Pakistan. Both these countries have recently reformed their VATs and digital transformation to make the tax system more resilient and conducive to investment, *but paid attention to the political economy of gainers and losers across states/provinces through the use of multiple tax and transfer instruments*.

A sustainable domestic resource mobilisation (DRM) strategy entails much more than raising revenues. A great deal depends on what measures are taken, and how these are implemented in a multilevel/federal framework; and must encompass measures for:

- Achieving balanced and equitable growth.[5]
- Addressing corruption and smuggling, a key concern of the NTRC 1985, in a manner that tackles informality and limits rent-seeking opportunities.
- Leveraging the comparative advantages of Pakistan in terms of location and skills.

[3]See Ahmad, E. and N. Stern (1991). *Theory and Practice of Tax Reforms in Developing Countries*, Cambridge University Press, and a number of papers published in *PDR*.

[4]China introduced a VAT in 1994 to bolster DRM, and the political economy involved multiple instruments, including special purpose and equalisation transfers to offset provincial gainers and losers. The reform took the tax/GDP ratio to around 20 percent from 10 percent in 1993, and a VAT with similar rates as Pakistan generated almost 11 percent of GDP prior in 2019, as opposed to 4 percent in Pakistan (see Ahmad, "Rebalancing in China: Fiscal Policies for Sustainable Growth. *Singapore Economic Review*, 2017).

[5]Haque, Nadeem Ul (Various Issues). Emphasis on the importance of a growth strategy to anchor public policy.

- Addressing political economy constraints of provincial interests and spatial imbalances.
- Achieving greater resilience to health and climate shocks, including at the national and local levels. There is no strategic or geopolitical stability without fiscal resilience. A debt ridden and aid dependent country cannot be resilient.

Digital innovations open significant enhancements in creating a new multilevel tax administration as well as more efficient and equitable policy options. These should also generate conditions for foreign direct investment in sustainable employment hubs, and help create clean, compact, and connected cities. The tendency in recent years to computerise processes, procedures and institutional structures based on existing arrangements has proved to be ineffective. Effective change management requires a joint reform of policies, institutions and procedures in a multilevel context, and the political economy of reforms takes centre stage.

A coordinated national and local agenda for tax policy and administration is also needed to take full advantage of the opportunities created by the global exchange of information and level playing field generated by the BEPS agenda. BEPS Pillar 2 with a minimum global CIT would have implications for the design and operation of SEZs, even for countries that have not acceded to the agreement, as investments from source countries would still be liable to minimum tax under Pillar 2. But taking advantage of BEPS requires a more conducive domestic fiscal system, involving an efficient VAT to facilitate domestic linkages and reflect a country's comparative advantage.

Thus, a new approach is needed to the design of SEZs, and to limit potential tax leakages.

Political economy considerations require that own-source provincial and local tax handles are available to strengthen accountability and access to private finance. This is to ensure stable provision of basic services and access to private financing for infrastructure. Such investments are preconditions for sustainable growth.

This paper addresses a broad strategy for the medium-term, and outlines some of the short- term building blocks that would not require Constitutional Amendments to correct underlying imbalances in assignments or institutional arrangements.

2. PERNICIOUS COLONIAL LEGACY

Pakistan's current difficulties are deeply linked to an inability to break away from its colonial legacy. The Government of India Act 1935 (GOI, 1935)was an attempt by the colonial power to accommodate growing unrest by permitting elections at the provincial/state level but hobbling the "elected" subnational governments with overlapping responsibilities and unworkable split revenue bases. Splitting the main tax bases (income and excise/sales) and controlling trade taxation, was designed to protect colonial commercial and industrial interests and British households from taxation by "native" provincial governments. The main tax handles assigned to "native" subnational jurisdictions were landed assets and income from these sources, and the final point sales tax on goods. By exclusion, the sales tax on services, excises on production, and non-agricultural incomes were left in the hands of the crown/centre, along with the taxation of trade/customs.

The main principles of tax policy in the Colonial period were aptly summed up by Dharma Kumar (1982, p. 905)[6]—"market for British manufactures, source of raw materials and field for profitable investment. The government was particularly chary of taxing those groups which it regarded as its allies, mostly landlord. India's first Viceroy commented on a proposal to impose income tax—"danger for danger, I would rather risk governing India with an army of 40,000 Europeans that I would risk having to impose unpopular taxation." While the GOI 1935 Act ostensibly accommodated elected provincial assemblies in recognition of growing resistance to Colonial rule, it created fissures that resonate to this day.

The expectation on the part of the colonial masters was that by facilitating landed interests to control provinces, ostensibly handing them tax powers that affected them directly, that most would choose not to tax themselves. They would continue to rely on largesse from the crown. For this purpose, the GOI 1935 created a divisible pool to share centrally collected revenues. While ostensibly seeming to be fair, this arrangement created incentives not to use assigned revenue bases, and to press the crown for more funding for what should be central responsibilities. This resulted in yet another area of conflict between the centre and the provinces. The consequence of the inherent incentives was that land revenue, which had generated 53 percent of combined central and provincial revenues in 1900 (other important sources of revenue included taxation of salt, customs, and excises), had fallen to 7 percent by 1946. Although there was an increasing contribution to revenue generation by customs and excises, the proportion of land revenue to gross agricultural output fell from 5 percent to 2 percent over the same period (Dharma Kumar, 1982, p. 918).

The split revenue bases and revenue sharing carried over to the succeeding Pakistan constitutions. The revenue sharing was seen as arbitrary and generated disincentives to raise and use resources efficiently, and dissatisfaction, especially in East Bengal, and was to contribute to the dissolution of Pakistan, as discussed below.

(a) Inadequacy of Colonial and Normative Governance Models

At independence, Pakistan had little in the way of an industrial base, hence the production-based excises were insignificant relative to the importance this tax head had in India. Other than customs, the only other tax base was the final point sales tax on goods, and this had been assigned to the provinces under GOI 1935. This base was centralised after independence, given the parlous state of federal finances. The revenue sharing compensation followed the pattern of the GOI 1935 revenue sharing, but implied that the provinces would get much less than they gave up—immediately sowing the seeds of conflict.

The lop-sided revenue sharing/compensation was codified and made worse by the Raisman award, implemented in 1947 and formulated as the Finance Commission Award in 1951 had the following components:

- 50 percent of net proceeds of the income tax, but only 45 percent of shared tax to more populous East.

[6]Dharma Kumar (1982). The Fiscal System. In Dharma Kumar and Meghnad Desai (1982). *Cambridge Economic History of India*, Vol II, 1757-1970. Orient Longmans & Cambridge University Press.

- 50 percent of net sales tax collection of sales tax on origin basis to originating province.
- 50 percent of excise duty on tobacco, betel nuts and tea (grown entirely in the East).
- 62.5 percent share in duty on jute to the East (grown entirely in "East").

The resources generated went largely to investments to the West (Indus basin, defense excluded) as well as definition of investments. This was accompanied by a huge focus on tariffs and QR protection for infant industries mainly in the West, especially in Karachi and the Punjab—sowing seeds of mistrust among the Western provinces. The dissatisfaction among provinces was so great that none of the Finance Commissions until the separation of Bangladesh were conclusive (see Table 2).

The split revenue bases and tax by tax administration, following the GOI 1935 model, including at subnational levels, formed major constraints for establishing a modern tax system that relies of information sharing and management. These issues have not been adequately addressed in post-independence South Asian countries, and in Pakistan are a major cause for creating "rents" and incentives to cheat. After the secession of Bangladesh, the 1973 Constitution doubled down on the GOI 1935 assignments—with the difference that the sales tax on goods was retained by the Federal Government, while that on sales was passed on to provinces. This split proved even more of a constraint to the VAT, than the assignment of the taxation of sales to the centre, and the 1935 assignment of the final point taxation of goods to the states (provinces) did in India.

Table 2

Revenue sharing/Finance Commission Awards in United Pakistan.

Chronology				
Awards Listing Order (s)	Raisman Award Listing(s)	Presented by	Tests, Results, and Status	Projected Fiscal Year
First	Raisman Award, 1951	Liakat Ali Khan	Conclusive[3]	1951–55
Second	NFC Award, 1961	Ayub Khan	Inconclusive[3]	1961–64
Third	NFC Award, 1964	Ayub Khan	Inconclusive[3]	1964–67
Fourth	NFC Award, 1970	Yahya Khan	Inconclusive[3]	Terminated[3]

Source: Government of Pakistan.

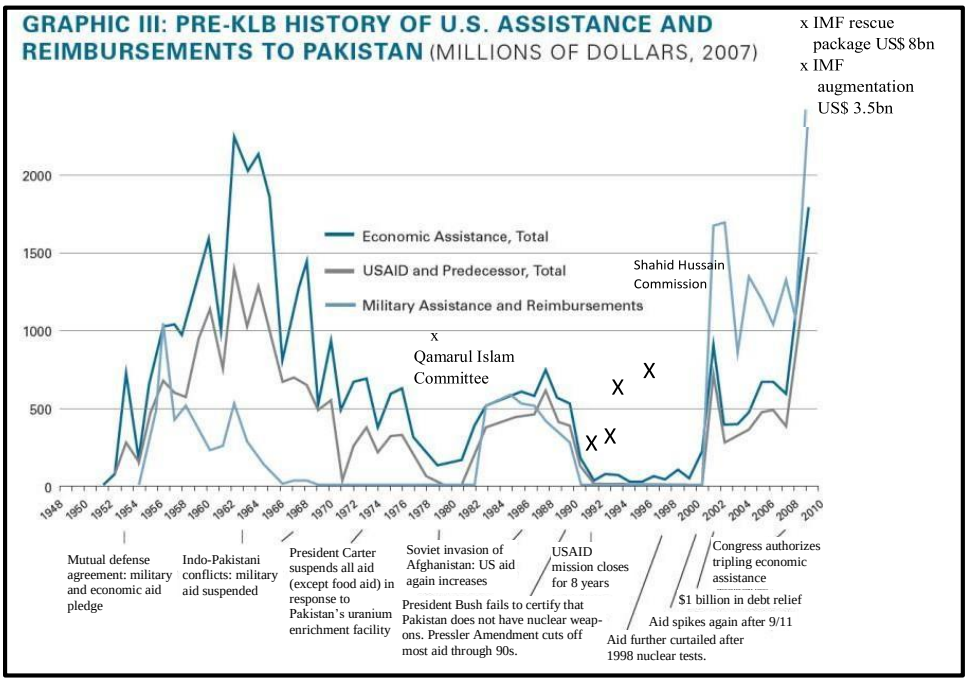
(b) Aid Dependency or the Great Game?

One of the main reasons that Pakistan has never been serious about domestic resource mobilisation is the geographic rents that have accrued from time to time. In the 1950s and 60s, the focus on Pakistan was largely to contain the threat posed by the USSR. As argued in Ahmad and Mohammed (2018),[7] the stop-go nature of the support from the Western powers, especially the US, has had much to do with periodic sanctions due to the development of the Pakistan nuclear program (see, Chart 2) and periodic usefulness in a dangerous part of the world. The resumption of aid in the mid-1980s for the bulwark against the Soviet invasion of Afghanistan is one of the main reasons that the Qamar-ul Islam

[7]Ehtisham Ahmad and Azizali Mohammed (2018). Pakistan, the US and Bretton Woods Institutions: A continuing Great Game. *Routledge Handbook of Contemporary Pakistan.*

NTRC 1986 report was buried and forgotten. The aid dried up with the fall of the USSR, and resumed again in the post-9/11 period from 2001-7 but the IMF and the World Bank stepped in to fill the breach when the largesse was no longer forthcoming. The VAT/GST was forced on the then government in 1990, but was not well understood and was badly implemented, effectively as a "production excise". This negated the purpose of the VAT—to reduce the cost of doing business, facilitate exports, facilitate domestic integration of value chains, generate information to stop cheating, and of course to raise revenues. The Pakistan GST failed on all counts, despite a huge quantum of technical assistance from the IMF, and the World Bank, accompanied by hundreds of millions of US$ to finance the modernisation of the tax administration (TARP and its successors).

Chart 2



Source: Ehtisham Ahmad and Azizali Mohammed (2018). Pakistan, the US and Bretton Woods Institutions: A continuing Great Game. *Routledge Handbook of Contemporary Pakistan.*

Unfortunately, successive governments in the 1990s, and since then, have not understood the difference between exemptions in excises and the income tax, and the very different implications of exemptions under a VAT/GST. Under a GST/VAT, exemptions signify "input taxation,"[8] and are far from desirable. Exemptions destroy the information generation aspects of the GST/VAT, introduce cascading that the tax was meant to eliminate, and make it impossible to correctly determine export refunds in a timely manner. The VAT with myriad exemptions stops generating revenues, adds to the cost of doing business and vitiates the efficiency gains that has led the tax being implemented with great success in developing countries, including in China in 1993/4 (three years after Pakistan).

[8]Input taxation is the term used in more modern VAT legislation, rather than exemptions, as in the 2000 Australian VAT legislation.

The *removal of GST exemptions was structural benchmark* for mid-1994 under ESAF 1993 (entered into by the Moeen Qureshi interim government and ratified by Benazir Bhutto's PPP government). The exemption removal condition was reported met to IMF (Staff Report, August 1994), but nothing of the sort actually took place. The exemptions were used to garner support and bonanza for the "parties" in power by all administrations since then. In the 2008 IMF Standy Program, fixing holes in the VAT was the core proposal of the newly formed PPP Government. Despite commitments by the then President to the Friends of Pakistan and to the IMF, again there was no real intention of removing exemptions, and as a matter of fact the administered doubled down on exemptions with SRO 283. This was the cause of failure of 2008-12 SBA. In 2012, and the IMF Mission chief, Adnan Mazarei, famously is reported to have said: "no VAT no money." However, in subsequent programs regrettably "fixing the VAT" has not been on the table. This had led to trying to extract income tax revenues from a narrow formal sector wage base; or taxing assets the majority of which are not under the jurisdiction of the Federal government. Given the continuing fiscal crises, the alternative involves unpalatable including effectively cutting the revenue shares of provinces agreed under NFC awards, that risks unwinding the federation, if the history of Pakistan is any guide.

(c) Constitutional Guarantees and Unfunded Mandates— "Good Intentions, Bad Outcomes"

The 1973 Constitution had very advanced, almost Bismarkian, social ambitions. It guarantees:

- "Compulsory and free" education till secondary level #37(b), but "within minimum possible period" (after 50 years, standards have not really improved, and even more modest SDG targets appear out of reach at the present time);
- Full access to technical and higher education for all on "merit" #37c—this is not subject to the minimum possible period and should have been prioritised from 1973 on.
- Social benefits for the unemployed or incapacitated: a very Bismarkian objective to "provide basic necessities of life, such as food, clothing, housing, education and medical *relief for all such citizens*, as are permanently or temporarily unable to earn their livelihood on account of infirmity, sickness or unemployment" #38d. This very clear, and no additional targeting, or score cards, that are favoured by many international agencies, but open to "capture" or "clientelism". *These are Constitutional basic rights and should be actionable in court.*

While it makes political sense to focus on functional responsibilities in a constitution, it is important to keep in mind the "economic implications" or preconditions for each of these rights or guarantees. Thus, compulsory and free education till secondary level has implications regarding the availability of teachers and school buildings, but also other functional inputs, like books and equipment, electricity, clean water and sanitation. The cost implications are a function of all the economic components. And if a function is assigned to a lower level, the accountability for a function also depends on whether or not a jurisdiction has the ability to raise taxes at the margin to cover incremental spending and additional liabilities (Ambrosanio & Bordignon, 2006, 2015).

The problem in Pakistan is that the social policy aims of the Constitution have not been supported by the domestic resource mobilisation agenda. The NTRC 1985 agenda to raise the tax GDP ratio from 14 percent towards 20 percent would have helped if it had been accompanied by a shift from distortive trade taxes to a more investment and growth friendly regime. The GST implemented under IFI duress in the early 1990s was implemented in production excise mode and imports, neither generated efficiency gains nor additional revenues expected from a VAT. Falling revenues led to various capacity-based schemes that increased cascading, disadvantaging exports, leading to further demands for exemptions. While there were many positive aspects to the 18th Amendment, the split of the GST was formalised, and both policy and administration for the taxation of services devolved to the provinces.

Again, this has had no impact on overall tax revenue collection that has stagnated at around 10 percent of GDP for general government. Note that to reduce the cost of doing business, and better integrate the domestic economy, including the high tech Special Economic Zones, China consolidated the taxation of services and goods under a single administration in 2015, and with similar rates as Pakistan, the VAT alone generated 11 percent of GDP. India is moving in the same direction with a Constitutional Amendment to harmonise the VAT base. Multiple administrations remain and are a constraint to business efficiency.

The anaemic performance of the Pakistan tax system at all levels of government implies that even the SDGs cannot be financed, let alone the ambitious Bismarkian guarantees under the Constitution. Just to meet the SDGs, Pakistan was estimated to need an additional 16 percent of GDP to meet the SDGs, and this was prior to the Pandemidc (Brollo, et al. 2021).[9] While this includes both public and private resources, often the private funding for public spending cannot be unlocked without a resilient own-source tax base, especially at the subnational level. The tax system has had a disastrous impact on the real economy, growth and export performance as well as social indicators. The "good intentions" under the Constitution and the 18th Amendment have degenerated into unfunded mandates and "bad outcomes."

3. LURCHING FROM CRISIS TO CRISIS—UNABLE TO BREAK THE BEGGING BOWL

Pakistan finds itself in a precarious situation with a tax/GDP ratio that has declined from 14 percent in 1985 to around 10 percent in 2022. Geo-political rents had periodically sustained the country, followed the Soviet invasion of Afghanistan, but created disincentives to address serious fiscal imbalances. Despite multiple IMF programs and FAD technical assistance missions, and extensive support from the World Bank (see Ehtisham Ahmad and Azizali Mohammed, 2018[10] for an assessment) various vested interests prevailed in a version of "Dutch Disease" without oil. These interests have prevented the efficient operation of modern tax instruments, especially the GST/VAT introduced under duress in the early 1990s.

[9]Brollo, Fernando, Emine Hanedar, & Sébastien Walker (2021). Pakistan: Spending Needs for Reaching the Sustainable Development Goals. (IMF Working Paper, WP/21/108).

[10]Ahmad, Ehtisham & Azizali Mohammed (2018). Pakistan, the US and Bretton Woods Institutions: a continuing Great Game. In Aparna Pande (2018). *Routledge Handbook of Contemporary Pakistan*. NY.

As noted above, the Pakistan tax system generates much lower levels of revenue than India despite similarities in starting points. This has led to a much lower counter-cyclical capacity to address shocks, such as the pandemic, maintain essential investments and run higher deficits and debt without running the risk of a debt crisis. The split GST/VAT in Pakistan, reiterated by the 18th Amendment, virtually vitiates all the advantages that a VAT was designed to create. The shift to harmonisation of the GST/VAT in India, through a Constitutional Amendment, while not complete, increases India's attractiveness as a destination for FDI, adding to economic and strategic resilience relative to Pakistan.

The Pakistan Tax System also does not perform well in relation to any of the major objectives of public policy for sustainable and resilient development. With the second highest PSBR in the world (approaching 30 percent of GDP in 2023/24, see IMF Fiscal Monitor, April 2023), Pakistan faces stark choices to get its domestic resource mobilisation (DRM) on a sustainable footing as quickly as possible, almost four decades after the NTRC 1985/6, and business as usual just will not do.

(a) Overview of the Major Problems

Among the main problem areas facing a coherent DRM strategy in Pakistan, some the result of long-standing political economy issues, including the following:

- *Split tax bases reflect fissures between the centre and the provinces, and the pernicious influence of the colonial 1935 Government of India Act.* The crown retained the major tax handles—especially on trade and excises on production and the main sources of income (that were also related to colonial interests), and assigned taxes on agricultural and property incomes, and hard to tax sales to newly elected "native" governments in provinces.
- *The post-independence centralisation of the sales tax*, given the absence of tax handles in the newly independent republic, was accompanied by an inadequate transfer/revenue sharing. This contributed to dissatisfaction in provinces, including in the most populous province that contributed to the subsequent separation of Bangladesh.
- *The central-provincial tensions continue* despite the 1973 Constitution that did not significantly depart from the 1935 GOI fiscal straitjacket. An inefficient design of tax assignments and sharing of revenues remains a fundamental problem and was reinforced under the 18th Amendment that sought to provide "own-source revenues" for devolved functions. While the motivation was correct, the wrong instrument was assigned to the provinces deepening the split in major tax bases and administrations.
- *The GST/VAT was introduced under duress under an IMF program in the early 1990s* (after the Soviets withdrew from Afghanistan, and there was a hiatus in support from the usual bilateral funders).
    - It was designed and administered like a production excise on an increasingly narrow base, including imports. This led to backward shifting of the tax, cascading, and difficulties with export refunds. Consequently, there was pressure from vested interests to exempt firms (often 50-year old infant industries) and even sectors.

- *The GST/VAT C-efficiency is among the lowest in the world* at around 0.2. This can be contrasted with 0.8 achieved in countries in East Asia, such as PR China, which introduced the VAT a few years after Pakistan, or Thailand.
  - Extensive exemptions and split bases vitiate the efficiency advantages of a VAT that should have reduced the cost of doing business and facilitated exports but have managed to have the opposite effect. The exemptions also remove the ability of the VAT to generate information for other taxes, especially the income taxes, or to stop cheating. The split bases and exemptions also prevent the free flow of goods and services that are a component of creating an integrated economic space. Furthermore, it fails to raise revenues.
  - Closing the gap in C-efficiency of the VAT/GST with other Asian countries could generate significant additional revenues (up to 4-5 percent of GDP), and improve the investment climate.

- *Capacity- based schemes during the 1990s*, to address budget crises following nuclear-related sanctions, further destroyed the logic of a VAT/GST, created production distortions, and spectacularly failed to achieve revenue objectives.
  - *Recent third-best proposals to move to a turnover basis for assessing tax* to raise revenues, would generalise the capacity-based schemes, and destroy what is left of efficient production or export-based sectors (see IGC-funded proposal by Best, et al. 2015).[11] Fortunately, these proposals have not had much traction.

- *PIT collections are low*. This is not unexpected given the levels of development in Pakistan and the heavy reliance on formal sector wages, as argued in Tanzi (1987).[12] Recent attempts in the current (suspended) IMF program to shift the focus from fixing the VAT to raising additional PIT revenues have not generated revenues. Since PIT revenues arise largely from withholding taxes on formal employment and non-wage income is hard to tax, the income tax paradoxically becomes regressive. While the PIT will eventually play its role as the prime instrument for redistribution, a premature emphasis is likely to be counterproductive and is not likely to raise revenues significantly. This may also prevent a reform of the other main taxes, such as the VAT.
- *The coverage of the CIT is pessimal,* with only a fraction of the companies listed registered for tax, and an even smaller percentage making any positive payments (see Chart 3). An industrial sector that has evolved around protective barriers and a distortionary tax system is at increasing risk as the macroeconomic situation deteriorates.
- *The urban property tax is dysfunctional*. The attempt by the FBR to set property values centrally is a pointless exercise. If a US-style ownership-

[11]Michael Best, Anne Brockmeyer, Henrik Kleven, Johannes Spinnewijn, & Mazhar Waseem (2015). Production versus Revenue Efficiency with Limited Tax Capacity: Theory and Evidence from Pakistan. *Journal of Political Economy, 123,* 6.

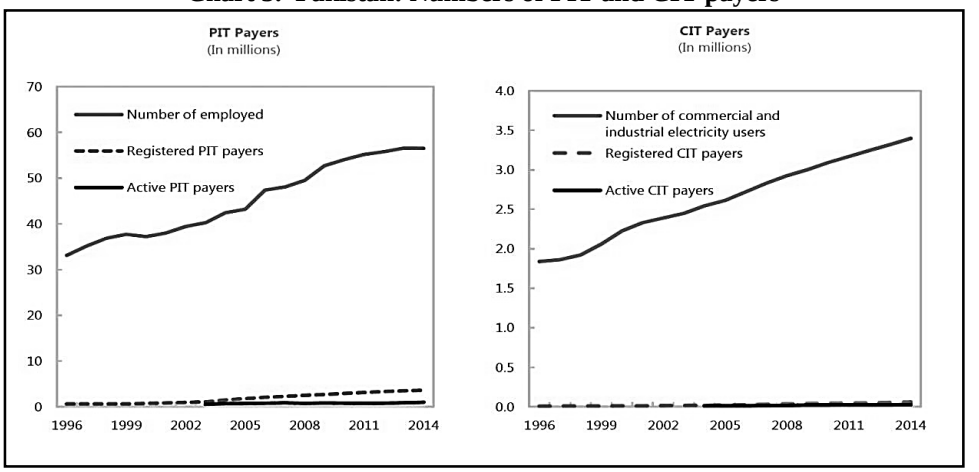
[12]Vito Tanzi (1987) Quantitative Characteristics of the Tax Systems of Developing Countries. In David Newbery and Nicholas Stern. *The Theory of Taxation for Developing Countries.* Oxford University Press for the World Bank.

valuation property tax model is being developed, then values need to be determined by market rates, and these will vary within cities and over time, depending on demand and supply, and the quality of public services being financed. For reasons outlined below, the property-valuation model has not worked very well in any developing country and was also abandoned in the UK by Margaret Thatcher. This paper develops proposals for a beneficial property tax for greater local accountability for the SDGs, and access to private finance for needed infrastructure.

- *The agricultural land tax collapsed after the Government of India Act 1935* (Dharma Kumar, 1982)[13] and far from being one of the main sources of revenues, has almost completely dried up (along with the payments for scarce water), but has spawned a large bureaucratic establishment that derives more in rent-seeking and extortion than actual revenues collected.

The FBR has been progressively "modernised according to prevailing wisdom", on a functionally designed tax administration model with significant World Bank support over the past two decades, but faces significant problems, including a static and declining revenue performance. Even the best administration in the world would have struggled to raise revenues with the policy framework that has evolved in Pakistan.

Chart 3. Pakistan: Numbers of PIT and CIT payers



Source: Serhan Cevik (2016). Unlocking Pakistan's Revenue Potential. (IMF Working Paper).

Recent attempts to move towards digital point of sales registers for small taxpayers were not successful due to the absence of a parallel policy shift away from lump-sum taxation that leads to backward shifting of the tax burden and reduces incentives to participate in a digital chain. Similarly, the extensive use of exemptions and SEZs increases both the incentives and the ability of taxpayers to avoid paying taxes to the state. Qamar-ul Islam's *prescient observation remains that tax avoidance, smuggling and corruption are closely linked and feed on each other* (NTRC, submission letter 1986).

[13]See Dharma Kumar (1982). *The Cambridge Economic History of India*. Volume II, Cambridge University Press.

It is important to heed Qamar-ul Islam's advice that the reform of the tax administration must be linked to the reform of the tax policy agenda to have any chance of success. Unfortunately, that dictum has been ignored by successive governments, as well as foreign advisors, including the IFIs.

(b) Recent External Support for DRM

Over the past three decades, there have been attempts to reform various taxes in a largely static tax administration model, e.g., supported by a very large number of IMF technical assistance missions. Many have been led by the IMF's leading tax policy and administration experts but have yielded little in the way of enhancements to the tax policy agenda. Ad hoc measures taken by the recipients of the technical assistance, as mentioned above, have amounted to further distortions in the tax policy framework and revenues have continued to decline.

The IMF missions were supplemented by the World Bank's administrative reform projects--or successive TARPs from around 2003, and the hundreds of millions of dollars have amount to little more than balance of payments support. The failure of the TARPs was largely due to the disconnect between a computerisation program without a clear "Conceptual Design" linked to a coherent tax policy reform agenda.[14]

More recent IFI efforts since the 18th Amendment have supported the establishment of new provincial tax administrations[15] mainly to administer the unworkable provincial assignment of the GST on services. These have also not had any appreciable impact on revenues or the overall efficacy of the tax system, and have clearly added to the cost of doing business.

Following the collapse of the 2008-10 SBA, the IMF engaged in "defensive lending" (see Ahmad and Mohammed, 2018),[16] and dropped the reform of the VAT that had been a contentious cornerstone of all programs since the early 1990s. Instead, the more recent programs have focused on raising revenues through the income tax. This is in ignorance of Vito Tanzi's seminal work in 1987,[17] that in most developing countries, the personal income tax is largely paid by formal sector wage earners. This would make it regressive, as it missed out non-wage income, and raises little prospect of additional revenues.

Recent proposals to establish electronic point of sales (POS) machines for e-invoices, and harmonising GST bases and rate structure *are sensible*. However, these are unlikely to be successful without additional policy measures and administrative rationalisation—reinforcing the observation of the 1986 NTRC that a comprehensive approach to tax reform is indispensable.

The IFI proposals to harmonise rates and bases of the GST, as India has almost managed under a Constitutional Amendment, is *eminently appropriate, but unlikely to work without additional policy measures to assure that provinces have "own-source" tax handles*. With harmonised rates and bases, there is no need for multiple administrations for the GST. Indeed, dealing with one administration for the GST (and the major taxes) would

[14]Review by the author in 2008 in preparation for the 2008-10 IMF Standby Programme.

[15]These were distinct from the Provincial Revenue Boards set up in colonial times to administer land-related issues and were broader than revenue collection offices.

[16]Ahmad, Ehtisham and Azizali Mohammed, 2018, *op cit.*

[17]Vito Tanzi, 1987. Quantitive Characteristics of the Tax Systems of Developing Countries. In Newbery, D. M. G. & Stern, N. H. (eds.) (1987). *The Theory of Taxation for Developing Countries.* Oxford University Press for the World Bank.

considerably reduce the compliance burden on firms—which has increased considerably since the 18th Amendment endorsed multiple administrations.

The harmonisation turns the provincial GST into a shared tax (with or without multiple administrations) and indistinguishable from the revenue shares under the NFC award. For accountability and access to private finance for investments, own-source revenue handles are needed with subnational ability to determine rates at the margin and can be achieved with a piggy-back or a surcharge on the income tax or excise tax base (including the petroleum surcharge). *Again, no separate subnational tax administration is needed.*

- The provincial tax administrations established for the GST on services would become redundant. Collections would be more efficient with a single tax administration and considerably lower compliance costs on businesses.
- Revenue distributions can be efficiently handled with a single tax administration, with the sharing proportions as determined under the 18th Amendment. This ensures that there are no relative revenue effects, other than hopefully a larger "pie" to be shared.

The IFI proposal to establish electronic POS machines is also appropriate, but not sufficient per se. This is largely due to the incentive systems under a simplified policy framework. Under lump-sum taxation of retailers and SMEs in lieu of GST, they would have no incentives to use the POS machines, as they would see no benefits with the change. This then breaks the value chain facing large taxpayers. Full implementation of e-invoicing is also important in generating information to stop cheating in all taxes and will require a coordinated amendment in tax policy and overall design of the administration, as highlighted by the Qamar-ul Islam Commission in 1985. The big difference today is that the reform options are greatly enhanced by the possibilities with digital transformations of the fiscal framework.

Beyond the numerical targets on tax/GDP ratios and levels of debt, it is important that the DRM should focus on incentives facing firms, workers, households, and governments at different levels of administration, to generate sustainable and resilient growth. This also would better position Pakistan to take advantage of opportunities in the wake of global supply chain disruptions due to the pandemic, climate shocks, as well as tensions between major trading partners. It is critical to anchor the tax design and administration within a strategy for sustainable transitions. A direct linkage with perceived benefits is also essential with respect to certain types of taxes, such as those on property—leading to a "beneficial approach to local taxation" (Ahmad and Brosio, 2022).[18] Such direct linkage is not possible with the broad-area taxes such as the GST.

4. APPROACH TO TAX MULTILEVEL TAX POLICY AND ADMINISTRATION REFORMS WITH LESSONS FROM MEXICO

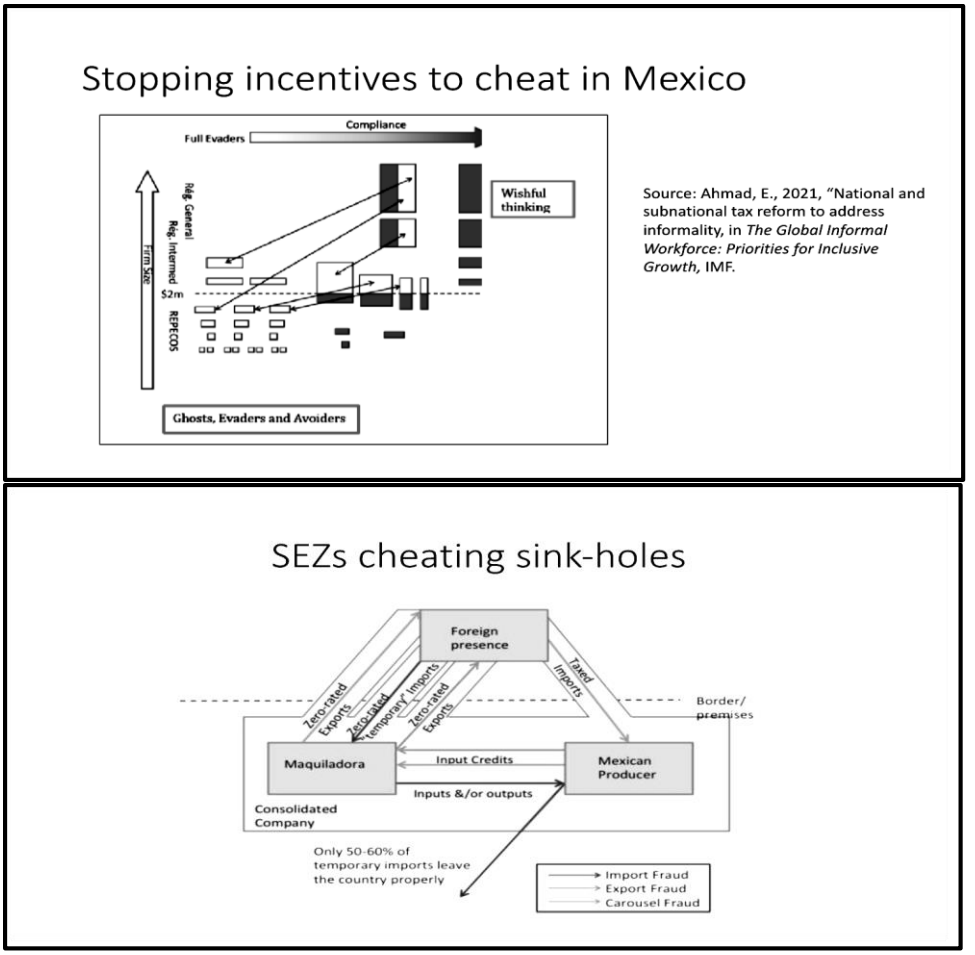
A meaningful sustainable tax policy and administration reform must incorporate more than just a revenue-generation objective. Exemptions and special provisions for income distribution purposes, or to attract investment, especially in the VAT, break the information chain on BTB transactions and are generally counterproductive. VAT was

[18]Ahmad, Ehtisham & Giorgio Brosio (2022). *Beneficial property taxation for emerging market countries—addressing climate change and post-pandemic recovery.* Palgrave MacMillan.

devised with the objectives of removing cascading and encouraging exports and *creating a level playing field for investments and workers*. This can leverage FDI and domestic linkages, as well as reduce the cost of doing business. VAT information from the full BTB value chain and digital transformation also *reduces the incentives of firms to "cheat" in their income taxes, and their ability to do so.*

Two standard policy recommendations relating to the registration threshold for VAT/CIT Chart 2a) and SEZs (Chart 2b) open the door to "cheating" in multiple taxes.[19] In the first case, the ability to hide transactions between large firms and those below the threshold, or out of the net, facilitates "cheating" on VAT, wages, and profits. In the second case, the SEZ facilitates import fraud, export fraud and carousel fraud—as well as income tax fraud with firms hiding domestic profits in the tax-free zone. In both cases, the solution is through VAT applied to all transactions, including in SEZs—the coverage of the full value chain permitting immediate refunds on export.

Charts 2a and 2b



[19]Ahmad, Ehtisham (2021). National and Subnational Tax Reforms to Address Informality. In C. Deléchat and L. Medina (eds.) (2021). *The Global Informal Workforce*. International Monetary Fund, Washington, DC.

Distribution and political economy considerations are best addressed through a joint consideration of tax-on-tax interactions that improve the income taxes, intergovernmental transfer design given multilevel assignment of functions, and tax- benefit linkages, especially at the local level.

A tax reform agenda to support resilient and sustainable growth should not only focus on revenues, but also:

- create incentives for *minimising environmental damage*,
- generate *greater spatial equality* given disparities and centrifugal tendencies,
- lead to greater *local accountability*, especially for the SDGs and form the basis for sustainable access to private finance, and
- utilise *technological transformations to ease the cost of doing business* while reducing incentives to evade taxes.

A more robust multilevel tax system, including at the local level, should be designed with appropriate weights given to human, social, and natural capital, and of course revenues. The broader focus is needed to anchor the SDGs for greater resilience to shocks. Local own-source revenues are also needed for accountability and to ensure sustainable local access to private capital to finance investments. Thus, the *tax system should provide signals to firms, workers, and households on decisions to invest, seek employment (including domestic and cross-border migration options), and patterns of consumption.* This would include taxation/public sector pricing of carbon- related activities and emissions at the national and local levels.

Coordinated actions at national and local levels will be needed to ensure financing for minimum service delivery levels across the country and achievement of SDGs, and for responding to shocks like the Pandemic. These actions will influence incentives to migrate from lagging regions, and orderly policies for mitigation and adaptation in metropolitan areas. The creation of sustainable employment opportunities in clean, compact, and connected cities should also begin to address the huge problems with informality, especially in the crowed metropolitan slums.

Own-source sources of revenue at the local level are necessary to create greater "accountability" for the enhanced spending responsibilities. The greater devolution of resources under the last NFC award was designed to finance the SDGs as well as disaster management. However, the failure of DRM has resulted in unfunded mandates for the provinces, and unsustainable fiscal deficits for the federal government.

Own-source revenues at the subnational level would also anchor sustainable access to private finance, including provincial/municipal bonds, PPPs, and attract private capital for infrastructure financing. In parallel, there will be a need for tighter monitoring of uses of earmarked transfers and external assistance and ensuring envisaged outcomes.[20] The use of PPPs (including) at the subnational level requires the liabilities to be recorded in the balance sheets at the appropriate level of government with associated provisioning (IPSAS rules governing the management of PPP liabilities).

With digital transformations, the administration for most taxes does not have to be local. This arrangement applies to several policy options, such as piggy-backs or surcharges on a national base, or the proposed use of blockchain for asset transactions that

[20]Examination of the PFM/treasury options is beyond the scope of this paper.

might be subject to taxation by more than one level of administration. Local control can be established by setting rates at the margin, including on bands legislated by the centre. However, assigned subnational funds collected by FBR must be promptly credited to the appropriate local treasury accounts.

A key lesson from the effective management of the Pandemic in Pakistan was local identification and provision of support, including for the informal sector and the "new poor," together with national, information management, coordination, and financing. For tax purposes, there needs to be coordination between the national ID numbers (NIC) and the FBR TIN.

The integration between the NID and TIN is critical for successful digital transformation that depends on the efficient flows and management of consistent information. This flow of information is central for the digital transformation of tax policies and rationalising fiscal institutions, including the tax administration and treasury functions and institutions. Digitisation of existing (semi-automated) processes and procedures is common.

Unfortunately, this is like pouring concrete over the fiscal system and preventing the desired transformation. Effective change-management will entail a joint reconsideration of policies and institutions to maximise the advantages of digital transformation of the fiscal system.

Digital transformations create significant new options for reforming DRM. These depend on timely and accurate information generation that facilitate tax-on-tax interactions and potential to change both policies and supporting institutions. Changes in the policy framework are an essential component in a digital transformation. This is seen in the resistance to adoption of point of sales measures by small businesses subject to lump sum taxation in the Pakistan case, as the tax regime did not change. Changes in institutional design are also needed, e.g., with the use of AI and big data. A very different structure of a national tax administration for all taxes emerges, as seen in the case of China. *More work would be needed to redesign the tax administration in the Pakistan case to take advantage of digital transformations*.

An application of an integrated VAT is observed with the need to generate full information on the BTB value-chain. This will permit electronic invoice matching leading to integration of small firms and businesses into the regular tax net. The more effective tax-on tax interactions will be made possible by digital enhancements, with significant improvements in the operations of the income taxes. The implications for the design of SEZs follows—e.g., the borders around the Shenzhen SEZ following the integration of the VAT in 2018 were removed to permit a better establishment of linkages with the domestic economy, leading to the creation of the Greater Bay Area High Tech Zone (Ahmad, 2021).[21]

Blockchain use to record asset transactions, including at the local level, provides a basis for establishing an arm's length tax administration that assists all levels of government. Local autonomy depends on setting of rates at the margin by the sub-national governments and immediate and full access to the funds generated and deposited in their Treasury accounts.

[21]Ahmad, E. (2021). Multilevel financing of sustainable infrastructure in China—Policy options for inclusive, resilient and green growth. *Journal of Infrastructure, Policy and Development***,** April 2021.

BEPS can play an increasing role in creating a level playing field and prevent "beggar-thy-neighbour" policies by trading partners and competitors. The effects of BEPS, even if a country has not formally acceded to the global treaties, are important for investment and resilient growth and should encourage FDI if the domestic linkages and business climate are sufficiently attractive. But taking advantage of the BEPS agenda will require transforming the investment climate to reduce the cost of doing business, and a streamlined system of SEZs. For this, a reformed VAT will play a major role. Enhanced domestic linkages should be among the core attractions of SEZs in Pakistan, including with CPEC related projects. Some preconditions for the effective utilisation of BEPS include the following:

- Immediate and timely refunds of the VAT on exports.
- Essential infrastructure investments for "agglomeration" effects, including "clean energy".
- High-quality basic services, including health and education, including in the SEZs/CCCs.

The implications for specific tax instruments at the central and local levels, and potential for digital transformation follow.

5. TOWARDS AN AGENDA FOR TAX REFORMS IN PAKISTAN

In keeping with the advice of the Qamar-ul Islam 1985 NTRC, given the history of failed tax reforms in Pakistan, and drawing on the experiences of relevant countries, it is possible to derive a set of coordinated multilevel tax policy and administrative reforms for the short-to-medium term. These build on Ahmad and Stern (1991) and can be linked with the more recent work by Haque, et al. (PIDE, 2024) on a sustainable growth strategy.

(a) Multilevel Tax Policy Options

The design and management of national and provincial taxes in Pakistan could be improved in several respects. Some of the reforms would be facilitated by the planned digital transformation, and others depend on a political economy linkage with other taxes or inter-governmental transfers and should be considered as part of a coordinated "package".

(1) *VAT and Digital Transformation*

A modern and simple VAT with minimal exemptions not only generates significant revenues but also helps with creating a level and integrated economic space, reduce the cost of doing business, and generate information that facilitates the broadening of the income tax base and reduce "leakages" and "cheating". As seen in China and Mexico, VAT introduction and reforms generate gainers and losers among provinces/states, *and political economy considerations require the use of a "package of taxes and transfers" to offset the likely resistance to the reforms.*

Digital transformations depend crucially on generation of timely and verified information that simplify both tax/spending design as well as institutional

arrangements, policies, and procedures. Thus, to anchor a digital transformation the VAT will involve:

- Full information for digital transformation with coverage of BTB value chain and the components of wages and profits at each stage, requires integration of SMEs into the VAT value chain. This will require both policy and administrative reforms along with digital transformations.
- Removal of exemptions and special provisions to encourage investments or distribution for BTB transactions. This applies to a significant portion of the tax base, leading to one of the lowest C-efficiency estimates in the whole world (OECD, 2022).
    - Exemptions in the VAT are tantamount to "input taxation" that prevent input tax offsets being carried further in the value chain. Hence this introduces "cascading" that the VAT was invented to eliminate, adds to the cost of doing business, and discourages exports.
    - Exemptions in a VAT lead to breaks in the information chain that prevent the use of information from the VAT for other taxes, thus making it easier to avoid income tax liabilities. An integrated VAT has the potential to stem "cheating" in the income taxes and hiding of transactions and value added (wages and profits), including by large taxpayers.
    - VAT can be applied to mining and drilling and would force the disclosure of activity levels, including with production-sharing contracts, even if the activities are mainly for export.
    - A VAT that covers the full value chain and facilitates immediate export refunds/credit could also transform the design and operations of SEZs that could better leverage domestic linkages.
    - A critical element in the digital transition is to ensure that the TIN is consistent with the NIC. The revised TIN/NIC would also need to be mandatory for any public transactions, especially customs, but also other public activities such as contracts and procurement, and registration of labour or companies.

With an integrated VAT and complete coverage of the BTB value chain (with C-efficiency rising from 0.2 to above 0.8, or levels achieved in PRC or Thailand), there should be a significant enhancement in the tax/GDP ratio taking it towards the 15-18 percent levels and form the main element in enhancing DRM resilience targets. This would also help in creating a level playing field and ensuring that Pakistan is able to take full advantage of greater global efforts to harmonise corporate taxation (BEPS Pillar 2 in particular).

- Sequencing of measures for a "package of reforms" including VAT and tax administration
    - In the short run, an integrated VAT would require agreement between the Centre and the Provinces for a single administration, perhaps with a board of directors representing all federating entities. Revenues would continue to be distributed according to the 18th Amendment. The new administration would also administer an integrated income tax and allocate revenues according to current laws.

- In the longer run, a Constitutional Amendment would be needed to reassign revenue functions, taking account of the efficiency and revenue gains of digital transformations, along with new own-source provincial revenues for accountability. A new fiscal equalisation component would also be needed to avoid exacerbating spatial imbalances.

(2) ***Political Economy of Distributional and Environmental Concerns***

Distributional and environmental concerns should be met through other taxes, such as the income tax or excises on goods consumed primarily by the rich. While it is not appropriate to integrate distributional concerns into a VAT, excluding non-processed foods from the VAT goes a long way in protecting the poor without jeopardising the flow of information from the full value chain.

Political economy considerations influence environmental taxation, such as a carbon tax. Reforms should be based on a broad perspective on gainers and losers, especially in a country such as Pakistan with lower-than- average per capita emissions in relation to other Asian countries as well as the global average. Yet, *appropriate carbon pricing is needed to tax the rich* users of energy and petroleum, and to *reduce pollution and congestion especially in large metropolitan areas.* This can be achieved through a piggy-back local surcharge on the petroleum levy[22] that would be higher in Karachi or Lahore, than in remote and less densely populated regions. This would reduce migrations and informality and help shift investment and employment to clean, compact, and connected cities (CCCs), and SEZs with domestic linkages.

More precise estimates for distributional or environmental concerns could be based on a system of additional petroleum excises. These would require systems of demand and supply estimates using household and production data (see Ahmad and Stern, 1991 for method and examples from South Asia, or Ahmad and Viscarra, 2016 for Chile; and Ahmad and Viscarra 2021 for Mexico). While static micro-simulation estimates, often used by the IFIs to establish gainers and losers in policy reforms are a useful starting point, a full assessment would also incorporate the impact on employment generation and the environment, that also lead to improvements in health and living conditions.

For Pakistan, drawing lessons from other countries would suggest the following options:

- Excises on carbon, emissions; taxing "bads" (including e.g., plastics, cigarettes, and alcohol)—the suggested relative rate structures would depend on the inequality aversion of the policy makers and weights on human, social and natural capital.
- Local piggy-backs or surcharges, e.g., on excises for health externalities and environmental damage would provide significant additional revenues and also appropriate (dis)incentives in more polluted or congested areas. A higher piggy-back in Karachi or Lahore, than in CCCs/SEZs, would generate incentives that support the spatial transformation for sustainable growth.

[22]This was originally called the petroleum tax but was changed to petroleum levy to avoid sharing the revenues with provinces.

Local/subnational tax administrations are not needed for surcharges or piggy-backs, and sub-national autonomy and accountability depend on the ability to set piggy-back rates at the margin.

(3) *CIT, BEPS and Redesigned SEZs*

In a rapidly globalising world and especially strengthened competition from neighbouring S and SE Asian countries, there is a case for reducing the standard rate of the CIT to bring the rate structure in line with the regional standard, especially since some of these countries are competing for FDI. Revenues would be protected by rationalising CIT exemptions and preferences, and making better use of BEPS, especially Pillar 2.

- CIT—rate setting with BEPS –would effectively establish a minimum tax on profits, even if generated in a SEZ, or in a country that has not signed on to the global treaty. It would make not sense for Pakistan to subsidise the Finance Ministries of investor source countries.
    - Consideration should be given to shifting to full loss carry forward rather than exemptions to tax the effective profits over the life cycle of the investments. This would reduce the incentives to cheat. It would also eliminate a bias in favour of short-duration projects.
- SEZs should concentrate on agglomeration effects and better linkages with the domestic economy. Implementing the VAT in SEZs would enhance domestic linkages, increasing the attractiveness of Pakistan for FDI, provided there is immediate and full refunds/credits for exports. This would depend critically on the planned digital enhancements of the FBR and procedures that directly credit the accounts of the relevant taxpayers.

(4) *PIT and Tax-on-tax Linkages*

PIT coverage in most Emerging Market Countries is often driven by formal sector wages. Non-wage income, including from the very extensive informal sector, agriculture, and assets, is typically difficult to capture with traditional tax administration methods. The options expand as the economy develops, and digital transformation takes hold, especially with a fuller coverage of the value-added base. The latter provides information on wages and profits (components of value added) at each stage, as is important in expanding the base of the income taxes.

- PIT enhancements depend on the effective use of big data, and full coverage of BTB value added by the VAT is a huge advantage.
- A critical precondition for the improvement in information flows is the linkage between the NIC and the TIN. This is a cornerstone of the digital transformation and needs to be examined carefully.
- Generating information from blockchain on financial and real asset sales will assist in expanding the base significantly beyond taxing formal sector wages.

Own-source revenues, where the sub national jurisdiction sets the rate at the margin (including within a band in unitary states) are essential for accountability. This is particularly important in countries that have devolved spending to the sub national level. Thus, for sub-national administrations:

- It is important to align incentives of subnational jurisdictions/local governments and the national tax administration by permitting a piggy-back on an integrated national PIT base. This would also encourage sub-national governments to provide information that is more readily available to them, especially third- party data on living standards. However, the more developed cities, where the rich live, would likely benefit disproportionately.
- A full reform that addresses political equalisation and spatial equity concerns would involve a fiscal equalisation system in which a subnational piggyback on the income tax (and property taxes—see below) should be a factor determining standard revenue capacities, and hence the amount of transfers received.
- The piggy-back would also count as "own-source revenue" for subnational access to local government bonds or other access to private finance. Shared revenues are not under the control of a sub-national jurisdiction and are thus not appropriate in determining local borrowing or capacity to service liabilities.

(5) ***Tax-benefit Linkages and Political Economy of Local Taxation***

A huge area of concern is the absence of effective own-source revenues at the local level in Pakistan, given a dysfunctional property tax, and major push to devolve spending. While higher revenue-shares are needed given the large vertical imbalance in the country, these do not ensure accountable use of revenues or appropriate decisions concerning financing the SDGs or associated investment design.

The potential piggybacks on national taxes provide a convenient tax handle that can be implemented quickly, can unlock bond issuance as well as private finance, and do not require a new local tax administration, three other elements would help in overcoming a potential "race to the bottom":

- The piggy-back could be subject to a floor;
- Access to private funds and borrowing could be made subject to generation of own-source revenues, including the piggy-back; and
- The fiscal equalisation could include a standardised estimate of what the jurisdiction should raise from the own-source taxes, that would be taken into consideration in the determination of the equalisation transfer. This however apples to all local own-source taxes, and not just the "piggy-backed" arrangements.

Property taxes are visible, "onerous" and generate political opposition, as Alfred Marshall noted in the 1890s. This seems to have been borne out in most emerging market countries, and Pakistan is one of the worst examples in this regard with negligible collections (see Annex charts). Alfred Marshall correctly pointed to the importance of

linking a simple property tax to basic services to overcome political resistance and turn an onerous tax into a beneficial one (Ahmad and Brosio, 2022).[23]

Three distinct cases apply with respect to urban property taxes:

(a) The recurrent tax on non-commercial properties. This provides the bulk of property tax revenues in most countries and is the most difficult to address largely because of a potentially "onerous" character of the tax. A major stumbling block in emerging market countries from China to Colombia to India, has been the political economy constraint of income constrained households living in potentially expensive areas.
(b) A recurrent tax on commercial properties. The political economy constraints faced under Case 1 do not apply, and there are far more transactions than for non-commercial properties. it would be appropriate to continue to apply the traditional market-based valuation-ownership model.
(c) Property sales. All property sales, whether for commercial or non-commercial properties, should be taxed at the prevailing market. Such sales can be taxed at both central and local levels and would benefit greatly from the digital transformation that is underway in many countries.

The ongoing work to establish property values by FBR can be used to establish relativities in a simple area-based system of bands based on location and size, with simple establishment of rates by the local authorities for the recurrent taxation of non-commercial properties. This has considerable potential (up to about 2 percent of GDP). It is possible to pilot some of the "Marshallian" linkage with local service delivery. But for commercial properties and all property sales, it is important to apply the accurate market rate, and a blockchain system can go a long way in establishing this. A significant area of work remains to be done in Pakistan on local taxation, urban transitions and achievement of the SDGs and greater accountability and resilience. Some key points follow:

(a) Use existing work on national valuation to establish rankings for "potential bands" for an area/location- based recurrent property tax on non-commercial properties; use of satellite technology (national tax administration) with low-tech local verification.
(b) Use of blockchain for all property sales at market values, would become a key element in the capital gains tax, and provide information on assets for the proper working of the income taxes.
(c) Market valuation for recurrent taxation of commercial/business properties is important, as more regular markets exist and more robust information generation. Central government/FBR determination of property values is not appropriate in this context.
(d) An effective "fiscal equalisation system" is an essential complement to this reform.

[23]Ahmad, Ehtisham & Giorgio Brosio (2022). *Beneficial property taxation for emerging market countries—financing sustainable development and post pandemic recovery* (with). Palgrave Macmillan.

(6) *Taxation of Agricultural Land*

Size/location and irrigation status could also be used to revamp agricultural taxation linking to local public services for accountability purposes—was presented to the 1986 NTRP and is outlined in Ahmad and Stern (1991, op cit). The Ahmad-Stern simulation of acreage-based land tax was linked to a percentage of gross output (7.5 percent) above a generous exemption limit of 12.5 acres of operational units (also graded by PIUs) for insurance purposes. The exemption leads to an increasing marginal tax rate for larger holdings, so is equitable, and would have generated around 1 percent of GDP or more revenue than the total provincial revenues at the time, or federal development grants to provinces. The crucial link with "ushr" and local public services: health care, basic education, and social protection for the locally identified needy, is needed for political acceptability and could transform rural local governments towards better accountability and social service delivery.

(b) Towards a New Tax Administration Paradigm with Digital Transformation and Local Autonomy

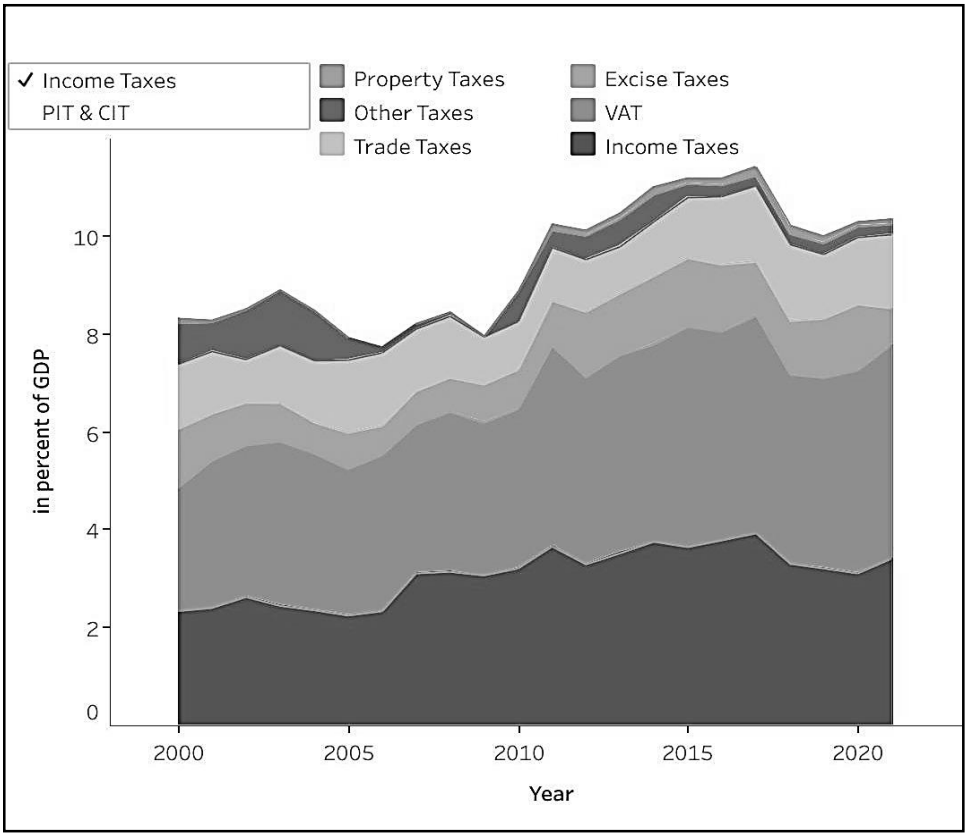
A digital tax administration is all about efficient information generation and management, and this involves both policy and processes and procedures. As seen in the recent less than successful attempts to roll out point of sales machines that issue electronic invoices to small taxpayers and wholesalers, there is not much enthusiasm for this as long as these taxpayers are subject to "lump sum taxation" and do not see any benefit to joining the scheme as the burden is shifted backwards.

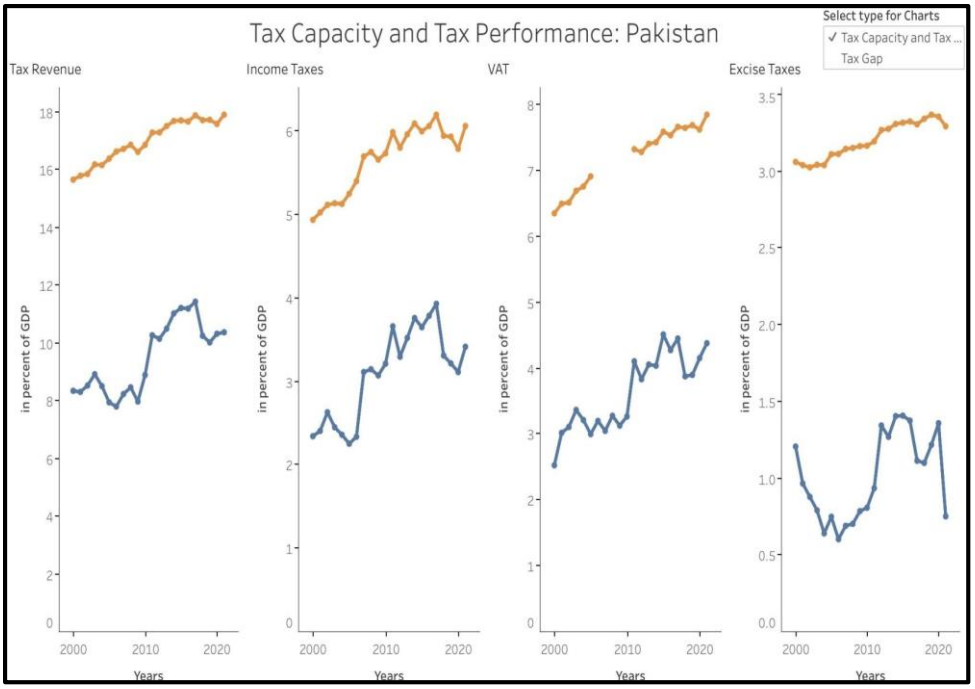
It is important not to computerise existing processes and procedures without thinking through what a policy and institutional arrangement might look like in a digital world. While there is considerable work needed in this area before more specific recommendations can be drawn, the following issues need to be kept in mind.

- Use and management of big data and artificial intelligence can shift the determination of tax liabilities to an automatic basis from the audit evading taxpayers, with a more arms' length role for the tax administration. *It would also change the options for the design of tax administrations from the standard TADAT model.*
- Invoice matching was not recommended in the typical structure and functions of an administration that relied on firms to maintain records and conduct (scarce skilled) audits—with the attendant focus on large taxpayers and increasing the registration threshold for VAT and income taxes. This led to ability and incentives to cheat, with incomplete information.
- With big data, it is much easier to integrate small businesses into the automatic invoice matching system—with detailed audits focused on very large and complex taxpayers, building on the Large Taxpayers Unit. This involves a potential shift in the role and functions of the tax administration to a more arm's length basis, with implications for tax policy and administration. The more efficient integration of small taxpayers is key to addressing informality and stop cheating (by large taxpayers).

- Simplification of procedures, reconciliation, and information by use of blockchain, as well as management of returns and liabilities, would need to also examine that interface with the treasury/PFM system.
- Digital transformation permits easier exchanges of information between domestic and foreign firms, facilitating FDI. This will transform the role of the tax administration, with most assessments carried out electronically and presented to taxpayers. An additional benefit is the exchange of information between tax administrations needed for a closer evaluation of transfer pricing, electronic services, and prevention of the cross-border leakage of revenues.
- There is considerable potential for an integrated arms' length tax administration for all levels of administration, that sidesteps capacity constraints at the local level—but
    - Rate setting at the margin is critical;
    - There needs to be a complementary equalisation system (administered within provinces/regions; or centrally).
    - Automatic transfer of funds to local accounts is essential, so PFM and TSA issues are also involved.

Annex Chart 1 Pakistan Tax Performance.





Source: World Bank Tax Revenue Dashboard.

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Static and Dynamic Comparison of Monetary and Non-monetary Multidimensional Poverty: Evidence from Morocco

EL AZAMI HICHAM and XIA QINGJIE

This paper compares monetary and non-monetary poverty in Morocco from 2013 to 2019 using Enquete Panel des Ménages (EPM) data. It finds that while the incidence of poverty has fallen substantially during this period, there exists an important mismatch between both measures that is not resolved when taking a dynamic lens. On a static level, while displaying similar headcounts, the two measures identified different populations as poor and had different poverty determinants. Taking a dynamic lens, we find that the level of mismatch between the two measures does not improve: Despite similar levels of mobility, transitions in poverty status in one measure are not accompanied by simultaneous transitions in the other measure. We thus suggest the concomitant use of both monetary and multidimensional measures when targeting the poor.

1. INTRODUCTION

Poverty has traditionally been measured through the lens of a monetary measure, be it income or consumption. While the monetary approach is still considered the "gold standard" (Sumner, 2007) of poverty measurement for development organisations such as the World Bank, an important body of literature has pointed to the limitations of this approach, favouring alternative, non-monetary measures.

Indeed, the monetary approach has been criticised for having unrealistic assumptions since it posits that individuals behave as rational agents driven by utility maximisation (Johannsen, et al. 2007). Empirical investigations have found on the other hand that scarcity can turn individuals into irrational agents by reducing their cognitive capacities (Mullainathan and Shafir, 2013). It also holds that individuals have homogenous preferences (Thorbecke, 2007) that exclude any socio-cultural or personal variation, and that utility only stems from market goods, thus ignoring any non-market externalities (Bourguignon and Chakravarty, 2003). In addition, Clark and Hulme (2005) and Spicker (2007) argue that the monetary approach, being based on changing flows (consumption and income) does not account appropriately for the chronicity of poverty. Finally, numerous studies have pointed to measurement errors in the monetary approach, notably when it comes to income (Evans, 2020).

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The quest for alternative measures, while started early (Rowntree, 1902), received more attention with the pioneering work of Amartya Sen (1979, 1985, 1999), defining the capability approach. Non-monetary measures derived from this approach have been deemed more realistic and direct (Kuklys & Robeyns, 2004), leaving room for socio-cultural variations as well as non-market externalities, notably governments' interventions (Thorbecke, 2007). From research to practice, numerous measures of non-monetary poverty have emerged, amongst which are the multidimensional poverty index (MPI) followed by the Alkire-Foster methodology (Alkire & Foster, 2011). The latter is now used by the UNDP as an alternative measure for poverty, and multiple countries have resorted to this methodology to create "national MPIs".

