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Regulatory Framework and Behavioural Issues in the Informal Khokhas' Markets in Pakistan

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Khokha (Kiosk) is a major part of informal markets and is widely observed across the globe and in Pakistan. Khokhas are one of the major sources of market-based poverty alleviation and absorb a significant number of labour force. However, on average Khokhas in Pakistan are in shabby states, which arise a question about its regulatory framework. Whether any regulatory framework of Khokhas prevails in Pakistan and to what extent it facilitates or hinders entry. To find an answer to these questions, we collect data from secondary and primary sources and find that, there exists no legal framework to obtain a license for establishing Khokhas in Pakistan. People set up a Khokha with a constant fear of demolishment, fines, confiscation, and arrest. We also find that the harassment of current vendors from public authorities is a major behavioural barrier for prospective entrants. Based on the other countries' best practices, we propose a detailed set of policies for creating a formal legal framework for khokhas across Pakistan.

JEL Classification: D52, J46, K4
Keywords: Khokhas, Barriers to Entry, Informal Markets, Legal Framework

1. INTRODUCTION

Economic prosperity requires the creation of new wealth, which is possible if there are efficient markets. One of the prerequisites for efficient markets is low barriers to entry including legal barriers. A market with a high level of restrictions discourages new entries and thus keeps the competitive level limited, leading to efficiency loss (Labaj, et al. 2017). The debate on how to keep markets competitive dates back to the 14th century when Ibn-e-Khaldoon wrote down the principles of competitive markets in his book '*Al-Muqaddimmah*'. Ibn-e-Khaldoon was a proponent of free markets, and he was against governments participating in markets, as doing so will drop competition in markets. He suggested that government should provide secure and accessible markets for trade.

New entries to markets are possible with differentiated as well as homogenous products. Some entrepreneurs enter markets with the introduction of diversified and differentiated products, while others with products that are similar and identical to the existing ones. In both cases, businesses may face various entry barriers and multiple risks, including financial risks, depreciation risks, and damage risks. In his seminal book, Shepherd (1979) discussed how entry barriers decrease the scope and speed of new entrants into the markets, while the entry of new firms is a source of competition and functional markets (You,1995). Per the literature on industrial organisation, the presence of entry

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barriers gives the incumbent firms an inherent advantage over the potential new entrants, enabling the incumbent firms to generate above-normal profits (Yip, 1982). Therefore, it is important to know the barriers to entry, in particular legal barriers, for bringing efficiency and optimal allocation of resources.

It is pertinent to mention that markets are of two types, i.e., formal, and informal. Formal markets are those in which starting a business requires fulfilling strict legal conditions apart from the requirements such as the availability of funds and willingness to take the risk. On the other hand, informal markets are those in which an entrant, on average, does need to pass through stringent conditions of the formal markets. Although there exist some rules for entering the informal markets, the level of details and fulfilment of legal conditions are much lower than in the formal markets. Informal markets are a major source of growth and employment in developing countries, including Pakistan. It provides employment opportunities for the less privileged as well as affordable goods and services for the low-income segment of society.

Khokhas (temporary stalls and street vendors) are a major part of the informal markets in every country, including Pakistan. Khokhas enhance the shopping experiences of city dwellers as well as tourists. The vibrant tourist markets around the world, especially in Thailand, Malaysia, Vietnam, and Singapore mostly consist of temporary stalls. These temporary stalls provide opportunities for poor entrepreneurs, students, and small craftsmen to sell their goods. The khokhas are set up on various street corners across all cities in Pakistan. However, the shabby look and structure of such khokhas raise a question about the regulatory framework. Due to the weak legal framework, the owners of such stalls work under the risk of expulsion (Haque, 2019). This research aims to examine whether any regulatory framework prevails for establishing khokhas in Pakistan and to what extent such regulatory framework, if any, is hostile or conducive to entry into Khokha markets.

The issue of market accessibility is significant for policymakers as the entry of new small firms indicates economic growth and market efficiency. Literature provides support for the positive relationship between entrepreneurial activities and macroeconomic growth (Van Stel, et al. 2005; Acs and Storey, 2004). On the other hand, entry barriers are a sign of economic disadvantages for many (Barrett, 2008; Bloom, et al. 2003) and such economic disadvantage may lead to a poverty trap (Barbier, 2010). Identification of entry barriers to the market is of significance as policy decisions are built upon them. This paper helps in the identification of such hurdles for small entrepreneurs in the form of Khokhas' owners as owners of large firms have the potential and resources for lobbying with the policy-makers to achieve desired policy decisions.

2. LITERATURE REVIEW

Street vending is an interdisciplinary subject and has been studied not only from the lens of economics (Bhowmik & Saha, 2013) but also from the perspectives of anthropology (Barthelmes, 2015), sociology (Vargas, 2016), urban planning (Sung, 2011), geography (Turner & Oswin, 2015), development studies (Nirathron, 2006), and gender studies (Cohen, 2010). The primary reason is the importance of street vending in terms of providing earning opportunities for the urban poor and cheap food for the lower middle class. Per FAO (2007) report more than 2.5 billion people across the world eat street food

every day. Street food is a source of affordable calorie intake for many individuals in the low-income strata of developing countries. In Thailand, street food is very famous. Nirathron (2006) showed that between 1990 and 1998 monthly household expenditure on food items decreased from 76 percent to 50 percent and expenditure on outside food increased significantly. This study also showed that half of the consumers purchased street food once a day. The study found that dinner was the most frequently bought meal and 70 percent of respondents quoted timesaving and convenience as the main reasons for eating street food.

The major issue street vendors face is harassment from public authorities such as police and municipal officials. This behaviour is rampant across Asia. As street vendors are perceived to be illegally occupying public space, they suffer from police harassment and racketeers, who charge fees for protecting officials (Hiemstra, et al. 2006). Agnello and Moller (2004) found that in Cambodia, harassment from police and market security was the major complaint by street vendors. The harassment ranges from the confiscation of items, prohibition of vending, or collection of undue taxes. The street vendors were paying various taxes, such as sanitation fees, umbrella rent, space rent, security fees, and many other taxes, collected by the people of local authorities in the municipality, police, and district administration. Although the payable tax for street vendors is specified in the Cambodian Tax book, the fees are not specified anywhere. Thus, officials find a loophole and indulge in fuzzy tax collection, stemming from the unclear legal status of street vendors.

Street vendors in Thailand also face harassment from various tiers of authorities. Wongtada (2014) explained that vendors are allowed to operate at particular times and in specific zones. The law also directs the vendors to have visible identification and appropriate dress. Vendors are responsible for cleaning their area of work. The officials under the command of the governor as well as local officials are authorised to determine the status of vending activities and amend rules and regulations. The traffic department can also prohibit the vendors if they deem vendors to be obstructing the road traffic. Thus, street vendors can be subjected to punishment by the governor's officials, local officials, and police officials.

Corruption and bribery are also widespread across global street markets. Cohen, et al. (2000) stated that bribes to public officials are so prevalent that there is a global vocabulary for bribes. In Nepal, this bribery is known as "private fees for public space". In other countries, some call it "speed money", some refer to this as "routine offerings" or "dog feed", and some call it a "friendship fund". Bribery takes away a portion of vendors' daily income and ranges from as low as 3-4 percent in Chennai, India, and Yokohama, Japan to 6 to 8 percent in Colombo, Sri Lanka, and Bangkok, Thailand (Cohen, 2010).

In Pakistan, PIDE (2020) shows that hawkers in Karachi pay between PKR 700 to 1,000 in the form of bribes to government officials. It includes police, municipality officials, and local development authorities. In the Saddar market of Karachi alone, the street hawkers pay PKR 67 million per annum to the officials in the form of bribery. It was found that 12,000 hawkers at Mumbai railway stations pay up to USD 2,400 per month in bribes to railway officials (Cohen, et al. 2000). Hence, this rent-seeking takes the form of an informal tax on the informal economy.

We also find studies, that have worked on barriers related to the growth of small formal firms in Pakistan. For example, Aftab and Rahim (1989) examine barriers to SMEs' growth and

identified the socio-economic background of the firms' owners as the largest hurdle in acquiring market skills. Afraz, et al. (2013) found that a lack of credit facilities, human resources, and raw materials are major barriers to SMEs' growth. Similarly, Hussain, et al. (2012) found corruption and rent-seeking as major impediments to growth for small firms in Punjab. World Bank Enterprise Analysis Unit and the Investment Climate Assessment (ICA) Survey (2007) found that the shortage of electricity and gas is the biggest impediment faced by the existing firms in the market. William, Shahid, and Martinez (2014) explore the factors which determine the decision of entrepreneurs related to switching from formal markets to informal status. Similarly, Khawaja and Iqbal (2019) studied the factors which lead to the expansion of small formal and informal firms in Pakistan. They provided details of various factors that contribute to the expansion of these businesses.

To our knowledge, research on the regulatory framework of Khokha in the context of Pakistan is missing. This study fills this gap and adds to the current available pool of literature by examining whether any regulatory framework prevails for establishing khokhas in Pakistan and to what extent such regulatory framework, if any, is hostile or conducive to entry into Khokha markets.

3. DATA AND RESEARCH METHODOLOGY

This is a qualitative study for which data is collected from primary and secondary sources. We studied documents related to the legal framework of Khokhas and organised sitting with people in regulatory departments, such as developmental and municipal authorities, local administration, police, lawyers, representatives of khokhas' organisations and local bodies, etc. Primary data was collected in five cities of Pakistan, i.e., Islamabad, Rawalpindi, Peshawar, Lahore, and Mingora, Swat in summer 2021. 10 detailed in-depth interviews were conducted from Khokha owners in each city (11 in Rawalpindi) by using a well-structured questionnaire, making the total observations to be 51. The markets in each city were selected based on the population of khokhas to ensure heterogeneity across the city. The respondents included vendors on footpaths, parks, streets, outside the shops, parking lots, and food trucks parked at the corners of roads. We also met some people who ran khokhas in past but left the market, later. We collected data from current khokha owners by visiting them, while those who exit, were interviewed by telephone. We tracked such people while conducting interviews with the existing khokha owners. The process of convenient sampling was used. The reason is that legal issues, on average, are the same and given for all khokha owners and do not change with the change of khokha owners. However, other issues, such as harassment from the current khokha owners, depend on the location of khokha owners for which we tried to include khokha owners from different locations. All interviews were recorded and transcribed, later. We mainly interviewed fixed-khokhas owners except for a mobile food truck. Fixed vendors mainly face legal issues such as confiscation at the time of eviction drives, while mobile vendors have the chance to leave the location when such drives start.

4. RESULTS

4.1. Legal Framework of Khokha in the Cities

In this section, we provide the legal framework for khokhas in the cities where we conducted our research. In this regard, we met relevant authorities. For example, we met

Tehsil Municipal Officer in Mingora, Swat, and his staff. We submitted a request for the provision of a copy of the framework that regulates khokhas. We were told that there is no proper documentation for the regulations of khokha in Mingora, Swat. In addition, there is no proper procedure for licensing and all temporary stalls in various parts of the city are not per law. However, due to political repercussions, they avoid taking legal action against all such setups. The staff in the municipality directed us to the local government act available on the website for more details. However, there is no discussion related to khokhas in this act.[1] Per our knowledge, there is also no proper legislation for the operation of the khokhas in Peshawar, Rawalpindi, and Lahore. However, we found some legal documents related to the khokhas in Islamabad. Apart from Islamabad, none of the city development authorities/local governments have formulated any policies/laws regarding the legal structure of khokhas. Hence, we present a detailed description of the legal framework for khokhas in Islamabad.[2]

4.1.1. *Historical Overview of the Legal Framework for Khokhas in Islamabad*

Islamabad is the only city in Pakistan that has issued licenses for temporary structures on green belts/sidewalks, generally known as khokhas/dhabas/rehri-walas. According to the legal documents, in 1979, the then President of Pakistan, General Zia ul-Haq directed Capital Development Authority (CDA) to issue licenses to small businesses, such as "rehri-walas/khokhas". On the Presidential directives, dated 31.10.1979, the then Federal Secretary of Housing and Works started the process of issuing licenses to khokha-walas (kiosks owners). Considering the directions of the President of Pakistan, the Planning Wing of CDA framed the policy for the allotment of tea stalls/kiosks in 1986 and earmarked the site for kiosks and the Works Directorate constructed the site and handed it over to the Municipal Administration for further action. The Municipal Administration then used to hand over the Khokhas to private individuals at a nominal rent of around PKR 100. Under the 1986 policy, CDA rationalised the process of issuing licenses to three main khokha categories:

(a) In developing sectors, as the development of markets took time, temporary khokhas were allowed to be set up as an interim arrangement for the residents of that area.
(b) Alongside the highways and service roads of sectors, where there were no markets left for the shoppers, small khokhas were allowed for the facilitation of travellers and shoppers.

[1]The act is available online on https://lgkp.gov.pk/wp-content/uploads/2019/06/The-KP-Local-Government-Amendmen-Act-2019.pdf

[2]It is pertinent to mention that Pakistan has no legislation (an Act of Parliament) on street vending (khokhas). Therefore, we have no legal definition of a khokha in Pakistan. On the contrary, India has a street vendors act 2014 (Protection of Livelihood and Regulation of Street Vending) which came into force on 1 May 2014. This Street Vendors act defines street vendors or khokhas as " *a person engaged in vending of articles, goods, wares, food items, or merchandise of everyday use or offering services to the general public, in a street, lane, sidewalk, footpath, pavement, public park or any other public place or private area, from a temporary built up structure or by moving from place to place and includes hawker, peddler, squatter and all other synonymous terms which may be local or region specific*" Neither Indian law nor any Pakistani regulation defines the size or measurement for the classification of khokhas. Hence, a khokha could be only a cart (rerhi) or a temporary stall that could have an area of 5 sq. ft. or 100 sq. ft. Khokhas have a temporary built-up structure and mostly operate on a street, sidewalk, public park, parking lot or a public place. It could operate on state land for free or on private land for rent.

(c) In parks and recreational places, small khokhas were allowed to be constructed for providing drinks and snacks to visitors.[3]

4.1.2. *Issuance of Licenses and Imposition of Ban*

From 1986 to 1992, CDA issued 646 licenses for running temporary khokhas at different locations in Islamabad against a nominal fee. In 1994, CDA stopped receiving the fee and demolished the khokhas, especially in the area where embassies were located and other sensitive locations citing them as a security risk. In 2009, the Khokha Association met with the chairman of the CDA, for the restoration of 646 khokhas. Due to this effort, a survey was carried out by the CDA along with the representatives of the Khokha Association and found 250 khokhas owners having proper old permissions at different locations in Islamabad. Thus in 2009, by the directions of the then chairman CDA, 250 out of 646 khokhas were restored.[4] In the same year, the CDA issued new licenses for khokhas taking the total number to 485. Thus, CDA recognised the existence of 250 old khokhas with licenses from 1986 to 1992 and 235 new khokhas with licenses issued in 2009.

The federal government perceived khokhas as a security risk. Therefore, the chairman of the CDA imposed a ban on the new allotment of khokhas on 06-02-2010 and was given approval by the CDA Board on 27.12.2011. This ban on khokhas is still intact. According to the CDA, even the 485 licensed khokhas have ugly and shabby structures, tarnishing the beauty of Islamabad, and are no longer needed. The CDA believes that the khokhas were only allowed to operate when Islamabad was developing and now that all markets of the city are properly functioning, there is no need for temporary stalls, and should be eliminated,[5] Thus in 2013, CDA decided to cancel all 485 licenses. The Directorate of Municipal Administration issued cancellation notices to all types of license-holders on 01-11-2013. Thereafter, in 2015, the Enforcement Directorate started a grand operation against the kiosks and demolished more than 315 khokhas. As a result, the Khokha Association launched a city-wide protest, held press conferences, and met with the members of the National Assembly and Senate with their demands. The anti-encroachment operation against khokhas started in 2015 and continued from time to time.

4.1.3. *The Restoration Process of Khokhas in Islamabad*

In 2015, the National Assembly of Pakistan took up the matter of the khokha-demolishing drive and instructed the CDA to reinstate the demolished khokhas in three days. The National Assembly, vide order O.M F12(3)/2015-Com-I, dated 30th December 2015, of the National Assembly Secretariat (Committee Wing), made some recommendations in the context of the meeting of the Senate Standing Committee on 9th November 2015 that CDA may restore the 485 licenses within 03 days.[6]

On the directions of the National Assembly of Pakistan, a resolution was passed by the House of Mayor Metropolitan Corporation Islamabad in the 14th and 15th meetings of

[3]Lodhi, A. (2019). One Khokha, One Thousand Lives, Soch Writing, available at https://www.sochwriting.com/one-khokha-one-thousand-lives/

[4] Official Documents retrieved from CDA by the authors of this study.

[5]Ibid.

[6]The News (2015). CDA asked to restore licensed kiosks within three days, available at https://www.thenews.com.pk/print/82842-CDA-asked-to-restore-licensed-kiosks-within-three-days

Metropolitan Corporation Islamabad on 28-08-2017 and 28-09-2017 regarding the restoration of all the 485 cancelled kiosks, which was principally approved by Mayor Metropolitan Corporation Islamabad. Thereafter, a follow-up meeting was held on 25-05-2018, and the mayor of Islamabad decided to first issue offers letters to 235 licensed khokha owners, with the condition that the khokhas would be of a standard size and design. Formal licenses were to be issued after vetting by Planning Wing CDA.[7] However, the licenses were never actually restored by the CDA.

Some offerees started their business in the demolished kiosks based on the offer letters issued to them but without the site being vetted by the Planning Wing of the CDA. Therefore, the CDA again demolished such khokhas constructed on green belts.[8] Between 2015 to 2019, a few of the khokhas kept operating in the city even without any legal status.

In 2019, around 120 licensed khokha owners filed a writ petition in the Islamabad High Court for their legal right to operate the khokhas per their licenses. A single-member bench of the court passed the judgement against the khokhas. The court observed that the CDA or MCI had no right to issue such licenses in the first place and all such licenses were illegal. The court stated that the federal government is the custodian of the Islamabad Master Plan and the allotment of land for khokhas fall under the 'Zoning Regulation & Developing Sector' tier of the Master Plan.[9]

After the dismissal from High Court, the Khokha Association approached the Minister of Interior regarding the appropriate action for kiosk/khokha affectees. On 10-06-2019, the Minister of Interior, of the Government of Pakistan issued directions to the MCI/CDA to provide a brief history of the subject matter to resolve the issues of kiosk/khokha affectees. After several follow-up meetings, the Standing Committee on Interior forwarded the recommendations to the CDA regarding the restoration of kiosks/khokha in Islamabad.

On 09-10-2020 the Planning Wing of the CDA once again presented the summary to the CDA Board regarding "Regulation for earmarking of Temporary Kiosks/ Khokha sites in the Layout Plan 2020". The policy of CDA is narrated as "*After due deliberation, Board observed that a policy regarding the allotment of temporary kiosk/khokha is a preview of the DMA, MCI, while the earmarking of Temporary Kiosk/Khokha sites/area in accordance with Planning Parameter is purely the domain of the CDA, being the custodian of the Islamabad Master Plan. The ownership of Temporary Kiosk/khokha sites will remain with the CDA and these kiosk/khokha/sites are nontransferable. The Board further directed that the Directorate of Municipal Administration MCI would forward each case for the earmarking of sites for Temporary kiosks/khokhas to the Planning Wing, CDA on case-to-case basis. After considering and examining each case, the Planning Wing CDA would earmark Temporary Kiosk/khokha/sites, in accordance with the Planning Parameters and the existing Rules and Regulations*".[10]

Thus, as of now, no new licenses of khokhas are being issued and all previously licensed khokhas are deemed cancelled. Any khokha operating even after the cancellation

[7]The Nation (2019). New kiosks allotment plan shelved after CDA, MCI resistance, available athttps://nation.com.pk/05-Sep-2019/new-kiosks-allotment-plan-shelved-after-cda-mci-resistance.

[8]Interview with Inspector, Directorate Municipal Administration, CDA.

[9]Express Tribune (2019). IHC permits CDA to demolish licensed kiosks in Islamabad, available athttps://tribune.com.pk/story/2005561/ihc-permits-cda-demolish-licensed-kiosks-islamabad

[10]Ibid.

of the license is deemed illegal under the CDA rules. The CDA Board decided to review the restoration of khokhas on case to case basis. However, as of September 2022, there is no information about any progress in this regard by CDA

The CDA claims that the licensing of khokhas is a function conferred to Metropolitan Corporation Islamabad as per Islamabad Local Government Act 2015.[11] CDA believes that the issuance of the license to khokhas is further backed by Section 15A of CDA Ordinance, Article 140A of the Constitution of Pakistan, ICT Local Government Act, Section 15A of CDA Ordinance, 1960 read with ICT Municipal Bye-Laws 1979, President of Pakistan's order dated 21st October 1979, Secretary of Housing's decision dated 15th July 1978, National Assembly's direction dated 30th December 2015, CDA's 1986 Policy, and MCI's Resolution dated 28th August 2017.[12]

After the involvement of the Ministry of Interior and National Assembly, the CDA started to lay out new regulations for khokhas in 2020. In the CDA Board meeting of February 2021, new regulations for earmarking the sites for khokhas were presented. However, the CDA Board did not approve the new regulations but rather forwarded them to the MCI for their input. The CDA considers itself the custodian of the state's land, therefore, it believes it has the mandate of earmarking khokha sites while the MCI has the mandate of issuing licenses to individuals based on the Local Government Act 2015.[13]

Islamabad is the only city with some regulatory framework for Khokhas, yet the demolishment of licensed khokhas periodically has shattered the confidence of the khokha owners in the law. Well-defined rules and transparency in the implementation of such rules are the only way forward for promoting a vibrant street-vending economy in Islamabad.

4.2. Identification of Legal Barriers Based on Empirical Results

In this section, we provide an analysis of the legal issues based on in-depth interviews. We provide different implications of the absence of a legal framework for Khokha owners.

4.2.1. *Legal Status of Khokhas and Harrasment*

We found that 42 out of 51 khokhas owners never applied for any kind of permit as shown in Figure 4.2.1. Although there exists no legal cover for khokhas, the purpose of this question was to understand any sort of effort made by the owners to obtain some kind of permission from any relevant authority. Only 4 khokha owners stated that they had obtained a permit of some sort from the administration. However, this permit was not a license, but rather some reference letter from a high-up that could be shown to the city administrators in case of a raid. For instance, a letter from the director general of the Parks Authority stated that the vendor was allowed to park her food truck on the premises of a public park. On the other hand, only 2 khokha owners claimed that due to the backing of

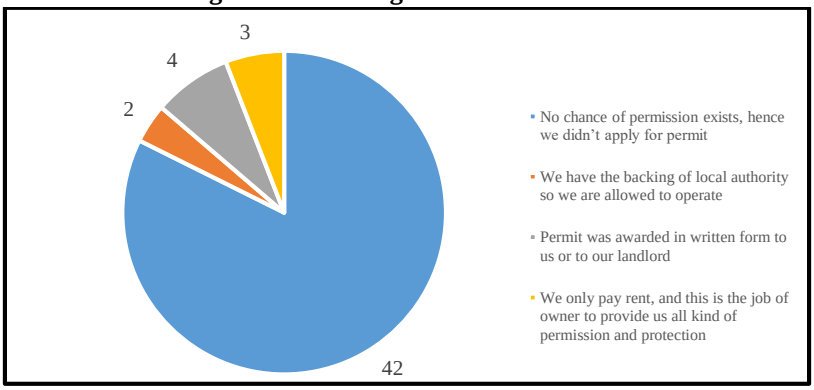
[11]Islamabad Local Government Act 2015, available at https://na.gov.pk/uploads/documents/1448345650_900.pdf

[12]Business Recorder (2019). SC urged to allow licensed kiosk to continue business, available at https://www.brecorder.com/news/amp/4724783

[13]The Nation (2020). Formulation of kiosks' regulation delayed due to non-cooperation of MCI, available at https://nation.com.pk/14-May-2020/formulation-of-kiosks-regulation-delayed-due-to-non-cooperation-of-mci

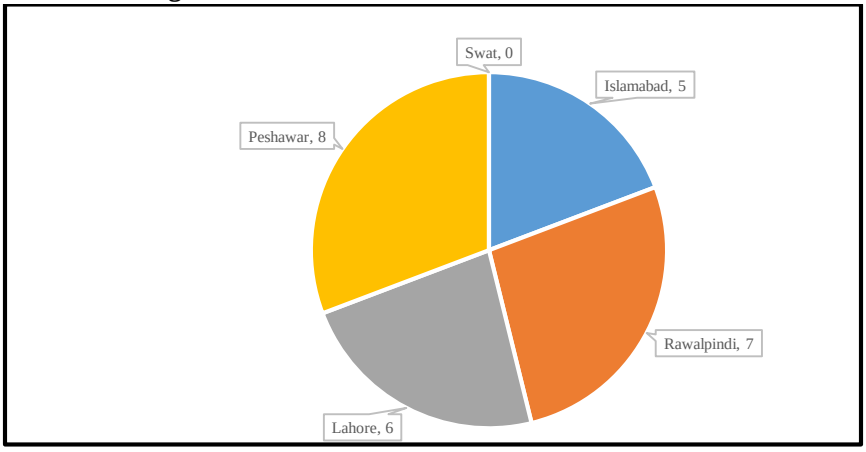
local authorities, they did not require any licensing. Those 3 owners who paid rent were of the view that they were only responsible to pay the rent and the owner of the land was responsible for the legal status of the khokha.

Fig. 4.2.1. The Legal Status of Khokha



As khokhas owners have no legal access to land, thus face harassment from officials of various agencies. We found that khokhas owners in Peshawar complained more about harassment from the administration followed by Rawalpindi. Figure 4.2.2 shows that 8 out of 10 khokhas owners in Peshawar reported regularly harassment by the Cantonment Board officials (Saddar market in Peshawar comes under the jurisdiction of Peshawar Cantonment Board). Similarly, 7 out of 11 khokhas owners in Rawalpindi stated that they were harassed by the Municipal Committee and the Cantonment Board. On the other hand, 5 khokha owners in Islamabad complained about harassment.[14] In Swat, none of the khokha owners made such complaints.

Fig. 4.2.2. Harassment from Local Administration



[14] In Islamabad, we found that khokhas that are run in posh sectors such as F6 and F7 complained more about harassment, whereas the khokhas operating in G8, G9, and Bara Kahu reported less harassment. A major reason behind this as stated by the respondents and a CDA official was that the CDA is more concerned about the face structure of posh sectors as most of the government officials reside in those areas.

4.2.2. *Types of Harassment*

Confiscation of goods and fines by the city administration were the most common types of harassment faced by khokha owners across four cities. In every city except Swat (whose khokha owners did not complain harassment), confiscation of the goods was the most reported harassment. The municipal administration and cantonment boards raided and damaged the khokha as well as confiscated the goods. While during the returning process, a lot of goods were not returned. Moreover, to take back belongings and stuff, vendors had to pay fines ranging between PKR 1,000 and PKR 2,000.

On average things remained confiscated for two days per month and it resulted in various kinds of losses such as damage of khokha, loss of goods or stolen, no sales during the confiscation period, and legal expenditures on bail (as many vendors get arrested during raids). The khokhas with a large setup had to face losses reaching PKR 100,000–PKR 200,00 as the confiscation or sealing of the khokhas, in some cases, prolonged to a month. Three of the khokha owners estimated the loss for each confiscation ranging between PKR 25,000 to PKR 50,000.

Table 4.2.2 show the estimation of confiscation losses, which include fine payments, legal expenses incurred on bail, goods stolen during confiscations, and the loss of sales during such period. Moreover, as shown in the table, the stuff remained confiscated for on average two days every month. The last row in the table shows that, on average, 17 percent of the monthly revenue generated by the khokhas in Peshawar is consumed on paying bribes and confiscation fines/losses— the highest across five cities. In Islamabad khokhas owners, on average, consume 12 percent of their monthly revenues on bribes and confiscation losses. Such losses in Rawalpindi are 5 percent while for 8 percent for Lahore.

Table 4.2.2

Average Monthly Economic Leakages

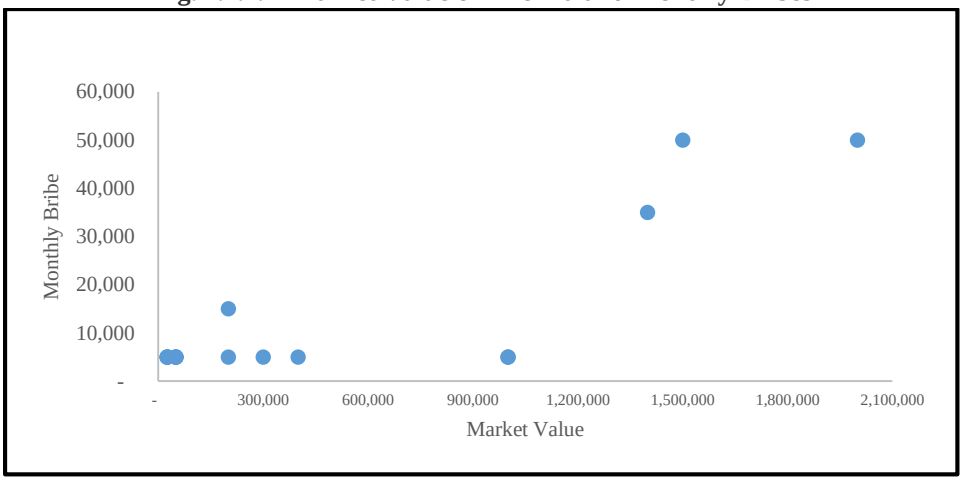
	Islamabad			Rawalpindi			Lahore			Peshawar		
	Min	Max	Avg	Min	Max	Avg	Min	Max	Avg	Min	Max	Avg
Bribe	1,000	50,000	5,500	300	3,000	1,300	1,000	6,000	3,200	2,000	33,000	9,200
Confiscation Loss	10,000	25,000	9,400	3,000	8,000	5,000	4,000	15,000	8,700	1,000	20,000	6,750
Days Stuff Remain Confiscated after a Raid	2	5	3	1	3	2	1	3	2	1	3	2
Monthly Revenue	100,000	500,000	128,000	6,000	20,000	125,000	60,000	300,000	137,000	60,000	200,000	92,000
Monthly Proportion of Avg Revenue Going into Bribe/Losses	–	–	12%	–	–	5%	–	–	8%	–	–	17%

In all four cities, some khokha owners paid cash bribes to the official authorities regularly. In Peshawar, 7 out of 10 khokhas owners told that they paid a monthly bribe of around PKR 5,000. Different ranged prevailed in each city as shown in above table,

however, the number of incidences was lower than Peshawar.[15] In addition, most of the respondents claimed that they did not get any receipt for the fines they paid in cash to the authorities. Some owners of khokhas also paid in-kind bribery. This included free food or free stuff to the traffic police, city police, and/or municipal authorities. The khokha owners in Peshawar faced an additional kind of harassment in the form of arrest. However, they were arrested by the traffic police for the violation of traffic rules and were released after a day when they submitted a fine of around PKR 1,000 to PKR 2,000.

This is pertinent to mention that monthly cash bribes are directly proportional to the market value of the khokha. We found that the market value of a khokha, as stated by the owner, was directly proportional to the monthly bribes they had to pay as shown in Figure 4.2.2. This was true for all cities except Swat. In general, when a khokha had invested a significant amount on the setup or was located at a commercially attractive place, the city administration officials tended to demand higher bribes from them.

Fig. 4.2.2.1 Market Value of Khokha and Monthly Bribes



4.3. Global Best Practices and Policy Recommendations for Pakistan

After a review of laws on street vending in India, the Philippines, Thailand, and some South and North American countries, we are making the following recommendations for designing a comprehensive legal framework for khokhas in Pakistan.[16]

Vending Site Selection Authority: Before setting up a khokha, the foremost issue is the selection of a vending site. A few countries such as Peru, India, and the Philippines have established authorities at the market, ward, or zone level for identifying such sites. In

[15] Few khokha owners reported that they were not harassed, because they either operated after working hours or had a setup at locations not frequently visited by the authorities. In the case of Islamabad, a few respondents reported that officials from CDA did not generally raid after office hours. Similarly, some were of the view that they did not bother about non-posh sectors and rarely raided there.

[16] This is pertinent to mention that in November 2020, The Poverty Alleviation and Social Security Division has drafted a bill in collaboration with Pakistan Institute of Development Economics (PIDE) to bring street vending legislation. The main purpose of the bill is to protect the right of street vendors in Pakistan. However, to our knowledge the bill has not yet tabled in the parliament as by September 2022. As the official copy is not available, hence, we will suggest flexibility for incorporating best practices of the world if possible.

Peru, the law defines vending-encouraged, vending-permissible, and no-vending sites. There can also be some flexibility in this regard. For example, in Quito, Ecuador, the law identifies nine locations for vending but allows the Municipal Allocation Committee to permit vending in other sites when it deems it feasible.[17] The Allocation Committee also includes three members from the vending association. In this way, inclusivity is ensured for such decisions. Per our findings, CDA Islamabad believes that since the khokhas damage the natural beauty of Islamabad in some places, it can preserve such places by earmarking them as no-vending zones. The site selection committee should have some representation from the khokha association so that a middle ground can be reached.

Identity Verification: Almost every country with a legal framework for khokhas requires the applicant to be at least 18 years of age, but in some countries, such as the Philippines, it is 21 years. In South Africa, licensing authorities are authorised to obtain the record from the South African police of any conviction of the license applicants.[18] In Pakistan, the eligibility criteria for licenses should be a valid identity card, which should be enough for a background check for anyone who desires to set up a khokha in any city. If someone below the age of 18 wants to set up a khokha, they may be allowed to operate and get it registered on B-Form. This way, there will be a minimum exclusion of common people along with a proper identity check. This will also address fear behind the demolishment of khokhas in Islamabad, in past, criminals had entered the khokha business.

Fixed vs. Mobile Vending: Islamabad and Lahore have accepted the concept of food trucks. Such food trucks are very common in New York, Singapore, Bangkok, and other cities of the world. In Buenos Aires, separate permits are issued for mobile and fixed vendors, and each vendor is allowed to hold only one type of permit.[19] In Sao Palo Brazil, there is a separate fee structure for mobile and fixed vendors.[20] It is important to legislate whether mobile vendors can operate at any location or should their mobility be restricted to a specific zone. Restrictions on mobile vendors can adversely affect them as they would like to cater to the needs of customers in different areas. However, restricted zones would benefit consumers as they will know where to find their favourite vendors every day. In any case, separate licenses for mobile and fixed vending can be a suitable approach.

Open vs. Restricted Licensing: A major question that arises in any street vending framework is the upper limit on the issuance of licenses. Should there be an unlimited number of vending licenses, or should the number be restricted? If restricted, should the restriction be at the city level or the neighborhood level? For instance, in New York, the City Administrative Code has restricted the total number of food vendor licenses to 2900.[21] This has resulted in a waiting list of thousands and chances of obtaining a license for a new entrant remain bleak. In Philadelphia, each business neighborhood has its limit of vendors, ranging from three to 100.[22] Similarly, Hong Kong and Singapore also have licensing caps. An unlimited number of licenses can create overcrowding in the cities, occupying public spaces and cramping space for pedestrians. Therefore, the legal framework in Pakistan

[17] Reglamento de Quito, *supra* note 65, Art. 7 & 9.

[18] Businesses Act, *supra* note 53, at (2)(5)(a)-(b).

[19] Buenos Aires Ley 1166, *supra* note 94, 11.1.9

[20] São Paulo Decreto 33.924, *supra* note 94, at Art. 11, 14.

[21] Street Vending, available at http://www.nyc.gov/html/sbs/nycbiz/downloads/pdf/educational/sector_guides/street_vending.pdf

[22] Philadelphia Code, 9-206(10).

should come up with a reasonable cap on khokha licenses at the start, which should be revised at least once in three years as per the market needs and the number of applicants.

Registration with Health and Tax Departments: Many jurisdictions in Europe and North America require multiple licenses before authorisation of work to street vendors. In New York, a vendor requires two licenses from the Department of Health, a food vending license, and a mobile cart license.[23] Furthermore, all vendors in New York are required to be registered with the sales tax registration authority. This ensures that health and safety practices are being followed and well as the government is not deprived of revenue. As the Federal Board of Revenue (FBR), Pakistan, has also launched a drive to register small businesses with sales tax, the registration of street vendors can also be a beneficial step. However, the government can devise a reduce discounted sales tax policy for the street vendors because of the nature of their customers, who are mostly from lower income stratum.

Transparency and Accountability: The licensing authority should have minimal discretion to grant the licenses. In CDA 1986 policy, a 20 percent quota was under the discretion of the CDA board. Discretion is against the rules of transparency and fairness. In South Africa, business laws state that a license must be granted to the applicant unless they fail to fulfil the requirement.[24] However, even in such cases, the authority can deny licenses by changing the requirements from time to time. In some cases, higher discretion can allow flexibility in rules that may result in a greater number of licenses. Therefore, to safeguard the rights of the vendors, the applicants and license holders should be given the right to challenge the verdict of the authority as is the case in South Africa.

Resale and Subletting: In most of the reviewed laws such as that of the Philippines, India, and Thailand, resale and subletting of licenses are strictly prohibited. This prohibition stems from the concept of fairness. Vending space is a scarce resource and should be distributed based on equity. In Islamabad, we found that few licensed khokha owners have subleased the khokha at very high rents, compared to the rent they used to pay to the CDA. In this way, deserving people are exploited. This leads to market inefficiencies. There should be two exemptions allowed in this case. First, in case of death or permanent illness of the licensee, the license should be allowed to be transferred to the spouse or child. Second, the licensee should be allowed to employ a few assistants for help without obtaining any additional license. This will also generate employment. However, as is the case in Ireland, the licensee should be responsible for any violation even if it is committed by the assistant.

Prevention of Monopolisation: Sometimes suppliers use vending licenses to extend their sales. For this purpose, the applicant should not be an employee of his supplier or should not be a registered small business. In Peru, the law prohibits individuals employed by suppliers or small businesses to apply for street vending licenses.[25] In New York, in 1995 the city council voted for a 'one person-one permit.'[26] Such rules ensure that corporations do not exploit vending licenses by operating

[23] *Sidewalk Standoff: Street Vendor Regulations are Costly, Confusing, and Leave Many Disgruntled*, (2010), p. 2.

[24] Businesses Act, *supra* note 53, at (2)(4) and (2)(6)(a).

[25] Lima Ordenanza 002; Reglamento de Quito, *supra* note 65, art. 12

[26] Urban Justice, *Street Vendors Unite! Recommendations for Improving the Regulations on Street Vending in New York City*, at 4, *available at* http://www.urbanjustice.org/pdf/publications/VendorsUnite.pdf.

hundreds of stalls across major locations and paying the bare minimum to their employees. The one-person one-license rule can be practiced in Pakistan as well, to benefit the most deserving individuals.

Provision of Services: The vendors require various services such as (i) solid waste disposal, (ii) toilets for maintaining cleanliness, (iii) electricity, (iv) warehouse and storage, (v) drinking water, and (iv) signages and other facilities. In the Indian Street Vendor Act, all these services are supposed to be provided by the Town Vending Committee. It is important to note that if such services are self-financed from the fees paid by the vendors, vendors would have to pay a higher percentage of their income in fees and taxes. Moreover, it is also important to understand that the provision of services by a national authority may bring uniformity across all areas but services by a local authority can cater to local needs. However, the availability of funds with the local authorities has remained a major bottleneck in Pakistan. In this scenario, the case of Lima, Peru can serve as a good example. In Peru, a part of the fees paid by vendors is invested in a fund and the income is distributed amongst vendors as social security assistance. Further, the decision to use the fees collected from vendors for the provision of services rests with the municipal board. which has members from vendor associations. In this way, the voice of local vendors is also heard in the provision of services and the use of funds.

4. CONCLUSION

Street vending or the khokha business is a part of a vibrant city economy. The street economy is regularised, taxed, and allowed to operate competitively. However, the street economy in Pakistan is discouraged due to the absence of any legal framework. Most of the khokha owners work illegally, because of which they face harassment from the civil administration in the shape of regular raids, forced closures, bribery, and the confiscation of carts and goods. In Pakistan, there is no legislation at the federal or provincial level for the street economy, due to which there exists no mechanism for issuing licenses. This makes the whole street economy unorganised, giving rise to various issues for the local and city administration, such as congestion, traffic jams, and the obstruction of roads sides, and pathways. All entrepreneurs who desire to establish khokhas enter the street economy risking losses in the form of confiscation and bribes. Islamabad is the only city in Pakistan that has framed any policy for khokha owners. However, instead of making such a policy a model for the rest of the country, there is a ban on issuing new licenses since 2011, and even the old licenses have been cancelled. There is a dire need for making regulations related to the street economy so that the ambiguity and uncertainty regarding khokhas may end.

Formalisation of khokhas would mean having a safe and secure location for vending in the city. It would not only mean a registered business, but the city government will also earn fees and taxes. Moreover, entrepreneurs would enjoy basic rights, such as the right to work and the right to earn without harassment and discrimination. Currently, wherever a vendor finds open and free space, they establish a khokha without any proper permission. This creates a threat to the public as well as to vendors. Moreover, such an informal setting facilitates people of underground mafias to grab free spaces. Thus, such places are generally not secure and safe. To provide a secure place for vending, city planners need to identify public spaces for vendors.

There are examples of formalisation in the world where the focus is on imposing costs on street vendors. However, if the vendors do not benefit from formalisation, such formalisation cannot be sustainable over time. It is important to understand the following important points:

- If formalisation implies "moving off the streets" vendors would not earn sufficient income to pay the rent of the stall.
- If formalisation implies "registering the business" or "paying the taxes" vendors would have no reason to be formalised.

An initiative to formalise khokhas should consider the support mechanisms which will help the vendors to sustain income over a long period. This may include legal and secure access to attractive locations, better infrastructure at the vending locations, and effective protection from abuse of authority and harassment.

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Analysing Household Willingness and Ability to Pay for Solid Waste: A Case Study of Karachi

SHAISTA ALAM (LATE) and AMBREEN FATIMA

Karachi being the industrial and commercial hub, comprising a population belonging to multiple cultures, is facing many types of socio-economic issues with solid waste at top of the list. District Municipalities lack the financial resources and capacity to provide the needed infrastructure to ensure the timely collection and disposal of solid waste. The public's involvement and financial support therefore can assist the provincial and local governments in resolving solid waste management concerns. The aim of this study is to investigate the socioeconomic status of households to assess their willingness to pay for solid waste management. A comprehensive household survey from Karachi has been carried out to achieve the aforementioned objective. The results revealed that households' willingness to pay ranged from Rs. 50 to Rs. 5,300 per month. The average number of households paying for a particular service (our selection variable) was around 70 percent, and the average per-capita income of the surveyed households was around Rs. 19,000. Interestingly, the results predict that households' Ability to pay was substantially greater than their Willingness to Pay, implying the need for motivating measures to persuade families to pay more to manage solid waste.

GEL Classification: D12, D31, H1
Keywords: Willingness to Pay, Ability to Pay, Solid Waste Management, Heckman two-step

1. INTRODUCTION

Pakistan is experiencing rapid urbanisation and environmental degradation, especially in its major cities such as Karachi mainly because of the improper handling of solid waste. Though the local and municipal governments are responsible for collecting waste, only about 60-70 percent of solid waste in the cities gets collected. Karachi being the industrial and commercial hub and having a large residential area, comprising a population composed of multiple cultures, is facing many types of socio-economic issues with solid waste at top of the list. The population is touching around 20 million and waste generation is causing a serious problem for the social and economic development of the mega city. The literature on solid waste management predicts a sharp increase in waste generation. For example, ESCAP/IUCN/UN HABITANT (2013) estimated that the

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average household solid waste generation in Karachi is around 0.44 kg/cap/day, ranging from 0.19 to 0.84 kg/cap/day. Fruit and vegetable market generates 1.795 kg/shop/day and 11.77 kg/shop/day, respectively. On a daily basis nearly 12,000 tons of solid waste was generated in six districts of the city (Sabir, et al. (2016). KCCI Research & Development Department (2018) reported that solid waste generation in Karachi hovers between 12,000 to 15,000 tons per day of which only up to 10,000 tons per day gets collected. More recently, Korai, et al. (2020) estimated that Karachi generates around 0.57kg/cap/day. Studies also estimate that around 55 thousand tons of waste is generated per day in urban areas of Pakistan, and almost 60 percent of it is transported by districts' municipal councils (DMCs). The municipal authorities face many constraints in managing solid waste in cities, and the provision of better services has become a nightmare. The megacity Karachi is now managing solid waste through private contractors' cooperation, both international (China and Spain) and local. Despite expanding collaboration between public and private sectors towards managing solid waste the city still manages to collect only 60 percent of the generation of which only 50 percent reached the designated site. Therefore, the unattended waste ranged from 435 tons per day to 960 tons per day. According to the EPMC estimates (1996), the waste collection was around 51 percent to 69 percent.

Inadequate waste disposal procedures generate a slew of issues. By the end of the day, open rubbish dumps induce waterborne diseases because leachate contaminates groundwater and causes breathing difficulties. To solve this pressing issue, the government and other stakeholders must make every effort to investigate the possibility of cost-sharing among households and examine the demand side to better manage solid waste. This research is also designed to provide demand-side knowledge that will be useful during the planning phase. The specific objective of this research is to measure and identify factors that influence households' willingness to pay for solid waste management. In addition, the study also assesses the collection charges households are already paying to avail some sort of services. A contingent valuation method/approach (CVM) was applied to determine households' willingness to pay. According to Carson, et al. (1996, 1998), the CVM is the standard methodology that includes both the use and non-use value of a product. As the households' decision to demand any service is based on both use and non-use values, in this study it was assumed that the amount households were willing to pay (WTP) for the more improved system was based on its use and non-use values. Furthermore, following Fujita, et al. *(*2005), matching WTP with the ability to pay (ATP) was also considered important. The ATP was derived from the income and expenditure patterns of the households. The compression of the two (WTP and ATP) adds another dimension to our research. For example, the WTP less than the ATP means that a household is reluctant to spend money on SWM. It means that a policy framework is needed to motivate households to invest in the service. But if the ATP is low, it reflects the inability of a household to pay for the service regardless of WTP. This further means that public investment is needed. In sum, if the ATP is less than the WTP it means that public/government support is needed. On the contrary, if the WTP is less than the ATP, it implies that motivational support is needed.

The rest of the paper is structured as follows. The next part goes through the literature review. Section three discusses the methodology for the study, followed by Sections four and five, which explain the empirical findings and conclusion.

2. REVIEW OF LITERATURE

Solid waste management has, become one of the most debated issues, especially in developing urban areas because of rising consumption (Abas des & Wee, 2014; Marshall & Bakhsh, 2013). Shahid & Nargis (2014) found that most developing countries face problems to manage solid waste material, which is rapidly growing due to the increase in population and the rate of development. Municipal solid waste is generated from various activities of daily life and usually increases with the growth of population and income (Tseng, 2011). Mahar (2010) reviewed the practice of solid waste management in urban areas of Pakistan. The study found that not a single city showed a proper solid waste management system. Haider, et al. (2013) studied a household-level analysis of SW generation rates across different income groups in Rawalpindi, Pakistan. The results revealed that the SW generation was greater in higher-income groups than in lower-income group households. Altaf & Deshazo (1996) study surveyed a solid waste disposal area in Gujranwala city and the results revealed that households were willing to pay for improved SWM service.

Sabir, et al. (2016) inspected the situation of solid waste management procedures employed in Karachi and the challenges faced by the responsible authorities. This study found that the citizens were disappointed with the performance of the solid waste system in Karachi. The study also found that municipalities faced a lack of financing and appropriate instruments to ensure their effectiveness. The citizens of Karachi are also a contributing factor to the growing waste through their participation in unlawful disposal. With the increasing solid waste per day in the city, there is a need to implement an adequate system of dumping or recycling solid waste on daily basis.

Anjum (2013) examined the processes of waste generation, collection, and disposal along with estimating the willingness to pay for SW using a survey of Islamabad. According to the findings, 65.4 percent of households are probably willing to pay for solid waste management. Moreover, a monthly mean willingness to pay of the households is reported as Rs. 289.15. The findings are consistent with the notion that willingness to pay is influenced by age, income, education, and environmental concern. Sumukwo et al. (2012) used the contingent valuation method (CVM) and multiple regression techniques to determine willingness to pay in Kenya. Age, educational attainment, household income, and the amount of readily available discretionary funds are among the variables that affect willingness to pay. The findings indicated that most people are willing to pay Kshs 363 a month for solid waste management.

3. DATA & EMPIRICAL METHODOLOGY

3.1. Data Source

A thorough household survey was done to gather information for the estimation of households' willingness to pay for managing solid waste in Karachi, and it included questions regarding socio-economic characteristics of the household as well as, major concerns related to solid waste management, awareness, and satisfaction regarding the current process and amount that households are willing to pay for the improved system. Table 1 provides details of the sample of households selected from each town. To reach an appropriate household sample, different combinations of confidence interval and

specification error were considered so it remains statistically valid and representative. Given the above, it was considered appropriate to determine the sample size with 95 percent confidence and less than 10 percent specification error. The following formula was used, which yielded an optimal sample size of 445 households:

Optimal Sample Size = Z^2 [p (1-p)]/e^2 (for known population)

where

Z = the specification of the confidence coefficient
p = estimated proportions
e = Specification error

Table 1

Household Sample

Town Name	Total	Proportion	Sample (Proposed)	Sample (Materialised)
Baldia	616,721	0.043	20	21
Bin Qasim	480,855	0.034	15	15
Gadap	439,675	0.031	14	14
Gulberg	688,581	0.048	22	21
Gulshan-e-Iqbal	949,351	0.067	29	30
Jamshed	1,114,138	0.078	34	39
Kemari	583,641	0.041	19	19
Korangi	829,813	0.058	26	28
Landhi	1,012,393	0.071	31	32
Liaqatabad	985,576	0.069	30	34
Lyari	923,177	0.065	29	29
Malir	604,766	0.042	19	18
New Karachi	1,038,863	0.073	32	34
North Nazimabad	753,423	0.053	24	23
Orangi	1,098,858	0.077	34	35
Saddar	935,565	0.066	29	28
SITE	709,944	0.050	22	23
Shah Faisal	509,916	0.036	16	17
City Total	14,275,256		445	460

Source: Data was extracted from the website of pbs.gov.pk

3.2. Methodology

The concept of ‘economic value’ is usually defined as the measurement of changes in personal well-being. The theory was extended to measure the changes in the prices and quantities of marketed goods as well as non-market goods and services such as managing solid waste. The economic valuation of a service is an assessment of the preferences held by people.

If a service is not available in an area, the willingness to pay for the services cannot be properly inferred from the expenditures that are supposed to occur. This issue further pushed us to use the "stated preference" approach, i.e., the contingent valuation approach

(CVM) as many surveyed households currently were not paying for solid waste management in their area. Under the CVM, the households were directly asked exactly what they would be willing to pay to avail the SWM service.

Given the stated preference approach, we included an open-ended question in the household questionnaire on how much a household was willing to pay. The study considered this as more reliable than a dichotomous choice question with a "yes" option in case people were willing to pay or otherwise "no". Moreover, the advantage of using the open-ended variable is that it does not require the assumption that the households having the same characteristics also have identical preferences. The stated WTP can, therefore, be directly regressed on the characteristics of the households. The following simple function was estimated to assess a household's willingness to pay:

$$Wtp = \beta' X + \varepsilon \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad (1)$$

Where X is the vector of independent variables hypothesised to be influencing the willingness to pay for the service. The independent variables used in the estimation of the above-stated model are presented in Table 2 below with the expected signs. The demand for the solid waste management system is hypothesised to be a function of the households' socio-economic conditions (per-capita income, occupancy status, and congestion), demographic factors (gender of the household head, dependency ratio, age, and the education of the primary contributors), satisfaction with the current service, awareness, and the knowledge of solid waste management, use and non-use values (bequest—leaving a better environment for the future generation), and the environmental impact of waste. The choice of variables and the effect hypothesised were based on the descriptive analysis presented in Section 4.

Table 2

Explanatory Variable with Expected Sign

Explanatory Variables in WTP Model	Expected Sign
Household Per Capita Income	+ve
Male Headed Household	+ve
Average Years of Education of Employed Household Members	+ve
Average Years of Age of Employed Household Members	+ve
Ownership of the house- Own House	+ve
Congestion [Room per person]	-ve
Index-Knowledge regarding SW Impacting Environment	+ve
Bequest Worth- Managing SW for Better Future	+ve
Selection Model- Participating in MSW Equals 1 Otherwise 0	
Male Headed Household	+ve
Dependency Rate	-ve
Congestion [Room per person]	-ve
Average Years of Education of Employed Household Members	+ve
Average Years of Age of Employed Household Members	+ve
Index- Satisfaction Score with Current System	+ve
Index- Awareness/Knowledge Regarding SW	+ve

We computed the age and education of the individuals contributing to the household income, i.e., the primary contributor's age and education. Primary contributors are those

who are assumed to have more say in the family's decisions since they are the earning members of the family. After identifying the primary contributors, the mean age and average education of the primary contributors to the household were estimated. We assumed that the higher the age and education of the primary contributors in a house the higher the amount the households are willing to pay.

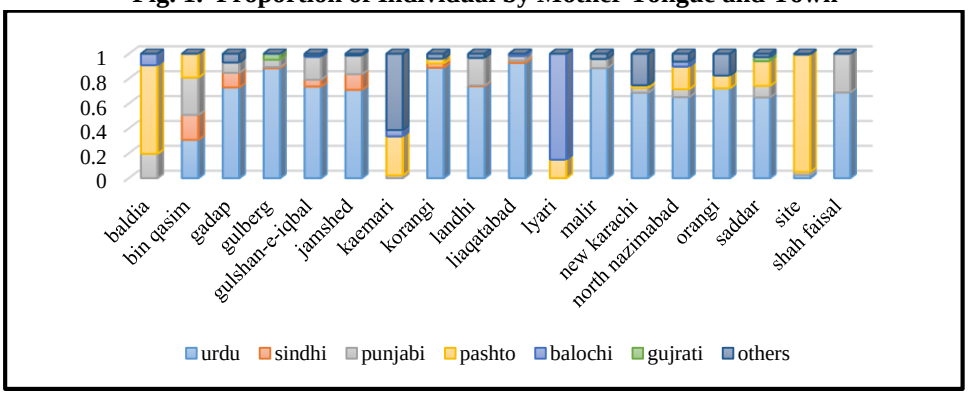
However, the key issue in estimating the above WTP model for the solid waste management services was that we did not observe the whole surveyed household. Since many of the surveyed households were currently not paying for solid waste management, their stated preference could lead to a problem of sample selection bias. However, in our study, we applied Heckman's two-step selection procedure to correct the sample selection bias. Heckman (1979) approached this as an omitted variable problem. He proposed that an estimate of the omitted variable would solve this problem of the sample selection bias. Therefore, Heckman's two-step procedure was used to control the selection bias of the sample. The selection equation was estimated using the maximum likelihood approach as an independent probit model. The variables' inverse Mills ratios were generated from the parameter estimates. The willingness to pay (amount) can be s observed only when the selection model equals 1, which is then regressed on the explanatory variables and inverse Mills ratios using ordinary least squares (OLS). The lambda is introduced in the second stage as an additional variable. If the coefficient of lambda is significant, we reject the null hypothesis of no selection bias.

4. EMPIRICAL RESULT

4.1. Household Socio-economic and Demographic Profile

Being the nation's economic hub, Karachi attracts a diverse population from all around the country for a variety of reasons. The city hence comprises multi-linguistic households. The following figure shows that the commonly spoken languages are Urdu (58 percent), Pashto (15 percent), and Punjabi (8 percent). The variation based on languages was examined to show the multicultural environment of Karachi. The variation can also be analysed in terms of ownership. Since the migrants in Karachi are not natives of the city, their interest in the development of the city can be considered limited.

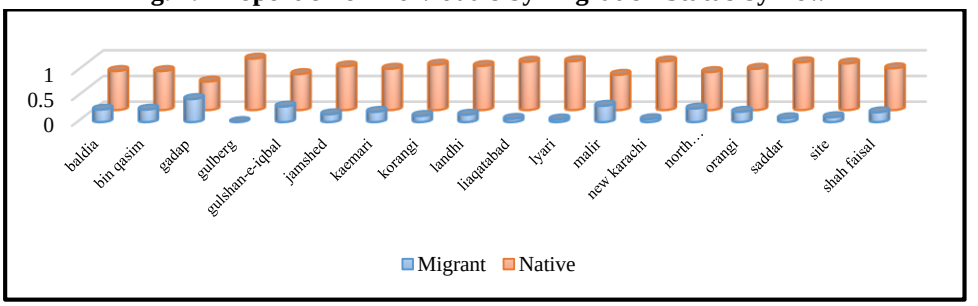
Fig. 1. Proportion of Individual by Mother Tongue and Town



Source: Author's estimations.

Figure 2 depicts the migration status of the surveyed population. Overall out of surveyed population 16 percent were migrants and 84 percent were natives. Gadap town has highest migrant share among all towns followed by Malir, Gulshan-e-Iqbal, North Nazimabad, and so on.

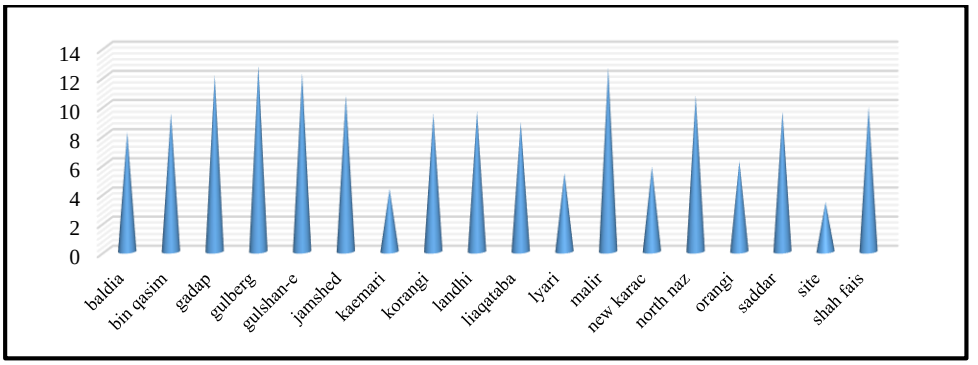
Fig. 2. Proportion of Individuals by Migration Status by Town



Source: Author Estimation.

The next figure shows the average years of education (highest education level at the time of interview). According to survey estimates, the average years of education is around 12 years, in the towns of Gulberg, Gadap, Malir, and Gulshan-e-Iqbal. In contrast to SITE and Kemari Town, where the average years of education are only about four years.

Fig. 3. Average Years of Education

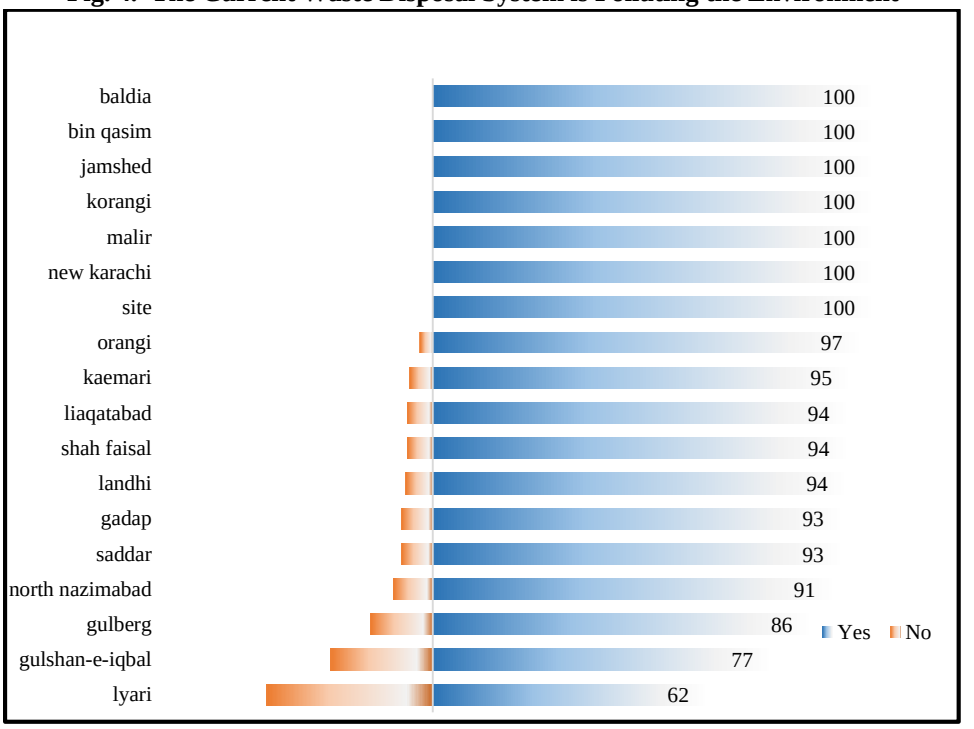


Source: Author Estimation.

4.2. Perception and Behaviour Regarding Solid Waste Management

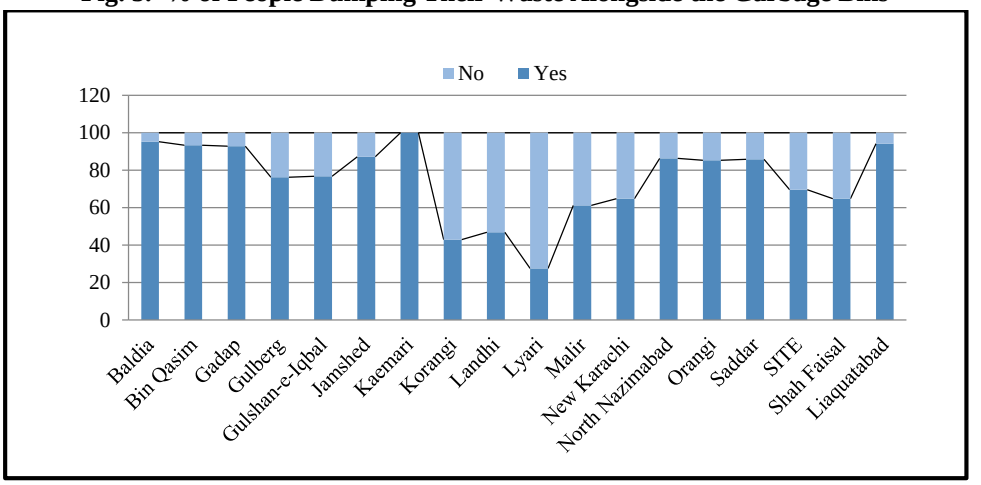
Public officials claimed that the main hurdle in handling solid waste was individual behaviour, we explored the perception, behaviour, and awareness of the surveyed households regarding solid waste management. The figures below show the results. The majority of the surveyed households said that they were aware of the environmental consequences of waste. We also enquired whether they dumped the waste alongside the bin (not in the bin). The majority responded with yes. We further asked the households if they were aware of the environmental consequences of the waste, and why they did not use a bin.

Fig. 4. The Current Waste Disposal System is Polluting the Environment



Source: Authors' estimations.

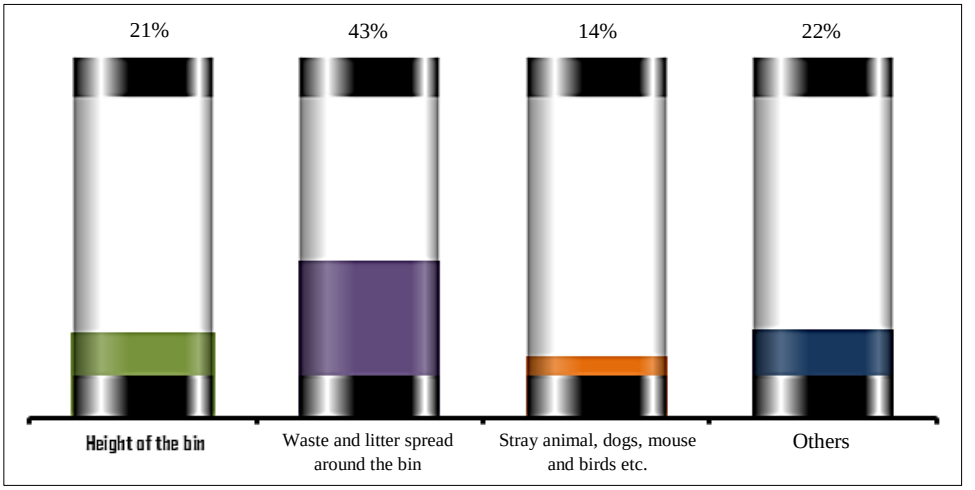
Fig. 5. % of People Dumping Their Waste Alongside the Garbage Bins



Source: Authors' estimations.

Around 43 percent of households replied that they threw the waste alongside the bin, (not in the bin) because the place where the bin was placed was too smelly. Around 21 percent said the bin was too high, and 14 percent said that they did not go near the bin because of the animals around the bins.

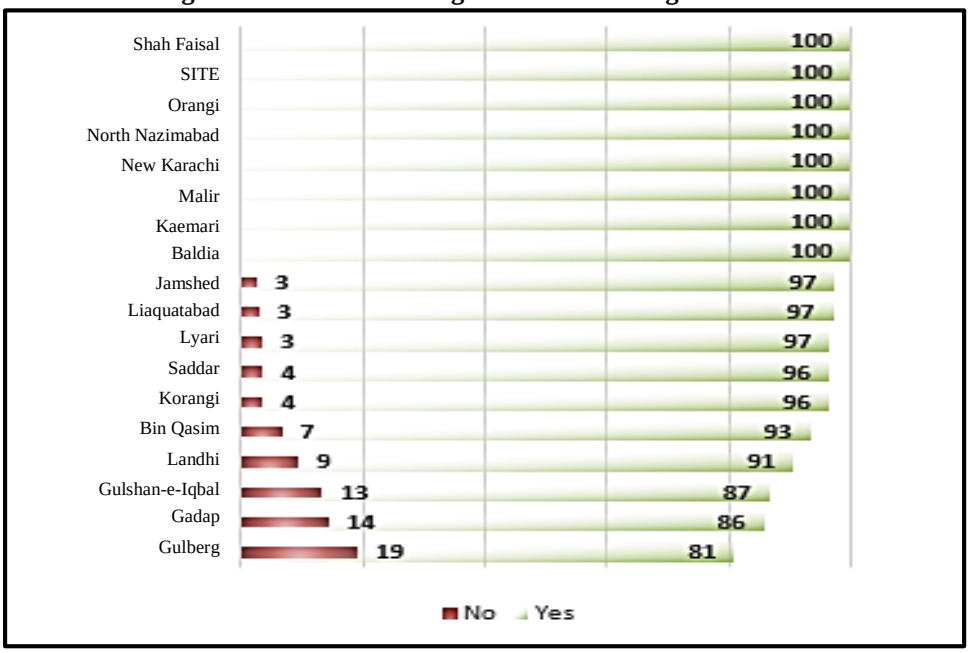
Fig. 6. Particular Reason for Dumping Outside Bin



Source: Authors' estimations.

Furthermore, the surveyed households also showed their concern for environmental degradation caused by waste.

Fig. 7. Environmental Degradation has a Negative Effect



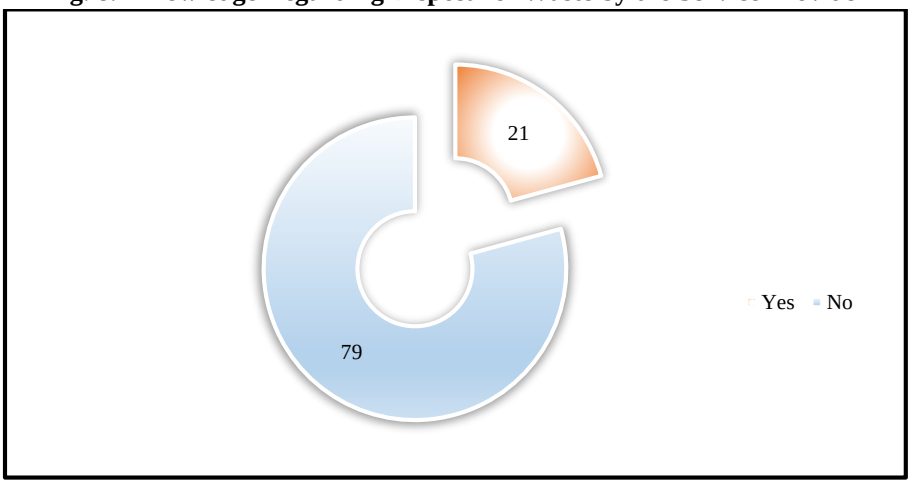
Source: Authors' estimations.