However, given the fundamental differences in both approaches, one might expect large discrepancies in identifying the poor. Indeed, a growing body of literature has investigated the mismatch between monetary and non-monetary poverty and its policy implications. Some studies have compared macro-level trends to determine that a reduction in monetary poverty does not necessarily lead to an improvement in non-monetary dimensions (Bourguignon, et al. (2010); Alkire & Santos (2014)), while others have focused on cross-country comparisons (Drèze & Sen, 2013). However, the most compelling evidence comes from studies using the same survey dataset from a particular country to compare monetary and non-monetary poverty. Perry (2002) finds a 60 percent average mismatch in OECD countries which means that 60 percent of non-monetary poor would not be identified as poor with an exclusively monetary approach. Similar studies with a focus on developing countries have come to the same conclusion: Alkire & Shen (2017) found a 75.4 percent exclusion error in China, while Salecker, et al. (2020) in Rwanda & Levine, et al. (2012) in Uganda & Klasen (2000) in South Africa find exclusion rates of 47.5 percent, 44 percent, and 30 percent respectively. Moving further to subgroup analysis, researchers have uncovered major differences in poverty risk for both approaches: non-monetary and monetary poverty do not affect the same sub-populations with regards to ethnicity, geography, and household characteristics (household size, education of household head…).

It is to be noted that the bulk of these empirical investigations have taken place in a static setting. While the mismatch uncovered is important, one might argue that it might be reduced by switching to a dynamic setting and accounting for poverty chronicity. This argument may hold theoretically, as non-monetary measures of poverty tend to be "stocks", in contrast with "flow" monetary variables. Dynamic comparisons of monetary and non-monetary poverty are rare due to the scarcity of panel data, but a few studies have tried to tackle the subject, mostly in OECD countries. For example, Whelan et al. (2004) analysed European panel data to find that there is a stronger correlation between monetary and non-monetary poverty in a dynamic setting, while the level of mismatch is equivalent. Suppa (2016), analysing German panel data, has found that only 34.17 percent of the chronic multidimensional poor (using a non-monetary index) are also chronic monetary poor: the static mismatch between both measures was not improved when taking a dynamic lens. He also found similar transient poverty rates for both measures (20 percent), which may invalidate the hypothesis of non-monetary measures inertia.

Even fewer studies have taken place in poor and developing countries, where poverty is endemic, and usually measured differently, through an absolute approach. Pioneering this field, Baulch & Masset (2003) have found considerably more persistence in education and health deprivations compared with income poverty when studying 1990 Vietnam, however, this study did not use a non-monetary index to account for all dimensions of non-monetary poverty at once. Using Ethiopian panel data, Seff & Jolliffe (2016) found slightly more volatility for consumption poverty compared to multidimensional poverty (using a non-monetary index). Contrary to Whelan, et al. (2004), they found an even lower correlation between both measures when considering panel data: 53 percent of those whose multidimensional poverty index improved, saw their consumption worsen. Tran, et al. (2015) also found that a dynamic comparison of both measures in Vietnam reveals comparable volatility rates and no improvement in the mismatch. Other studies include Bruck & Kebede (2013) and Alkire & Fang (2018) (for a survey, (see Azami, 2021).

This study aims to contribute to the literature on the mismatch between monetary and non-monetary poverty, using a static and dynamic lens. Using panel data from Morocco, we investigate and compare the drivers between both forms of poverty, for different population subgroups over time. Given the dearth of panel data in developing countries, few empirical investigations have addressed this knowledge gap (Alkire, 2018), and we believe that the conclusions drawn from Morocco's case may be generalised to similar countries.

Indeed, Morocco might constitute a good proxy for other middle-income countries with similar growth rates, and gradual improvements in monetary and non-monetary poverty. Despite being dependent on mainly rainfall-based agriculture, it has been able to sustain a moderate average annual growth rate of 4.2 percent during the past two decades. These economic gains have translated into lower monetary poverty rates, lifting nearly 1.7 million people out of poverty between 2007 and 2018 (High Commission for Planning, 2020), and effectively eradicating extreme poverty as defined by the World Bank (1.25 $/day). Monetary poverty (as defined by a national poverty line) is however still important for certain subgroups: rural areas, women and some inland regions are particularly prone to it. Meanwhile, important improvements in non-monetary dimensions have also been achieved, with child mortality rates going from 47 per 1000 to 22 per 1000 live births between 2003 and 2018, while preschool enrollment went from 45.6 to 62.1 percent between 2016 and 2019 (High Planning Commission, 2020). Given the important improvements in different forms of deprivations, it will be of prime interest to analyse whether the dynamics and patterns of monetary and non-monetary poverty were similar, and whether they concerned the same population subgroups.

What policy implications could be drawn from such a comparison here? We argue that four policy implications would ensue. First, if we hold that non-monetary measures present a more direct profile of poverty, it is difficult to accept monetary measures as a valid proxy. Indeed, it would have a detrimental effect on targeting with sizeable exclusion errors for the non-monetary poor but monetary non-poor. It would also allow for a sizeable inclusion error for the monetary poor but not the non-monetary poor. These errors can be high with up to 75.4 percent exclusion error in China (Alkire & Shen, 2017) leading to misdistribution of resources: 30 percent of multidimensional poor not receiving any government subsidy (Alkire & Shen, 2017).

Second, using monetary measures only might prove problematic to assess government policies, since they do not necessarily account for publicly provided goods such as health and education. Indeed, Mitra (2016) finds that in Nepal, using consumption only as a proxy for poverty would not have acknowledged important improvements for non-monetary dimensions in the mid-western and far-western regions: these regions had benefited from important poverty alleviation policies post-civil war.

Third, why should we accept a proxy if we can construct a more direct measure of poverty from the same dataset? Indeed, all included literature has managed to produce both monetary and non-monetary measures from the same survey data.

Finally, if we accept income or consumption as poverty dimensions in their own right, we must acknowledge their inherent differences with non-monetary measures. Targeted policies for each type of poverty should thus follow: the monetary poor could for example benefit from cash transfer policies, while the non-monetary poor would be keener on structural long-term change pertaining to their health and education situation.

To compare monetary and non-monetary poverty over time, we use the ONDH (National Observatory for Human Development) panel dataset, which follows a sample of nationally representative households over 4 waves (2013, 2015, 2017, and 2019). Given that information, health, education, and household conditions are collected, we were able to draw on the Alkire-Foster methodology (Alkire & Foster, 2011) to create a specific multidimensional poverty index. On the other hand, monetary poverty is accounted for through consumption figures.

This paper is structured as follows: the first part introduces the topic, while the second part presents the panel data and the strategy followed to analyse it. The third part reports results for the mismatch between monetary and non-monetary poverty, in a static and dynamic setting. Finally, the fourth part concludes with key policy recommendations, study limitations, and key areas for further research.

2. DATA

This paper uses panel household data (Enquete Panel des Ménages, EPM) for four periods (2013, 2015, 2017, 2019) assembled by The Moroccan National Observatory for Human Development (ONDH). The EPM is the first longitudinal survey to be collected in Morocco and one of the very few in the MENA region (Cottin, 2019) and thus provides us with a unique perspective on poverty dynamics.

Although ONDH started collecting data a year prior, we do not use the 2012 wave in our analysis given the significant changes brought to the questionnaire later. Using a three-stage sampling strategy based on official census data, 8000 nationally representative households were selected (Teto & Elhadri, 2018). Collected data include household demographics, level of education, employment, access to health services and health insurance, child mortality, assets, household consumption, and living conditions. An additional 8000 households were added to the panel in 2017 to improve the panel's representability and account for attrition: 2017 and 2019 are thus representative at the regional level as well and present with a higher cross-sectional population, as we can see in Table 1.

Table 1

Cross-sectional and Panel Population Count by Wave

Wave	Cross-sectional		Panel	
	Households	Individuals	Households	Individuals
2013	7755	37246	6329	24620
2015	7999	37218	6329	24620
2017	15828	69215	6329	24620
2019	16879	71798	6329	24620

Note: Panel Individuals count excludes cohabitants, splitting households and 2017'added populations.

It is to be noted that cross-sectional populations include co-habitants, which explains the higher number of individuals with each passing wave (Teto & Elhadri, 2018). In addition, an effort was made to track down individuals who went on to form new households for marriage or work reasons (Teto & Elhadri, 2018). However, we only consider panel individuals and panel households when comparing monetary and non-monetary poverty in a dynamic setting, which when accounting for attrition and ignoring cohabitants and added populations amounts to 24,620 individuals living in 6329 households spanning all four waves. Attrition rate spanning all four waves is 19.3 percent and attrition weights (based on propensity scores) were applied to keep the panel representative.

3. ANALYTICAL STRATEGY

This paper attempts to compare monetary and non-monetary measures of poverty using consumption per capita levels and a multidimensional measure of poverty based on the Alkire Foster methodology (Alkire & Foster, 2011). First, both measures are compared in a static setting across different sub-groups, probing any mismatch in poverty identification and differences in poverty risk factors. We then move to a dynamic setting, considering a panel of individuals over 4 time periods to compare poverty transition profiles and underlying determinants.

(a) Identification of the Monetary Poor

Although income is reported in ONDH surveys, this study uses consumption instead as the monetary indicator of poverty for two reasons. First, consumption was found to be more reliable than income (Deaton, 1997), especially in agriculture-based economies like Morocco where self-employment is important (Haughton & Khandker, 2009). Second, the national poverty line in Morocco is set by the High Planning Commission (HCP) against consumption levels and is used in targeting poor populations for subsidy programmes: any policy recommendations stemming from this paper would thus be more relevant if using consumption as an indicator.

To produce its poverty lines, the HCP first determines the minimum calorie requirement for an individual to live and then transforms it into a basket of minimal foodstuff, which corresponds to a food poverty line. Finally, a non-food poverty line is determined by fitting a model of almost ideal demand to the latest household consumption survey and differentiating urban and rural dwellers (Ezzrari, 2011).

By adding up the food and non-food poverty lines, the HCP produces two distinct absolute poverty lines for rural and urban milieus: these were 4667 MAD per year per capita in urban areas and 4312 MAD per year per capita in rural areas in 2014 (HCP and World Bank, 2017). Using OECD PPP equivalence rates (OECD, 2021), we find that these correspond to a 3.22$ per day per capita for urban areas and 2.97$ per day per capita for rural areas, which approaches the 3.2$ a day World Bank standard for lower-middle-income countries (countries with GNI per capita comprised between 1026USD and 3995 USD in 2019 (World Bank, 2020)) but is far from the 5.5$ a day standard for upper middle-income countries (GNI per capita between 3996 USD and 12375 USD, (World Bank, 2020)), a group which Morocco, with a GNI per capital of 3200 USD in 2019 (World Bank, 2019), is aspiring to join.

Following World Bank procedures, the HCP also produces vulnerability lines, which correspond to 1.5 times the poverty lines (Ezzrari, 2011). These, along with the 2014 poverty lines were actualised using the HCP annual consumer index. As we can see in Table 2, Official Poverty Lines consistently hover around the 3.2USD a day standard (higher for urban areas and lower for rural areas) while vulnerability lines approach the 5.5 USD a day standard but are consistently lower than it and thus might prove a better fit for a country like Morocco.

Table 2

Consumer Price Index and Actualised Poverty Lines by Wave

	2013	2014	2015	2017	2019
Consumer Price Index	112.9	113.4	115.2	117.9	120.4
Poverty line (Urban)					
In MAD (Annual)	4646.4	4667	4741.1	4852.2	4955
In USD PPP (Daily)	3.34	3.22	3.25	3.30	3.42
Poverty line (Rural)					
In MAD (Annual)	4292.7	4312	4380.4	4483	4578.1
In PPP USD (Daily)	3.09	2.97	3.01	3.05	3.16
Vulnerability line (Urban)					
In MAD (Annual)	6969.6	7000.5	7111.65	7278.3	7432.5
In USD PPP (Daily	5.01	4.83	4.88	4.95	5.13
Vulnerability line (Urban)					
In MAD (Annual)	6439.05	6468	6570.6	6724.5	6867.15
In USD PPP (Daily)	4.64	4.46	4.52	4.58	4.74

Notes: The author's calculation is based on the national Consumer Price Index (HCP) with 2014 as a base year and OECD Purchasing Power Parity data.

(b) Identification of the Multidimensional Poor

Given the consensus on the multidimensionality of poverty one of the main challenges of identifying the non-monetary poor lies with selecting poverty dimensions and aggregating those (Ruggeri Laderchi, et al. 2003). Following the work of Sen (1985), many attempts have been made to define universal dimensions critical to well-being (Nussbaum, 2000). There is however a limit to generalisation and Alkire (2002) argues

for reasonable adaptation for time and place. In addition, aggregation of said dimensions in an index is not straightforward given the heterogeneity of poverty indicators. Besides, juxtaposing each dimension in multiple dashboard measures would not solve the problem as it decreases international comparability and political buy-in (Ruggeri Laderchi, et al. 2003).

The Alkire-Foster methodology used in this paper, offers some responses to these challenges in identifying the non-monetary poor, by assigning normalised deprivation scores and equal weights to each poverty indicator. It has been used by the Oxford Poverty and Human Development Initiative (OPHI) and the United Nations Development Programme (UNDP) as the basis for the Global Multidimensional Poverty Index (GMPI) (Alkire and Jahan, 2018).

(i) ***Dimension, Indicators, Deprivation Cut-offs and Weights***

The non-monetary multidimensional poverty measure developed in this paper is adapted from the GMPI with some adjustments due to data availability and Morocco's specific context. Indeed, in its guidelines for defining a national MPI, OPHI insists that both data constraints and the domestic development agenda should be taken into consideration. Hence, the normative choices for dimensions and indicators should reflect important national development policies while international development objectives such as the SDGs should also be considered (OPHI, 2019). As this is not the first attempt to define a national multidimensional poverty index in Morocco, we also refer to the High Planning Commission's (HCP) measure in our further analysis (HCP, 2020).

Our measure assumes households as the main unit of analysis given that individuals usually pool resources and are impacted by other household members' deprivations (Alkire & Jahan, 2018). Thus, if one individual is deprived in an indicator then everyone in the household is considered deprived in that indicator.

Like the GMPI, our measure comprises 3 dimensions, namely Education, Health, and Living Conditions. This section delves into each dimension's selected indicators of deprivation (see Table 3 for a summary).

Health

We chose three indicators for health deprivations, namely "Child Mortality", "Effective Access to health services" and "Health Insurance Coverage".

According to the GMPI, "Child Mortality" concerns households in which a child (defined as any individual who has not reached 18 years old) has died during the 5 years preceding the survey (Alkire and Jahan, 2018). However, the EPM questionnaire only includes deaths of children aged up to 5 years during the past 5 years, we thus use this definition for our "Child Mortality" indicator.

Besides "Child Mortality", the GMPI also uses "Nutrition" as an indicator with deprivation defined as having a body mass index below an age-specific cut-off. Given the lack of anthropometric data in the EPM panel and Morocco's specific case, we use "Effective Access to Health Services" and "Health Insurance Coverage" instead.

"Effective Access to Health Services" assesses whether an individual had access to health services when in need during the 4 weeks preceding the survey. The EPM questionnaire also asks about reasons behind not having access to health services, and we

assigned a deprivation status accordingly: if the individual has not had access because of costs or remoteness, they were deemed deprived. Individuals with benign afflictions or who did not seek a health consultation because of personal choices (no female or male doctor present, do not like to consult) were assigned a non-deprived score. The inclusion of this indicator is in line with SDG target 3.8 "access to quality essential healthcare services" (Alkire and Jahan, 2018). In addition, it is included in multiple national MPIs, notably in middle-income countries: Panama, Pakistan, Vietnam, and the Dominican Republic (Santos, 2019)

"Health Insurance Coverage" assigns a deprivation status if any eligible household member is not covered by a health insurance scheme. The EPM questionnaire asks about non-coverage reasons and thus allows us to exclude individuals who chose to forego insurance coverage by their own choice.

The inclusion of this indicator is justified on many grounds. First, universal health insurance coverage is a major development policy of Morocco's government. Indeed, starting in 2002, Morocco instituted two basic public health insurance schemes: the first, AMO (Assurance Maladie Obligatoire), targets all working population, while the second, RAMED (Régime d'Assistance Médicale) is aimed at the poor and near-poor population (2 million households) (Cottin, 2019). RAMED's roll-out only started in 2012, and thus, it will be interesting to assess multidimensional poverty dynamics in this regard. Second, the inclusion of this criteria is also in line with SDG target 3.8 "Achieve universal health coverage" and it has become a fixture of multiple national MPIs, notably in Mexico, Chile, Moldova, and Vietnam (Santos, 2019).

Education

Similar to the Global MPI (GMPI), our study uses "School enrollment" and "School attainment" as the two indicators for the education dimension.

"School enrollment" in the GMPI assesses whether individuals aged 6 to 14 (6 years old and 14 years old being included) are currently attending school. This requirement is similar to Moroccan national education standards (Law 04-00 of Dahir 1-00-200, May 19th, 2000) which institutes compulsory education for all children aged 6 to 14, assorted with penalties for parents who fail to comply.

"School attainment" looks at education achievement within the household. Deprivation is defined as having no household member attaining 6 years of formal education. Alkire and Santos (2014) argue that years of schooling are a proxy for literacy and understanding of information, 6 years being the usual length of primary education globally. While there is no formal definition of literacy in terms of school attainment in Morocco, primary education also spans 6 years, we will thus use the same indicator.

Living Conditions

Similar to the GMPI, we chose "Electricity", "Water", "Sanitation", "Housing", "Cooking Fuel" and "Assets" as living conditions indicators of poverty.

A household is deprived of "Electricity" if it does not have access to an electricity source be it on-grid or off-grid. This is in line with SDG 7.1.1 (Alkire & Jahan, 2018) and reflects the importance of electrification on Morocco's development agenda.

Deprivation in "Water" is defined as not having access to improved water or having to walk more than 30 minutes round-trip to the nearest improved water source. The 30 -minute round-trip limit is less strict than national guidelines, which are defined by the HCP in terms of distance (200 meters in urban areas and 1km in rural areas) (HCP, 2020), but given the EPM questionnaire formulation, we opt for the international standard.

Deprivation in "Sanitation" is defined as not having access to improved sanitation which here refer to a water closet or having to share the facilities with another household. While SDG guidelines refer to various kinds of improved sanitation (latrines, ventilated improved pits, composting toilets, (see Alkire & Jahan, 2018), EPM data only reports on water closets.

The "Housing" indicator refers to the house's building materials, namely for roof, walls, and floor. Similar to the GMPI and following SDG guidelines, a household is deemed deprived if at least one of the latter is composed of inadequate materials (namely a floor made of mud, clay, or sand; or roof/walls using natural materials such as thatch or mud). This goes further than HCP's measure which only considers flooring for this indicator (HCP, 2020).

The "Assets" indicator considers a household deprived if it does not own strictly more than one of "small assets" (motorcycle, refrigerator, TV, phone, or computer) and does not own a "big asset" (car, truck, or tractor). This approach differs slightly from the GMPI and HCP measures which include bicycles in "small assets", given that EPM data does not report on such assets. While no SDG refers to this indicator, its inclusion is relevant given its important relationship to multiple capabilities (Santos, 2019).

Following the GMPI methodology, all three dimensions are assigned equal weights of 1/3, and indicators of the same dimension are assigned equal nested weights (see Table 3).

(ii) ***Association among Indicators***

To evaluate the adequacy of a multidimensional measure, it is interesting to look at the association between indicators, probing for redundancy

We first calculate Cramer's V values [1]indicating associations between every pair of indicators in 2013 (Table A1, Appendix). Following Akoglu (2018), we consider that an association is weak if presenting with a value below 0.1, moderate if between 0.1 and 0.25, and strong if superior to 0.25. As we can see in Table A1, most of the association are weak. Indicators within the same dimension also tend to be weakly to moderately associated, adult literacy and child schooling deprivations only present with a 0.13 Cramer's V, and all pairs of health indicators show weak associations.

The only strong association observed is between Electricity and Assets, which might be explained by the important number of electric devices included in the "small assets" category (computer, phone, refrigerator, TV) and also by the overall low headcounts of both deprivations (see Figure 2).

Following Tran, et al. (2015) we then compute a redundancy ratio equal to the percentage of deprived individuals in two indicators divided by minimum the raw headcount ratio of said indicators. Ranging from 0 to 1, with 1 indicating total overlap and 0 complete mismatch. Table A2 (appendix) presents the redundancy ratio in 2013 for all pairs of indicators

[1] Cramer's V values measures the strength of association between two discrete variables. It is based on the Pearson's Chi-squared test (Cramer, 1946).

Table 3

Dimensions, Indicators, Cut-offs, and Weights

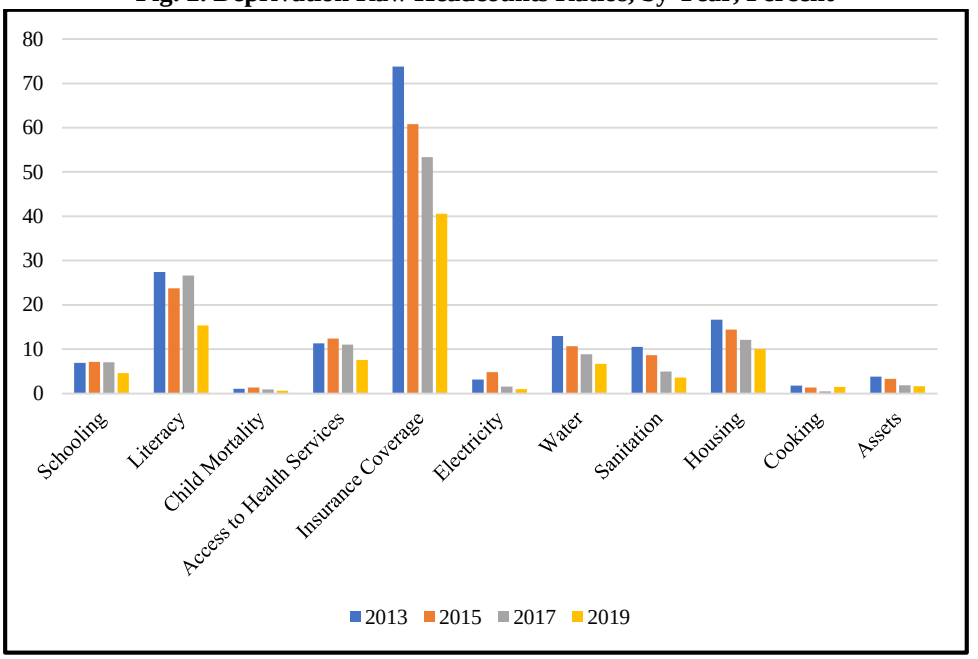
Dimensions and Indicators of Poverty	All Household Members are Considered Deprived if…	Weight
Health		
Child Mortality	Any child under the age of 5 years has died during the 5 years leading up to the survey.	1/9
Effective Access to Health Services	Any household member who has been seriously ill during the 4 weeks leading up to the survey did not have access to health services due to cost or remoteness.	1/9
Health Insurance Coverage	Any eligible household member is not covered by any health insurance scheme.	1/9
Education		
School Attendance	Any child aged 6 to 14 years old is not currently enrolled in school.	1/6
Years of schooling	No household member has completed 6 years of schooling.	1/6
Living Conditions		
Electricity	The household has no electricity.	1/18
Water	The household does not have access to improved drinking water or improved drinking water is at least a 30-minutes' walk from home, round trip.	1/18
Sanitation	The household does not have improved sanitation facilities (Water closet), or improved sanitation facilities are shared with other households.	1/18
Housing	At least one of the household's building materials for its roof, walls, or floor is inadequate.	1/18
Cooking Fuel	The household cooks with wood or charcoal.	1/18
Assets	The household does not own strictly more than one of these assets: motorcycle, refrigerator, TV, phone, computer; and does not own a car, a truck, or a tractor.	1/18

Note: Normative choice by author guided by national development goals, international SDGs, and data availability.

When excluding health insurance coverage, for which the headcount ratio in 2013 is still remarkably high but descends in later waves, only 56 percent or less of individuals who could be deprived in both indicators are indeed suffering from both deprivations, which is not a high overlap and shows the specificity of each indicator in designating poverty.

Overall, we find that most of the indicators of deprivation are not strongly associated with one another, and their inclusion paints a more complete picture of poverty in its multiple dimensions.

Fig. 2. Deprivation Raw Headcounts Ratios, by Year, Percent



Note: Multidimensional Poverty refers to a k cut-off of 33 percent, Raw Headcount Ratio is the proportion of deprived population for a certain deprivation.

(iii) *Setting a Multidimensional Poverty Cut-off*

To set the most adequate multidimensional poverty cut-off, we start by computing headcounts for both types of poverty, using different lines. As we will proceed to compare both measures using cross-headcount tabulations, it is important to select cut-offs leading to similar headcounts of poverty.

Looking at Table 4, we find that using the official monetary poverty line shows similar poverty headcounts with extreme multidimensional poverty, which confirms that is set too low while these headcounts are similar, they are also extremely low and hence do not give us statistically significant results when dealing with subgroup populations.

On the other hand, we find that the official monetary vulnerability is more in line with the traditional k cut-off of 33 percent for multidimensional poverty, with headcounts mostly matching except for 2019. This paper will thus use this pair of cut-offs for all further analysis.

Table 4

Poverty Rates at Different Cut-offs by Measure of Poverty and Year, Percent

	Monetary Poverty				Multidimensional Poverty				
Cutoff	2013	2015	2017	2019	2013	2015	2017	2019	k cutoff
Poverty	3.12	2.7	1.35	1.02	3.14	1.81	1.15	0.53	50
Vulnerability	14.89	13.46	10.15	8.17	14.89	10.45	9.34	4.71	33
	33.96		27.67		26		14.98		20

Note: Poverty and Vulnerability refer to each year's actualised poverty and vulnerability lines in Morocco. Author's Calculation based on ONDH Panel Data.

4. RESULTS

(1) Static Subgroup Analysis

As we can see in Table 4, Monetary and Multidimensional Poverty, when considered at adequate cut-offs, presents similar headcounts, and downward evolution. However, the low rates of "Both poor" in Table 5 is the first indication of the mismatch in identifying the poor. This section will thus delve into subgroup comparative analysis, using cross-headcount tabulations, quintile analysis, and socio-demographic determinants analysis.

(a) *Cross-headcount Tabulations*

Cross-headcount tabulations refer to the conditional probability of being poor in one measure given a certain poverty status for the other measure. Using these tabulations, we extract exclusion errors defined as the proportion of multidimensional poor that are not monetary poor and inclusion errors referring to the proportion of Monetary poor that are not multidimensional poor (Mitra, 2014). As we can see in Table 5, inclusion and exclusion errors are extremely high: in 2019, more than 75 percent of multidimensional poor would not have been identified as monetary poor, while 77 percent of monetary poor would not be considered poor in the other measure. These important mismatches are higher than the 50 to 60 percent error found by Perry (2002) in a review of OECD countries' poverty headcounts, and also higher than what we gathered from empirical literature in most developing countries except China (see Azami, 2021).

In addition, just like Mitra (2014), we find that these errors tend to go up with each passing wave, meaning that a reduction in overall poverty also means a higher risk of misidentification of the poor.

Table 5

Poverty Headcounts, Inclusion and Exclusion Errors by Wave, Percent

	2013	2015	2017	2019
Monetary Poor	14.89	13.46	10.15	8.17
Multidimensional Poor	14.89	10.45	9.34	4.71
Both Poor	5.38	3.26	2.33	1.33
Inclusion Error	63.85	75.8	77.02	83.72
Exclusion Error	63.85	68.81	75.04	71.73

Note: Monetary Poor refers to the Official Vulnerability line, Multidimensional Poor is considered with a k-cutoff of 33 percent, Inclusion Error refers to the proportion of Monetary poor that are not Multidimensional Poor, and Exclusion Error refers to the proportion of Multidimensional Poor that are not Monetary Poor, Author's calculation based on ONDH data.

(b) *Quintile Analysis*

Another way to compare both measures of poverty is to probe for multidimensional poverty amongst consumption quintiles. Table 6 presents multidimensional poverty headcounts by consumption quintiles for all waves. As the consumption poverty line (here the official vulnerability line) is set below the cut-off between the first and second quintile, individuals from the second quintile upwards are

not monetary poor. Still, we observe relatively high multidimensional poverty headcounts for the second consumption quintile population: it reached 18.39 percent in 2013 higher than the overall multidimensional poverty headcount of 14.89 percent. We observe similar patterns amongst the third and fourth quintiles, and even the richest consumption quintile presents with a noticeable multidimensional poverty headcount, at 4.08 percent in 2013 (see Table 6). This is in line with Sumarto and De Silva (2014) who found a 4 percent multidimensional poverty occurrence for the richest consumption quintile in Indonesia, but lower than the 30 percent figure found by Levine et al. (2012) in Uganda. We note however that these occurrences tend to subside with the decline of overall poverty: only 0.63 percent of the monetary richest were multidimensional poor in 2019.

Table 6

Multidimensional Poverty Headcounts for Consumption Quintiles by Waves, Percent

Consumption Quintile	2013	2015	2017	2019
First *(Poorest)*	34.3	24.23	4.36	12.56
Second	18.39	12.14	2.46	5.05
Third	9.84	8.68	1.22	3.42
Fourth	7.61	5.1	0.76	1.93
Fifth *(Richest)*	4.08	3.4	0.54	0.63

Note: Consumption Quintile refers to survey-weighted Annual Consumption per capita, Multidimensional poverty is calculated with a k-cutoff of 33 percent, the Author's calculation based on ONDH data.

(c) ***Socio-Demographic Analysis***

Furthermore, we probe for differences in poverty determinants for both measures, by computing logistic regression models with a set of socio-demographic independents variables in 2017 (see Table 7). Similar to Salecker, et al. (2020), we include the log of household consumption per capita as an additional independent variable in Model 3, in order to explore the marginal effect of consumption on multidimensional poverty and on the model fit as a whole. All models use stratified sampling weights to account for sampling design and standard errors account for clustering. They correctly classify more than 83.91 percent of observations which represents an excellent predictive accuracy (Hosmer, et al. 2013), and have an area under the ROC curve superior to 0.811, which indicates an excellent model fit (Hosmer, et al. 2013).

(i) Individual Variables

We find that the marginal effect of being a female compared to being a male on monetary and multidimensional poverty is statistically significant in Models 1 and 2. On the other hand, the age of the individual was found to have a statistically significant effect on monetary poverty only. However, it is a negligible effect in absolute terms.

(ii) Household Variables

Having an unemployed household head only has a statistically significant effect on multidimensional poverty in model 2, increasing the risk of poverty by 2.4 percent controlling for other variables.

Table 7

Estimated Marginal Effects Logistic Regression Models, 2017[2]

	Dependent Variable		
	Monetary Poverty	Multidimensional Poverty	
Model	(1)	(2)	(3)
Independent Variables			
Female Individual	0.010**	0.071**	0.005
	(0.002)	(0.002)	(0.003)
Age of Individual	–0.0003***	–0.0005	0.000
	(0.000)	(0.00009)	(0.000)
Age of Household Head	–0.0015**	–0.0009*	–0.001
	(0.00008)	(0.0004)	(0.000)
Unmarried Household Head	–0.048*	0.028	0.020
	(0.023)	(0.017)	(0.016)
Unemployed Household Head	0.017	0.024*	0.018
	(0.016)	(0.012)	(0.012)
Household Size	0.0272***	–0.0023	0.007**
	(0.0029)	(0.0025)	(0.003)
Habitation is Owned	–0.0342***	–0.0263	–0.014
	(0.0029)	(0.013)	(0.013)
Rural Location	0.1497***	0.2273***	0.174***
	(0.0174)	(0.0179)	(0.017)
Distance	0.0041**	0.0077**	0.007***
to All–weather Roads (km)	(0.0013)	(0.0015)	(0.001)
Log Household Consumption per Capita (MAD)	–	–	0.127***
			(0.013)
Observations	35152	35152	35152
Correctly Classified (%)	83.91	84.03	84.78
Area under ROC curve	0.815	0.811	0.833

Note: Models are survey-weighted and standard errors (in parentheses) account for clustering. Monetary Poverty refers to the National Vulnerability threshold, Multidimensional Poverty is measured with a 33 percent k-cutoff. Significance levels: ***=0.001, **=0.01, *==0.05.

On the other hand, having an unmarried household head is associated with statistically significant marginal effects for monetary poverty only, lowering the risk of poverty by 4.8 percent and holding all other variables constant. This might be due to not using equivalence scales in monetary poverty, favouring smaller households, which are more likely to have an unmarried household head.

Indeed, we find that for each additional household member, the risk of monetary poverty increases by 2.72 percent while controlling for other variables. However, household size does not have a statistically significant marginal effect on multidimensional poverty in Model 2, and only has a negligible marginal effect in Model 3, when including consumption as a dependent variable. Tabulating poverty headcounts with household size (see Figure 1) we find similar findings: the bigger the household, the higher the risk for monetary poverty. In addition, and similar to Tran et al. (2015), we find that multidimensional poverty presents with a convex relationship to household size, with poverty headcount higher for small and big households while 4-member households were the least poor.

[2] We only use a single year model here because some important independent variables are missing for previous years (owned habitation/distance to all-weather road).

Finally, we find that owning habitation presents a statistically significant effect on monetary poverty only, lowering the risk of poverty by 3.42 percent while controlling for other variables.

(iii) Location Variables

Compared to living in urban areas, the estimated effect of living in a rural area is statistically significant and positive for both monetary and multidimensional poverty. However, similar to Salecker, et al. (2020), we find that the effect is stronger for multidimensional poverty (22.73 percent) than for monetary poverty (14.97 percent) while holding other variables constant.

Finally, and given that the EPM 2017 cross-section is representative at the regional level, we compare monetary and multidimensional poverty rankings to find important dissimilarities (see Table 8). The two measures, present with different orderings: Draa-Tafilalet is considered the poorest in monetary terms but ranks mid-level (7/12) in multidimensional terms and Beni-Mellal Khenifra is the poorest in multidimensional terms but ranks mid-level in monetary terms (6/12).

(iv) Consumption Levels

The inclusion of the log of consumption per capita as an independent variable only slightly increases the accuracy and fit of the model. This shows that consumption doesn't play a key role in segregating multidimensional poor and non-poor. In addition, we find that while the marginal effect of consumption per capita on multidimensional poverty is significant at the 0.013 percent level, it is not strong in absolute terms: doubling an individual's consumption only decreases its chance of falling into multidimensional poverty by 12.7 percent holding all other variables constant.

Fig. 1. Poverty Headcount by Household Size in 2017, Percent

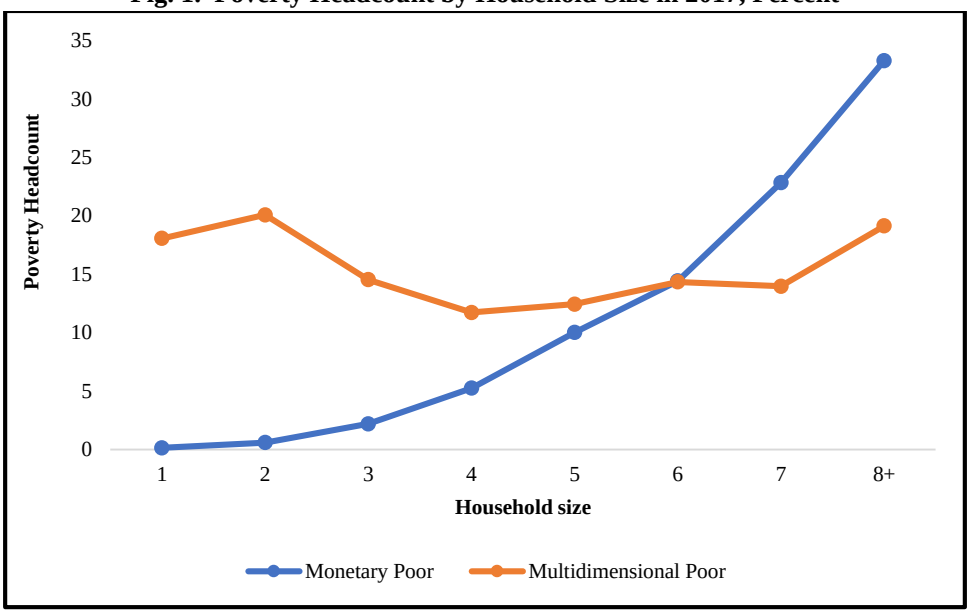


Table 8

Poverty Headcounts and Ranks by Region, 2017[3]

	Consumption Poverty		Multidimensional Poverty	
Region	Headcount (%)	Rank	Headcount (%)	Rank
Dakhla-Oued Ed-Dahab	0	1	1.29	2
Laâyoune-Sakia El Hamra	1.99	2	0.31	1
Guelmim-Oued Noun	4	3	3.29	3
Casablanca-Settat	5.59	4	7.37	6
Tanger-Tétouan-Al Hoceima	6.94	5	9.36	8
Béni Mellal-Khénifra	8.19	6	16.4	12
Rabat-Salé-Kénitra	9.24	7	7.04	5
Souss-Massa	10.56	8	10.78	10
Fès-Meknès	12.2	9	10.16	9
L'Oriental	12.6	10	5.81	4
Marrakech-Safi	16.06	11	12.99	11
Drâa-Tafilalet	23.47	12	7.85	7

Note: Consumption Poverty refers to National Vulnerability line, Multidimensional Poverty is calculated with a 33 percent k-cutoff.

In summary, we find that the measures differ significantly across sub-groups of the population and present an important level of mismatch in a static setting. This finding is in line with the argument that consumption is a poor proxy of welfare (Thorbecke, 2007). Will this mismatch resolve when taking a dynamic lens?

(2) Dynamic Comparison of Monetary and Multidimensional Poverty

Like Tran, et al. (2015) and Suppa (2016), we now use a panel of individuals present through all waves to probe for differences in mobility and poverty transitions for both measures. We then delve further into the drivers of multidimensional poverty, to find the origin of the mismatch.

(a) ***Differences in Mobility***

We use a joint probability matrix over the first and last wave (2013 and 2019) to compare the mobility of monetary and multidimensional poverty. Table 9's left panel shows monetary poverty transitions using the official vulnerability line, while the right panel presents multidimensional poverty transitions. The values in the diagonal show the share of individuals for which poverty status has not changed over the period. We find that 16 percent of panel individuals have switched monetary status while 14.7 percent have switched to multidimensional poverty status.

Another way to compare mobility for both measures is by computing headcounts by number of poverty episodes (Table 10). We find similar headcounts for the chronic poor (4 episodes of poverty), with 0.9 percent chronic monetary poor and 1 percent chronic monetary poor. However, we find a larger cohort of "never poor" with multidimensional poverty (72.5 percent) than with monetary poverty (66.4 percent)

[3] The sample data is not representative on the regional level for previous years.

Overall, we find quite minor differences in mobility between monetary and multidimensional which is surprising given the assumed hypothesis that "stock" indicators such as adult literacy and health access carry more inertia than consumption or income (Clark & Hulme, 2005). In line with Tran, et al. (2015), we find that multidimensional measures are also sensitive to change over time and thus might reflect changes in the economy as well as government policy responses. In the case of Morocco, the rollout of health insurance coverage starting in 2012 seems to have contributed to the downward evolution of multidimensional poverty in the second wave, as we will see in the last section.

Table 9

Join Probabilities between Monetary and Multidimensional Poverty, Percent

	MN 2019		MD 2019		
MN 2013	Poor	Non-Poor	Poor	Non-Poor	MD 2013
Poor	3.7	11.0	2.3	12.9	Poor
Non-Poor	5.0	80.3	1.8	82.9	Non-Poor

Note: MN refers to the official monetary vulnerability line, and MD refers to multidimensional poverty with a k cut-off of 33 percent.

Table 10

Headcounts by Episodes of Poverty, Percent

Episodes of Poverty	MN Poverty	MD Poverty
0 *(Never Poor)*	66.4	72.5
1	18.3	15.1
2	9.9	7.9
3	4.3	3.6
4 *(Always Poor)*	0.9	1.0

Note: MN refers to the official monetary vulnerability line, MD refers to multidimensional poverty with a k cut-off of 33 percent, and an episode of poverty corresponds to being identified as poor at one time period.

(b) *Dynamic Poverty Cross-tabulations*

While we found in the previous section that both measures display similar mobility, it would be interesting to probe the mismatch at the dynamic level and see if monetary and multidimensional poverty transitions concern the same subgroups of individuals in our panel. Table 11 shows a tabulation of multidimensional poverty given a certain monetary poverty status over the four periods. Transient poverty is defined as experiencing 1 or 2 episodes of poverty while chronic poverty definition is enlarged to include those who experience 3 episodes of poverty as well as the always poor. The level of mismatch in poverty status is important, especially for the chronic poor: only 22.7 percent of chronic monetary poor are also chronic multidimensional poor, which represents a 77.3 percent exclusion error. The "Never poor" population presents with a higher level of overlap with 82.3 of Monetary "Never poor" also multidimensional "Never poor".

Table 11

Cross-tabulation of Monetary and Multidimensional Poverty Status over time, 2013-2019, Percent

		MD Poverty		
MN Poverty	Population	Never	Transient	Chronic
Never	66.4	82.3	15.6	2.1
Transient	28.2	56.7	36.2	7.2
Chronic	5.2	32.6	44.7	22.7

Note: MN refers to the official monetary vulnerability line, MD refers to multidimensional poverty with a k cut-off of 33 percent, never refers to having encountered no poverty episode during the period, Transient refers to having encountered 1 or 2 poverty episodes, and Chronic to have encountered 3 or 4 poverty episodes.

We then probe this mismatch further by tabulating multidimensional poverty transitions given a certain monetary poverty trajectory. Table 12's upper matrix presents these conditional poverty trajectories for the 2013-2015 period while the lower matrix presents their equivalent for the 2015-2017 period. The first row of the upper matrix shows us that 75.9 percent of the total panel individuals stayed non-poor between 2013 and 2015, amongst which 83.9 percent stayed non-poor by the multidimensional measure, and 7.1 percent got out of multidimensional poverty. However, 4.7 percent of these non-poor in monetary terms fell into multidimensional poverty and 4.3 percent stayed in it during the same time period. Looking at the subgroup that stayed poor during the period, we find a higher level of mismatch multidimensional measure trajectories: only 27.5 percent stayed poor while 17.1 percent escaped poverty and 41.3 percent were non-poor, to begin with. The mismatch in trajectories is more important for individuals rising from or falling into monetary poverty during the period: only 18.9 percent of those who rose from monetary poverty also rose from multidimensional poverty while 8.9 percent fell into it at the same period.

Analysis of the lower matrix gives us the same insight: monetary and multidimensional transitions seem to be strongly correlation for the non-poor, moderately correlated for the chronically poor, and weakly or non-correlated for those whose status changes within a period. This suggests that the transitions in poverty status in one measure are not accompanied by simultaneous transitions in the other measure: in fact, the opposite transition is more likely to happen in the case of those falling into monetary poverty. This is in line with Seff & Jolliffe (2016) who in Ethiopia found that 41 percent of those multidimensional measures worsened saw their consumption poverty improve while 53 percent of individuals whose multidimensional measures improved, saw their consumption poverty worsen.

Hence, the seemingly slight differences in mobility that we previously found, are not a sign of a larger overlap of the two measures when considered in a dynamic setting as most of the individuals making the transitions in one measure are different from the one switching status in the other measure. We find similar mismatches between the two measures when looking at poor populations in a dynamic and static setting. Indeed, Table 11 gives us an inclusion error of 64.7 percent for transient poverty and 77.3 percent for chronic poverty, which is within the 63-83 percent range of errors found previously for every cross-section (see Table 5).

This finding is not in line with the theoretical argument made by Hulme, et al. (2001) that multidimensional and monetary poverty should reinforce one another and also not in line with Whelan, et al. (2004) which found a higher overlap between the two measures when analysing them in a dynamic setting. It is in line with the capability approach argument that monetary measures may not be a good proxy for public goods, as we shall see in the next section.

Table 12

Cross-tabulation of Monetary and Multidimensional Poverty Trajectories, Percent

Monetary Poverty Trajectory	Population Share	Multidimensional Poverty Trajectory			
		Non-Poor	Rising	Falling	Staying Poor
2013-2015					
Non-Poor	75.9	83.9	7.1	4.7	4.3
Rising	10.0	59.3	18.9	8.9	12.9
Falling	8.9	63.8	13.6	8.9	13.7
Staying Poor	6.2	41.3	17.1	14.1	27.5
2015-2017					
Non-Poor	76.1	86.3	6.2	4.4	3.1
Rising	10.5	68.1	14.8	11.7	5.4
Falling	8.9	65.8	15.5	8.5	10.3
Staying Poor	4.5	56.2	12.0	10.6	21.2

Note: Monetary Poverty refers to the official monetary vulnerability line, and Multidimensional Poverty refers to the k cut-off of 33 percent.

(c) ***Decomposition of Multidimensional Poverty Transitions***

While we found that both measures present an important mismatch at the dynamic level, it would be interesting to examine which indicators in particular are responsible for this disagreement. Figure 2 shows deprivation headcount ratios for the whole panel population encompassing the 4 waves: insurance coverage has the highest deprivation ratio by far, followed by adult literacy, housing, effective access to health services, child schooling, and water. On the other hand, Child mortality, cooking, assets, and electricity display low rates of deprivation throughout. Most indicators saw improvements overall, especially the education and health indicators, with the health insurance coverage ratio going from 73.8 percent in 2013 to 40.6 percent in 2019: this explains the overall downward tendency of the multidimensional poverty headcount as education and health indicators account for two-thirds of the measure. However, not all these indicators saw linear downward progress, with slight increases in adult illiteracy in 2017 and setbacks in effective access to health and electricity in 2015.

Looking at the subgroup of the panel that made a multidimensional poverty transition in the two first periods, we computed the change in headcount ratios for each of the 11 indicators (see Table 13). We find that the education indicators are the key drivers for those who entered poverty in the first period, with more than 36.9 percent of this sub-population also becoming deprived of child schooling and 31.5 percent becoming deprived of adult literacy. These are followed by the effective access to health indicator, with more than 28 percent of this subgroup also becoming deprived in this indicator. For those escaping poverty, we find that adult literacy and health insurance are the two most

important drivers, with 35 percent of the subgroup also exiting literacy deprivation and 32.2 percent also exiting insurance deprivation.

These important dynamics in education and health indicators could be unrelated to the purely monetary conditions of an individual and play a role in the important mismatch in monetary and multidimensional poverty transitions.

Figure 2. Deprivation Raw Headcounts Ratios, by year, Percent

Table 13

Changes in Raw Headcounts Ratios for Multidimensional Poverty Transitions by Indicator and Time-period

	Change in Raw Headcount Ratio					
	2013-2015		2015-2017		2017-2019	
Indicator	Entry	Exit	Entry	Exit	Entry	Exit
Schooling	–36.9	+24.8	–36.8	+30.9	–32.4	+29.7
Literacy	–31.5	+35.0	–43.9	+33.2	–41.2	+31.7
Child Mortality	–3.3	+8.2	–1.7	+4.2	–2.1	+3.3
Access to Health	–28.7	+19.2	–32.2	+23.9	–36.4	+27.8
Health Insurance	–6.9	+32.2	–15.2	+37.6	–14.7	+34.5
Electricity	–4.0	+6.1	+2.3	+9.1	+1.2	+7.6
Water	–10.4	+19.4	–6.3	+14.7	–3.4	+21.3
Sanitation	–20.4	+20.1	–9.3	+20.4	–5.7	+19.5
Housing	–13.0	+20.3	–17.6	+23.1	–15.7	+22.4
Cooking	–3.9	+4.1	+2.7	+3.5	+3.5	+4.1
Assets	–6.6	+3.4	–2.0	+10.8	–5.7	+11.2
Population Share	5.8	2.2	5.7	8.2	2.3	4.3

Note: Multidimensional Poverty refers to a k cut-off of 33 percent, Raw Headcount Ratio is the proportion of the deprived population for a certain deprivation, Entry refers to falling into poverty, and Exit refers to leaving poverty.

5. CONCLUSION

Using the first panel data ever produced in Morocco for the period from 2013 to 2019, we applied the Alkire Foster methodology to probe for differences between monetary and multidimensional poverty. For that purpose, we started with a static analysis, investigating the mismatch between both measures in the same cross-section and for different subgroups. We then moved to a dynamic setting to compare poverty transitions in a restricted panel of individuals who were present in all four waves.

We found an important mismatch between monetary and multidimensional measures on all levels. On a static level, while displaying similar headcounts, the two measures identified different populations as poor, with high levels of exclusion error (the percentage of multidimensional poor who are not monetary poor) and inclusion error (the percentage of monetary poor who are not multidimensional poor) for all four cross-sections. Delving deeper into subgroup analysis, we find that multidimensional poverty is present even amongst the richest monetary quintile and that doubling consumption figures would only decrease the risk of multidimensional poverty by 12.7 percent, which implies that an increase in consumption does not necessarily lead to an improvement in non-monetary indicators. In addition, the two measures present with substantially different poverty determinants, and thus might refer to different "poverty phenomena"

(Thorbecke, 2007): rural dwellers are more prone to multidimensional poverty, and bigger households are more prone to monetary poverty, while household size has a convex relationship with multidimensional poverty.

Taking a dynamic lens, we find that the level of mismatch between the two measures does not improve, and that multidimensional poverty shows surprisingly high dynamics. Despite similar levels of mobility, transitions in poverty status in one measure are not accompanied by simultaneous transitions in the other measure. This is in line with previous empirical studies in Ethiopia (Seff & Jollife, 2016) and Vietnam (Tran, et al. 2015) but not in line with the theoretical argument that both types of poverty tend to reinforce each other (Hulme, et al. 2001).

We also found that the main drivers behind transitions in multidimensional poverty were the education and health indicators, particularly adult illiteracy for falling into poverty, and insurance coverage for escaping poverty. These indicators are intimately linked to government interventions in Morocco, with subsidised insurance coverage for the poor and adult literacy programmes as one of the key development policies in the country. They can be considered non-market goods for which consumption or income are weak proxies, in line with the capability approach.

Policy-wise, our study suggests that the currently used official poverty and vulnerability lines may exclude a sizeable portion of the multidimensional poor. This might prove problematic as the Moroccan government uses proxy test targeting based on these monetary lines precisely to target people deprived of health access or insurance for example (Cottin, 2019): we thus recommend the concomitant use of non-monetary measures to allow for better targeting. We also suggest raising the official monetary line to the level of the current vulnerability line, to better reflect Morocco's current level of development.

It is worth mentioning that our study only spans 6 years in total (2013-2019) and that further studies on the dynamic mismatch between the two measures of poverty might use a longer period, with new waves of the EPM, for example. In addition, we were constrained by data for the specification of our multidimensional measure: it would have been interesting to explore the mismatch dynamics with nutrition (anthropometric measurements) as a health indicator, similar to the GMPI.

ANNEX

Table A1

Cramer V's between Multidimensional Deprivation Indicators, 2013

	School	Literacy	Mortality	Health	Insurance	Electricity	Water	Sanitation	Housing	Cooking	Assets
School	1.00										
Literacy	0.13	1.00									
Mortality	0.01	0.03	1.00								
Health	0.00	0.04	0.03	1.00							
Insurance	0.05	0.06	0.01	0.04	1.00						
Electricity	0.05	0.12	0.00	0.09	0.00	1.00					
Water	0.11	0.16	0.05	0.01	0.08	0.11	1.00				
Sanitation	0.04	0.12	0.06	0.07	0.00	0.14	0.15	1.00			
Housing	0.10	0.20	0.04	0.10	0.09	0.16	0.22	0.11	1.00		
Cooking	0.06	0.09	0.05	0.04	0.02	0.12	0.07	0.09	0.19	1.00	
Assets	0.05	0.15	0.03	0.10	0.00	0.52	0.10	0.14	0.18	0.11	1.00

Notes: School refers to child school attendance, Literacy refers to adult literacy, Mortality refers to Child Mortality, Health refers to effective access to health services, Insurance refers to health insurance coverage, Cooking refers to cooking fuel. Cramer's V values are significant at the 99 percent confidence level.

Table A2

Redundancy Table for Multidimensional Deprivation Indicators, 2013

	School	Literacy	Mortality	Health	Insurance	Electricity	Water	Sanitation	Housing	Cooking
Raw Headcount Ratio	6.0	24.4	1.1	11.7	72.6	2.6	11.2	10.0	15	1.8
Literacy	0.47									
Mortality	0.13	0.38								
Health	0.11	0.28	0.15							
Insurance	0.80	0.79	0.75	0.79						
Electricity	0.14	0.55	0.01	0.23	0.75					
Water	0.25	0.42	0.28	0.12	0.83	0.32				
Sanitation	0.18	0.42	0.25	0.20	0.75	0.40	0.27			
Housing	0.28	0.44	0.25	0.25	0.82	0.50	0.38	0.31		
Cooking	0.16	0.54	0.07	0.27	0.80	0.19	0.23	0.39	0.69	
Assets	0.12	0.55	0.05	0.26	0.72	0.54	0.26	0.36	0.5	0.22

Notes: School refers to child school attendance, Literacy refers to adult literacy, Mortality refers to Child Mortality, Health refers to effective access to health services, Insurance refers to health insurance coverage, Cooking refers to cooking fuel.

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Microcredit versus Child Schooling Nexus: Exploring Child Schooling Decisions in Rural Bangladesh

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The study investigates if the microfinance loan burden influences the children's education of the borrowers. By surveying the microfinance borrowers of Agarpur and Thakurmollik— distant rural areas under the Barisal district (Southern part of Bangladesh)— and by applying the OLS regression technique and logistic regression technique, the study identifies that the amount of microfinance loan installment does not have any significant direct effect on the dropout or enhancement of child education. Instead, the dropout tendency increases as kids move from primary to secondary or higher secondary level or as the number of kids increases in the family. However, as more kids are going to primary school, the school dropout tendency decreases. Thus, in remote rural areas, children's school dropout appears as a matter of social behaviour rather than being an issue of microfinance loan burden.

JEL Classifications: O15, I24, I25
Keywords: Microfinance; Education; School Dropout; Rural Economy; Economic Growth; Logistic Regression.

1. INTRODUCTION

Microfinance, a general term for "small loans", has often been pronounced as a key factor in the development of rural Bangladesh. The term got mass recognition in Bangladesh since the Nobel Peace Laureate, Dr. Muhammad Yunus commenced operating Grameen Bank in 1976. While the journey of Grameen Bank started with a project in Jobra Village in the Chittagong district during a famine, the major motivation of Dr. Yunus for initiating a structured microfinance system was the denial of access of rural poor people to commercial loans due to the lack of personal collateral, even though the requirement was less than a dollar (Kabir, 2016).[1]

According to McKenzie and Woodruff (2008), the Grameen Bank project works in over eighty thousand villages and serves more than six million borrowers. Following the

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[1]For detail, see Microworld.org

success of the Grameen Bank project during the 1970s and 80s, there was a rapid global growth in the number of new micro–finance institutions, many of them initiated by NGOs and funded by grants and subsidies from public and private sources. Besides being a development tool, microfinance has emerged as an effective tool for rural financial transactions in Bangladesh and many other countries for the poor and small–scale producers (McKenzie & Woodruff, 2008).

Most microfinance institutions in Bangladesh claim to alleviate at least the intense level of poverty; however, many academic researchers suspect that microfinance programmes have led poor people into a debt trap since these people often accept new loans to repay existing microfinance loans (Khandker, 1998). Moreover, with nearly $15 billion of foreign investment injected into the micro–finance system by the end of 2008, most of which came from government development organisations such as the World Bank, the social and economic effects of these microfinance programmes were inconclusive. Some authors are very optimistic about microfinance (Hossain, 1988; Khandker, 1998; Schuler, et al. 1997; Remenyi, 1991; Holcombe, 1995) while others are extremely pessimistic (Adams & Pischke, 1992; Rogaly, 1996; Buckley, 1997), and some remain in the middle (Hulme &Thankom, 2009). Microfinance has benefited poor households and shows the potential to mitigate poverty (Khandker, 1998); however, there also has been empirical research where the findings show that microcredit has minimal impact on poverty reduction (for example, Morduch, 2000). Thus, the literature on microfinance is mixed in terms of impact analysis.

In addition to poverty alleviation, many economists claim that microfinance increases schooling rates and reduces child labour among the families of microfinance clients (Littlefield, et al, 2003; Maldonado & Gonzalez–Vega, 2008). The impact of education and children's schooling on economic development has been the subject of extensive empirical research; however, in the past, empirical research on the impact of microfinance on education was limited and the issue is largely unexplored. In particular, very limited research has been conducted on the impact of rural microloans on the life of rural children in terms of their schooling. Some recent studies, for example, Menon's (2005) on Pakistan and Nelson's (2011) on Thailand suggest that loans led to a large decline in school participation and an increase in child labour participation. However, very few have investigated the specific effects of microfinance programmes on children's continuation of schooling in Bangladesh. Studies on remote rural areas' schooling issues are almost missing. However, the topic is important because poverty cannot be fully alleviated unless the future rural generations are educated. In general, microfinance is predicted to be a major tool in rural poverty alleviation. Hence a positive linkage between microfinance and rural education could be beneficial.

Conceptually, the impact of microfinance which was developed with the motive to eliminate poverty should work in line with improving the standard of living and thus, improving human skills through enhanced children's education. This paper examines this perception by complementing various existing literature and doing empirical analysis based on a survey performed in some remote rural areas in the Southern part of Bangladesh. The respondents are the borrowers of micro–credit loans. Thus, the paper explores if there is any relationship between rural microfinance facilities and the stance of rural children's education. In particular, the paper attempts to identify if household involvement in microfinance loans

can influence the dropout of child education in the rural areas of Bangladesh. The study also examines if there is any other factor involved as a catalyst in this process. Therefore, the paper is an attempt to fill the void in the literature by providing a quantitative analysis of the potential impact of microfinance on rural children's education using primary data collected from remote rural microfinance borrowers.

By running a survey on the microfinance borrowers of the villages of Agarpur and Thakurmollik—two large remote unions (sub–districts) of Barisal district, and doing a cross–section analysis of 100 observations (school–aged children) collected from over 200 households by applying the logistic regression model and the Heckman's Two–step selection model, the study finds that neither the microfinance loan nor the demography of the borrower can significantly influence the dropout or enhancement of child education. However, some other factors are observed to influence drop–out decisions. For example, the number of school–going kids in the family and their level of schooling significantly influence the dropout issue. For each unit increase in kids going to primary school compared to other levels of education, there is a decrease in dropout. The dropout tendency increases as kids move from primary to secondary or higher secondary level. Besides, with an increase in the number of total kids in the family, there is an increase in dropout. This result follows the conventional perception that dropout from school increases, especially in rural areas, as the level of kids' education increases or the number of kids in the family increases.

In a recent study on Bangladesh, Bhuiya, et al. (2019) claims a positive relation between school attendance in rural areas and microfinance membership; however, fail to explain the nexus between microcredit loans and school enrollment. The current study extends the literature by mitigating this gap, particularly, by explaining the factors that influence kid's schooling in the rural areas of Bangladesh. The study evidence that the drop–out issue is subject to different socio–economic factors, and, at least in the remote rural areas, the microfinance loan burden neither contributes to increasing the level of children education of the borrowers nor causes any harm to kids' schooling.

This paper is organised in the following order. Section Two examines the literature on the extent to which economists believe that microfinance programmes have proved to be beneficial for the poor; and identifies a research gap. Section Three presents the details of data collection and econometric approaches adopted in this research. The empirical findings and the analysis of results and discussion are presented in Section Four. This paper is concluded in the final section, along with policy recommendations and limitations of this study.

2. MICROFINANCE: OVERVIEW AND THE REVIEW OF LITERATURE

2.1. Microfinance in Bangladesh: An Overview

Microfinance operations have been practiced in Bangladesh since the 1970s.[2] Under this operation, loan amounts up to BDT 50,000 are generally considered microcredit, and loans above this amount are considered microenterprise loans. According to the Central Bank report on Microfinance, Bangladesh has four major types of institutions for micro–finance activities—first, Grameen Bank (GB), which is a

[2]For detail, see Microworld.org

member–owned specialised institution; second, around 1500 Non–Governmental Organisations (NGOs) like BRAC, Proshika, ASA, BURO–Tangail, BEES, CODEC, SUS, TMSS, Action–Aid, etc.; third, commercial and specialised banks like Bangladesh Krishi Bank (BKB), Rajshahi Krishi Unnayan Bank (RAKUB); and finally, government–sponsored microfinance projects/Programmes like BRDB, Swanirvar Bangladesh, RD–12 and others under the Ministry of Women & Children Affairs, Ministry of Youth & Sports, Ministry of Social Welfare, etc.[3] Microfinance institutions (MFIs) provide collateral–free loans to poor people and allow them to be involved in various income–generating activities and entrepreneurship.[4] Within underdeveloped communities, microfinance institutions provide necessary credit access and financial services that are needed to develop rural economic activities.

According to the report published by the Microcredit Summit Campaign, which was held in 2010, the 3,552 MFI institutions have been serving 155 million MFI borrowers globally, which covers 533 million people in total including borrowers and their households. The Asian report on Bangladesh published by Microfinance Information Exchange (MIX) identified that BRAC provided a gross loan portfolio of BDT 2,027.34 million in 2017, whereas BURO Bangladesh provided BDT 466.32 million.[5] The total amount of credit that was disbursed till 2013 by all the MFIs was BDT 515,364.60 million. According to InM (2015), there are about 1000 listed MFIs now operating in Bangladesh. Until June 2014, around BDT 403 billion (which includes Grameen Bank, 10 Government projects, and Commercial Banks) in microfinance loans were outstanding in the market, while the savings amounted to about BDT 237 billion (Ullah & Haq, 2017). The total clients in this sector are 33.73 million (including 8.62 million clients from Grameen Bank).[6]

2.2. Microfinance Institutions and Its Relationship with Education

The United Nations Millennium Development Goals Declaration was signed in September 2000 by 191 UN member states, which is a pledge to combat poverty, hunger, disease, illiteracy, environmental degradation, and discrimination against women. Among the eight Millennium Development Goals (MDG), a major goal is to achieve universal primary education.[7] Some of the MFIs are involved in rural primary education. For example, BRAC runs primary schools in regions where the formal education system has not yet reached. These schools are complementing mainstream school systems with innovative teaching methods and materials.[8] Among others, Grameen Bank offers scholarships that are given to the high–performing children of GB members.[9] Also, education loans are given to the children of the members who reach the tertiary level of education.[10]

[3]https://www.bb.org.bd/saarcfinance/seminar/cpbdesh.php

[4]For detail, see GrammenBank.org

[5]For detail, see www.themix.org

[6]Report by the Microcredit Regulatory authority (MRA), retrieved from http://www.mra.gov.bd/images/mra_files/News/mcinbd17082015.pdf

[7]https://www.who.int/topics/millennium_development_goals/about/en/

[8]For detail, see www.brac.net

[9]Nobelprize.org (2006).

[10]For detail, see www.grameen.com

Microfinance works differently in different regions due to diversity in population density, peoples' attitudes towards debt, group cohesion, enterprise development, financial literacy, and financial service providers (Aghion & Morduch, 2005; Fischer & Ghatak, 2011). Several economists in their empirical research observed that microfinance does both harm and good to the livelihoods of the poor (Duvendack, et al. 2001). Many NGOs have successfully included girls and children of low–income parents in non–formal schooling. However, microfinance sometimes creates barriers to sustainable local economic and social development (Bateman & Chang, 2009). Several macroeconomists in their empirical findings signify that even the presence of these NGOs could not eliminate child labour, which interferes with schooling (Basu, 1999).

Khan (2003) describes education as a high priority for overall economic development. The demand for education depends both on household preferences and on budget constraints, both being influenced by income levels. The marginal utility of an extra unit of income is mostly higher for a poor household. The schooling decisions of poor households are positively influenced by income levels (Duryea & Pagés, 2002). Any adverse shock that reduces income is expected to negatively influence these decisions. However, Sharma & Zeller (1999) suggest that higher and particularly stable income flow in a household positively influences the demand for a child's schooling.

In the long run, human capital formation has been recognised as an effective tool for reducing poverty (Bils & Klenow, 2000; Lindahl & Krueger, 2001). Childhood education is indicated as a crucial element in poverty alleviation and economic growth at the macro level as well as for the household (Quaegebeur & Marthi, 2005). However, previous literature suggests mixed effects on education from microloans (Duvendack, et al. 2011). Especially, the empirical research observed that access to education is limited when households are engaged in Microloans (Barro & Wha, 2000).

The impact of borrowing on labour supply and schooling of children often depends on the gender of the credit programme participant (McKernan, 2002). When the loan participant is a female, the schooling of children is less affected compared to that of a male participant. Jacoby (1994) also observed that in rural regions, access to credit reduces child labour and increases schooling in developing countries. However, Shimamura & Lastarria–Cornhiel (2009) found that children of credit clients are less likely to attend school and often get involved in agricultural production, especially in the production of tobacco.

Ray (2000) in his research on Pakistan and Peru demonstrates that there is a strong negative correlation between household income and child labour, while there is a positive relationship between household income and school enrollment. In addition, as stated in the studies carried out by Ray and Lancaster (2005), there is a negative association between children's dropouts (which results in child labour) and access to credit across various countries. When a rural household is associated with microfinance and is engaged in land cultivation or any labour–intensive microenterprise, they tend to send their children to work during any difficulty to repay the loan (Maldonado and Gonzalez–Vega, 2008).

Aghion & Morduch (2005) argued that microfinance is useful to mitigate adverse shocks and keep household production stable, as well as increasing a family's spending

on healthcare and education. Since the capacity to spend on education increases, microfinance borrowers should be able to avoid their children's school dropouts. This, in turn, should be able to reduce poverty by improving the quality and productivity of future generations. However, research done by Islam and Choe (2009) suggests that children of primary school age have a higher enrolment rate compared to their older siblings, the latter being more likely to drop out of school and go to work to support their family. Maldonado and Gonzalez–Vega (2008) also support the idea that older children are more likely to show an education gap. Khandker (1998) observed a similar result for Bangladesh, especially for boys.

Theoretically, income generated in a household through participation in microcredit programmes should result in higher spending on schooling (Brownstein,et al. 2007). Most of the rural people in recent times recognise the importance of education and have the desire to educate their children. The financial constraints, however, prohibit them from doing so (Barnes, et al. 2001). MFIs can take initiatives to support child education by providing families with income stability, eventually enabling them to afford schooling. Although there are no tuition fees charged at the primary education level, there are other direct costs involved such as the uniform cost, stationery costs, tiffin meals, transportation costs, and opportunity costs involved in the process. Hence, improving kids' schooling among microcredit borrowers may not work in practice as expected.

In view of the above discussion, the impact of microfinance facilities on children's schooling is inconclusive and largely country–specific. For rural Bangladesh, empirical research on this topic is limited and the impact remains unexplored. Even though there have been some studies on overall education, few have investigated the effects of microcredit programmes on a child's education and continuation of schooling.

The review of related literature suggests that the impact of microfinance should work in line with improving the standard of living and hence developing the human index through children being educated. Thus, the study explores the relationship between micro–credit and its impact on reducing the dropout of children from schooling by complementing a survey on some remote rural areas of the southern part of Bangladesh.

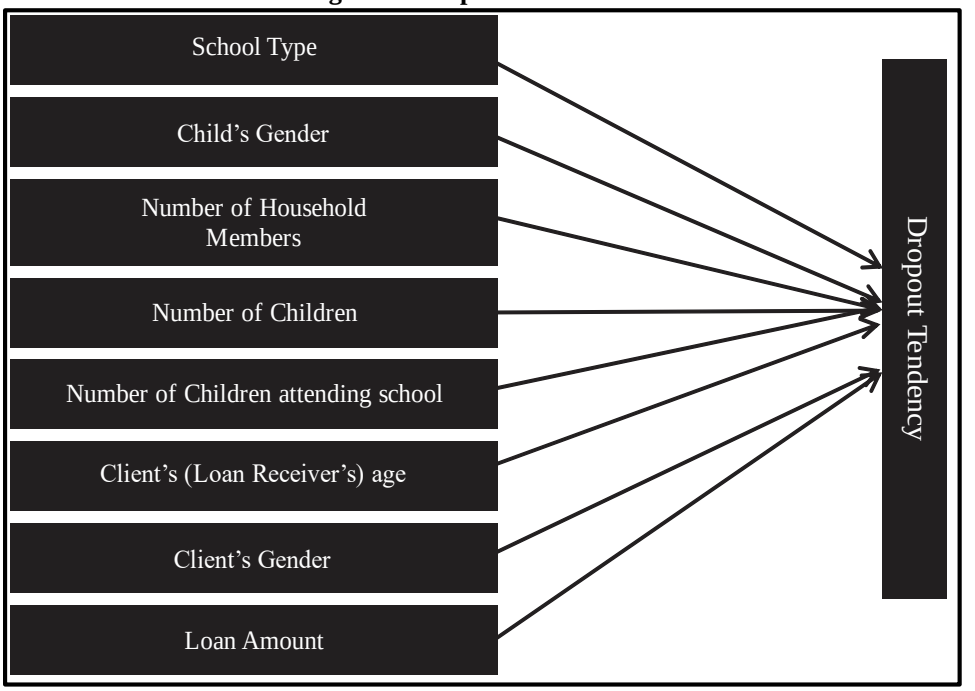
3. METHODOLOGY

This study proceeded in three stages. First, primary data is collected through survey; second, quantification of qualitative survey data as per the model; and finally, the organised dataset has been estimated using the logistic model technique and Heckman's Two–step selection model technique.

3.1. Survey Data Collection and Sampling Procedure

This study relies on a primary data collection method. The stratified random probability sampling technique has been used for the survey, where each member of the strata has an equal chance of being selected as a subject, provided they have taken micro–credit from different MFIs. According to Leary, et al. (1995), a stratified random sample will typically reflect the characteristics of the population.

Fig. 1. Conceptual Framework



The survey of households was conducted in the villages under two unions of the Barisal district of Bangladesh, namely Agarpur and ThakurMollik. The unions are selected using two criteria. First, villagers of both unions are mass users of microfinance loans (according to the Grameen Bank and BRAC representatives); and second, both unions are at remote rural sites and have limited communication to the nearest town. The study covers all 212 households from the villages of Agarpur and ThakurMollik unions, who have taken microfinance loans for different purposes. Thus, the whole Strata is covered by this study. However, out of this population, 100 households are usable since they have school–going children. The remaining households are dropped from the study since their children are already grown up and mostly migrated to other locations.

This is a cross–sectional study, which analyses the relationship of school dropout tendency with different variables identified in the theoretical framework as shown in Figure 1. The framework is developed based on existing literature. The validity of the variables is tested using the econometric model designed in section 3.2. Observations collected from the villages of two remote unions are expected to portray a real image of the situation in remote rural Bangladesh.

3.1.1. *Data Collection*

Theoretically, the appropriate model for a research methodology requires linking the main research question to the purpose, aims, and objective of the research (Saunders, et al. 2009). The questionnaire developed for this study attempts to gain a better understanding of the impact of MFIs on the social well-being of the children along with

their families i.e., the clients of MFIs. Thus, the survey questionnaire had two parts. The first part of the questionnaire contains information about the household children, and the second part is about the household itself which includes the number of household members, participation in the MF loan or not, amount of loan taken, repayment of loan on a weekly basis and the total amount the household repay with interest.

The questionnaire is designed to collect information directly from microfinance borrowers in rural areas. The survey did not record any personal information and the respondents were informed that the data will not be used for any professional benefits other than academic purposes. A sample questionnaire is presented in the appendix, which includes both Yes/No responses and numeric values like the amount of loan, number of children, and payment numbers. The Yes/No responses are converted to quantitative form using dummies. This technique is used to quantify the qualitative information and to include that information in the econometric model (Holden & Lynch, 2004; Adam, et al. 2014).

Most of the respondents of the survey are primarily women who are directly engaged with microfinance borrowing. Respondents of the Agarpur union are relatively cooperative and are found relatively literate yet unemployed in terms of a fixed job. However, some difficulties were faced while surveying ThakurMollik. Some participants were hesitant to answer questions regarding the loan amount suspecting that the researchers had the intention to ask for money, while others misunderstood the researchers are government agents who went there to help them out of their loan misery. Some households even demanded money for responding to the questionnaire. Some respondents could not answer the percentage of interest that they were paying for microfinance loans. Hence, the researchers calculated the rate and cross–checked with households and officials of MFIs.

3.2. Data Organisation and Modeling

The qualitative survey data is quantified using the dummy variable technique and has been statistically analysed with the aid of the econometric model. We develop a model relying on the conceptual framework and apply the logistic estimation technique and Heckman's Two–step selection model to do an econometric analysis of that model. Thus, the study validates the factors that would statistically significantly influence the dropout tendency of children schooling among rural microcredit borrowers.

3.2.1. *Statistical Modeling and Econometric Analysis*

The basic relationship between the independent variable and dependent variable is given by –

$$Y = a + bX + \varepsilon \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad (1)$$

where Y denotes the value of the dependent variable for a given value of the independent variable (X). This regression equation of Y on X means that each unit change in X produces a change of b in Y, which is positive for direct and negative for inverse relationships. a is the constant for the model while ε represents the error term.

With a goal to illustrate the independent factors that may impact school dropout tendency for kids, we consider the households that meet both criteria of having school–

going children and being clients of the microcredit programme. In view of Equation 1, the survey data has been organised according to the following multiple regression model:

$$Dropout = \alpha + \beta_1 V_1 + \beta_2 V_2 + \beta_3 V_3 + \beta_4 V_4 + \beta_5 V_5 + \beta_6 V_6 + \beta_7 V_7 + \beta_8 V_8 + \varepsilon \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad (2)$$

The explanatory variables of Equation 2 are as follows: V_1– Child's Gender, V_2– School Type, V_3– Loan Receiver's Age, V_4– Loan Receiver's Gender, V_5– No. of Household members, V_6– No. of Children, V_7– No. of Children attending school, and V_8– Loan Amount. In this model, if the Loan Amount (V_8) is significant, there exists evidence that involvement in microfinance loan–based activities influences the decision of school dropout for the kids. Other variables appear either as indirect factors or as control variables.

The detail for the variables is given below:

- Dropout Tendency: Dropout tendency has been considered as the dependent variable to test under which circumstances children are subject to drop out from school. The variable is coded as binary: dropout = 1 if the student discontinues schooling and 0 otherwise.
- Child's Gender (V_1): This variable has been taken as a dummy which was considered as Male =1 and Female = 0. The variable illustrates whether dropout tendencies are prominent among girls or boys or both.
- School Type (V_2): This variable has been taken as a dummy which was considered as Primary school = 1 and Otherwise= 0. The variable illustrates whether the dropout tendency is higher or lower when the students are at their primary level compared to any higher level of study.
- Loan Receiver (Microcredit Client's) Age (V_3): This variable is taken as an age group dummy variable. The age groups include 20–29, 30–39, 40–49, 50–above. Participants were rural inhabitants and less literate, so identifying the participants' ages was challenging. Often the participants were unaware of their age and needed verification from alternative sources. For example, the household head's age was mentioned as 20 while his son was approximately 12 years old and was a student of grade 7. Later, an elderly citizen confirmed that the household head's age would not be any less than 30 years.
- Loan receiver's Gender (V_4): Literature suggests that the number of student participants increases when the MC client is female compared to when the client is male (Khandker, 1998; Yunus & Weber, 2010). This issue was controlled by using the Loan receiver's gender variable, such that (Father)Male=1 and (Mother)Female=0.
- Number of Household Members (V_5): During the survey, it was observed that 90 percent of the family had the nuclear family structure and the number of household members ranged from 3–6. This number is controlled to see if a larger or smaller number of family members would have any significant impact on a child's drop out from school. The variable appears as numeric.
- The Number of Children in the Households (V_6): The number of children in the household is taken as a numeric variable to test if many children (e.g. –3 or

more children) in the family has any significant impact on the dropout tendency compared to fewer children (e.g.– 1 or 2 children).

- The Number of School–going Children (V_7): This variable was an approach to discover if there was any child in the household eligible for school– education but was being deprived of it. This is also a numeric variable. Besides the number of total children, separately controlling for the number of school–going children is important. In rural areas, there is a tendency to send the younger kids to school and to involve the elder ones in economic activities, irrespective of gender or the total number of kids.
- The Loan Amount Taken (V_8): The survey received a perception from the MF clients that they repay approximately 30 percent more than the principal amount. This interest rate is fixed if the loan is taken for 1 year and decreases when the loan is taken for 2 years. To see if the loan burden imposes any significant impact on a child's schooling, this model controls 'the amount of borrowing'. The variable appears as numeric, with the unit taken as BDT1000.

Abdulai & CroleRees (2001), Atamanov & Berg (2012), and others (for example, Joanne, et al. 2002; Sperandei, 2014 and Steyerberga, et al. 2001) suggest that the Logistic model approach is more reliable over the OLS approach when the dependent variable is a binary number. Hence, a logistic model approach is followed for this study. Heckman's Two–step selection model approach is applied to verify the results.[11] Results for both the Logistic model and Heckman's Two–step selection model estimation are presented and discussed in the Results (Section 4) section.

4. RESULTS

This section presents the estimated results and discusses the findings.

Table 1 presents the results of the Logit model. Here, Model 1 is estimated with suppressed constant, while Model 2 is estimated by taking 'Loan receivers aged 20–29' as a base and dropping 'No. of household members' from the Family Member group and 'Child's Gender' from the Gender group since these variables are observed as is insignificant. The results include the coefficient estimates, the b values, with their asymptotic t–statistics in the first column, and estimated marginal effects at the mean, the γ values, in the second column. Here, γ_i indicates the strength of the correlation between the probability of a parameter 'happening' and the respective explanatory variable, holding all other explanatory variables at their means.

Following both equations of Model 1 and Model 2, we observe that two variables (School type and No. of children attending school) significantly negatively influence the school dropout tendency, while one variable (total No of children) significantly positively influences the same. The coefficient of the three significant variables can be explained as follows:

School type: The coefficient for School type is –3.996, indicating that compared to the higher level of education, there is a 3.996 percent decrease in the school dropout tendency among the primary level students, ceteris paribus.

[11]Please see Morrissey, et al. (2016) and Strazzer, et al. (2003) for details.

Table 1

Logit Model for Dropout Estimation (b *and* γ)

Variable (Dropout)	Model 1		Model 2	
	b	γ	b	γ
School Type	**–3.996*****	**–0. 493*****	**–3.963*****	**–0.493*****
	(0.861)	**(0.128)**	**(0.842)**	**(0.126)**
Gender				
Child's Gender	0.092	0.011		
	(0.730)	(0.090)		
Loan Receiver's Gender	0.757	0.093	0.803	0.100
	(0.928)	(0.116)	(0.911)	(0.115)
Age				
Loan Receiver's Age 20–29	–0.416	–0.051	Base	
	(3.128)	(0.384)		
Loan Receiver's Age 30–39	–1.645	–0.203	–1.252	–0.156
	(2.990)	(0.361)	(1.334)	(0.166)
Loan Receiver's Age 40–49	–1.063	–0.131	–0.722	–0.089
	(2.972)	(0.363)	(1.256)	(0.158)
Loan Receiver's Aged 50 and	–2.294	–0.283	–1.881	–0.234
above	(3.291)	(0.400)	(1.488)	(0.190)
Family Member				
No of Children Attending School	**–2.053*****	**–0.253*****	**–2.029*****	**–0.252*****
	(0.581)	**(0.084)**	**(0.584)**	**(0.084)**
No. of HOUSEHOLD Members	0.552	0.068		
	(0.912)	(0.112)		
No. of Children	**1.250*****	**0.154*****	**1.652*****	**0.148*****
	(0.845)	**(0.108)**	**(0.546)**	**(0.040)**
Loan Amount (Unit in 1000	–0.008	–0.001	–0.008	–0.001
BDT)	(0.017)	(0.002)	(0.016)	(0.002)
Cons			1.043	
			(1.906)	
Number of Obs.	100	100	100	100
Log Likelihood	–29.414		–29.598339	

Note: Here, ***, **, and * indicate the significance level at 1 percent, 5 percent and 10 percent.

Number of Children Attending School: The coefficient for the number of children attending school is –2.053, indicating that with a one–unit increase in the number of children in a family that is attending school, there is a 2.053 percent decrease in the school dropout tendency, ceteris paribus. In other words, if the family has more school–going kids, the tendency to drop out decreases. This result indicates that if the family has more school–going kids, they all go to school together and are involved in other household and/or economic activities together after returning from school. However, if the number of school–going kids is less, generally the girl stays at home, or the elder son stays at home and the other goes to school.

Thus, the result reflects the traditional rural perception towards the elder kid or the female kid. In addition, the survey area being remote from the locality, traveling distance plays another important role behind this factor.

Number of Children: The coefficient for the No of children is 1.250, indicating that with a one–unit increase in the number of children in a family, there is a 1.250 percent increase in the school dropout tendency, ceteris paribus. This result conflicts with the result of the No. of School attending kids. The reason is the typical birth pattern and joint–family effect of rural families. When the number of children is greater, families generally have kids of different ages (both school–going and adults). Hence, the parents have grown–up kids to help with their economic activities, and the education of school–going kids is uninterrupted. However, if all kids are of school–going age, a drop–out tendency for one or more kids appears among parents.

The results are confirmed by the odd ratios estimated from the logistic model presented in Table 2, for both Model 1 and Model 2.

Table 2

Logistic Model for Dropout Estimation (Odds ratio)

Variable (Dropout)	Model 1 Odds ratio	Model 2 Odds ratio
School Type	**0.018*** **	**0.019*** **
	(0.015)	**(0.015)**
Gender		
Child's Gender	1.095	
	(0.800)	
Loan Receiver's gender	2.131	2.232
	(1.978)	(2.033)
Age		
Loan Receiver's Age 20–29	0.659	base
	(2.064)	
Loan Receiver's Age 30–39	0.193	0.285
	(0.577)	(0.381)
Loan Receiver's Age 40–49	0.345	0.485
	(1.026)	(0.610)
Loan Receiver's Aged 50 and above	0.100	0.152
	(0.331)	(0.226)
Family Member		
No of Children Attending School	**0.128*** **	**0.131*** **
	(0.074)	**(0.076)**
No. of Household Members	1.736	
	(1.581)	
No. of Children	**3.491*** **	**5.221*** **
	(2.950)	**(2.854)**
Loan Amount (Unit in 1000 BDT)	0.991	0.991
	(0.016)	(0.016)
Cons		2.838
		(5.411)
Number of Obs	100	100
Pseudo R2		0.5219
Log Likelihood	–29.413936	–29.598339

Note: Here, ***, **, and * indicate the significance level at 1 percent, 5 percent and 10 percent.

Table 3 presents the results of Heckman's Two–step selection model estimation. For the Two–step model, the total number of observations includes 100, where the selected observation is 41 and the unselected observation is equal to 59. Selected observation indicates that the students continue schooling, while the unselected observation indicates that the students do not continue their schooling. Here Wald chi2 is 428.14 which is high, and the probability of chi2 is 0.000. Thus, the selection model is confirmed as a good model. The Lambda value is 0.115, which is significant at a one percent level, indicating that the model is acceptable. In addition, the RHO value is 0.779 which is greater than zero, so there is a correlation between the two models.

Table 3

Heckman's Two–step Selection Model for Dropout Estimation

Variable (Dropout)	Coefficient (Standard Error)
School Type	**–2.443*****
	(0.705)
Gender	
Child's Gender	0.483
	(0.554)
Loan Receiver's Gender	0.434
	(0.620)
Age	
Loan Receiver's Age 20–29	–1.279
	(1.849)
Loan Receiver's Age 30–39	**0.175****
	(0.071)
Loan Receiver's Age 40–49	–2.127
	(1.705)
Loan Receivers Aged 50 and above	–2.866
	(1.909)
Family Member	
No of Children Attending School	**–0.9717*****
	(0.360)
No. of Household Members	**0.275*****
	(0.045)
No. of Children	0.563
	(0.4816)
Loan Amount (Unit in 1000 BDT)	Omitted
Number of Obs	100
Wald chi2	428.14***
Lambda	0.115**
RHO	0.779

Note: Here, ***, **, and * indicate the significance level at 1 percent, 5 percent and 10 percent.

A total of four variables are observed to have a significant impact on school dropout. The variables are School types, Loan receivers aged 30–39, and No. of children attending school and No. of household members.

School types: the coefficient for School types is –2.443, indicating that compared to the higher level of education, there is a 2.4 percent decrease in the school dropout tendency among the primary level students. This result follows the logistic model.

Loan Receivers aged 30–39: the coefficient for loan receivers aged (30–39) is 0.175, indicating that for the loan holders whose age is between 30 to 39, their children's school dropout tendency is 0.17 percent higher compared to the others. This may happen due to the overall family expenditure pressure of the middle–aged group.

Number of household members: the coefficient for the number of a household members is 0.275, indicating that with a one–unit increase in the number of household family members, there is a 0.27 percent increase in the school dropout tendency, ceteris paribus. This may be the larger–member–poorer family effect.

No. of children attending school: The coefficient for No. of children attending school is –0.971, indicating that with one unit increase in the number of children in a family that is attending school, there is a 0.97 percent decrease in the school dropout tendency, ceteris paribus. This result follows the logistic model. The reasoning is the same as discussed above in Table 1.

Overall, findings of both the Logistic regression and Heckman's Two–step selection model combinedly support the negative influence of school type and the number of school–going kids on drop–out. The result suggests that social factors such as the number of kids in the family and the level of kids' education are influential in the dropout decision. In comparison, the loan installment burden of the microcredit borrowers does not show any significant motivation in the dropout decision. Hence, there is no evidence for microcredit to elevate or hinder Rural Child Education in Bangladesh, at least in the selected localities. The model has been estimated with alternative setups, the results are presented in Appendix 1. The results support the outcome of Table 2 and Table 3.

A few issues are worth mentioning to justify the results. First, there are some social beliefs in rural culture such as getting a female child married at an early age. One of the local Grameen Bank officers reported that the villagers have the belief that basic primary education is enough for girls because they will be homemakers in the future. For example, some responses are—*"Our daughter got married soon after she completed standard 7, the proposal was very good"*. Besides, most female children are observed to get admitted to school a year or two later than male children, since female children are mostly subject to taking care of their young siblings and helping with the household chores. Second, since these are remote areas, the distance they travel each day from home to school could be an important factor in school dropout decisions. There were several households where the children had to drop out because travel expenses were high when they had to cross the river (Shondha) via an engine boat. This perception explains the negative coefficient of the number of children attending school. Third, many children are observed not to start schooling before the age of 7, since their parents do not have an accurate idea or knowledge about the children's age. For example, some responses were like *"My third son was born before the last election"*, not sure about the exact age. Altogether, rural children commence schooling late compared to urban children. They also need to look after their family and mostly their young siblings when their father and/or mother are away for work

and actively participate in the chores. Fourth, multiple female dropouts occur as they started school late and couldn't pursue after primary or secondary because their family preferred sending the male children to school as the male children are considered the future bread–butter earners. On the other hand, male children leave schools to find full–time jobs and to support their families. For example, a few tea stalls and vendors in the market are found as school dropouts. Finally, there is a dropout tendency amongst youngsters due to a lack of interest in education.

5. CONCLUSION

Research on microcredit programmes operated in different regions of Bangladesh has observed mixed impact on different dimensions of the participant's socio–economic well–being. Considering such confusion, this research investigates if microcredit influences the school dropout decision of the microcredit holders about their kids. In particular, the study tests if the loan burden (weekly installment amount) significantly affects the school dropout decision. The results indicate that school dropout decisions are more of an outcome of social behaviour and beliefs. Essentially, the survey includes wood craftsmen, fishermen, agriculture farmers, van drivers, vendors, etc., who are mostly day labourers. These villagers lack future scopes and better opportunities, with each passing generation becoming reluctant to send their children to school, believing that they need only a basic education for these jobs. The youngsters also lack interest in attending school. As a result, the dropout tendency is enhanced at a higher level of education. However, no evidence is observed that microcredit loan amount significantly influences the dropout decision. Overall, the nationwide microfinance movement in Bangladesh has not very well served for, if not failed in, really alleviating rural poverty and promoting economic development in general as originally purported and expected because the household's ability to support kids' schooling as an important sign of poverty alleviation has not been much empowered.

A few policy measures could resolve the situation. First, awareness and support programmes for female child education are already in practice in Bangladesh, some boost up of the process in the remote areas would be effective. Second, there are primary schools in rural areas; however, more accessible, and attainable schooling facilities for children in remote locations require attention. Third, more intensive awareness programmes to enlighten the remote villagers on the importance of education to promote economic growth and a promising better future could work well. The microfinance institutions may work in collaboration with the government to resolve these issues, especially in remote rural locations that have difficulty accessing common rural facilities. The research offers future research scope—covering diversified areas in such study; controlling for loan purposes in the model; and including both microcredit borrower and non–borrower parents to understand a broader perspective which is out of scope for this study.

APPENDIX

1. Questionnaire Format:

Section– A

1. Name: _____ ID: _____
2. Gender: (a) F (b) M

3. School Type:
a) Primary (b) Secondary

Section– B

4. Number of HOUSEHOLD members: _____
5. Number of children: _____; _____ F _____ M
6. Participant of the MF loan:
a) (a) YES (b) NO
7. Age of the borrower:
a) 20–29
b) 30–39
c) 40–49
d) 50 and above
8. Name of MFI: _____
9. (a) Total amount of loan taken: _____
(b) Amount on a weekly basis (converted by the researcher): _____
10. Amount repaid per week: _____
11. Loan duration: _____ year(s)
12. Number of children attending school: _____
(a)Primary _____
(b)Secondary _____
13. Any dropout: (a) _____ YES (b) _____ NO
14. Open discussion or opinion:

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Employing Assistive Technology (AT) for Children with Special Educational Needs: A Case Study from Pakistan

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In the era of the technological revolution, substantive research is required to assess the effectiveness of Assistive Technologies (AT) for the educational needs of children with special needs. Although studies have been conducted to examine the usefulness of integrating assistive technology into teaching content that caters to CWSN. However, it remained a less explored area in the context of developing countries, particularly in Pakistan. Also, there is a lack of awareness regarding the use of AT in the context of Pakistan. The paper addresses how assistive technology can be utilised to educate CWSNs effectively and transform their lives. It also explored the challenges related to its accessibility and availability. The case study design was adopted, and semi-structured interviews were conducted with the administrator, coordinators, and teachers. The interviews were transcribed and analysed by using thematic analysis. The findings of the research study indicated that the quality of life of CWSNs can be made not just easier, but AT can contribute to their overall well-being.

Keywords: Assistive Technology (AT), Case Study, Children with Special Educational Needs (CWSN), Educational Transformation, Inclusive Education, Sustainability, Thematic Analysis

1. INTRODUCTION

The educational world has transformed massively, which is a consequence of the revolution in technology. During the technological era, it is obligatory to make technology available and accessible for an effective teaching and learning process (Krasniqi, et al. 2022). The pandemic resulted in the closure of educational institutions which affected learning and development. This happened to both children with and without disabilities, however, children with disabilities suffered more as they had problems related to retention and memory. COVID-19 badly affected their academic and social activities (Najam, et al. 2022). Therefore, AT is a need of the day as it enables expanding the functioning of CWSNs and makes them independent. AT has a broad range of tools from simple wheelchairs to more intricate devices and educational software. The quality of education provided to children with special educational needs can be enhanced using assistive technology but can also contribute to the achievement of Sustainable Development Goals (SDGs) (Harper, et al. 2017). The Sustainable Development Goals aim to transform the world of education by providing quality and technologically sound education. Therefore, assistive technology can serve the purpose.

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The SDGs provide an opportunity to create awareness and to work to increase the accessibility to assistive technology (Karki, et al. 2021).

It is important to note here that the terminology assistive technology refers to a tool or a device, any equipment, or even a software program that can improve the functionality of persons with disabilities (PWD) or children with special educational needs (CWSN) or children with disabilities (CWD). It could also comprise tools that help them achieve their day-to-day tasks independently. It can include mobility devices, for example, walkers, and innovative software programs that can support diverse disabilities, such as learning disabilities and audio-visual impairment, to name a few (Ahmed, 2018). It is very important to understand that these intricate devices help improve the functionality of a CWSN but also make them independent, for instance, there is software available to magnify the screen and help those who are visually impaired (Qwuor, et al. 2018).

It is a need of the day to encourage equity and promote the inclusion of children with special educational needs in a mainstream setup by equipping them with resources (Hameed & Manzoor, 2019). Assistive technology can fulfill the dream of turning inclusion into a reality (Harper, et al. 2017). Assistive technology is transforming the lives of CWSNs by enhancing their functionality and reducing their dependence. For instance, the use of mechanical devices including hearing aids intricate software for instance magnifiers for facilitating visually impaired children, and other text-to-speech software are available. All these are transforming the lives of CWSNs and are contributing to their well-being (Kamran & Siddiqui, 2023).

The sustainable development goals demand an equitable, favourable, and inclusive learning environment that mandates the inclusion of all learners in mainstream schools (Genc, et al. 2021). Children with special educational needs are those having any physical, intellectual, behavioural, or emotional disability that requires inclusion by the school or any other organisation, workplace, or community (Fernandez-Batanero, et al. 2022). It comprises a range of disabilities, for instance, autism, and learning disabilities, to name a few that need to be included. This is a philosophy of inclusion in which all individuals are provided with equal opportunities and resources so that they are not left out (Krasniqi, et al. 2022). In this regard, the most important resource is to incorporate assistive technology which can facilitate the inclusion of children with special educational needs into the mainstream setup (Owuor, et al. 2018).

Safdar, et al. (2019) stated that in the context of Pakistan, there are barriers to the use of AT, and these are lack of awareness and knowledge of how to use it. Siddiqua (2022) stated that the unaffordable prices of these devices are also a barrier and funding is also not provided. It was found that its need was not considered important because of a lack of knowledge and training regarding using it. The walking devices were supported but when it comes to using software teachers are found reluctant (Manzoor, et al. 2022). This shows a lack of knowledge and training, but the leading cause is financial constraints (Safdar, et al. 2019). The current research study also explored that the rare use of AT is due to a lack of funding and training. The present study found that if funds are to be available then affordability, accessibility, and availability will be improved. Its use is extremely important for CWSN to carry out their daily activities effectively and independently.

It is enormously significant to comprehend that the terminology special needs or special educational needs are synonymous with disability. These two terminologies are used interchangeably in this paper. According to Fernandez-Batanero, et al. (2022), the conventional method of using the same obsolete devices to deliver teaching and learning is reducing the eminence of educational programs and they are falling far behind what the sustainable development goals demand today. Therefore, a modernised form of educational programs in alignment with the latest tools and devices for both children with and without disabilities is needed (Harper, et al. 2017). To give assurance that children with special educational needs are equipped to meet the pedagogical challenges of the modern world these tools are proven to be effective. These tools enable one to cope with challenges with fewer complications (Krasniqi, et al. 2022). In this regard, the right use of the right technology is required. Publicising and familiarising the right assistive technology for students with disabilities can play a vital role in saving time and effort (Malik, et al. 2020).

In the context of Pakistan, the needs of children with disabilities are not realised effectively. However, policies are made to accommodate CWSN, but implementation remains questionable (Hameed & Manzoor, 2019). The need for inclusive education is felt and the country is striving hard to turn inclusion into a reality, but the dilemma is that willingness is missing (Kazmi, et al. 2023). However, with the increase in global concern regarding the implementation of inclusive education private educational institutions have established schools to promote inclusion (Kamran & Thomas, 2021). The current case study is an example of an inclusive school where students with autism, cerebral palsy, down syndrome, learning disability, and developmental disorders to name a few are included and accommodated effectively. The present research study explored the school because it is an inclusive school working for more than 25 years to promote inclusive education in the country. It also addressed challenges related to the use of AT.

Pakistan is a signatory to many international documents that argue for inclusion and endorsed sustainable development goals that demand quality education. The indicators of quality education are the provision of resources that include technology incorporation (Kazimi & Kazmi, 2018). The research gap highlighted after an intensive literature review that the exploratory studies are not yet conducted in the context of Pakistan related to the incorporation of assistive technology for catering to children with special educational needs (Malik, et al. 2020). The current case study can significantly contribute to putting forward the effectiveness and challenges related to the incorporation of assistive devices.

The Study is Guided by the Following Research Questions:

RQ 1. How assistive technology is effective for teaching children with special educational needs to promote inclusion in school?

RQ 2. What are the challenges that inclusive schools face regarding integrating assistive technology?

2. LITERATURE REVIEW

Amartya Sen's Capability Approach and Nancy Fraser's Theory of Social Justice Concerning Inclusion.

The research study is guided by the theoretical lens of Amartya Sen's Capability Approach (1980) and Nancy's Fraser concept of Social Justice (2007; 2008a). The

selected theories are the most relevant for research as these have facilitated cognising the ontological position and also provided a philosophical foundation for establishing the research problem. Amartya Sen, a well-known economist and philosopher stated the idea of capability deprivation. It explains that having wealth is not just enough. An individual must have the capabilities to lead a fulfilling life. He believes that poverty is not about lacking income but also lacking access to services, such as education, health, and other necessary goods (Sen, 1980). Relating this concept to children having disabilities it is needed to develop capabilities in our education system by making use of the social justice approach. Therefore, we focus on the social justice theory, which integrates justice into parity of capabilities and respect for human diversity, since the capacity approach is seen as possibly providing a robust framework for social justice in education. This is mainly because, in addition to their shared commitment to equal opportunity, both theories would effectively frame the discussion regarding equity with an emphasis on human capital (capabilities) and human rights approaches (social justice).

Nancy Fraser, a renowned contemporary American political philosopher, put forward the theory of social justice (2007; 2008a) which is grounded on the idea of participating equally and linked to inclusive educational practices. It is proposed that the execution of social justice is primarily pertinent when supporting children with disabilities to provide them with a setting in which they can contribute as equals. Fraser (2007) indicated that it is established on equality of participation as its normative foundation and illustrated recognition, redistribution, and representation as to its dimensions. According to this norm, "Justice needs a social organisation that permits all members of society to interact with one another as peers" (Fraser, 2007, p. 36). The cognizance of participation equality encompasses the equal distribution of material resources, irrespective of differences in terms of gender, race, and other features (Amanda, 2012). Nancy Fraser's concept of justice as an analytical tool is a determination to support inclusive education and it is enriched through the interconnected ideas of recognition, redistribution, and representation (Amanda, 2012).

This study intends to theoretically establish that the capability approach by Sen emphasises the development of capabilities and Nancy Fraser's social justice theory focuses on the creation of a socially just environment. These two are the core of accomplishing equality for children with disabilities. The current case study explored the inclusive school where the use of AT enabled it to accommodate children with disabilities in a regular classroom. The use of AT facilitated children with disabilities effectively as they merged with their peers without disability. It was found that devices, for instance, hearing aids and other software including screen magnification software for children with vision impairment improved the functionality of children with disabilities and they interacted well academically and socially.

Relating to the rationale of the study, it is pivotal to understand the curricular modification as Malik, et al. (2020) discussed that the prevailing curricular and teaching-learning materials are not in alignment with the needs of children with special educational needs. Individualising the teaching methods and materials is one of the key requirements including alternative adaptations in alignment with classroom introductions. The concept of differentiated instruction includes the learning targets that need to be individualised following the needs of learners with special educational needs and

modifying learning targets employing simplifying academic goals aligning with standards of learning. In addition, supplementary targets including self-management and social skills need to be developed (Qureshi & Razzaq, 2019). In this regard, the use of AT helps to achieve learning targets by fulfilling the individualised needs of CWSN to be included effectively in a mainstream setup. By doing this, we have provided evidence for the significance of a socially equitable environment for the development of capacities and their applicability to children with disabilities.

Kyriazopoulou, et al. (2017) developed a collective understanding of what establishes quality inclusive preschool provision. This was the purpose of a qualitative 3-year (2015–17) study of inclusive settings for children from 3 years to compulsory education across European countries. The data consisted of practitioners' descriptions of 32 example-inclusive preschools from 28 European countries, namely Germany, Sweden, and France, to name a few, and more exhaustive data gathered during short visits to eight of the example settings. The qualitative thematic analysis identified 25 subthemes demonstrating the observed components of inclusive early childhood education provision. These were structured within a framework that entwined the structure-process-outcome model with the ecological systems model. The resulting adapted ecosystem model for inclusive early childhood education encompasses five dimensions: (1) the outcomes of inclusive education, (2) practices, (3) organisational factors within the microenvironment of the preschool, (4) inclusive structural factors at the community, and (5) at national levels. The framework can be beneficial for practitioners as well as researchers and policymakers pursuing the development of the provision of inclusive early childhood education.

In the context of Pakistan, a study was conducted by Qureshi & Razzaq (2019) on the attitudes of teachers toward children with disabilities. Through the focus group discussion, the findings suggested that inclusive education is an argumentative concern in Pakistan. Educator participants in the study were at the forefront of carrying out the transformation agenda, of converting mainstream schools into inclusive schools, and were apprehensive and uncertain. They were interested in the transformation but were not certain how to carry out successful inclusion. The confusion, regarding whether to include children with disabilities or not and hesitations generate an environment prevalent with ambiguities; on one hand, teachers were concerned by the acceptance of children with disabilities in education being a basic human right; then refuting inclusion to children with disabilities would be an immoral act.

Carrington, et al. (2019) presented the synthesis of seven research papers on inclusive education in seven developing countries of the Asia Indo-Pacific region namely Bangladesh, Sri Lanka, Bhutan, Kiribati, the Pacific Islands, Nepal, and Macao. The analysis of the literature review identified the following six key themes: (i) Flaws in developing and implementing policy guidelines on inclusive education; (ii) Ill-prepared educational institutes to cater to children with special educational needs; (iii) lack of institutional resources leading to deprivation and consequently hindering the admittance of children with special educational needs; (iv) lack of collaboration among the stakeholders hindering the way towards inclusive education; (v) lack of professionally developed teachers leading to reluctance towards including these learners; and (vi) Curriculum with lack of teaching and learning strategies that cater children with special educational needs.

There is a need for instant policy change because without this change carrying out the inclusion agenda forward might face serious hurdles (Carrington, et al. 2019). The

government of any country must include classroom teachers in all phases of inclusive policy development. It is recommended that the teachers be given opportunities for professional development so that they can play a role in fulfilling sustainable development goals and pave the way toward inclusive settings in schools. The teachers expect the school administrators to support and provide opportunities for professional development that will enhance their self-efficacy, reduce levels of stress, and improve their teaching effectiveness (Carrington, et al. 2019).

A study was conducted in the context of Pakistan where AT was incorporated, and these were the use of audio files for the hearing-impaired students. The students studied independently and fulfilled their academic needs effectively (Siddiqua, et al. 2022). Aftab, et al. (2022) stated that software related to word recognition and concept mapping helped students who struggle with written expression, for instance, students with dyslexia and autism spectrum disorder. With the use of software, the problem was resolved. Similarly, Kazmi, et al. (2023) discussed that electronic text and tape books resolved reading issues. However, the use of AT in Pakistan is limited (Kamran & Siddiqui, 2023). Children with certain special educational needs struggle to attain four basic language skills. They find it difficult to read, listen, or write and these skills are hampered. To decrease the difficulties of children with special needs software is available (Najam, et al. 2022). The software has developed Talk 'N' Learn-based English phonic software, Digital Talking Book (DTB), Fixture App, and Talking Book Application (TBA). 'Learning Tool for Autism Spectrum Disorder Students' (ASD) is also developed to provide a conducive learning environment for students with autism spectrum disorder so that they can learn with ease (Kyriazopoulou, et al. 2017).

3. METHODOLOGY

3.1. Design

Yin (2006) steered scholars to be aware of the target audience who can benefit from the research findings when planning a study. "*A case study design is a valuable opportunity to reveal a situation with an in-depth understanding of an event or individuals through direct observations and collecting data in a natural setting"* (Creswell, 2013, p. 73). This present case study occurs within the boundaries of a single location or a "bounded system" (Creswell, 2014). Yin (2006) also specified the justification for carrying out a single case-study design is that it should signify distinctive settings. In the current research paper, the single location is an inclusive school. It is a unique case where inclusive culture has been sustained for the past 25 years.

To achieve the objectives of the research study and to answer research questions, a purposive sampling technique is used. It is a type of sampling technique where the researcher selects a sample based on information about the population and the research study itself (Miles & Huberman, 1994). In a case study, purposive sampling mentions the assortment of respondents because of some specific criteria (Patton, 1999). For that reason, respondents were included by developing some selection criteria. The selection criteria are mentioned in Table 1 below for all the stakeholders including teachers, administrators, and coordinators. A total of 16 participants were interviewed, including the school administrator, three coordinators, and twelve teachers. Also, classroom observations were carried out.

Table 1

Sample Characteristics

S. No.	Pseudonym of Participants and Sex (m/f)	Designation	Experience	Job Responsibilities
1	Mahmud (m)	Director/Administrator	25 years	Founder/Administrative affairs
2	Zareen (f)	Coordinator	10 years	Communication, collaboration, and delegation of tasks, monitoring and supervision
3	Rabia(f)	Coordinator	12 years	Communication, collaboration, and delegation of tasks, monitoring and supervision
4	Rushna(f)	Coordinator	10 years	Communication, collaboration, and delegation of tasks, monitoring and supervision
5	Farina(f)	Teacher	6 years	English, Maths and Science
6	Ghazal(f)	Teacher	9 years	Social Studies and General knowledge
7	Amber(f)	Teacher	10 years	English
8	Kainat(f)	Teacher	6 years	Urdu and Islamiat
9	Aiman(f)	Teacher	6 years	Social Studies and General knowledge
10	Mina(f)	Teacher	8 years	English, Maths and Science
11	Beenish(f)	Teacher	6 years	English, Maths and Science
12	Yasra(f)	Teacher	10 years	Science
13	Isra(f)	Teacher	10 years	Maths
14	Rimal(f)	Teacher	6 years	Urdu and Islamiat
15	Talib(m)	P.E. Teacher	10 years	Taekwondo teacher/sports teacher
16	Rina(f)	Teacher	6 years	English, Maths and Science

3.2. Data Collection

The data collection method was observations of classroom activities and field notes, but the main research tool was one-on-one semi-structured interviews with all the stakeholders mentioned in Table 1. A total of 16 teachers were interviewed and their classes were observed. In qualitative research, semi-structured interviews are a frequently used data collection method (Johnson & Turner, 2003). It supported gaining understanding and bringing together exhaustive and in-depth information. It is stated by Patton (1999) and Miles & Huberman (1994) that during a research study observation can be enormously imperative and the most expedient way to record is in the form of field notes.

The main research tool was one-on-one interviews. The current research study used self-reported data collected through semi-structured interviews. It enabled to gain insight and collect in-depth information. The other data collecting sources were classroom observation and field notes. For gathering the data from classroom observation, the present research study used a standardised research tool, i.e., the

"Inclusive Practice Tool." This tool is constructed by more than 40 educators in Massachusetts, USA for supporting inclusive practice in schools and facilitating educators to create a place for all students to flourish in general education settings. It is a tested tool to certify they were contributing to teaching and learning in inclusive classrooms. This tool in the form of a Guidebook was designed on the following guiding principles from (i) Universal Design for Learning, (ii) Positive Behavioural Interventions and Supports, and (iii) Social and Emotional Learning. In this Guidebook, a few other tools are also designed to support educator evaluation processes and assist educators in achieving higher levels of professional growth and satisfaction. In the current research study, the researcher used this guidebook to understand the pedagogical practices of teachers that create an inclusive learning environment in the classroom where children with and without disabilities learn together. For that purpose, "Inclusive Practice Tools." was a useful tool for carrying out observations. Beyond formal interviews, classroom observations and field notes helped to gather rich data. The other reason for using multiple data collection methods is triangulation, which discusses the use of multiple data collection methods in qualitative research to develop a complete understanding of the phenomena being studied (Patton, 1999). Triangulation in qualitative research is a strategy to test validity through the convergence of data from multiple sources. The present research study triangulated all data collection methods to ensure validity.

3.3. Data Analysis

To develop an understanding of each transcript the reading and the rereading of text and field notes were carried out several times. The technique of open coding was applied for data analysis (Strauss & Corbin, 1998). To start to see patterns and clusters in the data set, undertook data coding manually using a highlighter pen. This process is termed 'data reduction', which is the first stage in the process of data analysis (Miles & Huberman, 1994). The subsequent stage was getting the data into categorised chunks, which is known as 'data display' (Miles & Huberman, 1994). According to Miles & Huberman (1994) 'conclusion drawing/verification' is the next stage in the analysis of data in which themes were analysed (Boyatzis, 1998). The same process was followed for data analysis. Reliability of findings was ensured using triangulation, prolonged engagement with data, peer debriefing, and member checking to ensure the social validity of the findings with participating stakeholders (Lincoln & Guba, 1985). Themes and subthemes were identified as the effectiveness and challenges of incorporating assistive technology to cater to children with special educational needs.

The themes derived from the collected data were arranged under the themes found in Figures I and II.

3.4. Procedure

The current research professed potential respondents as partners in an enterprise (Brooks, et al. 2014), based on a connection of mutual respect and trust. A vital element of this connection is informed consent. Informed consent was signed at the time of the interview, endorsing there is no harm or threat to members, and trying to establish trustworthiness and faith between the investigator and members. Above all, reassurance concerning the secrecy, privacy, and anonymity of members was given through a detailed

letter of information. It is exceedingly imperative to address that an ethical researcher keeps on inquiring about respondents' esteem, reducing harm and ethical behaviour in all phases of the research work, even the writing-up stage and afterward (Brooks, et al. 2014). All transcripts were securely stored. The respondents who signed the consent form were supported verbally that their identity would not be unveiled to anyone. For this purpose, pseudonyms are used.

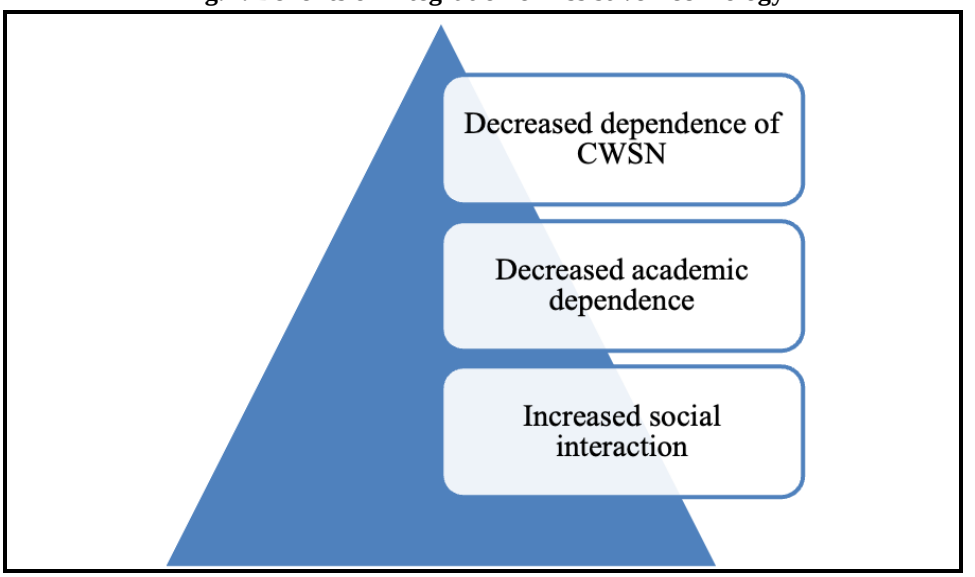
3.5. Research Findings

In the process of coding and data analysis of the transcripts, it can be stated that the two themes are of significance in answering the research question of the study and these are the effectiveness and challenges of incorporating assistive technology for catering to children with special educational needs:

3.6. Effectiveness of Incorporating Assistive Technology

The extensive literature review specified numerous benefits of integrating assistive technology into education to cater to children with disabilities and these are consistent with the research findings (see Figure I).

Fig. I. Benefits of Integration of Assistive Technology



One of the respondents stated:

The use of technology must be integrated into the curriculum meaning that there must be activities that illustrate the incorporation of technology to facilitate the teaching-learning process. We incorporate it for instance, for visually impaired students we use software effectively that enlarges the font size. This enables them to work independently as they can read effectively because of the larger font size (Amber)**.**

The same idea resonates with the research findings during a classroom observation, a teacher downloaded the textbook in a larger font which aided CWSNs in reading and they showed amazing academic performance. A child was extremely excited to have that downloaded text.

During classroom observation, a visually impaired child was excited to have that downloaded text and he told his teacher about it which was noted during classroom observation. The teacher shared the incident during an interview. A teacher of grade V said:

One of my students was dependent previously and was not able to complete the reading task. He had excessive difficulty achieving it. He needed my help while reading. Now he can do it easily. He was not bad at reading; however, he could not see. As soon as I downloaded the textbook in a larger font, he was able to read it (Ghazal).

The use of assistive technology in the classroom is one of the most substantial modifications that educational institutes must make available and accessible; furthermore, teachers should be aware of the needs of students Additionally, the finding is consistent with Harper et al. (2017) that high–tech computers and software can be helpful tools for children with disabilities such as a disability in solving mathematical problems, and disabilities in reading, listening, and writing. A teacher of science stated:

In the teaching-learning process, educators are in authority to provide assistive devices for children with disabilities to empower them to be effective in the teaching-learning process. Assistive technology can support educators in achieving their objectives by giving their children an opportunity for a bright future, for instance, a very important modified resource is designed for a child with autism who cannot balance himself and might fall off his chair. These chairs are assistive technology devices that could be used for facilitating CWSNs and can protect him from falling (Farina).

It was observed during classroom observation that assistive technology also has many therapeutic benefits, for example improving the movement of children with disabilities and their ability to complete daily responsibilities using wickers and walkers. Mobility aids are a source of increasing the self-confidence of children with disabilities and developing feelings of being secure, which supports them to reach the highest level of independence in their lives. Pupils with learning disabilities need assistive technology to permit them to participate and interact with their peers during cooperative learning activities in the classroom. The same idea is consistent with the research findings. It was observed during classroom observation that a child with hearing impairment was wearing a hearing aid and his communication and interaction were both enhanced. He responded to his peers and participated in classroom discussions.

A variety of assistive technologies has the potential to support children with special educational needs to develop skills related to their developmental areas. Related to this a teacher of English stated:

Assistive devices resolve problems linked to performance, concentration span, and the problems related to communicational skills, encountered by learners having special needs. The use of AT supports children with disabilities academically and helps to develop skills among students with disabilities (Amber).

As stated by the IDEA (2004) guiding principles for students with disabilities concerning the accessibility and availability of assistive devices to cater to their instructional or practical needs are present. There are numerous cases of setting up hands-on learning opportunities for students with special needs that might facilitate a student's interactional development. In the same way, these technologies can be used to facilitate a student's reach to educational institutions and can be used to support students with special needs both academically and emotionally. The same idea is discussed by a grade II Science teacher. She stated that:

Students with a learning disability can use assistive technology to improve their reading skills through computer-based software, available online, participate with their peers, and excel in reading. Furthermore, assistive devices could make the process of gaining information simple and subsequently increase the concentration span and interest in reading (Farina).

The current research study explored that assistive devices had all-embracing impacts on children with special educational needs due to their inclusion of them in society. Sharma & Wasson (2018) discussed the findings of their study that assistive devices are relevant for learners with mixed disabilities as a source of empowerment and gaining control over their educational settings. The findings of the study indicate that the empowerment of working autonomously was among the most mentioned advantages by stakeholders. Additionally, the respondents stated how this technology facilitated enhancing communication skills among peers, improved their determination to work together with their peers, and improved their self-confidence. A school coordinator stated:

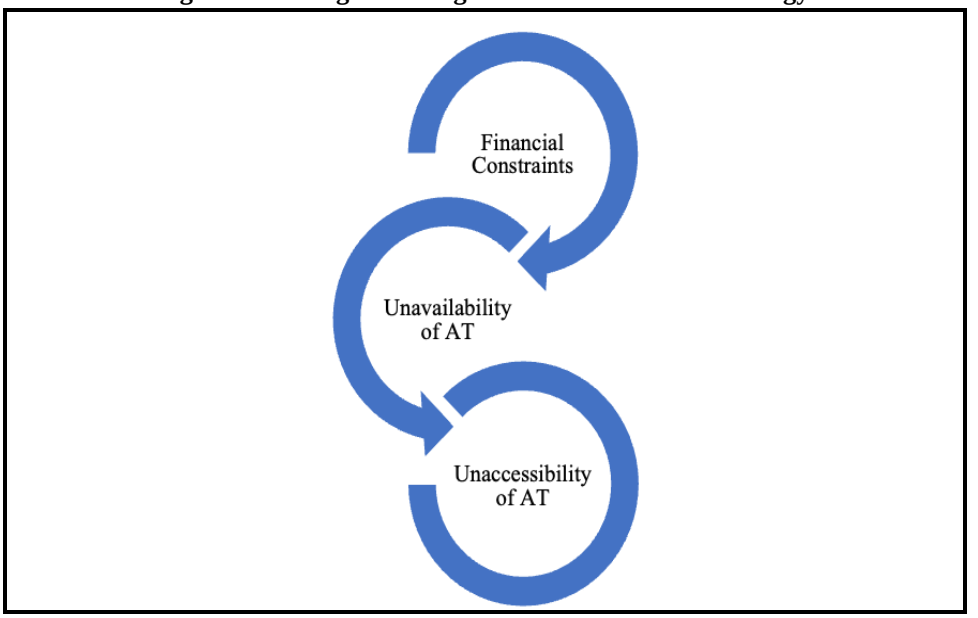
There was a learning-disabled child, who was knowledgeable. He was unable to write as his fine motor skills were hampered. I composed a text, demonstrating how to create texts using multiple modes (e.g., print, images, and audio - for ICT texts) by using computer software. The text used to be in bold letters. I also supported him by helping with learning software. I used to type key points or words on the computer as her writing skills were hampered. Before the presentation, I wrote new vocabulary words and key points on the computer. I engaged her in computer-based activities. The child showed great improvement. The point which I emphasise instead of focusing on their weaknesses focus on their strengths. If they cannot write, engage them in computer-based activities and teach them by using alternative teaching methodologies (Zareen).

It is evident from the above interview excerpt that assistive devices can play a pivotal role in transforming the lives of children with special educational needs.

3.7. Challenges Related to Incorporating Assistive Technology

Despite this, some children with disabilities are still unable to access assistive technology devices due to monetary constraints. The finding is that it is a predicament that many students with disabilities are unable to use assistive technology and materials at school. A variety of assistive technologies and digital technologies can be used to provide support to children with disabilities in the classroom However, the findings of this research study indicate that the unavailability of assistive devices poses challenges for both users and implementers (see Figure II).

Fig. II. Challenges of Integration of Assistive Technology



For AT to be implemented effectively, it is necessary to make it available. The director/ administrator stated:

Several worldwide agendas such as the Convention on the Rights of Persons with Disabilities (CRPD) and SDGs support governments in improving access to these technologies, even though improvement is often hindered by a low level of capacity of the country, and insufficient financial space and fiscal obligation to integrate assistive technologies into service provision (Mahmud).

The challenge highlighted was related to financial constraints as AT can be made available and accessible if financial barriers are removed.

The Director highlighted a very important aspect of the reasons for the unavailability which he believes is the biggest challenge:

The Convention on the Rights of Persons with Disabilities (CRPD) has made it mandatory to ensure the accessibility to assistive products that are not just of good quality but affordable as well. Despite these obligations, unfortunately, only 10 percent of the population has access to them. The demand for assistive devices is on the rise in low- and middle-income countries. The initiative taken by the World Health Organisation to meet the demand and to support countries in their struggle to fulfill the obligation of the Conventions on the Rights of Persons with Disabilities is launching the Global Cooperation on Assistive Technology (GATE). The initiative was taken in 2014 in collaboration with organisations for persons with disabilities. It includes agencies, for instance, UN and donor agencies, professional organisations, academia, and industry (Mahmud).

It is clear from the above statement that to make technology available there is a need for financial support in the form of funding to low-income countries.

Some challenges need to be focused on, for instance, every device is not suitable for everyone. This needs expertise as well to use the right technology for the right disability. As the coordinator stated:

It is equally important to explore which tool is appropriate for which type of disability. Research needs to be conducted regarding selecting the right technology for the right child. Also, every device cannot work for all children with special educational needs. In addition, a device that is effective for one person may not be effective for another. There is still a need to explore and expand assistive technology design, assessment, manufacture, and use, particularly in areas that are not well communicated, such as intellectual and visual disabilities. Investigation of assistive technology to help work and educate children with special educational needs is essential from a human rights perspective as well as to decrease poverty and meet sustainable development goals. To expand the use of assistive technology that is justifiably accessible, available, and reasonable, more research is needed (Rabia).

The above statement highlights a very important aspect of incorporating the appropriate technology as every device or aid is not suitable for all children with special educational needs.

This is a very thought-provoking statement by the Director regarding combating the challenges of AT. He stated:

Increasing awareness and understanding of the specialists in the field of assistive technology will lead to an increase in educational opportunities for children with special educational needs. Children with educational needs will be able to access available and suitable assistive technologies and be included in social life and education with the development of suitable assessment tools (Mahmud).

It is evident that the effective use of AT can be materialised with the knowledge of devices. For which professional help is needed by experts who can help in selecting the right tool for the child.

4. CONCLUSION

This research study aimed at optimising the teaching and learning process of children with special educational needs in the context of an inclusive school. Educational institutions are encouraged to facilitate Children with Special Educational Needs (CWSN) by using AT as a tool. For all-encompassing sustainable development, there is a prerequisite to prioritise the availability of assistive technology by development partners, organisations, and governments as a vital component (Ahmed, 2018). Providing worldwide access to high-quality assistive devices will not only develop the humanistic approach but will also ensure the well-being of society and make it economically, socially, and environmentally viable (Alkahtani, 2013). With the increase of children with special educational needs, the demand for assistive devices also increases internationally. Increasing demand puts pressure on the member states to address ignored areas of incorporating AT (Borgestig, et al. 2017).

The results also indicated that the right use of the right technology is required as it can be a source of achieving academic success. Familiarising and introducing the right assistive technology for CWSN can play a pivotal role in saving time and effort. The research findings indicated the effectiveness of incorporating AT in the teaching content

as it can play a pivotal role in decreasing dependence on CWSN and increasing their social interaction. The findings resonate with the literature that these useful devices help in enhancing the functional aspect of a CWSN but also make them independent, thus saving time (Qwuor, et al. 2018). There is a need for widespread access to assistive devices that are of high quality and reasonably priced, to fulfil the agenda of no one being left behind and accomplishing sustainable development goals (Erdem, 2017).

The research findings highlighted the challenge of accessibility and availability of assistive technology. It can play a fundamental role in the field of catering to children with special educational needs because many pupils with disabilities require explicit instructional treatment. A variety of assistive technology devices and tools exist that, with cautious preparation and organisation, can support students with special educational needs (Genc, et al. 2021).

The research findings illustrated some useful assistive devices, for instance, screen magnifiers, audio files, and other computer-based software. Classrooms with special education needs are set up so that teachers catering to children with special needs have increased responsibilities. The use of technology can promote the inclusion of children with disabilities in a mainstream classroom setup, thus transforming their lives. Through technology, one can transform education for children with disabilities so that they can play an active role in society as valuable human resources (Hameed & Manzoor, 2019).

It is therefore mandatory to put emphasise that the application of assistive technology reassures a sense of accomplishment and collaborative input in the classroom set up for children with special educational needs. Assistive technology improves and contributes to boosted motivation and assistive technology can act as a provision for the education of children with special educational needs, in that way reducing the pressure of work and stress levels of teachers (Karsniqi, et al. 2022). The research findings also illustrated that visually impaired children were motivated when they used devices like magnifiers, and they could read easily. Assistive technology can be a powerful tool in attaining quality education and inclusiveness for students with disabilities. Thus, this determination supports several of the important purposes of connecting children with disabilities to classroom activities enjoyed by their evolving peers, resulting in a sense of accomplishment, collective actions with distinct outcomes, and unbiased didactic knowledge (Ok, 2018). This resonates with the research findings that peer-to-peer interaction improved and resulted in increased social interaction.

Assistive technology brings about variations and modifications for children with disabilities. Variations that have been extensively used to recompense for obstacles related to difficulties in reading, writing, mathematical reasoning, and problem-solving skills. Furthermore, assistive technology can support children with disabilities to compensate for challenges in learning, particularly in the area of written work, by providing computer-supported tools (Qureshi & Razzaq, 2019). Additionally, this knowledge and use of assistive technology can also reduce frustration, increase enthusiasm, foster a feeling of peer acceptance, and enhance efficiency in school and at home. The findings are consistent with the literature as the use of AT not just improved their social interaction but also their academic performance. Therefore, the idea of implementing assistive technology for special needs children in school should be emphasised by teachers and school heads (Harper, et al. 2017). Teachers are expected to

choose the competence of existing assistive technology and manage children to ensure that the required alterations are made to reflect the changing abilities of the children.

The potential of assistive technology for children has been understood; however, implementation is challenging, especially for developed and underdeveloped countries (Ahmed, 2018). For every child with special educational needs, this assistive technology could be one way to eradicate difficulty in teaching and learning. However, there are challenges related to assistive technology and these are as indicated by the findings of the current research study. It was explored that there are issues that children with disabilities are still unable to access assistive technology devices due to monetary constraints and this finding is consistent with the literature. The literature also highlighted the challenges of accessibility as these devices are not affordable particularly, in developing countries including Pakistan (Safdar, et al. 2019).

Another intriguing finding was that there is a need to use the right technology for the right child. The current research study explored that every device is not appropriate for each disability type. Therefore, careful selection of AT is a need of the day. Connecting with this professionally developed teacher can impart the right use of technology for the right child and this finding is consistent with the literature. The literature states that a professionally developed teacher can be a source of selecting and using the right technology according to the individual needs of CWSN (Erdem, 2017).

It is recommended that governments, and other stakeholders embrace a systematic approach to confronting challenges at each level and work in collaboration to cope with challenges related to managing assistive technology and these require immediate attention. Primarily there is a need for establishing and maintaining professional networks and engaging in a community of practices to rightly utilise AT devices in inclusive classrooms. Another aspect that needs to be focused on is identifying and recognising knowledge and expertise in the field. Furthermore, funding is essential to ensure its availability and accessibility. The outcomes of the research study can significantly contribute by creating awareness among schools that are concerned with promoting inclusion. It can also be a source of achieving sustainable development goals by facilitating inclusion. The incorporation of assistive technology can be a source of transforming educational scenarios to transforming lives. Fernandez-Batanero, et al. 2022; Genc, et al. 2021 suggested that the attainment of sustainable development goals can be ensured by a collaborative approach to including children with disabilities in research and development, infrastructure, sustainability, policy, and planning.

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The Role of Early Childbearing on Child Health Outcomes in Punjab

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Early Childbearing is a major social and public health concern in developing countries. The study explores the role of early childbearing on child health outcomes in Punjab, Pakistan. Using the newly available data, Multiple Index Cluster Survey for Punjab 2017-18, the paper aims to test the association between early childbearing and child health outcomes both in the short and long term. Since early childbearing decision is influenced by a wide array of factors which include individual, household as well as social and cultural norms; the paper employs cluster & household fixed effects model to deal with the issue of omitted variable bias. The empirical results suggest that early childbearing exerts a negative impact on child health outcomes. The findings of the study are also robust to changing the specification of early childbearing as well as the data set. This study adds to the existing literature by providing insights into the strong influence of social and cultural norms in influencing childbearing decisions.

Keywords: Child Health, Maternal Characteristics, Social Norms, Household Fixed Effects

1. INTRODUCTION

Early childbearing is a common practice in developing economies because of the prevalence of deep-rooted social norms in society. Such practices have important implications for population growth and fertility levels. Early Childbearing refers to when women give birth in their adolescence as a consequence of early marriages.[1] The higher fertility and early family formation behaviour are influenced by strong social values and norms in society. In most developing countries, early childbearing continues to be a major social issue and public health concern as it poses risks to maternal and child health care.

Developing countries are characterised by higher fertility rates and increasing population levels. The latest data as of 2020 suggests that Pakistan has one of the highest fertility rates of 3.4 percent compared to India & Sri Lanka with 2.1 percent.[2] The regional comparisons suggest that; the adolescent fertility rate is seen higher typically in South Asian countries like Bangladesh and Nepal while Sri Lanka[3]again has the lowest adolescent fertility rate in the South Asian region which partly explains their development scape as well (*World Development Indicators*, 2022).

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[1] Number of women age 20-24 years who had at least one live birth before age 18.

[2] See Graph 1 : Total Fertility Rates.

[3] See Graph 2 : Adolescent fertility rate.

The societies in developing countries are generally described by early marriages and consequently early childbearing decisions[4] primarily because of the social norms prevalent as well as the interplay of household structure dynamics with social pressure (Maertens, 2013). It is important to note that societies in developing countries put great emphasis on "young brides" to start childbearing sooner as proof of their fertility; young brides interestingly undertake these decisions to increase their relative bargaining power and status within the households**.** Thus, the household dynamics and structure influenced by social norms have a substantial influence on private choices like childbearing decisions. Since the norm of early marriage is a common practice in Pakistani society; these young married women are under societal and family pressure to produce offspring to prove their fertility. This is demonstrated by the adolescent birth rate which was 42.3 percent for the year 2021 for Pakistan (*Word Development Indicators*, 2021).

Early childbearing tends to have negative consequences on child and maternal health because young maternal age at first birth deters higher education acquisition as well and it tends to be associated with lower social and economic background.[5] Young maternal age is also adversely related to child health partly because of the differential in health behaviour adopted by young mothers. The objective of the paper is to empirically explore the role of early childbearing and child health outcomes. The paper also addresses the empirical issues accompanied by testing the effect of early childbearing decisions on child health outcomes.