4.3. Knowledge and Awareness regarding the Current System

The two figures below show how many households took interest in the management of solid waste. This gives an idea of how serious a household is in managing the solid waste

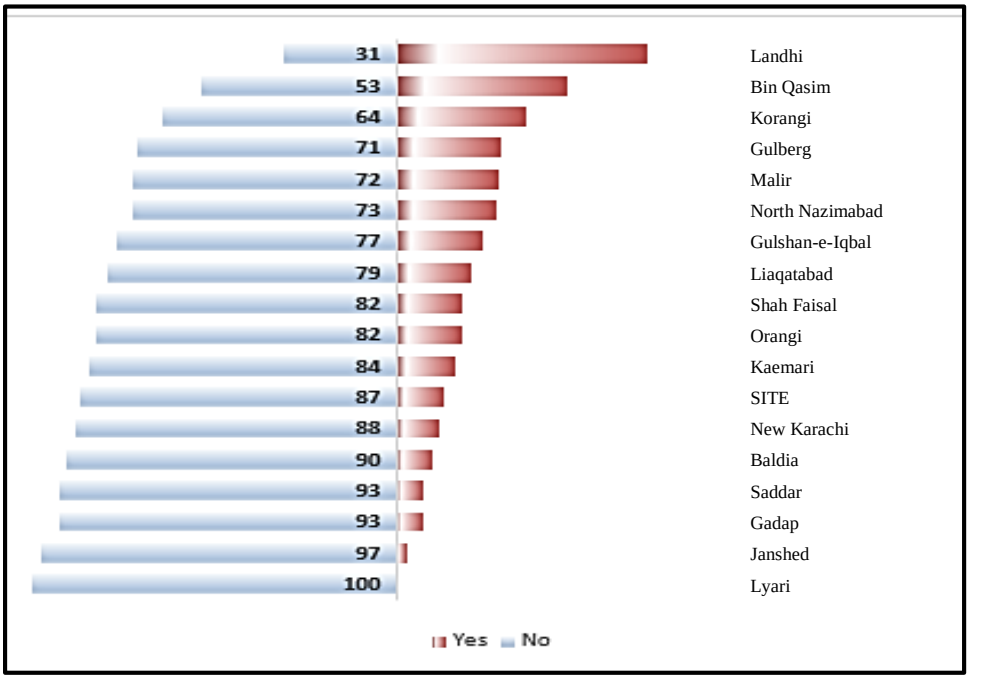
problem. Though Figure 8 highlights that around 79 percent of households were aware of their service providers, it is evident from the next figure that the majority of the households were unaware of how waste was disposed of by their service providers. This further highlights that their interest or concerns were limited.

Fig. 8. Knowledge Regarding Disposal of Waste by the Service Provider



Source: Authors' estimations.

Fig. 9. Do You Know How Your Service Provider Disposes of Your Collected Waste?



Source: Authors' estimations.

4.4. Household Willingness to Pay for Solid Waste

The table below provides the descriptive statistics of the variables of interest. According to the table, the households' willingness to pay varied from Rs. 50 to Rs. 5,300 per month. The average numbers of households currently paying for availing some sort of service (our selection variable) were around 70 percent (323 out of 459), and the average per-capita income of the surveyed household was around Rs. 19,000. Table 2 also reports the indices developed. It shows an average score of 0.66 for the environmental knowledge index (ranges between 0 to 1, where 1 means perfect knowledge), a score of around 1.9 for the satisfaction index (ranges between 0 to 3, where 3 means complete satisfaction), and a score of 0.67 for current solid waste management process.

Table 3

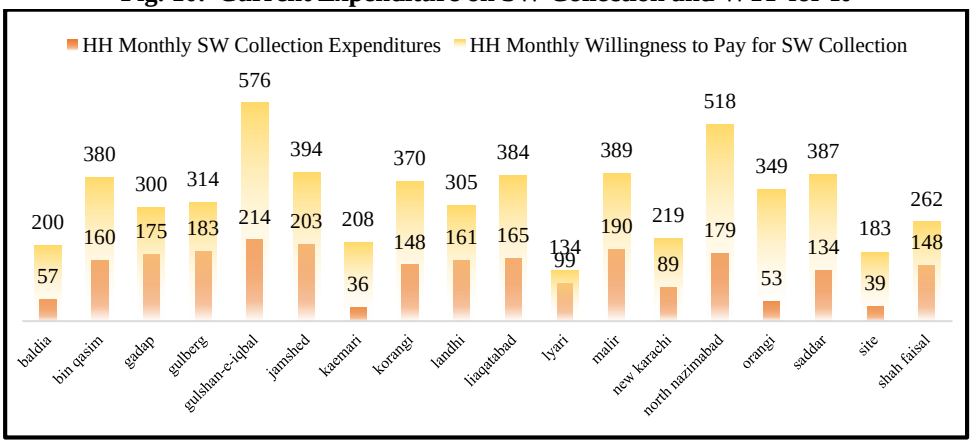
Descriptive Assessment of Factors Influencing WTP

	# Obs.	Mean	S.D	Minimum	Maximum
Household Willingness to Pay	459	467	452	50	5300
Participating in MSW Equals 1 Otherwise 0	459	0.7	0.46	0	1
Household Per Capita Income	459	19085	21867	1429	340000
Male Headed Household	459	0.9	0.3	0	1
Dependency Rate	459	3.89	2.37	1	13
Average Years of Education of Employed Household Members	459	10.43	4.51	0	19
Average Years of Age of Employed Household Members	459	39.4	9.79	17.7	86
Ownership of the House-Own House	459	0.79	0.41	0	1
Index- Knowledge regarding SW Impacting Environment	459	0.66	0.22	0	1
Bequest Worth- Managing SW for Better Future	459	0.98	0.14	0	1
Index- Satisfaction Score with Current System	459	1.93	0.8	0	3.3
Index- Awareness/Knowledge Regarding SW	459	0.67	0.16	0	1

Source: Authors' estimations.

The following figure shows the current expenditure household made on SWM and what households were willing to pay for further improving the system. The numbers are disaggregated by town.

Fig. 10. Current Expenditure on SW Collection and WTP for It



Source: Authors' estimations.

In general, households would be willing to pay more than they do in order to receive the service. Residents in Gulshan-e-Iqbal and north Nazimabad towns are the most eager to spend money overall on services whereas those in Liyari are least willing in this regard.

4.4.1. *WTP Regression Results*

Table 4 reports the factors influencing the maximum amount households were willing to pay for making improvements in the current solid waste management condition and their decision to pay for the services (under the current state), which equals 1 if yes and 0 otherwise.

Table 4

Factors Influencing WTP

Variables	Coefficients	t-stats	p-value
Household Willingness to pay—Rs.			
Household Per Capita Income	0.002	1.97	0.049**
Male Headed Household	223	2.51	0.012*
Average Years of Education of Employed Members	8.5	0.8	0.426
Average Years of Age of Employed Members	-5.6	-1.79	0.073***
Ownership of the house—Own House	-77	-1.24	0.216
Congestion [room per person]	2.8	0.06	0.951
Index- Knowledge Regarding SW Impacting Environment	257	2.05	0.04**
Bequest Worth—MSW for Better Future	62	0.35	0.727
Constant	397	1.3	0.195
Participating in MSW Equals 1 Otherwise 0			
Male Headed Household	-0.18	-0.7	0.485
Dependency Rate	-0.02	-0.67	0.502
Congestion [room per person]	0.44	1.93	0.054**
Average Years of Education of Employed Members	0.09	5.7	0.00*
Average Years of Age of Employed Members	0.02	2.5	0.012*
Index-Satisfaction Score with the Current System	0.40	4.72	0.00*
Index - Awareness/ Knowledge Regarding SW	0.44	1	0.318
Constant	-2.22	-4.48	0.00*
Mills Ratio—Lambda	-311	-1.88	0.06**
Number of Observations	459		
Censored Observations	136		
Uncensored Observations	323		
Wald $chi^2(8)$	26.14		
Prob > chi2	0.001		

Source: Authors' estimation.
Significance level: 1 percent (***), 5 percent (**), 10 percent (*).

The table shows that among the explanatory variables, household per-capita income, households headed by a male, the average age of the primary contributor, and knowledge regarding SW impacting environment had a significant impact on the households' willingness to pay for the SWM. Except for the average age, the rest showed a positive and significant effect. The table shows that a 1 rupee increase in per-capita income increased the WTP by Rs. 0.002. Similarly, if the household was male-headed, the WTP increased by Rs. 223, and the household's knowledge regarding the environmental impact of solid waste increased the WTP by Rs. 257. However, the average age of the primary contributor, hypothesised to have a positive impact, was found to influence the WTP negatively. The reason could be that as the age of the primary contributor increases, the tendency to save more increases to secure the future after retirement. Overall, an increase in the age of the primary contributor by a year decreased the WTP by Rs. 5.6.

The first stage probit estimates show that an increase in the age and education of the primary contributor increased the probability that the household would pay for the SWM. In terms of the coefficient (the probit coefficients give the change in the z-score for a one-unit change in the predictor), a one-unit increase in the age and the years of education of the primary contributor, increased z-scores by 0.02 and 0.09, respectively. Similarly, a one-unit increase in the satisfaction index increased the z-score by 0.40. In addition, the congestion (rooms per person) also showed a significant impact [with a one-unit increase in the congestion, the z-score increased by 0.44]. Furthermore, the lambda, which measured the presence of selectivity bias, is also significant implying that selectivity bias was present in the model. Therefore, Heckman's two-step approach is justified.

4.5. Ability to Pay (ATP) vs. Willingness to Pay (WTP)

The WTP refers to the maximum amount that the households are willing to pay for improvement in solid waste management conditions, while the ATP is the amount households actually can pay. Capturing a household's ATP means checking household affordability. The information is, therefore, useful for policy design. Policies formed without considering who will pay and how much ability they have to pay result in policy failure.

The ATP is usually calculated using the household disposable income or the household expenditure composition. Researchers have followed various techniques to compute the ATP and the suggested ATP for SWM is 1 to 2 percent of the household's income for low and middle-income countries. In this study, we computed the ATP as 1 percent of household income (see Wilson, et al. 2012). Specifically, the ATP was computed as 1 per cent of the household's income. Table 5 compares the household's willingness to pay with the household's ability to pay. The results predict that in all the cases the ATP was much higher than the WTP, suggesting the need for motivational arrangements needed to convince households to pay more to manage solid waste.

Table 5

Comparing ATP and WTP

Town	ATP (Rs.)	WTP (Rs.)	Difference
Baldia	705	257	ATP>WTP
Bin Qasim	731	540	ATP>WTP
Gadap	1,374	475	ATP>WTP
Gulberg	1,097	498	ATP>WTP
Gulshan-E- Iqbal	1,738	790	ATP>WTP
Jamshed Town	1,164	597	ATP>WTP
Kaemari	801	244	ATP>WTP
Korangi	720	518	ATP>WTP
Landhi	637	466	ATP>WTP
Liaqatabad	850	549	ATP>WTP
Lyari	683	234	ATP>WTP
Malir	1,367	579	ATP>WTP
New Karachi	623	308	ATP>WTP
North Nazimabad	1,709	705	ATP>WTP
Orangi	748	403	ATP>WTP
Saddar	1,581	521	ATP>WTP
SITE	679	222	ATP>WTP
Shah Faisal	718	409	ATP>WTP
Total	987	467	ATP>WTP

Source: Authors' estimations.

5. CONCLUSION AND POLICY RECOMMENDATIONS

The households living in Karachi confront significant environmental challenges. A serious environmental issue in the city has always been the lack of proper solid waste management. The absence of adequate financing for managing solid waste is one of the major causes of this problem. The primary purpose of this study is to look at the feasibility of service charges for collecting revenue as households are concerned with the improved solid waste system and are ready to make efforts for it because every strategy in this regard would be futile if it merely focused on revenue collection and the assumption that all users should pay without taking into account the households' capacity and readiness to pay directly for this service. Hence this study not only evaluated household willingness to pay as reported by the household themselves but also quantifies it using an empirical model based on various explanatory variables. As per the survey responses, the households are generally open to pay more for the service than they already do. The willingness of residents to pay for services is highest in Gulshan-e-Iqbal and north Nazimabad towns, while it is lowest in Liyari. The regression findings indicated that the households' willingness to pay for the SWM was significantly influenced by household per capita income, households headed by a man, the average age of the principal contributor, and awareness environmental effects of SW; therefore, any policy intended to increase willingness to pay will be ineffective until these socioeconomic characteristics are improved. To get the intended enhanced effects, policymakers should target these aspects.

As far as the ability to pay is concerned the results indicated that for all towns in Karachi, the household ability to pay for SWM is higher than the willingness to pay for it. This is, in fact, promising from a policy point of view as this could be used to generate funds for financing the public efforts for managing the SW in an accelerated manner. However, for those who are reluctant to adopt and willing to contribute to sustainable waste management strategies motivational aspects are required to induce them to do so by making them aware of its long-lasting concerns for health and the environment for the current and future generations.

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Public-Private Partnerships in Education: Evaluating the Education Management Organisations Programme in Sindh, Pakistan

GUL MUHAMMAD RIND and DHANI BUX SHAH

The focus of this study was to investigate public-private partnerships (PPPs) in education, in this instance by evaluating the Educational Management Organisations (EMOs) Program in Sindh, Pakistan. The study was guided by the research questions that were intended to evaluate to what extent, how, in what way, and for whom the PPP mode of education through EMOs improves access to education, ensures quality and equity in education, and sustainability in the context of Sindh, Pakistan. We chose the *realist evaluation* as a methodological approach, applied New Public Management as a theoretical framework to answer the research questions, and adopted a mixed methods research design. The findings indicate that PPPs through EMOs have some advantages in terms of better governance of schools through autonomy and decentralisation. The schools' accountability, monitoring, and evaluation have somehow improved. However, the broader impact of EMO reform still does not reflect in increasing access, overall quality, and ensuring equity.

Keywords: PPPs in Education, Education Reform, EMOs, Realist Evaluation, Sindh, Pakistan

1. INTRODUCTION

Public-private partnerships (PPPs) in education are a global phenomenon and are framed as a best practice to achieve educational goals. It can be broadly defined as a legal contract where the private sector provides educational services to the government for a certain period (Patrinos, et al. 2009; Verger, et al. 2020). In this setup, the private sector typically assumes the role of service delivery and risk-sharing. Meanwhile, the role of the government is typically to finance and ensure the values of compassion and social cohesion (Patrinos, et al. 2009). In Pakistan's education system, there are also several kinds of PPP modes in schooling, which include foundation schools (in Sindh and Punjab), voucher schools (in Punjab), adopting a school model, and the Education Management Organisation (EMO) schools.

The PPPs in education are relatively less explored and evaluated in public policy research because of their different manifestations in different parts of the world. It is different from PPPs in other sectors such as roads, buildings, and infrastructure services.

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Education is treated as a common public good and can be delivered without charging any fees. Most of the existing research and discussion about PPP has focused on PPP policies and outcomes in the context of its advantages. The discussion is framed as the PPP review without any substantial comparative analysis. The above approaches do not yield specific and useful information regarding the implementation or efficacy of PPPs in developing countries such as Pakistan (Gideon & Unterhalter, 2021; Verger, 2012). Also, very little attention has been given to "what works," "how," and "in which context" with respect to PPPs. The policy design for PPPs matters because of its differential impact on education. The evidence-informed policy decision can unpack the nuanced outcomes of PPP in a particular context (Verger, et al., 2020).

This study evaluated the ongoing reform initiatives such as PPPs in education through EMOs' implications from the contextual perspective of the Sindh province. As such, this study tried to unpack PPP and examine issues related to educational accessibility, quality, and equity. The *realist evaluation* of (Pawson & Tilley, 1997) theoretical framework applied in this study helped to evaluate these PPP reforms based on contextually designed objectives. Conventionally, policy reforms have been evaluated through a single method, which only touches on some aspects of reforms. According to Yin and Davis (2007), the robust evaluation of comprehensive reforms typically requires both quantitative and qualitative evidence. The study addressed the following research questions, framed by, and based on, the idea of examining whether quasi-government policies in education (through PPPs) are effective (or ineffective) in meeting the goals of equitable access to quality education and ensuring efficiency in education.

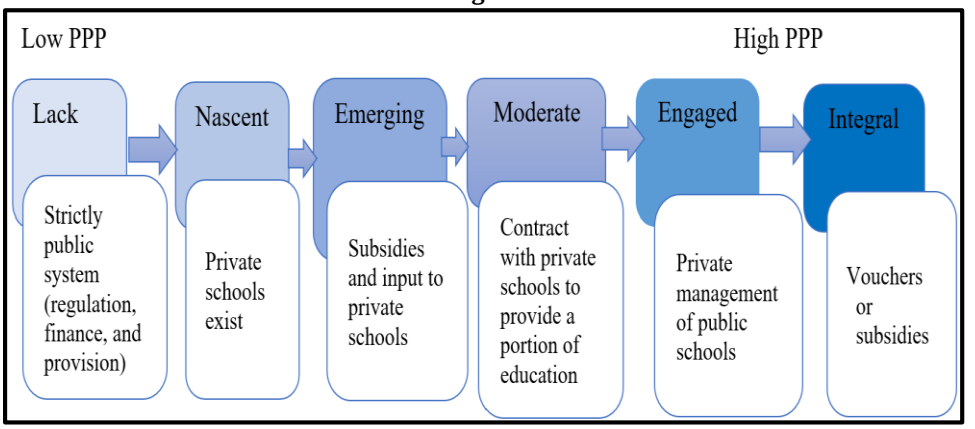
(1) To what extent, how, and for whom does the PPP mode of education through EMOs improve accessibility to education in Sindh?
(2) How effectively and efficiently do PPPs in education through EMOs in Sindh meet the objective of quality education?
(3) To what extent and in what ways do PPPs in education address the issue of equity (as related to gender, income, context (rural, urban), and academic inequality) in education?
(4) To what extent and in what ways are PPPs through EMOs sustainable in Sindh?

2. LITERATURE REVIEW

There are several forms of PPPs in education. Patrinos, et al. (2009) delineated different types and degrees of PPPs in education, as shown in Figure 1. It can be noted that government regulation and involvement decrease as the chart moves from left to right.

In Figure 1, the left side shows low PPP with major regulatory powers at the government level. However, at the far right of the continuum, it shows a high degree of PPP where a school is under the complete private regulatory control form of a PPP with minimum government regulations, and the government's role is limited to providing financing through vouchers or subsidies. Based on the PPPs continuum concept (in Figure 1), different countries or regions have adopted various PPP models and contracts as per their government structure and financing capacity. Sindh has a largely *emerging* and *engaged* model of PPPs in the form of subsidising private schools through the Sindh Education Foundation (SEF) and private management of public schools (through EMOs), respectively.

Fig. 1.



Source: Adapted from World Bank (Patrinos, et al. 2009, p. 16).

2.1. The Emergence of PPPs in Education

PPPs have gained popularity in various sectors in the last few decades and are commonly applied in education. PPPs in education gained prominence in the 1990s when the United Nations (UN) developed the *universal primary education* and *education for all* (EFA) goals, which instruct all governments to ensure 100 percent enrolment at the primary level by 2030 (UNDP, 2015). Various UN-supported agencies offered funds to governments and non-governmental organisations in the setup of PPPs to support their efforts to achieve these and other educational goals. PPP initiatives also generally encouraged the private sector, non-profit, and philanthropic organisations to supplement government agendas on education for all (UNICEF, et al. 2011). The PPP mode is being claimed as a key mechanism to address inefficiencies in public services and reduce inequalities (Gideon & Unterhalter, 2017). Accordingly, the PPPs in education are rapidly proliferating, not only in industrialised countries but also in non-industrialised countries (Verger, 2012).

Due to the globalisation of national economies, the role of international organisations (IOs) increased in the agenda-setting of education reform and policy convergence. Rising international loans, funding, and philanthropy drastically changed states' educational development and policymaking roles. IOs such as the World Bank and Organisations for Economic Co-operation and Development (OECD) are key drivers of policy diffusion of private sector participation in education (Ball & Youdell, 2007). UN subsidiary organisations such as UNESCO and UNICEF also promote private sector participation in developing countries to achieve SDGs (Gideon & Unterhalter, 2021; Rizvi & Lingard, 2010). The educational reform projects based on PPPs in Pakistan currently receive substantial government grants and attract external financing from the World Bank and other IOs (Afridi, 2018). The Asian Development Bank (ADB) and the World Bank have jointly developed PPP models in Pakistan and offered loans for pursuing the EFA goals (Barrera-Osorio & Raju, 2011; UNICEF, et al. 2011). Beyond the World Bank and the ADB (which finance the government to promote the private sector), bilateral partner agencies such as United States Agency

for International Aid (USAID) and the UK Department for International Development (DFID) also use funding and research activities through private sector participation. Pakistan is a large recipient of international donor funding, including the World Bank, the ADB, and USAID. This funding amounts to almost 20 percent of the total education budget (Burki, et al. 2005). In such a situation, the role of the private sector and non-state actors become inevitable. There is also a concern that in Pakistan most PPP programmes remain ad-hoc and have a little systematic impact on access, quality, and equity. Further, the programmes also show little financial sustainability as most of the PPPs are financed by donors and are time-bound, and there is inconsistent financing from the government side (Bano, 2008).

2.2. PPP Programs in Education in Sindh

The Government of Pakistan (GoP) has also adopted the use of private education through PPPs by developing a policy action for resource mobilisation to reduce educational inequality and structural divide through collaboration as mentioned in the National Educational Policy, 2009:

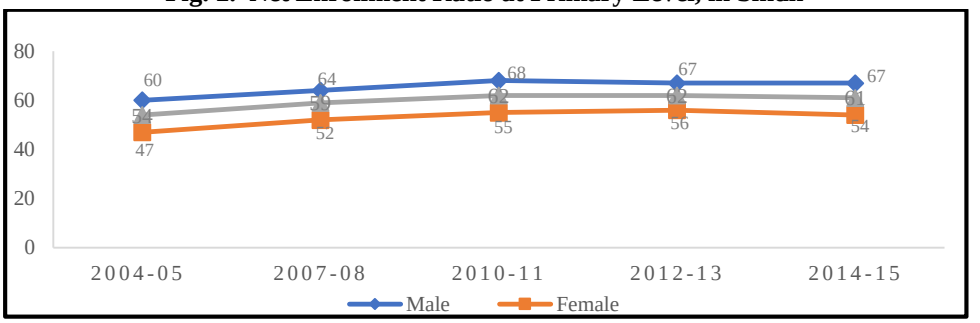
For promoting Public-Private Partnership in the education sector, particularly in the case of disadvantaged children, a percentage of the education budget as a grant in aid (to be decided by each province) shall be allocated to philanthropic, non-profit educational institutions. (Ministry of Education (MoE), 2009, p.20)

The Government of Pakistan currently claims that PPPs in education offers a best-practice means of meeting the UN goal of education for all and SDGs (MoE, 2017). Accordingly, they are pouring resources and efforts into such models, which will likely carry major short- and long-term implications for students and the citizens of Pakistan.

Sindh is the second largest province in Pakistan, constituting 24 percent of Pakistan's total population. However, Sindh's literacy rate is only 56 percent, with urban-rural and male-female disparities. According to the 2017 census (GoP, 2017), about 50 percent of Sindh's population lives in rural areas, and 50 percent live in small urban areas. The poverty rate is 40.1 percent, and the majority of poverty is concentrated in rural Sindh. Moreover, an estimated six million children are out of school (SELD, 2019). This low enrolment is a serious challenge to the education sector of Pakistan. In addition, half of the schools in rural Sindh lack basic facilities such as toilets, clean water, electricity, and building infrastructure (Malik, et al. 2015).

After the 18th Amendment of the Constitution, the policymaking authority of K-12 education has been entirely delegated to provinces. It has been directed that it is the responsibility of the provinces to make comprehensive education plans. Due to the lack of governing experience in Sindh, the challenge was intense to decrease the number of children not attending school (SELD, 2014). The quality of education is very abysmal in the government schools of Sindh. According to the *Annual Status of Education Report 2013* (ASER-Pakistan, 2014) report, 51 percent of grade five students lack grade one competencies in language, and 57 percent of grade five students cannot perform two-digit division in mathematics. The net-enrollment rate is also comparatively low in Sindh. Figure 2 shows the net enrollment rate at the primary school level from 2004 to 2015.

Fig. 2. Net Enrollment Ratio at Primary Level, in Sindh



Source: Government of Sindh, SELD, (2017).

To meet these challenges, the Sindh government launched a comprehensive medium-term reform in 2006-7 called the Sindh Education Reform Program (SERP), the purpose of which was to improve access to equitable education, improve the quality of education, and provide better education governance. In 2013, the Sindh Government also passed the Sindh Right of Children to Free and Compulsory Education Act in compliance with Article 25-A of Pakistan's constitution. This legislation also exerted pressure to bring innovative solutions to the poor education system to maximise enrollment (SELD, 2017). Furthermore, the policy is meant to institutionalise accountability to improve service delivery in education, which should be aligned with National Educational Policy 2009 (SELD, 2014).

The PPPs received support from the World Bank and the ADB (LaRocque & Sipahimalani-Rao, 2019). The World Bank supported the efforts by providing financial assistance and technical support during the Sindh Education Reform Program (SELD, 2014). The role of the non-state and private sectors is deemed significant in the education of Pakistan. According to SELD (2014), the private sector provides 67 percent of education in Karachi and 53 percent in Hyderabad (both are part of urban Sindh). However, in the rural part of the province, private education only accounts for 9-10 percent. To reduce this disparity, the government sought to adopt PPPs in education (assumed as an innovative education model). The PPPs' focus on rural Sindh was to reduce the inequality of the rural-urban divide and out-of-school children (Barrera-Osorio & Raju, 2011). The argument of reducing the urban-rural gap in quality education, offering accessibility opportunities to out-of-school children, and reducing the inefficiency of the government sector (LaRocque & Sipahimalani-Rao, 2019) paved the way for the two major forms of PPP models, i.e., Foundation Assisted Schools (FAS) through SEF, and private management of government schools through Education Management Organisations (EMOs) are discussed below.

Sindh Assembly passed the bill of the Sindh Education Foundation in 1992. Later, the governor of Sindh made it the SEF act. As a quasi-government autonomous organisation, SEF's mandate was to work in less-developed areas and the province's marginalised populations. Later, the World Bank sought the role of SEF to scale up private schools (Barrera-Osorio, et al. 2017). The SEF launched the Promotion of Private School in Rural Sindh (PPRS) through contracting by offering an education subsidy to scale up mass enrollment and paying 500 Pakistani Rupees (equal to 5 USD) per student to the private provider including individuals and local organisations (Khan, et al. 2018). Currently, all schools have been renamed Foundation Assisted Schools, and these schools

can also be called contract schools in the terminology of PPPs. Currently, there are 2,673 schools and 725,000 enrolled students, and 20,959 teachers in foundation-supported schools (SEF website, 2022).

In 2015, the Government of Sindh launched the EMO program with the World Bank, the ADB, and USAID's support to ensure educational accessibility and equity (LaRocque & Sipahimalani-Rao, 2019). Most of these EMO schools opened in rural Sindh and flood-affected areas. The Government of Sindh (SELD, 2017) claims EMO reforms are a milestone toward ensuring educational equity and efficiency. They will help the government get valuable services and investments from the private sector. The objectives of the EMOs reform also include hopes to bring innovation in public schools, reduce inefficiencies and management issues, improve quality, and encourage private sector investment in rural Sindh. To give EMOs legitimacy, the Sindh government drafted the "Concession Agreement" based on PPPs Act 2010 and got it approved by the provincial assembly. The PPPs act attracted the attention of local and international NGOs to reach out to those marginalised areas where the government was unable to reach due to resource inefficiencies (SELD, 2017). The USAID supported 106 school buildings in Northern Sindh, and ADB also started opening 160 secondary schools in the southern Sindh districts under PPPs through the EMO program.

Currently, in Sindh, different types of organisations are operating as EMOs. These are NGOs, higher education academic institutions, and private school systems. These all are Pakistan-based organisations. However, now the government, and its supporter ADB, also intend to add more international school operators to get their innovative services. All EMOs are selected based on a competitive technical and financial bidding process (SELD, 2017). The profiles of EMOs[1] are given in the Table 1.

Table 1

Profile of EMOs Operating in Sindh

Name of Organisation(s)	Description (s)
Sukkur IBA University	A public sector university located in Sukkur that also manages several community colleges and government schools funded by the Government of Sindh.
The Citizen Foundation (TCF)	A non-profit organisation working in the education sector of Pakistan that mainly focus on the less-privileged segment of the society
Indus Resource Centre (IRC)	A Sindh-based NGO that mainly works in education, health, and other social sector activities.
Sindh Rural Support Organisation (SRSO)	A Sindh-based not-for-profit organisation mainly funded by the government of Sindh to work in rural sector development of the province to alleviate poverty through skill enhancement, microfinancing, education, and community empowerment.
Charter for Compassion	A non-profit international organisation that operates in Pakistan in education, health, and other social-related activities.
Health and Nutrition Development Society (HANDS) Pakistan	An international NGO that mainly focuses on disaster management, health, nutrition, and hygiene. Currently also operating in the education sector under PPPs mode
Beacon House School System	A private school system that operates in eight countries, mainly in K-12 education.

[1] The Number of EMOs given in the table is based on the available data of 2021. However, the Sindh government has recently added more EMOs during the study period; these are not part of this study.

2.3. Application of NPM Concept in the PPP-EMOs Model

Our theoretical approach for this study is based on the concept of New Public Management (NPM), which is being claimed as an innovative approach to public policies through applying the values of accountability, managerialism, and decentralisation, to avoid bureaucratic hurdles (Verger & Curran, 2014; Wilkins, et al. 2019). There is a common argument from the supporters of PPPs that decentralisation and separating financial and operational provisions can improve the performance of schools. The NPM concept also emphasises school autonomy and helps hire quality teachers efficiently from the market. In a realist evaluation of PPPs (discussed in the following section), we have discussed EMO schools constructed in Sindh where schools' management has been given to the competitive private sector, but the financing of schools is coming from the Sindh Government. It is assumed that the decentralisation of power, increasing accountability, getting specialised services from the private sector, and mobilising private sector investment all increase the accessibility to education, quality of education, and overall school efficiency (SELD, 2017).

Yet issues arise when contracts are unclear, especially surrounding how one can ensure private sector sustainability when low teachers' salaries are low in PPP schools. Policy researchers also have concerns that NPM emphasises managerial ideas through private sector participation in education, which includes standardisation, decentralisation, and performance-based approaches (Steiner-Khamsi & Draxler, 2018; Verger & Curran, 2014). They further believe NPMs transform education from a human experience into a place that manufactures products by lowering the cost of teacher preparation and increasing standardisation. The current education system is adopting business models that help them increase customers by reducing the cost of education through standardisation in education to incentivise the business sector to enter education, which also lowers the responsibility of the state (Steiner-Khamsi & Draxler, 2018). These implications of NPM can increase inequality. In a realist evaluation, the NPM concept must be fully unpacked contextually. In addition, quality and equity in education also need to be discussed beyond the market approach, which includes local norms, religious/moral values, and social cohesion. We applied the realist evaluation as a quite relevant methodology to answer these context-specific questions. The realist evaluation guides us to review relevant policy documents, develop a theory of change, revise the theory of change with the help of stakeholders, and then design the field to test the theory.

3. METHODOLOGY

We chose the realist evaluation approach (Pawson and Tilley, 1997) to answer the research questions of what extent, how, in what way, and for whom the PPP mode of education through EMOs improves access to education, ensures quality and equity education, and sustainability in the context of Sindh, Pakistan? Realist evaluation is a theory-driven approach. Theory-based evaluation is an approach that focuses on the theories people have about what it takes to create a successful program or policy

(Mertens & Wilson, 2019). According to Pawson and Tilley (1997), public policies, programs, or interventions for social improvement are complex and work differently in different contexts. Therefore, these policies need to be unpacked and tested in context to discover how/why complex programs work or how/why they fail. Realist evaluation is rooted in realist philosophy. It does not ask "what works" but instead asks "what works for whom in what circumstances and in what respects, and how?"(Mathison, 2005, p. 363).

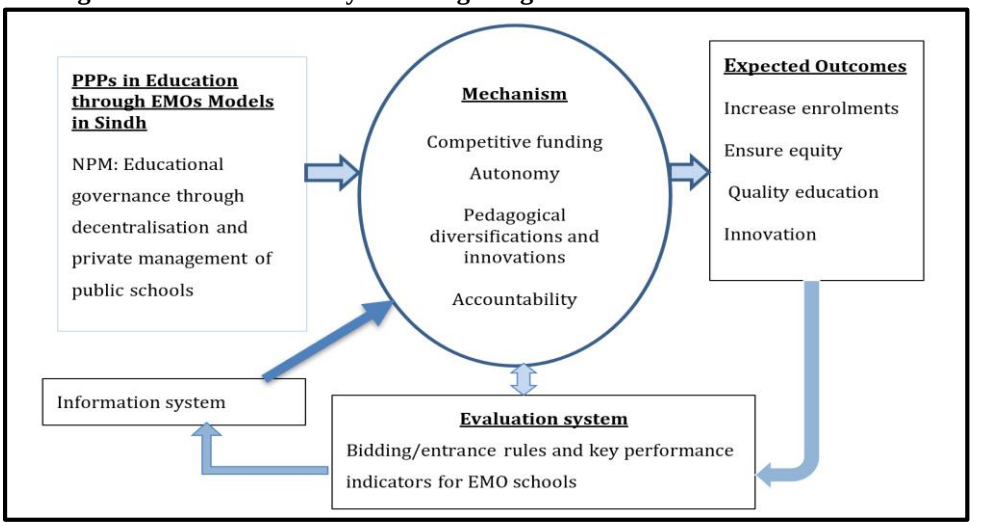
The distinction between a realist methodology and a randomised control trial is that a realist inquiry model (also called a generative model) also includes internal factors such as society and context. To infer causal outcomes (O) between two events (X and Y), one needs to fully understand the underlying mechanism (M) that connects X and Y and the context (C) in which that relationship occurs (Pawson, et al. 2005). Here causality is not based on controlling extraneous variables but embedded in the process (Creamer, 2018). It is sceptical toward the panacea or "context-free" approaches of policies or interventions. In this study, the context was Sindh, the mechanism of EMO policies, and the required outcomes were meeting educational goals (accessibility, equity, and quality).