Using the recent MICS 2017 data set the results are suggestive of a negative association between early childbearing decisions even after controlling for unobserved characteristics at household and district levels. However, the drop in the size of the magnitude suggests that these unobserved characteristics play a significant role in explaining early childbearing decisions The contribution of the paper is to test if there is an association between early childbearing and child health outcomes and to cater to unobserved heterogeneity associated with early childbearing decisions.

The rest of the paper is organised as follows: Section 2 describes the Literature Review Section 3 presents data and econometric techniques employed. Section 4 presents empirical results, and Section 5 concludes.

2. LITERATURE REVIEW

The intra-household literature puts great emphasis on the role and behaviour of maternal characteristics in contributing to child well-being outcomes. Literature suggests that early childbearing is negatively associated with child outcomes and economic well-being. This is because early family formation hinders higher educational levels for the mothers which have consequences for inadequate human capital accumulation for both the current and future generations.

Literature shows different mechanisms through which the impact of early childbearing is transmitted to child wellbeing. Teenage mothers are physically and psychologically less mature; they lack the necessary skills needed to efficiently uptake

[4] (Westoff, 2003) Shows that teenage child bearing is higher in Sub-Shahran African region as well as exceptionally higher in Bangladesh.

[5] (Ferré, 2009) Shows empirically through instrumental variable approach that addition schooling tends to delay and shorten the reproductive fertility decisions. The study shows that an incremental year of schooling decreases the probability of giving birth in early age.

health care of children which results in adverse outcomes for child health. The results show that children born to teenage mothers are more likely to be shorter, stunted, and underweight (Branson, Ardington, & Leibbrandt, 2011).

One strand of literature tests the impact of teenage pregnancy on child health care, mortality, feeding practices, and birth weight. Young mothers also typically adopt health behaviour that is significantly different than their counterparts. The differential in health behaviour adopted by teenage mothers explains much of the variation in child health. The study shows that teenage childbearing is negatively associated with prenatal care as well as vaccination behaviour. In addition to this, the probability of receiving supplementary food by the age of 6 months is negatively and statistically significantly associated with teenage childbearing. The primary reason for such associations is because teenage mothers lack the maturity needed to nurture the child hence leading to adverse outcomes (LeGrand & Mbacke, 1993). (Maitra & Pal, 2007) also shows the adverse impact of early childbearing on mortality is significantly explained through health inputs[6]. This implies that young mothers are substantially different from old mothers in terms of their behavioural use of health inputs like vaccination and prenatal services[7]. (Miller, 1993) suggests that firstborn children of teenage mothers are likely to face health disadvantages compared to firstborns of non-teenage mothers. This is because teenage mothers are likely to belong to lower socioeconomic backgrounds, have lesser financial resources and health knowledge; and therefore likely to receive negligible prenatal care.

Teenage childbearing is also associated with birth injuries and congenital abnormalities; the effect diminishes once all the possible set controls are taken into consideration. The study suggests that the adverse impact of early childbearing on pregnancy outcomes is not because of age per se; which reflects physical immaturity; rather the underlying mechanism is the behavioural and socioeconomic factors experienced by teenage mothers (Letamo & Majelantle, 2001).

Another theme in the literature examines the influence of teenage childbearing on academic and behavioural outcomes.[8] The results suggest that teen parenting is more strongly associated with behavioural outcomes compared to short-term academic scores however the effect diminishes when fixed effects are employed. The reason for the stronger impact on behavioural outcomes is primarily because teenage childbearing suggests a lack of parenting skills to shape the behaviour of children. In addition to this, the mothers may lack the appropriate social network and ties which consequently have an impact on the behaviour of children. (Levine, Pollack, & Comfort, 2001).

(Mollborn & Dennis, 2012) also tests the impact of teenage childbearing on a child's outcomes in terms of cognition, behaviour, and health. The paper suggests that while short-

[6] (Conger, McCarty, Yang, Lahey, & Robert, 1984) also shows that chronological age and age at first birth have a negative influence on the behaviour of mother in terms of child care activities.

[7] (LeGrand & Mbacke, 1993) have shown that both physiological and behavioural characteristic of young mothers adversely affect child health through poor feeding practices and prenatal care as well as vaccination behaviour.

[8] The papers employ ordinary least squares, multiple regressions and cousins fixed effects to test the impact of teen age parenting on academic and behavioural outcomes. Teenage child bearing is measured through a set of four dummy variables of age at first birth (16 years and less, 17-18, 19 and 20-21 with greater than 21 as the base category) as compare to a single dummy of teen or non-teen variable. This kind of specification checks for the differentials as a result of early teens compared to later teens; as well as if childbearing after teens is associated with same outcomes (Levine, Pollack, & Comfort, 2001).

term effects are nonexistent the impact is profound on long-term indicators of behaviour. (Turley, 2003) shows that children of teenage mothers are more likely to face behavioural problems and lower academic scores as a result of family background characteristics and not because of young maternal age. The paper also finds evidence for the systematic difference hypothesis which advocates the idea that maternal age at first birth has a more significant role to play in child health outcomes compared to maternal age at child's birth. This then implies, the existence of some important background characteristics rather than age per se.

Another strand of literature tests the impact of teenage childbearing on the economic consequences. (Fletcher & Wolfe, 2009)shows that teenage childbearing reduces the probability of higher education for the mother which consequently has a direct impact on the potential earnings that can be earned by the mother; however, it increases the likelihood of receiving cash assistance.[9] (Hofferth & Moore, 1979) using a path analysis framework shows that later childbearing is associated with higher educational levels and earning potential which has an impact on the economic well-being of the household. On the contrary, women who experience early childbearing have lower education levels and therefore lower earning potential. (Geronimus & Korenman, 1992) uses a sister's comparison approach to test the association between socioeconomic well-being and teenage childbearing. While cross-sectional analysis overstates the impact of teenage childbearing; the sister's comparison caters to one of the sources of unobserved heterogeneity associated with teenage childbearing in terms of unmeasured background characteristics. However; due to mixed results from different data sets the study doesn't conclude that teenage childbearing contributes to significant differences in socioeconomic well-being. (Hoffman, Foster, & Jr., 1993) shows that even after accounting for unobserved family background characteristics, the impact of teenage childbearing on high school completion, family size, and economic well-being doesn't get affected.

Decisions about early childbearing are influenced by social norms and cultural values which exert pressure on individuals to undertake such behaviour. A wide array of literature emphasises the role of norms in determining fertility behaviour. Firstly, the social learning mechanism has its basis in the social learning theory which suggests that behaviours are learned through observation of models unveiling these behaviours (Bandura, 1977). This implies that individuals learn behaviours by observing actions and decisions made by other members of society. Observation learning allows the ego (self-realisation) to assess the consequence of a particular behaviour without taking into consideration the risk of potential adverse consequences such as failure or social disapproval. The fertility decisions tend to be influenced by the environment; as more members are in the network transiting into parenthood; more ego and self-realisation would adopt the same behaviour. Thus; the social learning hypothesis predicts a positive impact of social norms on the intention of entering parenthood and consequently on childbearing decisions.

The second mechanism is the social pressure from network members which suggests that members in the networks act as a channel to enforce norms through the personal nature of network ties (Keim, 2011). These network members have the ability to sanction each

[9] The paper estimates the impact of early childbearing through community fixed effects in order to account for unobserved community level factors associated with early pregnancy outcomes

other for behaviours that are not socially acceptable. Life course theorists believe that in every society there are social norms regarding each life stage in which normative evaluations are made for instance parenthood becomes due (Neugarten, 1979) Thus; these norms act as a social clock as soon as an individual reaches a certain stage at which transition is expected; these network members serves as a way to ensure adherence to norms by social approval or sanction. Thus; theoretically it is expected that the stronger tightly connected the society is; the more self-realisation is to comply with social expectations. In the case of childbearing decisions; it is expected that if there is a dominant number of befriended couples with children; there is societal pressure on couples without children to enter into parenthood.

The third mechanism is the social opportunity costs which suggests that there are higher opportunity costs of entering into parenthood in terms of reduced leisure time. Individuals consider these opportunity costs in relation to society dynamics. If a society is characterised by a childless society then the individuals would associate higher opportunity costs of child-rearing while it holds true conversely (Bernardi, 2003) Theoretically; the literature suggests that the inclusion of social norms in the fertility choice model[10] explains the high fertility equilibrium in societies characterised by increasing population levels; primarily because they are historically coordinated on a high fertility path; because of the society dynamics in terms of higher preference on having children sooner, this is observed typically in agro-based societies (Bhattacharya & Chakraborty, 2011).

The empirical literature finds evidence for these channels and shows higher support for the social learning view. Firstly, the empirical evidence suggests that self-realisation acquires information from couples with children pertaining to the aspects of parenthood. Secondly, the evidence also shows that parents without children feel pressured by other network members with children to start a family.[11] Thirdly, the social opportunity costs mechanism shows that the loss of social ties is reduced if the society is characterised by network members with children (Lois & Becker, 2014).[12] Another similar theme in the literature tests for the prevalence of norm-based theory of reproductive change which suggests that fertility choices are determined by norms prevalent in society. The intervention of contraceptive prevalence finds evidence for the existence of norm-based theory as the empirics suggest that individuals strongly respond to changes in contraceptive prevalence within their religious group in the village while cross-religion effects are absent (Munshi & Myaux, 2006).

One of the issues in determining the causal effect of early childbearing is self-selection; which implies that women who experience early childbearing tend to choose themselves into this behaviour. This is mostly attributed as a result of background characteristics and pre-existing social disadvantage. (Gruber, 2009) shows strong associations between disadvantaged background and teenage childbearing at the aggregate

[10]Inclusion of social norms essentially assumes that individuals are conformists which implies that individual behaviour pertaining to fertility is partly influenced by social norms where individuals tend to minimise their fertility distance from others in the society (AKERLOF, 1977) .

[11] (Udry, 1980) shows that respondent were confronted with direct social pressure primarily from social circles as well as specifically from mothers and mothers in law as they are precarious in response to new pregnancy.

[12] (Barbanb, 2014) shows that increasing child bearing by friends in a network through observational learning and social pressure induces couples without children to start child bearing.

level compared to the individual level; however, once state and year fixed effects estimates are employed the relationship between the two is greatly mitigated.

Although the sister comparison approach caters to unmeasured family background characteristics; however, it assumes family homogeneity in terms of the same parental treatment for all children. In addition to this, siblings are also likely to differ in terms of their endowments and physical traits which is not considered in the sister's comparison approach (East & Jacobson, 2000). (Ribar, 1999) controls for omitted variable bias pertaining to early childbearing by employing sibling fixed effects which differences out family-specific unobserved factors; while simple regressions lead to larger estimates of the impact of early childbearing; the sibling fixed effect reduces the magnitude of early childbearing on socioeconomic outcomes.

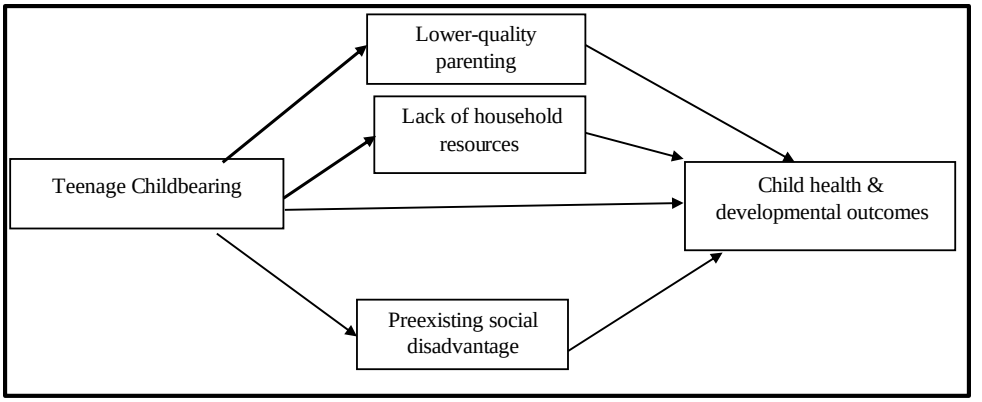
Econometrically, estimating the effects of early childbearing through simple ordinary least squares is likely to give biased estimates; as women who experience early childbearing are more likely to come from disadvantaged family backgrounds and have poorer outcomes compared to their counterparts. In addition to this, the estimated effect of early childbearing also suffers from omitted variable bias; as the literature suggests that there are important neighborhood mechanisms and cultural pressures at play when the decision to conceive a child is made. Simple regression estimates are thus likely to overstate the true impact of early childbearing on various outcomes of interest.

To deal with the unobserved heterogeneity associated with early childbearing; literature has used the instrumental variable approach and fixed effects estimation; the within-family estimates to test the impact of teenage childbearing on economic well-being; suggests that teenage sisters who experienced early childbearing have lower education level however the difference is not statistically significant which implies that much of the economic adversity associated is not because of the early childbearing itself but the disadvantage that precedes it.

The study fills in the gap in the literature by addressing, the role of early childbearing on child health outcomes by taking into consideration the presence of unobserved characteristics as discussed in the section above which is the existence of strong social norms that influence these decisions & consequently child health outcomes.

3. THEORETICAL FRAMEWORK, DATA & METHODOLOGY

The theoretical framework is influenced by the life course perspective which explains the link between teenage mothers and their child's health and developmental outcomes. Three possible channels are widely discussed in the literature as influencing a child's health outcome. Firstly, the preexisting social disadvantage suggests that mothers who experience teenage pregnancies are more likely to belong to poorer socioeconomic and educational backgrounds. Through intergenerational transmission, these characteristics are accumulated over time and transferred to the next generations. Secondly, the lack of household resources also influences child health developmental outcomes; as teenage childbearing puts pressure on the available resources by increasing the financial needs of the children. Thirdly the lower quality parenting influences child health outcomes primarily because young parents are not psychologically mature enough to uptake child health care efficiently. The children of teenage mothers are expected to experience different parenting styles which may be reflected in differences in developmental and health outcomes (Mollborn & Dennis, 2012).



Source: (Mollborn & Dennis, 2012).

3.1. Methodology & Variables Specification

The paper econometrically aims to test the impact of early childbearing on child health outcomes. The empirical strategy rests upon eliminating the unobserved heterogeneity associated with early childbearing; given variations in culture and norms governing early childbearing decisions across communities and households. The equation for estimating the impact of early childbearing on child health takes the following form:

$$Child\ health = \beta o + \beta_1\ Early\ Childbearing + \beta_2\ Maternal\ Education + \beta_3\ Child\ characteristics + \beta_4 Health\ Practices + \beta_5\ Household\ Characteristics + \varepsilon \quad \ldots \quad \ldots \quad (1)$$

Child health is measured through anthropometric indicators developed by the World Health Organisation (WHO) which includes height for age z-scores and weight for age z-scores. The height for age represents the long-term status of a child's health whereas weight for age is the short-term indicator; which reflects the current status of the child's health.

Early Childbearing is defined as a dummy variable which takes a value of 1; if the mother's age at first birth is less than 20 years and zero otherwise. The usefulness of employing a dummy variable approach to directly estimate the impact of being born to a teenage mother on child health outcomes.[13]

The analysis controls for the maternal education-based characteristics; in terms of the level of education acquired by the mother, while the child characteristics control for the gender and age of the child; as well as the past illness status of the child.

The equation takes into account the set of features that describe the household environment; which are captured through the gender of the household head and education of the household head. While the economic status is accounted for through wealth score and status of agricultural landownership. The health practices are captured by; salt iodisation as well as hand washing practices. The ε denotes the error term in the regression

An estimation of the given equation through ordinary least squares will inflate the true impact of early childbearing on child health outcomes; since there are important unobserved factors that are correlated with both early childbearing and child health. For example; socio-cultural values and norms in society are likely to pressure young brides to undertake the decision about early family formation to elevate their status in the household

[13] Base category refers to mothers who have had their first birth after 20 years of their age.

and society; however, once such decisions are taken; it limits the educational attainment as well as the earning potentials which then have implications for child health outcomes (Gruber, 2009) (Ribar, 1999)

In addition to this, early childbearing also suffers from self-selection bias, which implies that women who experience early childbearing tend to choose themselves into this behaviour. Young women who bear children early are substantially different from their counterparts intrinsically as they are likely to have lesser education as well as they also vary in terms of the knowledge and use of health inputs e.g. vaccination, and feeding behaviour. This then implies that unobserved factors in the error term are likely to impact both maternal behaviour as well as child health outcomes.

The data also suggests that differences exist in terms of various characteristics among the sample of mothers who experience teenage childbearing compared to their counterparts. The descriptive statistics[14] show that children of mothers who experienced early childbearing are on average shorter and weigh less compared to their counterparts. In addition to this, there are also significant dissimilarities in terms of maternal characteristics; as the sample of women who experienced early childbearing on average have lower levels of education compared to women who postpone early childbearing.

The household environment also varies significantly among teenage and non-teenage mothers; the data shows that on average the household head education is higher among non-teenage mothers. In addition to this, there are also variations in terms of health knowledge; as only 27 percent have awareness regarding aids compared to 41 percent among non-teenage mothers. These differences in characteristics imply that women who experience teenage childbearing face different household environments compared to their counterparts.

To eliminate the unobserved factors that create variations at the community level, the estimation strategy relies upon employing cluster fixed effect to differentiate the common unobserved factors that include social norms, culture, and practices that induce women to bear children earlier as well as child health. The cluster fixed effects are estimated through the following equation:

$$\begin{aligned} Child\ Health = {} & \beta o + \beta_1\ Early\ Childbearing + \beta_2 Maternal\ Characteristics \\ & + \beta_3 Child\ Characteristics + \beta_4 Health\ Practices \\ & + \beta_5\ Household\ Characteristics + \varphi + \varepsilon_i \quad \dots \quad \dots \quad \dots \quad (2) \end{aligned}$$

The unobserved variations are represented by φ; the unobserved factor which is common across clusters is differenced out as a result of employing cluster fixed effects; the coefficient of early childbearing then gives the net impact after taking into account the unobserved cultural norms and practices.

Similarly, at the household level, various characteristics induce women to bear children early to prove their fertility as well as to elevate their status in the household. To account for the household-level unobserved heterogeneity; the paper also estimates household fixed effects. The household fixed effects take the following form:

$$\begin{aligned} Child\ health = {} & \beta o + \beta_1\ Early\ Childbearing + \beta_2\ Maternal\ Education \\ & + \beta_3 Child\ Characteristics + \beta_4 Health\ Practices + \delta + \varepsilon_i \quad \dots \quad (3) \end{aligned}$$

[14] See Appendix : Table 2

The unobserved heterogeneity at the household level is represented by δ which is assumed to be shared across households. Once the unobserved heterogeneity is taken into consideration; the coefficient of early childbearing then represents the impact adjusted for the unobserved heterogeneity.

3.2. Data

The paper aims to do a cross-sectional analysis by using newly available data Multiple Indicator Survey (MICS) 2017-18 which is a comprehensive survey for assessing child health status. MICS covers all 36 districts of Punjab covering both rural and urban areas. The dataset includes 2,692 clusters; where each cluster comprises 20 households, which gives a total sample of 53,840 households in the data set. The sampling design used in MICS 2017 incorporates two stages; the first stage for urban and rural areas; is the selection of enumeration blocks and villages respectively. From each of the first stage; a sample of 20 households are selected in rural and urban areas. The first-stage units are selected by considering the probability proportional to size while for the second-stage units; equal probabilities are assigned. The total number of Primary Sampling Units (PSUs) clusters is 2050 and the Secondary Sampling Units (SSUs) households are 41,000. The urban/rural split is 38 percent and 62 percent respectively (MICS, 2017). MICS provides a separate questionnaire for children under the age of five which includes information about age, birth registration, early childhood development, breastfeeding and dietary intake, immunisation, care of illness, and anthropometry. The height for age and weight for age z-scores are provided for all the children under age five years in the child data file.

The focus of the analysis is children under the age of 5 years; which constitutes 32,579 in the sample. Based on the newly available data MICS 2017, shows that the mean height for age is –1.30 in the sample, which means that on average a child is 1.30 standard deviations below, compared to a child in the reference population. While; the weight for age z-scores shows that a typical child in the sample weighs less than 1.05 standard deviations compared to a child of the same age and sex in the reference population. The child health indicators show that 21.2 percent & 6.4percent; are moderately and severely underweight respectively. While 31.5 percent & 1.4 percent are moderately & severely stunted respectively (MICS, 2017).

Table 1

Child Health Status in Punjab for Children Under Age 5

Variable	Observations	Mean	SD	Moderate	Severe
Height for Age	32,579	–1.30	1.48	31.5 %	11.5%
Weight for Age	32,579	–1.05	1.21	21.2 %	6.4 %

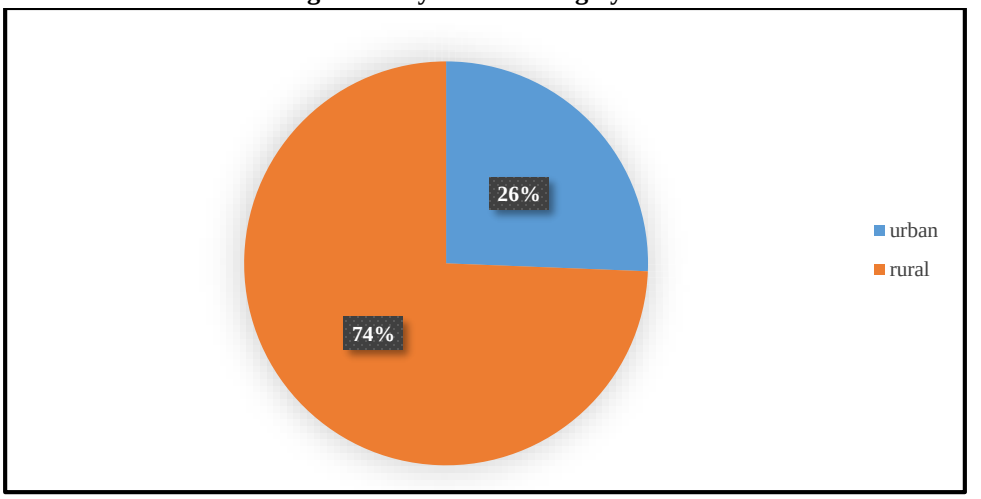
Source: Based on the author's calculation.

The role of maternal characteristics has a significant impact on child health outcomes. The data on maternal characteristics shows that the average age at marriage in the sample is 22 years; while on average the age at first birth is 24 years for women who have ever married and given birth. In addition to this, in our sample, 24 percent of currently married women in the sample have experienced early childbearing.[15] The incidence of

[15] In the analysis, early childbearing is defined as if age at first birth is less than 20 years.

women who experienced early childbearing by area also gives important insights in terms of the differentials associated with the area of residence. Figure 1 shows that among the women who have experienced early childbearing 74 percent of them belong to rural areas compared to 26 percent in urban areas, which partly reflects how preferences governing such private decisions are shaped by the area of residence.

Fig. 1. Early Childbearing by Area



Source: Author's calculation.

Early childbearing tends to deter education acquisition for young mothers which in literature is considered as one of the primary channels through which it can have an impact on child wellbeing. The data suggests that, among women who have experienced early childbearing 48 percent have no education compared to women who had postponed early childbearing with 37.3 percent. Interestingly, there are important differences, especially at higher and secondary educational levels. Among the mothers who have experienced early childbearing; only 11.6 percent have secondary and 3.9 percent have higher education compared to their counterparts with 15.4 percent and 17.3 percent respectively. .These educational differences reflect the choices made by young mothers pertaining to educational acquisition at different levels. It is evident that young mothers have significantly lower educational levels especially secondary and higher as it engages them in other tasks of child care and upbringing.

Table 2

Early Childbearing by level of education

Variable	Young Mothers Sample	Old Mothers Sample
None/Pre-School	48%	37.3%
Primary Education	21.4%	17.6%
Middle Education	14.1 %	14.6%
Secondary Education	11.6%	15.4%
Higher Education	3.9%	17.3%

Source: Author's calculation.

Table 3

Descriptive Statistics

Variable	Mean	Std. Dev.	Observations
Child Health Indicators			
Height for Age z-score	–1.303874	1.487435	32,579
Weight for Age z-score	–1.057604	1.215924	32,579
Maternal Characteristics			
Mother education none *	.4014549	.4902002	32,579
Mother education primary*	.2032905	.402453	32,579
Mother education middle*	.1099481	.3128299	32,579
Mother education secondary*	.1448479	.3519528	32,579
Mother education higher*	.1404586	.3474675	32,579
Age at marriage	21.18862	4.282141	32,579
Age at First Birth	22.56862	4.253881	32,579
Short First Birth Interval *	.3588815	.4796797	32,579
Early Childbearing*(age at first birth <20=1)	.2458946	.430623	32,579
hild Characteristics			
Child Gender(1=male ,Female=0)	.5141042	.4998087	32,579
Age of child	1.970871	1.406677	32,579
Child Past Illness Status *	.4092506	.4917032	32,452
Health Practices			
Ever heard of aids*	.2484116	.4320984	32,579
Ever used any family planning method*	.1313351	.3377751	19,751
Salt Iodisation *	.9891648	.1035284	32,579
Household Characteristics			
Household head primary education*	.1860094	.3891202	32,579
Household head middle education*	.1453697	.3524786	32,579
Household head secondary education*	.1905215	.3927185	32,579
Household head higher education*	.107646	.3099376	32,579
Gender of Household Head (Male=1,Female=0)	.9276835	.2590153	32,579
Number of Household Members	8.350348	4.204526	32,579
Households own agricultural land*	.3236441	.4678732	32,579
Area(Urban=1,Rural=0)*	.2802419	.4491242	32,579
Wealth Score	.0215109	.9716739	32,579

Source: Author's calculation.
Note: * indicates dummy variable.

The summary statistics show the set of controls included in the analysis to assess the impact of early childbearing on child health. To cater to the maternal characteristics, the analysis takes into account the maternal level of education and the age at which the mother starts childbearing. The descriptive statistics show that 40 percent of the mothers do not have any level of education while the average age at first birth in the sample taken into consideration is 22 years. In addition to this, the variable short first birth interval shows the spacing between marriage and first birth; the data shows that 35 percent of the women have experienced a shorter first birth interval.

The analysis also takes into account the child's characteristics; which includes the age and gender of a child where the data shows that on average the sample is equally divided by both genders. To proxy for the child's past illness status a dummy variable is created which reflects if the child has experienced either fever, cough, or diarrhea in the last two weeks. The descriptive statistics show that 40.9 percent of children have suffered any type of illness in the last two weeks.

To gauge the health knowledge and behaviour of the household, the descriptive statistics show that only 24 percent are aware of aids; while the use of contraceptive methods is only 13 percent. In addition to this, the analysis also takes into account the household characteristics which includes the gender and education of the household head; while to proxy for household size; the analysis includes the number of household members; as well as to cater for the economic status, we used the measure of wealth score and ownership of agricultural land by the household provided by Multiple Index Cluster Survey.

The incidence of early childbearing also varies across different regions of Punjab. The data shows visible north-south differences within Punjab pertaining to early childbearing. The data indicates that 25 percent of the women have experienced early childbearing in Southern Punjab compared to 21 percent in Northern as well Central Punjab[16] . These differences could be because of variations in the culture and social norms concerning early childbearing behaviour prevalent in different regions of Punjab as well as partly because of educational differences as well as variations in socioeconomic development[17] experienced in different regions within Punjab, all of these aspects have a substantial role to play in determining the attitudes and perceptions towards early family formation behaviour. Literature also suggests that districts where socioeconomic development and literacy rates are lower have higher patterns of total fertility rates; indicative of the influence of these channels on fertility behaviour (Khan, 2011)

4. RESULTS & DISCUSSIONS

As per the estimation strategy, the paper first estimates the proposed equation through a simple ordinary least square. The simple correlation of early childbearing with child health outcomes shows a strong negative association. Table 4 shows the correlation of early childbearing with height for age z-score and weight for age z-scores. The result indicates that the height for age decreases by 33.3 percent for early childbearing mothers compared to the base category.[18] This implies a negative and statistically significant relationship between early childbearing and child health outcomes. Table 4 gives the estimation results for children's height for age z-scores and weight for age z-scores. The estimates from ordinary least square regression indicate that early childbearing decreases height for age by 33 percent and weight by 21.9 percent standard deviations. These results suggest that early childbearing had a negative impact on both long-term and short-term child health measures.

[16] See Appendix : Table 1.
[17] (Afzal, 2010).
[18] Base category refers to mothers who have had their first birth after 20 years of their age.

Table 4

Correlation of Early Childbearing with Child Health Measures.

Dependent Variable	Height for Age (z-scores)	Weight for Age (z-scores)
Early Childbearing (Age at First	-0.333***	-0.219***
Birth<20=1)	(0.0188)	(0.0155)
Constant	-1.222***	-1.004***
	(0.00951)	(0.00776)
Observations	32,579	32,579
R-squared	0.006	0.009

*** p<0.01, ** p<0.05, * p<0.1

Robust standard errors in parentheses.

4.1. Ordinary Least Square Results

Table 5 shows the estimates from ordinary least square results by including the possible set of observable characteristics. The results suggest that early childbearing is negatively associated with child health for both height for age and weight for age z-scores. All the regression results are carried out by implementing robust standard errors at the cluster level. The results suggest that being born to a teenage mother decreases the height for age z-scores by 11.10 percent and weight for age by 5 percent standard even after controlling for other maternal, child, and household characteristics. In addition to this, the mother's education is found to have strong positive associations with height for age and weight for age z-scores; which has been well documented in the literature [19]as it suggests that maternal education has a stronger role in in determining child health status as she is considered the primary caretaker of child health as well as maternal education can also enhance working and earning potential of the mother and consequently improving the nutrition uptake.

To proxy for the child's illness status, the paper takes into account the child's past illness status which is a dummy variable that indicates if the child had experienced either diarrhea, cough, or fever in the last two weeks. This variable shows a very strong negative and statistically significant relationship between a child's past illness condition with both the child's height and weight.

Moreover, health knowledge and practices have a substantial role to play in determining the child health status of the child. The estimates show that hand-washing practices & salt iodization have positive effects on height for age z-scores.

To gauge the role of household characteristics, the analysis takes into account multiple variables; firstly the household head education at a higher level has stronger explanatory power; the height for age z-scores improves by 30 percent and weight for age score improves by 19 percent. Wealth score [20]as provided by the Multiple Index Cluster Survey, shows a positive and statistically significant relationship with both height for age and weight for age z-score.

[19](Duncan Thomas & Henriques, 1991); (Desai & Alva, 1998) shows that mother's education have strong effects on height for age of children as well as on their immunisation statuses.

[20]Wealth scores are assigned on the basis of assets owned by the household which comprises of main material of the dwelling floor, main material of the roof, main material of the exterior walls, type of fuel used for cocking, household possessions (electricity, radio, television, non-mobile telephone, refrigerator/freezer, gas, computer, air conditioner, washing machine/dryer, air cooler/ fan, cooking range/micro wave, sewing/knitting machine, iron, water Filter and dunky pump/Turbine), utilities owned by household members (watch, mobile telephone, bicycle, motorcycle / scooter, animal drawn-cart, bus / truck, boat with motor, car / van, tractor/trolley), household ownership, ownership of land, having animals (cattle, milk cows, buffaloes or bulls, horses, donkeys, mules or camels, goats, sheep and chickens/ ducks/ turkey), possession of bank account, main source of drinking water and type of toilet. (MICS, 2014).

Table 5

Ordinary Least Square Results of the Impact of Early Childbearing on Child Health

Dependent Variable	(1) Height for Age (z-scores)	(2) Weight for Age (z-scores)
Maternal Education Levels		
Early Childbearing (Age at First Birth<20=1)	-0.110***	-0.0590***
	(0.0231)	(0.0205)
Mother Educated up to Primary Education	0.0949***	0.0659***
	(0.0286)	(0.0249)
Mother Educated up to Secondary Education	0.287***	0.225***
	(0.0343)	(0.0305)
Mother Educated up to Middle Education	0.0976***	0.102***
	(0.0352)	(0.0305)
Mother Educated up to Higher Education	0.440***	0.389***
	(0.0379)	(0.0329)
Child Demography & Health Conditions		
Child Gender	0.0160	-0.0268
	(0.0192)	(0.0167)
Child Age	-0.0676***	-0.0129**
	(0.00683)	(0.00610)
Child Past Illness Condition	-0.0703***	-0.0831***
	(0.0194)	(0.0172)
Health Knowledge/Health Practices:		
Salt Iodisation	0.0763	-0.0909
	(0.0861)	(0.0790)
Hand Washing	0.0124	-0.00718
	(0.0273)	(0.0232)
Household Characteristics :		
Household Head Educated up to Primary	0.0476*	0.00313
	(0.0274)	(0.0243)
Household Head Educated up to Secondary	0.183***	0.0907***
	(0.0294)	(0.0255)
Household Head Educated up to Middle	0.131***	0.0994***
	(0.0318)	(0.0279)
Household Head Educated up to Higher	0.302***	0.191***
	(0.0375)	(0.0321)
Gender of Household Head	0.0769**	0.0403
	(0.0370)	(0.0334)
Number of Household Members	3.43e-05	0.00159
	(0.00231)	(0.00201)
Household Owns Agricultural Land	0.191***	0.161***
	(0.0224)	(0.0193)
Urban	-0.121***	-0.117***
	(0.0241)	(0.0212)
Combined Wealth Score	0.278***	0.236***
	(0.0162)	(0.0139)
Constant	-1.349***	-1.124***
	(0.104)	(0.0948)
Observations	19,742	19,742
R-squared	0.109	0.091

Robust standard errors in parentheses.

*** p<0.01, ** p<0.05, * p<0.1.

4.2. Cluster Fixed Effects

To deal with the unobserved heterogeneity associated with early childbearing at the cluster level; the paper employs cluster-fixed effects. The cluster-fixed effects take into account the component of the omitted variable bias that is common across clusters because households located within a cluster share the same neighborhood characteristics. These factors comprise common cultural practices and shared norms and values in a specific community which exerts pressure on individual behaviour towards early childbearing decisions. The clusters are defined as primary sampling units[21]. On average there are approximately 20 households in each cluster. The cluster fixed effects show that even after controlling for the unobserved factors across clusters, the impact of early childbearing still holds strong explanatory power. If the age at first birth is less than 20, then after accounting for unobserved community factors; the height for age z-scores decreases by 12.3 percent while the weight for age decreases by 8.27 percent. The results are suggestive of the fact that early childbearing exerts a strong influence on both short-term and long-term child health outcomes.

Table 6

Cluster Fixed Effects Estimation

Dependent Variable:	Height For Age (z-scores)	Weight for Age (z-scores)
Early Childbearing (Age at First	–0.123***	–0.0827***
Birth <20=1)	(0.0299)	(0.0245)
Constant	–1.377***	–1.259***
	(0.144)	(0.119)
Observations	19,742	19,742
R-squared	0.068	0.051
Number of Cluster ID	2,551	2,551
Mother Controls	Yes	Yes
Child Controls	Yes	Yes
Community Controls	No	No
Household Controls	Yes	Yes

4.3. Household Fixed Effects

The paper also employs the household fixed effects model to eliminate the source of omitted variable bias which arises at the household level. The household fixed effects take into account the unobservable factors at the household level that influence early childbearing; these factors essentially comprise the preferences within a household pertaining to early childbearing and the value of having a child earlier. Table 7 shows the household fixed effect estimations. The results show that while early childbearing continues to exert a negative impact on height for age; the impact is however not statistically significant. For the case of weight for age z-scores; the results indicate that children born to teenage mothers have lower weight

[21]Census enumeration areas are defined as Primary Sampling Units (PSUs) .In the sampling frame, enumeration blocks, both urban and rural, are considered as Primary Sampling Units.

for age. This implies that after controlling for the unobserved household controls; early childbearing continues to have an impact on the short-term measure of child health while the long-term child health measure becomes insignificant. This implies that early childbearing has much more influence to play in the short-term health status of the child.

Table 7

Household Fixed Effects Estimation

Dependent Variable:	Height For Age (z-scores)	Weight for Age (z-scores)
Early Childbearing (Age at First Birth <20=1)	–0.0963	–0.0289
	(0.0816)	(0.0724)
Constant	–2.089***	–2.632***
	(0.114)	(0.0921)
Observations	19,742	19,742
R-squared	0.032	0.005
Number of Household ID	12,043	12,043
Mother Controls	Yes	Yes
Child Controls	Yes	Yes
Community Controls	Yes	Yes
Household Controls	No	No

4.4. Result Comparison across Estimation Strategies

Table 8 shows the coefficient comparison of early childbearing across different specifications for height for age. The comparison yields that once the ordinary least square accounts for all the possible set of controls; the size of the coefficient decreases by 66.7 percent, which implies that only 34 percent of the impact remains. The cluster fixed effects estimation reduces the size of the coefficient by 11.8 percent; which infers that the estimation takes into account the unobserved cluster factors, which influence early childbearing decisions. The coefficient of early childbearing also diminishes in terms of its magnitude as well as statistical significance once household fixed effects are employed; as only 5 percent of the impact of early childbearing remains on height for age. A similar pattern holds for weight for age regression results[22]; however the only difference arises when we employ the household fixed effects; as it shows that although the coefficient decreases in terms of its magnitude compared to a simple ordinary least square regression estimate the variable still holds strong statistical power; which implies that early childbearing continues to remain important even when unobserved household characteristics are eliminated. This is only true for weight for age z-score results which suggests that early childbearing endures having a major impact on short-term measures of child health (WAZ) compared to long-term measures (HAZ). The comparison of results across estimations suggests that early childbearing continues to influence the short-term measure of child health even once household unobserved characteristics are accounted for.

[22]See Appendix Table 3.

Table 8

Result Comparison across Estimation Strategies: Height for Age z-scores

Dependent Variable: Height for Age (z-scores)	OLS	OLS	Cluster FE	Household FE
Early Childbearing (Age at First Birth <20 =1)	–0.333***	–0.110***	–0.123***	–0.0963
	(0.0188)	(0.0231)	(0.0299)	(0.0816)
Observations	32,579	19,742	19,742	12,043
R-squared	0.006	0.109	0.068	0.032
Community FE	No	No	Yes	No
Number of Cluster id	–	–	2,551	–
Household FE	No	No	No	Yes
Number of Household id	–	–	–	12,043
Mother Controls	No	Yes	Yes	Yes
Child Controls	No	Yes	Yes	Yes
Community Controls	No	Yes	No	Yes
Household Controls	No	Yes	Yes	No

4.5. Robustness Checks

To check for the robustness of our results, the paper uses different strategies to check the validity of the results.

4.6. Robustness Checks: Changing the Specification[23]

One of the strategies to check if the results still hold importance is done by changing the specification of the key variable of interest which is early childbearing. Previously, early childbearing was specified through a dummy variable which took a value of one if the age at first birth was less than 20 years. To show that the results still hold the specification is changed by introducing a categorical variable of age at first birth. The ordinary least square results for height for age show that age at first birth is negatively associated with categories 17-18 and 19 at 5 percent and 10 percent significance levels respectively. However, once the unobserved cluster factors are taken into account only age at first birth at 19 years remains statistically significant; while household-level fixed effect yields that the mother's age at first birth is 16 and less and has strong explanatory power at a 1 percent significance level. The same set of results holds for the weight for age z-scores. The ordinary least square results show that the mother's age at 19 years; is negatively and statistically significantly associated with weight for age across different estimation strategies. However, the household fixed effects show that the mother's age at first birth less than or equal to 16 holds strong explanatory power. These results are in line with the previous specification; as the results show that a mother's age at first birth is less than 20 years is negatively associated with both long-term and short-term measures of child health.

4.7. Robustness Checks: Alternative Data Set[24]

To check whether the results hold for the previous data set as well; the paper uses the MICS 2011 Punjab data set. The comparison of results between 2011 and 2014 data sets shows similar results. The comparison yields that the sign of the coefficient of early

[23] See Appendix Table 4 & 5 for regression results.

[24] See Appendix Table 6 & 7 for Regression Results

childbearing remains the same for both data sets. The ordinary least square results for 2011 and 2014 remain statistically significant for both data sets at 5 percent and 1 percent respectively. However, once the regressions take into account the unobserved household characteristics; the coefficient of height for age does not remain statistically significant for both the data sets. This implies; that in the long run, the impact of early childbearing doesn't hold much explanatory power. The weight for age results comparison; shows that across different specifications the impact of early childbearing remains negative and statistically significant for both the data sets taken into consideration. This implies that teenage childbearing has negative influences in the short term compared to the long-term indicator of child health.

5. CONCLUSION & POLICY IMPLICATIONS

The study aims to test the impact of early childbearing on child health outcomes in Punjab. The analysis takes into account additional characteristics in terms of maternal education, health knowledge, household factors, and child characteristics. The empirical analysis is based on cluster and household fixed effects.

The role of early childbearing on child health measures; is partly explained by the differential in maternal education acquired by teenage mothers compared to non-teenage mothers. In addition to this, the analysis shows that teenage mothers differ significantly from non-teenage mothers in terms of the household characteristics they experience; which are considered in terms of household head education, wealth score, agricultural land ownership as well as the locality of the residence. While much of the previous empirical studies have focused on the role of background characteristics in influencing early childbearing and consequently child outcomes; this paper takes into consideration the unobserved contextual setup experienced by mothers in the face of social norms and cultural values to produce offspring as soon as they get married. Since it is difficult to quantify the cultural and household norms and preferences advocating such behaviour; the empirical strategy relies on employing cluster and household fixed effects models.

The empirical analysis shows that once the ordinary least square regressions control for household, child, and health knowledge characteristics; approximately 31 percent of the impact remains for height for age. However, once unobserved cluster and household factors are taken into account only 21 percent and 5percent of the impact remains for height for age. This shows that the size of the coefficient is greatly attenuated once unobserved characteristics are accounted for. The same set of patterns holds true for weight for age indicators as well. While it may be correct to say that the empirical analysis carried out does take into account the unobserved characteristics influencing early childbearing decisions; however, the analysis doesn't take into consideration the practical knowledge of teenage mothers which may develop over time and hence improve child health-seeking behaviour in the long run. In addition to this, the analysis assumes the type of omitted variable bias that exists; while there may be unobserved characteristics at different levels such as the mother and child's unobserved characteristics; this analysis is only confined to the issue of omitted variable bias existing at the household and cluster level.

The results are suggestive of the fact that besides nutrition and knowledge about health care; teenage pregnancy continues to have a significant impact on child health outcomes in both short-term and long-term measures. This suggests very strongly the

existence of social norms and practices and their influence on individual behaviour as well as the choices made about childbearing decisions.

Therefore, policies that focus on enhancing nutrition and health knowledge alone might not be effective; policies should rather focus on developing the parenting skills of young mothers so that they can efficiently uptake child health care. The government on the other hand can focus on taking innovative initiatives like developing mother-child care units while providing parenting skills to young mothers.

Future research in this area can focus on exploring the linkages between social norms and childbearing decisions. The research can also focus on the linkages between maternal empowerment, childbearing decisions, and its influence on a child's developmental and social outcomes.

APPENDIX

Table 1

Region Wise Distribution of Early Childbearing Pattern within Punjab

Regions	% of Women who Experienced Early Childbearing
South Punjab	25%
North Punjab	21%
Central Punjab	21%

Source: Author's calculation.

Note:

South Punjab includes the districts Bahawalpur; Bhawal Nagar; Rahimyar Khan; Dera Ghazi Khan; Layyah Muzaffargarh; Rajanpur; Multan; Khanewal; Vehari & Pakpattan.

North Punjab includes the districts Gujrat; Narowal; Sialkot; Nankana Sahib; Sheikhupura; Lodhran; Rawalpindi Attock; Chakwal; Jhelum; Sargodha; Bhakkar; Khushab & Mianwali

Central Punjab includes the district Faisalabad; Chiniot; Jhang; Toba Tek Singh; Gujranwala; Hafizabad;Mandi Bahaudin; Lahore; Kasur ;Sahiwal & Okara

Table 2

Descriptive Statistics: Break Down by Early Childbearing

Variables	Age at First Birth< 20	Age at First Birth ≥20
Child Health Indicators		
Height for age (z-scores)	–1.714603	–1.418112
Weight for age (z-scores)	–1.749793	–1.520961
Maternal Characteristics		
Age at Marriage	16.01	22.14
Short First Birth Interval*	.5165934	.436108
Mother Education Primary*	.1941224	.1853206
Mother Education Middle*	.0931627	.0946007
Mother Education Secondary*	.0881647	.133802
Mother Education Higher*	.02499	.1374578
Child Characteristics		
Child Gender(Male=1,Female=0)	.4990998	.5008733
Age of Child	2.612355	2.54342
Child had Diarrhea in Past Two Weeks *	.1813991	.1625282
Health Knowledge/Practices		
Ever Heard of Aids *	.2760896	.4175014
Ever use any Family Planning Method *	.1135546	.1079865
Salt Iodisation *	.6491403	.6985939
Household Characteristics		
Household Head Primary Education*	.1945222	.1749156
Household Head Middle Education*	.1321471	.1472441
Household Head Secondary Education*	.1505398	.1975816
Household Head Higher Education*	.0581767	.121766
Gender of Household Head (Male=1,Female=0)	.9528189	.9457255
Number of Household Members	8.159336	7.79207
Household Own Agriculture Land*	.2714914	.3055681
Area(Urban=1, Rural=0)	.2856857	.3585489
Wealth Score	–.3612048	–.0038705

* Indicates dummy variable.

Table 3

Regression Results: ORDINARY Least Square, Least Square Dummy Variable,

Dependent Variable: Weight for Age (z-scores)	OLS	OLS	Cluster FE	Household FE
Early Childbearing (Age at	–0.229***	–0.0583*	–0.0438**	–0.159***
First Birth <20 =1)	(0.0349)	(0.0336)	(0.0203)	(0.0473)
Observations	21,809	21,905	21,905	21,905
R-squared	0.007	0.114	0.059	0.019
Community FE	No	No	Yes	No
Number of Cluster id	–	–	2020	–
Household FE	No	No	No	Yes
Number of Household id	–	–	–	7606
Mother Controls	No	Yes	Yes	Yes
Child Controls	No	Yes	Yes	Yes
Community Controls	No	Yes	No	Yes
Household Controls	No	Yes	No	Yes

Table 4

Robustness Checks: Categorical Classification of Age at First Birth for Height for Age

Dependent Variable : Height for Age(z- scores)	OLS	Cluster FE	Household FE
Mother's Age at First Birth:			
≤ 16	–0.0435	–0.0586	–0.336***
	(0.0930)	(0.0507)	(0.116)
17-18	–0.121*	–0.0476	–0.00862
	(0.0623)	(0.0352)	(0.0862)
19	–0.123**	–0.0938**	–0.0737
	(0.0605)	(0.0388)	(0.0928)
20-21	–0.0590	–0.0175	–0.0822
	(0.0410)	(0.0263)	(0.0619)
Child Controls	Yes	Yes	Yes
Mother Controls	Yes	Yes	Yes
Household Controls	Yes	Yes	No
Observations	21,758	21,758	21,758
R-squared	0.112	0.054	0.018
Number of Cluster id	–	2,018	–
Cluster FE	–	Yes	No
Number of Household id	–	–	7584
Household FE	–	–	Yes

Robust standard errors in parentheses.
*** p<0.01, ** p<0.05, * p<0.1.

Table 5

Robustness Checks: Categorical Classification of Age at First Birth for Weight for Age

Dependent Variable : Weight for Age(z- scores)	OLS	Cluster FE	Household FE
Mother's Age at First Birth:			
≤ 16	–0.0129	–0.00493	–0.462***
	(0.0706)	(0.0416)	(0.0928)
17-18	–0.0528	–0.00523	–0.0982
	(0.0501)	(0.0288)	(0.0682)
19	–0.117**	–0.128***	–0.260***
	(0.0493)	(0.0316)	(0.0736)
20-21	–0.0160	–0.0134	–0.213***
	(0.0334)	(0.0216)	(0.0491)
Constant	–1.843***	–1.888***	–0.967**
	(0.0971)	(0.0669)	(0.434)
Child Controls	Yes	Yes	Yes
Mother Controls	Yes	Yes	Yes
Household Controls	Yes	Yes	No
Observations	21,905	21,905	21,905
R-squared	0.114	0.059	0.021
Number of cluster id	–	2,020	–
Cluster FE	–	Yes	No
Number of household id	–	–	7,606
Household FE	–	–	Yes

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 6

Comparison of MICS 11 & MICS 14 data sets for Height for Age z-scores.

	OLS		Cluster FE		Household FE	
Dependent Variable : Height for Age(z- scores)	MICS 2011	MICS 2014	MICS 2011	MICS 2014	MICS 2011	MICS 2014
Early Childbearing	–0.128***	–0.0907**	–0.107***	–0.0613**	–0.111	–0.0170
(Age at First Birth<20=1)	(0.0237)	(0.0420)	(0.0264)	(0.0248)	(0.108)	(0.0596)
Constant	–0.955***	–1.875***	–0.926***	–1.874***	–0.171	1.121**
	(0.0519)	(0.114)	(0.0578)	(0.0813)	(0.521)	(0.544)
Observations	25,250	21,758	25,250	21,758	25,250	21,758
R-squared	0.124	0.112	0.094	0.053	0.112	0.017
Number of Cluster id	–	–	6,220	2,018	–	–
Cluster FE	–	–	Yes	Yes	–	–
Number of Household id	–	–	–	–	16,015	7584
Household FE	–	–	–	–	Yes	–
Child Controls	Yes	Yes	Yes	Yes	Yes	Yes
Mother Controls	Yes	Yes	Yes	Yes	Yes	Yes
Household Controls	Yes	Yes	Yes	Yes	No	No

Robust standard errors in parentheses.
*** p<0.01, ** p<0.05, * p<0.1.

Table 7

Comparison of MICS 11 & MICS 14 data sets for Weight for Age z-scores

	OLS		Cluster FE		Household FE	
Dependent Variable : Weight for Age(z- scores)	MICS 2011	MICS 2014	MICS 2011	MICS 2014	MICS 2011	MICS 2014
Early Childbearing (Age at First Birth<20=1)	–0.0742*** (0.0196)	–0.0583* (0.0336)	–0.0561*** (0.0213)	–0.0438** (0.0203)	–0.0148 (0.0867)	–0.159*** (0.0473)
Constant	–1.450*** (0.0426)	–1.844*** (0.0972)	–1.477*** (0.0466)	–1.888*** (0.0667)	–0.885** (0.421)	–1.075** (0.433)
Observations	25,574	21,905	25,574	21,905	25,574	21,905
R-squared	0.102	0.114	0.048	0.059	0.019	0.019
Number of Cluster id	–	–	6,235	2,020	–	–
Cluster FE	–	–	Yes	Yes	No	No
Number of Household id	–	–	–	–	16,146	16,146
Household FE	–	–	–	–	Yes	Yes
Child Controls	Yes	Yes	Yes	Yes	Yes	Yes
Mother Controls	Yes	Yes	Yes	Yes	Yes	Yes
Household Controls	Yes	Yes	Yes	Yes	No	No

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Policy

Utilisation Challenges of Public Health Insurance Initiatives: Evidences from Sehat Sahulat Programme (SSP) in Pakistan

DURR-E-NAYAB, SHUJAAT FAROOQ, and NABILA KUNWAL

EXECUTIVE SUMMARY

Healthcare utilisation largely depends on both demand and supply-side factors. On the supply side, health infrastructure could be better to serve the population's needs, whereas, on the demand side, affordability is the main challenge, especially for poor households. Health insurance provides an opportunity to avail of decent health facilities. The government of Pakistan launched the Sehat Sahulat Programme (SSP) to provide equitable and affordable indoor health services through public-driven health insurance.

The current study has analysed the SSP by focusing on the factors that may reduce the in-door utilisation of health services. Besides secondary analysis, we have managed the qualitative and quantitative field survey by conducting in-depth interviews with all the supply and demand side stakeholders. A household survey is also carried out with the beneficiaries.

Our analysis found that the programme has been facing the issues of lower utilisation due to various factors, including lack of awareness and a limited number of empanel hospitals. In some districts, there is only one hospital to cater to the needs of 73,000 families. The programme also requires focus to ensure 100 percent enrolment of all the eligible families, as in study districts, the pending cases range from 22 percent to 74 percent, with an average of 39 percent. Around 7 percent of the inpatients are deprived of seeking indoor treatment, either due to lack of hospital or lack of facility in the hospital or denial of services by the empanel hospital.

The programme requires improving the environment of the empanel hospital by ensuring the availability of communication material, the 24/7 presence of a front desk person (HFO), and the availability of the operational manual. On the demand side, we found that most beneficiaries need more proper knowledge about various programme features, including where they should go for treatment, package amount, type of treatment covered in the package, and whom to contact for information.

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Despite the low utilisation rate, a heartening element is the high satisfaction level of the beneficiaries who had received treatment. As a way forward, we recommend the following:

First, the programme may ensure every citizen receives in-door health treatment by improving accessibility and availability of health services and easing the documentation requirement.

Second, there must be a sufficient number of empanel hospitals, and offered packages against a treatment must be attractive to avoid the 'pick and choose' option by the hospitals. The entire government health infrastructure must be on the pool of SSP. It should be mandatory that all private hospitals be a part of the SSP.

Third, the authorities must ensure that HFOs should be available in hospitals 24/7. The hospital list should be publicly available through various sources, including the website and dedicated SMS service. Moreover, the programme should introduce some Android applications to find the nearest hospital to a patient.

Fourth, there is a need for a grassroots-level communication strategy, especially in districts where the programme is universal. The key messages must be disseminated at the doorsteps of beneficiaries. For this, the programme may involve local notables, education and health departments, and other social safety net departments having a ground-level presence (i.e., BISP, Zakat, Pakistan Bait-ul-Mal, and various provincial social protection/security authorities). Overall, the communication strategy must be heterogeneous, considering the population's needs.

1. INTRODUCTION

1.1. Introduction

Healthcare utilisation largely depends on both demand and supply-side factors. In developed countries, it is mostly determined by the demand-side factors as these countries have well-structured supply-side facilities and financing elements, including health insurance systems (Kale, et al. 2013, Kressin & Groeneveld, 2015). However, in low-income countries, access to health facilities and quality of health services are the major concerns, as poor individuals cannot utilise the health facilities due to the availability and affordability challenges (Lyu, et al. 2017).

Most low-income countries, including Pakistan, face supply and demand-side constraints on effective health financing tools. On the supply side, they lack high-quality health infrastructure—uniformly available to all the population segments. On the demand side, the informal markets, and health insurance mechanisms are inadequate and accessible only to a limited population segment. The social protection programmes also cannot ensure health financing for vulnerable and low-income families. As a result, most of the population has to finance their expenses from their pockets (Vujicic, Buchmueller, & Klein, 2016). The heavy health expenditures raise their present vulnerability, i.e., compromise on low or forgo treatment, and push them into chronic and intergenerational poverty. As a coping strategy, they mostly borrow, cut down on consumption, sell assets, and curtail other investments, including that on child education (Bredenkamp, Mendola, & Granolati, 2010).

Health insurance provides an opportunity to avail adequate health facilities Finklstein, et al. 2012). Different health insurance models are operatable around the globe, including single-payer, multiple insurers, government-sponsored and employer-sponsored insurance, etc. Ellis, Chen, & Luscombe, 2014). However, such models could be more mature and operational in developing countries by targeting most of the population due to various socio-economic imperfections, including informal economy, lack of affordability, absence of competitive health insurance companies, and cultural, religious, and other beliefs. For example, various religious segments in Pakistan consider health insurance as '*haram*'.

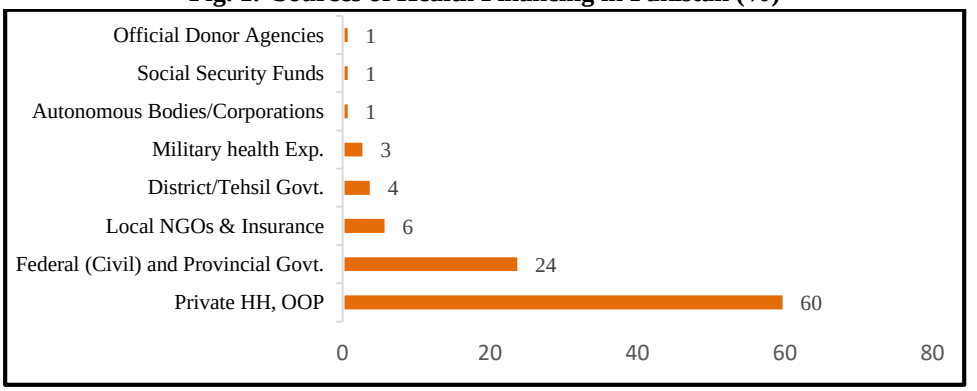
Health insurance helps the public, especially the poor, to afford equitable health facilities; therefore, insurance schemes can enhance the health utilisation rate across various socio-economic groups, including inpatient, outpatient, and emergency services [6]. Multiple governments in developing countries have devised health insurance schemes for the poor segments to facilitate them through in-door/out-door services, i.e., Rashtriya Swasthya Bima Yojana (RSBY) and PMJAY in India (Thakur, 2016), National Health Insurance (NHI) in South Africa (Setswe, et al. 2015), and National Hospital Insurance Fund (NHIF) in Kenya Kazungu & Barasa, 2017). Some programmes are non-contributory, where the government fully pays the health premium, whereas some are contributory.

There are various challenges in the supply-driven health insurance programmes for the poor segments. For example, the need for more awareness about health insurance schemes plays a vital role in influencing the coverage and acceptability of the schemes amongst the beneficiaries, leading to lesser effective utilisation of health care services and, consequently, poorer health outcomes. Although the public sector programmes offer free health insurance to the poor and vulnerable segments, they mostly face coverage issues and lower utilisation. The programme may also need better awareness among beneficiaries, lack robust planning, delays and irregularities, etc. (Thakur, 2016). Several determinants of poor understanding include political factors, social/cultural norms, and economic factors (Thakur, 2016, Capuno, et al. 2016). Supply-side factors include hospital access, lack of requisite facilities, denial of services by empanelled hospitals, and lower health insurance limits (Setswe, et al. 2015, Wagstaff, et al. 2016). Sometimes, the poor beneficiaries have to purchase medicine out-of-pocket due to the non-availability of ensured treatment in empanelled hospitals or because the scheme does not cover prescribed drugs (Rathi, Mukherji, & Sen, 2012, Devadasan, et al. 2013). Regular awareness campaigns, automated health insurance systems, and efficient complaint management systems significantly improve health insurance utilisation care (Kotoh, Aryeetey, & Van Der Geest, 2018).

1.2. Health Utilisation Issues in Pakistan

According to the constitution, the state is responsible for providing the necessities of life to all citizens irrespective of sex, caste, creed, or race (Article 38 of Pakistan). Still, health is treated as a commodity in Pakistan, and most population finances health services from their own pockets Malik & Syed, 2012). The state lacks sufficient resources to provide equitable health facilities to all population members. The country has been facing a doubled disease burden where, on the one hand, health budgetary allocation is insufficient (only 0.6 percent of GDP), and, on the other hand, around two-thirds of the population finances their health expenses themselves (Figure 1). The employed population working in the formal sector may avail of health insurance as provided by the government part of their perks. Still, the poor and informal workers mostly lack such facilities.

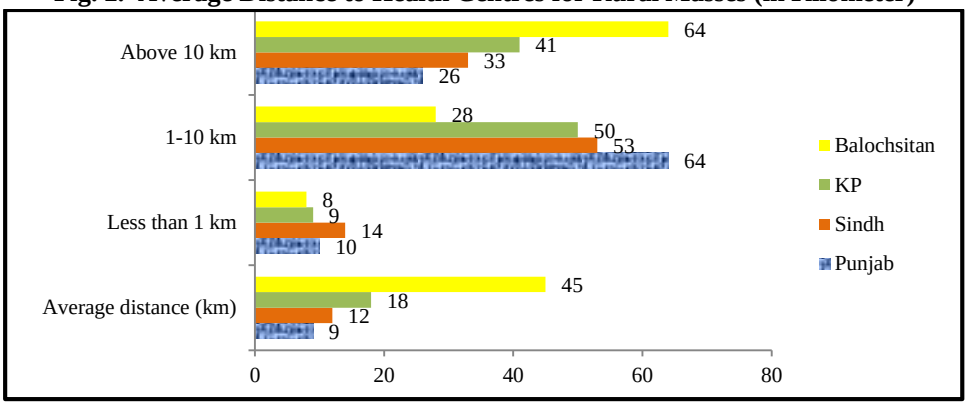
Fig. 1. Sources of Health Financing in Pakistan (%)



Source: GoP, National Health Accounts, 2013.

The public health system of Pakistan can only serve part of the population due to resource constraints and the lack of a well-structured health infrastructure. For example, the 2008 Mouza Statistics show that 65 percent of the rural population of Balochistan in Pakistan has to travel a lot (more than 10KM) to access health centres (Figure 2).

Fig. 2. Average Distance to Health Centres for Rural Masses (in Kilometer)



Source: Mouza Statistics, Pakistan Bureau of Statistics (PBS), GoP (2008).

Due to poor public sector infrastructure, private hospitals bridge the gap. The statistics of the 2017/18 National Health Accounts (NHA) reveal that 83 percent of the population in Pakistan has experienced using private health facilities, whereas only 17 percent used government health facilities. In such a scenario, the poor and marginalised households in Pakistan are more disadvantageous as they face the double burden of diseases—on the one hand, they face more chances of sickness, and on the other, they lack resources to purchase the desired health services in private hospitals (Shaikh & Hatcher, 2005).

Before the emergence of SSP, most low-income groups financed their health services from their own pockets. Affordability was one of the significant barriers to their utilisation of health facilities, and they had only the option to visit government health centers. The emergence of SSP has eased the lives of people with low incomes by providing reasonable and affordable insurance coverage for in-door treatment for the entire family.

Private hospitals are empanelled with the SSP to ensure the supply-side facilities, as there could be overcrowding and attitude issues in government hospitals.

The SSP programme uses the Benazir Income Support Programme (BISP) poverty score data for targeting. The SSP has a clear eligibility threshold of a score of 32.5. Our estimates suggest that the programme covers more than one-third of the population; therefore, most of the bottom two quintiles are covered in the SSP. The critical challenge of the SSP is the low utilisation rate of the provided health insurance. Global evidence suggests that it should be around 4-7 percent but below 1 percent per annum for the SSP. Potential reasons could be manifolds at both the demand and supply sides. There could be certain constraints related to policy, implementation, and database. An eligible person must enrol in the programme or avail of the services. The reasons may include:

- Non-traceability of beneficiaries due to incomplete addresses and migration and incomplete database (lack of CNIC and non-registration of all family members).
- Card delivery challenges due to migration of the recipients and weak communication and awareness strategy.
- Lack of a sufficient number of hospitals to provide indoor treatments.
- Poor and marginalised segments mostly lack proper information on how to be enroled in the programme and utilise health services.

Our previous analysis of BISP's Waseela-e-Sehat Programme (WeS) found alarming findings: the utilisation rate was below 1 percent. A lack of awareness was the critical reason for not utilising health insurance services. Many beneficiaries considered that they would get cash instead of using the health card. There was no reliable information center to guide the beneficiaries despite BISP's Tehsil offices in the area; however, they were not properly trained to guide the beneficiaries. Another constraint was the lack of OPD facility in the health insurance card. OPD is quite essential in reducing catastrophic health expenses. The 2017-18 NHA report suggests that around 78 percent of the population used health facilities for outpatient, 8 percent used in-patient facilities, 5 percent used delivery, and 11 percent used self-medication.

1.3. Objectives of the Study

The proposed research aims to evaluate the barriers that can hinder the potential beneficiaries from enroling in the Sehat Sahulat Programme (SSP) and utilising the health services. The study revolves around the following objectives:

(i) To review the existing communication and awareness policies and guidelines on enrolment and service delivery as well as the implementation of these guidelines;
(ii) To analyse the operational challenges in enrolment and card delivery to the beneficiaries;
(iii) To identify the potential collaboration with the public sector social protection initiatives;
(iv) To evaluate the in-door utilisation of the programme, whether there is some non-utilisation of health facilities due to lack of information; and
(v) To draw policy implications for enhancing enrolment, coverage and awareness among the beneficiaries.

1.4. Organisation of the Study

The current study is organised into seven sections. A literature review is detailed in Section 2, followed by data and methodology in Section 3. A secondary analysis is carried out in Section 4 using the SSP dataset. Section 5 details the analysis of data validation and communication arrangements on enrolment and service delivery. Section 6 explains the demand and supply side analysis of health utilisation. The last section concludes the study along with recommendations.

2. UTILISATION ISSUES IN PUBLIC DRIVEN INSURANCE PROGRAMMES

The word health insurance is unknown to most poor living in developing countries. Health is still a significant shock and permanent threat to the livelihood and earnings of low-income people, where they have to bear both the direct (i.e., doctor fees, medicine, etc.) and the opportunity cost of missing their labour hours. Various developing countries have started social health insurance schemes to improve access to acceptable healthcare for the marginalised segments.

Alternative healthcare financing and cost recovery strategies like user fees are generally criticised. This makes the insurance option appear to be a sound alternative as it allows pooling the catastrophic risks and unforeseeable health care costs to fixed premiums. Various health insurance models are operatable around the globe, including non-profit, mutual, and community-based health insurance schemes etc. An ethic of mutual aid, solidarity, and the collective pooling of health risks characterises these schemes. In several countries, these schemes operate with health care providers, mainly hospitals in the area.

In South Asian countries, India has a good example where less than one-fifth of the population has a considerable health insurance plan. Approximately 70 percent are covered under various government schemes in India, i.e., Pradhan Mantri Jan Arogya Yojana (PMJAY), Employment State Insurance Scheme (ESIS), Aam Aadmi Bima Yojna (AABY) and the Janashree Bima Yojna (JBY).

A well-designed health insurance programme for the poor must hold the following characteristics:

- The programme must enrol a large proportion of the poor;
- The enroled population must increase their utilisation of health facilities;
- The programme must improve financial protection for the poor by reducing out of pocket payments that lead to increased poverty; and
- Over time, successful health insurance schemes should improve health outcomes for the poor.

Success in achieving the desired results from health insurance for poor segments depends on multiple factors, mainly outside the health insurance scheme, including good quality services (supply-side) and social and cultural norms on the demand side. While designing the programme, the policy-makers must consider these aspects (Watson, Yazbeck, & Hartel, 2021). The evidence suggests that programmes with universal

eligibility for insurance with a substantial premium subsidy can significantly improve enrolment rates. For example, in Thailand, citizens not covered in formal sector programmes are eligible for a non-contributory health insurance programme, and almost 100 percent are enroled, with an increase in utilisation over time (Suphanchaimat, et al. 2016, Wagstaff & Manachotphong, 2012). In Ghana, universally exempting all pregnant women from paying premiums significantly expanded coverage of people with low incomes Nguyen, Rajkotia, & Wang, 2011).

Even if people experiencing poverty are rightly identified/selected, a scheme can achieve pro-poor enrolment only if it has a well-administered plan to enrol the poor segments. The Indonesian programme Kesehatan Masyarakat programme is available for all the poor households in the bottom two quintiles. However, it requires a lot of documentation and official procedures for registration, resulting in limited registration (Brooks, et al. 2017). We have found in SSP that a significant number of eligible families still need to be enroled due to specific communication-related challenges.

Information and administrative features of schemes are the most critical aspects. The insurance increases health utilisation only if the beneficiaries understand the programme's features. Still, there is evidence that many do not, especially if they have been automatically rather than voluntarily enroled and have yet to be well informed about their entitlements. In Kerala, a lack of knowledge about the benefits package and empanelled hospitals was the main reason people who held a Comprehensive Health Insurance Scheme card did not use it (Philip, Kannan, & Sarma, 2016). On the other hand, the awareness campaigns led to significant knowledge and utilisation of services in the case of the Rajiv Aarogyasri Community Health Insurance Scheme in Andhra Pradesh and VAS in Karnataka (Sood & Wagner, 2018, Rao, et al. 2016).

The impact of health insurance on the utilisation of health care services in low and middle-income countries is demonstrated well in the literature. The utilisation depends both on demand and supply side factors and constraints. Gotsadze, et al. (2015) found that medical insurance for low-income families increased the use of formal health services by 12 percent in Georgia (Gotsadze, et al. 2015). Another study in Indonesia found that the Jaminan Kesehatan Nasional Programme increased inpatient admission for the premium voluntarily paid group by 8.2 percent and the subsidised group by 1.8 percent Erlangga, Ali, & Bloor, 2019). However, evidence on the effect of health insurance on out-of-pocket (OOP) reduction was found inconsistent by some studies (Aji, et al. 2013, Erlangga, et al. 2019). Some studies have reported that health insurance reduces OOP expenditures (Gotsadze, et al. 2015, Kanmiki, et al. 2019), while others found that health insurance increases OOP expenditures. For example, evidence from the Indian National Health Account 2017 shows that OOP health expenditures for inpatient care constitute around 32 percent of the total OOP health expenditures despite the coverage offered by various health insurance programmes.

Karan (2017) analysed the Rashtriya Bhima Yojana (RSBY) programme in India and found that RSBY has raised households' non-medical expenses by 5 percent without impacting OOP spending. The schemes could have been more effective in reducing the burden of OOP on low-income families. Some of the reasons cited by them were denial of services and lower coverage limits to provide care by empanelled hospitals and lower coverage limit. Nayab and Khan (2015) evaluated the Waseela-e-

Sehat Programme (WeS) in Pakistan and found poor health utilisation among insured families. The critical main reason for not utilising health insurance services was a need for more awareness. The other reason was that there needed to be a reliable information center to guide the beneficiaries properly. Another constraint was the need for an OPD facility in health insurance cards.

Better accessibility increases utilisation and decreases income-related differences. Thus, improving geographic accessibility, a structural approach, could improve utilisation and decrease income-related disparities (Fujita, et al. 2017). The study of Thakur (2015) evaluated the awareness, enrolment, and utilisation of Rashtriya Swasthya Bima Yojana (National Health Insurance Scheme) in Maharashtra, India, and found that only 29.7 percent were aware of the scheme and 21.6 percent enroled 2-4 years post the rollout of the scheme. A significant rural-urban differential was found in the level of awareness, with rural understanding greater than urban awareness by 13.2 percent. The study found that the political factors (voting in recent elections, participation in local politics, political contacts, contesting in the local election, and being a member of a political party) were more significantly related to awareness as compared to social/cultural and economic factors in both urban and rural areas Thakur, 2016). However, in comparatively developed countries (i.e., South Africa), the respondents' knowledge and awareness were high (Setswe, et al. 2015).

Panda, et al. (2015) found that various awareness tools (i.e., stories and folklore evoked in flipbooks, posters, and wall paintings based on the local understanding of insurance and risk-pooling mechanisms) improve beneficiaries' awareness. The findings suggest that the enrolment rates can be increased through frequent interactions and communication of concepts to the public (Panda, Chakraborty, & Dror, 2015). Philip, et al. (2016) found that the enrolment rate is high among families having pre-existing disease(s) or having a member who is chronically ill (Philip, Kannan, & Sarma, 2016). El-Sayed, et al. (2015) managed the analysis in 48 countries through a quasi-experimental design. They found a higher enrolment rate for the chronically ill compared to the general population in various health insurance schemes in many LMICs (El-Sayed, et al. 2016). Another study in Kenya showed that the sick chronically had, despite having a borderline significance, 22 percent greater odds of coverage compared to those without a chronic disease (Kazungu & Barasa, 2017).

Kotoh et al. (2018) employed a multi-level perspective to examine the reasons for enrolment and retention in the Ghana's National Health Insurance Scheme via canvassing household survey 20 months after educational and promotional activities to improve enrolment and retention rates. The results indicated factors influencing enrolment and retention in NHIS can be multi-dimensional across all stakeholders. People enroled and renewed their membership because of NHIS benefits and health provider's positive behaviour. Barriers to enrolment and retention included poverty, traditional risk-sharing arrangements influencing people to enrol or renew their membership only when they need healthcare, dissatisfaction with health providers' behaviour, and service delivery challenges (Kotoh, Aryeetey, & Van Der Geest, 2018). A Meta-analysis is given in Table 1.

Table 1

A Meta-Analysis of Health Insurance for Poor Segments

Study	Pro-poor Enrolment	Pro-poor Utilisation	Pro-poor Financial Protection	Pro-poor Health Outcomes
Georgia Medical Insurance (2007-2008).		No pro-poor effect.	Reduced OOP and CHE.	
Georgia Medical Insurance for the Poor (2006).		Increase utilisation of inpatient services by the poor.	-	
Ghana Two Rural Districts.	Enrolment rates much lower for the poor than for the rich.		Insurance had a strong protective effect against CHE for the poor.	
Ghana NHIS Coverage of Pregnant Women in BrongAhafo.	Enrolment was automatic for all pregnant women. Enrolment rates much lower for the poor than for the rich.	Narrowed the differential in facility deliveries between rich and poor.	Not explicitly examined, but pregnant women were exempt from the premium and all co-payments.	
Kenya Jamil Bora CBHI.	Poorest were most likely to be enroled.	Utilisation of inpatient services was highest among the poorest quintile.		
Ethiopia CBHI.	Participation in the productive Safety Net Programme increased the likelihood of enrolment in CBHI.			
Burkina Faso Nouna CBHI.	Use of community wealth ranking increased enrolment by the poor.			
Mexico (Seguro Popular).	Not reported, but the data came from a programme that also increased enrolment of the poor.		Reduced CHE for the poor (who were the people eligible to join).	
Colombia	Coverage was mandatory Enrolment is automatic.	Point estimates suggest a large increase, but the study was not powered to detect significant changes.	Substantially reduced OOP costs for hospital admissions.	Reduced mortality.
India VAS Karnataka.			Reduce OOP.	Reduced mortality.
India RSBY Himachal Praceshy.				
India RSBY Gujrat.	Most BPL families in the sample were enrolled.		Most enrollees who were hospitalised still faced OOP payments.	

Continued—

Table 1—(*Continued*)

China NCMS TB	Enrolment rates are high.		Small positive effect.	
China NCMS Puding Country 2009 Reforms	Enrolment rates are high in NCMS.		Reform removed the pro-rich bias in reimbursement by NCMS.	
China NCMS Rural. China Urban Schemes Shaanxi.	Enrolment rates are high in NCMS.	One of the two schemes had a pro-poor effect on outpatient utilisation. Both had pro-rich effects on inpatient utilisation.		
China NCMS Six Countries.	Enrolment rates are high in NCMS.	Small pro-poor impact on inpatient utilisation; no significant impact on outpatient utilisation.		
Vietnam Health Care Fund for the Poor (HCFP)	Successfully enrolled the poor.	No significant impact	Significant pro-poor impact on financial protection.	
Vietnam HCFP for the Rural Elderly Poor.		Increase utilisation	No significant impact on financial protection.	
Vietnam under 6 Years Old.	Enrolment is automatic.	Increased utilisation	No impact found ion financial protection.	No impact found on number of sickness days or bed days.
Vietnam HCFP.		Small impact on outpatient visits; larger impact on inpatient utilisation by the poor.		
Vietnam Health Insurance in Rural Areas in Philippines.		Pro-poor impact on utilisation of both outpatient and inpatient services. No pro-poor effect that could be attributed to insurance coverage.		
Indonesia Jamkesmas Celivery care.		Modest effect on facility-based delivery and skilled delivery among poor women.		
Indonesia obstetric care in three hospitals. Thailand migrants			Insurance significantly reduced CHE for poor women.	
Thailand	Some success in enrolment.	Utilisation remained low.		

Source: Watson, et al. (2021) [18].

3. CONCEPTUAL FRAMEWORK, DATA AND METHODOLOGY

To accomplish the objectives in Section 1, we have adopted a multi-approach strategy that includes desk analysis, secondary analysis, and primary data collection (qualitative and quantitative) from relevant stakeholders. The current section details the conceptual framework, methodology, and data collection process against each tasks according to the study's objectives.

3.1. Conceptual Framework

Health insurance schemes must be available, accessible, and acceptable to the targeted population if they are to be used. The decision-making process for individuals to use such schemes depends on their choices about when and where to seek care and the various socio-economic and cultural factors that influence their perceived needs and demands. Before their perceived needs result in demand for and utilisation of health services, they must interact with the reality of the health insurance system. This includes knowledge and facility of features and services covered, level of affordability (for expenditures not covered), and quality (actual or perceived) of treatment given under such schemes, in addition to the ease in identifying and registering.

To understand the potential reasons for lower utilisation rates, the level of awareness of the scheme, and various factors that can increase the scheme's uptake, we employ a modified Tanahashi framework (1978) to review the demand and supply side constraints. The framework is beneficial for ascertaining challenges to universal coverage – defined by WHO as access to critical promotive, preventive, curative, and rehabilitative health interventions for all at an affordable cost, thereby achieving equity in access.

The framework helps identify the barriers and enabling factors in accessing hospital care services under the Sehat Sahulat Programme (SSP). This model has supported the identification of bottlenecks through a stepwise approach by evaluating six determinants of the effectiveness of coverage of an intervention.

(i) *Availability coverage:* This considers the resources available for delivering an intervention and their sufficiency. That is the number or density of health facilities and personnel or the availability of technology (drugs, equipment). In other words, availability coverage measures a health system's capacity about the size of the target population or, ideally, the people in need.

(ii) *Accessibility coverage:* There are two main dimensions of accessibility: physical access and affordability. On the physical dimension, access may be hindered if the resources are available but located inconveniently. For example, the distance from a health service provider is a vital accessibility factor. Time is another factor closely related to distance and transport. The travel time to a health facility to access services and the waiting time to see a health professional seem well-associated with patients' perceptions of the accessibility of services. However, the value of time (opportunity cost) is different for different groups of people and, consequently, has varying impacts as an access barrier. The second main dimension is the financial barrier to access or financial accessibility (affordability). User fees and transport costs have been shown to negatively impact access to health services, rendering health services inaccessible to poor and vulnerable households. Out-of-pocket (OOP) health expenditure as a percentage of total health expenditure and the percentage of the population suffering from catastrophic health expenditures can be used as indicators to measure the financial barriers to accessibility.

(iii) *Acceptability coverage:* Tanahashi defines acceptability coverage as the capacity of health services to be appealing and sought by the people. Even if resources are available and accessible, they may not be used if the population does not accept them. Acceptability includes non-financial factors such as culture, beliefs, religion, gender, age-appropriate services, and confidentiality, as well as aspects of affordability that relate to people's perceptions of the value of health services. People's perceptions influence the acceptability of coverage and expectations of health services, such as expected costs, effectiveness and quality of care, religious views, and personal beliefs.

(iv) *Initial utilisation:* It means that people are initially enrolled or intend to use the services.

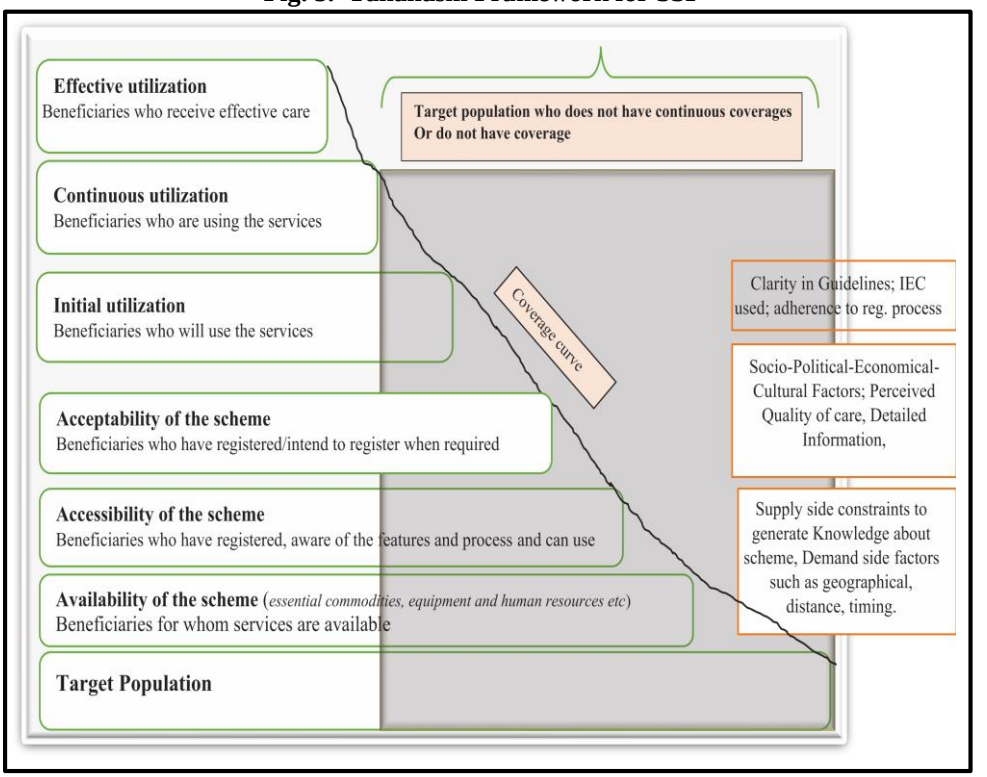
(v) *Continuous utilisation:* It is defined as the actual contact between the service provider and the beneficiaries in the last six months. The number of beneficiaries who have contacted a service measures output. It is similar to the 'use of services'. Contact coverage may be equivalent to adequate coverage for health interventions requiring a one-time action.

(vi) *Effective utilisation:* The contact between the service provider and the beneficiary only sometimes leads to successful intervention by health programmes or effective utilisation. Some services may not be available since they enrolled or may be far away, poor quality of in-door health services, unaffordable or unacceptable for specific groups may not be satisfied with the treatment, etc.

The first two factors focus mainly on supply-side constraints, while the others concentrate on demand-side barriers. The framework is useful for analysing the level of awareness to access the hospital care services under the Sehat Sahulat programme (SSP) as it helps identify the entitled beneficiaries who do not have any knowledge about the features and process of the scheme and helps identify the barriers/constraints encountered in reaching out to the potential beneficiaries. Information may not have reached /available to the beneficiaries, or the location of beneficiary enrolment centers (BEC) or hospitals for registration may be far away, unaffordable, or unacceptable for certain groups of beneficiaries who will never contact the health system to take advantage of the benefits of the scheme.

Significantly, the above six determinants will help to differentiate between nominal (potential) and practical (actual) coverage, as it highlights the gap between available supply (service capacity) and the three determinants of service output (initial utilisation, continuous utilisation, and effective utilisation). As long as these bottlenecks exist, programmatic interventions will fail to reach those in need, and an effectiveness utilisation "gap" will remain, with an endurance of inequitable health outcomes. Removing the bottlenecks is, therefore, a mandatory step towards achieving the equitable impact of SSP.

Fig. 3. Tanahashi Framework for SSP



3.2. Data Description

Following the study's objectives, we have adopted a multi-approach strategy for data collection. The current section has explained the data collection details according to the study's objectives.

Following the first objective, we have reviewed the existing policy and guidelines to enroll the beneficiaries and service delivery. We also reviewed the material disseminated for enrolment and placed in hospitals for the guidance of beneficiaries. To review the implementation of communication material, we have visited more than 13 districts where we have interacted with the concerned stakeholders, including concerned NGO and local partners in each of the districts who have been tasked to enroll the beneficiaries, around 40 hospitals where the meeting was carried out with front desk officer, hospital manager and district medical officer (DMO). We also examined the communication material placed in empanel hospitals.

To accomplish the second objective, we have conducted in-depth interviews with the concerned stakeholders regarding enrolment-related arrangements, starting from data acquired from BISP, transforming into family level, and then enrolling beneficiaries at the BECs. The information has been acquired from the NADRA (responsible for preparing the data for enrolment) and the concerned NGO in each district (having the mandate to enroll the beneficiaries at designated centers by providing health cards). The analysis has covered the following aspects:

(a) How the BISP household level data is being converted from household to family level?[1]
(b) How data matching is carried out to fine-tune the family level information?
(c) How certain data is enhanced through family tree (i.e., CNIC numbers, age, marital status, address completion).
(d) Data triangulation with other datasets, i.e. NADRA dataset to add certain information of family members, addresses, CNICs, new family addition, mobile numbers etc.
(e) If a family is not added in the BISP data, how some data is updated (unmarried to married) and what systems are being placed for it?
(f) What services have been added in the HMIS to update the data? What are the key challenges of HMIS at the hospital level due to which data cannot be updated?
(g) How the programme is dealing with null data, lack of addresses and CNICs.
(h) Is there any policy to catch-up missing households in the BISP survey?

Due to the COVID-pandemic, the Beneficiary Enrolment Centers (BECs) were closed. Therefore, the analysis on registration at the BECs has yet to be carried out; however, we have managed meetings with the focal persons of concerned NGOs who managed BECs and enrolled beneficiaries. They have reported the critical challenges faced during the enrolment.

Since the core team itself has visited 13 districts, we have also reviewed the potential collaboration of SSP with other programmes for improving communication and awareness. Various social protection programmes, both at the federal and provincial levels, are operational in the country, being set at the district and Tehsil levels, i.e., BISP, PBM, Zakat, etc. We have explored how these institutes can be used in exploring the coordination for improving communication by conducting meetings with the operational teams of these programmes in 13 districts. We probed how much they knew about the programme's features and how effectively they could disseminate information about the SSP programme to its beneficiaries.

Following the study's fourth objective, the ongoing study's core task was to manage a household survey to review utilisation trends. To accomplish the task, we have conducted the desk-based secondary microdata analysis and primary household survey. The secondary analysis has covered the coverage and utilisation in selected districts by linking the analysis with various factors, including enrolment year, poverty, empanel hospitals, etc. Across regions and time, the study has identified areas with lower and higher coverage rates. The analysis has been linked with years of enrolment, deprivation, urbanisation, hospital availability, and load of beneficiaries in the district/Tehsil.

Regarding the household survey, we have taken a sample of 647 households from 13 districts (45 to 53 from each of the districts). We have followed a two-stage stratified sample design where the universe was the eligible families in the district. The list of 13 districts and the sample size is below.

[1] The SSP programme used BISP household level data. The data was converted from household to family level by developing married couple in the household.

Table 2

Sample Size for Household's Survey

Province	District	Category A	Category B	Category C	Category D	Total
Gilgit Baltistan	Astore	14	37	0	0	51
	Hunza	4	38	4	5	51
	Gilgit	30	15	6	2	53
AJK	Bagh	10	22	0	18	50
	Neelum	2	39	0	9	50
	Bhimber	10	12	3	20	45
Punjab	Bahawalpur	14	4	2	30	50
	DG Khan	2	11	0	34	47
	Gujrat	5	14	2	32	53
	Sarghoda	3	6	5	36	50
Islamabad	Islamabad	6	11	6	24	47
Sindh	Tharparkar	0	11	2	37	50
KP	Khyber agency	7	21	14	8	50
Total		107	241	44	255	647

The village has served as the Primary Sampling Units (PSUs) and households as the Secondary Sampling Units (SSUs). We have taken 4-5 villages from each districts where 10-12 households have been interviewed. While conducting the sampling, we established the following four groups:

(i) *Category A* is the eligible group comprising those still not enrolled despite massive efforts. It would be worthwhile to analyse the group to understand the enrolment challenges.

(ii) *Category B* are the enrolled beneficiaries that have still not utilised the card. The group can effectively inform on specific challenges, including enrolment, communication, and awareness as well as utilisation related issues.

(iii) *Category C* are the enrolled beneficiaries who have punched the health card but have not utilised the health facility. The group can better explain the potential denial of services, and utilisation-related issues.

Category D are the beneficiaries who have utilised health facilities in the last six months. The group can respond to questions linked to challenges in using the health services, satisfaction, etc.

3.3. Survey Tools

Separate survey tools were developed for each of the stakeholders, keeping in view his/her
nature of involvement. For example:

The qualitative tool to interview the Front Desk Officers and District Medical Officer in hospitals has focused following aspects:

(i) What are the main data related issues that families usually face when they visit hospital for enrolment and/or treatment, i.e., lack of data, data up-dation, system functionality etc?

(ii) What data related issues you can resolve yourself and what issues you cannot resolve in CMIS.
(iii) Limitations of CMIS that needs to be build-in to update data and to register all sorts of complaints.
(iv) Have you received sufficient training? Whether operational manual is available?
(v) What are the core communication related challenges that usually the public and beneficiaries face when they approach to front desk officer?
(vi) What are the main challenges that may lead late admission or denial of services etc.
(vii) Please comment on the package amount and the sickness that still not covered.
(viii) Package comparability, number of sufficient hospitals, hospitals having good services and complaints resolution. What are the main data related issues that families usually face when they visit hospital?

The qualitative tool to interview the Hospital Managers in empanel hospitals has covered following questions:

(i) What are the main challenges of beneficiaries due to that they either face wait in admission or has to pay certain amount from own pocket or lack of services in hospital/denial of services.
(ii) What are the main challenges of beneficiaries related to the communication due to that they often don't know where to go for treatment.
(iii) What are the key challenges of CMIS due to that every complaint cannot be entertained?
(iv) Do your hospital has all the requisite facilities and there is no denial of services.
(v) Which sort of sickness have not been covered in the package and they must be covered.
(vi) Please comment on the comparability of packages and certain sickness that has not been covered.
(vii) What are the key challenges that hospital has been facing to admit beneficiaries and coordination with DMO.
(viii) Your suggestions that how in-door health utilisation can be enhanced.

The main tool of the Household survey was designed to capture various aspects of communication including knowledge about the programme and utilisation related issues to the beneficiaries. The tool comprised of the following key information:

(i) Roster having individual information including gender, age, disability, chronic sickness, status of member's registration in programme and status of CNIC/B-form.
(ii) Education and employment information
(iii) Out-of-pocket expenditures' information including sickness, type of treatment received by family, nature of treatment (out-door and in-door) and medical expenses.
(iv) Asset profiling including dwelling, durable and productive.
(v) Media habit strategy and knowledge about SSP programme.

(vi) Knowledge of Beneficiaries about SSP Programme about packages, where to go for treatment.
(vii) Practice on receiving treatment including maternity other sickness.
(viii) Knowledge and attitude about the complaint.

3.4. Training, Data Collection and Analysis

While visiting the concerned district, we managed two-days of training with an enumerator hired for each district. The training's key objective was to ensure that the enumerators had a sound understanding of instruments, correctly implemented the fieldwork protocols, and comfortably used the instrument in the field.

While conducting the field survey, we have not faced any major difficulty. However, one difficulty is worth explaining here. Our field team faced many problems tracing the 'category A' beneficiaries, that is, the beneficiaries who still need to be enrolled in the programme. We found multiple reasons against it, including decease, migration, name mismatch issues, and inability to find despite the massive effort.

Data were entered by the persons hired for the purpose at PIDE using the programme designed in CSPRO. The application allows not only establishing certain filters to avoid wrong data entry but also to ensure consistency. Once all the data were entered, it was imported in STATA version 15 for analysis. The technical team of the study did the analysis itself or a more thorough and robust understanding of the collected data.

3.5. Ethical Considerations

We have used multiple data sources, both secondary and primary. Keeping the ethical considerations in view, the following care was strictly followed in the field:

(i) The SSP shared secondary dataset for the analysis. The PIDE team confidentially used the data and none of the information was shared with any of the 3rd parties. The same was communicated to the entire team, especially those in the field.
(ii) During the household survey, participants were taken in confidence that their provided information will not be disclosed to any third party.
(iii) The survey ethics were fully explained to the enumerators during training.
(iv) Keeping in view COVID-19, we have adopted all the precautionary measures during field activity.
(v) We have followed a set of ethical principles in conducting all fieldwork that we have previously followed in the fieldwork. The survey have followed the international best practices including the OECD DAC International Quality Standards for Development Evaluation, the OECD DAC Principles Standards for Development Evaluation, UNEG's Ethical Guidelines for Evaluation. These includes:

    (a) Consent of respondents during field activity.
    (b) Ensure confidentiality of respondents is maintained, and personal information is protected.
    (c) Respect for culture.

4. INDOOR HEALTH UTILISATION: A SECONDARY ANALYSIS

Before the emergence of SSP, the majority of the population in Pakistan financed their health expenses from their pocket. This resulted in catastrophic health expense issues for poor households due to affordability issues. We may call it an 'unmet need' when the population needs medical care but cannot receive it due to various factors, including affordability, accessibility, and other cultural/belief factors. The percentage of unmet needs varies across countries, ranging from around 8 percent globally to much higher in low-income countries (Publishing, 2018).

The SSP programme has facilitated the beneficiaries and population (in universal districts)[2] to minimise the unmet need issues by resolving affordability challenges for in-door treatment and improving accessibility through the involvement of private hospitals. However, the programme may need to add OPD treatment as medical and outpatient expenditures incur much higher costs than inpatient treatment alone.

The inpatient health utilisation rates vary across countries. The study of Roodenbeke (2004) found it at 3.6 percent (De Roodenbeke, 2004), and Saksena et al., estimated it at 4.6 percent (2010) (Saksena, et al. 2010). However, we found a lower indoor utilisation rate in SSP in the 15 selected districts. Table 3 shows that the average annual utilisation is around 3 percent, which is much lower than the global utilisation rates. The utilisation rates vary across districts, with the highest in Gilgit and Bagh and the weakest in Islamabad.

Several factors can explain the varying utilisation rates in Table 3. Some of the key points are listed below:

(i) There is high variation across districts, ranging from 1 percent to 8 percent. Although the programme was started very late in Rawalpindi, it has the highest coverage, possibly due to better patient referrals/movement from other districts.

(ii) The programme was simultaneously started in districts Bagh and Bhimber, and both are universal districts where the entire population can avail of indoor health facilities. The higher utilisation in district Bagh and lower in Bhimber is linked with the number of hospitals in the district and more efficient services in the district headquarters hospital Bagh than the Bhimber.

(iii) The lower utilisation of health services in district Astore is the lack of a single empanel hospital in the district. It is a hard and hilly district where beneficiaries in far-flung areas have to travel a lot to other districts for in-door treatment. The same goes for Hunza Nagar, where the programme was started one year ago, but still, there is only one hospital in the Hunza district and no one in the Nagar district.

(iv) The lower utilisation in district Tharparker is due to multiple factors, including poverty, deprivation and scattered rural population in the desert having poor road connectivity. Although there are eight empanel hospitals, they lack good quality services, including laboratory, doctors, and surgical instruments.

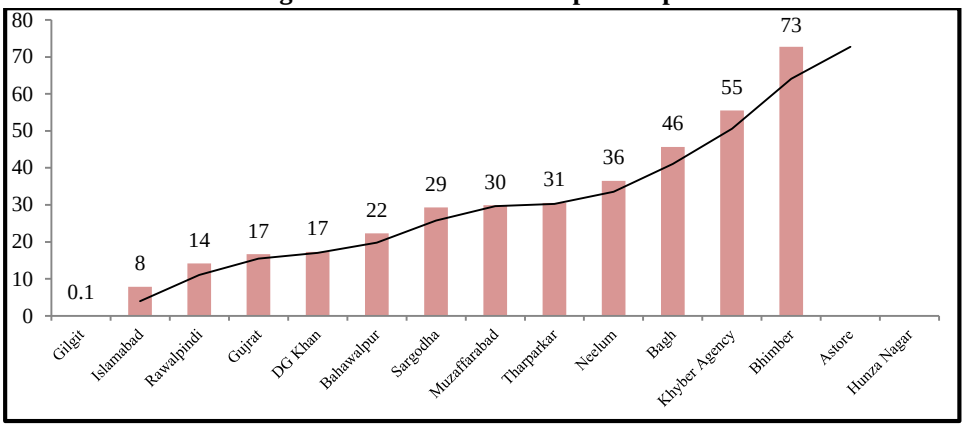
[2] Earlier the health benefits were limited only for poor segments, however, now the programme has started the in-door health treatment benefits for all the population (universalisation) and currently the population in 7 districts of Punjab, district Tharparkar, all districts of ex-FATA and AJK are part of SSP programme. Similarly the government of Khyber Pakhtunkhwa has extended the benefits of health insurance for all the citizens residing in province.

(v) The higher utilisation in districts Rawalpindi and Islamabad is due to the presence of tertiary care health facilities. A significant percentage of the beneficiaries from other districts also visit the tertiary hospitals in these two districts for treatment.

(vi) In Gilgit Baltistan there is no tertiary hospital, but the presence of AKDN in Gilgit makes beneficiaries from other districts also visit it.

As shown in Figure 4, the number of hospitals varies across regions. For instance, Islamabad has one hospital for 8 thousand beneficiaries, whereas there is only one for 55,000 and 73,000 beneficiaries in district Khyber and Bhimber, respectively. Islamabad and Rawalpindi may provide better health services as the cities have primary and tertiary care services. On the other hand, cities like Tharparkar have a few private hospitals that only provide primary-level services, and Bhimber only has a government District Headquarter hospital.

Fig. 4. Number of Families per Hospital



Source: Estimated from the Secondary data of SSP.

Table 3

Utilisation of Indoor Treatment among SSP Beneficiaries (in %)

Province	District	Registered Beneficiaries (in Numbers)	Who Utilised Services (in Numbers)	Total Months of Programme Start till August 01, 2021	Overall Utilisation Rate Since Inception (%)	Annual Utilisation Rate (%)	Number Hospitals
AJK	Bagh	91377	6122	20	6.7	4.0	2
	Bhimber	72739	1576	20	2.2	1.3	1
	Muzaffarabad	179659	32508	65	18.1	3.3	6
	Neelum	36495	1798	21	4.9	2.8	1
Islamabad	Islamabad	94477	22203	67	23.5	4.2	12
KP	Khyber Agency	221924	35806	53	16.1	3.7	4
Gilgit	Astore	4651	45	10	1.0	1.2	0
Baltistan	Gilgit	200	10	10	5.0	6.0	2
	Hunza Nagar	9486	133	14	1.4	1.2	0
Punjab	Bahawalpur	200680	17199	39	8.6	2.6	9
	Dera Ghazi Khan	190035	17259	29	9.1	3.8	11
	Gujrat	100052	3810	19	3.8	2.4	6
	Rawalpindi	170091	15566	14	9.2	7.8	12
	Sargodha	351331	52554	53	15.0	3.4	12
Tharparkar	Tharparkar	244259	9858	25	4.0	1.9	8
Total		1967456	216447	–	8.6	3.3	86

Source: Estimated from the Secondary data of SSP.

As a way forward, the programme needs to improve supply-side facilities that will ultimately improve health utilisation:

(i) Every public or private hospital must serve as the empanel.
(ii) A sufficient number of empanel hospitals in each district to create a competition among hospitals.
(iii) Better communication and awareness among beneficiaries so they must know about the details of empanel hospitals and services available to them near their hospitals.
(iv) Resolving the package-related constraints as some of the hospitals have been denying the services with the excuse that the benefit package is not enough to cover in-door expenses.

5. OPERATIONAL ARRANGEMENTS FOR ENROLMENT AND SERVICE DELIVERY

The current section broadly reviews challenges in targeting that may restrict some eligible beneficiaries from enrolling in the programme. Since the SSP programme has used BISP's poverty scorecard (PSC) data to identify the eligible families, we have analysed certain limitations of the PSC data that may prevent the eligible households from registering and, hence, receiving treatment. Targeting analysis is necessary to examine as programme authorities must review and design specific policies in the future to ensure complete enrolment and service delivery for every citizen. We have also reviewed the communication-related arrangements to enroll beneficiaries at the designated centers and the awareness material available in hospitals for beneficiaries' guidance.

5.1. Targeting of SSP Beneficiaries

The SSP programme has two sorts of beneficiaries:

(i) Poor and vulnerable households where the programme has used BISP data to identify the beneficiaries. The SSP programme started its operations using the BISP's data throughout the country.
(ii) All citizens are part of the programme in universal districts. The universalisation has been recently started. Currently, the population in 7 districts of south Punjab, district Tharparkar in Sindh, all districts of ex-FATA, and AJK are part of the SSP programme. Similarly, the government of Khyber Pakhtunkhwa has extended the benefits of health insurance for all the citizens residing in the province. Here, the programme is using NADRA data instead of the BISP data, and every married couple registered in the NADRA database is considered as a separate family.

It is worth mentioning that BISP conducted a nationwide poverty scorecard (PSC) survey by following the proxy mean test (PMT) formula technique in 2010-2011. PMT scores various household characteristics, including demography, education, durable, and productive assets. A lower score shows the high vulnerability of the household and vice versa.

In 2010/11 PSC, a door-to-door census was carried out throughout the country. Collectively 27 million households were covered with coverage of 85 percent of the population. The following table provides an insight into the enumeration statistics of the 2010–2011 national roll-out, which shows that 15 percent of the households were not surveyed by the programme (Table 4). There is no issue if a well-off household is not covered; however, if a poor household is not surveyed, it is largely the exclusion error at the design level as these poor and vulnerable households have been deprived of the benefits mainly due to a lack of data. It is worth mentioning that BISP's PSC is a static registry, and there is no window that a non-surveyed household can be interviewed at the latter stage.

Table 4

Area-wise Coverage under Poverty Scorecard Survey

Province	No. of Districts	HHs Covered (in millions)	Estimated Population (in millions)	Population Covered (in millions)	Population Covered (in %)
Punjab	39	14.9	96.4	81.2	86.3
Sindh	27	6.6	38.9	34.3	88.1
KPK	24	3.6	26.9	21.3	79.1
Balochistan	30	1.1	7.6	6.1	79.4
AJ&K	10	0.6	3.9	3.5	88.5
GB	7	0.2	1.3	1.1	89.4
FATA	7	0.4	3.7	3.1	83.0
Total	144	27.4	177.9	150.6	84.6

Source: BISP's Poverty Score Card (2010/11).

Following eligibility criteria was established for the selection of beneficiaries by the BISP:

(i) PMT score equal or less than 16.17.
(ii) Female beneficiaries either married, divorced or widowed.
(iii) Beneficiary must have a valid CNIC.

Every socio-economic registry faces specific targeting errors, i.e., inclusion and exclusion errors. Still, one can see a fair targeting of the BISP registry where the beneficiary proportion is reasonably aligned to the geographic poverty spread in the country. One can see the higher share of beneficiaries in remote and rugged areas (i.e., South Punjab, rural Sindh) and lower coverage in urban areas and north Punjab with lower poverty rates (Table 5). It reveals that although some poor households were not surveyed (as shown in Table 4), BISP's targeting is quite fair and aligns with the country's poverty spread.

It is not easy to enroll the beneficiaries in the SSP programme as they are primarily the chronically poor who live in remote areas and need proper awareness. They often need more of the necessary documentation for enrolment. After completion of the poverty scorecard survey, BISP developed a dedicated Case Management System (CMS) to enroll the pending beneficiaries, but it took too much time to enroll them. The system was developed with the help of NADRA and was deployed in BISP's Tehsil and Divisional offices to enroll and verify the pending beneficiaries. Around 1.8 million beneficiaries were enrolled through CMS through a massive effort by BISP's Tehsil offices (Figure 5).

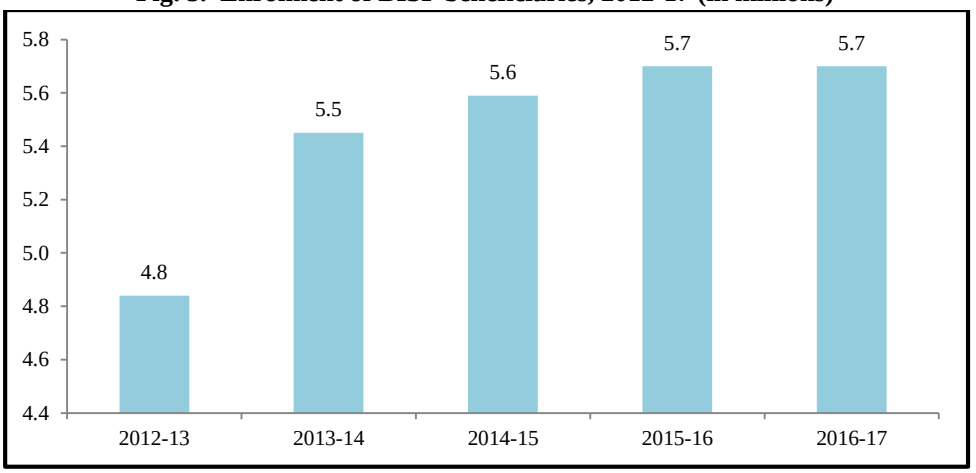
Table 5

Region-wise BISP's Beneficiary Concentration

Province/Region	Total HH Surveyed (In millions)	Benefiting Households (In millions)	Benefiting Households (In %)
AJK	0.57	0.08	14.71
GB	0.15	0.03	22.07
FATA	0.43	0.14	31.86
Balochistan	1.07	0.20	18.69
KP	3.63	0.95	26.17
Punjab-North	1.33	0.07	5.19
Punjab-Central	8.73	0.78	9.11
Punjab-South	4.61	1.01	21.81
Sindh-Rural	4.17	1.54	37.06
Sindh-Urban	2.43	0.23	9.47
Total	27.12	5.03	18.55

Source: Estimated from BISP National Socio Economic Registry (NSER) 2010 data.

Fig. 5. Enrolment of BISP beneficiaries, 2012-17 (in millions)



Source: BISP Annual Report 2019.

5.2. Data Validation for Enrolment

The SSP programme has used the BISP data for its targeting. It is worth mentioning that the BISP survey was conducted at the household level. In contrast, the SSP targeting is at the family level—a married couple with unmarried children is considered a family. After getting the data from BISP, the SSP hired the services of NADRA to convert the data from household to family level. NADRA is the custodian of citizen's data as it holds the data of birth, marital, and death registration, so it can efficiently convert the household data into family by adding the missing family members that do not exist in the BISP database but exist in the NADRA database.

NADRA enhanced the BISP data by adding CNIC numbers against the spouse and the number of family members who did not exist in the BISP database but exist in the

NADRA database. However, such conversion is not an easy task as the following limitations may be noted that NADRA faced during conversion:

(i) The BISP data is static in nature and has no provision for giving the appeal rights to the non-eligible and non-surveyed households to review/gather their data on poverty score card. The coverage of BISP registry was around 85 percent, and there was no mechanism to conduct the survey of the households that were skipped. The SSP has no mechanism to enroll such households.

(ii) Among those surveyed households in the BISP database, a significant percentage (of adults) lacked a computerised national identity card (CNIC). Suppose both the husband and wife lack CNIC in the BISP database within the family. In that case, the NADRA has no option to establish a family tree for such families for enrolment as the availability of a valid CNIC is the primary data to develop a family tree.

(iii) The benefits are that BISP made a strong effort to update the data with a PMT score of 16.17 (its eligibility threshold); however the SSP has used 32.5—a higher PMT cut-off than the BISP. The data till a score of 16.17 was much cleaned and updated by the BISP; however, above 16.17, it is mainly the raw and un-cleaned data. As a result, the non-matching issues were much higher among households with a PMT score above 16.17.

(iv) Although NADRA has tried to enhance the data where family details of children are available in their database, Pakistan still faces challenges in achieving universal birth registration and CNIC for every citizen. Many women and children in remote areas do not have B-form/CNIC (Table 6). Without information in the NADRA database, people cannot avail of health services. Even for the SSP programme, a B-form is required, not the birth registration. It is worth mentioning that both birth registration and B-form are two different documents, the former being registered in the Union Council (UC) office. In contrast, the latter document is issued by the NADRA only if the birth is registered at UC. NADRA avoids issuing B-from without birth registration in UC.

Table 6

Proportion of Children and Adult having Birth Registration/CNIC (%)

Province	District	% of Children Having Birth Registration in NADRA	% of Population (Aged 18 and above) Having CNIC		
			Female	Male	Both
Gilgit	Astore	12.0	–	–	–
Baltistan	Hunza	81.0	–	–	–
	Gilgit	16.0	–	–	–
Punjab	Bahawalpur	49.6	74.4	88.6	81.5
	DG Khan	30.3	70.1	87.1	78.4
	Gujrat	96.6	81.8	93.4	87.2
	Sarghoda	87.6	80.2	92.8	86.5
Islamabad	Islamabad	–	90.4	96.4	93.6
Sindh	Tharparkar	30.7	70.0	84.5	77.3
KP	Khyber Agency	–	77.1	94.0	85.5

Source: Population Census 2017/18, Multiple Indicator Cluster Survey (MICS), Punjab 2017-18, Multiple Indicator Cluster Survey (MICS), Punjab 2018-19, Multiple Indicator Cluster Survey (MICS), Gilgit 2016-17.

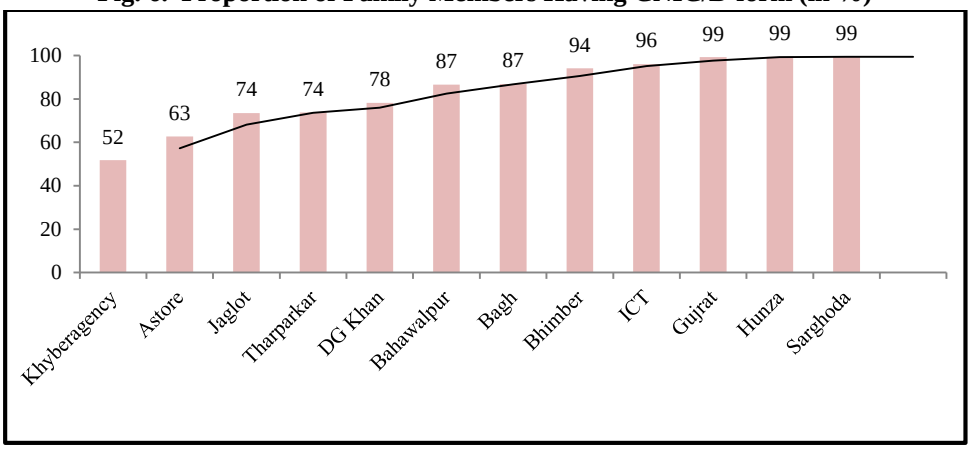
Note: Data of AJK is not reported due to non-availability.

(i) The SSP programme's database is not continuously updated using the NADRA database. For example, if a girl gets married, she may have to wait six months after updating the NADRA's database. Ideally, the SSP must have a live integration with the NADRA database and any update in the NADRA database should automatically be available in the SSP database.

(ii) We observed that many recently married women are facing issues in health utilisation due to a lack of updated data. Although they are enrolled with their parents (with unmarried status), they cannot get maternal health care services as the programme does not allow them to update their marital status. Despite having updated CNIC, they cannot register themselves as a separate family in the programme. The issue prevails all around the country, even in universal districts.

We found from our household survey that 84 percent of the respondents reported that their family members have CNIC or B-form or birth registration; the rest either does not have or lack information. Unless the family members have CNIC/B-form, they cannot receive treatment. Figure 6 shows variation across districts where we may link the availability of CNIC/B-form with remoteness and accessibility challenges. For example, district Tharparkar is relatively poor and desert, where most of the population resides in rural areas and has a poor literacy rate. Similarly, Astore is again one of the hard districts in Gilgit Baltistan (GB), where road infrastructure and accessibility are challenging. On the other hand, districts like Gujrat and Islamabad are much better in all aspects and are close to 100 percent.

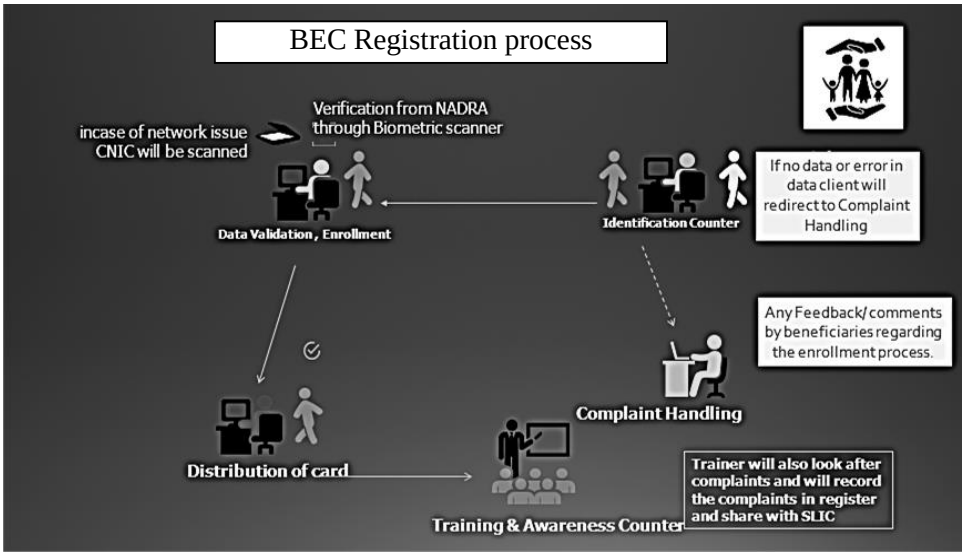
Fig. 6. Proportion of Family Members Having CNIC/B-form (in %)



Source: SSP Beneficiary Survey 2021.

5.3. Communication Arrangements for Enrolment

After data preparation by the NADRA, the programme established specified protocols for disseminating the SSP cards to the eligible beneficiaries; the third parties were hired to establish beneficiary enrolment centers (BECs) in each area to guide the eligible households for card collection. The BEC's establishment had two objectives: first, to deliver the card, and second, to enhance beneficiaries' awareness. The SSP card holds communication material in its envelope where the flyers had vital messages, including helpline details, answers to critical questions, and package details.

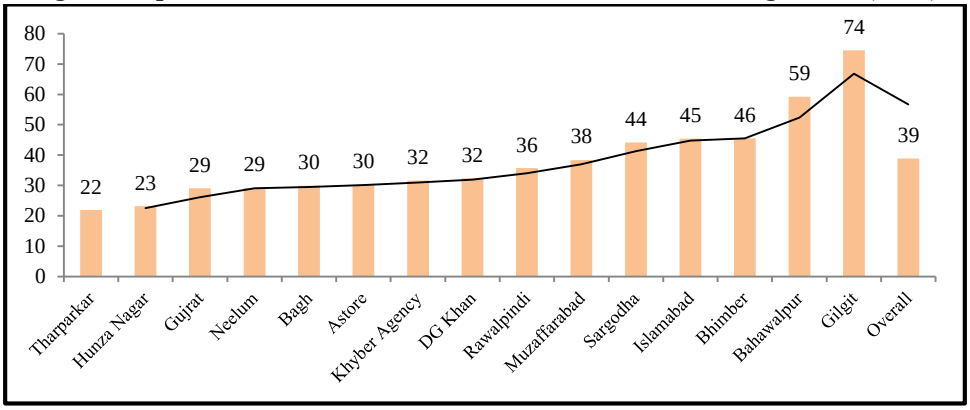


The protocols of concerned stakeholders were well defined in managing the BECs, where it was assumed that beneficiaries would receive the card after verification, and their cards would also be activated after biometric verification. Similarly, the beneficiaries who faced specific grievances will also be managed at the counter.

Despite the protocols, it was not easy to disseminate cards to everyone within a stipulated time. As noted earlier in Figure 5, it took five years for BISP to enroll the pending beneficiaries. BISP established dedicated permanent offices in each Tehsil and a CMS to address the grievances of its potential beneficiaries.

Although a third party made a massive effort to enroll the beneficiaries using various communication methods, including door-to-door campaigns and follow-up of migrant persons, a significant proportion of eligible households was not given the SSP card (Figure 7). The card delivery can also be linked with the period of a programme launched in a particular district. For example, the higher non-response rate in Gilgit can be reconciled with the programme's late start (just ten months ago); however, it is complex to explain the high non-enrolment rate in district Bahawalpur where the programme has been operational for more than three years.

Fig. 7. Proportion of Beneficiaries who were not Enrolled in Programme (in %)



Source: Estimated from the Secondary data of SSP.

Few challenges may be noted in the communication campaign that we found while interacting with the concerned stakeholders:

(i) Various beneficiates were found dead at card disbursement (around 5 percent). There is no exact number of it as it was reported by the focal persons of third parties involved in communication campaigns and card delivery. In such cases, sometimes the health card cannot given to the children of the deceased card holder until they provide sufficient documentation.

(ii) Although the programme attempted to ensure biometric verification for card delivery, it was optional, considering the vast rush and internet connectivity issues at the BECs. Many cards were given to beneficiaries without biometric verification, and some faced activation challenges.

(iii) As reported by the third-party focal personnel in Nagar, some beneficiaries have been facing the name mismatch issue where the name is wrongly printed on the SSP cards. Still, there was no way for such a correction.

(iv) In GB, the SSP card was exploited by the political parties as the SSP card was disbursed right before the election, so different parties claimed and attempted to get its ownership. Similarly, different package limits were announced by different political parties where the ruling party tried to exaggerate the package amount, and the opponents gossiped that it was 'fake'. In Tharparkar, we found that the provincial government (as the opposition in the federal government) doesn't want beneficiaries to use cards, so there is a rumor that an 'SSP card is not workable'.

(v) In many parts of GB, despite the inception of the programme, no hospital was taken on empanel for more than one year except in Gilgit city, so people started to consider that it is a fake card as cards were in the hands of beneficiaries, but there was no hospital for treatment.

(vi) The COVID-19 severely affected the performance of BECs. As a result, the management closed them and adopted an alternate strategy to deliver cards to doorsteps.

(vii) Three main challenges with the communication strategy are listed below:

(a) A third party was hired for communication and card disbursement.[3] However, they mainly focused on card delivery rather than awareness. Overall, there were temporary awareness arrangements as it cannot be done in a just few minutes and in a rush at BECs. It requires consistent interaction with the beneficiaries. The eligible families received the card but they lack sufficient information on usage.

(b) The third-party established temporary offices/set-up for communication and card delivery. After completing of their contract with the SSP, they have now closed their offices. Currently, there is no center where beneficiaries or non-card recipients go to acquire information or receiving their undelivered cards.

(c) The SSP lacks its offices at the Tehsil/district level. Except for hospitals, there is no in-person office where beneficiaries can interact with someone for certain information and queries and register their complaints.

5.3. Communication Arrangements for Service Delivery

Our team has visited more than 25 districts, where more than 40 hospitals were visited to review the available communication arrangements to the beneficiaries. We have interacted with front desk (HFO), hospital management, and district medical officer (DMO) to acquire available communication measures for the public and beneficiaries. All the hospitals have a dedicated counter for SSP beneficiaries where the focal person of SSP is available to guide both the public and beneficiaries. The same focal person is responsible for coordinating with the hospital and DMO to facilitate the patient's treatment, including admission, treatment, and claim management.

Currently, it is the HFO that is the primary source of in-person interaction with the public and beneficiaries, not only to make them aware but also to address certain grievances, especially data up-dation.[4] We have found that HFO exists in every hospital. They have been doing an excellent job. Except in a few hospitals, communication material is also found to guide the beneficiaries.

Few limitations can be noted on communication related arrangements in hospitals:

(i) Some HFO were found quite trained and motivated; however, a vast majority were quite demoralised due to their contractual jobs and lower salary as they were not even hired by the SLIC.[5] We made few questions to them for observing

[3] Mostly some NGOs were given contract for card delivery. Overall 6 NGOs were hired for card disbursement in the whole country.

[4] HFO is hired by the SLIC where one HFO manages one or multiple hospitals. S/he is the primary interaction source in each hospital and after his/her verification and consent, hospital examines the patient.

[5] SLIC recruited HFOs through another firm and have no contractual obligation with them.

their knowledge about the programme and found that some of them were not fully trained. Even some of them do not know the package amount.

(ii) Internet issue was found in some parts of GB where HFO cannot guide beneficiaries or update their data due to poor connectivity (i.e., Hunza, Gakooch).

(iii) They lack proper SOPs on operations. The documentation requirement as demanded by the HFO varies across hospitals. Some HFO demands multiple documents: original SSP card, cardholder CNIC and patient CNIC. If someone lack all three, there is denial of services. Similarly demand of document varies on hospital sides as well. For example in governmental hospitals (Bhimber, Bagh, Mirpur and Neelum), we found that hospitals lack automation system and due to manual system, they have been demanding various photocopies. Now if a person from Gilgit migrates to Karachi and s/he face some accident, s/he cannot acquire treatment unless s/he bring SSP card and CNIC of card holder. The same was reported by MS DHQ Neelum that people from far-flung areas usually come without card and as a result they face denial of services.

(iv) HFO lacks a proper operational manual having their clear roles and responsibilities. As a result they lack their clear SOPs.

(v) Mostly HFO works 8-10 hours with leave on Sunday. Even in some government DHQs (universal districts, they have no 24/7 presence. Their absence in the hospital, especially in government hospitals) can lead to denial of services when a person will visit on Saturday night or Sunday.

(vi) In various hospitals, their sitting place is not visible (i.e., Mirpur AJK a universal district). Ideally every patient in AJK region should be treated from SSP due to universalisation, but still the rate is just 35 percent in district Mirpur and around 10 percent in district Neelum. It is close to 100 in district Bhimber and Bagh.

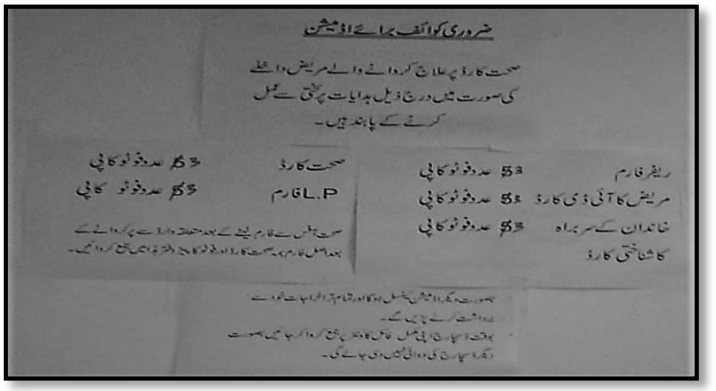
(vii) The existing communication measures in hospitals are limited at the hospital level. Currently the programme lacks certain communication measures to interact with the public in their surroundings or at their door-steps.

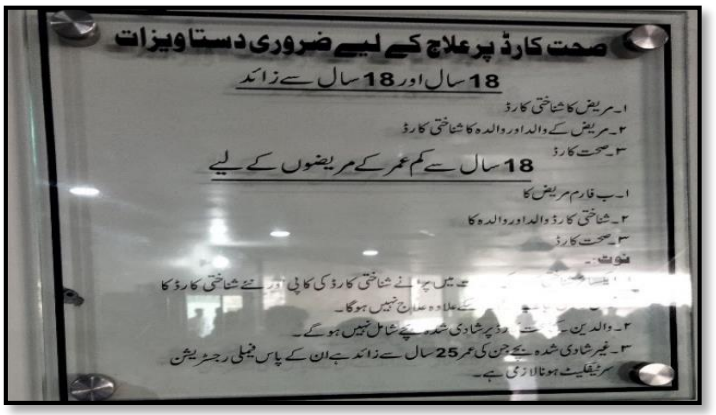
(viii) The beneficiaries and the public living in remote areas do not have access to the various online communication modes. The programme lacks a 'word of mouth' communication strategy, which can work when technology is unavailable.

(ix) The SSP management has a poor presence in the field and is concentrated at the headquarter/provincial level.

Access to media is another concern where beneficiaries living in remote areas lack proper access to various communication sources through which they may acquire information. Although the programme has a dedicated helpline and SMS service; it may not serve those who are sitting in remote areas (Figure 9). We found different communication material available to beneficiaries in the empanel hospitals (Figure 8). The HFO in some hospitals demands health cards, CNIC of card holders, and CNIC of patients, although it is not in demand. Similarly, they sometimes also demand specific photocopies of CNIC. In some hospitals, there was no communication material, and the HFO desk was not visible place.

Fig. 8. Communication Material vary Across Hospitals





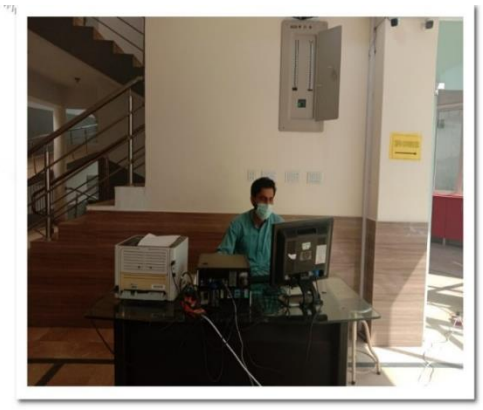
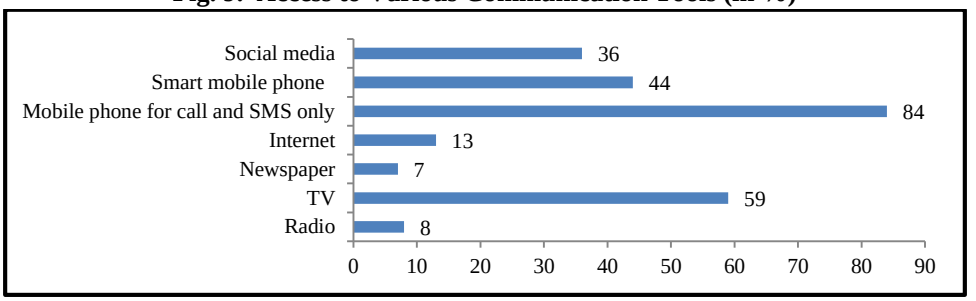


Fig. 9. Access to Various Communication Tools (in %)



Source: SSP Beneficiary Survey 2021.

5.4. Collaboration with Local Stakeholders

As detailed earlier, SSP hired third-party services for card delivery and dissemination of key messages to both the public and beneficiaries. The third-party attempted its best to achieve the target (card disbursement) by involving various stakeholders, especially the notables, to trace out the eligible households and deliver the cards to them.

However, after completion of the contract with these firms/NGOs, there is no permanent set-up or arrangements to disseminate information to the public. HFOs in the hospital are limited to the secondary level and can cater to the need-based population, whereas the supply-driven communication campaign needs to be included. The public mostly believes in 'word of mouth,' and local norms and beliefs largely offbeat the right communication messages that must be known to the public. We interacted with the public and found that people in remote areas of Tharparkar have cards but think that 'it is not workable'. Similarly, as told by the focal personnel of an NGO in Nagar, the beneficiaries in two union councils of Nagar have refused to accept cards by stating that those who already have the card reported that the card is not workable.

To counter such illusions and misperceptions, the programme must collaborate with local partners, including academic institutes, governmental health departments, and other social safety net departments. For example, every BISP beneficiary is also part of the SSP, so BISP's gross-root level presence (having offices in each Tehsil) can be used to disseminate critical messages.

5.5. Recommendations

The findings in current section hold following recommendations:

(i) The programme must ensure a wider message through robust communication that there is no need of SSP card for in-door treatment and in parallel ensure the training of HFOs so they rightly communicate to the beneficiaries and general public.

(ii) In universal districts, the objective should be to provide in-door treatment to all the citizens by minimising the documentation requirements. Those beneficiaries who lack CNIC or B-form or health card can be treated on the basis of some other document including marriage certificate or on the basis of any other citizenship proof.

(iii) The programme must use the NADRA database and there should be live integration of SSP database with the NADRA database. When a citizen acquires B-form or CNIC from the NADRA, it should be automatically updated in SSP database.
(iv) The HMIS available to the HFO must be capable to update minor data related issues, i.e., name mismatch, card activation, address up-dation etc.
(v) The programme needs to closely work with provincial governments for utilising the provincial health infrastructure for communication and service delivery.

6. DEMAND AND SUPPLY-SIDE ANALYSIS IN HEALTH UTILISATION

The current section analyses health utilisation using the Tanahashi framework (1978) to review the demand and supply-side constraints. We explore the six dimensions, where four prevail on the demand side and two on the supply side. These six dimensions are discussed in the below sub-sections. It is worth mentioning that the analysis was carried out by using multiple data sources, both qualitative and quantitative, gathered through the field survey. The qualitative information has been gathered through in-depth interviews with hospitals, SLIC, SSP, front desk officers, and district medical officers. In contrast, the household survey has been carried out to capture demand-side limitations.

6.1. Accessibility and Availability of Hospitals

The programme has several empanelled private hospitals to ensure quality health services. The secondary data shows 86 hospitals for 1.75 million eligible families in 15 selected districts. Both the success and challenges prevail in the availability and quality of hospitals for the beneficiaries.

The salient features of successful instances are as follows:

(i) The addition of private hospitals has improved the competition and the quality of health services for poor citizens. In certain districts, private hospitals have more than 80 percent of their total caseload from SSP beneficiaries, i.e., Allied Hospital in Bagh, Kashmir Surgical Hospital in Muzafarabad, Maqsood Hospital in Peshawar, and many others.
(ii) Districts with a combination of government and private hospitals are highly effective as the workload is optimally divided among the two-tier, i.e., Bagh and Peshawar.
(iii) The programme has uplifted the capacity of various trust hospitals that are now part of panel by resolving their financial constraints, i.e., Kashmir Surgical Hospital in Muzafarabad, Al-Khidmat hospital in Mithi, Lovecare hospital in Chochro, etc.
(iv) The involvement of government DHQ hospitals in AJK has significantly lowered patient's indoor health expenses. Bhimber and Bagh DHQs are almost close to 100 percent in admitting the SSP beneficiaries in their total caseload, where an admitted patient has to make no payment during treatment.
(v) The involvement of tertiary hospitals in major urban centers has significantly provided equitable health services to the beneficiaries, i.e., Rawal hospital, Akbar Niazi hospital, and Heartcare hospital in Islamabad.