The core purpose of the realist evaluation is to test and refine the theory. Hence, the context-mechanism-outcome pattern (CMO) configurations in our study attempted to understand how the PPP initiative through the EMO program ensures the private management of the public schools in the targeted areas of Sindh, and brings about access to education, enhances students learning outcomes, and ensure the quality and equity in education in the marginalised, and rural regions of Sindh, Pakistan. The realist evaluation helps develop and test CMO configuration empirically which leads to theory testing and refinement (Pawson & Tilley, 1997). The realist evaluation considers public policies as an assumption about social improvements and needs to be unpacked while designing the study. According to this methodology, researchers need to construct a theory of change (or program ontology) based on policy questions and treat theory as a set of policies that need to be tested in the field (Termes, et al. 2015). Developing a program ontology is a logic model that describes how elements of social reforms (planned activities and expected results) are related to each other in the process (Mertens & Wilson, 2019).

3.1. The EMO Theory of Change

Based on the secondary data, including the policy documents of the EMOs program (please see the details of documents at 1 and 2 in Table 2) and through consultations with policymakers and key informants of PPPs, we attempted to (re)construct the EMOs theory of change. We assumed the theoretical concept of NPM guides the development of a theory of change in the EMO program. NPM is a managerial approach borrowed from the market and applied in public policy and is widely used in PPPs in education (Verger & Curran, 2014). PPP programme through EMOs logic model based on NPM concept is given in Figure 3.

Fig. 3. PPP-EMOs Theory of Change/Logic Model in Sindh Based on NPM



Source: The Government of Sindh, 2017: Termes, et al. 2015.

3.2. Research Design

This study is a mixed-methods case study of the PPP-EMOs program in Sindh. According to Yin (2018), a mixed-methods case study is an empirical method compatible with evaluation research to investigate the real-world phenomenon contextually and in-depth. It likely takes a realist perspective, and in evaluation research, it triangulates multiple (i.e., quantitative and qualitative) sources of evidence. Furthermore, mixed methods offer a third research paradigm that can bridge the schism between qualitative (interpretive) and quantitative (falsification or confirmatory) research. In evaluating PPP-EMOs, we used quantitative data to see what works, and qualitative data to look at the context and mechanism that enable PPPs to be a success or failure.

3.3. Data and Sampling

To evaluate PPP-EMOs that address the questions of equitable access, quality, and efficiency in education, we, therefore, collected and analysed both quantitative and qualitative data of different stakeholders and participants. These included document reviews, secondary data sets, and interviews. We used secondary data collected from the Pakistan Social Standards and Living Measurement (PSLM) survey, School Education Management Information System (SEMIS), and Student achievement Test (SAT) data for quantitative analysis. In the qualitative part, we used document reviews and interviews with key informants of EMOs based on convenient and representative sampling. Thus, in this study, we selected participants for interviews and focus group discussions (FGDs) based on a sample representing all stakeholders of PPP-EMOs. The details of data collection and participants are given in Table 2 below and the detail of participants is given in Appendix A.1.

Table 2

Techniques and Fieldwork of the Research Project

Sr. No.	Techniques	Fieldwork
1.	Document analysis of legal contracts and bidding processes	(a) PPP Guide and Toolkit by SELD and USAID (b) ADB Brief on EMOs in Sindh (c) National Education policy 2009 and 2017 (d) Sindh Education Sector Plan 2014-18 and 2019-21 (e) EMO bidding documents and contracts between SELD and EMOs
2.	Interviews with key informants (policy level)	5 semi-structured interviews: (a) 2 interview each policy developer from SELD (b) 2 interviews with donors (1 from USAID and one from ADB) (c) 1 Independent education expert
3.	Interviews with EMO operators	7 semi-structured interviews: 1 interview with each of the 7 EMO operators
4.	Semi-structured interviews (in EMO schools)	14 semi-structured interviews: (a) 7 semi-structured interviews with 7 EMO Managers (b) 7 semi-structured interviews with 7 EMO school headteachers
5.	Focus groups interviews (in EMO schools)	12 focus group interviews: (a) 6 teachers focus groups (2-4 teachers from each EMO school) (b) 6 parents focus group (2-3 parents from each EMO school)
6.	Statistical analysis of SEMIS, SAT, and PSLM survey data	(a) SAT results of schools before and after EMOs and non-EMO schools within the same geographical areas. (b) SEMIS and PSLM survey data of districts: 7 districts where EMO schools operate

Source: Authors' compilations.

3.4. Data Analysis

In realist evaluation, the development of a logic model or theory of change helps in data analysis which is based on CMO. The CMO configuring tool determines the relationship between input and output (Marchal, et al. 2012). In qualitative data analysis, recorded interviews were transcribed and later translated. The interview transcripts and document analysis were coded in CMO themes that discuss the EMO initiatives' objectives, observed outcomes, context, and mechanism of PPPs through EMOs. In quantitative analysis, we used the descriptive analysis tool to describe SAT, SEMIS, and PSLM data sets to examine the access, out-of-school, and academic achievement

differences between EMOs and other government schools. After analysing the above-mentioned multiple data sets in qualitative and quantitative formats, we concurrently integrated and triangulated qualitative and quantitative data and presented it based on the themes mentioned above (objectives) in the form of tables, charts, quotes for interpretations, and discussions.

4. FINDINGS AND DISCUSSION

The findings of this study are presented according to two broader themes and their sub-themes. These mainly addressed the research question(s), i.e., to what extent, how, in what way, and for whom PPP-EMOs improve access to education, ensure quality and equity education, and sustainability in the context of Sindh, Pakistan. The first broader theme highlights the findings relative to how PPP-EMOs in education are viewed in Sindh and how and through what mechanisms it is being implemented. The second broader theme is regarding the PPP outcomes, i.e., the extent to which PPP models in education served to enhance access, quality, and equity in Sindh in achieving the SDGs and have been organised into a subtheme.

4.1. Evaluation of Educational Reform Policy through PPP-EMOs in Sindh

The main outcome of this theme was to broadly understand PPPs-EMOs and their governance mechanism in Sindh as perceived by various stakeholders.

(a) *Differently Understanding of PPPs in Education by Various Stakeholders*

To unpack PPPs and their scope in education, we first explored the definition and understanding of PPPs at different stakeholder levels. According to Patrinos et al. (2009), PPP arrangements are different according to varying levels of government and private sector partnerships. Its definition and understanding are rooted in ideology, countries' economic policies, social values, and the role of IOs and donor agencies. As per the Government of Sindh (SELD, 2017), the PPP in education is a framework where the government's role would be more of a regulator and policy developer, whereas the private sector's role would be to deliver service efficiently and effectively. However, other stakeholders such as donors strategize PPPs differently. The three main drivers of PPPs in Sindh, namely the World Bank, ADB, and USAID, also have different strategies. The World Bank pushes for more vouchers and low-cost subsidy types of schools in Sindh. On the other hand, ADB is investing more in secondary schools and building infrastructure. The USAID has primarily invested in the Sindh Basic Education Program. Under this scheme, they have supported drafting policies and funded establishing a school operated under the PPP mode by EMOs. In our interview with the donor who designed the PPP model in Sindh, it emerged that his response differed from the Sindh government's definition of PPPs. His understanding of PPPs in education was broader rather than technical support in education:

I want to define PPPs [differently]. . . when [we] talk about PPP, people think infrastructure PPP, private finances to some groups of entity, get together and make consortium, to finance, construct, design, and operate big infrastructure road, high and railways… That's to be a very limited definition of PPPs. I worked with things like broader

PPP: contracting schools, charter schools, voucher programs, and private management of public schools. At the limit, you can consider anything PPP. [In] EMOs we are financing in Sindh. Given that you can have any number of objectives of PPP: Access to quality, and relevant skills just depend on the situation.

The importance of PPPs is also being oversold (Verger, 2012), which aid agencies also later realised as "PPPs is one strategy and ongoing process and not a panacea." It has been reported by donors that PPPs support the government to meet resource shortages through private sector participation. This way, additional support comes from communities, the private sector, and other regions. PPP reform allows the Sindh government to flex policies for private sector support. Along with donors, the Sindh government also reported that PPPs in education bring more resources, benchmarking, and accountability mechanisms.

Contrary to donors' perspectives, the logic and need of PPPs at the Sindh government level are viewed differently as one policy level person mentioned, "In PPPs, donor money is not a gift; instead, it is a loan." The private sector brought its resources and investment. If the private sector brings, they could charge for services in the form of tuition fees, which is allowed in education. The government brings its resources and money, while donors help in policy design. Furthermore, they reported that the need for PPPs arose when the public sector ultimately failed to perform its duty. The government has to meet its obligation of offering quality education and increasing accessibility through better governance. In these instances, the role of the private sector was found essential to implementing educational governance. The private sector has an advantage because it has the power to fire those who do not work.

It was also reported that the PPP EMO concept has not been adequately translated and understood by the public. Spillane (2006) discussed that policy designed at the top level and not properly translated into administrative support and training often gets distorted and misunderstood. At the operational level, partners confessed they signed the contract and read monitoring and other accountabilities but still could not fully understand the agenda of PPPs in a long-term scenario. Few school operators suggested that this setup can work better if these schools are completely handed over to NGOs or private organisations and remove government teachers and staff because it is challenging to work with government-school teachers and get results. Contrarily, others believe complete handover will distort the idea of partnership in the PPP. It is also not fully understood at the top and the local level of the bureaucracy. The head of the PPP node reported that many bureaucrats and local-level administrators also create problems in governance; they feel government schools have been sold to the private sector. This shows that the ownership of PPP schools is still lacking at the government staff level. Beyond the above discussion on PPP policies and their contract complexities, there is a solid supporting voice at the school and community levels. They believe that the partnership model offers a unique opportunity to get services from prominent institutes and organisations, i.e., Sukkur IBA University and the Citizen foundation.

(b) *EMOs Model and Contextual Challenges*

The current PPP-EMO model has some advantages but also creates many challenges as the model is designed and suggested by donors. Donor-driven policies, i.e., PPP Guide

& Toolkit and Sindh Capacity Development Project are prepared under the USAID sponsorship through Sindh Basic Education Program. However, the Sindh government policymakers reported that these ideas of PPP-EMOs are indigenous compared to other PPP policies, i.e., the foundation schools. They claim that it is more vibrant and workable. Despite this, after five years of policy implementation, the Sindh government shifted from the oversimplification and panacea approach of PPP to greater contextualisation of the model. Similarly, the Sindh government also realised that the local understanding of any interventions as mentioned in The Sindh Education Sector Plan and Roadmap (SERP, 2019-24).

A clear understanding of where and why children are out of school will be instrumental in developing localised strategies. This is particularly important in implementing the SESP&R priority program addressing the challenge of gender parity in enrolment and retention. (p. 5).

It is reported that the Government of Sindh is not fully autonomous in designing and implementing PPP policies. Education funding still relies on external cash inflow by donor agencies, and they have their preferences. As one of the donors mentioned in our interview, "Obviously, the development partner has some role in financing and designing. For example, in the Philippines, we developed with the Philippine government. Ultimately the government is getting a loan; the loan has its design".

According to Patrinos, et al. (2009), "A crucial component of any PPP in education is an effective strategic (as opposed to piecemeal or ad hoc) communication plan as this can substantially reduce political risk and be an effective way of promoting a PPP initiative" (p.57). The EMO model initially faced more challenges when the school was handed over to private school chains; a power struggle between the government and EMO staff sometimes resulted in clashes between staff on both sides. One reason reported is that private schools' governance seems different from government-funded schools in the way they deal with employees. As per our investigations not all (currently operating) EMOs understand the local contexts and capacity to navigate the nuances in educational quality and equity. However, some (i.e., Sukkur IBA and The Citizen Foundation) have solid contextual understanding and extensive expertise in education policy implementation.

A large majority of teachers, parents, and local level administrators believe PPP can work better in rural areas where it is needed, where government reach is not possible. However, bringing PPPs intervention near government schools creates a sense of insecurity among teachers, leading to no ownership. They feel all better and well-funded schools are being handed over to private parties. There should be clarity in the PPP model. Not all organisations are entering the field with a philanthropist approach or goal to serve and support the government in education; sometimes, profit is also their motive. Increasing the private sector's interest also raises doubts among the public and policy experts that EMOs in PPPs contracts earn profits on public money.

(c) ***EMOs selection Process: Supply and Demand Mechanism***

As per our investigation, the motivation to run schools is largely based on the supply side, depending on the government's incentives. The NEP 2009 and 2017 and policy documents of the Sindh government also seek the support of the private sector. The government realised the role of NGOs and community-based organisations is crucial and

planned to support these organisations through various ways various, i.e., tax exemption, subsidy, and capacity building**.** It has been revealed by donors such as ADB:

One of the reasons for using EMOs is that SELD cannot run hundreds of new secondary schools, so they cannot staff them, support them, and keep them running. Therefore, EMO is a good model to use for the existing civil society or the private sector companies to manage schools.

The motivation for private organisations also varies. Some social organisations or NGOs claim that their motivation is to serve the community; some private school chains claim that they want to enlarge their activities, diversify their school systems, and ensure quality education. It is a win-win for both parties because the government gets better services, and the private sector earns reputation and revenue. Another reason for motivation is that NGOs were already working or thinking to diversify their work toward education, as the government, USAID, and ADB have already constructed buildings. Therefore, they became ready to embark on this established building. It was less challenging for them to enter than building new infrastructure. The USAID and the Government of Sindh also realised that they should continue their services in the social sector; they are being incentivised to manage schools.

In the school selection process, the PPP-EMO model has a somewhat clear policy and competitive bidding process than foundation schools in Sindh. Their award is based on technical and financial proposal evaluation, which has been carefully designed. This practice has been reported to bring the best out of organisations. In EMOs, the Concession Agreement of PPPs clearly mentions bringing industry practices into the education sector. There are key performance indicators (KPIs) that enable an environment of accountability. Independent educational experts and auditors evaluate the KPIs and ensure financial transparency. It has legal certainty, institutional arrangement, fairness, transparency, competition, contract sanctity, mutual support, and supplementary financing arrangement (SELD, 2017).

There are also some critical aspects of this model. It has been reported that in the PPP policy board of EMOs, many non-educator consultants work for education. They have a limited understanding of the complexities of learning and how to improve educational outcomes. Moreover, many private sector organisations are mushrooming in education as EMOs; they have limited expertise in education, and their team is also naive. It has been reported they are good at manipulation and outsourcing proposal writing. These manipulative tools enable them to enter the market, which is also a matter of concern. Furthermore, the PPP node at the government level is intensely bureaucratic, which contradicts the objectives of innovation. The school contracts need incentive mechanisms beyond monetary rewards for bringing innovation. Also, selecting schools only based on monetary aspects has many disadvantages. As expressed by one of the policies implementors of PPP-EMOs:

In my opinion, PPP should be more flexible [in awarding schools]. At the end of the term, a lot of organisations came to their technical proposal were strong; it's hurtful they lost because of the monetary aspect, as the lowest bidder won.

There is more evidence that the competitive bidding mechanism is creating issues. Many believe school selection based on competitive bidding compromises quality and equity. It is very difficult for the lowest bidder to ensure libraries and labs and concentrate more on disadvantaged kids. These issues make EMOs less innovative in solving problems.

(d) ***Governance through Decentralisation, Autonomy, Competition, and Accountability***

There is no doubt that the poor governance of public schools in Sindh gives a comparative advantage to PPP schools. The reasons are not simple but embedded in the social and political structure of the country. It has been reported that in the government sector, many primary schools were established based on political motivations to appease constituents. School financing is also uniform in most cases due to which some schools remain disadvantaged because of the large number of kids and teachers. There is no mechanism to generate funds swiftly and hire teachers based on need. School headteachers and local administrators are not empowered to tackle these issues. As one government official at the policy implementation level mentioned:

In many schools, one can find a large number of kids but very few teachers. On the other hand, one can also find a dozen of teachers but less than a hundred kids. We do not utilise the budget properly. In some schools, there are many teachers and fewer students, and vice versa.

Autonomy and Accountability

Commonly, government schools lack good governance and accountability mechanisms due to their centralised educational administration. On the other hand, through PPP mode, they apply the concept of NPM. The NPM mechanism based on decentralisation, school accountability, and incentive-based performance yields better output (Wilkins, et al. 2019). It has been reported that due to decentralisation, decision-making on teachers' hiring, remunerating, and firing process is swift and better outcomes could be achieved. It also can make pedagogical innovation and finance different units easily. According to the PPP documents of the Sindh government, in PPP mode, NGOs and community-based organisations are encouraged by sharing the power of administration. They play a crucial role in supporting the government agenda by managing government schools. Compared to government schools, PPP schools are more empowered as one EMO operator mentioned, "We have power, resources, and budget so we can improve schools . . ."

In most PPP schools, the administrative process is easy and meet parents' expectation. During the admission process, PPP school administrators and parents showed satisfaction in taking care of students' records and cross-checking certificates and other issues when needed. There is also a follow-up of students' records. Government schools show relatively more bureaucratic processes; in those cases, many kids of poor and uneducated parents discontinue their schooling. There is more accountability in privately managed schools compared to government schools. However, UNESCO (2017) suggests that accountability should be beyond indicators such as students' report cards and penalizing schools by reducing their funds. It should be holistic, including supporting schools in resources and community ownership of schools.

Competition, Differentiation, and Innovation

The NPM in education claims that diversification and differentiation in schools create an environment of competition and innovation (Verger and Curran, 2014). As the PPP document of Sindh claims and hopes, new types and models bring new practices and pedagogical innovation. As per the evidence we collected, some schools or organisations

(who have extensive school management experiences i.e., Sukkur IBA and TCF) had competitive advantages and offered very effective training and professional development relevant to their classroom effectiveness. However, the market approach to the competition itself distracts innovation. It has been reported that innovation is more tied to collaboration to solve chronic issues rather than creating competition. Another critical aspect of PPPs as revealed by some participants was that education is being handed over to non-educationists, who only bring cosmetic changes rather than radical ones. Though EMOs offer a conducive learning environment due to their enough funding, no pedagogical innovation was found to solve poor quality issues and ensure equity in challenging areas. Only standardisation and ranking of schools increased, which is the byproduct of the market-based approach to education (Steiner-Khamsi, 2016). Furthermore, in the name of innovation and competition, schools have created a manipulative environment in the education system, where private school owners and PPP operators attract parents and families by showcasing and focusing more on the English language. This practice also undermines the local languages.

(e) ***Monitoring and Evaluation***

PPP policy experts and implementing agencies believe that in Sindh, and generally, in Pakistan, there is an enormous inefficiency and a lack of monitoring. In conventional government schools, a large number of teachers are ghosts, who have political backing, and the government can't make them accountable. As reported by a participant "In many of the cases, the appointed teachers are somebody influential's relatives; whatever their qualification, they got appointed." In a government setup, there are many constraints to firing teachers who do not perform. There is also less chance for deserving employees to grow based on performance. As a result, the government system will not yield adequate educational outcomes. There are also several political and legal challenges, which nobody wants to touch. Therefore, the PPP has advantages as narrated by one of the policymakers:

It is very difficult to operate in such regulatory environments; there are huge constraints on teacher hiring or firing [in a government set-up]. One of the difficulties is hiring qualified staff and paying them well. The PPP gives a chance to manoeuvre around it.

Therefore, the PPP has a relative advantage as partners' performance is aligned with educational quality and access, and there is a specific monitoring system that ensures accountability. In the PPP, if teachers do not show up, they can be fired easily. As one policy developer elaborated, "there is accountability. It is a hope [to] bring better management skills in the education sector. It is also about trying to pay what you need to pay." In the EMO-PPP model, schools' monitoring and evaluations are enlisted based on KPIs outlined in the PPP document.

There is also adequate criticism of the monitoring of the PPP model in Sindh despite SELD and USAID's added condition of independent experts and audits who monitor and evaluate. As per our investigations, most experts lacked rigorous educational knowledge and experience. These consultants were mostly hired on ad-hoc bases. Steiner-Khamsi, et al. (2016) perspective for ensuring quality and equity in education is narrow. The existing monitoring system is well-suited for ensuring infrastructure and facilities. However, they lack the capacity to investigate and ensure the core aspects of education, i.e., access,

quality, and equity. It has been emphasised the government should add more credible educational institutes in monitoring and evaluation, that continuously evaluate based on research and evidence-based information. Compared to Sindh, Punjab has introduced real-time monitoring for all schools, which has improved students' and teachers' availability through better use of technology (Government of Punjab, 2022). Another issue in monitoring is that PPP contracts have a lot of grey areas. Many EMO partners believe these KPIs are somehow ambiguous and contradictory. For example, the KPI of increasing student enrollment is difficult as the schools are already at full capacity because schools have nice buildings and resources, which attracts kids from other schools. KPIs such as community engagement and capacity building can be manipulated by fake reporting, and their impact cannot be monitored through self-reporting by private partners.

(f) ***Teacher Hiring Mechanism, Remuneration, and Security***

In Sindh, there is a teachers' recruitment policy for government schools, which is uniform for everyone based on specific criteria. Teachers' recruitment is centrally administered through an open advertisement, which is a long process. However, in the PPP model, including EMOs, this structure is entirely different; they hire locally, based on their needs. In this model, higher qualifications and teacher certifications do not matter, and the process is much quicker. As reported, for instance, if they need a teacher for maths, they can complete the recruitment process in days. Even if they do not have a budget, they can hire a volunteer. In PPP documents, there is no specific guideline for teachers' recruitment. The lack of framework and mechanism also raises questions on ensuring teachers' commitment and proper regulation in the private sector as per the labour laws. The salary of government-school teachers is many times the salary of the private sector teachers. We found that except for Sukkur IBA, the rest of the EMO teachers' salary is very low. This is why only leftover teachers get jobs in PPP schools, and all teachers desire government jobs.

A big concern being raised regarding the PPP model is that of lower salaries and job security of teachers. They are being hired based on simple contracts. Afridi (2018) reported that the PPP mode adds less qualified and low-paid teachers to the Pakistani system, compromising education quality and violating labour laws. It is a common perception among all teachers that the government set-up is more favourable for teachers, and in the PPP model, teachers are more vulnerable and insecure. Many teachers shared their stories in which told that they are local, and are looking for some experience and salary to survive, which PPP schools offer. They said if they get another opportunity, they will leave.

(g) ***Financing, Efficiency, and Equity***

Educational financing in Pakistan and Sindh is quite inefficient and unfair. Most of the school financing in the government sector is uniform or based on the number of students or special grants/funds approved through political patronage. Due to a lack of systematic and equitable financing, a considerable budget goes underutilised. According to NEP 2009 estimates, funds ranging between 20 percent to 30 percent of allocated funds remain unutilised (MoE, 2009). The option of PPP is considered to regain trust in education and to make true educational goals. It is claimed that the PPP is an innovative model, and the EMO model may attract better education organisations.

As per the analysis of PPP documents, EMOs also have a more bureaucratic bidding process as requests for proposals and then selecting organisations take a long time. The lowest financial bidding mechanism can compromise quality and manipulate the system. The EMO model is comparatively more costly than government schools and even many times the foundation model of PPP. The policy document creates another inequality. As per the document, international partner organisations have a higher bidding range than local partner organisations. The implication can be reflected in schools' output and disparity in student quality.

The PPP model claims that the current design offers equity in education. However, based on our investigation, we found many loopholes. There is no incentive or extra support for students with disabilities or additional support for teachers and staff who address these challenges. It has been suggested by various policymakers that more equitable funds transfer in PPP could be through targeted vouchers, which has been suggested for Sindh. Allocating more vouchers to girls' education or paying more funding to schools that enrol more students with a specific poverty score can ensure equity.

(h) ***Community Participation***

In our interview process, we found that donors and other policy-level persons believe that in a PPP-EMO set-up, with community support, there is a possibility to pool resources from donors, government, and community, which has been successful in several countries. We also found that the involvement of the community and participation of parents is essential in bringing out-of-school children and ensuring quality education. It has been confessed that although there are excellent people in the government, they could not perform due to a lack of coordination with the community. Another factor in the absence of democratic participation of the community is that there is a vast disparity in education in Pakistan. Most middle-class and affluent parents send their kids to private schools, so their interest is relatively low or negligible in government and government-subsidised free schools (Rashid et al., 2015). An increasing number of private schools has also reduced parents' trust in the government. As accountability from the parental side is reduced, government schools are losing their quality continuously**.**

It is also claimed that bureaucracy does not care about parents' and community's wishes in the government sector. The private sector is more task-oriented, and without community participation, it cannot fulfil educational tasks and objectives. Therefore, the PPP model is well-suited to community participation. In the PPP design of EMOs, there is a community mobilisation unit, and community involvement is one of their KPIs. It has been confirmed by various stakeholders the level of community involvement, and trust increased in the EMO set-up.

The blind spot of this set-up is that these mobilisations are funded and based on short-term goals. Among many PPP operators, these are considered less sustainable because it is a one-sided push or drive that creates less bonding. Therefore, the push should be mutual. There is also a criticism of the PPP model that this model lacks democratic governance of schools, and parents and the community are not empowered enough to hold schools accountable. The role of the community is not legally and contractually guaranteed, so, in many cases, the parents' and the community's role is passive and taken for granted. Although many parents and school administrators mentioned that this model has increased

parents' visits to the school, still, their visits do not fully hold the operator accountable as most of the school's decisions are taken by the operator and governments. In designing education policies, policies are never discussed at the bottom level, parents' voices are never heard, and even teachers feel surprised when new policies are implemented.

4.2. PPP-EMOs for Access to Equitable Quality Education, and its Sustainability

The broad objective of this central theme is to discuss the findings regarding the role of PPPs in achieving educational goals of access, quality, equity, and sustainability in Sindh.

(a) *Access and Equity in Education*

The inability of the government to add more post-primary schools and open new schools with an increasing population causes a huge gap in achieving the objective of access to education. It has been realised that the main reason for dropping out is that initially Sindh government only targeted opening primary schools through PPP mode supported by the SEF. Currently, in Sindh, there are 45,447 public schools, out of which 41,131 schools, i.e., 91 percent, are primary schools. There are 12 million children aged 5-16 years in the province, out of which 6.67 million (approximately 56 percent) are out of school (SELD, 2017).

It has been reported that by learning lessons from a smaller number of middle and secondary schools, the PPP mode also reformed itself to focus more on post-primary education. It is hoped that current PPPs through EMOs can help to build and increase access and ensure proper schooling requirements. Although the EMO model of PPP shows some achievement in increasing access, more considerable impact is still far behind. Table 3 below shows an increase in access due to EMOs.

Table 3

Student Enrollment and Attendance

		Enrollment				Attendance			
	No of	Baseline		Current		Baseline		Current	
EMOs	Schools	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys
Beacon House	1	0	373	119	393	0	66%	96%	92%
CfC	14	2,331	5,472	3,417	6,608	59%	61%	100%	100%
HANDS	3	179	742	378	1,039	43%	58%	77%	79%
Sukkur IBA	10	704	1,616	1,048	1,940	58%	69%	56%	NR[2]
IRC	4	649	2,073	754	2,366	25%	52%	57%	64%
SRCO	2	123	430	164	489	61%	65%	71%	70.50%
TCF	19	5,701		6,116		NR		71%	
Total	53	20,390		24,831					

Source: Data collected from the PPP node of the Sindh government based on the report of 2020-21.

The impact of education reform cannot be viewed in isolation. As SELD (2017) claimed, PPP-EMOs will largely address bringing out-of-school children to increase post-primary enrollment in selected districts. Based on our analysis of the SEMIS data of Sindh

[2] NR = Not reported.

and PSLM surveys of these selected districts, the EMO model so far has not been able to address the larger goal of the educational access issue. Table 4 and Table 5 below highlight the picture of EMOs districts before and after EMO interventions.

Table 4

Schools Monitoring Report of Selected Districts Before EMOs Intervention 2014-15

	Students' Enrollment		Total Enrollment Gender-wise			Primary Completion Rate				
Districts	Primary+ Pre-primary	Post-primary	Boys	Girls	Total	Boys	Girls	Total	STR[3]	OSC[4]
Khairpur	222,377	88,530	192,119	118,784	310,903	61	47	54	34	55
Sukkur	110,690	43,348	95,092	58,946	154,038	53	38	46	30	47
Larkana	154,196	101,730	128,924	90,002	218,926	73	60	67	31	50
Kamber-Shahdadkot	129,848	42,121	105,785	66,184	171,969	60	49	55	31	71
Dadu	189,381	48,299	140,520	97,160	237,680	68	61	65	35	42

Table 5

Schools Monitoring Report of Selected Districts After EMOs Intervention 2019-20

	Students' Enrollment		Total Enrollment Gender-wise			Primary Completion Rate				
Districts	Primary+ Pre-primary	Post-primary	Boys	Girls	Total	Boys	Girls	Total	STR	OSC
Khairpur	258,258	92,353	217,215	133,396	350,616	49	25	38	39	48
Sukkur	135,585	50,654	112,273	73,966	186,239	77	68	73	41	48
Larkana	192,352	73,623	152,861	113,114	265,975	54	42	48	38	56
Kamber-Shahdadkot	148,549	50,402	119,194	79,757	198,951	51	35	44	39	46
Dadu	173,952	58,201	141,682	90,471	232,153	69	54	62	38	40

Sources: Authors compilation based on SEMIS Sindh and PSLM survey 2014-15 to 2019-20 data.

It was reported in interviews that PPP-EMOs have limitations to increasing access because this model is quite costly, and the number of schools is relatively low as the current number is about 100. In EMOs, a school can accommodate a certain number of students. This has also created an environment of admission tests, excluding some kids from accessing quality education. Against the requirement of KPI, most of the EMO operators responded that they do not go for admission drives because the capacity in their schools is already full. The right design and regulatory framework of PPP can also motivate students and parents to remain in touch with schools and increase students' attendance. The foundation school model and targeted vouchers have been able to bring out-of-school children to schools as they incentivise the stakeholders to bring children into schools.

Educational equity is a big concern and a serious challenge in Pakistan. As NEP 2009 (MoE, 2009) mentioned:

The educational system in Pakistan is accused of strengthening the existing inequitable social structure as very few people from the public sector educational

[3]STR refers to the student-teacher ratio, calculated based on the number of students per teacher.

[4]OSC refers to the rate of out of school children at the age of (4-16), as per the given data PSLM survey (2014-15) and (2019-20).

institutions could move up the ladder of social mobility. If immediate attention is not paid to reducing social exclusion and moving towards inclusive development in Pakistan, the country can face unprecedented social upheavals.

In order to increase the participation of children from disadvantaged and hard areas, the PPP model lacks a special mechanism or design. In Sindh, within districts, some villages are better than others. In some places there is tribal system, some people feel more secure and interested, and others are apathetic toward education. Special provisions and targeted incentives can bring children to schooling from challenging areas. It was also reported that the current uniform policy of admission and schooling hardly addresses the problem of those parents who are continuously migrating for livelihood. Though the PPP model has some advantages in retaining children but fails to address those children who dropped out of school because of a poor academic base, poverty, and child labour. The local partner suggested that there should be a remedial education in the PPP model along with an incentive or stipend for those students.

Based on our interviews with parents and teachers, we found that PPP schools are more attractive for girls. Parents feel more secure sending their girls to these schools as more female teachers are recruited based on convenience and need, which also win parents' trust. However, educational inequalities are mostly based on social and economic factors. The increasing role of non-state actors and the PPP model in education exacerbate inequity (Afridi, 2018). Due to the nature of the PPP model being more market-centric, it incentivises operators to select more able-bodied students. When we inquired from the operators, they all believed in equity. Still, they felt the system would not support students with different needs because schools do not have specialised staff and supporting material and incentives.

(b) *Quality Education*

Another objective of PPP in education is to ensure quality education. The Sindh government has planned in SERP 2019-24 to increase the quality of education through upgrading educational facilities, adding more qualified teachers, and inclusive education. As narrated by a PPP director, "PPP model was adopted because government schools' quality was not improving, the lack of specialised teachers and teacher absenteeism." The autonomy of schools through PPP offers a good opportunity to ensure quality. Though PPP schools offer some level of better-quality perception due to accountability, it has created a huge difference in quality based on different management of schools. Some PPP schools (i.e., Sukkur IBA and TCF) perform extraordinarily well, while others perform relatively poorly. This difference is because some organisations have a comparative advantage in operating schools. For instance, Sukkur IBA is already managing schools for the last two decades and has a strong team of educational experts and teachers compared to local NGOs who have limited capacity and teams. Poor regulations, more competition, and standardised assessment in PPPs are to for less inclusiveness and differences in quality.

Educational standards and assessments are also complex and mean different things to different stakeholders, i.e., teachers, parents, and administrators. For example, some believe quality education is if students perform well as per their syllabus, while others think that students should have better result cards. Many teachers disclosed another challenge, which is that in some PPP schools, children have different levels based on their educational history and huge disruption in schooling. It is challenging to ensure better quality education and learning without

addressing their learning deficiencies and proper support from organisations. The current debate on quality education is never concerned with students' physical and mental growth, better communication of local languages, and solving complex social problems.