Following challenges, however, still prevail:

(i) The number of empanel hospitals is still deficient, keeping in view the caseload. Some districts have fewer hospitals (only 1 in Ghizer) or no hospital (Astore and Nagar). The beneficiaries in districts without a hospital cannot purchase health services from their pocket.

(ii) In Punjab, government hospitals are still not part of the empanelled that can provide secondary and tertiary care treatment. The same is in Tharparker, where few private hospitals are on the panel, but they are facing capacity challenges, and as a result, their caseload is nominal. Without the involvement of government hospitals, private hospitals alone cannot manage the caseload, and it may also create a monopoly of private hospitals.

(iii) In AJK, district government hospitals (DHQ) are part of SSP intervention. Few challenges prevail. *First*, they have been receiving a massive caseload after becoming part of the intervention; however, as a government hospital, they cannot uplift capacity from their own resources and require certain approvals from the ministry/department. *Second*, the resource sharing formula is still not finalised, so attitude and behaviour issues prevail with the doctors and paramedical staff as they have no incentive to deal with SSP beneficiaries. District Mirpur in AJK is a universal SSP district; however, DHQ Mirpur has hardly 30 percent caseload of SSP despite sufficient health capacity (teaching hospital).[6] On the other hand, DHQ Bhimber and Bagh are managing many times high caseloads. *Third*, THQs and RHCs are not part of SSP but have some capacity for inpatient services. The AJK Health Department should ensure certain amendments in the health regulatory framework by giving autonomy to hospitals.

(iv) Accessibility sometimes is also compromised with the 'pick and choose' option by the hospitals. Many hospitals (especially in Tharparker a universal district) have limited health facilities, resultantly with a limited caseload.[7] As a result, beneficiaries have no interest in visiting these hospitals due to the lack of services. We found that including private hospitals in Tharparker has kept the burden of public hospitals high. Denial of benefits also occurs in some hospitals. The DMO in Gujrat, Sargodha, and Faisalabad reported that some hospitals provide treatment only in that sickness where they have profit (i.e., surgery) by avoiding the medical treatment they don't have enough financial margin.[8] Similarly, we found that sometimes affordability is compromised due to a lack of medicines. The programme has ensured free medication. However, we found that in some governmental hospitals, the medical store is not open 24 hours, or the required medicines are not available in store (i.e., Bhimber and Mirpur). As a result, some beneficiaries have to purchase at their own expense. Similarly, the

[6] Ideally every patient should be treated from SSP card; however, currently 70 percent of them are bearing expenses from their own pocket and only 30 percent are admitted under the SSP.

[7] In Tharparkar mostly the private hospitals have only one doctor, lack of full-time availability of doctor, the hospital can make treatment against only 1-2 sickness due to lack of capacity.

[8] The programme has defined a package against each of the sickness and the same is paid to the hospital after treatment.

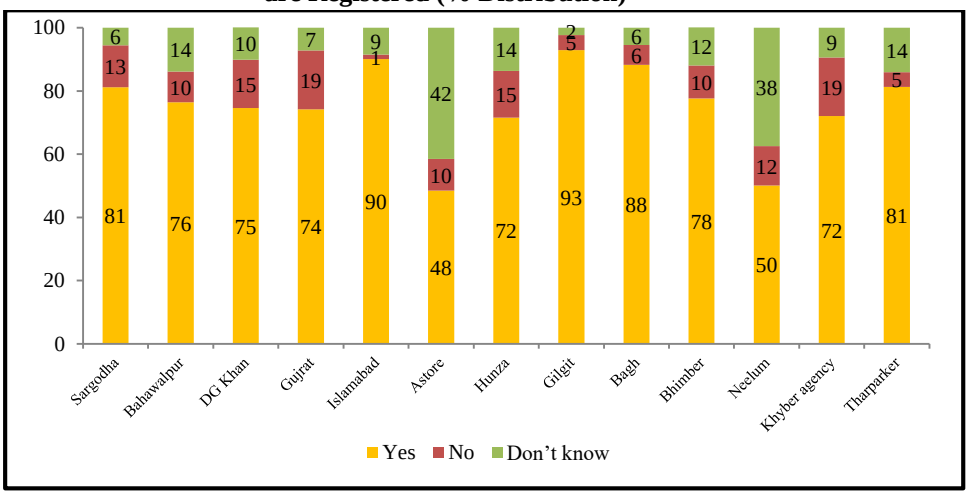
Combined Military Hospital (CMH) Muzafarabad is violating the contract by providing medicine of only Rs. 1200 per day against the upper limit of around Rs. 3,000 per day.

(v) There are only a few empanelled hospitals in GB, and there is none of them have the tertiary level facilities. The area is hilly, and accessibility is a big challenge.

6.2. Awareness about Programme

The analysis in this section was carried out using the household survey data gathered from 647 beneficiary households. Conceptually, the beneficiaries must know whether their family is registered in the programme, as the benefits are linked with their enrolment. We asked the respondents to inform us whether the existing family members of their families are registered in the programme. As shown in Figure 10, 75 percent confirmed that the members in the roster are registered, 13 percent reported that the member is not registered, and 6 percent did not know the status of their family member's registration. The programme must have 100 percent registration of all the family members. Families must also know about such information and the availability of indoor health services whenever required.

Fig. 10. Respondents Knowing that Members of Family are Registered (% Distribution)

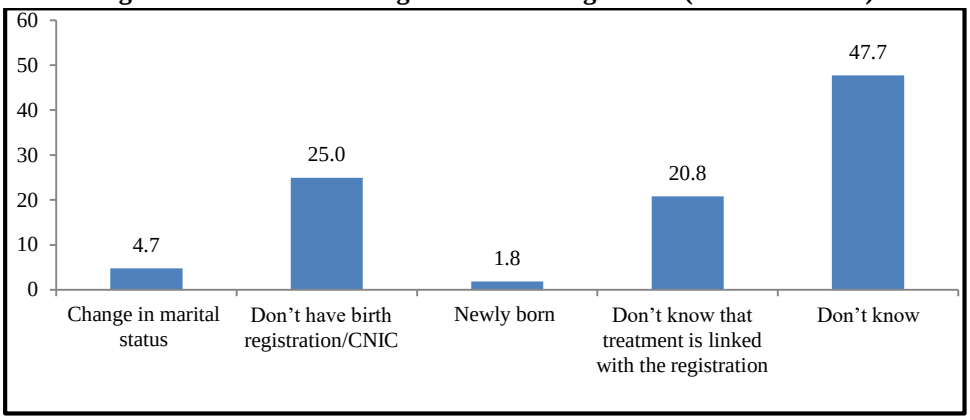


Source: SSP Beneficiary Household Survey, 2021.

Among those who reported that some members of the family are not registered, the key reasons were: not knowing any reason as they have never visited hospital or used SMS service (47 percent); lack of birth registration/B-form or CNIC (25 percent); not knowing that treatment of SSP is linked with the CNIC/B-form and registration in database (21 percent); and change in marital status by 5 percent (Figure 11).

The programme needs to work on both fronts through its communication strategy: *first*, every citizen must know the status of whether s/he is enrolled in the programme or not; and, *second* to resolve specific bottlenecks that escape a minor percentage to be enrolled in the programme due to lack of documents.

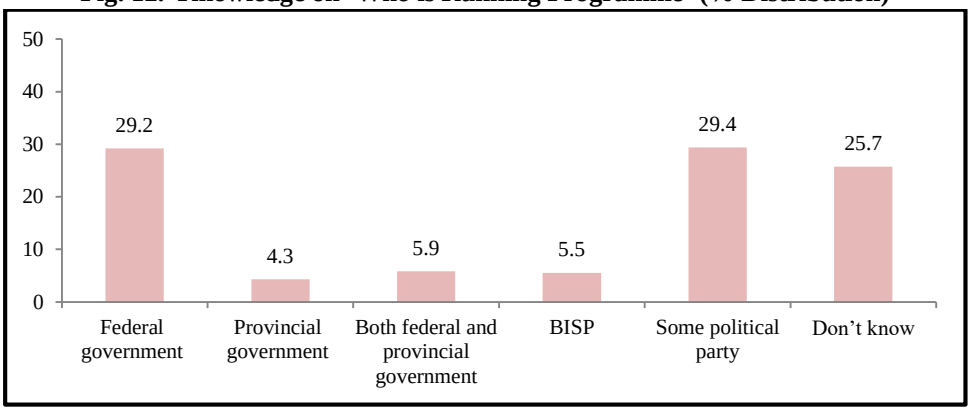
Fig. 11. Reasons of not Registration in Programme (% Distribution)



Source: SSP Beneficiary Household Survey 2021.

The political or ruling government parties mostly politicise the social protection programmes in low-income countries for their political interest. We have questioned the beneficiaries about who is running the programme. Around one-third of them rightly know that the federal and provincial government manages the programme; still, most of them either do not know or consider that the programme is run by some political party (Figure 12). The communication strategy must consider these aspects for rightly sharing the information with the public.

Fig. 12. Knowledge on 'Who is Running Programme' (% Distribution)

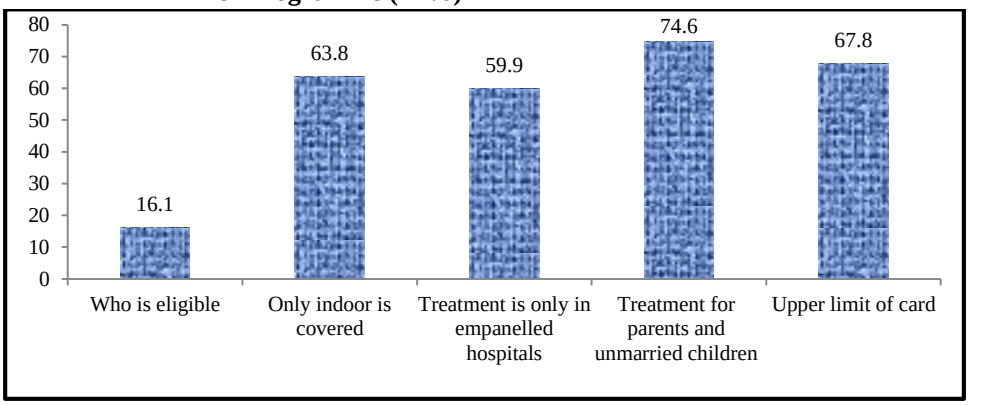


Source: SSP Beneficiary Household Survey 2021.

The beneficiaries must know the programme's eligibility criteria and various features, including packages, treatment location, documentation required for treatment, etc. A significant proportion of the population needs to learn the right information about the programme. For example, 16 percent of the respondents don't know who is eligible and should be part of the programme, 64 percent don't know that only indoor treatment is covered, 60 percent don't know that treatment can be taken only in empanel hospitals, 75 percent don't know that treatment is only for parents with unmarried children, and 68

percent do not know the upper financial limit of the card. Among those who reported the card limit, there was a lot of variation in reporting the amount, ranging from Rs. 50,000 per annum to one million.

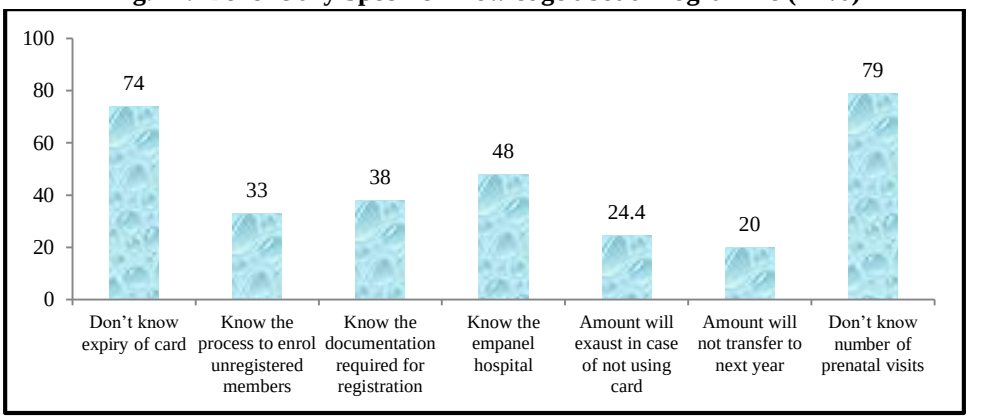
Fig. 13. Beneficiaries' Lack of Clear Knowledge about Features of Programme (in %)



Source: SSP Beneficiary Household Survey 2021.

We also conducted in-depth beneficiary-specific questions and found that most beneficiaries need to learn about the programme's various features for service delivery, in-door treatment, and financial knowledge. For example, only one-third know how unregistered family members can be registered, and 48 percent know the eenrmpanel hospital near their home. Most must determine how many prenatal visits are covered in the package and when the card will expire (Figure 14).

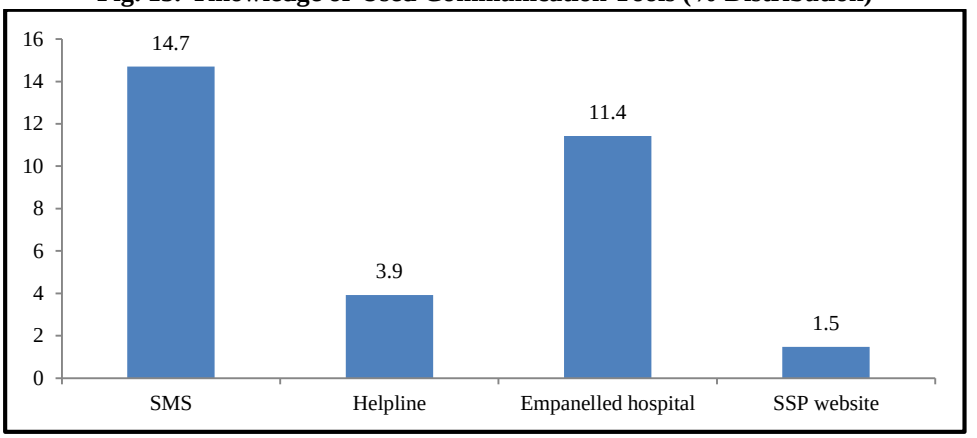
Fig. 14. Beneficiary Specific Knowledge about Programme (in %)



Source: SSP Beneficiary Household Survey 2021.

Only a minor proportion of the beneficiaries know or have used the various communication tools as provided by the SSP. For example 7 percent of them know the SMS service, and 4 percent have the knowledge of helpline, 11 percent have visited some empanel hospital for acquiring information and only 2 percent have visited the SSP website (Figure 15).

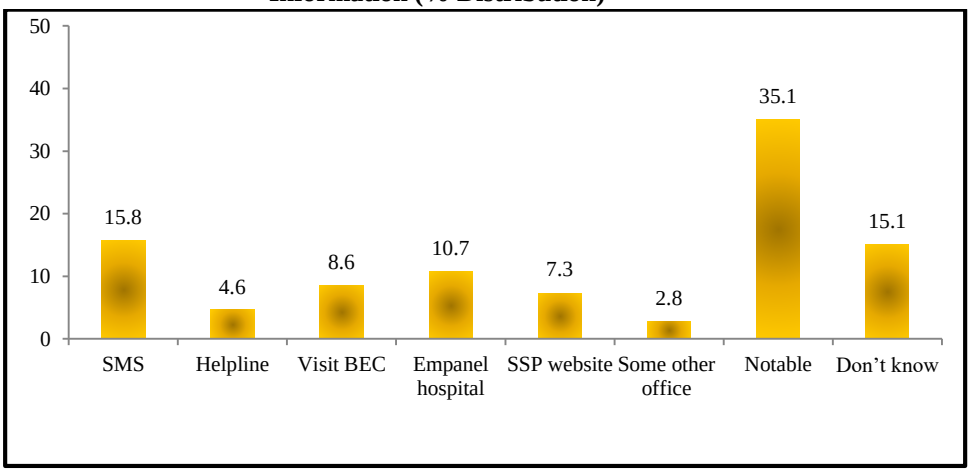
Fig. 15. Knowledge or Used Communication Tools (% Distribution)



Source: SSP Beneficiary Household Survey 2021.

We questioned beneficiaries about the source of communication they would prefer if they required some information about the programme. Most of them either needed to learn or preferred local notables for information. They need to learn more about the deployed communication facilities, i.e., SMS, helpline, empanel hospital, etc. There is a need to strengthen communication tools, especially in some centers/offices, where the beneficiary and public can interact with the focal persons of the programme. The beneficiary centers are commonly closed, and the lack of SSP offices at the grassroots level has generated a gap in acquiring information.

Fig. 16. Source of Support Seeking if Beneficiary Need Information (% Distribution)



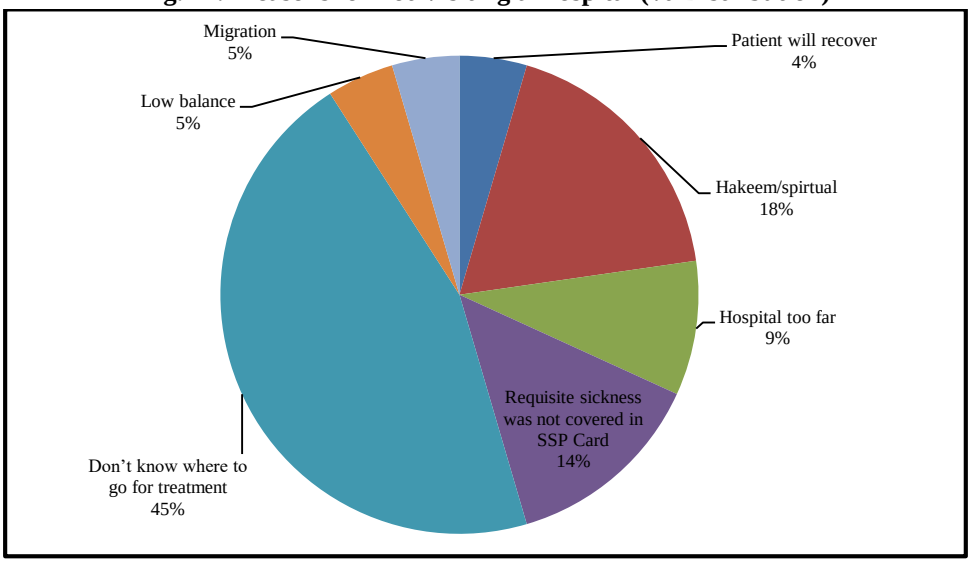
Source: SSP Beneficiary Household Survey 2021.

6.3. Card Utilisation Practice

Health utilisation largely depends not only on the knowledge but also the available health facilities. After getting the card, 4 percent of the beneficiaries reported that they

faced a situation where in-door health facilities were required, but they had not visited the empanelled hospital. Out of the 4 percent of such beneficiaries, the reasons are listed in Figure 17 that includes: do not know where to go, incomplete documentation, believe that some local quake/spiritual will make better treatment, hospital is too far away, etc.

Fig. 17. Reasons for not Visiting a Hospital (% Distribution)



Source: SSP Beneficiary Household Survey 2021.

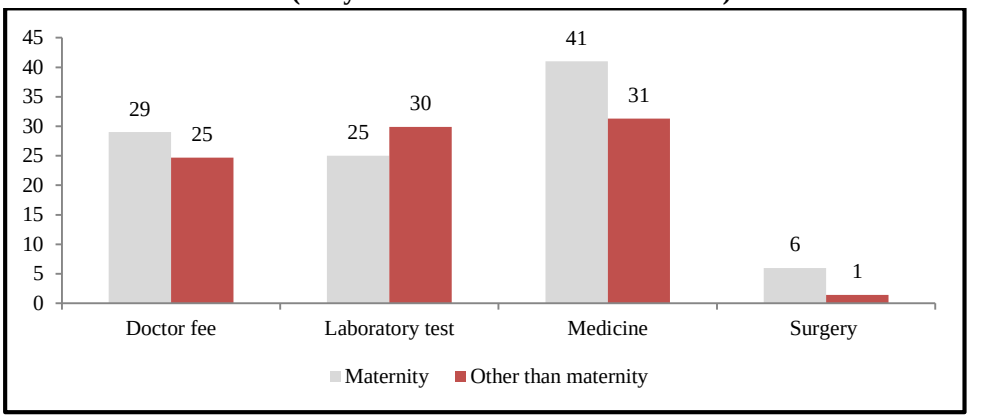
As reported by the respondents, another 3 percent visited empanel hospital but they were unable to utilise the SSP card. The main reasons, as told by the HFO/hospitals to the beneficiaries, were that concerned sickness is not for in-door patients (29.4 percent), the hospital reported that balance is not sufficient (23 percent), documents were incomplete (11.8 percent) and the required treatment was not available (11.8 percent).

Around 4.3 percent of the families got a birth delivery in their family after getting the SSP card. 5 percent of the birth took place at home, 64 percent in the empanelled hospitals and 32 percent in other hospitals.[9] Among those who have used the card, only 10 percent had received four parental care visits, 21 percent had received only one prenatal visit, 10.5 percent visited twice, while a vast majority did not know whether the prenatal or postnatal were covered in the package.

Among those who got treatment from SSP, 72 percent of the respondents reported that after discharge from the hospital, they received 5 days of medicine, 21 percent did not receive it, and the rest 6 percent did not have the knowledge. Similarly, 44 percent had received transport charges, 50 percent had not received it, and the remaining 6 percent did not know whether they had received transport charges or not. We also questioned the beneficiaries (only those who received treatment) whether they had made any payment during treatment or not. Some of them had paid fee to doctor, or made expenses on laboratory tests, medicine, etc (Figure 18).

[9] The birth in other hospital could be due to 2 factors: either denial of services in empanel hospital or own ease of beneficiary that she is already engaged with some doctor and trust on it.

Fig. 18. Proportion of Beneficiaries who Payment OOP Payments During Treatment (Only Those who Received Treatment)



Source: SSP Beneficiary Household Survey 2021.

An encouraging element was that three-fourths of the beneficiaries were highly satisfied with the treatment (Table 7). Overall they were satisfied on quality of health services discharge procedure etc. yes the programme has to work on certain aspects where dissatisfaction is also shown on certain activities, i.e., information provision, admission procedure, doctor's availability and cleanliness.

Table 7

Beneficiary Satisfaction on Treatment (% Distribution)

Activity	Highly Satisfied	Moderately Satisfied	Not Satisfied	Total
Admission Procedures	82.3	11.8	5.9	100
Quality of Health Services	76.1	23.5	0.4	100
Doctor's Availability	76.4	17.7	5.9	100
Staff Availability	88.2	5.9	5.9	100
Cleanliness	82.4	11.8	5.8	100
Information Provision	76.5	5.9	17.6	100
Discharge Procedure	82.3	17.7	0.1	100
Overall	76.4	14.8	8.3	100

Source: SSP Beneficiary Household Survey 2021.

7. CONCLUSIONS AND WAY FORWARD

The current research has analysed SSP beneficiaries' demand and supply-side constraints in accessing indoor health services. A distinctive focus of the study was to evaluate the ongoing communication and awareness apparatus available to the public and beneficiaries. The findings reveal that most beneficiaries need more proper knowledge about various programme features, including where they should go for treatment, package amount, type of treatment covered in the package, and whom to contact for information.

Despite the low utilisation rate, a heartening element is the high satisfaction level of the beneficiaries who had received treatment. Multiple reasons were identified for the low

utilisation, including a limited number of empanelled hospitals, especially in remote areas, limited medical facilities in various private hospitals, and attitude issues in government hospitals.

Based on the findings, we have the following recommendations:

7.1. Targeting and Enrolment

The programme has been switching toward universalisation, where every citizen can receive indoor health treatment. The programme must ensure the enrolment of every citizen where collaboration is required with the NADRA and provincial and local governments to ensure universal birth registration as benefits are linked with the birth registration. In case of a lack of birth registration or national identity card, the programme must consider any other document as proof of citizenship and provide in-door treatment. Specific bottlenecks, i.e., name mismatch, marital status up-dation, etc., require resolution.

Data up-dation is crucial, and authorities must collaborate with the provincial and local governments to ensure birth registration, B-form, and CNIC. The programme may either use the live data or update the data with NADRA weekly. A policy must also be developed for newly married couples who were earlier registered with parents but could not receive treatment due to a change in marital status.

7.2. Sufficient Number of Hospitals

Currently, the number of empanel hospitals is fewer. It requires more empanel hospitals in each district to create competition among hospitals. There is a need for tertiary care empanel hospitals in each region, i.e., AJK, GB, along with the provision of referral services to link the remote areas beneficiaries with significant centers. The programme must also resolve the package-related constraints as some hospitals have been denying the services with the excuse that the benefit package is insufficient to cover in-door expenses. The entire government health infrastructure must be on the pool of SSP. It should be mandatory that all private hospitals be a part of the SSP. Otherwise, their registration should be canceled.

7.3. Improve Hospital's Environment

The hospitals face various challenges, including a lack of uniform communication material, limited presence of HFOs (i.e., morning to evening and leave on Sunday), and internet issues in remote areas. The authorities must ensure that HFOs should be available in hospitals 24/7. The list of hospitals should be made available to the public through various sources, including the website and dedicated SMS service. Moreover, the programme should introduce some Android applications to find the nearest hospital to a patient.

7.4. Robust Communication Strategy

There is a need for a grassroots-level communication strategy, especially in districts where the programme is universal. The key messages must be disseminated at the doorsteps of beneficiaries. For this, the programme may involve local notables, education and health departments, and other social safety net departments having a

ground-level presence (i.e., BISP, Zakat, Pakistan Bait-ul- Mal, and various provincial social protection/security authorities). The message should be simple, focusing on guiding beneficiaries on SMS service, call center, and in-person information source points (i.e., hospitals).

For urban centers and educated populations, communication must use social media, TV, and radio platforms. Recently, the government has made a massive campaign on breast cancer through IVR messages. A similar campaign must be launched to guide and raise awareness among the beneficiaries.

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Life Time Cost of Public Servants

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PREAMBLE

The government of Pakistan is facing a growing financial challenge due to the high number of non-productive government employees. Politicians pride themselves on placing their favourites in the public sector knowing that the taxpayer has no say in the process and will pay the cost.

Yet no one looks at what the cost of this dirigiste politics is!

Not only are most political employees mostly employed in positions where they are not productive, they are also a drain on the budget.

An employee when hired represents a stream of commitments from the budget for her lifetime and beyond given guarantees a of lifetime employment and pension and for pension to surviving widows and unmarried daughters. We show here what the expected compensation amounts to. We calculate the present value of the government commitment here. This is the value that the government must place in a bond to make the hiring budget neutral for the coming generation. Otherwise, the cost will inflate in future budgets.

The estimates presented here are of immense value in understanding our fiscal predicament. We do hope that politicians and media will use them in a debate on our fiscal situation. Like all estimates they are based on available data and some assumptions.

1. INTRODUCTION

The number of federal government employees in Pakistan has been increasing steadily over the past few years. This is due to some factors, including the expansion of the government's bureaucracy, the increasing number of government-run social programmes, political appointments, poor HR planning and bad recruitment.

According to the Pakistan Bureau of Statistics, the latest headcount of federal government employees in Pakistan is 1,374,911 as of December 2022. This number includes civilians, armed forces and autonomous/semi-autonomous/corporations.

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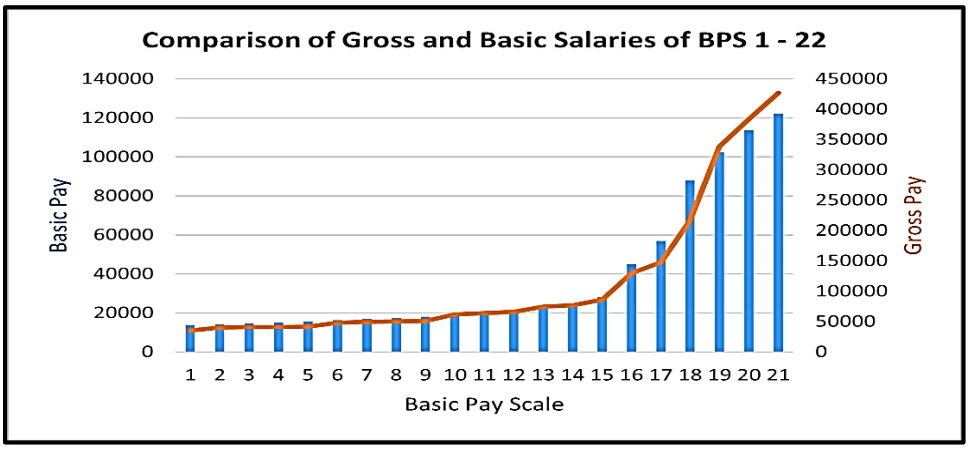
Federal Government Employees	Headcount	Source
Federal Government	5,75,354	Annual Statistical Bulletin of Federal Government Employees for (2021-22)
Armed Forces	9,43,000	https://data.worldbank.org/indicator/MS.MIL.TOTL.P1?locations=PK
Autonomous/ Semiautonomous Bodies/Corporations	3,99,265	Annual Statistical Bulletin of Employees of Autonomous/Semi-autonomous Bodies / Corporations under the Federal Government for 2018-19

In Pakistan, the government spends ample amount of money on paying its employees and providing pensions:

- The cost of paying these employees is about Rs 3 trillion, and pensions cost about Rs 1.5 trillion.
- Project workers, people working in government companies, and other organisations, cost approximately another Rs 2.5 trillion.
- Salaries for the military, the total amount spent on wages becomes around Rs 1 trillion.

Since 1947 the central federal government introduced various job and salaries structures from time to time. For details refer to Appendix A.

The Basic Pay Scale (BPS) of 1983 has undergone a series of revisions, with a total of 12 updates implemented since its inception. The most recent revision took place in 2022 Sadly, none of these revisions were based on modern HR prinicples to develop modern public sector incentives with market conditions and the needs of modern management. Instead, the colonial system of ad-hoc pay and pensions committees patches up the system with allowances.. The periodic adjustments in the BPS 1983 underscore a commitment to ensuring fair and competitive compensation for employees over time. The 2022 revision serves as the latest effort to recalibrate the scale in accordance with prevailing economic indicators and the organisation's strategic considerations. This iterative process of revision demonstrates an organisation's responsiveness to changing circumstances and its dedication to maintaining equitable compensation practices.



The BPS system continued with the socialist one pay scale structure across the entire public sector with a few minor tweaks:

- The Pakistan Adminstrative Service was increasingly favoured with non-monetary benefits and better appointments.
- The technical or professionally skilled with sidelinied oth interms of grades and in terms of non-monetary benefits.
- While the NPS sought to open the system to lateral entry the BPS with its amendments sought to make it more difficult for lateral entry, separate grades were created for professional intake such as MPS and SPSS but all subervient to PAS.
- Over time.

PIDE conducted a study on perks and benefits of Civil service employees, PIDE concluded that as assumed Civil servants are not at a salary disadvantage when compared to their counterparts in the private sector. PIDE unpacked the compensation package of the civil service employees and found there is a lot more which never reflect on their salary slip.

Salient Features of PIDE Report:

- With higher grades, the proportion of cash allowances in pay and quantified perks in the total cost increases.
- Government housing facility, given as an in-kind benefit, has never been accounted for in the total cost of the civil servants, nor its opportunity cost to the government has ever been calculated.
- The use of official vehicles for personal use by grade 20-22 officers increases the total cost by more than 1.2 times the basic pay.
- Medical allowances and medical bills reimbursement add over Rs 2.5 to Rs 3 billion to the medical bills.
- Perks and different allowances add to the total cost of civil servants substantially, and if monetised, would break the myth of low salaries in the public sector.

Source: Cash Poor, Perk Rich! Civil Service Compensation: Incentives, Dissatisfaction, and Cost.

The Cost of a Public Servant

When a new government employee is recruited, the public sector incurs costs associated with their salary, benefits, and potential training. These financial outlays are funded through tax revenue. The addition of a new employee increases the overall personnel expenses of the government, contributing to a larger portion of the budget being allocated to salaries and benefits. This can directly affect taxpayers, as the government may need to raise revenue through increased taxes or reallocation of funds from other areas to cover these expenses.

PIDE's current study has investigated the burden that each newly recruited individual (ranging from Grade 1-22) brings on the national budget. However, politicians raise political slogans of offering public employment to substantial number of individuals, without acknowledging that Government's job is to create new opportunities and not offering jobs. However, politicians by providing employment opportunities to many individuals, especially within their own party or patronage network, politicians can cultivate a base of supporters who are more likely to vote for them in elections.

In this study, PIDE has estimated the salary burden of public sector employees (from BPS 1-22) specifically how much money shall be needed to carry the load of employee for the period of thirty years. The study has also calculated the present value of accumulative sum that government will pay that employee over the period of 35 years.

The employment practices of political governments in developing economies often stem from a combination of political motivations, short-term focus, lack of economic

expertise, and societal expectations. While immediate job creation can have positive effects, it is crucial for governments to also consider the long-term financial implications and strike a balance between short-term gains and sustainable fiscal policies.

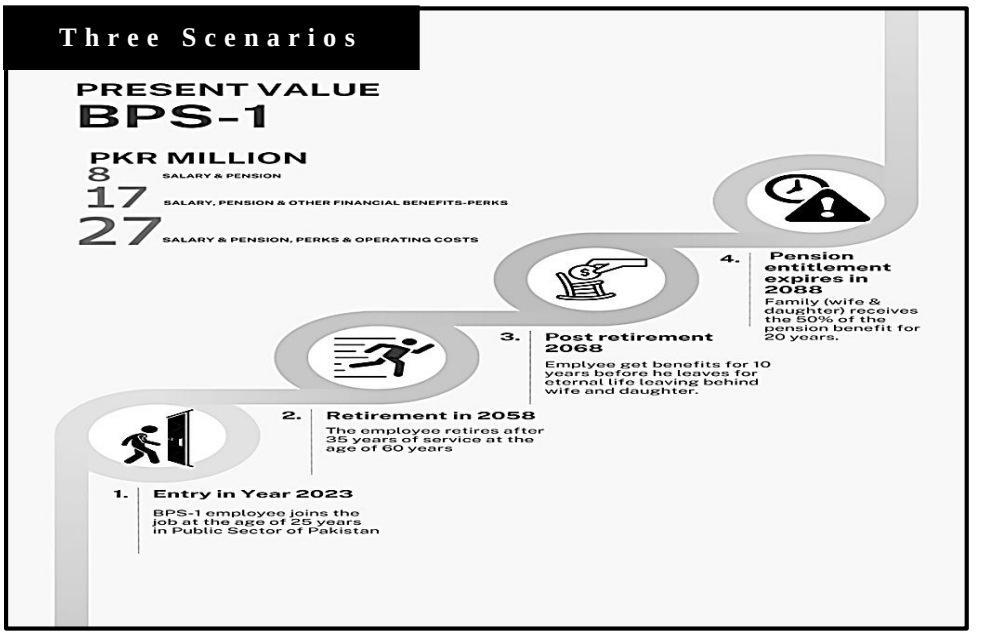
Predicting future salaries and pensions is a highly intricate task, but we endeavour to estimate the current value of forthcoming salary and pension payments. We have formulated three scenarios for government expenditure on employees. Public sector organisations have structured salary scales or step-based systems in place, where employees receive regular salary increases based on their years of service. These increments are intended to acknowledge an employee's experience and dedication to their role. While they may not result in a change in job title or responsibilities, these increments can elevate an employee's compensation.

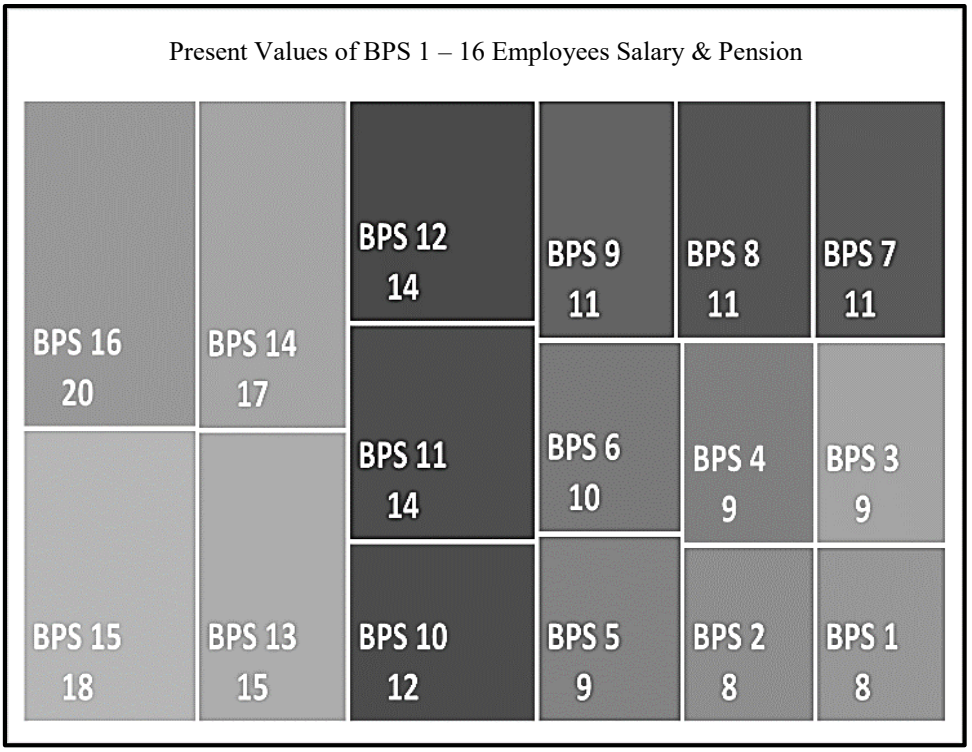
The significance of these continuous salary increments lies in their cumulative effect. Over the years, even if an employee does not advance to a higher position, their compensation steadily rises. This can have a profound impact on the organisation's budgetary considerations.

The projection of the future salary of government employees is based on few assumptions. The core assumption is the employee appointed in 2023 in initial basic scale and will get promotions in average time of public sector promotion practices. The following three scenarios have been formulated to calculate the total expenditures of government in account of Salaries & Pensions, Perks and Benefits and Non-Salary Expenditures (Overheads).

Scenario I: (Salary Expenditure)

In the first scenario, the salary paid to a public sector employee over a span of 35 years has been projected. The calculation involves considering a period of 10 years of pension for the employee, followed by 10 years each of half-pension for both the spouse and the child. It is assumed that the employee will be hired in July 2023 under the Basic Pay Scale (BPS). To determine the present value of a sum that the State will disburse over the 65-year duration with a 10 percent discount rate.





Recommending someone for a BPS 1 position is equivalent to gifting them Rs 8.00 million at the time of appointment. The government pays this amount to the individual over the course of their career, and it continues in the form of a pension after retirement.

The government can consider the Rs 8.00 million as an investment that earns a 10 percent return on investment (ROI) per year. The returns from this investment would offset the cost of the employee's salary and pension, making the cost budget neutral. In other words, the government would not be putting a burden on future taxpayers by employing this person.

Through this study, our objective is to estimate the present value of future employee costs to make that employment budget neutral over a lifetime. It is important to note that these calculations are under some assumptions and conservative on the lower side. Nonetheless, they vividly highlight the economic burden associated with new hiring and the cost of unproductive political employment.

Scenario II: (Salary and other Financial Benefits—Perks)

In Scenario II, Other financial benefits like Special Allowances, Medical Reimbursement, Job Security Discounts, and others are also added in the monetary burden of Salary and Benefits as estimated in Scenario I & II. (Please refer to Poor Cash, Perk Rich Study of PIDE, *Appendix–B*)

Table 1

BPS	Scenario 1	
	Total Amount to be Paid	Present Value (Millions)
BPS 1	61	8
BPS 2	62	8
BPS 3	70	9
BPS 4	72	9
BPS 5	72	9
BPS 6	74	10
BPS 7	85	11
BPS 8	87	11
BPS 9	88	11
BPS 10	90	12
BPS 11	108	14
BPS 12	111	14
BPS 13	116	15
BPS 14	131	17
BPS 15	135	18
BPS 16	151	20

The estimation of the second scenario is the most complex part of the study. The different offices of public sector employees receive various allowances and perks. The judicial employees receive the highest number of perks, similarly, other autonomous bodies employees also receive higher perks and allowances. The secretariat and other ministries' staff also gain 150 percent of their basic salary as an allowance. Medical reimbursement and most important is Job security discount also an additional allowance of public sector employees. Refer to *Appendix* – C

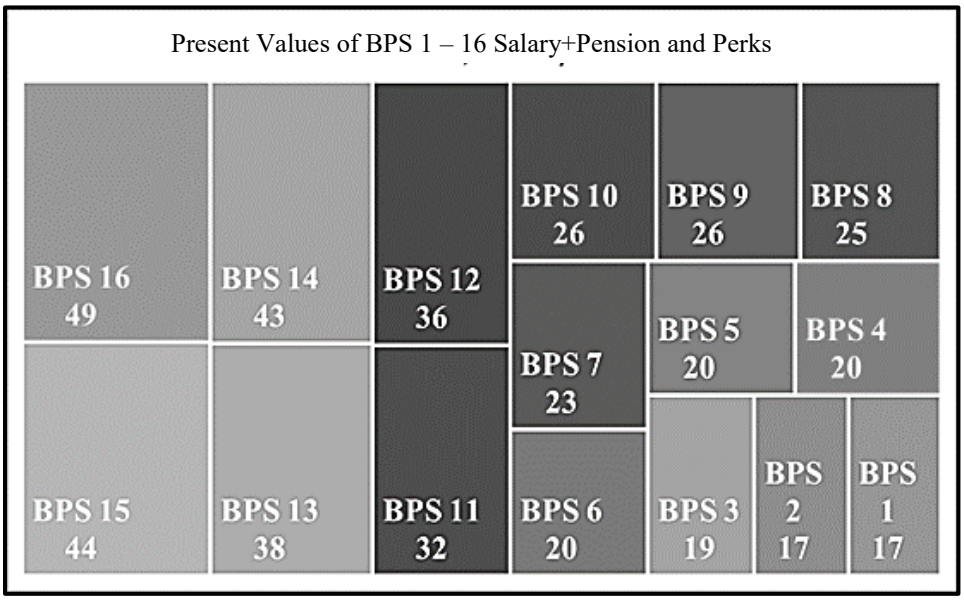


Table 2

BPS	Scenario 2	
	Total Amount to be Paid	Present Value (Millions)
BPS 1	129	17
BPS 2	131	17
BPS 3	148	19
BPS 4	150	20
BPS 5	152	20
BPS 6	154	20
BPS 7	178	23
BPS 8	195	25
BPS 9	198	26
BPS 10	202	26
BPS 11	243	32
BPS 12	278	36
BPS 13	289	38
BPS 14	327	43
BPS 15	337	44
BPS 16	378	49

Scenario III: (Salary & Pension, Perks and Operating Expenses)

In scenario III, along with salary that has been estimated in Scenario I and allowances with perks in Scenario II, Office overheads (non-Salary Expenditures). This includes the cost of physical space, cost of electricity, cost of telephone and internet, maintenance cost, cost of security of office space etc.

The third scenario is more complex than Scenario 1 & 2. The estimation of overheads of employee's offices and other facilities is a difficult job. The most common non salary expenditures are:

(1) *Rent and Lease Payments:* Payments made for renting office space, equipment, vehicles, or other assets required for business operations.
(2) *Utilities:* Expenses for electricity, water, gas, internet, and other utilities necessary to run a business or maintain a residence.
(3) *Office Supplies:* Costs associated with purchasing stationery, paper, ink, pens, toner, and other supplies needed for daily operations.
(4) *Equipment and Maintenance:* Expenditures for purchasing, repairing, and maintaining machinery, computers, furniture, and other assets used in the business.
(5) *Insurance Premiums:* Payments made to insurance companies to cover various types of insurance, such as property insurance, liability insurance, and health insurance.
(6) *Travel and Entertainment:* Expenses for business-related travel, accommodation, meals, client entertainment, and other related costs.
(7) *Professional Services:* Fees paid to external consultants, legal advisors, accountants, and other professionals who provide specialised services to the business.
(8) *Depreciation and Amortisation:* The allocation of the cost of tangible assets (depreciation) or intangible assets (amortisation) over their useful life as an expense.

(9) *Repairs and Maintenance:* Expenditures for repairing and maintaining equipment, facilities, vehicles, and other assets to ensure their proper functioning.
(10) *License and Permit Fees:* Payments required to obtain licenses, permits, and certifications necessary to operate legally within a specific industry or location.
(11) *Software and Technology:* Expenses related to purchasing and maintaining software licenses, cloud services, and other technology solutions.
(12) *Security Expenses:* Expenditures for security systems, personnel, and measures to ensure the safety of employees, assets, and information.
(13) *Inventory Costs:* Expenses related to managing, storing, and maintaining inventory, including warehousing and inventory management software.

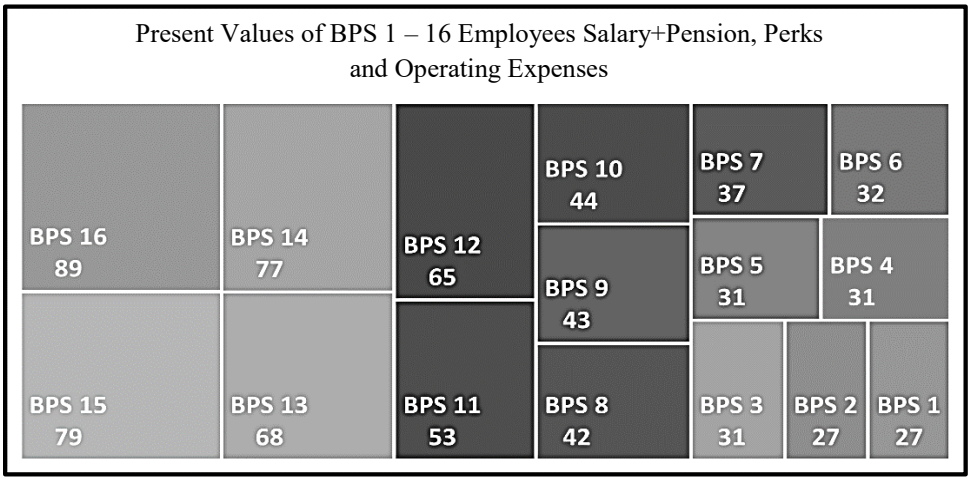
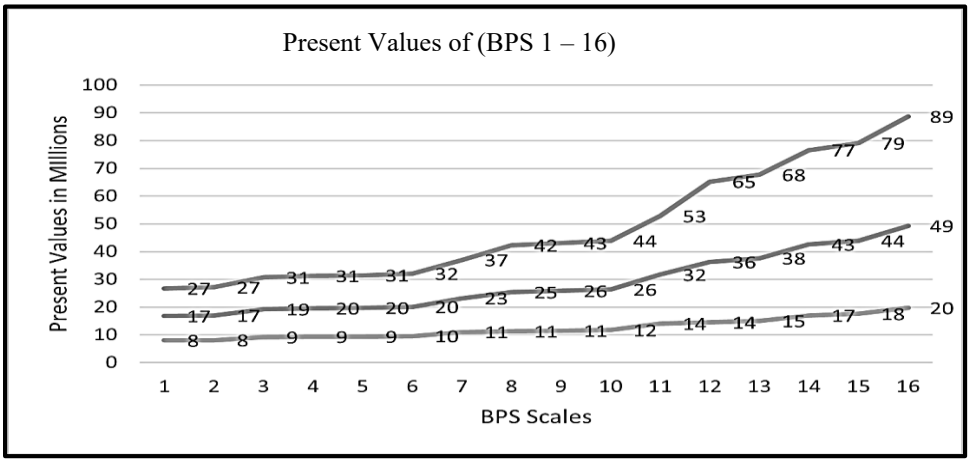


Table 3

	Scenario 3	
BPS	Total Amount to be Paid	Present Value (Millions)
BPS 1	205	27
BPS 2	208	27
BPS 3	236	31
BPS 4	240	31
BPS 5	242	31
BPS 6	246	32
BPS 7	284	37
BPS 8	325	42
BPS 9	331	43
BPS 10	337	44
BPS 11	406	53
BPS 12	501	65
BPS 13	520	68
BPS 14	588	77
BPS 15	607	79
BPS 16	681	89

Comparison of All Three Scenarios BPS 1 -16 Present Values

The estimated present values for employees BPS 17 or above are notably higher in comparison to those 16 and below scales. Remarkably, when an employee is promoted to BPS 20, the salary increase is significantly greater compared to other promotion increments.



The present values assigned to scales 17 and above are calculated based on the assumption that promotions will occur accordingly. Interestingly, if an individual is directly appointed to the 18th grade, their total lifetime compensation turns out to be lower than that of those appointed to the 17th grade. This observation underscores the minimal disparity between basic and gross salaries at these levels.

The present value of Scenario 3 is extremely high, it shows that the government spends enormous amounts of money on higher grade employees in account of operating expenses.

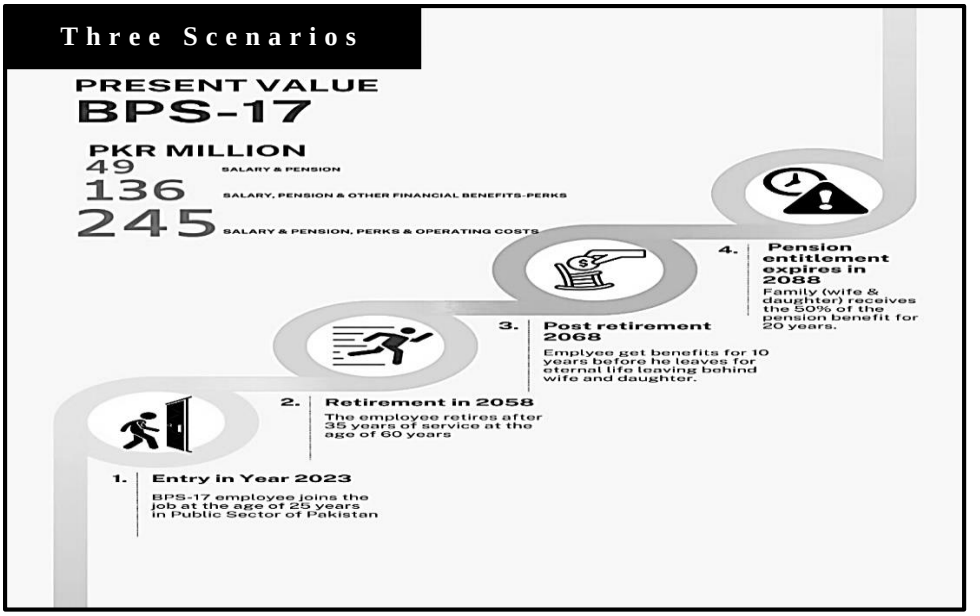
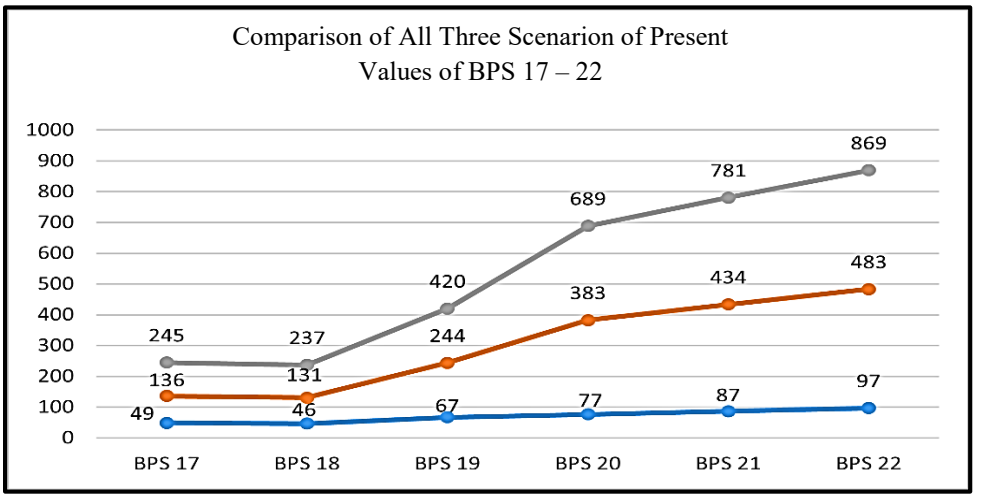


Table 4

BPS	Scenario 1		Scenario 2		Scenario 3	
	Total Amount to be Paid	Present Value (Millions)	Total Amount to be Paid	Present Value (Millions)	Total Amount to be Paid	Present Value (Millions)
BPS 17	482	49	1283	136	2283	245
BPS 18	563	46	1518	131	2711	237
BPS 19	658	67	2298	244	3938	420
BPS 20	552	77	2761	383	4970	689
BPS 21	626	87	3130	434	5633	781
BPS 22	697	97	3486	483	6274	869



The numbers in Table 4 are based on assuming that when a person starts their job, they begin at a certain level and work for 35 years. Each year, their salary goes up by 10 percent. Also, they get promotions when they have worked for a certain amount of time. Mostly, the new hires in the public sector start at levels 17 and 18. The university teachers can start at level 19 if he/she is Ph.D.

In the subsequent Table 5, we try to project the anticipated remuneration for BPS levels 19 to 22, considering an assessment of service duration.

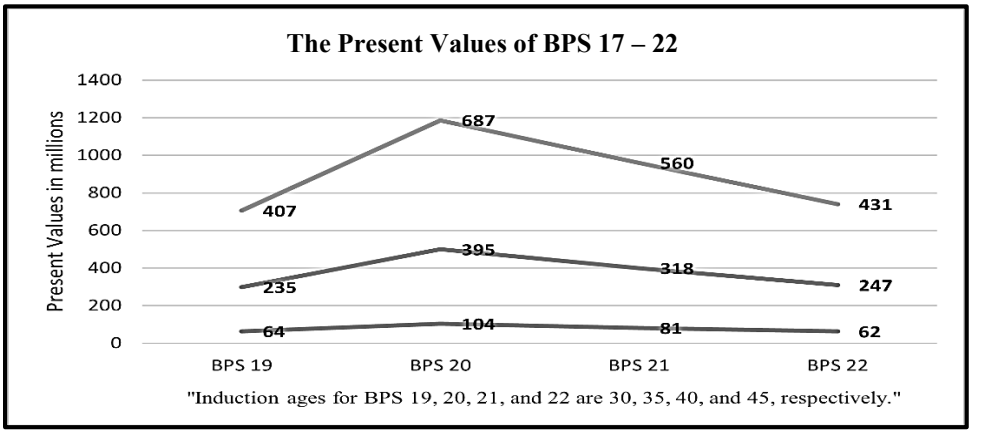
Assumptions:

Scale	Induction Age	1st promotion	2nd promotion	3rd promotion
19	30	BPS 20 at 40	BPS 21 at 50	-
20	35	BPS 21 at 45	BPS 21 at 50	BPS 22 AT 55
21	40	BPS 22 at 50		
22	45	spend 15 years in BPS 22		

Other assumptions remain same

Table 5

BPS	Induction Age	Present Values (Million)		
		Scenario 1	Scenario 2	Scenario 3
BPS 19	30	64	235	407
BPS 20	35	104	395	687
BPS 21	40	81	318	560
BPS 22	45	62	247	431



Anticipated Financial Consequences of Creating a Single Job Across BPS 1 to 19 Grades

Case No.	Scales	No. of Recruitments	Total Amount to be Paid (M)	Present Value (Millions)
Scenario 1	BPS 1 – 19 (one Each)	19	3216	359
Scenario 2	BPS 1 – 19 (one Each)	19	8589	965
Scenario 3	BPS 1 – 19 (one Each)	19	14889	1678

Only nineteen, bad recruitment and nonproductive employees' cost in account of salary & pension Rs 3.2 billion and the present value of this spending is Rs 359 million. In total, the government must spend Rs 14.9 billion and the present value of that amount is Rs 1.6 billion. In simple words, for the appointment of 19 employees, the government should have at least Rs. 1.6 billion in a bank with a 10 percent annual growth rate to pay the salaries and meet the operating expenses and perks of these employees.

Compression Ratio

The compression ratio of salaries and other benefits is the difference between the highest and lowest salaries, or the highest and lowest total compensation packages, in a company or organisation.

The salary compression ratios in developed countries are not as high as in underdeveloped countries. The compression ratios for salaries and pensions in Pakistan are notably higher as compared to those in developed countries. The table below provides a detailed breakdown of these ratios across all three mentioned scenarios. It distinctly

illustrates that the perks and benefits for employees at higher pay scales significantly surpass those at lower scales. Likewise, the operational expenses of the government exhibit a similar pattern.

Region	Country	Ratio	Region	Country	Ratio
OECD*	United States	3.3	EAP	Mongolia	3.4
	United Kingdom	1.5		Indonesia	2
	New Zealand	2.4		Cambodia	5.5
	Netherland	2.3	EAP	Serbia	9
	Luxembourg	3.1		Montenegro	4.95
	Finland	2.3		Moldova	2.5
	Australia	2.8		Kosovo	2.5
LAC	Uruguay	3.4		Albania	3
	Suriname	2.6	AFR	Togo	13
	Jamaica	15		Nigeria	7
	Colombia	4		Niger	10
	Brazil	22		Mozambique	9
	Belize	9.8		Ghana	13
	Barbados	5.5		Cote D'Ivoire	9
EAP	Thailand	14.4		Burkina Faso	8
	Philippines	9.5		Benin	13

	Compression Ratios of Present Values of All Three Scenarios		
BPS	Salaries and Pensions	Salaries and Pensions with Perks and Benefits	Salaries and Pension and Perks with Operating Expenditures
1	12.10	28.82	32.52
2	11.93	28.42	32.06
3	10.55	25.11	28.33
4	10.36	24.66	27.82
5	10.29	24.49	27.63
6	10.09	24.02	27.10
7	8.75	20.82	23.50
8	8.57	19.04	20.56
9	8.41	18.70	20.19
10	8.25	18.34	19.80
11	6.86	15.25	16.47
12	6.67	13.33	13.33
13	6.42	12.85	12.85
14	5.68	11.35	11.35
15	5.50	11.00	11.00
16	4.90	9.80	9.80
17	1.99	3.56	3.55
18	2.09	3.69	3.67
19	1.44	1.98	2.07
20	1.26	1.26	1.26
21	1.11	1.11	1.11
22	1.00	1.00	1.00

The table shows the compression ratios of salaries and benefits for public sector employees. The lower the compression ratio, the more compressed the salaries are. In this case, the compression ratio for salaries and pensions with perks & benefits is 12.10, which means that the highest salary is 12.10 times the lowest salary. The compression ratio for salaries and pensions with perks & benefits is 28.82, which means that the highest value of salary and perks is 28.82 times the lowest salary.

The aggregate ratio encompassing salaries, perks and benefits, and operating expenses for BPS 22 employees is significantly greater than that of BPS 1 employees, at a ratio of 32.52 to 1. This indicates a substantial disparity in perks, benefits, and operating costs, with a considerable chasm between the highest and lowest salary levels.

The combined ratio of salaries, perks and operating expenses is much higher of BPS 22 employees getting 32.52 times from BPS 1 employee. This suggests that the perks & benefits and operating expenditures are highly compressed, with a large gap between the highest and lowest salaries.

Is the New Employee Worth the Cost?

To the extent that the employee is productive and adds to economic growth our calculated present value would be decreased. However, common perception holds that these appointments are purely rent seeking and often create *sludge* and other activities that impede growth.

In Pakistan, high-level officials order appointments without considering the need for employees or making any plans. These politically motivated and poorly executed recruitments do not contribute to public sector performance. The government must bear the heavy economic burden. The poor recruitment procedures are also one of the main reasons for the low productivity of various government departments, especially autonomous bodies.

In short, the government gifts these amounts to those who are nonproductive and contribute nothing in their jobs. Consequently, the economic burden of compensating these unproductive employees is shifted onto the taxpayers. Moreover, the presence of nonproductive personnel can lead to various issues that hamper the organisation's productivity and spoil its reputation.

This is a significant amount of money, and it is important to find ways to reduce this cost of employment. Bad recruitment can lead to several problems, including low productivity, poor service delivery, and corruption. The cost of bad recruitment can be significant, both in terms of financial losses and the opportunity cost of lost opportunities.

The employment practices of political governments in developing economies often stem from a combination of political motivations, short-term focus, lack of economic expertise, and societal expectations. While immediate job creation can have positive effects, it's crucial for governments to also consider the long-term financial implications and strike a balance between short-term gains and sustainable fiscal policies.

Though it might not appear initially, however, when an employee is recruited without any analysis, we are not looking at immediate salary that shall be paid to that person, we are looking at the burden that taxpayers must carry until that employee or his next to kin is receiving pension.

2. CONCLUSION

This report provides a foundation for estimating the future economic burden of public servants in Pakistan. The increasing number of government employees who are not

productive is a big problem for Pakistan's finances. These appointments are often made for political reasons, not because the person is qualified for the job. This puts a burden on taxpayers and strains the national budget.

When a government appoints an employee, it means that the government is committing to paying them for their lifetime, and even longer if they have surviving spouses or unmarried daughters. This report estimates the cost of these commitments, which is important for ensuring that future generations do not have to pay for them.

This paper is one of a series that PIDE is developing in looking at the costs of politically motivated appointments and contracts. This is an ignored issue in Pakistan. Politicians and VIPs get political credit by appointing favourites into government jobs and giving others' contracts. In this manner, public funds are wasted while Pakistan's governance and administration are also weakened. It is important to understand the costs which are substantial as shown here.

Political motivations can lead to governments hiring more people than they need, to reward supporters or to create a sense of job security. Short-term focus can lead to governments not considering the long-term financial implications of their hiring decisions. The lack of economic expertise can lead to governments making poor decisions about how to manage their workforce. And societal expectations can lead to governments feeling pressured to hire more people, even if they do not have the resources to do so.

It is important for governments to consider all these factors when making decisions about employment. While immediate job creation can have positive effects, it is important to strike a balance between short-term gains and sustainable fiscal policies. Governments need to ensure that they are only hiring people who are needed, and that they are doing so in a way that is financially sustainable.

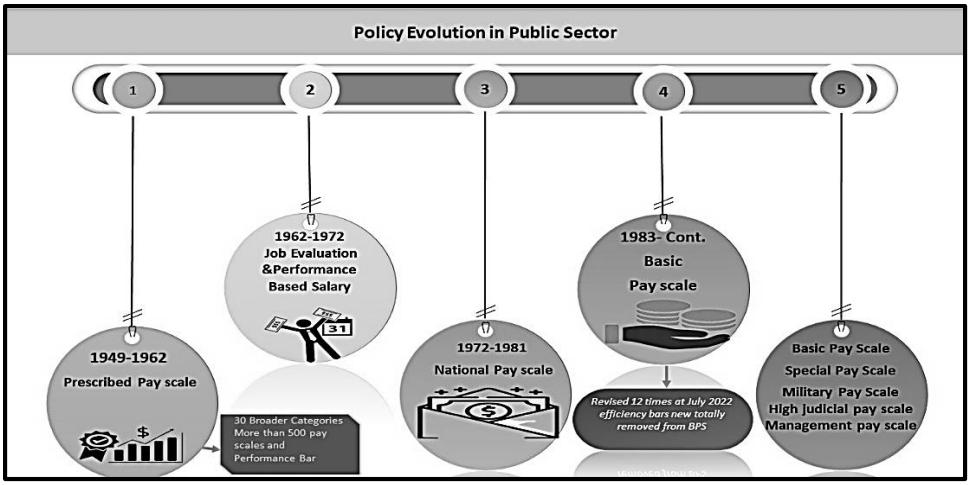
APPENDIX – A

Evolution of Government Pay Scales

Job Structure (1948-1962)

The 1948 Finance Commission divided public employees into 30 broad categories, based on their job responsibilities and qualifications. The Salient Features were:

- These Scales were sanctioned for each post separately in various Ministries/Divisions/ Organisations etc.
- More than five hundred pay scales were operative for different categories of Government servants. One or more Efficiency Bars were introduced in each scale to judge the efficiency of Government servants at various stages.
- Selection grades, special pay and technical pays were introduced as an incentive for improvement of skill of Government servants.
- Government servants were divided in four classes along with comparison with present pay scales, as shown below:
    - Class —I (Gazetted) BPS-17 and above.
    - Class—II (Gazetted/NG) BPS- 16
    - Class—III (Non-Gazetted) BPS-3 to 15
    - Class—IV (Non-Gazetted) BPS-1 and 2.