A significant factor to gauge quality is the annual assessment based on large-scale examinations and standardised tests. This is a more outcome-based approach to ensuring and assessing quality education. It was reported that a major flaw in this approach is that it is not fair to compare schools in far-flung areas with schools in urban advantaged areas. Students with low socio-economic status are always portrayed as low achievers. Educational quality should not be limited to test scores but should include student participation, learning life skills, ensuring better availability of infrastructure and labs, and well-qualified teachers, which comes with the approach of input-based quality assurance (Steinner-Khamsi, 2016). Most unbiased stakeholders believe that overall quality education is the same in government schools and PPP schools. Comparatively, PPP schools have better governance and management, which reduce students' and teachers' absence. On the other hand, PPP schools' teachers are less qualified and low-paid and cannot teach advanced courses adequately. The Sindh Student Achievement Test (SAT) results (see Figure 4, Figure 5, and Figure 6.) also show that there is no significant difference in the achievement of EMO schools and government schools of the same region (Figure 4 and Figure 5), and between EMO schools before and after EMO interventions (Figure 5 and Figure 6).

Fig. 4. SAT Results of EMO Schools in Selected Districts

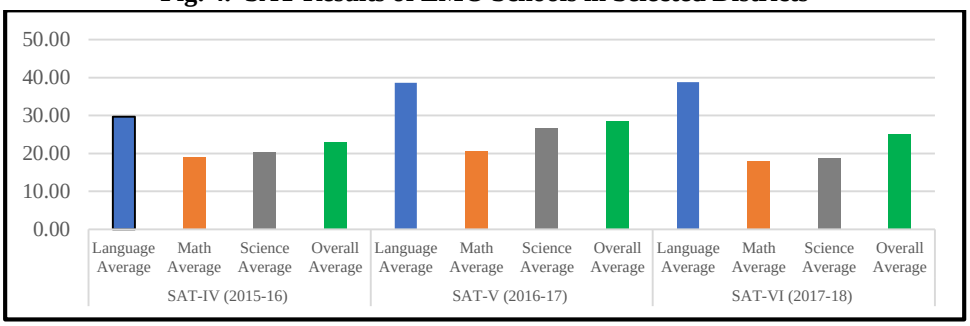
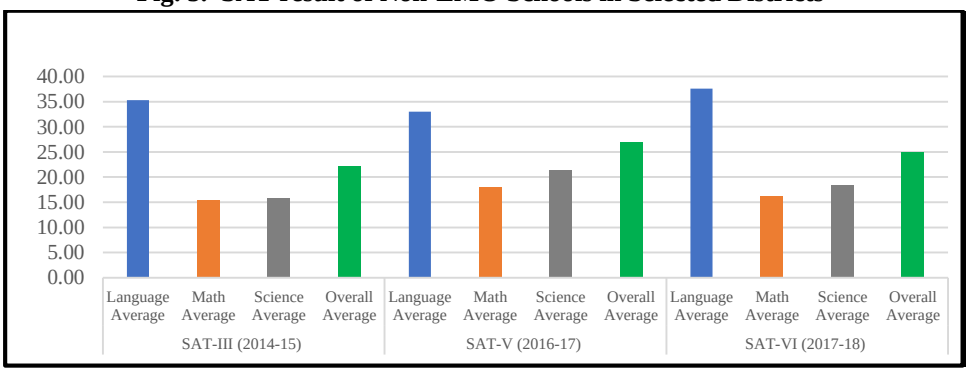


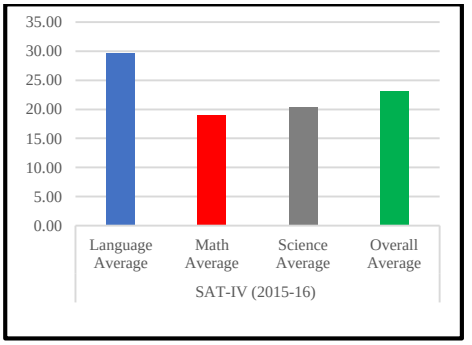
Fig. 5. SAT result of Non-EMO Schools in Selected Districts[5]



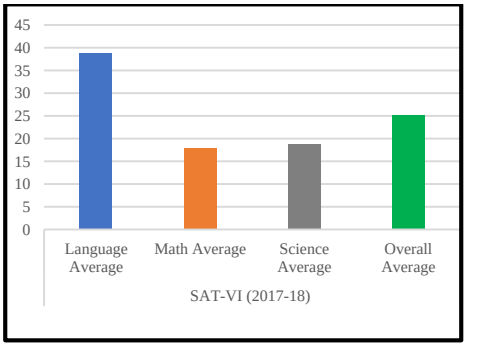
[5]Selection criteria of non-EMO schools in SAT analysis were based on nearby non-EMO (government) schools in the same union council or tehsil.

Fig. 6. SAT Results of Schools Before and after EMOs Interventions

Before EMOs



After EMOs



Source: Authors' compilation based on the analysis of SAT Sindh results.

(c) *Sustainability of PPP-EMOs in Sindh*

Though PPPs in education are currently increasing in Sindh and Pakistan due to the UN's demand for access to education and external forces such as donor agencies, there is also a big concern about its sustainability among stakeholders. In the EMO model, schools are handed over to organisations for a 10-year contract period as per the requirement of USAID and the ADB. These schools will learn from the process and will be sustained based on government funding. Many EMO operators and stakeholders show concern that as the government bureaucracy and administration processes are outdated and corrupt, schools will struggle to survive. There are myriad examples in Sindh where schools supported for a short term by donors' schools closed down, or are performing poorly after the support was pulled out.

It was reported that the sustainability of PPPs can be retained if these schools' financing is guaranteed. There should be a financial endowment with a proper plan. Also, there should be a board of governance composed of local experts and school staff, who should be continually trained. Once organisations pull out, the school can be run and pay teachers and staff through the endowment and continuous government and community support.

It was also reported that PPP schools cannot fill the government schools' system gap. This may lead to more waste of resources by building an entirely new system. There is no evidence of the complete success of the PPP model (Verger, et al. 2020). Rather than opening PPP schools everywhere, the Sindh government is planning to open them in targeted areas where government machinery cannot work properly or is difficult for the government to reach. The collected data revealed that there are also negative externalities of the current EMOs for other public schools. As per the views of teachers and school administrators, due to a better perception of the performance of PPP schools, there is pressure from parents to pull out their children from government schools to send them to PPP schools.

As the objective of PPPs is to be a helping hand to the government, their role should be more supportive of government schools based on the cluster school model. This will increase collaboration among schools through better teacher professional development to achieve the same goals.

5. CONCLUSION

The PPP-EMOs model is claimed to be a relatively more systematised model of PPPs in Sindh, which mainly focuses on post-primary education. Its better funding and large investment in infrastructure have created a better perception of the learning environment. However, due to donors' design and investment, its policies and objectives are not fully realised, which creates several contextual challenges. Compared to government schools, generally, PPP schools offer better governance, including administration, monitoring, and accountability mechanism. It succeeded in ensuring teachers' and students' attendance but does not show any significant improvements in terms of equitable learning for the students. The selection of EMOs through competitive bidding ensures transparency. However, the selection of the lowest bid proposals and loose (educational expertise) criteria ended up in the emergence of low-quality organisations. Those EMOs that have extensive educational management expertise and better incentive mechanisms for managers and teachers offer relatively better outcomes compared to NGOs that have limited scope in education policy implementation. Overall, the existing EMOs fall short of addressing the broader issues in education, i.e., accessibility, quality, and equity. Compared to FAS, EMOs are in limited numbers and are a relatively expensive intervention. Moreover, this reform might not be replicated in the entire Sindh because of financial, legal, and other constraints. After donors' withdrawal, its sustainability would also be a real challenge. Moreover, PPPs are not a silver bullet for education reform. However, developing and sustaining better PPP models depends on the government policies recommended beyond the interventionist or piecemeal reforms on a limited scale. It needs to be based on the supply and demand mechanism, innovative and equitable financing, and the optimal use of resources. The analysis of the collected evidence revealed that a more targeted model of PPPs, need-based funding, and incentives can help to bring out school children from disadvantaged areas and increase girls' education. School decentralisation and accountability must relate to the democratic governance of schools. The PPP contracts between the government and private sector must not ignore important stakeholders such as the community and teachers.

6. RECOMMENDATIONS AND POLICY IMPLICATIONS

Our policy recommendations are based on a realist evaluation of PPP-EMOs. We found that PPPs are neither entirely efficient and effective nor a complete failure. We found that PPPs in education can be evaluated based on their merit. Similarly, we found that PPPs are not a panacea for everything that ails education. Moreover, PPPs are not a reason for the government to withdraw from its responsibilities. Following are some policy recommendations for education reforms, including PPPs.

6.1. Right Design of PPP Policies

The ultimate effect of PPP depends on a policy design that ensures quality and equity. Huge investment in infrastructure and better funding attracts private partners, but it also constrains resources to scale up the model. There should be a better regulatory approach in PPP, and it should be clear so that the children from disadvantaged communities are prioritised. The opening of schools should be based on socio-economic

conditions, where more incentives and subsidies are to be allocated to the area where socio-economic conditions have deteriorated. Targeted vouchers or subsidies are recommended, which especially focus on disadvantaged areas. Most of the schools located in underprivileged areas are underperforming due to the unavailability of quality teachers and challenging conditions. There is no supportive funding and incentives in the current PPP mechanism. There should be supplementary funding (including incentives for teachers) for schools that belong to the disadvantaged area. The government must create a solid framework for creating a partnership and the objective of educational operation and funding strategies. The donor money and policy recommendations should also be better negotiated while applying the contextualised framework.

6.2. Education Accountability and Regulation

It is an accepted premise that market forces and non-state actors have a certain educational agenda, so their approach is limited. There should be a more balanced approach to educational accountability, which also includes the input-based mechanism (i.e., supportive resources and quality teachers) along with outcome-oriented and standardised assessment. The students' learning achievements are more complex and personalised, so these should be treated separately from other dimensions (i.e., availability of infrastructure and teachers, etc.) of the KPIs. The monitoring and evaluation mechanism of students' achievements and progress tracking should be done through a panel of educational experts who have extensive research and practice-based experiences in the field. School regulations should be supportive and fair, and all kinds of bureaucratic hurdles should be removed. Also, there should be minimum criteria for teacher and staff recruitment, their qualifications, and the payment process. There should be more democratic accountability and governance of schools where the role of parents should be alleviated.

6.3. Different PPPs should be under one System

In Sindh, there are various models of PPPs operating and proliferating. However, there are two major forms of PPPs, i.e., FAS and EMOs, in the K-12 education system. It is recommended that all PPPs be under one system to increase synergy and reduce inequitable funding and regulations of schools. This approach also reduces segregation and stratification of schools, students, and teachers. The best possible way to get collaboration among schools is through a cluster-owned system, where nearby schools are managed by a hub school irrespective of their provision (either public or private). As per UNESCO's (2017) recommendations, the government needs to see all schools, students, and teachers as part of a single system. Furthermore, different donors and PPP actors work together and acknowledge each other's work. So, the role of government should be to streamline policies, rather than acting in bits and pieces.

6.4. Availability of Robust Data

The evidence relating to the impact of PPPs, regulatory measures, PPPs performance in a particular context, and education providers' behaviour is still scarce. There is a concern at many stakeholders' levels that currently available data on students' enrolment and

assessment (based on local exams) are unreliable. The data on private schools is based on estimates, and the same student is enrolled in a government school and a private school. The data collected by the World Bank and UNESCO is also based on administrative, which is collected hastily. Designing policies on inauthentic data do not help in developing better strategies. Therefore, the Sindh government needs to streamline all types of schools and adequately manage the data with the help of technology.

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Improving the Public Sector Development Programme Allocations in the Clientelistic Environment of Balochistan: A Political Economy Analysis

MIR SADAAT BALOCH and NADIR KHAN

Successive governments in Balochistan have failed to streamline the Public Sector Development Programme (PSDP). This study discusses how political clientelism influences the process of PSDP by diverting scarce resources to create incentives for powerful political actors to keep the public dependent and poor. An analysis of the disbursement of PSDP in the 10 districts in the last ten years clearly shows that some districts with more population and area receive fewer funds as compared to less populated and smaller districts. This paper formulates a mathematical model that estimates the amount to be allocated to each district. Then to further prioritise the projects of any department a performance matrix is developed. The matrix ranks the public sector development projects.

Keywords: Clientelism, Development, Balochistan, Performace Matrix, PSDP Allocation, Poverty

INTRODUCTION

This paper is about the Public Sector Development Programme (PSDP) in Balochistan. The province has always been on the development agenda of every political party, but, sadly, we have not witnessed any meaningful development in the region. The growth rate of the region is the lowest in Pakistan. After the 7th NFC award and the 18th Amendment in 2010, the people of Balochistan anticipated an era of sustainable development, but this fiscal autonomy has proved to be a zero-sum equation. The PSDP is considered a key component in improving the socio-economic outlook of an area. However, successive governments have failed to streamline it despite repeated directions from the High Court and the Supreme Court to plan it effectively. During 2017 and 2018 no new development projects were undertaken as the matter was sub judice. Even in the following years, the PSDP was challenged in the Balochistan High Court and the Supreme Court of Pakistan as the opposition claimed that the allocative efficiency and distributive justice were very low. Finally, the opposition, with the help of the ruling party, changed the incumbent Chief Minister of Balochistan as he was not addressing their clientelistic demands. The province is experiencing a clientelistic environment that is affecting the overall development of the area. This paper discusses how effective PSDP allocations can be done in a clientelistic environment.

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Keeping in view the events of the last five years, it is imperative to find ways to improve the process of PSDP allocations. For this study, resource allocation means the projects allocated in the PSDP to different departments and districts. In this paper wherever resource allocation is mentioned it means the PSDP allocations, which is the case in the relevant literature as well. Ideally, the PSDP allocation should be based on a prioritisation exercise keeping in view the challenges in the province. However, in Balochistan political clientelism plays a major role. Financial allocations are mostly done based on what could be best described as an incremental approach: a certain fraction is added to the department's previous year's allocation every year without a rigorous investigation of the departmental needs and impact of previous allocations. Based on these issues the research has devised the following aim and objectives.

Scope

The main focus of the current study is to formulate a mathematical model and develop a matrix for only four departments, namely health, education, social welfare, and communication and works in the province of Balochistan.

Rationale

To suggest better methods and tools for the improvement of PSPD allocations in Balochistan.

Objectives

(1) To understand the influence of political clientelism on the process of PSDP allocations in Balochistan.
(2) To suggest more effective ways for resource allocation.
(3) To discuss policy inputs for the improvement of PSDP allocations.
(4) Based on the rationale and objectives, we answer the following three questions based on the findings:
(5) How political clientelism influences the process of PSDP allocations in Balochistan?
(6) How effective resource allocation can be performed in Balochistan?
(7) What are policy inputs for the improvement of PSDP allocations in Balochistan?

Before discussing the literature related to resource allocation, we examine the current system of development budget allocations in Balochistan below.

LITERATURE REVIEW

Development Budget Allocation System in Balochistan

Budget allocation in Pakistan is based on budgetary demand, which covers both the development and the non-development sides. On the other hand, the current mechanism used in Balochistan for development budget allocations can be best described as incremental (Green, et al. 2000). Franklin & Ebdon (2020) and O'Hagan, et al. (2020), claim that, in theory, development budget allocation should be done with the involvement of focal persons, which are district officers at the grassroots level in the case of Balochistan. However, contrary to what is argued by Panday & Chowdhury (2020) and Williams, et al (2019), in Balochistan, a centralised approach is used as most of the decisions are taken by the provincial capital, Quetta.

Mostly, departments do allocations without the involvement of key stakeholders, such as the general public or the private sector (Escobar, 2018). Furthermore, any changes such as the addition/deletion of resources are done based on political clientelism. This implies that there is no specific plan or policy for development budget allocation in Balochistan as suggested in theory (Dias & Julio, 2018; Franklin, Krane & Ebdon, 2013; Glodfrank, 2020).

There are other weaknesses in the process as well. For example, we can hardly witness any productive debates being conducted for budget allocations (Head, 2007). The majority of budget meetings are rushed, and their sessions are not long enough to ensure that the process is as inclusive and successful as it should be (Bostan, et al. 2021; Jobaid & Khan, 2018; Jackobsen, et al. 2016). Finally, a budget document is presented to the assembly for approval without any discussion by the members. Hence, as argued by McGuire, et al. (2020), the development budget allocation turns out to be a mismatch between the people's needs, the required facility, and allocated resources. There is a huge gap between what certain districts actually need and what they get. In the following sections, we discuss the relationship between public expenditure and resource allocation and how it is influenced by political clientelism, and how multi-criteria decision analysis can help in effective resource allocation in Balochistan.

Public Expenditure and Resource Allocation

Public expenditure efficiency has been a debatable issue for both academics and non-academics (Khan & Murova, 2015) because public expenditure makes a huge percentage of domestic output and it has a direct influence on public policymaking whether it is education, social welfare, public safety, health care, or any relevant social issue (Khan & Murova, 2015). Albassam (2020) argues that to bring efficiency to public expenditure, budget allocations play a vital role in the development and prosperity of an area. Therefore, dealing with public expenditure in terms of resource allocation remains the hardest job, particularly, in developing countries. In developing nations, it also has a significant role in the monetary development and the prosperity of people.

Further analysis of the importance of resource allocation during capital expenditure shows that there is a positive relationship between capital expenditure and growth rate. However, some researchers have argued that there is no association between the two. Thus, numerous studies have resulted in mixed results about the efficiency of capital expenditure, which makes the issue more complicated. For example, an empirical study conducted by Landau (1983), in ninety-six countries, concluded a negative relationship between government expenditure and gross domestic product (GDP). However, Albassam (2020) argued that public budget allocation plays a significant role in economic growth and the well-being of the public through the programs that provide different services, such as health and education. Therefore, scholars and policy-makers are in search of effective models, that can help the decision-makers in the allocation of resources wisely and effectively. Another major factor in resource allocation, particularly in developing countries, is the clientelistic environment caused by political clientelism.

Political Clientelism

Like most social concepts, there is a lack of consensus about the concept of clientelism. Few researchers have conceptualised it as a citizen–politician linkage that is commonly based on direct material exchange to small groups or individuals that are eager

to sell their vote for the right price (Stokes, 2007). While another group of scholars has explained it as an alliance between two entities of unequal power, status, or resources, where both parties reckon it beneficial to have such a relationship (Hicken, 2011). Another school of thought has conceptualised this exchange as a way to tie the client to the patron not via a rule of mutuality but by promoting a concern that the chain of benefit will break off if they do not act as per the wishes of their masters (Kitschelt & Wilkinson, 2007). While exploring different definitions of clientelism, Hicken (2011) highlighted the following significant fundamentals of this relationship: contingency, dyadic relationships, iteration, and hierarchy. The powerful political actors reinforce their influence by giving their supporters traditional favours that create a sense of obligation that the favour must be reciprocated when demanded. Access and control over state resources are vital for clientelism.

Clientelism and State Resources

Political clientelism, especially in developing nations, can affect resource allocation of state-related projects such as subsidised health care, pension or unemployment benefits, community infrastructure funds, or government jobs (Hicken, 2011). Political actors in such nations very effectively reward their followers with resources, while others remain excluded. Berenschot & Aspinall (2020) claimed that while doing so, politicians find ways to bypass, manipulate or abolish, official procedures of resource distribution. They replace the prescribed standards for selecting recipients of government projects with their political standards such as party loyalty. Apart from powerful political actors in the case of some developing countries high degree of discretionary control over the state resources is exercised by their bureaucrats as well (Cruz & Keefer, 2015). They hold autonomous power, making them powerful actors in resource allocation. This control over state resources ultimately influences the development of a nation.

Why Clientelism is Bad for the Development of a Nation?

One of the most prominent debates in clientelism literature is on the association of clientelism with development. Researchers assert that clientelism is predominant in developing countries (Brusco, et al. 2004). The contemporary conception of the connection between clientelism and economic development is that it is not deterministic but probabilistic. Although the empirical association between development and clientelism is fairly robust (Kitschelt & Wilkinson, 2007; Bustikova & Corduneanu-Huci, 2011; Berenschot, 2018), there are a variety of views about the causal mechanisms at work.

Hicken (2011) claimed that clientelism hampers economic development by diverting scarce resources to create incentives for powerful political actors to keep the general public dependent and poor. As a result, it feeds on extreme levels of exploitation and corruption, ultimately creating a trust deficit in the public who become sceptical of democratic foundations. There is a consensus among the researchers that it has immense negative repercussions on the functions of democracy, especially on the capability of the administration to deliver necessary public policies (Gherghina & Nemčok, 2021). Apart from this, clientelism tends to change the basic accountability connection and hinders sustainable development in a region (Bustikova &

Corduneanu-Huci, 2011). Clientelism not only slows down the development of a country but also stagnates political institutions. The politicisation of the bureaucracy is also associated with clientelism. It obstructs the system and creates governance issues for the administration (Keefer, 2007, Cruz & Keefer, 2015). The clientelist approach is bad for transparency as it discourages information sharing and collaboration (Keefer, 2007).

Several studies claim a relationship between the size of the public sector and clientelism, whether calculated in terms of wage bills, development funds, or jobs (Grzymala-Busse, 2008). It is attributed as one of the main factors for public sector inefficiencies and larger public deficits. Researchers claim a major variance in the types of goods and services offered in programmatic systems versus clientelist systems (Gherghina & Nemčok, 2021). The impact of clientelism on institutions is still not explored widely as most of the research has focused on offices of political parties. For example, Desposato (2007) argued that political offices that practise clientelist strategies act in a different way than the parties that mobilise electoral support by providing public goods. Such political parties are more focused on consolidating public resources and supplying them through their private links. The influence of clientelism on development and institutions ultimately leads to a poor nation.

How Clientelism Causes Poverty?

If we examine the conception of clientelism, the majority point toward the poverty of the client, especially in the context of poor countries (Hicken, 2011). It is pertinent to mention that most of these surveys are qualitative and lack quantitative cross-national studies. Despite that, if we analyse the qualitative literature, it can be concluded that clientelism is more prevalent in the developing world (Hicken, 2011). These studies have theorised two distinct justifications for the linkage between poverty and clientelism. As Kitschelt (2000) explains, "poor and uneducated citizens discount the future, rely on short causal chains, and prize instant advantages such that the appeal of direct, clientelist exchanges always trumps that of indirect, programmatic linkages promising uncertain and distant rewards to voters" (p. 857).

However, another school of thought argues that it is not poverty that generates clientelism, but it is the other way around, i.e, clientelism generates poverty (Robinson & Verdier, 2013). Scholars explain that to stay in power powerful political actors can develop a strategy to hold back income growth and social mobility. In developing countries, political parties discourage the delivery of development-enhancing public goods and prefer the provision of personal favours (Robinson & Verdier, 2013) resulting in a decline in the productivity of the country while increasing the dependence of people on favours from politicians (Medina & Stokes, 2007). One may argue that both premises can be true; clientelism can cause poverty and poverty can also cause clientelism**.** However, if resources are allocated in better ways, clientelism can be overcome. This raises the question of how resource allocation can be done more effectively.

Multi-Criteria Decision Analysis for Effective Resource Allocation in Balochistan

The present study aims to create a decision matrix that can help the decision maker to select the best project for each department. The following section discusses one such criterion for resource allocation.

Kurth, et al. (2017) claimed that public administration has to make complex decisions that must create a balance among technical, economic, and political considerations. They have to face pressure from multiple concerns to ensure transparent techniques for decision-making (Esmail and Geneletti, 2018). For governments, efficient administration means the prioritisation of scarce resources reasonably and transparently. Hence, decisions about resource allocation must involve all the stakeholders (Kurth, et al. 2017). Dodgson, et al. (2009) while discussing this further asserted that for decision-making in government projects the popular form of analysis is cost-effectiveness analysis (CEA). This tool equates the costs of different project alternatives that provide similar kinds of output. Another less popular tool, called cost-benefit analysis (CBA), also considers some essential goods or services that are economically insignificant in monetary terms (Gamper and Turcanu, 2007). Both CEA and CBA are systematic tools of comparison that give monetary value to the decision maker to rank or prioritise projects (Gamper and Turcanu, 2007). However, this research is focused on methods of comparing impacts in ways that do not involve assigning explicit monetary values to all of them.

Multi-criteria analysis (MCA) is supposed to overcome the deficiencies of old decision-support techniques such as cost-effectiveness analysis (CEA) or cost-benefit analysis (CBA) (Müller, et al. 2020). Müller, et al. (2020) asserted that MCA can deal with qualitative measures and uncertainties related to the future impacts of a project. This tool is favoured by the government organisations that have used it in recent times (Melville-Shreeve, Ward & Butler, 2016). Although previously used models such as CEA or CBA do provide a decision-making framework, the MCA enables the use of quantitative as well as qualitative measurement scales (Nedeljković, et al. 2021). For this reason, the tool is more suitable to address multidisciplinary problems such as resource allocation. Gamper, et al. (2006) argued that MCA is an ideal method if the government needs to find consensual resolutions to overcome conflicts.

The MCA banks on the ruling of the decision-making team, while setting objectives and criteria approximating comparative vital weights (Reddy, Thokala & Duenas, 2017). However, for researchers, the subjectivity of MCA is a matter of concern because choices of objectives, criteria, weights, and assessments are based on the choices of decision-makers for achieving the objectives (Gamper and Turcanu, 2007). Stirling (2006) claimed that this subjectivity can be tackled by using ‘objective’ data that can be measurable, such as observed prices, population, or any other index. He further claimed that despite its subjectivity the MCA can bring a degree of objectivity, scrutiny, and honesty to the process of decision-making that lies beyond the practical reach of CBA.

The present study uses a more informed and objective form of the MCA known as multi-criteria decision analysis (MCDA). This tool was created to provide an ordering for the option used in the criteria, from the least preferred to the most preferred option (Dodgson, et al. 2009). The options used differ in their impact on the objectives set by the government, and secondly, no one option can be best in achieving objectives (Dodgson, et al. 2009).

Kurth, et al. (2017) claimed that the MCDA is a better way to examine complex problems that involve a variety of non-monetary and monetary objectives. It helps in

analysing the problem in light of realistic information that allows data and judgements to be more objective. The main aim of this technique is to help in decision-making, but not to take the decision (Kurth, et al. 2017). This tool offers diverse ways of examining a multifaceted issue by gauging the impacts of options on set objectives. They further discussed that multi-criteria decision analysis can be used either to assess things that are only proposed or to appraise things to which resources have previously been allocated. The MCDA can also help public organisations in decision justification and checks (Dodgson, et al. 2009). The formation of the MCDA for this study is further discussed in the methodology part of this paper.

DATA AND METHODOLOGY

In this section, the procedure adopted to analyse the development budget allocation in Balochistan is discussed. For this purpose, secondary data was obtained from the provincial planning and development, education, health, social welfare, communication & works, and finance departments. The data set was composed of data related to PSDP projects in Balochistan from 2011 to 2021. Statistical analysis was performed using frequency distributions to understand the dimensions and distribution of the development budget.

The sample for the study was 10 districts of Balochistan selected using the multiple poverty index (MPI). Four departments, namely education, health, social welfare, and communication and works development projects were analysed to find out inequalities in resource allocation. Table 1 shows the top 5 districts having the lowest MPI values and the bottom 5 districts having the highest MPI values.

Table 1
Sample of the Study

Top 5 Districts		
S. No.	District	MPI
1.	Quetta	0.213
2.	Kalat	0.275
3.	Khuzdar	0.285
4.	Gwadar	0.293
5.	Mastung	0.302
Bottom 5 Districts		
S. No.	District	MPI
1.	Killa Abdullah	0.641
2.	Harnai	0.633
3.	Barkhan	0.627
4.	Ziarat	0.575
5.	Chagai	0.546

Source: Multidimensional Poverty in Pakistan 2014-15.

The table shows that Quetta has the lowest MPI depicting low poverty and Killa Abdullah has the highest MPI depicting the highest poverty among the districts of Balochistan.

Mathematical Model

Furthermore, the model was developed by using population and area as the constructs for the allocation of development funds. The weights for population and area were estimated and incorporated into the following model to calculate the estimated funds for each district:

$$R_i = P_T \, x \, (W_{Pi} + W_{Ai}) \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad (1)$$

Equation 1 shows the allocation of resources to a particular district. The allocated resources of a district are a function of its population and area and the total PSDP. After estimating the funds for each district, the allocation of funds to each department was calculated by using the following method:

$$R_{Dj} = R_j \, x \, \frac{\Sigma R_j}{years} \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad (2)$$

Equation 2 shows that the resources to be allocated to each department are a function of the weighted average of the resources allocated previously and the resources allocated to the district.

The MCDA Performance Matrix

The matrix for this study was based on the Multi-Criteria Decision Analysis (Dodgson, et al. 2009). In the MCDA, the preferences of the stakeholders determine the criteria for project selection. The weights given to each criterion are subjective and are dependent on the availability and fulfilment of the criterion.

The projects to be approved in the PSDP were scored on each criterion. The score of each criterion was then estimated as a part of the total weight given to that criterion. The total preference score was calculated using the following mathematical equation:

$$S_T = w_1 s_{i1} + w_2 s_{i2} + \ldots + w_n s_{in} = \sum_{j=1}^{n} w_j s_{i_j} \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad (3)$$

To make an MCDA performance matrix, this study focused on the choice of key players to give more informed data. A key player in this study was a person who could give us suitable and substantial information for the creation of our performance matrix for the MCDA (Dodgson, et al. 2009). Key informants were selected to signify all the important viewpoints about resource allocation in Balochistan. They were the people who cannot participate in the process of PSDP making but their values should be represented in the matrix to make an impact on the decision-making. The study was not limited to the views of these key informants. Supplementary informants from the Department of Finance, the Planning and Development Department, and the Chief Minister's Office were also involved because of their expertise and knowledge about the process of PSDP allocations.

While collecting data from these informants, we ensured that all contributors are given equal opportunities to give their viewpoints. It was ensured that the minority points of view are not marginalised in the process of data collection. They assisted the participants through numerous phases, getting pertinent knowledge and findings. Through knowledge sharing, it was ensured that every participant also envisioned the larger picture for which the MCDA is working.

The present study uses one of the typical features of multi-criteria analysis known as a performance matrix (Dodgson, et al. 2009). In such a matrix, each column describes the performance of the options against each criterion and each row describes an option (Dodgson, et al. 2009). This study used numerical values for each criterion of individual performance assessments that are often expressed as 'bullet point' scores, or colour coding, in other research.

For this study, the performance matrix was key for the analysis of each project by any department. The departments can assess the extent to which their PSDP objectives are met by the entries in the matrix and rank their project for efficient selection. This spontaneous valuation of data ensures the timely and operative selection of projects for the departments (Dodgson, et al. 2009).

RESULTS AND DISCUSSION

Comparative Analysis

A comparative analysis of the disbursement of PSDP in the 10 districts in the last ten years can be seen in Table 2. The allocated percentages are averages for the last 10 years. The discrepancies in the allocation of PSDP to the departments are quite evident. Some districts with more population received fewer funds as compared to less populated and smaller districts. This inefficiency justifies the purpose of this research as currently, the Government of Balochistan has no proper model or matrix to allocate the development budget to the districts or even to the departments in an efficient manner.

Table 2

Comparative Analysis of the Disbursement of PSDP in the 10 Districts

Districts	Population	Area (sq. km)	Communication & Works	Education	Health	Social Welfare
Quetta	2,269,473	3,447	19%	15%	17%	32%
Khuzdar	798,896	14,958	5%	4%	7%	2%
Killa Abdullah	758,354	4,894	4%	3%	3%	2%
Kalat	412,058	8,416	2%	1%	1%	1%
Mastung	265,676	3,308	1%	2%	1%	1%
Gwadar	262,253	12,637	4%	2%	5%	1%
Chagai	226,517	44,748	2%	1%	1%	0.5%
Barkhan	171,025	3,514	1%	1%	0.5%	0%
Ziarat	160,095	3,301	1%	0.5%	1%	1%
Harnai	97,052	2,492	2%	1%	0.5%	1%

Application of the Mathematical Model

The mathematical model was applied to the secondary data on population, area, and PSDP. For practical use of the model, weights for the population and area of each district were estimated. The weight for each district was taken as a part of the total. Table 4 shows the weights calculated for the population and area of each district.

Table 4

Estimated Weights for each District

Districts	Population	Area
Quetta	18.40%	0.99%
Khuzdar	6.48%	4.31%
Killa Abdullah	6.15%	1.41%
Kalat	3.34%	2.42%
Mastung	2.15%	0.95%
Gwadar	2.13%	3.64%
Chagai	1.84%	12.89%
Barkhan	1.39%	1.01%
Ziarat	1.30%	0.95%
Harnai	0.79%	0.72%

The weights for population show that Quetta is the most populated district (18.4 pecrent) but is among the smallest districts (0.99 percent), which can be seen from the weights. District Harnai is the least populated (0.79 percent) and the smallest (0.72 percent). Chagai and Gwadar (12.89 percent and 3.64 percent) are the largest districts but with low populations (1.84 percent and 2.13 percent). Khuzdar is the only district with a large area (4.31 percent) and the second highest population (6.48 percent).

Not considering the population and area statistics leads to inefficient allocation of resources. More populated and large area districts are receiving lower allocations from PSDP as shown in Table 2. Therefore, it is imperative to consider population and area as important factors in PSDP allocations.

The mathematical model estimated the amount to be allocated to each district, where the amount to be allocated to each district is a function of the total PSDP and the weights of population and area for that district. As a case, the total amount of PSDP for the year 2020-2021 was set as the input and the estimated amounts to be allocated to each district are shown in Table 5.

Table 5

Comparison of Actual and Required PSDP Allocation to each District in Billion Rs.

District	Actual PSDP	Required PSDP
Quetta	25.3	22.9
Chagai	11.1	17.4
Khuzdar	8.1	12.7
Killa Abdullah	5.2	8.9
Gwadar	3.5	6.8
Kalat	1.5	6.8
Mastung	2.2	3.6
Barkhan	0.4	2.8
Ziarat	0.9	2.6
Harnai	1.6	1.7

Furthermore, the amount allocated to each district is then disbursed to the respective departments. The disbursement is made based on the average amount allocated to the departments previously. This systematic allocation of PSDP, firstly, to the districts and then to the departments is an attempt to remove the inefficiencies in the current development budget allocation process of Balochistan.

Table 6 shows the proposed amounts to be disbursed to the departments of each district. The amounts were estimated using the total amount allocated to the district and the historical data of each department.

Table 6
PSDP Allocation to the Departments of each District in Billion Rs.