Pay Structure (1962-1972)

Report of the Pay and Services Commission: 1959-1962 (A.R Cornelius) was submitted on 28th May 1962 and suggested major pay reform in service and pay structure. It introduced a few new features, such as the concept of "Job Evaluation" and performance-based pay. The 1962 finance Commission introduced a new pay structure that was based on the concept of "Job Evaluation." This meant that the salaries of government employees were determined by the job they did, rather than their class or seniority. The new pay structure also introduced several new benefits, such as performance-based pay and pension plans.

NATIONAL PAY SCALES (NPS)

National Pay Scales, introduced with effect from 01.03.1972 and revised with effect from 01.05.1977. The Salient Features were:

- A uniform set of 22 National Pay Scales, introduced for all the Government servants.
  - ➢ Selection grades, special pays and technical pays abolished altogether.
- The concept of the Efficiency Bar eliminated in the scales for Gazetted Officers and retained up to N.P.S-15.
- Government servants, divided into twenty-two grades and classes of Government servants abolished.
- The benefit of one premature increment on promotion allowed.

Thus began the era of socialism in public sector management, where all put in one national PayScale—in short one relativity.

BASIC PAY SCALES (BPS)

Basic Pay Scales introduced with effect from 1st July 1983, and revised on 1st July 1987, 1st June 1994, 1st December 2001, 1st July 2005, 1st July 2007, 1st July 2008, 1st July 2011, 1st July 2015, 1st July 2016, and 1st July 2017.

- The nomenclature of the scales changed without disturbing the basic structure of N.P.S.

- The Basic Pay Scales are not to be regarded as grades like in N.P.S.
- Officials shall henceforth be appointed/promoted to posts and not in grades.
- Selection grades were introduced for certain categories of employees.
- Various Special/Technical Pays and Allowances allowed as incentives for higher qualifications, etc.
- The concept of advance increments on possessing/acquiring higher qualification introduced to encourage the Government servants to improve their qualification/skills and they discontinued in BPS 2001, with effect of 01-12-2001.
- Efficiency Bars totally removed from the Pay Scales.

APPENDIX – B

Allowances Galore

Instead of indexing salaries and developing a proper payment system, the approach of pay and pension committees has been to provide arbitrary allowances to compensate for inflation. These allowances make up a substantial portion of the cash received by the civil servants. In addition, the employees of powerful ministries, such as the MOF and the FBR, give special honoraria ranging from a one-month salary to a one-year salary.

A01109-Command	A0122g-Fixed Medical Risk
A01152-Personal	A0122l-Mobile Phone
A01153-Special	A0122n-Special Conveyance to Disabled
A01154-Good Conduct	A0122w-Residential Telephone
A01155-Qualification	A01230-Dusting
A01201-Senior Post	A01232-Performance Evaluation
A01202-House Rent	A01233-Unattractive Area
A01203-Conveyance	A01234-Training
A01204-Sumptuary	A01236-Deputation
A01205-Dearness	A01237-Design
A01206-Local Compensatory	A01238-Charge
A01207-Washing	A01239-Special
A01208-Dress	A01240-Utility for Gas
A01209-Special Additional	A01241-Utility for Electricity
A0120b-Servant	A01242-Consolidation Travelling
A0120c-Club	A01243-Special Travelling
A0120d-Integrated	A01250-Incentive
A0120f-Mobility	A01251-Mess
A0120h-Hair Cutting	A01252-Non-Practicing
A0120i-Remote Area	A01253-Science Teaching
A0120l-Hard Area	A01254-Anesthesia Allowance
A0120r-Prison	A01255-Hostel Superintendent
A0120t-Education	A01259-Fuel
A0120z-Vehicle Maintenance	A01260-Ration
A01210-Risk	A01263-Research
A01211-Hill	A01264-Technical
A01212-Telecommunication	A01276-Outfit
A01216-Qualification	A01277-Contingent Paid Staff
A01217-Medical	A01278-Leave Salary
A0121j-Transport Monetisation	A01279-Extra Duty
A0121n-Personal	A01225-Instructional
A01222-Hardship	A01284-Firewood
A01224-Entertainment	A01289-Teaching
A01225-Instructional	A01292-Screener
A01226-Computer	A01293-Diet Charges
A01227-Project	A012ac-Servant
A01228-Orderly	A03805-Travelling

APPENDIX – C

Officers and Pay Scale

Equivalence of Gazetted Officers Based on Pay Scales in Pakistan

S. No.	Pay Scale Type	Stage-1	Stage-2	Stage-3	Stage-4	Stage-5	Stage-6	Stage-7
1	Basic Pay Scales	BPS 1-4	BPS 5-6	BPS 7-8	BPS 9-10	BPS 11-12	BPS 13-14	BPS 15-16
2	Special Pay Scales	SPS-01	SPS-02	SPS-03	SPS-04	SPS-05	SPS-06	SPS-07 (Staff Cadre)
3	Military Pay Scales	E-1	E-2 & E-3	E-4	E-5 & E-6	E-7	E-8	E-9

Equivalence of Officials Based on Pay Scales in Pakistan

S. No.	Pay Scale Type	Stage-1	Stage-2	Stage-3	Stage-4	Stage-5	Stage-6	Stage-7	
1	Basic Pay Scales	BPS-16 & BPS-17	BPS-18	BPS-19	BPS-20	BPS-21	BPS-22	BPS-Spec	BPS-Apex
2	Special Pay Scales	SPS-7 & SPS-8	SPS-9	SPS-10	SPS-11	SPS-12	SPS-13	SPS-14	–
3	Military Pay Scales	O-1, 2 & 3	O-4	O-5	O-6 & 7	O-8	O-9	O-10	–
4	Higher Judicial Pay Scales	–	–	–	–	J-III	J-II	J-I	O-Apex
5	Management Pay Scales	–	–	–	MP-III	MP-II	MP-I	MP-Spec	–

Gazetted Officers in Pakistan

Group/ Services	BPS-16 & 17/ FMU-1 & 2/O-1, 2 & 3/ SPS-7, SPS-8/ OG 1 & 2	BPS-18 / FMU-3/O-4/SPS-9/OG-3 & 4	PS-19/ FMU-4/O-5/ SPS-10/ OG-5 & 6/TTS-III	BPS-20/ FMU-5/O-6 & 7/SPS-11/ MP-III/ OG-7/ TTS-II/ HoM Grd-III	BPS-21/FMU-6/J-III/O-8/ SPS-12/MP-II/ OG-8/TTS/ HoM Grd-II	BPS-22/J-II/O-9/SPS-13/MP-I/ TTS-MP/ HoM Grd-I	BPS-Spec/J-I/O-10/SPS-14/MP-Spec/ TTS-Spec/HoM Grd-Spec	BPS-Apex-/O-Apex/ HoM Grd-Apex
Upper Judiciary					Additional Judges of the High Court Registrar of the High Court	Judges of the High Court Registrar of the Supreme Court	Judges of the Supreme Court Wafaqi Mohtasib (Federal Ombudsman) Chief Justice of the Federal Shariat Court Chief Justice of the High Court	Chief Justice of Pakistan (CJP)
Lower Judiciary		Civil Judge cum Judicial Magistrate District Attorney (small districts)	Senior Civil Judge Assistant District & Session Judge District Attorney (larger districts)	Additional District & Session Judge	District & Session Judge			
Lawyers				Assistant Advocate-General Deputy Attorney-General	Additional Advocate-General Additional Attorney-General	Advocate-General for province Attorney-General for Pakistan		

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Agricultural Commodity Markets in Pakistan: Analysis of Issues

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EXECUTIVE SUMMARY

Agriculture markets in Pakistan are still primarily based on a colonial-era model and have not modernised with changing times. This has increased unnecessary costs in the supply chains that put growers and end-consumers at a disadvantage. Additionally, price and supply volatility causes insecurity for policy-makers as information about prices, supply and demand is not structured, timely or reliable.

For decades, agricultural markets have functioned without government focus on innovation. Recent initiatives from various federal and provincial agencies provide hope that this vital area can now finally be addressed. Numerous constraints need to be resolved to bring meaningful change to the ecosystem. The process must start with a fresh policy look and commitment to adopt modern themes. This policy process can be supported by technology and successful lessons from other countries as well as developments in other sectors within the country.

There is a need to develop a certain level of coordination between various federal and provincial agencies. The increasingly fragmented nature of agriculture markets might be useful for some stakeholders as they can innovate according to their needs but it leaves most of the sector at a continually suboptimal level. The lack of progress in modernising core markets has also made it difficult for some innovative solutions to succeed. A rapid assessment of the current environment, key constraints and recommendations for possible development areas is presented in this report.

1. INTRODUCTION AND BACKGROUND

This is a rapid study of wholesale agricultural markets in Pakistan to highlight key issues that require policy intervention. A short introduction to the historical background is followed by a discussion of the current state of agriculture markets. The next section will analyse issues and look at some possible solutions.

Some issues of agricultural marketing are well documented but often stop short of specific recommendations on the way forward. Often, the discussion is limited to exploitation by middlemen and the need to eliminate the role of intermediaries. This simplistic view fails to take into account the wider issues of political and market

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economy, historical development, absence of viable alternatives, policy blindness and the need to prepare for the changing supply chain dynamics of today's world.

This paper aims to get straight to the issues at heart and offer some suggestions for further policy research. Detailed information on historical and current developments in agriculture markets can be obtained from reference sources. The focus here is to provide an analysis of important constraints and issues that may not have been looked at holistically before.

1.1. Historical Development

Wholesale agricultural marketing in Pakistan has its roots in colonial-era laws dating from the 1920s. The Royal Commission on Agriculture recommended in 1928 the regulation of marketing practices and the establishment of regulated markets. It proposed regulation of trade practices and the establishment of markets in the countryside. The government of India prepared a Model Bill in 1938 and circulated it to all states. Punjab was the first in present-day Pakistan to enact the Agricultural Produce Markets Act in 1939. This act has been the foundation of agricultural marketing ever since then. It was replaced by the Punjab Agricultural Produce Markets Ordinance in 1978 and more recently by the Punjab Agricultural Marketing Regulatory Authority (PAMRA) Act 2018 (further amended in 2020). Despite the introduction of new laws, the fundamental operations of wholesale agriculture markets remain the same. The latest legislation does open up the space for modernisation and this will be discussed later but as of now the workings of these markets (mandis) remain based on a 100-year-old model.

Other provinces followed the example of Punjab and established similar regulatory environments for the marketing of agricultural produce. The erstwhile North West Frontier Province adopted the same Punjab law of 1939 for the regulation of its agricultural markets. The NWFP Assembly passed the Agricultural and Livestock Produce Markets Act in 2007 to replace the previous law. Due to resource constraints, the spread of public markets in Khyber Pakhtunkhwa has been limited with only two public markets operating in Peshawar and Dera Ismail Khan. Private markets stepped in to fulfil the growing production and demand needs of the province. In May 2021, the government promulgated the "Model Byelaws for Establishment and Regulation of Private Fruit and Vegetable Markets by Tehsil Municipal Administration or Tehsil Local Government, 2021" under the KP Local Government Act 2013 to bring private markets under regulatory ambit.

For decades, Sindh also followed the colonial-era agricultural marketing legislation of 1939. It was only in 2010 that under a USAID-funded project, The Sindh Wholesale Agricultural Produce Markets (Development and Regulation) Act was passed by the assembly to replace the 1939 Act. This act has many reforming and modernising aspects including encouragement of private markets. However, the lack of implementation through lack of rules has made it ineffective and the good intentions of a reformed regulatory design have not been achieved.

Balochistan also followed the 1939 Act till 1991 when it passed a new law, The Agriculture Produce Marketing Act 1991. This law also has a similar model as other provinces in terms of the setup of agricultural markets and needs reform based on changing needs and times.

As agriculture is a provincial subject under the constitution, each province pursues its own explicit or implied agricultural policies that include agricultural marketing. The scope of agricultural marketing is primarily concerned with the supply of fruits, vegetables, and grains for spot or immediate delivery of commodities. Another element of commodity markets is in the form of futures markets where delivery is at some date in the future. A futures contract is a type of derivative instrument and is regulated like the securities market by federal laws under the jurisdiction of the Securities and Exchange Commission of Pakistan. Pakistan Mercantile Exchange was established in 2007 under the Securities and Exchange Ordinance 1969 and has the mandate to provide futures trading in approved commodities including agricultural products. The governing legislation for futures trading was changed to Futures Market Act 2016 but SECP remains the regulator of commodity futures trading.

The implications of these different sets of legislation for the pricing and supply of agricultural produce and development needs will be discussed later in the report, but it is important to understand at this stage that the regulatory setup for agricultural commodity pricing is fragmented and is an additional challenge on top of other technical issues that will be discussed next.

1.2. Current Setup

As mentioned above, the general model of agriculture markets in Pakistan remains the same. There are some differences between provinces due to recent legislation but the core functioning model remains the same. This includes the concept of a physical marketplace, managed by a market committee, relying on commission agents acting as middlemen, with auctioning as the price discovery mechanism. For such a system to act as an efficient market, all the constituent components need to be functioning efficiently as well. While this requirement is understood at a theoretical level, its practice has left many issues unresolved and generated new ones as well. However, this should not detract from the fact that wholesale agricultural markets are the mainstay of food supply and make it possible to put food on the table for millions every day. Between about 8 million farmers and 220 million citizens of the country, wholesale markets are the funnel that channels produce to consumers and processors. New supply channels like contract farming, direct marketing and e-commerce are growing, but as of today, their percentage is very small compared to the role of mandis.

The supply chain based on wholesale agricultural produce markets can provide for the needs of a large and growing population daily. On this metric, the system may seem efficient and, in fact, its century-old setup is a testament to the strength of the model. An in-depth critical analysis will reveal various shortcomings of the system that have also lingered and grown over the decades. Some of these are well-documented and have been voiced by stakeholders regularly. The common refrain of exploitation by the middleman is the most aired complaint. While justified, there has been very little analytical explanation of the causes of this exploitation. We need to understand the historical developments before beginning to understand the issues at heart, partly because some of the ‘original sin’ problems are still unresolved.

Creation of Mandis. Ironically, the report of the Royal Commission on Agriculture in 1928 justified the need to establish physical marketplaces in the countryside to counter

the exploitation of the farmer which is still being mentioned as a major issue. Before the 1939 Act, a variety of private markets existed that collected and traded produce. Farmers were not direct participants in those markets given the lack of logistical infrastructure and connectivity between farms and markets. Farmers had no real option but to sell to local middlemen within their villages. Often, these middlemen were also moneylenders and this intertwined role continues to this day and will be discussed shortly. With poor access to market and information, farmers were never able to get a good price for their produce as more knowledgeable and downstream connected intermediaries and participants were able to capture most of the value.

Motivated by the desire to improve price realisation for farmers, the Royal Commission proposed the establishment of public markets in the countryside and the abolition of unregulated private markets. The prescribed design of these markets required a physical location managed by a neutral market committee which should have at least 50 percent representation of growers of the area. These measures were designed for farmers to bring produce to the market instead of selling it in the village. Additionally, auctioning was specified as the mode of price discovery with the hope that it would lead to a fairer price for growers.

For this goal to be achieved, a large number of markets had to be established in a province like Punjab which was a major production region. The government came up with a model that has been in practice for almost a century now. On one hand, it demonstrates perhaps the most successful execution of public-private partnership (PPP), but on the flip side, it also highlights the weakness in design and regulatory oversight that can lead to distortions and market failures. The PPP model enabled the government to establish a large number of markets throughout the province in a short time with minimal public expenditure. A typical transaction modality involved the government (though the Agriculture Department) acquiring 30-40 percent of the selected site with the balance being funded by private individuals (typically large landlords or middlemen). Private partners would, hence, acquire a freehold interest within the physical market area and would become permanent stakeholders with the impossibility of dislodging them.

Market Committees. All efficient markets require specialist intermediaries for smooth functioning. Even in today's technologically connected world, transactions require at least one intermediary. Similarly, the role of the key middleman (known as a commission agent) in wholesale agriculture produce markets was vital for the functioning of the market. The government achieved its goal of establishing a large number of public markets throughout Punjab with the prescribed structure of a market committee and auctioning. The market committees instituted for the management of these markets consisted of growers, consumers, market traders, and government officials. The market committee also had its own staff for regulatory purposes and for facilitating growers who brought their produce to the market. Government representation was mostly through the local administration, typically the District Commissioner.

These committees were supposed to be financially self-sustaining through the collection of transaction and licensing fees. The law also stipulated that a market committee is entitled to collect a market fee on all wholesale produce sold within a geographical notified area in which the actual market was located. This local monopoly on wholesale marketing for each market committee was supposed to provide a level-

playing field for all including those who did not bring their produce to the market but transacted outside. Market committees are also responsible for providing annual licences to commission agents that allow them to conduct business within the market premises and earn a commission on the value of produce auctioned on behalf of growers.

While the management structure of market committees was intended to support farmer representation, in effect it became a vehicle for political ambitions and was dominated by large landlords. Each market committee had a quasi-independent structure with its own bye-laws but overseen and regulated by the agriculture department. This oversight was never strong and over time became ineffectual. Often MCs would be used for local political purposes and many times these would be disbanded and be run by local district administration. In fact, a later amendment in law gave powers to the government to disband MCs at times of general elections.

Commission Agents. The desired objectives of achieving a fair marketplace required that the market committee be able to ensure compliance and enforcement of auction rules and other requirements. In reality, the most powerful group of stakeholders, commission agents, were able to use their pivotal position to their advantage. While the market fee was fixed in Rupees per quintal (100 kgs), commission agents were allowed to charge fees in percentage of the value of the produce auctioned. This difference meant that market committees were never profitable enough to invest in quality infrastructure, staff, and procedures. Due to the poor oversight capacity of market committees, commission agents were able to establish a strong foothold in determining the dynamics of agricultural produce markets.

With their knowledge and financial strength, commission agents are still the major actors in agricultural markets. Their position has remained unchallenged with no alternative channel able to compete. The main consequence of this dominant market role is the extreme hesitancy of any policy attempt to reform lest the disruptions to price and supply are unmanageable. This regulatory vacuum has allowed commission agents to capture a central position in the supply chain with some costs as well as benefits. On the positive side, there is an uninterrupted supply of produce to consumers every day, but on the negative side, there are questions about excessive costs extracted by intermediation that come out of the pockets of growers and end-consumers.

The financial strength of commission agents found a natural outlet in the form of a shadow banking system that is still the prime financier of agricultural production in the country. This informal, unregulated and largely undocumented agriculture lending provides credit to growers for crop inputs, both in kind and in cash. The clever way in which this credit provision can bypass laws against unauthorised lending results in a binding constraint on the efficient price discovery of markets. Most of the lending is in the form of agriculture inputs and the repayment is in the form of commission (along with other deductions based on exploitative practices) earned on the value of produce auctioned through the commission agent's shop in the market. In the absence of easy alternatives to agriculture inputs financing options, farmers are forced to borrow from commission agents. This loan contract binds farmers to sell their crops through the same commission agent. While farmers may view their borrowing as interest-free as no explicit terms are agreed upon, in reality, the implied cost can be very high when taking into account all commissions and deductions made by the agent.

During consultations, commission agents admitted that their business model is now of an investor in agricultural production. They do not see themselves as pure commission-based auctioneers. The financing of agricultural production requires large investments that are locked throughout the crop cycle and the return *on* this investment is through the commission and other deductions at the time of crop sale. The return *of* this investment is also through the leveraged value-addition of the crop. For example, if a 3-6 month horticulture crop requires PKR 100 in the form of inputs, the value of the harvested crop may be PKR 400. The commission deducted from the value of the harvested crop represents considerably high excess returns. Commission agents counter this statement against them by taking the plea that this return is balanced by taking considerable risk. This uncollateralised lending is exposed to many risk factors including crop failure or reduced production, and the borrower deciding to sell the crop through another agent or channel. Often the commission agent is also the financier to farmers for non-production related expenses that may include medical and family emergencies. The ease of accessing the commission agent for funds in times of need makes the middleman an important social support for farmers and the village community. This relationship continues over generations and it is very common for commission agents to keep accounts of rolled-over debts from previous generations.

During high commodity price seasons, commission agents are able to extract larger income which compensates for reduced income during lean periods. The charge of exploitation levied on commission agents has to be analysed in the context of weak regulatory oversight as well as the absence of viable alternative models of credit. Data on the annual growth of agriculture sector credit through banks is impressive but hides the fact that most of these loans cover the whole agriculture value chain and not just farm inputs. Technical requirements for formal bank credit disbursement are a disadvantage for farmers when compared to the relationship-based informality of commission agents. Commission agents and farmers have developed a symbiotic relationship which is considered a necessary evil in the absence of any better alternative. The intertwined dependence of marketing freedom on input credit is the biggest obstacle to the reform of agricultural markets.

Auctioning. The purpose of the auctioning model was to get the best price discovery. The principle of efficient price discovery requires a large number of buyers and sellers. A physical marketplace provides an opportunity to gather buyers and sellers in one place for better price discovery. While agriculture markets are busy with activity, a closer look will reveal that auctions are fragmented with commission agents conducting these at their own shops or using a central area. This fragmented nature of auctioning results in relatively few participants at each auction compared to whether these were consolidated or run by neutral market committee staff. The lack of investment in staff resources by market committees has resulted in poor capacity for performing the role of a neutral and trusted market operator. Necessity dictated that commission agents fill the void and conduct their own private auctions. They can hardly be blamed for capturing space for their self-interest. These markets are operating suboptimally as the market space is not being used for aggregation but for many small auctions taking place instead. The flip side to the potential price inefficiency argument is that a large number of auctions makes it possible to clear the market in a short time which is essential for perishable fruits and vegetables.

Many market participants will say that prices are fairly determined and that even with the fragmentation of auctions, participants have a fairly good idea of the day's price range. This information gathering is an individual exercise by each participant depending on his network, resources and connections. Knowledge about the day's price action in different locations is obtained through phones and is used to make decisions on immediate supply and destinations. This informal mechanism of information dissemination is also a symptom of weak market systems. As auctions are conducted privately by commission agents, real transaction information is not publicly available. This asymmetry of information further impacts the actions and rewards of participants with suboptimal price discovery. Policy knowledge about designing efficient market structures seems to be lacking as reliance has been on century-old practices and the trust that market participants will get the produce to its destination regardless of the cost extracted for intermediation.

Auctioning as a mode of transaction for agricultural produce is now only practised widely in South Asia. Most wholesale markets around the world rely on direct sales. These markets provide space for buyers and sellers to meet and negotiate directly. The market operating entity will provide services and facilities to attract buyers and sellers and ensure compliance with standard procedures and norms in return for a fee. Advanced countries have generally moved away from the concept of physical wholesale markets as private sector supply chains have taken over. Even though the role of wholesale markets has diminished in the developed world, there are some countries like France, Spain, and Italy where wholesale agricultural markets channel up to 50 percent of produce. These provide valuable lessons on how to modernise agricultural markets in the context of Pakistan's requirements.

Internationally, wholesale agricultural markets are not hugely profitable businesses. They are essentially fulfilling a utility role. This is also evident from the current state of markets in Pakistan though there is room for improvement in operational profitability. Given food security considerations, often governments support these markets in some way. Market design can range from completely government-owned and run markets to private markets. Often examples exist of public-private partnerships or government support in terms of land and logistical access.

Wholesale markets in Pakistan fall under the domain of provincial agriculture departments. As discussed above, this is due to the initial legislative design which was motivated by the need to improve access of growers to markets. However, agriculture departments were not the only government stakeholders. Local administration is part of the land acquisition process as well and is also represented on the Market Committee. With an increase in urban population, the need to look after the competing interests of consumers has increased the importance of agriculture supply chains. The institutional inefficiencies of agricultural markets also add to the costs paid by the end consumer, not to mention the price volatility and supply disruptions. In most countries, the responsibility of establishing agriculture markets rests with the local government to ensure food supply to the immediate population. As transport and communication connectivity is different now from earlier times, the legacy oversight of these markets in Pakistan needs to evolve as well to take into account the needs of the whole supply chain including end consumers.

Price volatility of essential agricultural produce is always a sensitive matter and the government is always in a reactive mode when prices escalate. Generally, rapid price escalation is considered a more politically sensitive issue as it affects consumers immediately and feeds into headline inflation. The government relies on Price Control Committees at the district administration level to cap retail profit margins. There is a range of profit margins, typically 10 percent but not more than 20 percent, that the government tries to enforce at the retail level. These prescribed retail prices are based on wholesale market prices that are not subject to any government intervention. As such, these are generally accepted as a fair representation of the immediate demand and supply conditions. Principles of efficient price discovery require non-interference by the government, but equally important is the need to ensure transparency of operations so that other distorting practices can be deterred. Given the poor capacity of the government to oversee market operations and the hold of commission agents, it cannot be assumed that price discovery from current markets is at its best. Still, in the absence of alternatives, current wholesale markets seem to price the produce fairly.

While the wholesale auction price may be acceptable to most stakeholders given the capacity of the system, additional costs added to and deducted from the price for upstream and downstream participants restrict the benefits to growers and end-consumers. These costs are due to a long list of reasons that also include issues of the production system itself. Lack of consistent quality and grading starts from seed and gets amplified throughout the production system. Harvest and post-harvest practices add further factors of variation to the quality of produce reaching the market. In the absence of a sector-wide information system, market prices react to the flow of information that is not structured and adds further uncertainty to demand and supply expectations.

Grading Standards. Despite operating for almost a century, wholesale markets in Pakistan have not shown any signs of innovation. There has been no move to introduce grading standards. Each market operates in isolation as far as development is concerned and the agriculture department's capacity has never been strong enough to envisage or lead any reform. Unless the marketplace devises a mechanism to encourage and reward better quality produce through better pricing, farmers will continue to mix their produce. Commission agents and market committee staff lay the burden of grading on farmers. The most suitable place for grading is indeed at the farm level but without any requirements from the market committee, farmers cannot be blamed for mixing. This is a clear failure of market committees and commission agents and symptomatic of the narrow focus of these actors. Failure to design and enforce quantifiable standards results in a loss of value for producers as well as other stakeholders in the rest of the chain.

The lack of specified standards for packaging is also due to similar reasons described above for grading. The same applies to the lack of any protocols on food safety, hygiene, and phytosanitary requirements. Agriculture departments have never considered the whole value chain in unison. Despite overseeing the whole agriculture production system through its research, water management, crop reporting, mechanisation, extension, and marketing directorates, there is little coordination within the agriculture department to improve various aspects of the supply chain that impact each other. Directorates continue to work in silos according to their initial terms of reference with little effort to take a holistic view. Due to a lack of unifying force, the

agriculture marketing directorate also continues to perform outdated routine operations with no evidence of any strategy to innovate.

PAMRA. International donors have been trying to assist the government for some time to reform agriculture marketing. A new law for agriculture marketing in Punjab was drafted with the assistance of USAID but it was never adopted. Under the World Bank's Strengthening Markets for Agriculture and Rural Transformation (SMART) results-based loan in Punjab, one of the targets was the adoption of a new agriculture marketing law that created a new regulatory authority. The Punjab Agricultural Marketing Regulatory Authority (PAMRA) Act of 2018 was further amended in 2020 to provide continuity for existing public markets while also opening space for new models of agriculture marketing. These new models include private-run markets, virtual markets, collection centres, model markets, contract farming, and direct farmer markets. Areas relating to grading standards and their enforcement are now also the mandate of PAMRA along with training and development of stakeholders. Additionally, the collection and dissemination of market data information is now also under the jurisdiction of PAMRA.

The formation of PAMRA is the first major reform attempt of agricultural marketing in decades. Even this reform was achieved to comply with one of the deliverables of the World Bank programme that required the government to enact a new law for agricultural marketing to receive a loan instalment. As the World Bank instalment clause only required the law to be enacted, the department did not actively follow up on establishing the new authority on sound footing. Till now, no budget has been allocated to PAMRA due to a delay in amending Punjab Government Rules of Business. The authority only has a chairman and a director general with no other staff. Support is currently being provided by the Marketing Directorate of the Agriculture Department. This is yet another example of the level of priority that the department places on reforming this area. At the same time, the government is firefighting price volatility by using powers to control retail profit margins. Without a strategic rethink of wholesale markets, such efforts cannot bring improvement.

The Agriculture Department is already facing capacity constraints in terms of manpower and expertise. A skeleton regulatory authority has further weakened the oversight as well as the development agenda. The setup of the authority is based on a typical but inefficient approach to incorporate many stakeholders with the result that authority membership is spread over ex officio members, elected politicians, and some private sector representatives. This too-broad representation of stakeholders on authority boards has shown to be a drag on dynamism, and the organisation loses its ability to develop and execute innovative ideas. Pakistan has a large number of good and bad examples of regulatory authorities and PAMRA's setup could have been better designed based on lessons from other successful regulators. Particularly, the Securities and Exchange Commission of Pakistan (SECP) is a good model to study. While the SECP may also have some organisational flaws, its experience in overseeing capital and commodity markets can guide PAMRA. Issues of regulating market intermediaries, improving investor protection, and striving for fair market practices are equally relevant to agricultural markets under PAMRA.

Establishing independent regulatory authorities is considered a preferred way to develop the confidence of stakeholders and better regulate sectors but it is also motivated

by the government's desire to reduce budgetary expenses. The model of independent regulators places certain onus on these authorities to become financially self-sustaining. This requirement to earn income through regulatory fees can conflict with the need to develop efficient markets. One criterion of efficient markets is low transaction fees. Ideally, transaction fees should be low enough to not impact the decision of market participants to transact. As discussed above, current market fees are too low as these are based on a small historical base. Currently, in Punjab, this fee is PKR 2 per quintal (i.e., 100 Kgs). In comparison, commission agents are allowed to base their fees on a percentage of value. In a desire to correct this low level of market fee and to raise funds for its desired business plan, PAMRA has proposed a market fee of 0.5 percent of value. The level of this fee has not been justified on the transaction cost criterion and, instead, seems to be motivated by the future budgetary requirements of the authority. While the authority is rightly focussed on improving the infrastructure and operations of existing markets, the concept of financing this plan through high fees from participants (under the new proposed rules, buyers will be liable to pay this fee instead of sellers) is difficult to justify. This is one reason, in addition to self-interest, for the strong opposition from commission agents with the result that PAMRA has not been able to implement new market rules.

The government established a new authority without preparing a financial plan for it or providing initial finances. The law requires PAMRA to develop and oversee new areas of agriculture marketing which is a welcome change. Without adequate funding, the seriousness of the department becomes questionable. New areas of oversight require in-house capacity development of technical and specialised expertise. The current setup, on the other hand, is a step backwards and does not indicate improvements in agriculture supply chains.

In an interesting policy change, PAMRA has embarked on an aggressive strategy of issuing licences to new private markets. Since 2021, the regulator has approved over 200 new private market licences. While this is a very positive approach to encourage private sector markets, it comes at the same time when PAMRA has very limited internal HR and system capacity. There is evidence that due to limited resources, PAMRA is being forced to take shortcuts in giving approvals to these new markets when compared with its regulations. This is another example of a good measure being marred due to the typical ineffective regulatory oversight. The number of private market licenses is now the same as the number of public markets in Punjab. While the number of markets has an almost fifty-fifty divide, these new markets are still of small size and the bulk of produce is still handled by public markets. However, with time, private markets will grow and play a much bigger role in supply chains. The risk is that the currently weak regulatory oversight at the time of licencing has created a gap and given capacity issues, these gaps will soon become difficult to close by PAMRA.

PAMRA has also not taken any lead in using this opportunity to encourage better operational and design practices. The same old design and operations of public markets are being replicated by these new private sector operators. An opportunity to modernise through private sector encouragement is being lost and soon it will be too late to rectify. The private sector will replace much of the public markets but without any improvement to the issues already plaguing the sector. In fact, there is evidence that these private

markets are even worse in terms of infrastructure, organisation, operations and facilities when compared to public mandis. Out of over 200 private markets, there are only a handful of progressive operators who have the vision to develop modern marketing channels. Most other private market owners and developers are pursuing a short-term real estate play under which a PAMRA license can increase the value of the agricultural land by reclassifying the market area as commercial. As urban expansion grows, even these new markets will be encroached. Private market developers admit that their markets may only be viable for a maximum of 8-10 years. After that time, the incentive to sell the land at higher prices and close the market will be more attractive than continued operations. PAMRA and PAD need to address this developing issue now and have a policy to counter it. Without a proactive approach, long-term improvement of agriculture supply chains may remain a dream.

Market Data. Current operations of wholesale markets are devoid of any modern technology. Data on transactions and activity is still recorded on paper and is largely for fee collection purposes. A walk-through of all Lahore markets revealed that each market varies in its data collection and recording methods since there is no standard requirement from the agriculture department on how market committees should keep records. The basic data being reported is related to total market fee collection without any detailed source information. Information on average auction prices is based on sampling. There is no system to electronically capture and record price and volume information of every transaction that takes place in a market. As these auctions are effectively private affairs, individual books of commission agents contain detailed accounts. There has never been any requirement from the government that commission agents report their activity. Significant information on market activity is not captured and, consequently, policymakers are not aware of the true state of activity in markets. The absence of timely and accurate data leads to a misdiagnosis of the supply and demand situation and can lead to inappropriate policy decisions. The recent initiative in Punjab to digitise market activity data is an important initiative but a closer study reveals that instead of replacing paper-based recording, an additional layer is added on top whereby the same staff re-enters the data electronically. The digitalisation of operations can only bring benefits if accompanied by the reengineering of processes and retraining of personnel.

Other Provinces. For many decades, all provinces followed the original 1939 Act for agriculture produce markets. In 2018, Punjab adopted a new act which continues with the existing model but opens up space for other types of marketing channels to be established as well. Punjab has the most extensive network of mandis and these have been almost entirely public markets till very recently. Other provinces did not develop such extensive reach. This was due to a lack of demand, finances, or other technical issues related to geography.

The Khyber Pakhtunkhwa government managed to develop only two large public markets and the rest of the needs of the province were met by unregulated private markets. These private markets are the main channels for agricultural produce in the province and the new rules under local government laws are now designed to bring these private markets into the regulatory ambit. The provincial government is not considering public sector expansion of wholesale markets and considers the private sector as the main actor. It is also interesting that the responsibility for regulating private sector agriculture

markets has been placed under local government along with the agriculture department which remains the overseer for the two public markets.

Balochistan has only two wholesale markets of which Quetta is the largest. With a low population and demand within the province, most of the produce goes to wholesale markets in other provinces. Due to large distances, collection and aggregation of produce from farm-gate by private service providers is a well-established practice and shows how it is feasible without farmers having to bring their produce individually to the marketplace. The current draft work on a new agricultural policy for Balochistan recommends the adoption of a similar new law as PAMRA in Punjab. Based on the earlier discussion, it would be prudent to learn from Punjab's issues and alter the design for Balochistan accordingly.

Sindh was the first province to enact a modernising act to replace the colonial era legislation. This act was designed to modernise market committees and corporatise their structure. Private markets were also envisaged under the act, but the rules and regulations required to implement the new act were never prepared. This has left agricultural markets in Sindh in a state of regulatory vacuum. The positive effect of this regulatory vacuum is the development of new supply chains that procure directly from farm-gate. As the needs of the population and growers cannot wait for regulatory reawakening, market forces have continued to innovate. The lack of regulatory clarity has allowed market participants to develop their own channels suited to their needs. In a way, this is a sign of the maturity of agriculture supply chains but, on the other hand, it also means that there is less information and data for policymaking. Many farmers and consumers may benefit from direct marketing channels but other weaker participants risk losing out. Government support in terms of oversight of supply chains and standards may still be needed to assist the large majority of growers not able to market produce directly.

PMEX. Agriculture is a provincial subject. The 18th Constitutional Amendment brought some further devolution but agricultural markets were always under provincial domain. These markets are spot markets as produce is delivered, auctioned, and taken away the same day. Spot markets are the basic underlying transaction channels by which physical commodities change hands. Buyers and sellers agree to exchange goods for a price determined and paid on the spot. This involves price risk for both parties as commodity prices at the time of the transaction can change significantly later on. To manage this price risk, futures markets provide a platform.

Motivated by the need to provide participants with a mechanism to hedge price risk, the National Commodity Exchange, later renamed as Pakistan Mercantile Exchange (PMEX), became operational in 2007. Futures are derivative contracts as they depend on the underlying spot commodity. Being a contract for buying or selling something at a future date at a price agreed today, they are classified as securities. Securities trading is a federal subject and the Securities and Exchange Commission of Pakistan (SECP) is the regulator for the PMEX. The exchange was initially licenced under the Securities and Exchange Ordinance 1969 which was later replaced by the Futures Market Act 2016. Over the years, the PMEX has grown considerably in terms of trading volumes in currency, precious metals, stock indices, and crude oil futures contracts. During the same time, the exchange also listed contracts based on domestic agriculture commodities but none of these have managed to become successful in terms of trading activity.

There are several reasons for the lack of success of agriculture futures on the PMEX. From the start, the exchange was undercapitalised. Attracting business in internationally established leveraged trading contracts on financial assets required little effort as similar expertise existed in the unregulated futures brokerage houses. Development of similar products based on domestically produced agricultural commodities needed more resources. Resources are needed to invest in marketing, training, awareness and the necessary infrastructure network required for handling physical commodities. A considerable amount of time was wasted in permissions from SECP which ate into the already small capital base of the exchange. SECP, being a capital markets regulator, itself did not possess the required in-house skillsets to understand commodity futures with full confidence. This led to a lack of leadership and support for the new area of commodity futures trading that was new to Pakistan.

The PMEX also suffered from the lack of coordination between federal and provincial authorities. A proactive approach by the federal government could have involved provinces and their agriculture departments in pursuing a common strategy that would have improved the functioning of agriculture markets. Again, the SECP's focus on capital markets left it ill-prepared to develop agricultural futures. There has been an element of deliberate hesitancy to work on agricultural matters lest the provinces take it as an encroachment on their domain. This untested view has deterred the development of a consensus national strategy to develop agriculture markets.

To make agriculture futures trading successful, studying the experiences of other countries is useful. The most relevant example is of India and an important lesson is the creation of separate spot exchanges by futures exchanges as well as state-level commodity exchanges. For futures trading to be successful, a certain level of efficiency in spot markets is a prerequisite. The PMEX is an all-electronic exchange and this model contrasts with the already discussed archaic nature of operations of mandis. A similar situation existed in India that forced the commodity futures exchanges to establish their spot trading exchanges. Those exchanges had issues related to internal design but they were able to demonstrate an alternative to wholesale markets. Any attempt or dialogue by the PMEX on a similar approach has not been encouraged by the SECP. This is partly because the jurisdiction for spot markets lies with provinces. But for the PMEX to even apply to a province for establishing a market, it needs a green light from the SECP. The SECP has not encouraged the PMEX to take this route even if done through a separate entity. Again, the regulator is relying on a strict interpretation of the licence of the PMEX to only conduct futures trading. If the PMEX wants to invest in spot market operations to make a success of commodity futures trading, it should be allowed to do this. Detachment from the agriculture sector at the SECP also plays a role in the regulator's lack of willingness to allow innovation.

The recently promulgated PAMRA Act creates a space for the first time for new models of spot markets to be registered. This should provide the basis for a fresh look from the SECP and the PMEX to bridge the gulf between spot markets and futures markets. Any new initiative must involve provinces to have cooperation and coordination something that has been missing till now. Discussions with stakeholders have raised the issue of the 18th Constitutional Amendment as a hurdle to agriculture sector development. An analytical assessment will reveal that this is used more as an excuse by stakeholders as opposed to a real obstacle. Agriculture was already a provincial subject before the amendment, especially

agriculture markets. The 18th Amendment does not restrict cooperation, coordination, and dialogue between provinces and federal agencies. While provinces are confined by geographical boundaries, agricultural produce is grown, transported, traded and consumed across the country. No attempt has been made by any government ministry, department or agency to develop a policy or strategy that focuses on the shortcomings of agricultural markets and associated downstream and upstream activities.

It has already been discussed that commission agents are the linchpin of the current agriculture supply chains. They are not only the financiers for growers but also provide credit to the buy-side wholesalers (called 'phairias') who disaggregate produce for retailers after the wholesale auction. Their production finance role also gives them a foothold in the inputs distribution chain of seed, fertiliser, and pesticide manufacturers. It is not possible to bypass them completely nor should a strategy be designed for that aim. They have long-standing relationships and an embedded knowledge base of the sector. A more intelligent approach should be to incentivise them to modernise with the benefit of increasing their business opportunities. Like other traditional sectors, commission agents are also faced with issues of continuity as their younger generation looks to other career opportunities. With their carry-forward receivables over years from the buy and sell side, they have no choice but to remain rooted in their business. This is also a drag on business expansion and innovation.

The current SECP regulations for brokers are a barrier for commission agents to become members of the PMEX. Being a capital markets regulator with no connection to agriculture, these rules have been framed from a financial markets approach. However, these do a disservice to the goal of developing agricultural commodity futures. There are innovative ways to admit commission agents into the SECP regulatory regime by relaxing some of the conditions that are more suited to financial sector institutions but not conducive to commodity and location-specific agriculture market intermediaries.

A similar approach should be explored by the SBP as well for bringing commission agents closer to the banking sector and perhaps becoming a conduit for bank financing to farmers. Commission agents also have capacity constraints in terms of liquidity and this is one of the reasons for the growth of microfinance as the growing needs of farmers are not fully met by the informal sector. Commission agents can be provided with liquidity to dispense onwards to farmers under a new agent model with banks. Due to this disconnect with banks, a considerable amount of liquidity to commission agents comes from private individuals placing investments with them. This is very similar to the "badla" investments offered by stockbrokers to their clients before stock market reforms by SECP. These realities need to be understood before innovative and out-of-box measures can be designed to improve financial inclusion in a sector that is economically crucial for the country. The alternative road to financial inclusion is going to be a long one as most of the current focus is on simple accounts for money transfers between individuals for consumption purposes.

The SBP and the SECP are jointly involved in developing the ecosystem for electronic warehouse receipt financing (eWRF). The concept of the eWRF is beneficial for the banking sector as well as established players in the agriculture value chain. For farmers to benefit from the eWRF, many constraints have to be overcome. Some of these are technical, some economic, and some regulatory. Just as commodity futures trading depends on spot markets, the eWRF also requires a certain efficiency in these markets. The behaviour of market and

credit intermediaries in agriculture markets also impacts the prospects of success of the eWRF. After all, eWRF is just another bank financing product in direct competition with informal lending by commission agents. The PMEX and Naymat Collateral Management Company (NCMC) are also key actors of the eWRF system and they are also lobbying for the inclusion of commission agents into the regulatory ambit for this new concept to succeed. Warehouse receipt financing and commodity futures trading are higher-degree products. In a country where basic bank accounts are still not universally used, a jump to a higher degree of products risks failure or at least a long adoption time. Efforts need to be made in parallel on solutions to reform existing markets as other channels and products depend on the underlying agriculture supply chains. However, no such unified approach by policymakers has been seen so far. A task force led by the SBP was set up at the beginning of 2022 to look into issues of the eWRF. It does provide a broad-based platform with equally inclusive terms of reference. It will be interesting to see if the task force is able to identify the core issues affecting different parties and provide solutions as well.

The recent performance of the collateral management company suggests that undercapitalisation and too broad-based a shareholding has led to a disappointing start, very similar to the PMEX. Some private sector pilots on innovative storage solutions show good results. Under these examples, Islamic banks have more acceptability with farmers than traditional banks. These banks are offering loans to farmers under a collateralised storage model operated by third-party service providers. Development of these products by banks looks like a more viable path in the short term than the overly ambitious desire of regulators to impose an advanced electronic warehouse receipt issuance and trading ecosystem. Small individual steps need to be taken first before any realistic possibility of a large-scale integrated system can be contemplated.

Lastly, deficiencies in market information availability lead to deficiency and delays in policy responses. The recent volatility in prices and supply of agriculture commodities has highlighted the government's dilemma. Stale data collection and processing techniques of government departments have led to incorrect or delayed information for top-level policymakers. Decisions taken at the highest level as a consequence of wrong information were later proved to be misguided. Efficient markets are recognised as the best filter of demand and supply information, but current agricultural markets are so fragmented with no involvement of modern technology that they fail to perform this essential role. Government infrastructure is not designed to capture accurate and timely demand and supply information. This data is currently the private domain of a large number of independent market participants. The absence of strong market operating authorities and regulators has been the reason for this loss of information. Strengthening these markets with modern technology and reformed operations can also lead to better quality data on supply and demand for policymakers.

2. AGRICULTURAL MARKETS ANALYSIS

A description of key features of the current landscape of agriculture markets was presented in the previous section. It also covered emerging areas that offer some solutions but also have some issues of their own. A holistic policy approach to issues of agriculture markets has been missing in Pakistan. The need to reform agriculture markets is acknowledged in some government circles but there is no strategy with specific goals and targets or a vision for the long-term evolution of this area of the agriculture sector.

2.1. Key Issues and Possible Solutions

A tabulation of key issues and recommended solutions for agriculture markets are presented below.

	Area	Issue	Possible Solutions
1	Legislation and Rules	Legislation in smaller provinces is either outdated or not supported by adequate rules. The amended act in Punjab currently does not represent a major shift.	Holistic review of provincial legislation with lessons on certain degree of harmonisation. Formulation of rules and regulations if missing or inadequate
2	Local Government	Wholesale markets are mainly the domain of agriculture departments to facilitate growers. This is not suited to the needs of urban populations.	Involvement of local government in developing wholesale markets from a demand-side perspective. This may lead to better production practices if there are market signals from the demand side. Possible reassessment and realignment of Agriculture Department mandate and focus on near-farm interventions rather than feeding urban populations.
3	Policy	National and provincial agriculture policies do not have details on agriculture marketing.	A clarification of long-term objectives for agriculture wholesale markets required from relevant authorities and agencies.
4	Private Sector	The private sector is either not involved or in some provinces operating without oversight.	Policy and laws to make private sector participation attractive and beneficial. A recent surge in approval of new private markets by PAMRA does not come with new models or standards. The same old model of public markets is being replicated by private markets with increased inefficiencies.
5	Certification and Training of Participants	Currently, no regulatory requirement to certify and train approved market intermediaries.	Structured training, certification and training of intermediaries will improve the quality and service of operations.
6	Regulatory Fees	Either too low for historical reasons or too high for new regulatory models	Should be set at levels that encourage market efficiency rather than a drag on activity.
7	Auctioning	Currently the dominant form of transaction in public markets. Not practised widely in the rest of the world now. Current auctioning in markets very is fragmented.	Equal patronage to other channels of supply: contract farming, direct farmer markets, e-commerce & B2B, processor and supermarket procurement, digital exchanges, remote participation, etc. Review of current auctioning operations to bring improved transparency.
8	Regulation of Cash and Non-cash lending	The shadow banking system is the driver of production but also a drag on it. It is unregulated and suboptimal.	Review of existing laws that are not enforced and formulation of new ones that seek to regulate inputs provision and financing to farmers.
9	Input provider registration	Commission agents also act as agents or provide access to inputs. There are variations in the quality of inputs provided and directly bind the borrowing farmer to his crop sale decisions.	A registered trail of inputs provision is one way to document farmer dependency and subsequent marketing decisions.
10	Enforcement of transaction reporting	There is no legal requirement or enforcement on intermediaries to report transactions. Price, volume, source and counterparty data in agriculture markets is only held privately by intermediaries.	A requirement to report market activity data by all intermediaries. Technology makes the solution easier now than in the past.
11	ICT adoption	All market operations are manual and paper-based. These are prone to error propagation and are not helpful for data capture.	All market transactions need to be digitally recorded using ICT technology. Market operations should be digitalised and remote participation made possible.
12	PAMRA Setup	The regulatory body's design and setup perpetuates existing agriculture department practices.	A review and lessons from other market regulators in the country may help improve the governing and operating structure of PAMRA for better impact.
13	PAMRA capacity	PAMRA has no HR capacity and funds for operations. Support from Agriculture Department staff continues the same inefficiencies.	A financially viable and self-sustaining model with budgetary support from the government will enable PAMRA to perform its role.
14	Grading Standards	There is an absence of quantifiable grading and quality standards at markets that encourage higher-value production by growers.	Regulatory prescription for designing and implementing cascading standards is needed to differentiate between various qualities that the market will price accordingly.
15	Packing Standards	No standard packing norms are enforced by markets that may improve quality and reduce losses	Specifications led by markets will be the catalyst for adoption by the rest of the chain.
16	Food Safety Standards	Markets have also failed to design, enforce and reward food safety and hygiene standards. Current markets operate in unhygienic conditions.	Market operators and regulators need to ensure the quality of markets and the produce coming into them is improved.
17	SECP	SECP is detached from the agriculture sector and yet has direct responsibility for some areas: WRF, PMEX, and Crop Insurance. Poor capacity at SECP for understanding the agriculture sector is a hurdle to the future growth of new ideas.	Investment in developing in-house capacity at SECP for commodity and agriculture sector. A policy commitment to play a more proactive leadership and coordination role is required in the case of agriculture-related areas.
18	Market Data	The collection and dissemination of market data are poor and inaccurate. This leads to misinterpretations and possible wrong policy decisions.	The current market data-gathering operations need review and reform to improve trust.
19	PMEX	Undercapitalised exchange has not been able to contribute to agriculture markets.	Commitment from shareholders and regulators is needed to pursue a coordinated approach to agri markets. A reformed policy approach is required to connect PMEX to spot markets.
20	Market Infrastructure	Poor infrastructure of current markets leads to loss of quality and produce with added costs.	Investment to modernise infrastructure, systems, and operations of existing markets.
21	Aggregation	The lack of near-farm aggregation places growers at a disadvantage in terms of bargaining power in the market.	The establishment of near-farm collection centres by independent service providers can improve the market bargaining power of farmers.
22	Coordination between provinces	All provinces follow different approaches but could benefit from coordination.	A forum for coordination and discussion on lessons from each other.

2.2. Way Forward and Next Steps

All of the issues identified above require detailed analysis and consultations to develop consensus on possible solutions. While the issues highlighted here are real, further in-depth research is needed for verification and comprehensive diagnostics. No specific policy research has been undertaken to develop a long-term holistic strategy for agriculture markets.

The modern role of agriculture supply chains is multidimensional. Pakistan needs to move forward from the first stage of agriculture markets at which it has been stuck for decades. Facilitation of growers was the main aim initially but there are equally important requirements for fulfilling the needs of agro-processing and end-consumers. With multiple and growing stakeholders, multiple channels of supply chains need to be encouraged. Experience from other countries shows how they managed to mature their supply chains and Pakistan needs to recognise similar expansion should be facilitated. Government interference and involvement should not cause an obstacle for the private sector. Government insecurity relating to price and supply volatility can be better handled by improved data collection and information dissemination on all supply chain activity. It is in this area that the regulatory philosophy needs to evolve where the government is acting as a facilitator instead of a direct operator. At the same time, provincial agriculture departments need to ditch the silo-based approach to agriculture. Agricultural marketing is still viewed with a very narrow lens focussed on the arrivals at a physical marketplace on a particular day. The modern approach requires policymakers to understand that markets are in a central position to drive innovation through their backward and forward linkages. If markets are not run like businesses vying for the satisfaction of buy and sell-side customers, they will remain basket-case examples of inefficient government-run operations.

After decades of following the same colonial laws, all four provinces are now starting on different approaches to agriculture markets. All these efforts are still evolving and already gaps can be identified. There is conceptual recognition of the need to adopt some reform themes but implementation strategies still seem missing or based on traditional approaches. While provinces are free to pursue their policies, there is also merit in coordination and learning from each other. Given the free movement of produce within the country, marketing practices in one province impact stakeholders in other provinces as well. Similarly, the agriculture produce supply chain will benefit from the leadership of federal ministries and agencies. The ritual excuse of the 18th Amendment as a hurdle should be replaced with a more inclusive approach that can lead to knowledge sharing and learning among all federating units.

No institutional initiative is underway to incorporate modern requirements of standards and food safety. International trade requires modern protocols to be followed for agricultural produce. Agriculture markets are best placed to develop and enforce protocols that are adopted by participants and improve the quality and value of produce. Lack of financial and technical capacity is a hurdle for implementing these reforms. Advances in technology now make it possible to remedy many operational weaknesses. Policymakers also seem oblivious to the need and method to bring about this change. Pakistan has become a country dependent on regulatory prescriptions for the adoption of new technology and practices. Within this scenario, it is incumbent on the government to start the process before the private sector can play its role in its adoption.

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Transports and Logistics

NADEEM UL HAQUE and SABA ANWAR

KEY MESSAGES

- The estimated potential of Pakistan's logistics sector is USD 30.7 billion but it has not been realised as yet. Where is it today?
- Pakistan is nowhere in the global scenario according to the recent Logistics Performance Index prepared by the World Bank 2023.
- The modal shares are highly skewed towards roads accounting for more than 92 percent of passengers and 96 percent of freight. On average this should be 60 percent.
- The motorways and highways constitute less than 10 percent of the total road network but carry almost the entire freight traffic.
- The inadequacy and inefficiency of the public transport system in Islamabad bring more private vehicles on the roads.
- Heavy losses in the railway sector have necessitated an increase in grants from PKR 45 billion in 2022-23 to PKR 55 in 2023-24. Per-passenger grants amount to PKR 1,261 and PKR 5,556 per ton for freight in 2021-22.
- Pakistan Railways has so far failed to adopt the open access policy approved in 2011, which reflects bureaucratic hurdles and governance failures.
- PIDE survey reveals that freight forwarders do not use Pakistan Railways because of the non-availability of relevant information, but mainly because of the non-reliability of the services.
- Pakistan Post has 10,293 post offices in Pakistan, of which 87 percent are incurring losses, while TCS has a market share of 43 percent with less than 10 percent of branches than Pakistan Post.
- The labour unions in public sector organisations have played a major role in resisting reforms, ensuring inefficiencies and substantial losses to the exchequer.

1. INTRODUCTION

The transport and logistics infrastructure plays a critical role in domestic commerce in facilitating buying and selling. In fact, transport infrastructure is the asset that increases the productivity of other players in the ecosystem like trucks (Baldwin & Dixon, 2008).

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The estimated potential of the logistics sector in Pakistan is USD 30.7 billion (World Bank, 2015), however, this has not been realised due to the sector suffering from several challenges. Pakistan was ranked 122 out of 160 countries in the Logistics Performance Index (LPI) 2018, while disappeared from the international scenario in the 2023 LPI. This calls for immediate attention to the sector that faces several challenges, which must be addressed if it is to compete in the global economy, especially in the region where other countries are performing much better.

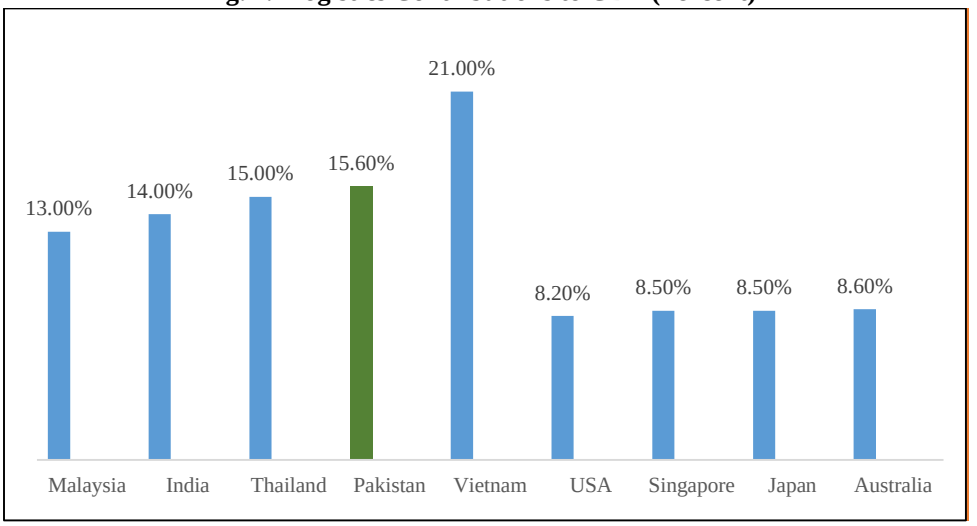
Table 1

Logistics Performance Index of South Asian Countries

Country	LPI Rank	Customs	Infrastructure	International Shipments	Logistics Competence	Tracking & Tracing	Timeline
India	44	2.96	2.91	3.21	3.13	3.32	3.5
Maldives	86	2.4	2.72	2.44	2.55	2.77	3.18
Sri Lanka	94	2.58	2.49	2.51	2.42	2.79	2.79
Bangladesh	100	2.3	2.39	2.56	2.48	2.79	2.92
Nepal	114	2.29	2.19	2.36	2.46	2.65	3.1
Pakistan	122	2.12	2.2	2.63	2.59	2.27	2.66
Bhutan	149	2.14	1.91	1.8	2.35	2.35	2.49

Source: Pakistan Export Strategy Logistics; Logistics Performance Index, World Bank (2018).

Fig. 1. Logistics Contributions to GDP (Percent)

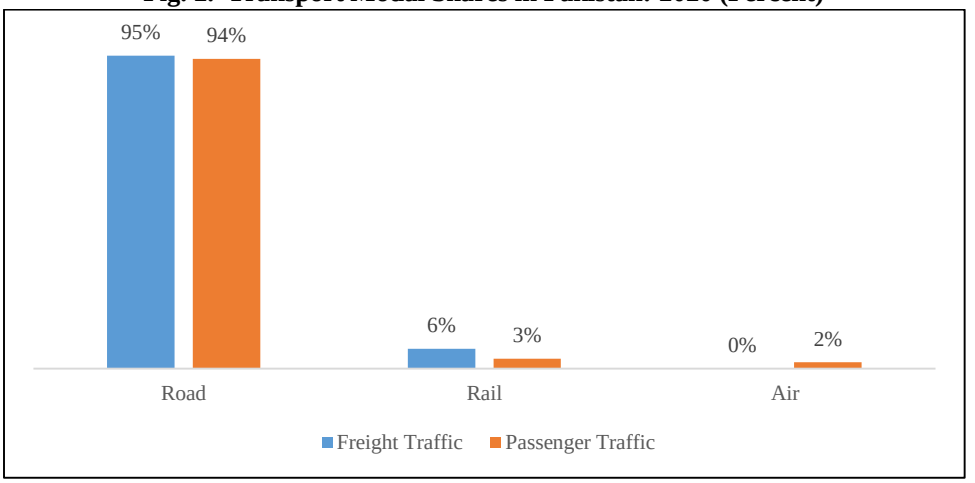


Source: Pakistan Export Strategy Logistics.

In Pakistan, the modal shares are highly skewed towards roads. Roads are the predominant source of transportation in Pakistan accounting for more than 92 percent of passengers and 96 percent of freight. This imbalance has increased the cost of transportation through congestion, pollution, and expenditure on the maintenance of roads. In contrast, although the share of rail in both freight and passenger traffic in India is declining (Figure 10.3), it is greater than in Pakistan.

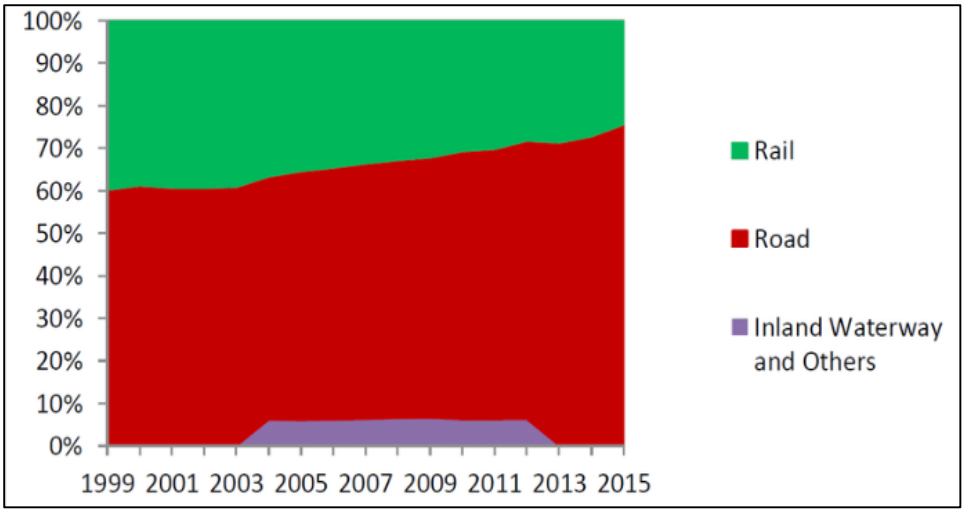
The authors acknowledge the contribution of Babar Badat in screening the report.

Fig. 2. Transport Modal Shares in Pakistan: 2020 (Percent)



Source: Pakistan Economic Survey.

Fig. 3. Transport Modal Shares in India (Percent)



Source: Gu, et al. (2020).

The National Freight and Logistics Policy (2021) document has rightly pointed out that the logistics sector is fragmented and in need of modernisation. A lack of institutional framework has further impeded the growth of the logistics sector and a mixture of old and new laws govern what is supposed to be a sector operating in the modern world. The main obstacle lies in the absence of a unified Ministry/Department of Transport responsible for creating and executing a comprehensive National Transport Policy (Shaikh, 2019). Currently, the logistics sector is divided among multiple federal ministries, making it extremely difficult to establish coherent regulations for the sector's growth and integration.

- The Ministry of Commerce handles foreign and transit trade.
- Shipping services are overseen by the Ministry of Ports and Shipping.

- The Ministry of Defence is responsible for airports and aviation.
- The Ministries of Communications and Railways manage rail and road infrastructure as well as freight.
- Customs and cargo clearance affairs fall under the jurisdiction of the Ministries of Finance and Interior.

This fragmented structure prevents the effective implementation of existing important regulations like the Trucking Modernisation Plan and the National Transport Policy, which were approved in 2007. Consequently, Pakistan has not ratified or adopted international standards and conventions concerning the transportation of goods and products, intensifying the challenges faced by the sector. Furthermore, the sludge (Haque, et al. 2022) in the sector which includes burdensome documentation requirements and customs procedures, results in delays, escalates shipment costs, and reduces the ease of doing business in the country.

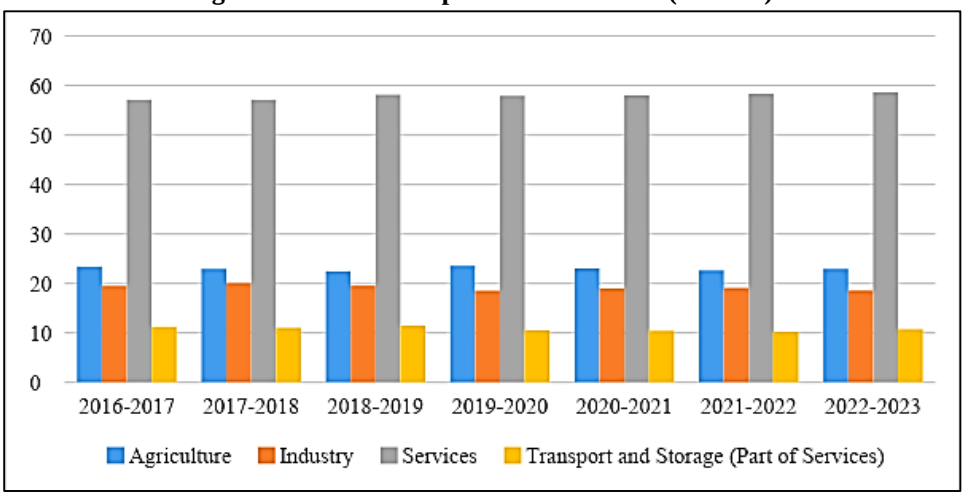
2. ROAD TRANSPORT

Pakistan's transport and logistics are dominated by road transport. The fuel consumption is the highest in the case of road transport. In the case of freight transport, fuel consumption is three times as much as compared with railways and 7.2 times as compared to waterways. The cost of road transport including forward and backward linkages of road transport amounts to PKR 5.6 million and PKR 6.7 million in the case of protests, such as *dharnas*. Moreover, for metro service, a subsidy of PKR 4 per passenger will be paid by the government in 2023-24. The transport network in Pakistan is concentrated as 57 percent of the total road network lies in Punjab.