District	Communication	Education	Health	Social Welfare
Quetta	4.3	3.3	3.9	7.2
Khuzdar	0.6	0.4	0.8	0.2
Killa Abdullah	0.3	0.2	0.2	0.1
Kalat	0.1	0.08	0.09	0.05
Mastung	0.05	0.05	0.01	0.03
Gwadar	0.2	0.1	0.3	0.07
Chagai	0.2	0.1	0.1	0.03
Barkhan	0.03	0.02	0.004	0
Ziarat	0.03	0.01	0.02	0.01
Harnai	0.04	0.008	0.005	0.008

Application of Performance Matrix

This performance matrix used numerical analysis in two stages. In the first stage scoring for each expected consequence of each option was assigned a numerical score. In the second stage, numerical weights were assigned to each criterion keeping in view their importance for the process of PSDP allocations. The matrix was developed to rank the public sector development projects. The criteria used in the matrix were the themes obtained from the interviews and focus group discussions with the personnel of the relevant departments. Each project was given a score on a scale of 0–100 for each criterion. The score of each criterion given to a project was then taken as a product with the assigned weight of that criterion. The final score for each project was calculated using Equation 3 mentioned in the Research Methodology section. Table 6 is an example of how the health department can prioritise different projects for a given year.

Table 7
Project Decision Matrix for Health Department

Project Name	District MPI Rank	District Pervious PSDP Funds	Infrastructure for Project	Project Prerequisites	Project Risks	Score
P1	10	10	100	100	100	**46**
P2	20	70	100	100	100	**67**
P3	90	60	66	100	50	**77**
P4	100	30	66	0	50	**51**
P5	80	80	33	100	0	**71**
Weights	*30*	*30*	*10*	*20*	*10*	

The findings of this research showed that there are inefficiencies and inequalities in the process of PSDP allocations in Balochistan. The process of PSDP allocations is influenced by political clientelism and there are impediments and shortcomings in the process of allocating the PSDP funds. Realising them is vital for effective PSDP allocations. The data on PSDP allocations in Communication & Works, Education, Health and Social Welfare departments in the 10 districts during the last 10 years i.e., 2011 to 2021 indicated discrepancies in the allocation of PSDP to the departments. Some districts with more population and area received fewer funds as compared to less populated and smaller districts. This inefficiency justifies the purpose of this research since currently, the Government of Balochistan has no proper model or matrix for the efficient allocation of PSDP projects to the districts or even to the departments. The analysis of quantitative data further highlighted that ignoring the population and area statistics lead to an inefficient allocation of resources. More populated and large area districts received lesser allocations from PSDP as shown in the figures. Therefore, as discussed in the literature review it is imperative to consider population and area as important factors for PSPD allocations.

Below, we answer all three questions raised in the introduction section before the conclusion and recommendations.

Question 1: How political clientelism influences the process of PSDP allocations in Balochistan?

The findings of this research indicated that the process of PSDP allocations is influenced by political clientelism. High officials such as the minister of finance showed their concern about it and admitted that most of the projects are included to please the members of the parliament and their followers. As argued by Berenschot (2018) the powerful political actors reinforce their influence by giving their supporters desired projects to create a sense of obligation that would ultimately be reciprocated in a time of need. While further explaining the influence of political actors, another official of the education department claimed that schools or colleges are built without any need for assessment, and projects are included on the wishes of influential people.

As discussed by Stokes (2007) the more powerful political actors do not need to take public office. Even without a public office, they would still be considered credible enough to promise their voters access to public resources. The politicians' influence on state resources is so strong that deputy commissioners, who are the administrative heads of districts, are not taken into the loop while allocating PSDP funds to their districts. This resonates with the study of Berenschot & Aspinall (2020) that politicians find ways to bypass, manipulate, or abolish official procedures of resource distribution. They replace the prescribed standards for selecting recipients of government projects with their own political standards such as party loyalty. However, as asserted by Cruz and Keefer, (2015) in developing countries a high degree of discretionary control over the state resources exercised by their bureaucrats seems to be missing in the case of Balochistan. Hence the politician holds autonomous power, making them more powerful actors in resource allocation.

Due to this political victimisation, many districts in Balochistan faces development problems over the years. As explained by Gherghina & Nemčok (2021) it has immense negative repercussions on the functions of democracy, especially on the capability of

administrations to deliver necessary public policies. The political parties in Balochistan are more focused to consolidate public resources and then supply them through their private links. This is one of the reasons that these political parties have less cohesion and their members tend to switch parties as they find any opportunity to do so.

This whole scenario is hampering the development of Balochistan. Services and goods to the general public are underprovided while in some specific constituencies they are provided in abundance. The politicians are diverting scarce resources to create incentives for themselves to keep the general public dependent and poor. As a result, there are extreme levels of exploitation and corruption in Balochistan that are creating a trust deficit among the people of Balochistan. The political influence is so high that it has changed the basic accountability connection in the province and people go unpunished even after failing a project. This is hindering sustainable development and causing the politicisation of bureaucracy. Ultimately obstructing the system and creating governance issues. In order to stay in power, the powerful political actors will hold to this strategy to hold back income growth and social mobility in Balochistan. Political clientelism is discouraging the administration from offering services and goods to the public as it serves the interests of powerful political actors that thrive on poverty in Balochistan.

Question 2: How effective resource allocation can be performed in Balochistan?

As argued if resource allocations are done without improvement in the process of fund allocation and supervision of the schemes then it is a zero-sum equation. Inefficiencies in fund allocations in Balochistan have led this research to find better ways to address the issues of resource allocation. The main aim of this research was to ascertain better ways for PSDP allocations in Balochistan. The findings of the research indicate that the allocation of PSDP projects in Balochistan is disproportionate and unfair. The study has analysed the data on PSDP in Communication & Works, Education, Health and Social Welfare departments in the 10 districts during the last 10 years i.e., 2011 to 2021. It was indicated by the results that there is unfairness on both accounts i.e., district level and departmental level. Some districts have more population and areas that have been receiving fewer funds as compared to less populated and smaller districts. Banking on the arguments of McGuire, et al. (2020) for using a formulaic approach. To overcome discrepancies in Balochistan this study has proposed a mathematical model that uses weights for the population and area of each district. This research has used these parameters on the premise that consideration of the population and area statistics leads to inefficient allocation of PSDP projects. More populated and large area districts are receiving lesser allocations from PSDP as shown in Table 2. Therefore, it is imperative to consider population and area as important factors while making development budget allocations. Table 3 shows the weights calculated for the population and area of each district. Using the model as a case, the total amount of PSDP for the Year 2020–2021 was set as the input and the estimated amounts to be allocated to each district are stated in Table 4. Then in Table 5, the proposed amounts are further distributed to departments of each district.

This study envisaged that only proposing a financial model for funds allocation would not suffice, hence it constructed a matrix that will help the decision maker to select the best PSDP projects for each department. Stemming this argument from Kurth, et al.

(2017) that complex decisions such as public resources allocations must create a balance among technical, economic, and political considerations; this paper proposes a matrix that helps in the prioritisation of scarce resources reasonably and transparently. So the decisions about PSDP allocations must involve all the stakeholders. This study uses a matrix known as multi-criteria decision analysis (MCDA). This tool is created to provide an ordering for decision makers from least preferred to most preferred option (Dodgson, et al. 2009).

MCDA will help in analysing the problem in light of realistic information that will allow data and judgements to be more objective. It will help in decision-making, but not take the decision (Kurth et al, 2017). This matrix offers diverse ways of examining the multifaceted issue of resource allocation by gauging the impacts of options on set criteria. This tool is an organised and official platform for engaging all stakeholders. It will provide means to interface with strictly rigorous analysis while working beyond quantitative analysis. Finally, MCDA will also help the government of Balochistan in decision justification and checks (Dodgson, et al. 2009).

Question 3: What are policy inputs for the improvement of PSDP allocations in Balochistan?

Following Jobaid & Khan (2018), this research proposes at the time of development budgeting spatial distribution should be considered. Most importantly the allocation should be made without any bias and influence as such influence and biases would turn some districts stronger and others weaker. Furthermore, the government of Balochistan should include each district's local government body to know their need and responsibilities. The government needs to adopt a bottom-up approach to understand the real development needs of departments. It is imperative to conduct proper monitoring along with an assessment of the utilisation of money that is allocated to these projects.

The government of Balochistan must use a formulaic approach for development budgeting based on performance, political goals, and fairness (McGuire, et al. 2020). The efficiency in this context means that public money is spent as per policies developed (or to be developed) for the wise use of resources. While every political party should have a certain commitment and set promises within its community in terms of addressing their needs. The government to shift away from historical resource allocations and toward resource distribution based on metrics that try to capture the ground reality.

Grounded on evidence by Williams, St Denny & Bristow (2019) this study further suggests that a single approach to budgeting would make it difficult for the government. We understand that budget decisions are getting progressively difficult, especially during times of reduced public sector budget and austerity as the people of Balochistan are demanding more public services. In recent times the public has had minimal trust in the political process as they feel limited engagement in any political decision. The government of Balochistan can decide their level of participation depending on their preferences. They may only inform them through objective and balanced information or can obtain their feedback about alternative opportunities and solutions. On the other hand, the public can be involved throughout the process to understand their concerns and aspirations in a better way. In the best-case scenario, the public and government can work in a partnership and decide the course of action through joint decision-making.

However, if the government of Balochistan finds it difficult to engage the public in these traditional ways they can opt for innovative ways such as consensuses conferences, planning cells, deliberative polls, citizens' assemblies, and citizens juries to engage the public at a micro level that can also facilitate deliberation and participation (Escobar and Elstub, 2017). The government can use the concept of 'mini public' for such engagement. Mini-publics are randomly nominated residents following the principle that stakeholders affected by the issue have an equal chance of being selected to ensure the legitimacy of the process.

Along with engaging the public the government needs to ensure that the whole process of PSDP is improved. The government of Balochistan needs to ensure transparency by providing information about decisions taken in the process. For a budget to be more effective it should be managed on the following four principles such as multiyear planning, transparency, public expenditure consolidation, and effectiveness and efficiency. For this, the stakeholders need to ensure the planning of tasks, expenditure, objectives, and their effects on a yearly basis. Transparency can be achieved through clarity, comparability, and legibility of financial statements. The consolidation of public expenditure can be achieved through the synergy of revenue and expenditure with assigned tasks. Finally, efficiency and effectiveness mean matching the planned tasks, expenditures, and objectives with the outcome achieved. The government needs to establish a relationship between resource allocation and results to increase productivity. The departments can ensure efficiency by measuring and promoting progress while making evidence-based policymaking by basing decisions on performance data.

CONCLUSION AND POLICY IMPLICATIONS

The findings of this research show that there are inefficiencies and inequalities in the process of PSDP allocations in Balochistan. The process of PSDP allocations is not free of political leverage and there are impediments and shortcomings and realising them is vital for an effective allocation. The data from PSDP in Communication & Works, Education, Health and Social Welfare departments in the 10 districts during the last 10 years i.e., 2011 to 2021 indicates that discrepancies in the allocation of PSDP to the departments are quite evident. Some districts with more population and area have been receiving fewer funds as compared to less populated and smaller districts.

This whole scenario is hampering the development of Balochistan. Services and goods to the general public are underprovided while in some specific constituencies they are provided in abundance. The politicians are diverting scarce resources to create incentives for themselves to keep the general public dependent and poor. As a result, there are extreme levels of exploitation and corruption in Balochistan that are creating a trust deficit among the people of Balochistan. The political influence is so high that it has changed the basic accountability connection in the province and people go unpunished even after failing a project. This is hindering sustainable development and causing politicisation of the bureaucracy. This is ultimately obstructing the system and creating governance issues. To stay in power, the powerful political actors will hold to this strategy to hold back income growth and social mobility in Balochistan. Political clientelism is discouraging the administration from offering services and goods to the public as it serves the interests of powerful political actors that thrive on the poverty of Balochistan. To overcome these issues this paper, have the following recommendations.

RECOMMENDATIONS

Banking on the arguments of McGuire, et al. (2020) for using a formulaic approach. Especially in the case of developing countries have tried to shift away from historical resource allocations and toward resource distribution based on metrics that try to capture variance in need. Contemplating these arguments to overcome discrepancies in Balochistan this study has proposed a mathematical model that uses weights for the population and area of each district. These parameters are used on the premise that not considering the population and area statistics leads to inefficient allocation of resources as shown in the findings.

This study envisioned that only proposing a financial model for resource allocation would not suffice, hence it designed a matrix that will help the decision maker to select the best project for each department. Stemming our argument from Kurth, et al. (2017) that complex decisions such as public resources allocation must create a balance among technical, economic, and political considerations; we propose a matrix that helps in the prioritisation of scarce resources reasonably and transparently. Therefore, the decisions about resource allocation must involve all the stakeholders.

Contemplating Jobaid & Khan (2018) this research recommends at allocations should be made without any bias and influence as such influence and biases would turn some districts stronger and others weaker. Furthermore, the governments of Balochistan should include each district's local government body to know their need and responsibilities. Grounded on evidence by Williams, St Denny & Bristow (2019) this study further suggests that a single approach to budgeting would make it difficult for the government. This study understands that budget decisions are getting progressively difficult, especially during times of reduced public sector budget and austerity as the people of Balochistan are demanding more public services. In recent times the public has had minimal trust in the political process as they feel limited engagement in any political decision. As suggested during such times we can gain public trust by involving them in the process. Along with engaging the public the government needs to ensure that the whole process of PSDP is improved. The government of Balochistan needs to ensure transparency by providing information about decisions taken in the process.

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Impact of Scholarships on Student Success: A Case Study of the University of Turbat, Pakistan

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This study uses data of a public sector university to investigate the impact of government financial aid on students' success outcomes. The estimates of the difference-in-differences (DID) model show that there is a positive and significant relationship between need-based scholarship (NBS) and students' success outcomes while for merit-based scholarship (MBS), the relationship is insignificant. Empirical results reveal that the NBS seemingly increases the academic performance of male students by about 4 percent in subsequent semesters after the award. The t-tests further reveal that a male student when obtains a scholarship is less likely to depend on his parental income for university-related expenses and more likely to focus on his study by taking class notes seriously. This positive and significant difference between NBS holders and non-holders also exists for male students on every measure of success outcomes (e.g. students' retention, engagement, acquisition of skills and competences, and career success). The NBS (i.e. HEC Ehsaas) is designed properly and contributes to reaching out to the targeted students in Balochistan or even in the country, therefore, the findings of this study suggest the government of Pakistan for its continuation while using a more self-sustained financial model just like the BEEF programme in Balochistan and the PEEF programme in Punjab.

JEL Classification: A22
Keywords: Impact Evaluation, Need-Based Scholarship, Merit-Based Scholarship, Academic Success, Academic Performance, Difference-in-Differences, Quasi-Natural Experiment

1. INTRODUCTION

Education is one of the leading instruments for enhancing economic growth. It helps to uplift human capabilities through knowledge and skills and creates a progressive society. The education benefits are not only limited to the national economy but individuals also benefit from it. But unfortunately, one-sixth of the world's children, adolescents, and youth—258.4 million—were out of school in 2018 and shockingly 93 million of them were from South Asia (UNESCO Institute for Statistics (UIS), 2019b). Pakistan has the world's second-highest number of out-of-school children after Nigeria. An estimated 44 percent of the children aged 5-16, i.e., 22.7 million children, were not enrolled in schools in 2017 (Hunter, 2020). Further sizeable disparities among regions, socio-economic statuses, and

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genders exist. For instance, 78 percent of girls from Balochistan and 58 percent of girls and 52 percent of the poorest children in Sindh are out of school (UNICEF, 2020).

The situation of higher education in Pakistan is not commendable compared to its neighboring countries. The chance of getting higher education in Pakistan is only 4 percent, which is much lower than in India and China where the chances are 11 percent and 20 percent, respectively (Nasreen & Afzal, 2020). One reason for the current condition of education in Pakistan is low government spending on education. For instance, government spending on education during the last two decades remained at 2 percent of the GDP (Ali, Hakim, & Abdullah, 2016). The Government of Pakistan reduced its spending on education from 4 percent (target) to 2.9 percent of its GDP in 2017 (Hunter, 2020). In 2019-20 the total education expenditure declined from Rs. 868.0 billion to Rs. 611.0 billion. It decreased by 29.6 percent, which is an alarming situation (see Figure A1). Pakistan has only focused on primary and secondary education, and the tertiary/higher level has been neglected (Aziz, et al. 2008).

Among other socio-economic and cultural constraints, poverty is one of the biggest hurdles to the development of higher education in Pakistan (Razi, 2016). Getting higher education is even much harder for females than males because, inter alia, money or financial constraint is the core hindrance to females' higher education (Abid & Khan, 2017; Amin, Tatlah, & Afghani, 2018; Hashmi, Shahzad, & Kanwal, 2016; Khan, Khan, & Khan, 2020). The lack of financial resources is the key barrier that every marginalised community in Pakistan faces to getting a higher education (e.g., slum dwellers) (Awab-us-Sibtain, Usman, & Husnain, 2020).

Under SDGs Goal 4, 'ensure inclusive and equitable quality education and promote lifelong learning opportunities for all', some global targets were set by representatives of the global education community, including ensuring equal access to affordable and quality higher education for all genders, persons with disabilities, and indigenous peoples (targets 4.3-4.5) (UNESCO Institute for Statistics (UIS), 2019a). To accomplish these targets by 2030, the global community also committed (target 4. b) that by 2020, the global enrolment of students in higher education should increase significantly by the means of expanding the number of scholarships in developed countries for the students of developing countries. Though there are no such precise records on the number of scholarships, according to one estimate the developed countries provided public scholarships to only 1 percent of students in developing countries in 2015 (UNESCO Institute for Statistics (UIS), 2019a).

To reduce poverty and improve income distribution, the development of higher education could be a viable policy option (Qazi, Raza, Jawaid, & Karim, 2018). To that end, the Government of Pakistan has taken several initiatives on the supply side (e.g., the development of faculty members) of higher education in Pakistan. Both federal and provincial governments of Pakistan have launched several scholarship programmes under the umbrella of the human development programme. The HEC has initiated various merit and need-based scholarships for specific regions (Gwadar-China Scholarship Programme, Indigenous Scholarship, Aghaz-E-Haqooq-E-Balochistan Project, and Undergraduate Scholarship Programme for the students of Gilgit-Baltistan). The HEC also has initiated national-level scholarships such as the Prime Minister Fee Reimbursement scheme for the less developed areas (the scheme

is closed), the Indigenous Ph.D Fellowship Programme, HEC Need-Based Scholarship, and Ehsaas Undergraduate Scholarship Programme.

Though an extensive body of research studies on the subject area is available, a methodologically rigorous study on impact evaluation in the context of Pakistan is missing. For instance, studies highlight that scholarship programmes in general increase the chances of accessibility to educational institutions, increase students' enrolment, and improve survival, retention, and academic performance (Barrow, Richburg-Hayes, Rouse, & Brock, 2014; Bettinger, et al. 2017; Schudde & Scott-Clayton, 2016; Timilsana, 2017). In the context of Pakistan, B. U. Khan, Shah, and Gul (2019) in a survey based on self-administered questionnaires from 350 HEC need-based scholarship holders in four districts of KPK Pakistan and found that the scholarships had a considerably positive effect on education outcomes, i.e., the scholarships increased enrolment, improved attendance, and reduced dropouts.

In terms of a causal relationship between scholarship and students' academic performance, the study of Khan, et al. (2019) has limited policy implications. Although they found a positive impact of scholarships on students' performance, their study did not take into account those students who were not awarded scholarships and were excluded from their study. Also, what would have been the educational performance of observed students if they did not get scholarships? What would have been the academic performance of those students who were enrolled in the same class as the scholarship awardees but were not awarded any scholarships? These and other similar policy-relevant questions motivated us to design this impact evaluation research which will improve our understanding and knowledge base on the effectiveness of government scholarships as interventions for student academic performance and success.

The main objective of the study was to investigate the impact of financial aid on students' success by taking the University of Turbat as a case study. More precisely, it was designed to answer the following four research questions:

(1) What is the impact of government scholarship on students' academic performance?
(2) What is the impact of the scholarship on students' success beyond their academic performance?
(3) Which type of financial aid is a better intervention for undergrad students in the underprivileged regions of Pakistan? Need or merit-based scholarship.
(4) What are the key constraints, challenges, or barriers in the process of implementation, monitoring, and evaluation of the scholarship programmes?

To identify the effectiveness and successes of the government's need- or merit-based scholarship programmes in the province of Balochistan, we conducted a rigorous short- to medium-term impact evaluation by taking the University of Turbat as a case study. In this evaluation, we took the scholarship programmes initiated by both provincial and federal governments as policy interventions. Evidence derived from this impact evaluation helped us understand how these scholarship programmes are contributing by providing opportunities to students in Balochistan to access higher education. The findings of this case study also apply to universities with similar institutional settings and characteristics.

2. LITERATURE REVIEW

In a global context, the significance of scholarships is profoundly acknowledged across all levels of education. Specifically, in the year 2015, it gained more importance when the United Nation Sustainable Development Goals (SDGs) emphasised the inclusion of scholarship programmes as a tool for achieving its goals. The research has also identified scholarships as a significant instrument for the nation's development and growth. In this connection, rigorous research can be found in the literature which establishes the importance and the impact of scholarships on multiple psycho-social and economic variables. According to the literature, financial aid and scholarships can directly affect students' academic motivation, which eventually results in good academic performance. Campbell and Neff (2020) reviewed 105 research articles on international higher education scholarships. They found that the six primary outcomes of these scholarships were building human capital, bringing social change, promoting sustainable development, internationalising institutes, improving diplomatic ties, and enhancing access to education.

In addition, several studies reported empirical evidence of the link between scholarships or financial aid and students' academic success, motivation, satisfaction, retention, and engagement (Alon, 2011; Angrist, et al. 2015; Glocker, 2011; Millea, et al. 2018; Mulyaningsih, et al. 2022; Waskito & Azizah, 2013). In their seminal work, Ganem and Manasse (2011) found that scholarships had a manifold impact on students' academic achievement, motivation, and success. Academic success was measured by students' persistence, progression, and timely completion of degrees (Ganem & Manasse, 2011). Moreover, researchers highlighted the need for institutional scholarships for student success as it is considered an essential tool or predictor for success. Mushtaq and Khan (2012) identified several antecedents of college scholarships that affected student performance and engagement. In another study, Watson, et al. (2014) found an interesting result that scholarship had a positive ripple effect on siblings, parents, relatives, and neighbours. Particularly, it encouraged parents to get other children into education as the burdens or expenses of educating children would be compensated through scholarships. Furthermore, they argued that social distance emerged among the students who were the scholarship recipients and those who were non-recipients of scholarships. They also argued that the scholarship stipend changed the course of students' lives. Over half became the most educated persons in their families and towns. Above all, these findings suggest that the social and economic value of scholarships needs to be evaluated on a greater spectrum (Watson, et al. 2014).

In another empirical study, Cagasan, et al. (2019) found that graduate students' perceived contribution of scholarships to academic success. The findings showed that a majority of the students (89 percent) were able to finish their studies within the prescribed time. Almost all of the students (97.8 percent) believed that scholarships contributed to graduate students' persistence and timely degree completion. The majority of students (93.3 percent) needed financial support to stay at university. Further surveys revealed scholarships reduced students' stress levels (48.9 percent) and that some students claimed that the financial assistance helped them with their living expenses (60 percent) and finish their education on time (Cagasan, et al. 2019).

In a correlation investigation, Bliven and Jungbauer (2021) established that student motivation, self-determination, and persistence were positively related to student recognition programmes, acknowledging the students' efforts and other achievements in university. In addition, Rana, et al. (2021) argued that scholarships enhanced the quality and standards of education among the scholarship recipients and further recommended that some scholarship programmes were less holistic, which may not be able to cover the whole expenses of the students. In a recent empirical investigation, Mulyaningsih, et al. (2022), found that in Indonesia, large-scale targeted government scholarships had a very strong impact on students' performance, in particular, those who were least privileged and lived lives in poor conditions.

3. CONCEPTUAL FRAMEWORK

The conceptual framework of this study was built on the comprehensive meta-analysis of York, Gibson, and Rankin (2015). They defined academic success (which is different from student success) based on Astin's (1991) input-environment-outcome (IEO) model as the theoretical framework for their study. According to the IEO model, the outcomes (O) of higher education are conditioned on inputs (I) and environment (E). Lately, Astin's model has been further expanded by Pascarella and Terenzini (2005) by including demographic characteristics, such as family background and academic and social experience as inputs. The setting of HEIs includes people, programmes, policies, cultures, and institutional experiences in the environment; and finally student characteristics including knowledge, skills, attitudes, values, beliefs, and behaviours after graduation in the outcomes. Combining Astin's model and York et al., analytical review of the literature, this study followed the given conceptual framework (see Figure 1).

3.1. Inputs

Demographic characteristics of students, their family backgrounds, and academic and social experiences are necessary inputs for achieving academic success. We modified the model by including financial aid, the main variable of interest, as an additional input. Financial aid includes additional support from governments, philanthropists, or other sources in terms of scholarships, fee concessions, etc., to students that helped them to concentrate on their studies during degree programmes and achieve a high level of academic success. In this study, we measured financial aid by using government-sponsored scholarships in the form of fees, stipends, etc. Currently, there are two main types of financial aid available for undergraduate students at the University of Tubat, namely, need based scholarships (i.e. HEC need-based, HEC Ehsaas scholarship, and merit-based scholarship (i.e. BEEF merit-based scholarship). The other inputs for this study included students' previous academic records (matric and intermediate percentage marks, age, gender, and parental education).

3.2. Environment

The environment includes people, programmes, policies, cultures, and institutional experiences in HEIs that affect students' academic success. In this study, our research

setting was the University of Turbat (UoT) which is far away from other cities in Pakistan. Hence, it mainly attracts students who mostly belong to poor families in the same region. Therefore, the culture of UoT is less diversified in terms of students' ethnic or family backgrounds. Also, the institutional experiences may influence students' performance and success. To capture the environmental or institutional variation in our analysis, we included degree programmes and district-fixed effects in our model.

3.3. Outcome: Academic Success

In this impact evaluation, we used academic success as our outcome variable. York, et al. (2015) defined academic success as "inclusive of academic achievement, attainment of learning objectives, acquisition of desired skills and competencies, satisfaction, persistence, and post-college performance." Academic achievement is a student's academic performance and ability which is being measured by a student's GPA, or grades in a course (York, et al. 2015). They further separated 'academic achievement' into 'acquisition of skills and competence' and 'attainment of learning objectives', though those were used interchangeably for measuring academic success in the literature. This study opted academic achievement, acquisition of skills and competence, and attainment of learning objectives for measuring academic success in our empirical analysis. Academic achievement was measured by students' GPA, CGPA, or percentage marks in a given semester. Other students' success outcomes were measured by several proxies which were extracted from the College Student Experience Questionnaire (CSEQ)[1] (Pace and Kuh, 1998) and the survey was conducted at the UoT.

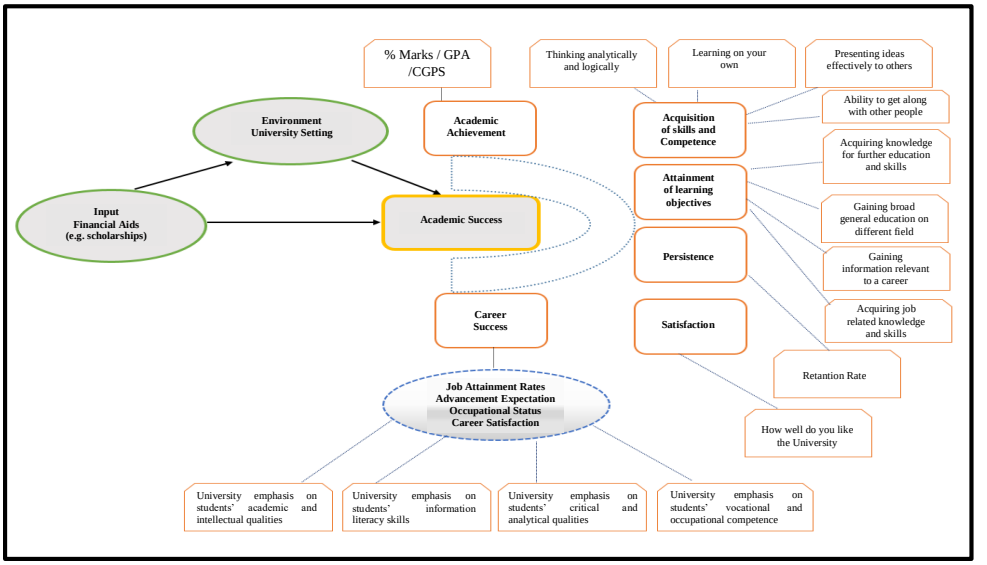
Persistence is an academic success, defined as "persistence corresponds to students' continued progression in an academic degree despite institutional transfers or stopping out" (York, et al. 2015). Usually, it is measured by students' graduation and retention rates, but due to data limitations, we measured it with students' promotion rates to the next semester based on the university's institutional policy of promotion, probation, or dropout.

Satisfaction, though, is not itself a component of academic success but it is an outcome that includes other aspects of students' well-being, such as students' perceptions of the institution and climate, and their goal achievement which affects their ability to succeed at the university level academically (York, et al. 2015). It was measured by students' satisfaction level with the university's facilities and academic environment and also their engagement in educational activities. Student engagement in a university setting is an essential aspect of comprehending students' satisfaction, persistence, and class attendance.

Finally, York, et al. (2015) suggested in their meta-analysis that career success is a part of academic success, which includes both intrinsic and extrinsic measures of it. Due to data limitation, we used students' self-reported responses or perceptions of their educational prospects, prospects of their career in the field, their level of background or specialised knowledge and skills that would help them in the future to find and qualify for their desired jobs.

[1]The CSEQ is a product of the Center for Postsecondary Research & Planning at Indiana University (College Student Experiences Questionnaire (CSEQ) : Institutional Research Swarthmore College).

Fig. 1. Conceptual Framework for the Impact of Financial Aids on Students' Academic Success



4. RESEARCH SETTING

4.1. Background of the University of Turbat

The University of Turbat (UoT) was established in May 2013 and it is the second public sector general university in the province after the University of Balochistan. Turbat is the second most populous city in the province after Quetta. The establishment of this institute has not only fulfilled the desire of the public in this southern part of Balochistan, but it also covers the majority of districts scattered about the wide geographical. The primary objective of the establishment of this university was to address higher education challenges in the Makran Division of the province consisting of three districts, namely Kech, Gwadar, and Panjgoor besides the adjoining districts of Awaran and others.

Since it establishment, the university expanded its academic departments from three to fifteen with four faculties by offering twentyfive degree programmes in various disciplines. Apart from the main campus in Turbat, it established one sub-campus in Gwadar in 2017 (recently converted into a full-fledged university) and another sub-campus in Panjgoor in 2020. The enrollment status is 3,414 students of which 39.10 percent are female. The dropout rate is 33 percent at the undergraduate level and that is because of inter alia (e.g. the institutional policy), and financial constraints.

4.2. Brief Description of Scholarship Programmes

UoT has two main types of scholarship programmes; need based scholarship (NBS) or merit-based scholarships (MBS); the former includes HEC Need-Based Scholarship and HEC Ehsaas Undergraduate Scholarship, and the latter includes Balochistan Education Endowment Fund (BEEF). Under these programmes, about 901 and 980 scholarships were awarded to students in 2019 and 2020, respectively (see Table 1).

Table 1

HEC and BEEF Scholarship Programmes at UoT in 2019 and 2020

Name of Scholarships	2020	2019
HEC Ehsaas Scholarship Programme	437	657
HEC Need-Based Scholarship Programme	63	38
BEEF Merit-Based Scholarship Programme	480	206

Source: Document Records of UoT.

In this impact evaluation, we used an NBS (i.e. HEC Ehsaas Undergraduate Scholarship) and an MBS (BEEF Merit-Based Scholarship Programme) to estimate the impact of the scholarship on students' success outcomes. The unit of observation is the students at who are/were enrolled in any ungraduated degree programmes (4-5 years) at UoT.

The HEC Ehsaas Undergraduate Scholarship Programme

The federal government has initiated this programme in 2019 for supporting undergraduate students financially (Higher Education Commission Pakistan, 2020a). In its policy brief, it stated that "this is the largest ever need-based undergraduate scholarship programme in the history of Pakistan" (Pakistan, 2020). The programme supports needy students to access higher education in underprivileged areas of Pakistan. The HEC has awarded 657 (40 percent females) and 437 (43 percent females) scholarships to the undergraduate students of the UoT in 2019 and 2020, respectively (see Table 1). Compared to its size, HEC has awarded scholarships to students of UoT more generously than other public sector universities in Balochistan (see Table 2).

Table 2

HEC Ehsaas Scholarships: Four Public Sector University in Balochistan in 2019 and 2020

	2020			2019		
Name of Universities	Total	Male	Female	Total	Male	Female
UOT	437	248	189	657	394	262
UOB	282	156	126	435	227	208
UOL	24	23	1	62	61	1
BUITEMS	235	147	88	594	517	77

Source: Financial aid offices of given universities in Balochistan.

BEEF Scholarship Programme

The Government of Balochistan established an educational endowment fund of Rs. 5 billion and for investment, monitoring, and disbursement of this funds, a company, namely, the Balochistan Education Endowment Fund (BEEF) was registered under the Companies Ordinance, 1984. The main objective of BEEF is to increase the provincial literacy rate, enrolment and retention rates of students, create a talented human resource, and improve socio-economic and poverty conditions in Balochistan (the Government of

Balochistan, 2016a, 2016b, 2017, 2018). From the proceeds of the endowment fund, BEEF has been awarding merit-based scholarships to talented and needy students mainly belonging to Balochistan Province. For undergraduate (4-5 years) degree programmes, BEEF usually selects the top 10 to 20 students from a list of the top 20 to 40 students provided by the universities in Balochistan. BEEF awarded scholarships to 480 and 206 students of UoT in 2019 and 2020 respectively (see Table 1).

5. EMPIRICAL ANALYSIS STRATEGY

In this impact evaluation, we utilised a mixed method for estimating the short- to medium-term impacts of government-sponsored scholarship on students' success outcomes in a public sector university in Balochistan. Below we present a simple model for analysing the impact of scholarships (T) on students' success outcomes (Y):

$$Y = \beta_0 + \beta_1 T + \mu$$

Furthermore, we expanded the above model by using the outcome model of Albouy (2004) through which we evaluated the government NBS and MBS programmes' impact on students' success outcomes (such as academic performance that was measured by % change in marks or GPA/CGPA) Y_{ijt}:

$$Y_{ijt} = \beta_0 + \beta_1 T_i + \beta_2 Post_t + \beta_3 T_i * Post_t + \varepsilon_{ijt}.$$

In the above difference-in-differences (DID) model, where T_i is the treated group (T = 1, 0), 1 indicates students who were/are enrolled in a degree programme *j* and awarded a scholarship (i.e., the treatment group), and 0 indicates similar students who were not awarded any type of scholarship because they enrolled before the scholarship programmes were launched or were not awarded scholarships due to financial constraints (i.e., the control or comparison group). We extracted students' performance outcomes (i.e., students' GPA/CGPA or percentage marks) for two time periods or semesters ($Post_t$ = 1, 0). 1 indicates the periods (i.e. the semester(s)) during and after the treatment group received scholarships (post-treatment) and 0 indicates the periods (or semester(s)) before that the students received their scholarships. The index *i* represents students ($i = 1, 2 \ldots, N$) having observations for at least two time periods ($t = 1, 2, \ldots, 8$), one for the semester(s) before the award and the other for the semester(s) during or after the award. ε_{ijt} is the idiosyncratic error term.

Furthermore, in this quasi-experimental design the treatment assignments (scholarships) were not made by a randomised process but were rather made on some arbitrary criteria (they were either selected based on a need or merit). Due to the selection criteria, the comparison group was possibly a sandwich between two possible treatment groups (i.e. need- and merit-based scholarships). At one extreme, students who were eligible for merit-based scholarships probably had better standards of living than the rest. For example, the students who availed of BEEF merit-based scholarship awards probably got the same awards for each succeeding year due to their higher academic achievements (e.g. CGPA), which would also be highly correlated with their family social status. On the other extreme, the students who availed of a need-based scholarship probably had lower standards of living because of the prescribed eligibility criteria that made them eligible for the award. The HEC Ehsaas scholarship programme is an example of such a programme that selects students based on the need assessments.

To avoid biased estimates that was possible due to the selection bias and also given the availability of data, we expanded the model by including other control variables or the student level baseline characteristics, S_i, programme level characteristics, P_j, and district level controls, D_d. Thus, the functional form of the estimation model became:

$$Y_{ijt} = \beta_0 + \beta_1 T_i + \beta_2 Post_t + \beta_3 T_i * Post_t + \sum_l \gamma_l S_i + \sum_k \delta_k P_j + \sum_m \theta_m D_d + \varepsilon_{ijt}.$$

In the above equation, S_i is the student background information (i.e., students' previous academic records (percentage marks in matric and intermediate), parents' education, gender, age, etc.). P_j is a set of dummy variables that control for departmental level variations and degree programmes (*j = 1, 2,…,13 representing BBA, BS Economics, etc.*), and D_d is a set of dummy variables for districts that control the variation in students' domicile. The difference-in-differences (DID) estimation technique is applicable when there are sufficient numbers of observations in both treatment and control groups and the two periods (in the semesters before and after the scholarship intervention). We used students' records who were enrolled in sessions 2017-20 and 2018-21 for our main DiD analysis. The model was estimated by OLS and standard errors were robust. In other cases, (such as using survey-based datasets), though we still had observations on both treatment and control groups (students with scholarship and without scholarship), due to losing the pre- and post-intervention interactions, we either applied a t-test or multiple regression model to estimate the impact of scholarships on other dimensions (quantitative-nature) of student academic success, such as student retention rate, their engagement, satisfaction, etc.

6. DATA AND METHODOLOGY

To understand the impact of scholarships on students' academic performance and success, we used a triangulation of mixed methods by using administrative data, a survey conducted at UoT, key informant interviews (KIIs), focused group discussions (FGDs), and policy documents from the scholarship monitoring bodies (Higher Education Commission of Pakistan (HEC) and Balochistan Educational Endowment Fund (BEEF)).

6.1. Quantitative Data

This study used a wide range of secondary quantitative data (e.g., students' academic performance measured by students' marks in percentage, GPA, and CGPA; students' retention rates, and students' percentage marks in matric and intermediate levels) collected from several sources at the UoT. These sources included students' semester gazettes from the office of the controller examinations, MIS records from the IT section, lists of awardees, and other scholarship documents from the financial aid office (FAO). These sources also provided us with information on other control variables, which were used in the analysis, including gender, age, district, BS programmes, and sessions (2017-20 to 2021-24).

6.2. Survey Data

This study was complemented with survey data, which we conducted at the UoT by using the survey questionnaire of CSEQ[2] (Pace and Kuh, 1998). The survey questionnaire

[2] The CSEQ is a product of the Center for Postsecondary Research & Planning at Indiana University (College Student Experiences Questionnaire (CSEQ): Institutional Research: Swarthmore College).

included students' background information, their experiences using a library, computer labs, course learning materials, writing, their experiences with faculty, using campus facilities, personal experiences, scientific and quantitative experiences, opinions about the university, the environment of the university, level of their knowledge, skills, and competence.

The total population consisted of 1,826 students who were enrolled in 13 undergrad degree programmes of four faculties in sessions 2018-21, 2019-22, 2020-23, and 2021-24 (see Table A2 for programmes). We distributed 1,780 questionnaires and collected 960 (53.93 percent) responses successfully. After cleaning and merging this dataset with other datasets, 579 (60.31 percent) questionnaires were finally used for this analysis.

6.3. Other Instruments for Data Collection

In addition to the survey and secondary data of UoT, we also conducted key informant interviews (KIIs) with the concerned officials of BEEF, University of Turbat, University of Loralai, University of Balochistan, SBK Women's University, and BUITEMS. We conducted 17 KIIs, including 13 from the universities (i.e. focal person of the Financial Aid Office, chairpersons or deans of departments or faculties, and members of the Institutional Scholarship Award Committee (ISAC)) and 4 concerned officials from the monitoring agency (BEEF). The survey tools for this analysis were taken from MacAuslan *et al.* (2019). In addition, we also conducted four FGDs with students who were awarded any type of scholarship in the given four public sector universities of Balochistan (UOB, BUITEMS, SBKWU, and UOL). Each FGD comprised 10-12 students. The key questions in FGDs or interviews were based on the scholarships' impact other than the students' cognitive learning skills (i.e., academic performance) such as scholarships' spillover effect or externalities (both positive and negative) in the form of supporting their siblings' education, part-time jobs, reasonable stipend amount, pressure for retaining scholarship, etc. In addition to that, the main focus of discussions and interviews was on the areas of need assessment, programmes' monitoring and process evaluation, budget constraints, barriers to implementation, delays in payments, knowledge and information dissemination, data recording, maintaining and updating, etc.

6.4. Descriptive Statistics

We made a huge dataset by combining four datasets, namely student information system (SIS), result gazettes, scholarship lists, and survey datasets. Though we lost a huge number of observations due to combining all the datasets, we still had a sufficient number of observations for analyses. The unit of observation for this analysis was students who were/are enrolled in any of the thirteen undergraduate programmes (4-5 years) at UoT (see Table A2). After cleaning the data, overall the dataset consisted of 1,740 individual observations, of which 66.84 percent were male and 33.16 percent were female. Out of the total, about 55.86 percent were awarded any type of scholarship with 51.07 percent and 65.51 percent of males and females respectively. According to the district-wise distribution of scholarships, about 61, 70, 75, and 92 percent of students were from Turbat, Punjgoor, Gwadar, and Awaran, respectively. Natural sciences (e.g. biochemistry, biotechnology, and botany) were very popular subjects among female students, and above 70 percent of females received scholarships (see Table A2 for further detail).

Table 3 shows descriptive statistics of the students' academic performance. On average, students secured 60.29 percent marks (2.35 and 2.47 in terms of GPA and CGPA, respectively) in the comparison group, whereas students secured 75.74 percent marks (3.24 in terms of both GPA and CGPA) in the control group.

Table 3 shows a significant difference between outcome variables of interest in the treatment group (students having scholarships) and control group (students having no scholarships) that were observed before the scholarship programmes were launched at UoT. For instance, among enrolled students in different undergraduate programmes, the average percentage marks of students without any expected scholarship were 55.40, whereas it was 75.89 percent for students with an expected scholarship before the scholarship programmes were launched.

On average, the percentage of marks of students increased by 10.16 points in the control group but surprisingly the marks reduced by 0.25 points after the award of scholarships. In addition, the students' academic performance in both treated and control groups either before or after the awards varied significantly when disaggregated by gender (male vs. female) (see Table 3).

Table 3

Descriptive Statistics of Students' Academic Performance (in Percent, CGPA and CGPA): Session 2017 and 2018

	Percentage Marks				GPA				CGPA			
Outcome	Students without Scholarships		Students with Scholarships		Students without Scholarships		Students with Scholarships		Students without Scholarships		Students with Scholarships	
Variable	Obs.	%	Obs.	%	Obs.	mean	Obs.	mean	Obs.	mean	Obs.	mean
Before the Award												
Total	542	55.40	778	75.89	552	1.98	782	3.21	548	2.06	777	3.22
Male	423	55.14	500	75.16	431	1.96	504	3.19	429	2.05	502	3.18
Female	119	56.31	278	77.20	121	2.04	278	3.25	119	2.11	275	3.28
During and After the Award												
Total	1922	61.67	3938	75.70	1929	2.46	3940	3.25	1930	2.56	3939	3.24
Male	1403	58.93	2415	73.94	1407	2.35	2415	3.15	1408	2.42	2415	3.16
Female	519	69.08	1523	78.49	522	2.86	1525	3.41	522	2.91	1524	3.36
Scholarship Types												
Total	2464	60.29	4716	75.74	2481	2.35	4722	3.24	2478	2.47	4716	3.24
HEC			4064	75.47			4070	3.22			4065	3.21
Ehsaas												
BEEF			342	79.02			342	3.52			342	3.57
HEC Need			310	75.54			310	3.27			309	3.28

Data Source: Authors' calculations based on the UoT result gazettes and scholarship awardees' lists.

7. RESULTS AND DISCUSSION

This rigorous short- to medium-term impact evaluation was carried out to assess the impact of need (i.e. HEC Ehsaas Scholarship) and merit (i.e. BEEF Scholarship) programmes on students' academic success at the University of Turbat (UoT). Our variable of interest in this study was student academic performance, which we measured by students' percentage marks in the semester. The percentage of marks of students at the university level was higher for the students who received scholarships than for those who did not receive any scholarship, both before and after the intervention (see Table 3 for further detail). Students' matric and intermediate percentage marks along with their parental education were included in the regression for controlling the variation in their

background. Also, the fixed effects of degree programmes, semesters, and district levels were also included for further controlling the institutional or district-level variations in the datasets. The regression model is estimated by the ordinary least square (OLS).

7.1. Impact of Scholarship on Students' Academic Performance (Research Question 1)

Starting with the baseline regression (Column 1, Table 4), the estimated coefficients of βs indicate that overall there was no seemingly significant impact of parental education or students' intermediate marks on students' academic performance while students' matric marks were seemingly a better predictor for students' performance in the undergraduate programmes.

Table 4

Programme-Semester Fixed Effect Estimates of Government Scholarships on Students' Academic Performance

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Overall Sample			Need-Based Scholarship (Ehsaas Programme)			Merit-Based Scholarship (BEEF Programme)		
Outcome Variables: Semester Marks (in percent)	Total	Male	Female	Total	Male	Female	Total	Male	Female
Educated Parents (at least one Graduated from School)	–0.00	0.30	–2.20*	–0.42	–0.33	–1.87	0.18	0.01	1.45*
	(0.63)	(0.84)	(1.26)	(0.71)	(0.91)	(1.30)	(0.61)	(0.94)	(0.80)
Intermediate Marks (%)	0.05	0.06	–0.011	0.03	0.07	–0.028	–0.06	–0.13**	–0.07
	(0.03)	(0.06)	(0.06)	(0.04)	(0.06)	(0.07)	(0.03)	(0.06)	(0.05)
Matric Marks (%)	0.21***	0.14***	0.56**	0.21***	0.12**	0.61**	0.14***	0.15***	0.00
	(0.05)	(0.05)	(.23)	(0.05)	(0.06)	(0.24)	(0.04)	(0.05)	(0.11)
Scholarship Holders	4.58***	4.95***	1.92	2.43**	1.21	4.52**	9.39***	10.31***	9.18***
	(0.90)	(1.10)	(1.60)	(1.17)	(1.31)	(2.26)	(0.90)	(1.21)	(1.26)
Post-Scholarship Semester	5.20***	4.5**	7.18***	4.41**	3.01	8.75***	4.27***	3.37**	6.61**
	(1.69)	(1.90)	(2.51)	(1.86)	(1.96)	(3.17)	(1.51)	(1.69)	(2.61)
Scholarship Holders x Post-Scholarship Semester	0.39	–0.15	0.54	3.10**	4.10***	–2.58	–0.75	–1.58	–0.13
	(1.46)	(1.78)	(2.02)	(1.39)	(1.55)	(2.51)	(1.47)	(1.86)	(1.98)
Observations	869	603	266	759	529	230	634	436	198
R- square	0.2943	0.2743	0.3809	0.2940	0.2928	0.3683	0.4597	0.4290	0.5983
District Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Semester Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Programme Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Data Source: Authors' calculations based on the UoT result gazettes, awardee lists, and survey at the UoT.

Note: Observations comprise students enrolled in the sessions 2017–20 (5th to 8th) and 2018–21 (3rd to 8th). Each session starts in January and ends in December. Robust standard errors are in parenthesis. * p<0.1, ** p<0.05, *** p<0.01. Models estimated by OLS.

Results in Table 4 indicate that students who held scholarships obtained 4.58 percent higher marks compared to those students who did not have any scholarships (see Column 1); for need and merit-based scholarship programmes it is 2.43 percent and 9.39 percent respectively (see Column 4 and 7, Table 4).

The estimated coefficients of interest indicate that overall the scholarships seemingly did not affect the academic performance of undergraduate students on average (see Column 1, Table 4). In addition, though the female students in our sample performed significantly better than the male students after the scholarship intervention (7.18 percent

vs. 4.5 percent), the overall intervention of the scholarship did not have any significant short- to medium-term impact on students' academic performance (see Table 4, Columns 2 and 3).

7.2. Need vs Merit-based Scholarship (Research Question 2)

Which type of intervention is a better tool for students to access higher education: need - or merit-based scholarship? Given the variation in eligibility criteria or the nature of scholarship programmes (see Table A1), the study splited the sample into two; need-based scholarships (see Table 4, Columns 4 to 5) and merit-based scholarships.

Results in Column 4 of Table 4 show that the need-based scholarship (i.e. HEC Ehsaas scholarship programme) increased the academic performance (in percentage marks) of those students who held a scholarship compared with those who did not. On average, a student who held the need-based scholarship obtained 3.10 percent more marks compared to a student who did not hold any type of scholarship in the subsequent semesters of the intervention (i.e. third to eighth). By doing further analysis, our results show that the impact of the need-based scholarships on students' academic performance in overall sample was due to the sample of male students only as the estimated coefficient for the sample of female students is insignificant (see Columns 5 and 6, Table 4). The award of need-based scholarship increased the academic performance of male students by 4.10 percent of marks and this increase could protect a student from dropout or it can change a student's grade from B to B+, for example. On the other hand, the estimated coefficients of our variables of interest show that there is seemingly no significant relationship between merit-based scholarship (i.e. BEEF programme) and students' academic performance (see Table 4, Columns 7 to 9).

7.3. Impact of Scholarships on Students' Other Success Outcomes (Research Question 3)

Persistence (or Retention)

With the given data, direct measures for retention rate were not available. We measured it by using the University of Turbat's policy for the minimum requirement of the degree award (i.e. minimum CGPA shall be 2 or more out of 4). The expected retention is a dummy variable with a value of 1 if the CGPA of a student was greater and/or equal to 2, and 0 otherwise. We did a t-test mean comparison and found that overall 17.76 percent more students without any scholarship were vulnerable and expected to drop out. On average, male students were seemingly more vulnerable than females to drop out of the university's enrolment if they did not have any scholarships with about 19 percent and 12 percent of male students and female students respectively (see Column 4, Table A3).

Student Engagement and Satisfaction

Students' satisfaction was measured on a scale of 0 to 3. Overall, those students liked the UoT more (mean 0.19 points) if they had a need-based scholarship than those who did not, however, the difference in their preference for UoT was significant only for the male sample only (see R1 of Table A5).

Four indicators were used to measure students' engagement in activities in their academic pursuit on a Likert-type scale of 0 to 3 (where; 0=never and 3=very often). a) When we asked students how often they talked with their instructors about their course materials, grades, and assignments, we found a significant difference in mean scores (0.37 points = 2.08-1.71) between students with and without scholarships (see R2 Table A5). Though a significant difference was observed for both genders, it was much higher for the male sample (0.46) than the female sample (0.21). b) Similarly, we asked students how often they discussed their career plans and ambitions with a faculty member. Though the average score was low overall, interestingly it was much higher for male students who held a scholarship (see R3 of Table A5). c) Further, we also asked them how often they asked a friend for help with a personal problem and it was observed that students, when held a scholarship, most likely asked their friends for helping them with their problems and this was held for male sample only (see R4, Table A5). d) Finally, we asked students about their engagement in learning activities by using campus facilities on the same scale and found that students who had scholarships and particularly male students used more computer labs and learning centers to improve their studies or academic skills such as reading and writing (see R5, Table A5).

The Attainment of Learning Objectives

We used four indicators (on a 4-point scale, where 1=very little and 4 =very much) to measure students' perception of the learning objectives of the programmes they were enrolled in by linking them with their potential career prospects. We asked students to what extent they feel they had (a) acquired knowledge and skills applicable to a specific job or type of work, and (b) acquired background and specialisation for further education in a professional, scientific, or scholarly field. Overall they responded to these questions very positively; we found no significant difference in the mean scores of the students with and without scholarships and that is because positive and negative mean score differences were respectively observed in male and female samples (see R6 and R7, Table A5). To further strengthen and validate our findings, we asked two additional similar questions (c) and (d) to students using the same scale. The responses were positive in both treated and control groups and their mean score differences were significantly high for both genders (see R8 and R9, Table A5).

Acquisition of Skills and Competences

The acquisition of skills and competence is another concept that explains the academic success of students. We asked students several questions (on a scale of 1 to 4, where 1= very little and 4=very much) that were related to the acquisition of skills and competence to support the argument that scholarships make a difference in students in terms of focusing and acquiring skills and knowledge that are necessary for career success. (a) We asked students to rank their experiences to the extent they felt that they gained the ability to think analytically and logically and we observed a significant difference in the mean scores (0.17 points) existed between treated and control groups and that was because of the male sample (see R10, Table A5). (b) We asked another question about their ability to learn on their own to pursue ideas, find information when they needed it, etc. Overall, the mean scores in all of the cases were above 3 on the 4-point scale but a significant

difference in mean scores (0.12) was observed in the male sample only (see R11, Table A5). (c) Similarly, the students were asked about their ability to present ideas and information effectively when speaking to others and we found a 0.23 point difference in the mean scores of male students with and without scholarships (see R12, Table A5). d) Finally, to the question on the ability to get along with different kinds of people, the average response was about 3 on the 4-point scale, however, a statistically significant positive (negative) difference in the mean scores for the male (female) sample was observed (see R13, Table A5).

Career Success

We asked students to share their experiences or feelings (on a 7-point scale; where 1=lowest and 7=highest) about the emphasis of the University of Turbat on various aspects of student development. For example, when we asked them to express their feelings about the emphasis on academic, scholarly, and intellectual qualities, we found that the overall mean scores were above the expected mean score (3.5) in all cases, however, a significantly huge difference in the mean score (0.24 points) in the male sample was observed (see R14, Table A5). On the questions about how the UoT emphasised students' information literacy skills (see R15, Table A5) and students' critical, evaluative, and analytical qualities (see R16, Table A5), the differences in mean scores were positive and significant for both samples (i.e. male and female).

7.4. Robustness Checks on Main Findings

Alternative Measures of Academic Performance

In our main analysis, we measured academic performance with percentage marks obtained in a semester to capture the maximum variation in the dependent variable. However, there are other measures available that are important in the semester system, which are grade point average (GPA) and cumulative grade point average (CGPA). We did not choose these measures for our main analysis because in the semester system once a student attained a GPA or CGPA of 4 in a semester and maintained it in the subsequent semesters, the outcome variable of interest would not vary for that student. On the other hand, percentage marks might have varied according to the student's performance in each succeeding semester. Columns 1 to 3 and 4 to 6 of Table A4 present the findings of the need-based scholarship impact on students' academic performance in terms of GPA and CGPA, respectively. As expected, according to both the measures, the GPA and CGPA of male students improved by 0.313 and 0.183, respectively after the scholarship awards compared to the GPA and CGPA of their counterpart male students who had no scholarship. On the other hand, there was no sufficient evidence that the academic performance of female students according to these measures improved after the awards of scholarships.

Placebo Experiment

A serious concern is that if a time trend existed in the data we used due to numerous confounding factors, the estimated coefficients we got from our DiD analysis would be

biased. Therefore, we ran a placebo experiment to check the robustness of our results, especially for the need-based scholarship for which we got a positive impact of scholarships on male students' academic performance. The basic assumption of the placebo experiment was that the scholarships were awarded to students in the first and the third semesters of sessions 2018-2021 and 2017-20 rather than being awarded in the third and fifth semesters of sessions 2018-2021 and 2017-20 respectively. Since we had a sufficient number of observations for both pre- and post-intervention scenarios, we were able to estimate the impact of the pseudo-scholarship awards on students' academic performances.

The findings from this placebo exercise further strengthen our initial findings. Here the estimated coefficients of our variable of interest in all cases remained statistically insignificant (see Columns 7 to 9 of Table A4). Based on evidence extracted from this placebo experiment further proposes that need-based scholarships could improve the academic performance of male students by reasonable percentage points.

7.5. Possible Channels for Better Academic Performance of Male Students Due to Scholarship

To investigate the possible causes of getting higher marks in the semester by male students due to the need-based scholarship, we used our survey data. Given the regional socio-economic conditions and cultural constraints, one can think of several reasons but we limit our analysis and discussion here to two possible channels. First, in a male-dominated society where a marketplace job is mostly an option for male students only; financing their university-level education comes with the added pressure of concentrating on their education and academic performance. Our survey data also show that there was a significant difference between how males and females met their university expenses. Male students mostly financed their expenses by themselves and females' expenses were mostly met by their parents or spouses. It is clear that, on average, 19.35 percent more females than males depended on parental income for their university expenses (see Column 1, Table A3). However, the statistics also show that though parental support decreased due to scholarships awarded to their children, the reduction was twice as much for females than for males (see Column 1, Table A3). Elaborating the case further, it is quite clear from the self-reported survey data that, on average, 9.26 percent of male students and 5.66 percent of female students met their university expenses mostly by themselves (Column 2 of Table A3). Moreover, the scholarship awards seemingly helped about 4.91 percent of the male students. However, for female students the difference in the percentage between scholarships awarded and non-awarded was insignificant. We also observed from our survey data that the scholarship awards had seemingly reduced the attitude of female students toward taking notes of their class lectures. However, the awards did not bring any significant difference in their attitude between students with scholarships and students without scholarships in taking notes of their lectures (see Column 3, Table A3).

We tried to disentangle the potential causes for justifying why the male students in our sample got better results compared to the female students. One possible explanation could be that the male students because of getting scholarships got extra time from their working hours to focus on their studies. To check the validity of this argument, we ran two regressions. We regressed the dependent variables, namely, the

parents meeting the university expenses of their children and students taking detailed class notes on dummy variables for scholarship holders and gender, and including control variables, i.e., district, semester, age, and parental education (see Columns 1 and 2 of Table 5). The results show that 14 percent of the students who held a scholarship were less likely to depend on their parental income for their university expenses compared to the students without any scholarships. Compared to female students, male students were also less likely to depend on their parental income for their education expenses.

Coming to our variable of interest, i.e., the interaction term (scholarship holder x male), 12 percent of male students with a scholarship, reduced their dependency on their parental income for university education compared to female students who got a scholarship as well as those students who did not get any type of scholarship. To further strengthen the argument, we also investigated whether there was a significant difference between the attitude of male students with scholarships towards class participation or note-taking and their counterparts and female students. The DiD estimates show a difference of 0.69 points between male students with scholarships and other students with or without scholarships (see Column 2 of Table 5). These results, together with the results presented in Column 3 of Table A3, show that this difference is not because of being a male student with a scholarship, rather the difference is because female students who got scholarships were less likely to take class notes. It can be inferred from this analysis that the scholarship likely made a difference in the academic performance of male students because of reduced dependency on self and parental financial means.

Table 5

Possible Causes/Channels of Scholarship that Improve Male Students' Academic Performance

Outcome Variables	Parents Meeting Students' University Expenses (Value = 1, and 0 otherwise)	Students Took Detailed Class Notes during Class (never, Occasionally, often, very often)
Scholarship Holders	–0.14***	–.031
	(0.05)	(0.23)
Male	–0.13***	–1.10***
	(0.04)	(0.20)
Scholarship Holders x Male	–0.12*	0.69**
	(1.06)	(0.28)
Observations	863	849
District Fixed Effects	Yes	Yes
Semester Fixed Effects	Yes	Yes

Data Source: Authors' calculations based on the UoT's result gazettes, awardee list, and survey data.

Note: Observations comprise students enrolled in sessions 2018–21 to 2021–24. Robust standard errors are in parenthesis. * p<0.1, ** p<0.05, *** p<0.01. Model (1) is a linear regression model (2) is an ordered logistic regression.

7.6. Extension: Findings on Process and Monitoring Evaluation (Research Question 4)

Using OECD's evaluation criteria, viz. relevance, efficiency, sustainability and effectiveness and impact (OECD, 2021) and the qualitative data extracted from the FGDs, KIIs, and policy documents of public sector universities in Balochistan, HEC, and BEEF, this study did a thematic analysis and found the following evidence on the scholarship programmes.

Relevance

While reviewing the relevant policy drafts of both scholarship sponsoring bodies, it was observed that these scholarship programmes are not only vividly relevant but also aligned with national and global level policies and are focused on underprivileged and talented students, further these scholarships are also aligned with SDGs.

Since the BEEF programme is designed to focus on the socioeconomic conditions of Balochistan but according to our thematic analysis, it concentrates on the talented students only. In other words, the previous academic performance in terms of CGPA of a financially sound background student can compete to achieve these criteria only as generally affluent students have better academic records than the financially challenged students who cannot compete for the merit-based inclusion criteria. Therefore, as per the finding of this study, it is recommended to redesign the BEEF scholarship in line with the HEC Ehsaas programme.

Efficiency

To check the cost-effectiveness of these scholarship programmes, our findings through KIIs and FGDs depicted that there are various types of constrains from the announcement of such scholarships till the disbursement to the recipients. For instance, the award of the HEC Ehsaas scholarship was completed after two semesters, and we observed a huge dropout ratio in the first and second semesters this seemingly happened due to financial constraints of the undergrad students, and the same was also endorsed by KIIs.

This study also found several reasons for delays in these scholarships including a lack of coordination among various stakeholders i.e., the funding agencies, universities, and the financial institutions concerned. Most of the FAOs are under-resourced, and the traditional role of the administrative staff in universities are some of the obstacles observed during the FGDs and KIIs. For the HEC Ehsaas scholarship, the stipulated account opening with NBP was a major bottleneck for remotely located students, whereas BEEF awardees for the 2016-19 session received their cheques in 2020 when the students graduated from a university a year earlier, therefore, the objective of the scheme was not met. For the efficiency of the HEC scholarship process see further details in Table A6.

Sustainability

In KIIs, the officials raised concern about the sustainability of the HEC Ehsaas programme as the disbursed amount is from the annual recurring budget, and discontinuation of the scheme might jeopardise the financial means of a huge number of undergraduate students as was the case of the Prime Minister Fee Reimbursement

Programme(PMFRP). On the other hand, BEEF has a more sustainable financial model due to its endowment fund, and its proceedings are utilised for scholarships and meeting the operational costs of the entity (see Table A7).

Effectiveness and Impact

The qualitative data from the FGDs and KIIs revealed that these scholarship programmes not only helped the recipients to continue higher education but supported their siblings' education, purchasing books and other reading materials. It was also found that many students utilise their stipends for buying capital assets.

8. CONCLUSION AND RECOMMENDATIONS

Access to higher education is inadequate mainly in the underprivileged areas of Pakistan. The federal and provincial governments of Pakistan have initiated several scholarship programmes for undergraduate students in the underprivileged regions of Pakistan. This study aimed to examine the short-to-medium-term impact of government-sponsored scholarships on undergraduate students' academic success. Using a quasi-experimental research design and DID estimation technique, the findings of this study revealed that the short to medium-term impact of a need-based scholarship programme (i.e., HEC Ehsaas Programme) is effective only for male students in improving their academic performance (improved semester percentage marks).

In contrast, this study found no evidence on the impact of merit-based scholarship (i.e. BEEF) on students' success outcomes and that may be due to the fact that it provides incentives to those students who are already performing better academically. Further analysis showed that need-based scholarships likely reduced the burden of university-related costs for male students that were previously covered either by their parents or by themselves. As a result, these students had more time to focus and engage in academic activities at university.

On every measure of students' success—students' retention rate, engagement in campus-related activities such as talking with course instructors about the course, career plans, and ambitions; using campus labs and centers; satisfaction with the university and degree programmes, acquisition of knowledge and skills; and career success indicators – the need based scholarship programme appeared to be a better-targeted programme for male students in the underprivileged region of Balochistan. In light of the above findings, the following are some policy recommendations.

First, the Ehsaas Scholarship programme is designed properly and contributes to reaching out to the targeted students in Balochistan and even in the country. It seems to support the poor and underserved families in Balochistan to meet their children's educational expenses. There is evidence that such financial supports seemingly reduce the burden of those male students who usually do jobs to finance their education. On the other hand, though the merit-based BEEF scholarship programme provides incentives to brilliant students in Balochistan due to its policy, it incentivises only those whose family status and their socio-economic conditions are already much better than the rest. Given the scarce resources and socio-economic conditions of people in Balochistan, we recommend that the need-based scholarship programmes should be given more attention in the province.

Second, though the objectives of the scholarship programmes are well defined, a slight revision in their policies makes them more effective to target the deprived population of Balochistan. For example, we observed that the threshold of Rs.45000 of family income as its initial inclusion criteria in the Ehsaas programme was inappropriate given that the demographics of the rural population of Pakistan (i.e. joint family structure with large family size and few earning hands is common). Therefore, we suggest a new threshold for its initial inclusion criteria which is per capita family income (i.e. family income /family size). Similarly, without revision of its policy, the BEEF scholarship programme rarely supports needy or underserved students of the province due to its merit-based assessment for eligibility. Though its financial model is more sustainable because it does not only provide scholarships to students but also covers the operational and other costs of the proceedings. Combining the positive points of both merit and need-based scholarship programmes, a better programme design for students in Balochistan Province could be the one that aligns the eligibility criteria of the Ehsaas programme with its threshold modification with the autonomous financial model of the BEEF programme.

Third, the discontinuation of such scholarship programmes in Pakistan is a very common phenomenon due to political rivalry and revenge—a crucial concern raised by stakeholders in public sector universities of Balochistan by illustrating the recent example of the discontinuation of the Prime Minister Fee Reimbursement Programme(PMFRP) that severely reduced the enrolments of postgraduate degree programmes in their universities. Since the ongoing Ehsaas scholarship programme is providing financial support to underprivileged students of Pakistan and if it is discontinued just like the PMFRP, its unprecedented impact on higher education could be disastrous across the country. Therefore, we suggest the government of Pakistan should continue the HEC Ehsaas scholarship programmes but think of a more self-sustained financial model just like the BEEF programme in Balochistan and the PEEF programme in Punjab.

Fourth, the results of this study may be generalisable to other universities in Pakistan with characteristics similar to those of the UoT (e.g., similar location, less diversified students based on ethnic, lingual, and socio-economic conditions). Since the HEC Ehsaas scholarship programme is a national-level programme, which is operating in 135 universities and 87 campuses of degree awarding institutes, it may be possible to conduct an experimental research design for identifying the causal impact of the scholarship on students' academic success.

APPENDICES

Table A1

Comparison between BEEF and HEC Ehsaas Undergrad Programmes

Components	BEEF Scholarship Programme	HEC Ehsaas Programme
Eligibility Criteria	Student academic performance-based, measured by CGPA	Need-based, measured by different indicators including family income is less than Rs.45,000
Duration	Each year based on previous academic performance	Continue throughout the undergraduate programme subject to the student's satisfactory academic progress
Funding	Balochistan Government	Federal Government
Monitoring body	Balochistan Education Endowment Fund (BEEF), Quetta	Higher Education Commission (HEC), Pakistan
Funding Detail	Total Endowment Fund Rs. 8 Billion. Award scholarships from the proceedings of investment	Total Budget Rs.24 Billion over four years. Total scholarships = 200,000 (50,000 each year)
Scholarship Coverage	Stipend Rs. 60,000	100% Tuition Fee Stipend 4000 per month
Bifurcation based on Gender/	Gender Free merit at Institutional Level.	50% Quota for Female 48% Quota for Male 2% Quota for differently abled
Level	All degree programmes	Undergrad programmes (4-5years)
Likely Outcome	Motivate students or create a competitive environment	Attract needy students to higher education
Evaluation Process	It is simple to evaluate the performance of students based on student CGPA	It is difficult to evaluate student's needs which is somehow subjective and requires a lot of procedures, documents, and efforts
Impact	Recipients of the scholarships seemingly continue their education without the scholarship award. It is observed that high-performing students most likely belong to families with a better socio-economic background. Their early education was better, they have better accessibility to current resources (internet, books, etc.)	A huge number of scholarship recipients seemingly could not continue their education without the scholarship award. Due to the extreme poverty and low HDI of the province, the design of the programme is suitable for under-served students in the province to access higher education in public sector universities of Balochistan.
Payment Procedures	BEEF provides cheques or other means of payment to students' stipend amounts directly to them.	Initially, HEC accepted account numbers from any bank in Pakistan. Now, it is strictly bound for students to open their accounts in the NBP, which was observed from interviews and FGD, the biggest hurdle for the smooth operation of the programme and caused delayed payment. Opening accounts in NBP is either inaccessible to students or difficult for them since officials at NBP do not entertain students politely.
Sustainable Model	The scholarship programme is operating based on a self-sustainable financial model which not only provides students with scholarships but also covers its operating cost. BEEF is operating as a company which invested in the Endowment Fund and uses its proceeding only.	Since the programme is initiated by the incumbent government with an annual budget of Rs.6 billion which is projected to continue for four to five years. There is no guarantee that the programme will continue after the tenure of the incumbent government.