2.1. National Overview

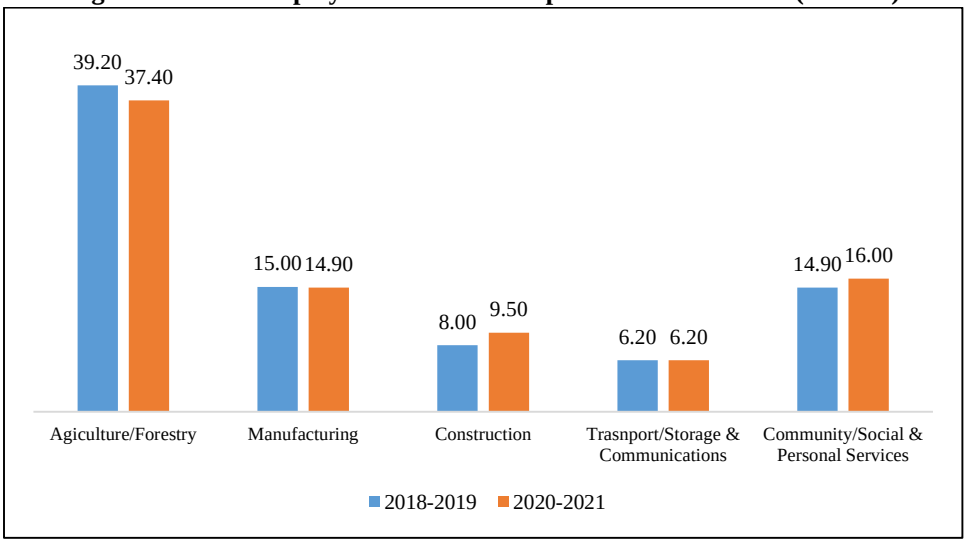
The transport sector contributes around 10.7 percent to the GDP of Pakistan and employs more than 5.8 percent of the labour force (see Figure 10.4 and Figure 10.5).

Fig. 4. Share of Transport Sector in GDP (Percent)



Source: Pakistan Economic Survey.

Fig. 5. Share of Employment in the Transport & Other Sectors (Percent)



Source: Pakistan Economic Survey.

> "Road transport is particularly suited to the conditions and requirements of Pakistan … the motor vehicle is more adaptable than the railways to varying degrees of traffic intensity and permits a greater degree of speed and efficiency in haulage over short distances… there is a close relationship between the volume of transport and the level of economic activity because each depends upon the other."
>
> *The Government of Pakistan, Planning Commission, 1960).*

In Pakistan, despite having a wide railway network at the time of independence, there has always been a fixation on building roads at the expense of other modes of transport and logistics. In the Second Five-Year Plan (1960-65), the allocation of financial resources prioritised roads over railways, and the larger cities witnessed an immense expansion of road networks and road-based public transport systems.

Table 2

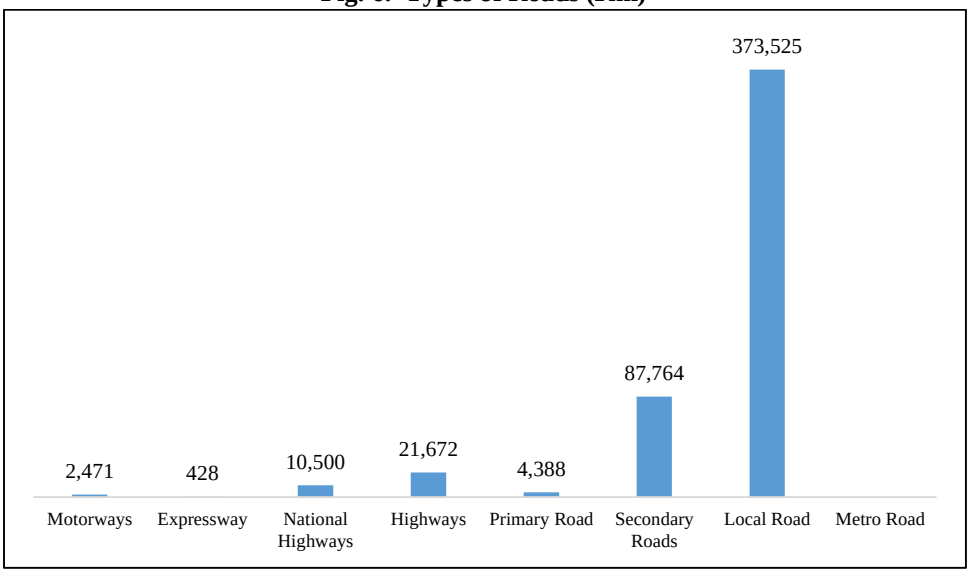
Comparison of Road Transport Indicators: 1947 & 2021

Indicator	1947	2021
Registered Vehicles (Number)	30,577	30,968,000
Registered Trucks/Trailers (Number)	800	300,000+
Total Roads (km)	50,367	500,000
Motorways (km)	0	2500+
National Highways (km)	0	12,000
Road Density	0.06	0.58

Source: Pakistan Economic Survey.

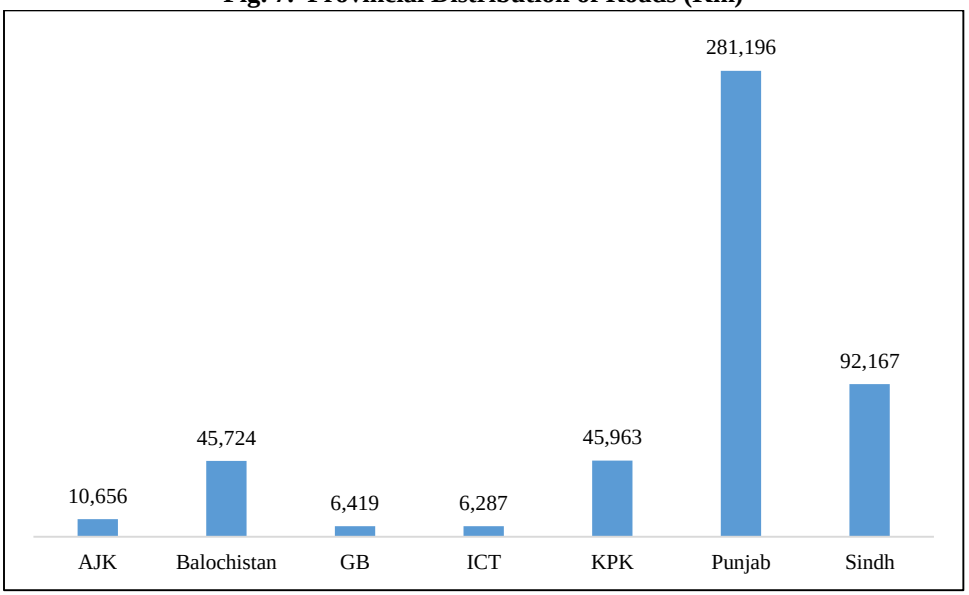
The emphasis of the policymakers remained on the hardware of the country, especially on roads. The road density now stands at 0.58. The road investment policy did not originate from any industrial development policy, but the heavy investment in roads left no money for the public transport system (Imran and Low, 2007). The same Plan encouraged the private sector to participate in road-based public transport, which resulted in private wagons being run on assigned routes.

Fig. 6. Types of Roads (Km)



Source: NRTC Digital Map.

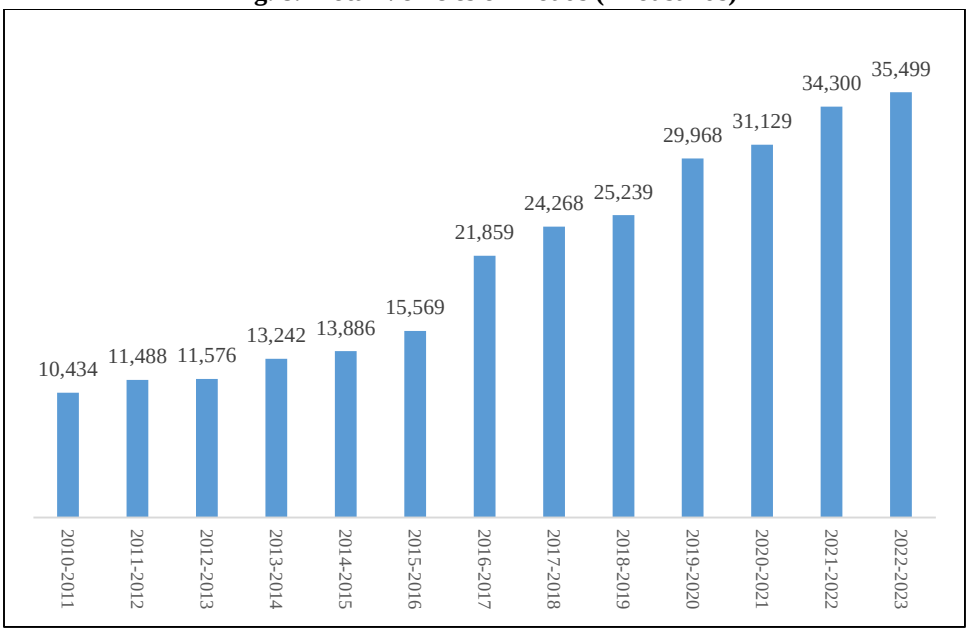
Fig. 7. Provincial Distribution of Roads (Km)



Source: NRTC Digital Map.

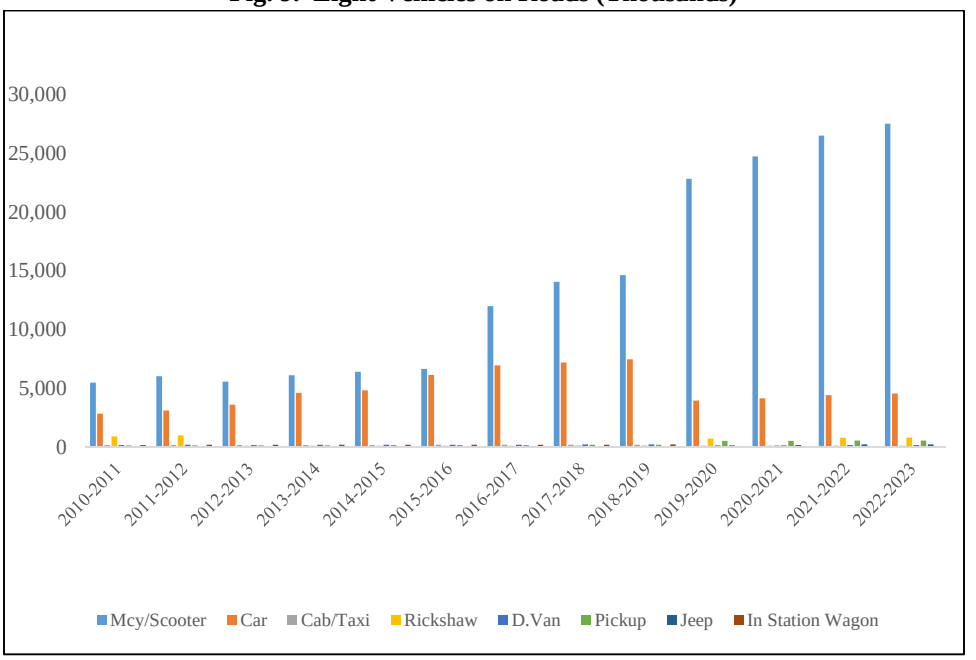
As a result, the number of vehicles on the road in the country has also been increasing as can be seen from the figures below.

Fig. 8. Total Vehicles on Roads (Thousands)



Source: Pakistan Economic Survey.

Fig. 9. Light Vehicles on Roads (Thousands)



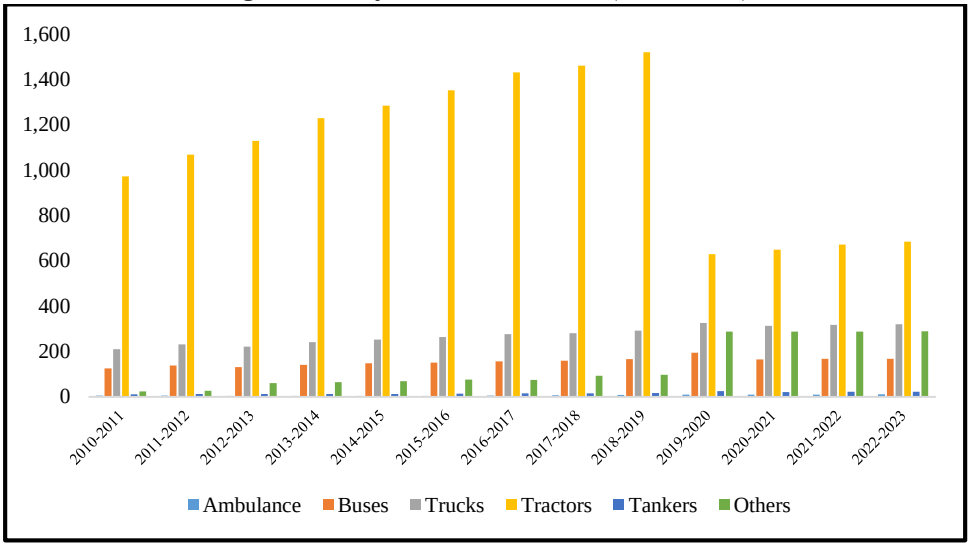
Source: Pakistan Economic Survey.

MAJOR ISSUES IN THE TRANSPORT SECTOR OF PAKISTAN

- A largely obsolete truck fleet:
  - Causes problems with road safety (drivers are poorly trained).
  - Poor fuel efficiency (transport consumes 35 percent of all energy in Pakistan).
  - Promotes overloading which damages roads.
  - Does not meet certification requirements under TIR and cannot be used to transport goods across borders.
- Physical and non-physical bottlenecks:
  - Port access in Karachi and Port Qasim is an issue.
  - Rail is virtually non-existent.
  - Laws governing the transport sector need updating and harmonisation.
  - Carriage of Goods by Road Act (COGRA), was prepared in 2003 but never approved.
- Trucking Policy of 2008 identified the need for change in the sector but was partially adopted Legal environment in which the sector operates needs to be updated to permit operations in line with standard practices globally.
- Development of the CPEC corridor, Accession to TIR will increase competitive pressure on Pakistan's freight and logistic sectors.

Source: NTRC.

Fig. 10. Heavy Vehicles on Roads (Thousands)



Source: Pakistan Economic Survey.

2.2. Road Transport in Twin Cities

2.2.1. *Length and Type of Roads*

Islamabad and Rawalpindi together constitute a 278 km^3 area for 1.8 million residents. (RDA, 2021; NTRC, 2006). The twin cities are viewed as one urban agglomeration. Islamabad is a medium-density planned city, while Rawalpindi is a high-

density mix use city. The daily twin city commuters account for almost 70,000 (RDA, 2012). The motorways and highways constitute less than 10 percent of the total road network but carry almost the entire freight traffic (NLP, 2020). The tables below contain information about the motorways, expressways, highways, primary roads, secondary roads, local roads, and metro roads that are situated in twin cities.

Table 3

Road Class and Length: Islamabad (Km)

Road Class	Road	Length
Motorway	Islamabad Motorway	11
Highways	Islamabad Highways	192
Primary Road	Primary Road in Islamabad	208
Secondary Road	Secondary Roads in Islamabad	503
Local Road	Local Roads in Islamabad	5,641
Metro Road	Metro Roads Islamabad	17
Expressway	Islamabad Expressway	56

Source: NESPAK (2015).

Table 4

Road Classes and Length: Rawalpindi (Km)

Road Class	Length
Motorway	74
G.T. Road	145
Primary Road	315
Secondary Road	544
Tertiary/Collector	906
Street/Local	1,063

Source: NESPAK (2015).

2.2.2. *Vehicles on Roads (Public & Private)*

Around 1.3 million vehicles were registered in Islamabad by April 2022. With an estimated population of 2.6 million, this amounts to around one vehicle per two residents, indicating a huge volume of traffic. This quantum of vehicles far exceeds the capacity of the secondary and tertiary roads in the planned city. Perhaps the most alarming indicator is the average vehicle registration per month, which is reported to be around 2-3 thousand.[1] This indicates the inefficiency of the public transport to cater to the needs of the commuters in the twin cities. With fewer buses, the public transport fleet mainly comprises 18-seater wagons and 12-seater vans. These vehicles are not at all adequate for the use of the elderly, females, and people with disabilities (Adeel, 2016).

[1]https://www.thenews.com.pk/print/946937-record-number-of-vehicles-causing-traffic-issues-in-islamabad

Fig. 11. Annual Growth Rate of Vehicles: Rawalpindi (Percent)

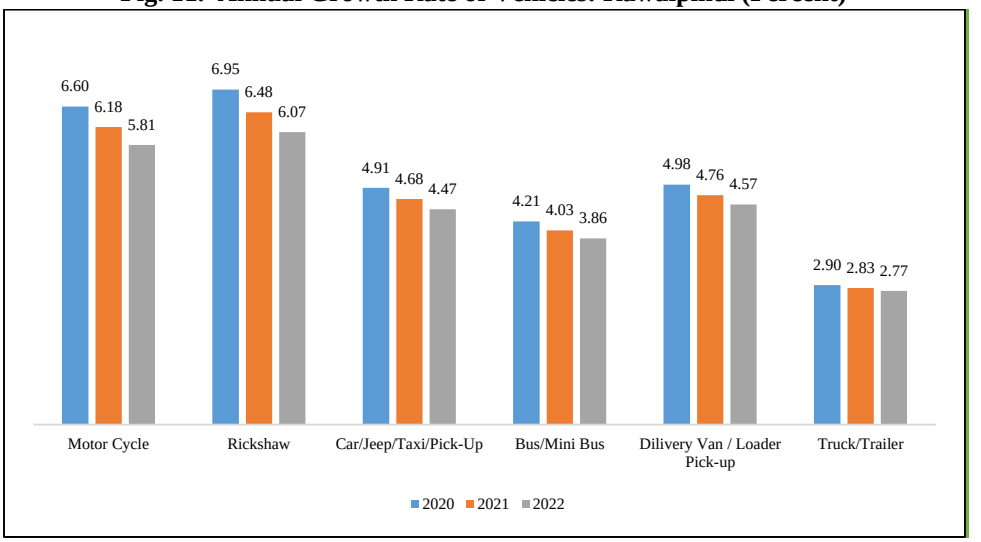


Table 5

Traffic Volume in Twin Cities

Location	Direction	Total Traffic	Total PCU
Khiaban-e-Iqbal	Faisal Ave. to 7th Ave.	13,029	11,939
	7th Ave. to Faisal Ave.	12,109	10,935
Jinnah Ave	Jinnah Park to Secretariat	33,075	30,141
	Secretariat to Jinnah Park	37,322	32,736
7th Ave	Khayaban-E-Jinnah to Kashmir HW	19,400	17,750
	Kashmir HW to Khayaban-E-Jinnah	17,914	16,456
Faisal Ave	Faisal Masjid to Zero Point	50,605	48,160
	Zero Point to Faisal Masjid	72,758	66,507
9th Ave	I-9 to IJP	31,368	28,173
	IJP to I-9	37,412	32,380
Service Road E	Margalla Rd to Jinnah Ave	22,474	20,840
	Jinnah Ave to Margalla Rd	18,239	16,955
Islamabad	Rawat To Faizabad	59,982	61,470
Highway	Faizabad to Rawat	48,043	52,117
IJP Near 9th Ave	Pirwadhai to Faizabad	25,152	32,104
	Faizabad to Pirwadhai	23,323	28,804
Murree Rd Near	Chandani Chowk to Faizabad	46,666	42,101
Faizabad	Faizabad to Chandani Chowk	40,289	37,009
Stadium Road	IJP to Stadium	29,921	23,680
	Stadium to IJP	20,152	15,194
Saidpur Road	Saidpur Rd to IJP	11,881	7,864
	IJP to Saidpur Rd	11,233	8,008
Rawal Road	Chandani Chowk to Airport	14,262	11,901
	Airport to Chandani Chowk	20,126	14,278
GT Road	Rawalpindi to Peshawar	44,075	56,096
Peshawar Side	Peshawar to Rawalpindi	39,907	48,400
G.T. Road	Rawat to Kacheri	40,207	37,825
Lahore Side	Kacheri to Rawat	40,016	38,446

Source: MTSSRI Traffic Survey.

2.2.3. *Public Routes*

The public transport network for Rawalpindi and Islamabad was planned in early 1980. Out of the 89 planned public routes, 52 routes remained inoperative owing to low commuters (Adeel, et al. 2014). The absence of public transport led to paratransit services in the twin cities. In 2015, ride-hailing services started operating in Pakistan as a substitute for unreliable and inaccessible public transport. The latest addition has been the 24 km long Pakistan Metro Bus Service operationalised in 2015. The route carries 68 buses and 24 stops.

As shown in Table 3, the route between Faisal Mosque and the zero point has the highest traffic volume. However, 25 coasters and 80 wagons have been issued licenses to carry the traffic count of 72 thousand commuters.

Table 6

Functional Routes and Transport Vehicles: Islamabad

No.	Route No.	Route Area	Vehicles (Numbers)
1	101	Pirwadhai to Faisal Masjid	25 Coasters
2	104	Tarnol to Pak Secretariat	24 Coasters
3	104-A	Tarnol to Pak Secretariat	9 Coasters
4	105	G-15 to Pak Secretariat	50 Wagons
5	105-A	G-15 to Pak Secretariat	47Wagons
6	110	Khataar to Pirwadhai More	151 Wagons
7	111	Rawat to F-8 Markaz	60 Wagons
8	113-A	Pirwadhai to Secretariat	05 Coasters
9	115	Pirwadhai to G-11/1	48 Pickup van
10	115-A	Peshawar to G-14	35 Pickup van
11	120	Hajj Complex to Bari Imam	210 Wagons
12	121	Hajj Complex to Faisal Masjid	24 Wagons
13	121-A	Pirwadhai Morr to Faisal Mosque	47 Wagons
14	122	Chirah to Pak Secretariat	70 Wagons
15	122-A	Khanna to Pak. Secretariat	42 Wagons
16	124	Arri Syedan to Faisal Masjid	80 Wagons
17	127	Chattar to F-8 Markaz	35 Wagons
18	127-A	Bhera Pull to G-11	27 Wagons
19	128	Gulshan-e-Jinnah to Pir Sohawa	210 Wagons
20	131	Faizabad to Kurry Sher	60 Coasters
21	133	Pirwadhai to Chonpra	64 Coasters
22	136	PWD Colony to Pak Secretariat	40 Wagons
23	138	Alipur to G-15 Markaz	55 Wagons

Source: Regional Transport Authority (RTI) RWP & ISB.

Table 7

Functional Routes and Transport Vehicles: Rawalpindi

No.	Route No.	Alignment of Route	Wagons (Numbers)
1	1-C	1-C: Liaqat Colony CDA Stand Islamabad	381
2	1	Route No.1: Humrahi Ada Sowa to Islamabad Secretariat	551
3	3	Liaqat Road to Foreign Office	115
4	5	Route No.5: RMA Building Tomogah to village Koth Kala, Aara Machine.	70
5	6	Railway Station to Pak Secretariat	42
6	7	Route No. 7: Hajj Complex to SOS Village Sawan	529
7	21	Route No.21: Pak Secretariat to SOS Village Sawan	
8	24	Route No. 24: Adiala to Pak Secretariat Islamabad	143
9	29	Route No. 29: Liaqat Road near Baldia Complex to Rawat	129
10	35	Route No.35: Railway Station to Wah Factory	174

Source: Regional Transport Authority (RTI) Rawalpindi & Islamabad.

Table 8

ICT & Rawalpindi: Intercity Routes and Vehicles

No.	Route No.	Alignment of Route	Vehicles (Numbers)
1	1	Haider Road Rawalpindi to Pak Secretariat	72 Wagons
2	1-C	Chungi No. 22 to Karachi Company	60 Wagons
3	3	Liaquat Road Rawalpindi to Noor Pur Shahan	42 Wagons
4	6	Railway Station to Pak Secretariat	42 Wagons
5	21	High Court to Pak Secretariat	67 Wagons
6	23	Gharibabad Rawalpindi to Pak Secretariat	37 Wagons
7	24	Lalkurti Rawalpindi to Pak Secretariat	65 Wagons

Source: Regional Transport Authority (RTI) RWP & ISB.

3. RAIL TRANSPORT

In Pakistan, rail transport is a neglected sector. Figures show that the losses incurred by Pakistan Railways during the five years—from 2015 to 2020 – amounted to a prodigious PKR 144 billion. Despite these losses, the grant to the sector has increased from PKR 45 billion in 2022-23 to PKR 55 billion as per budget 2023-24. The grant per passenger was PKR 1,261 and PKR 5,556 for freight per ton in 2021-22.

3.1. National Overview

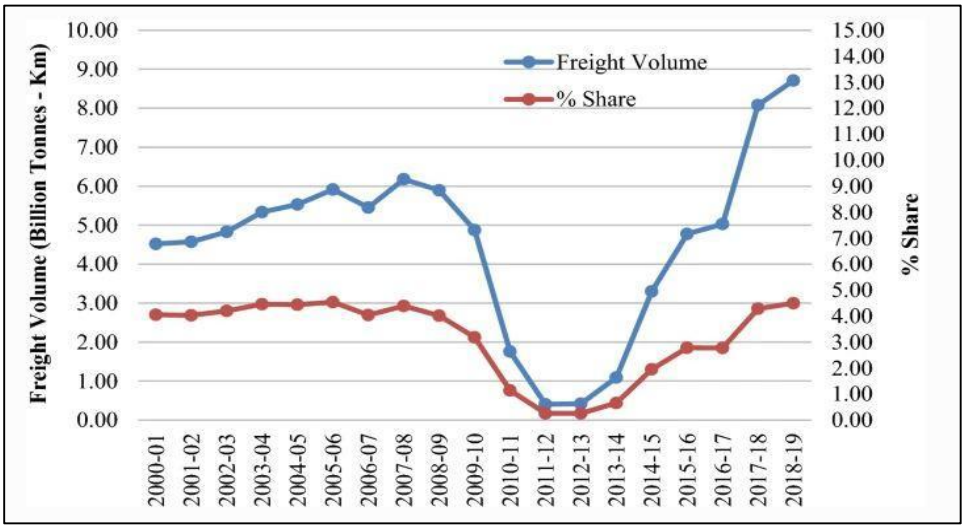
Until the 1960s, rail transport was expanding and there was considerable focus on developing the rail infrastructure in the country. Several policies and plans were initiated to this effect. After the Second Five-Year Plan, investment in rail infrastructure declined in favour of road infrastructure, which had an overall negative impact on the rail network as well as Pakistan Railways (PR). At present, Pakistan Railways is the sole entity responsible for freight and passenger traffic through the rail network and has 650 stations, 461 locomotives, and a route length of 7,791 km. Freight and passenger revenues have been declining, which has had an impact on the gross earnings of the entity and its share in transport.

Nationwide Pakistan Railways owns 167,690 acres of land. The 145 000 acres of land is used for operational purposes. The remaining 33 000 acres is the "Right of Way" entitled to PR (Anwar, 2022). Since the land is not put to any productive use, land encroachments is becoming a regular phenomenon in PR.

In 2022, PR reclaimed 267 acres of land in Punjab, 133 acres of land in Khyber Pakhtunkhwa, from Sindh PR claimed 106 acres of land, and 23 acres of land in Baluchistan. From the total surface area, the commercial land was of 91 acres, 309 acres were residential, and 104 acres were agricultural.

There are a total of seven stations in Narowal, Okara, Hasan Abdal. which are not being used. This dead capital (Haque, 2018, Anwar, 2022) can be used to tap commercial resources of the railway stations by building hotels, hostels and markets on unused stations to strengthen its finances.

Fig. 12. Freight Volume and Share



Source: Railway Yearbook 2018-19.

The stiff competition from road transport and the inability of the PR to adopt a customer-centric business plan because of the complex bureaucratic structure has led to an inefficient, underfinanced, and overstaffed public agency. The ability of the PR to revert to the open access policy approved in 2011 and other governance reforms reflects the sheer failure of the governance and raises questions as to why and how PR has successfully managed to retain a forty-year-old governance model.

3.2. Circular Railways

One of the initiatives of the PR included circular railways which was included in the Second Five-Year Plan (1960-65). The Karachi Circular Railway was planned as the first rail-based public transport project to serve the entire city and its periphery. The 44 km long project was successful for the first 15 years (1964-79) though it was partially built. As the investment in infrastructure declined, fuel prices rose, the losses crept in and the KCR was eventually suspended in 1999. The KCR was revived in 2020 on the orders of the supreme

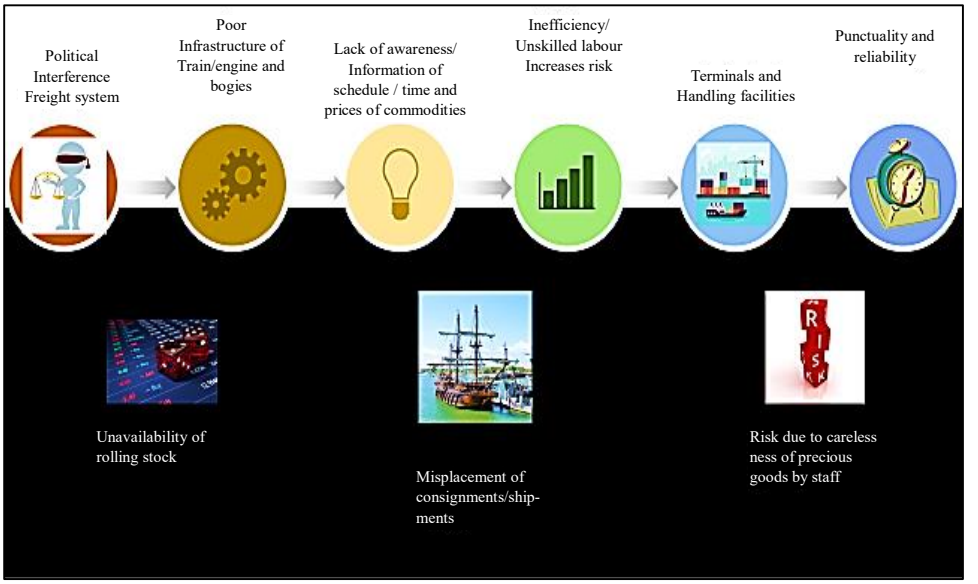
court, with an expected ridership of half a million passengers per day. The actual ridership is critically low, thus, making it an inefficient and costly mass transit project. Similarly, another circular train as a mass transit project was proposed for Lahore in 1973 which never materialised.

Similar projects were initiated in Islamabad and Rawalpindi as well. In 1996, rail-based mass transit was initiated in Rawalpindi and Islamabad. The objective was to use the existing railway infrastructure and reduce congestion and pollution. The service started with six trains but was reduced to four within three months. The inefficiencies in the form of the absence of timetables, facilities at the stations, feeder buses, and relatively higher fares led to the shutdown of the services. Currently, the BRT with no feeder routes serves as the mass transit project.

3.3. International Freight Forwarders Survey on Railways

PIDE conducted a survey of freight forwarders in five major cities of Pakistan. The survey revealed that they neither use railways nor are aware of the online railway freight charges, schedules, or the booking system. The prime reason put forward for not using railways is the non-reliabili ty of the services.

Fig. 13. PIDE Survey of Freight Forwarders: Why They Do Not Use Pakistan Railways?



Recommendations

Based on the findings of the PIDE survey, the following suggestions are put forth:

- There is a need for the reliability of facilities and modern train infrastructure.
- A tracking system by booking number must be introduced because Pakistan Railways do not provide such a service, which indicates the primitiveness of the railway system in Pakistan.

- There is a need for training of the handling staff to avoid any damage.
- Trains should specialise in large shipments to attract higher volumes.
- As the PIDE survey revealed that the schedule of trains is neither easily accessible nor reliable, therefore, the timetable should be improved.
- The introduction of a shuttle service to both pick up the cargo and deliver it would attract more freight. I.e. manage the last mile once again a management issue

4. AIR TRANSPORT

Once one of the best airlines in the region, Pakistan International Airlines (PIA) is in dire straits. It has been incurring heavy losses for long now. As a result, PIA received PKR 15 billion as a loan from the government in 2023. The grant given to PIA per passenger is PKR 3,503 and PKR 14 for freight per ton per km. On average, there are 500 employees handling one plane in PIA.

Pakistan has a total of 46 airports for conducting commercial operations. Out of these airports, 42, including 10 internationals, are owned and operated by the Pakistan Civil Aviation Authority (CAA). At present, out of these 42 airports, 13 are being used for both international and domestic operations, whereas 11 are only for domestic operations, and the remaining 22 are either scaled down or closed for operations due to various reasons.

Air transport is another avenue where Pakistan faces challenges, especially when it comes to its airports. Pakistan has consistently failed to perform well against its regional competitors in terms of airport usage and the volume of passengers and freight catered to by the airports (Batool, et al. 2018). There are several reasons for this including inefficient management and regulation of airports, security threats, operating inefficiency, financial issues, and technical problems. Airports face infrastructure constraints and all airports are far from meeting world-class standards. Technologies at airports have also not been updated regularly, leading to reduced operational ability of airports. Another reason which is responsible for the current status of PIA is the labour union. Like other government, organisations, this problem has been persistent in the PIA over more than a decade now. The labour unions had become very powerful and influential (Selase, 2018). Unlike other regional competitors, Pakistan has been unable to show extraordinary vision and planning to develop attractive aviation infrastructure along with support industries of international standards (Deen & Arshad, 2007).

The public sector passenger and freight transport services are provided by Pakistan International Airlines (PIA), which has a total fleet of 35 aeroplanes. The performance of PIA can be seen in the Table below.

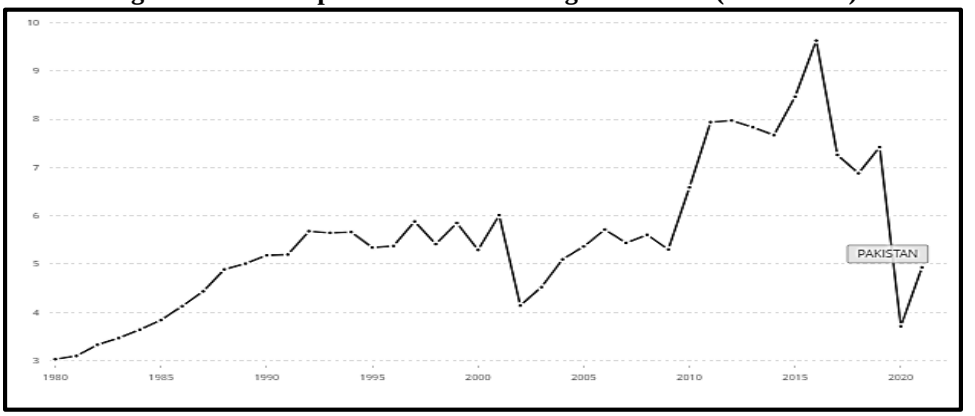
Table 9

Pakistan International Airlines Corporation Performance

Indicators	2018	2019	2020	2021	2022
PIAC Fleet (No. of Planes)	32	32	30	30	35
Route (Km)	332,303	389,725	778,609	374,054	341,821
Passenger Load Factor (%)	77.3	81.3	74.5	66.9	80.3
Revenue Flown (000 Km)	70,089	70,515	38,114	34,544	53,811
Revenue Passengers Carried (000s)	5,203	5,290	2,541	2,657	4,281
Revenue Passengers (Million Km)	13,975	14,938	6,629	5,138	10,497
Operating Revenue	100,051	146,097	94,683	86,185	172,038
Operating Expenses	170,447	160,037	102,912	101,212	183,345

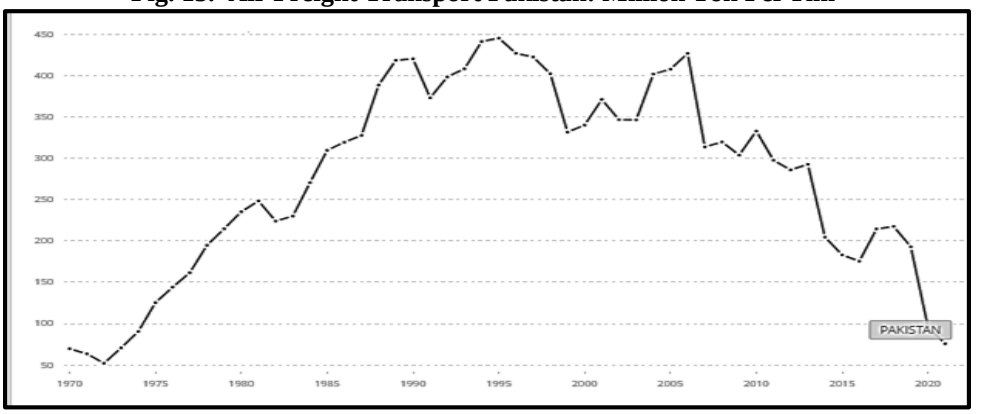
Source: Pakistan Economic Survey.

Fig. 14. Air Transport Pakistan: Passengers Carried (Thousands)



Source: World Bank.

Fig. 15. Air Freight Transport Pakistan: Million Ton Per Km



Source: World Bank.

Airport connectivity for users is also poor, especially for international airports. Unlike in other countries, airports in Pakistan have not been built keeping in mind the ideal requirement of being centrally located and accessible to travellers through various modes of public transport. Commercialisation of non-aeronautical areas is also insufficient and is an area that is less focused on (e.g. real estate, car parking, food & beverages, retail stores, etc.).

The landside facilities, passengers and cargo terminals, ground access facilities, and general amenities are inadequate. The arrangements of airline check-in facilities are not scientific; therefore, passengers have to remain in long queues and wait for long hours. Facilities, such as waiting areas and restaurants are very limited and also, and retail shops are just a few, and prices charged by retailers are several times higher than the actual prices (Batool, et al. 2018).

5. POSTAL SERVICES

5.1. National Overview

Pakistan Post has around 10,293 post offices and employee base of 40,000, and 87 percent of the branches are incurring losses. On the other hand, Tranzum Courier Service (TCS), which has 900 branches has 43 percent of the market share.

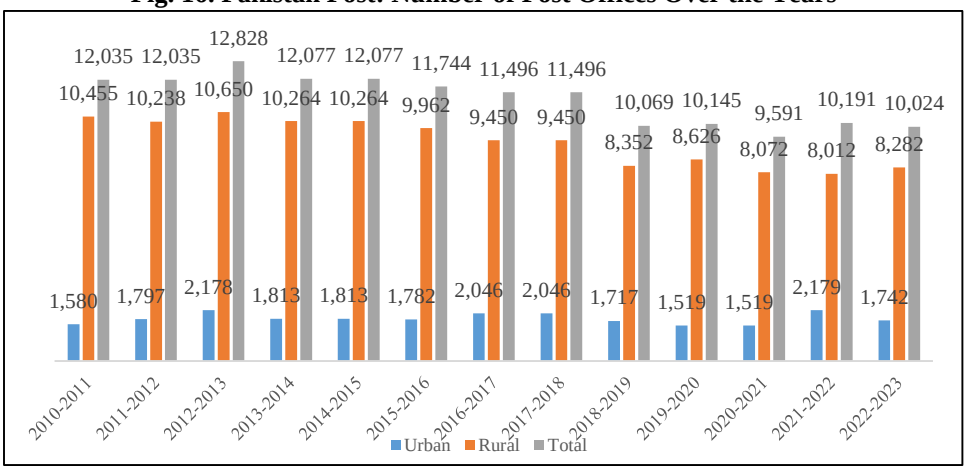
In the public sector, Pakistan Post is providing delivery services to about 20 million households and businesses as community service without any cost considerations. The consumers lost confidence in Pakistan post as it failed to align its services with modern technology. The private companies which were more responsive to technology and customers easily captured the market share in 90s. In addition to its traditional role, the Pakistan Post also performs agency functions on behalf of Federal and Provincial governments, which inter-alias include Savings Bank, Postal Life Insurance, Collection of Taxes, Collection of Electricity, Water, Sui Gas, and Telephone bills. Despite its substantial significance, the postal services was attached with ministry of communications that never prioritised Pakistan Post (Mansoor, et al. 2011).

The need to reform and the new vision "To provide every household in Pakistan with the ability to communicate and conduct business with each other and the world efficiently and economically" faced severe resistance from the National Organisation of Postal Employees (NOPE) in 2000. The NOPE was then banned and the reforms were implemented with the formation of an autonomous and high powered board by Postal Services Management Board Ordinance, 2002. The powers were delegated to the chief postmasters, the removal from service ordinance was practiced, there was effective communication about the reforms across the country, human resource development was prioritised, Western Union and DHL opened counters in GPOs and the organisation became self sufficient. (Mansoor, et al. 2011)

Pakistan Post has made great strides in terms of aligning itself with international standards. In the 2021 Universal Post Union rankings, Pakistan ranked 62 out of 168 countries, having improved its ranking from 92 in 2018 (2021). Since then, Pakistan has improved its ranking to 55 in 2022. This ranking was awarded building on the Integrated Index for Postal Development (2IPD) which currently ranks 168 countries across four dimensions: reliability, reach, relevance, and resilience (2021).

However, there is still considerable room for improvement in terms of digitisation and removing logistic bottlenecks. Pakistan Post has around 10,293 post offices in Pakistan, with 67 percent of these being in rural areas, which make up 87 percent of the branches incurring losses (Bukhari, 2019; 2023). Figure 5.16 shows the number of post offices over the years.

Fig. 16. Pakistan Post: Number of Post Offices Over the Years



Source: Pakistan Economic Survey.

In comparison, TCS, which is Pakistan Post's largest private-sector competitor operates with only 900 retail outlets across the country and has more than 43 percent of the market share (Bukhari, 2019; Jat & Jajja, 2020). TCS moves up to 130 million documents and parcels and 140,000 metric tons of freight annually (Jat & Jajja, 2020).

The major difference between both entities is in infrastructure and use of technology with Pakistan Post lagging in terms of technology use (Bukhari, 2019). However, since Pakistan Post is a service-providing entity, it cannot close down its rural offices since compared to the private sector, it performs much broader functions, which range from a savings bank, postal life insurance, collecting utility bills, receiving international remittances, selling savings certificates, and working on behalf of the Ministry of Finance and the federal and provincial governments (Bukhari, 2019).

5.2. Postal Services in Twin Cities

There are 28 post offices in Islamabad and 20 in Rawalpindi.

Table 10

Pakistan Post Offices in Twin Cities

Islamabad	Rawalpindi
Aiwan-e-Saddar Islamabad	Attock Oil Company Post Office
Allama Iqbal Open University	Bahria Town
B-Block Pak Sectt	Chak Jalal Din
DHA Phase-II	Chaklala Air Field
E-9 (Air Hq)	Dhamial Camp
F-7 Markaz	Fazaia Colony
F-8 Markaz	GHQ
Federal Board	High Court Post Office
G-10 Markaz	Judicial Town
G-5 Foreign Office	Kohinoor Colony
G-8 Markaz	Kutchery
G-9 Markaz	Maira Post Office

Continued—

Table 10—(*Continued*)

I-10 Markaz	Momin Pura
Islamabad I-8/4	Murre Brewery Post Office
Islamabad Post Office	Pir Wadhai
Jagiot	Raja Town
Kirpa	Rawalpindi Post Office
Kuri	Satellite Town
Lohi Bher	Urdu Bazar
Malpur	Westridge
Mara Jaffar	
Model Town Humak	
National Health Laboratories	
Nirole Post Office	
Noorpur Post Office	
Prime Minister Sectt	
Quaid-e-Azam University Post Office	
Rawal Town Post Office	

Source: PIDE State of Commerce Survey.

There are 8 TCS Locations in Islamabad and 15 in Rawalpindi.

Table 11

TCS Branches in Twin Cities

Islamabad	Rawalpindi
Aabpara Express Center	Rawalpindi Lalkurti
Bara Kahu	Adiala Road Express Center
F-6 Markaz	Bahria Town Express Center
F-7 Markaz	Blue Plaza Express Center
F-8 Markaz	Chaklala Express Center
Royal Express Center	Chandni Chowk Express Center
Umar Plaza	Gulzar-e-Quaid Express Center
Zero Point Branch	Khanna Express Center
	Liaqat Bagh Express Center
	Morgah Express Center
	Peshawar Road Express Center
	Raja Bazar Express Center
	Saidpur Road
	GPO Branch

Source: PIDE State of Commerce Survey.

6. DRY PORTS

The dry ports were established by both the public and the private sector in Pakistan. There are six dry ports constructed and managed by Pakistan Railways, one by National Logistics Cell. The remaining are managed by the private sector under the trust. These dry ports are regulated by the respective provincial board of revenues. The growth and potential of

Pakistan's dry ports are constrained by several obstacles and limitations, much like those faced by many other countries, and have been graded as "little potential" by UNESCAP in 2013. These difficulties, however, also present chances for growth and development. Pakistan's dry ports are dealing with the following difficulties, constraints, and opportunities.

6.1. Infrastructure Cess

The Punjab Revenue Authority has placed a 0.9 percent **cess on total value of the shipment purchase order** on imported goods entering Punjab through many ports, airports, and customs stations. According to the Punjab Infrastructure Cess Act of 2015, this levy raises exporters' overall cost of doing business.

Transaction Costs: Shipping Lines-related Issues

- Container Detention charges: High container detention charges due to delays in returning empty containers can increase costs for importers/exporters. Improved coordination and communication between shipping lines and port operators can help address this issue.
- Security: Ensuring container security is crucial to prevent theft and damage during transit. Implementing advanced container tracking and security systems can enhance security measures.
- D.O. Charges: The imposition of Delivery Order (D.O.) charges can add to the overall cost of import/export operations. Evaluating and rationalising these charges can improve cost-effectiveness.

6.2. Dry Ports in Pakistan

At present, there are six dry ports which are being operated by Pakistan Railways:

- Lahore Dry Port
- Karachi Dry Port
- Quetta Dry Port
- Peshawar Dry Port
- Multan Dry Port
- Rawalpindi Dry Port (AIG).

An additional six dry ports are also being operated by the private sector:

- Sialkot Dry Port
- Faisalabad Dry Port
- Pak-China Sust Dry Port
- NLC Dry Port Thokar Niaz Beg Lahore
- NLC Dry Port Quetta
- QICT Dry Port at Prem Nagar Railway Station (AIG).

7. INLAND WATER TRANSPORT

Pakistan inherited an extensively developed riverine and canal network at independence, which stretches from Sindh to Khyber Pakhtunkhwa (Tehsin & Nasir, 2019)

This system encompasses around 30,000 kilometres, comprising both horizontal and vertical stretches, and serves as a vital physical integration mechanism for the country's riparian regions. The extensive river and canal networks in Pakistan possess significant untapped potential for the advancement of inland waterway transportation by leveraging the Indus River System. In Pakistan, the utilisation of waterways for purposes such as irrigation, hydropower generation, and flood protection takes precedence over inland waterways transport, and these alternative uses hold greater significance and dominance (Zaidi, et al. 2022).

7.1. Institutional Framework

The absence of a comprehensive institutional, legal, and regulatory framework has hindered the progress of the inland water transport (IWT) sector, despite its numerous advantages. When considering the institutional arrangements for developing IWT in Pakistan, there are crucial factors to be taken into consideration.

Presently, due to the 18th Amendment, provincial assemblies hold legislative authority over shipping and navigation within inland waterways (Zaidi, et al. 2022). However, as the Indus River traverses three provinces—Khyber Pakhtunkhwa, Punjab, and Sindh—it necessitates legislation by each province, which could complicate coordination among the authorities. Consequently, it would be more appropriate to establish a Federal-level "Inland Waterways Authority" that can assume responsibility for overseeing and coordinating IWT operations.

There are provisions within the Constitution that can address the challenge of inland waterways being devolved to provinces. Firstly, under Part V (Relations between Federation and Provinces), Chapter 1 (Distribution of Legislative Powers), Article 141 grants Parliament the power to enact laws with extra-territorial operation. Secondly, Article 144 empowers the Parliament to legislate for one or more provinces with their consent. Thirdly, the Parliament can directly address this matter by utilising entry No. 27 of the Federal Legislative List, which pertains to the "Commerce Clause" of the Constitution, allowing it to legislate and establish the necessary institutional structure for the Federal-level Inland Waterways Authority. Notably, there are existing precedents for such institutional bodies, including the National Electric Power Regulatory Authority (NEPRA) and the Indus River System Authority (IRSA).

8. MARITIME TRANSPORT

Pakistan has a 1,050 km long coastline along which 8 seaports are operating. Among these, more than 95 percent of maritime trade is carried out by the ports of Karachi, Qasim, and Gwadar (Alam, 2020). Pakistan has tremendous maritime transport and trade potential due to its central location in the Arabian Sea, with pathways to the Middle East and Africa and a potential source of access route to the Central Asian region. However, this potential remains underutilised, due to the presence of competing countries. According to World Bank's Liner Shipping Connectivity Index, Pakistan is ranked 34, with the highest value for the index being 100.

Table 12

Liner Shipping Connectivity Index

Country	2018	2019	2020	2021
Bangladesh	13.2	12.2	13.8	14.7
India	55.5	54.3	57.2	58.9
Iran	18.4	18.1	31.2	31.1
Oman	55.5	52.6	60.7	59.3
Pakistan	34.0	33.9	40.8	34.1
Qatar	34.7	34.0	36.9	37.7
Sri Lanka	63.6	62.2	72.0	70.7
United Arab Emirates	71.7	72.1	76.5	73.9

Source: World Bank Liner Shipping Connectivity Index.

Maritime transport and related affairs fall under the domain of the Ministry of Maritime Affairs. No single National Shipping Policy exists at the moment. However, the Pakistan National Shipping Corporation Regulations 1984, Pakistan Merchant Marine Policy 2001, and the Merchant Marine Policy of 2019 collectively govern maritime transport and trade in the country (Urooj, 2020).

The existing seaports are:

- Karachi Port
- Gwadar Port
- Port Muhammad Bin Qasim
- Muhammad Ali Jinnah Naval Base
- Keti Bandar Port
- Port of Ormara
- Port of Pasni
- Port of Jiwani

Four public sector agencies operate and regulate maritime freight in the country, which includes

- National Shipping Corporation (PNSC)
- Karachi Port Trust (KPT)
- Port Qasim Authority (PQA)
- Gwadar Port Authority (GPA)

KPT, PQA, and GPA are non-budgeted entities. Figures 7.1 to 7.4 show the performance of PSNC and the cargo handled by the three port authorities.

Table 13

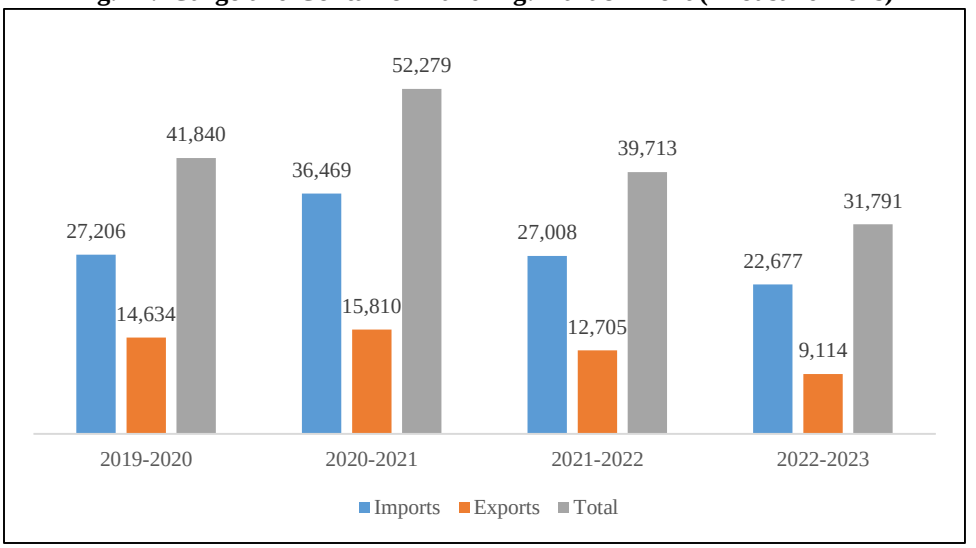
Commercial Performance of PNSC: 2022-23 (July-March)

Tanker	Chartering	SLOT Consolidated	
Liquid Cargo	Dry Cargo (MT)	TEUs	Slot BB/LCL
7,250,105,91	1,215,162.39	856	61.141

Source: Pakistan Economic Survey.

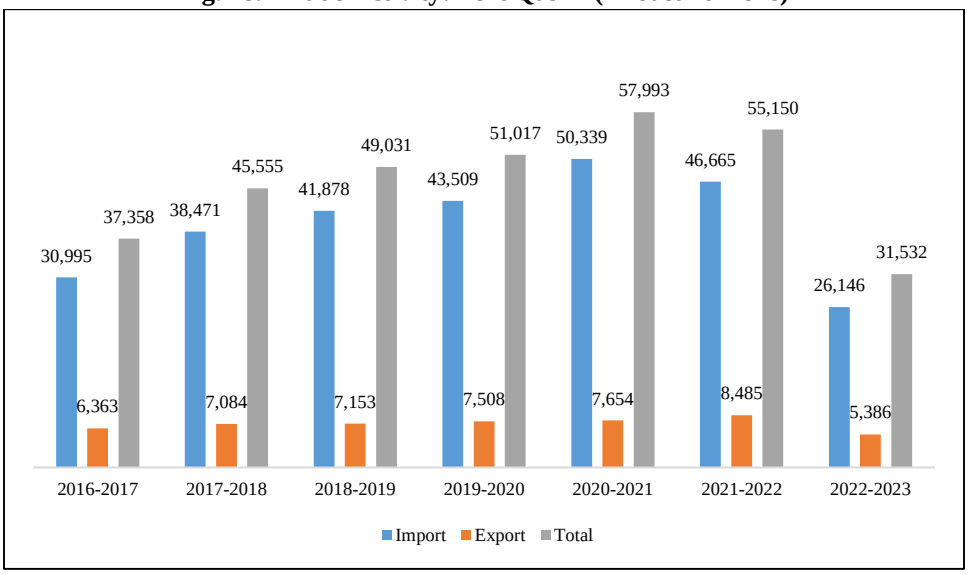
At present, PNSC only has 12 vessels due to which despite being Pakistan's largest and sole flag carrier, Pakistan National Shipping Corporation (PNSC) moves only 11 percent of cargo (Gul & Alam, 2021). Pakistan lacks containerships and ordinary cargo ships making its fleet smaller than regional rivals, for instance, 3,004 out of 70,094 registered ships are American (Gul & Alam, 2021). Pakistan's dependence on foreign oil necessitates the procurement of oil tankers and bulk carriers by the relevant government.

Fig. 17. Cargo and Container Handling: Karachi Port (Thousand Tons)



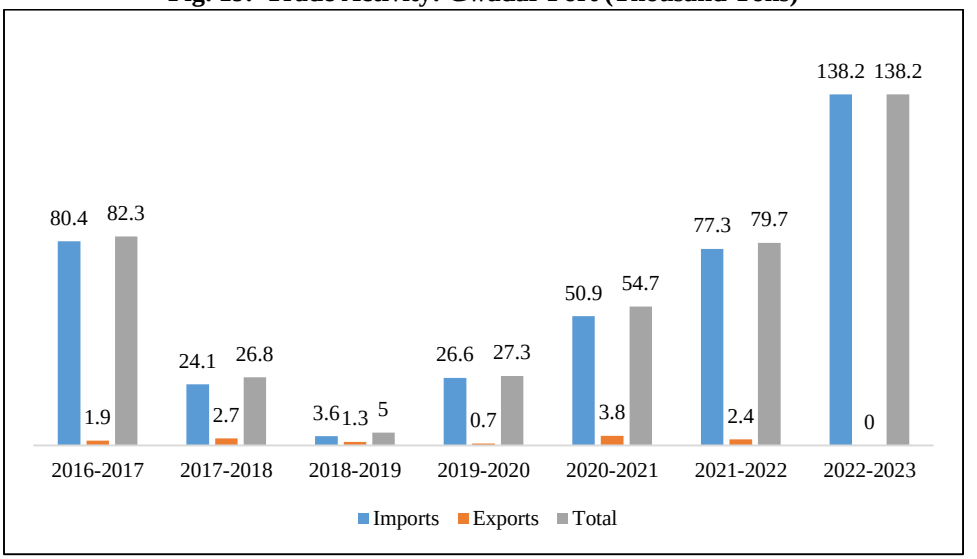
Source: Pakistan Economic Survey.

Fig. 18. Trade Activity: Port Qasim (Thousand Tons)



Source: Economic Survey of Pakistan.

Fig. 19. Trade Activity: Gwadar Port (Thousand Tons)



Source: Economic Survey of Pakistan.

9. CONCLUSION

- Different regions within the domestic market lack full integration. Given the state of logistics sector, the transportation of goods not only takes more time but also incurs higher costs. This leads to significant price disparities for goods in both domestic and international markets. The inefficiency in connectivity increases the risk associated with joint ventures involving businesses from different geographical areas. Consequently, this not only hampers the growth of domestic commerce but also stifles innovation, as individuals are compelled to adhere to traditional business practices.
- To enhance the effectiveness of multimodal transportation, there is a necessity to modernise the legal and regulatory framework to safeguard and align the interests of various stakeholders. The restructuring of the regulatory framework and the protection of stakeholders' interests must conform to global standards, industry practices, and international conventions to meet the expectations of trading partners. Given the potential for expanding cross-border trade with Pakistan's neighbouring countries and within regional organisations like the Economic Cooperation Organisation (ECO), Central Asia Regional Economic Cooperation (CAREC), and the South Asian Association for Regional Cooperation (SAARC), it becomes imperative for Pakistan to update its legal statutes and reinforce the mechanisms for enforcement
- The absence of Pakistan in the Global Logistics Index 2023 indicates that the highlighted issues, put forward by each player in the logistics sector, need to be addressed immediately. Once the initial regulatory issues are resolved, we can move on to the policy's proposals, which include creating contemporary logistics parks, building multimodal transport hubs, and enhancing logistics information systems.

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Book Review

Economic War: Ukraine and the Global Conflict between Russia and the West by Maximilian Hess.

"Economic War: Ukraine and the Global Conflict between Russia and the West" by Maximilian Hess is not only a historical account of a conflict between Russia and the West but a critical analysis of the economic power struggles between the two. The book explicitly highlights the political problem that emerged when Russian President Vladimir Putin hit Ukraine in 2014 and the economic warfare that followed the event. Hess explores Russian strategies behind the scenes and against the sanctions, focused on pursuing global power. The author's extensive research and deep analytical skills make the book an essential part of the knowledge impartation related to the intricate economic problems found within the conflict between Russia and the West on an international scale.

Maximilian Hess is a political risk analyst, consultant, and research fellow at the Foreign Policy Research Institute. Hess possessed notable strengths in the areas of trade, debts, diplomacy, and foreign policy. These strengths allowed him to become an accomplished writer who could effectively discuss the economic problems that affected Russia and the West. He has authored numerous articles on Russia and its neighbouring countries, which eventually led to the publication of his first book in partnership with Hurst and Oxford University Press in 2023.

In "Economic War: Ukraine and the Global Conflict between Russia and the West," the author asserts that the present confrontation between Russia and the West is not the new Cold War but a struggle to influence the spheres of finance, energy, and capital markets. Economic war is defined as "the use of economic means to achieve geopolitical objectives or the use of geopolitical objectives to achieve economic ends." Hess merges history with an analysis of the economic war, which has a long-term effect on liberalism, democracy, and the structure of the world's economy. The author gives a clear and profound description of how the West preferred to use international markets to inflict pain on the Kremlin, and the Russian reaction was to seek the involvement of countries like China, Turkey, and Iran in the process.

Moreover, the author insists on the fact that in the short term, Russian oil production is at its maximum, and the consequences of shutting off the Russian market for European gas will be substantive. This is indeed a valid concern because Gazprom, a Russian state-controlled firm, supplied almost one-third of all gas consumed in Europe until Ukraine interrupted supplies and exposed the dangers of over-reliance on a single energy provider. This demonstrates how Russia's gas blockade would severely impact Europe. Similarly, the author's analysis and concrete examples strengthen analytical rigorousness about possible economic effects, thus enriching the previous literature, which does not entirely address issues in the context of economic warfare.

Considering the book's contents, the author presents a detailed assessment of the economic challenges that arise from the Russia-West confrontation regarding the Ukraine issue. The book is divided into two parts. Part 1, from 2013-21, depicts the prelude to the current military and economic war that followed the annexation of Crimea, the emergence of separatist republics in Donetsk and Luhansk, and the subsequent imposition of Western sanctions. Hess posits that the sanctions the West imposed on Russia produced only moderate results, which Russia used to its advantage to strengthen its economy and minimise the Western effect. Russia tried to bring its global geoeconomic power to a higher level by exploring the opportunity of cooperation with Latin America, Africa, and Asia, especially the Middle East, by establishing an essential partnership with Saudi Arabia. Nevertheless, the book does not deal deeply enough with the relevant literature on the debates on the efficacy of sanctions and the implications for the civilian populations. Understanding how economic sanctions impact Russia offers insights into the use of economic coercion in international events. Economic sanctions have serious consequences; therefore, analysing their impact is critical for businesses, governments, economists, and the public.

In the latter part, Hess divides the book's second part into seven sub-parts. Part II of the book looks at how Russia and the West's economic conflict has progressed after Russia invaded Ukraine in February 2022. Although the book has well-conducted research and is valid, some readers might think the level of detail is overwhelming.

Hess portrays the issue of power energy by means of an example of the German chemicals industry, Basel, the headquarters, whose needs of energy exceed those of Denmark, a small European country, yearly, and gas consumption is comparable to that of another European country, Switzerland. This was accomplished simply by importing expensive American LNG instead of cheap Russian gas, which the US has long desired but has never been economically viable for Germany. The US has always been against the Nord Stream 2 pipeline construction, but it is obvious that the project stopped the German industry's access to affordable energy. Hess also attributes the 2022 catastrophe to Russia, but his statement lacks plausibility.

Moreover, Russia's attempts to create a 'parallel system together with states like China and India' have been gradually failing. Russia's threat is primarily from its oil and gas reserves that threaten 'the risk of Europe being submissive to the Kremlin' because of its energy needs. There is no doubt that Hess did not mean the audience to interpret his work this way. However, it is impossible not to see that the conflict in Ukraine is a proxy one for US oil supplies.

Similarly, the influence of fossil fuel producers is indisputable. Yet, it is almost impossible to find evidence confirming Russia's goal or strategy of creating an alternative international financial system before facing hard sanctions. In 2007, Mr. Putin denounced the 'unipolar' system, saying it was 'harmful' to give absolute sovereignty only to the US, considering it unstable and its implosion inevitable. Hess's comments on Ukraine and gas import deals centre on the relationship between an equal global economic system and security worldwide. Some, such as Hess, regard this as proof of deliberate villainy. Yet, it is not a realistic expectation that countries would not take advantage of the resources at their disposal globally. Western powers are involved in the game as well.

Although the book possesses some advantages, it has some weaknesses as well. A missing theoretical framework without clarity and consistency would have served as a structure for the overwhelming amount of data and analysis presented. Besides that, the book is silent on the critical ethical and normative issues attached to the economic war, including environmental, distributional, and justice implications, as well as the responsibilities of the actors involved in the war.

Conclusively, the book highlights the main transformations in the foreign and defence policies of the West, such as increased weapons supplies to Ukraine, the allocation of financial resources for military aid, and the lifting of the German arms export ban. The author also addresses the flaws of the West, which include NATO's expansion and the paternalistic handling of Russia, which caused the evolution of the war from a manageable conflict to a serious confrontation. The author thus concluded with a plea for a responsible discussion of the European future security strategy and the restoration of détente with Russia after the war was over. He also mentions the addition of China's influence as Russia's biggest trading partner in this conflict. Ultimately, this book presents an insightful assessment of the conflict and its consequences for the future of European security.

Therefore, the ongoing economic rivalries between the US and Russia and between the US and China are not related to Ukraine but rather about maintaining dollar dominance and exploitative hegemonies. Moving from one hierarchy to another, such as switching from the dollar to the yuan or through initiatives like BRICS, is unlikely to lead to a peaceful world. Instead, the new hierarchy would be just as ruthless as the old one in order to preserve its supremacy. The wave of globalisation that swept through the 1990s and 2000s has ceased since international economic systems preserve inequities between states and spark conflict. The only way to break this cycle is through a global anti-war solidarity movement opposing the aggressive policies of ruling classes and militaristic solutions. The current system's vicious rulers cannot establish equitable mechanisms of international trade.

Despite the book's limitations, it deserves praise for introducing new ideas and investigating the war's financial, trade, and informational aspects as the latest battlegrounds in a world where conventional fighting is becoming outdated. This is a must-read for anybody looking better to comprehend the conflict and its consequences for world politics.

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REFERENCE

Hess, M. (2023, July). *Economic war: Ukraine and the global conflict between Russia and the west*. HURST. https://www.hurstpublishers.com/book/economic-war/

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The Pakistan Development Review is an internationally refereed journal published regularly by the Pakistan Institute of Development Economics since 1961. The journal focuses on economics and related social sciences and welcomes theoretical and empirical contributions in relevant disciplines with a particular emphasis on Pakistan's socio-economic issues. The journal is published on a tri-annual basis. The journal's editorial and advisory boards consist of more than 18 renowned scholars in the fields of economics and related social sciences. The actively participate in refereeing the papers and also render valuable advice on other related matters.

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