Table A2

Distribution of Scholarships at UoT: District and Programme Wise

	Total		Male		Female	
	No of Obs.	%	No of Obs.	%	No of Obs.	%
Overall	1740	55.86	1163	51.07	577	65.51
Districts						
Turbat	1232	60.55	802	55.49	430	70.00
Punjgoor	61	70.49	51	68.63	10	80.00
Gwadar	127	74.80	68	67.64	59	83.05
Awaran	25	92.00	23	91.30	2	100.00
Others	10	80.00	9	77.78	1	100.00
Programmes						
BBA	194	50.52	169	49.11	25	60.00
BS Commerce	49	65.30	42	61.90	7	85.71
BS Economics	180	51.11	149	49.66	31	58.06
BS Political Science	90	41.11	65	41.54	25	40.00
BS Computer Science	152	53.28	134	52.99	18	55.56
BS Education	354	61.30	194	54.12	160	70.00
BS Balochi	91	58.24	59	59.32	32	56.25
BS English	131	49.62	77	46.75	54	53.70
BS Chemistry	120	61.67	62	48.39	58	75.86
BS Bio-Chemistry	77	72.73	32	62.50	45	80.00
BS Bio-Technology	49	73.47	17	76.47	32	71.88
BS Botany	69	68.12	27	59.26	42	73.81
LLB (5 Years)	159	52.83	115	50.43	44	59.09

Data Source: Authors' calculations based on the UoT result gazettes and scholarship awardee lists. The normal duration of all degree programmes are 4 years except the LLB.

Table A3

Additional Descriptive Statistics

	Parent meet their University Expenses (1)		Students meet their University Expenses by themselves (Part-time Job, Saving, etc.) (2)		Took Detailed Class Notes during Class (0 = never, 1= Occasionally, 2=Often, 3=Very Often) (3)		Expected Retention (if the CGPA of a Student is Greater than 2) (4)	
Group of Students	No of Obs.	% of Students	No of Obs.	% of Students	No of Obs.	Mean	No of Obs.	% of Students
Female	424	79.00	424	5.66	417	2.55	3250	78.18
Male	518	59.65	518	9.26	505	2.25	4117	95.94
Difference		*19.35****		*3.61****		*0.30****		*17.76****
Male Students								
Without Scholarship	312	70.19	312	11.21	302	2.20	2399	75.99
With Scholarship	206	43.69	206	6.31	203	2.30	2506	95.37
Difference		*26.50****		*4.91***		*0.10*		*19.38****
Female Students								
Without Scholarship	264	84.47	264	6.06	259	2.61	851	84.37
With Scholarship	160	70.00	160	5.00	158	2.45	1568	96.75
Difference		*14.47****		*–1.06*		*–0.16***		*12.37****

Data Source: Authors' calculations based on the UoT result gazettes, SIS, scholarship awardees' lists and survey at the UoT. * p<0.1, ** p<0.05, *** p<0.01.

Table A4

Robustness Check: Programme-Semester Fixed Effect Estimates of the Need Based Scholarship on Students' Academic Performance

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Grade Point Average			Cumulative Grade Point Average			Placebo Effect Semester Marks (%)		
Outcome Variable	Total	Male	Female	Total	Male	Female	Total	Male	Female
Scholarship Holders (SH)	0.131	0.021	0.407**	0.196**	0.080	0.354	4.14***	2.63*	4.59**
	(0.092)	(0.097)	(0.192)	(0.075)	(0.082)	(0.157)	(1.18)	(1.40)	(2.24)
Post Scholarship Semester (PSS)	0.340***	0.215*	0.823***	-0.011	-0.084	0.258	-0.93	-1.25	7.81**
	(0.122)	(0.125)	(0.249)	(0.127)	(0.134)	(0.182)	(1.44)	(1.64)	(3.15)
Scholarship Holders x Post Scholarship Semester	0.209**	0.313***	-0.356*	0.118	0.183**	-0.198	1.66	2.28	-2.93
	(0.101)	(0.110)	(0.201)	(0.080)	(0.088)	(0.158)	(1.85)	(2.13)	(3.35)
Observations	760	530	230	759	530	229	324	221	103
R – square	0.2364	0.2322	0.3853	0.2738	0.2902	0.4606	0.2577	0.3063	0.4759
District Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Semester Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No
Programme Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Data Source: Authors' calculations based on the UoT's result gazettes, awardee list and survey at the UoT.

Note: Observations comprise of students enrolled in session: 2017-20 (5th to 8th) and session 2018-21 (3rd to 8th). Other control variables are parents' education (at least one graduated from school), intermediate marks (%) and matric marks (%). In the placebo effect analysis, 1st semester in session 2018-21 and 1st and 2nd in session 2017-20 were assumed pre-scholarship semesters and 2nd in session 2018-21) and 3rd and 4th in session 2017-20 were supposed post-scholarship semesters. Robust standard errors are in parenthesis. * p<0.1, ** p<0.05, *** p<0.01. Models estimated by OLS.

Table A6

Relationship between Need based Scholarship Students' Success Outcomes

	Overall Sample (Mean Socre)			Male Sample (Mean Socre)			Female Sample (Mean Socre)		
Variables	SWS	SNBS	Diff.	SWS	SNBS	Diff.	SWS	SNBS	Diff.
Students' Engagement and Satisfaction									
R1. Students Like the University of Turbat	1.59	1.78	*0.196* ***	1.50	1.76	*0.26* ***	1.75	1.81	*0.062*
R2. Students talked with Instructor about their course materials including grades make-up classes etc.	1.71	2.08	*0.37***	1.62	2.08	*0.46***	1.88	2.09	*0.21***
R3. Students discussed their career plans and ambitions with a faculty member	1.05	1.13	*0.08**	1.06	1.28	*0.22***	1.03	0.93	*-0.10*
R4. Student Asked for a friend for help with a personal problem	1.84	1.94	*0.10***	1.80	1.92	*0.12***	1.90	1.97	*0.07*
R5. Students used computer learning labs or centres to improve their study or academic skills such as reading, writing, etc.	0.74	0.92	*0.18***	0.71	0.97	*0.26***	0.81	0.86	*0.06*
Attainment of Learning Objectives									
R6. Acquiring knowledge and skills applicable to a specific job or type of work	2.94	2.94	0.00	2.80	2.90	*0.10**	3.22	3.01	*-0.21***
R7. Acquiring background and specialisation for further education in a professional, scientific, or scholarly field	2.95	2.98	*0.03*	2.79	2.91	*0.13***	3.28	3.08	*-0.20***
R8. Gaining a broad general education about different fields of knowledge	2.76	2.95	*0.18***	2.71	2.86	*0.15***	2.87	3.07	*0.20***
R9. Gaining a range of information that may be relevant to a career	2.88	3.10	*0.23***	2.80	3.00	*0.19***	3.01	3.24	*0.24***
Acquisition of Skills and Competences									
R10. Thinking analytically and logically	2.85	3.03	*0.17***	2.76	2.99	*0.22***	3.02	3.09	*0.07*
R11.Learning on your own, pursuing ideas, and finding the information you need	3.08	3.15	*0.06*	3.00	3.12	*0.12***	3.27	3.20	*0.07*
R12. Presenting ideas and information effectively when speaking to others	2.93	3.05	*0.12***	2.75	2.98	*0.23***	3.30	3.14	*-0.16***
R13. Developing the ability to get along with different kinds of people	3.06	3.09	*0.03*	2.97	3.06	*0.10***	3.24	3.11	*-0.13***
Career Success									
R14. UoT emphasised students' academic, scholarly and intellectual qualities	3.50	3.73	*0.23***	3.51	3.75	*0.24***	3.50	3.72	*0.22***
R15. UoT emphasised students' information literacy skills using computers, other information resources	3.37	3.41	*0.04*	3.25	3.58	*0.33***	3.62	3.17	*0.45***
R16. UoT emphasised students' critical, evaluative, and analytical qualities	3.41	3.73	*0.32***	3.44	3.84	*0.39***	3.34	3.58	*0.24**

Data Source: Authors' calculations based on the UoT result gazettes, SIS, scholarship awardees' lists and survey at the UoT. R1: scale 0 to 3; 1=they don't like it to 3= they are enthusiastic about it. R2-R5: scale: 0 to 3; 0 = never to 3=very often. R6-R13: scale: 1 to 3; 1=very little to 3=very much. R14-R16: scale: 1 to 7, with lowest to highest points. SWS = students without scholarship and SNBS = students on need based scholarship. * p<0.1, ** p<0.05, *** p<0.01.

Table A6

The Process of the HEC Ehsaas Scholarship Programme

Stage	Date
Online HEC Ehsaas portal opened for applications	01-Oct-20
The deadline for online application submission	30-Oct-20
The deadline for online application submission was extended to	30-Nov-20
Collection of hard copies of applications from the students	21-Jan-21
Pre-ISAC meeting held on	24-Feb-21
The actual ISAC meeting held on	13-Apr-21
Minutes of the meeting along with the list of recommended and waiting students was shared with the HEC	13-Apr-21
Disbursement of the fund by HEC to the University's account happened on	23-Jun-21
Fund disbursed to the scholarship recipient students	25-Aug-21

Data Source: Focal person at FAO UoT.

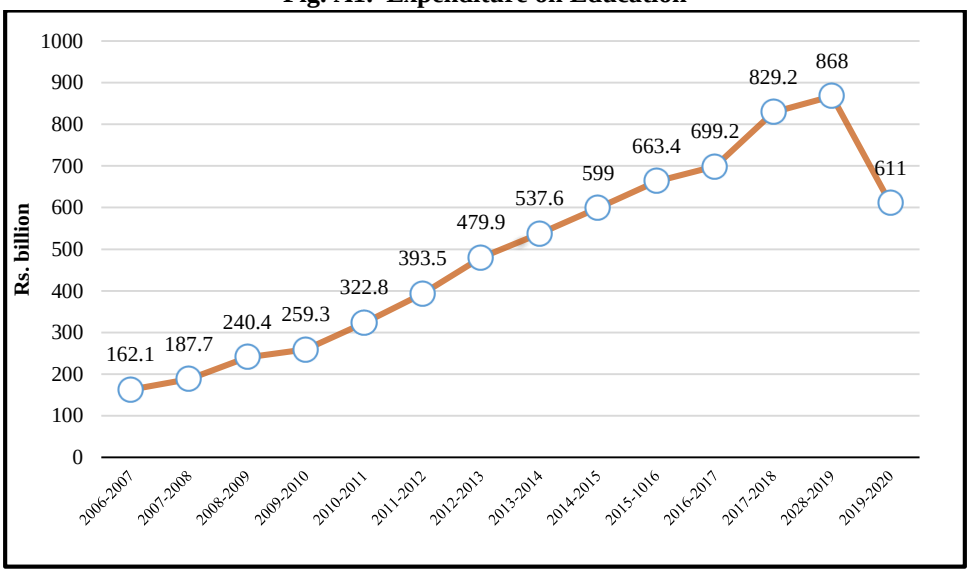
Table A7

BEEF Financial Position during 2015-16 to 2018-19

Year	2015-16	2016-17	2017-18	2018-19
Endowment Fund	Rs. 5 (B)	Rs. 6 (B)	Rs. 8 (B)	Rs. 8 (B)
Income From Endowment Fund	Rs. 346 (M)	Rs. 347 (M)	Rs. 373 (M)	Rs. 547 (M)
Income Generated from Re-investments	Rs. 11 (M)	Rs. 20 (M)	Rs. 41 (M)	Rs. 81.7 (M)
Programme Cost	Rs. 131 (M)	Rs. 406 (M)	Rs.29.7 (M)	Rs. 420 (M)
Administrative Operational Expenses	Rs. 17 (M)	Rs. 27 (M)	Rs. 45 (M)	Rs. 13 (M)

Data Source: The Government of Balochistan, 2016a, 2016b, 2017, 2018).
Note: B and M stand for Billion and Million respectively.

Fig. A1. Expenditure on Education



Source: Economic Survey of Pakistan (various issues).

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An Assessment of Electricity Tariff Reforms in Karachi City: The City of Light

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Providing reliable access to electricity to every citizen is a responsibility of the government, which is also considered an imperative condition for improving the life of every household in a country. This study thus aims to find the electricity accessibility as well as affordability condition of the households of Karachi. To collect in-depth electricity information at the household level, this study surveys Karachi city through a questionnaire design. The study surveyed 467 randomly selected households from 18 towns in Karachi. The accessibility and affordability indicators of electricity have been examined using descriptive analysis. Findings from the survey data reveal that although tariff rates are still subsidised for lower consumption households, additional charges such as government charges, TVL fees, fuel adjustment charges, etc., constitute a significant proportion of total electricity bills. The study also recognises households' cognitive and behavioural aspects of energy use by incorporating these modules in the survey questionnaire. Hence, numerous viable policy options are recommended in the study to successfully implement reforms without compromising the social aspects.

Keywords: Karachi; Electricity, Household, Tariff Reforms

1. INTRODUCTION

Access to quality electricity is a prerequisite for a better standard of living, which ultimately leads to social and economic development in a country. A huge literature on household electricity consumption shows that poor quality and lack of access to electricity adversely affect households' welfare (Chakravorty, et al. 2014; Samad & Zhang, 2016, 2017). Additionally, studies conducted by Dinkelman, 2011; Khandker, et al. 2012; Lipscomb, et al. 2013; and Banerjee, et al. 2015 have also evaluated the households' welfare effects of electricity consumption. Moreover, the UNDP's *Sustainable Development Goals (SDGs-17)* linkup the energy-related goals (SDG-7) with human welfare such as SDG-13 (action on climate change), SDG-3 (ensuring healthy lives) & SDG-11(building sustainable cities & communities) and targeted to ensure access to affordable, reliable and modern energy for all by the end of 2030.

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Access to more efficient and reliable energy sources is also an important issue that needs to be addressed. According to the World Energy Outlook (2016) statistics, at least 51 million people in Pakistan, representing 27 percent of the total population, live without access to electricity. In its annual State of the Industry Report, the National Electric Power Regulatory Authority concludes that approximately 20 percent of all villages (32,889 out of 161,969) are not connected to the grid. Even those households that are statistically connected experience blackouts daily. It is estimated that more than 144 million people across the country do not have reliable access to electricity. A survey revealed that rural households in Punjab spent about 9 percent of their total household income on fuel and lighting. However, poor households are forced to invest up to 25 percent of their monthly income in fuel, kerosene oil, and batteries due to the dysfunctional market.

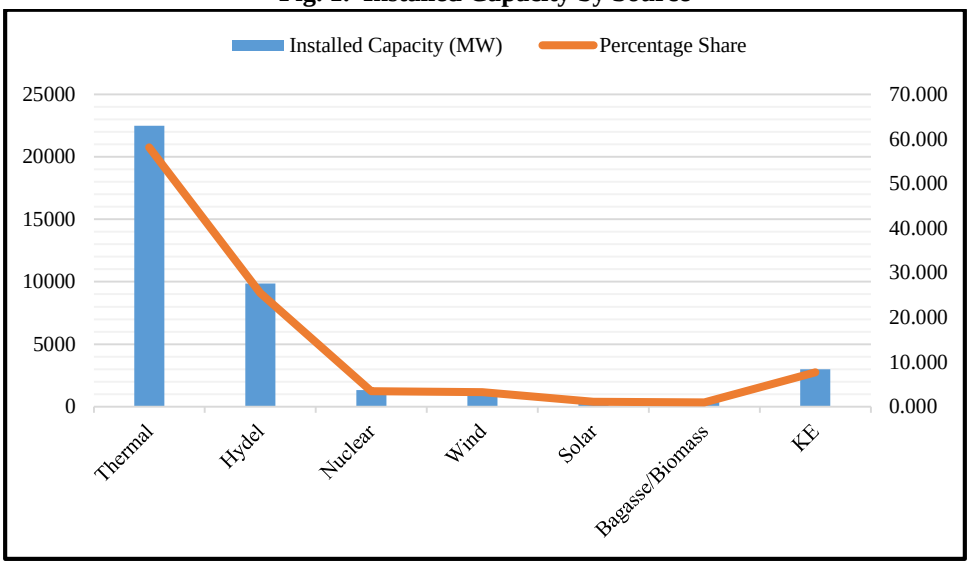
Considering the above facts, the current study is an attempt to assess the households' accessibility and affordability of electricity in Karachi city. For this purpose, the study collects an in-depth survey through a questionnaire. A random sample of 457 households from 18 towns of Karachi has been selected to examine the households' accessibility and affordability–measured by households' electricity consumption and expenditures respectively. Additionally, the study also evaluates the households' cognitive and behavioural aspects of energy particularly related to electricity consumption. The assessment of the study is based on a descriptive analysis of households' average consumption and expenditures across different slabs of the K-electric. Furthermore, the study constructs households' literacy, behaviour, and satisfaction indices across 18 towns of Karachi using linear combinations of various indicators selected from the questionnaire. Thus the overall findings of the study reveal that lower consumption households of Karachi still pay a higher amount of electricity bills consisting of electricity unit expenditures, and other charges such as government, TVL fees, and fuel adjustment charges. However, the unexpected rise in electricity prices resulting from a reduction in subsidies could aggravate anger among individuals and obstruct the implementation and completion of the government's reform programmes.

The rest of the study is organised as follows: The next section presents a brief introduction to the electric power sector of Pakistan. Section 3 presents the sampling methodology and sample size of each town drawn for the study. Section 4 discusses the findings of the survey. However, the last section concludes the study and provides policy implications.

1.1. Brief Introduction to the Electric Power Sector of Pakistan

In Pakistan, electricity is generated and supplied by both the public and private sectors. The major sources of power generating plants are Hydro, Thermal, Nuclear, and Renewable (wind, solar & biomass). Figure 1 presents the total installed capacity of electricity and its share in each power plant. Further, the figure also shows the share of K-Electric. The figure depicts that the Thermal power plant possesses the highest share (58 percent) of total installed capacity followed by Hydro and KE.

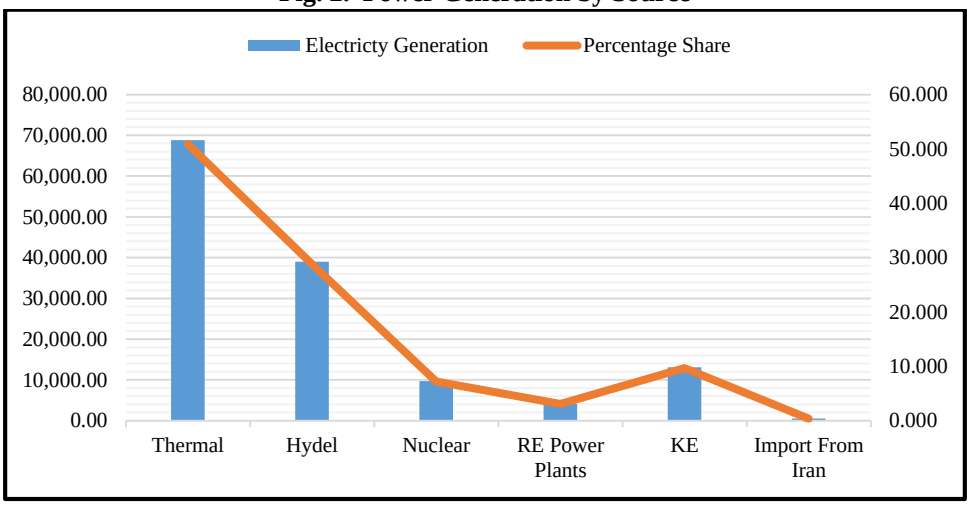
Fig. 1. Installed Capacity by Source



Source: Authors' illustration based on GENCOs/WAPDA/IPPs/DISCOs/KE.

However, Figure 2 below displays the total electricity generation and its share by source in FY 2019-20. It can be depicted from the figure that along with public/private suppliers, Pakistan also imports electricity from Iran. The total electricity generation in Pakistan during the FY 2019-20 was reported as 135, 259.39 GWh. The following figure depicts that the share of Thermal power plants in the country's total electricity generation remains highest (51 percent) followed by Hydro power generation plants with 29 percent of the total electricity generation of the country. Though the private sector i.e. KE contributes around 10 percent to the country's electricity generation.

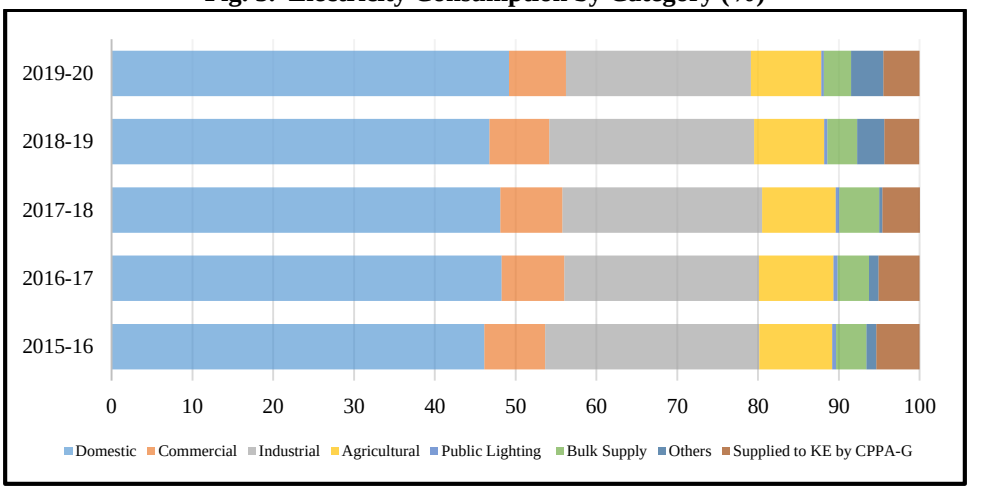
Fig. 2. Power Generation by Source



Source: Authors' illustration based on GENCOs/WAPDA/IPPs/DISCOs/KE

Figure 3 below presents the share of electricity consumption by category for 2015-16 to 2019-20. The figure depicts that the pattern of consumption (electricity) for each category is almost the same over the years. However, the domestic users (households) are the major consumer of electricity followed by the industrial sector and agricultural sector of the economy.

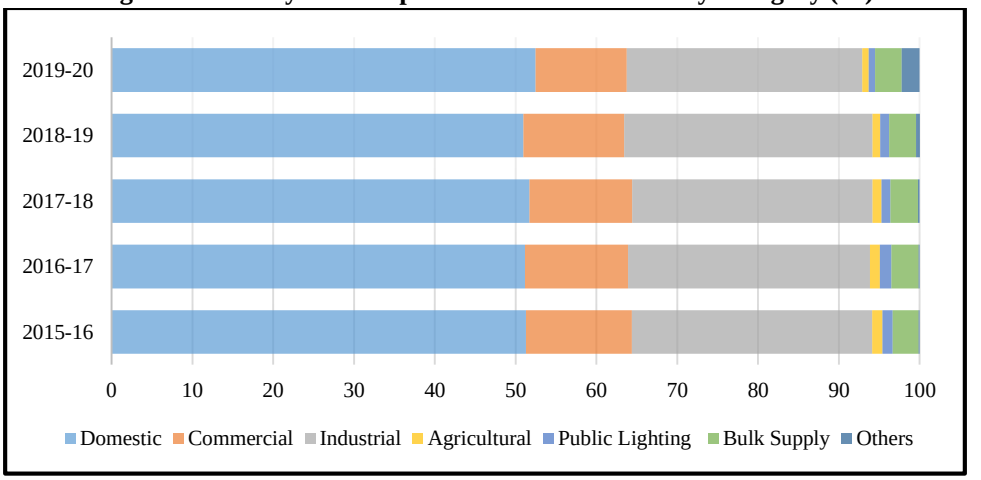
Fig. 3. Electricity Consumption by Category (%)



Source: Authors' illustration based on DISCOs/KE.

However, Figure 4 below displays the trend and share of consumption of electricity supplied by KE in Pakistan. The figure depicts a similar pattern of consumption for each sector over the period. Domestic and industrial users are the major consumers of electricity.

Fig. 4. Electricity Consumption of K-Electric Area by Category (%)



Source: Authors' illustration based on DISCOs/KE.

2. METHODOLOGY

This section of the study provides the sampling technique of the survey and discusses the c of household level questionnaire module used to collect the data. A pre-test was conducted in two districts of Karachi namely district East and Central. The sampling design and survey details are as follows:

Sampling Design and Survey Details

The table below provides the details of the households sample selected from each town in Karachi. To reach an appropriate household sample, different combinations of confidence interval and specification errors were considered for statistical validity and representativeness. Given the above, the sample size with a 95 percent confidence interval and less than 10 percent specification error was considered appropriate. The following formula was used, which yielded an optimal sample size of around 455 households:

Optimal Sample Size = Z^2 [p (1-p)]/e^2 (for known population)

Where,

Z = Specification of confidence coefficient.
p = Estimated Proportions of the population (based on 2005 and projected population for 2020).
e = Specification error.

The sample size was determined according to the proportion of the population. Furthermore, the town-wise estimated population was extracted from the 2017 census provided by the Pakistan Bureau of Statistics.

Table 1

Household Sample

S. No.	Town Name	Total Population	Proposed Sample	Actual Sample Used
1	Baldia	616,721	20	20
2	Bin Qasim	480,855	15	15
3	Gadab	439,675	14	13
4	Gulberg	688,581	22	21
5	Gulshan-e-Iqbal	949,351	29	40
6	Jamshed	1,114,138	34	37
7	Kaemari	583,641	19	19
8	Korangi	829,813	26	26
9	Landhi	1,012,393	31	32
10	Liaqatabad	985,576	30	34
11	Lyari	923,177	29	30
12	Malir	604,766	19	20
13	New Karachi	1,038,863	32	34
14	North Nazimabad	753,423	24	21
15	Orangi	1,098,858	34	35
16	Saddar	935,565	29	30
17	SITE	709,944	22	23
18	Shah Faisal	509,916	16	17
	City Total	14,275,256	445	467

Source: Authors' calculations based on Pakistan Bureau of Statistics.

2.1. Household Questionnaire Description

To gather household-level information, the study has designed a comprehensive questionnaire based on multiple policy dimensions: affordability, accessibility, reliability, and sustainability which directly affect household welfare. The questionnaire consists of 12 sections that are given as follows:

Section 1: Household Composition & Demographic Information

This section discusses the basic household-level information such as relationship with the head, gender, age, marital status, and migration status.

Section 2: Current Education Status

This section of the questionnaire presents the educational status of all the household members: literacy, current enrolment, and completed years of education.

Section 3A & 3B: Employment & Other Sources of Employment

Section 3A discusses the employment details such as employment status, nature of work, industry, occupation, and income of the households. However, section 3B presents the details of employment from other sources.

Section 4: Housing Characteristics of Households

This section provides the household's characteristics related to their houses such as nature, the total area of the plot, the number of rooms, the material used for floor, roof, and walls, and the main fuel used for cooking, heating & lighting.

Section 5: Housing Expenditure

This section displays the information on a household's expenditure on the consumption of daily use basic items such as food & beverages, Clothing &footwear, utility charges, health and education expenses, etc.

Section 6: Household Electrical Appliances & Item

Section 6 of the questionnaire gives information related to the number of electrical appliances owned and how many hours these appliances are used by the households.

Section 7: Electricity Source of Lighting (Grid)

This section obtains the electricity (Grid) connection information such as units consumed, tariff structure, and expenditure born by the household.

Section 8: Electricity Source of Lighting (Off Grid)

Section 8 of the questionnaire provides information related to off-grid sources of lighting such as solar, UPS, generators, Dry Cell, and batteries. The information is based on the mode of purchase, fixed and fuel costs, etc.

Section 9: Natural Gas as a Source of Heating and Cooking

This section gathers information related to natural gas as the source of heating and cooking. It includes variables such as gas connection, unit consumed, expenditure, and, tariff structure of the household.

Section 10: Heating and Cooking (Other Sources)

Section 10 is based on other sources of heating and cooking such as electricity, LPG, Kerosene, and, other sources. Further, it provides related variables such as the presence of these sources, mode of payment to purchase, and amount paid on these sources.

Section 11: Electricity Outages/Load Shedding

This section provides information related to electricity outages and load shedding such as season & reason for outages, hours of power breakdown, and how frequently households experience power outages.

Section 12: Energy Literacy

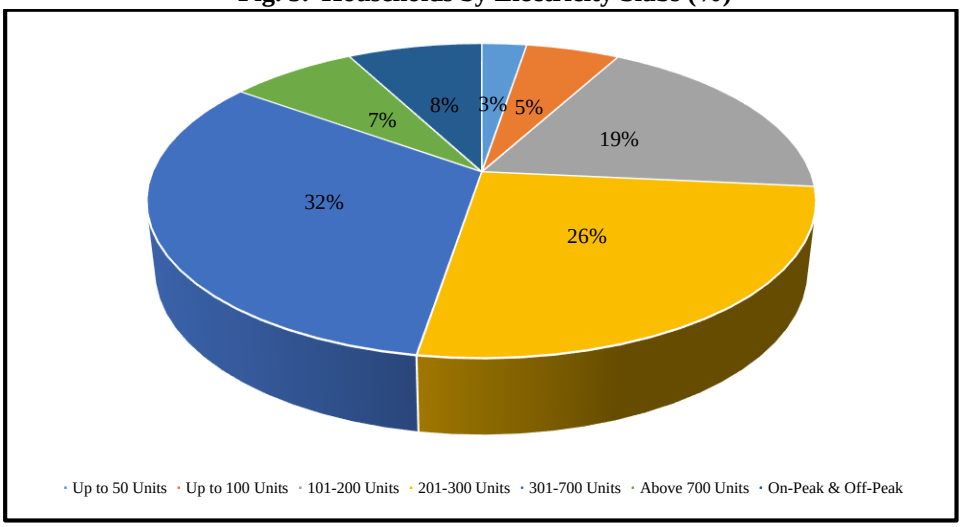
This section is completely based on energy literacy that is to what extent households are energy literate. It includes the best guess estimate of 1 KWh, increases in per unit rates in peak hours, which item consumes more electricity, etc.

3. FINDINGS OF THE SURVEY

This section of the study discusses the findings, which are based on a descriptive analysis of the household-level primary data of Karachi city. The descriptive analysis presents the consumption, expenditure, and change in the recent increase in electricity tariff by electricity consumption slabs. The analysis also provides information on energy literacy, consumers' satisfaction, and, household behaviour regarding electricity use.

Figure 5 above illustrates the percentage of households in each consumption slab. The figure depicts that most of the households were middle-slab consumers, i.e., 32 percent in the 5^{th} slab (301-700), 26 percent of households in the 4^{th} slab (201-300), and 19 percent in the third slab. As argued by Walker, et al. (2014), survey results validate that the lifeline tariff slab is nearly ineffective in Pakistan as a meager 2.57 percent of households were lifeline consumers consuming less than 50 units per month. The Proportion of households consuming in the lowest and highest slabs was also relatively low, whereas the ToU tariff applies to households having sanctioned load equal to or greater than 5 kWh. Hence, according to the survey results, only 8 percent of households fell under this category.

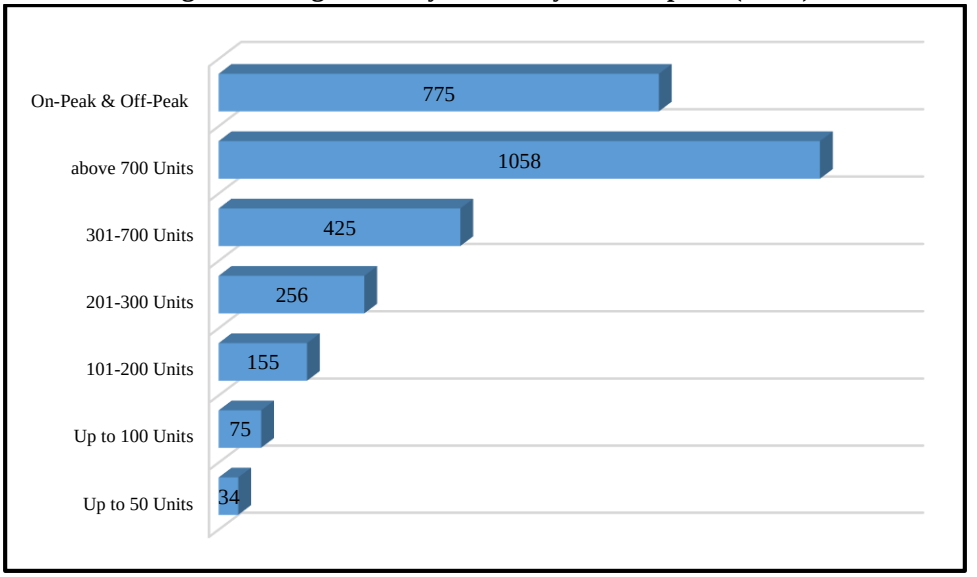
Fig. 5. Households by Electricity Slabs (%)



Source: Authors' illustration based on a primary survey of Karachi.

Figure 6 portrays the average electricity consumption in units by electricity slabs. The figure depicts that on average, the highest units of electricity (1058) were consumed by only 7 percent of households. Following this, on average, about 775 units of electricity per month were consumed by only 8 percent of households that belong to the ToU category. However, the highest proportion of households in Karachi, i.e. 32 percent, on average, consume only 425 units of electricity per month. This is followed by an average consumption of 256 units by 26 percent of households.

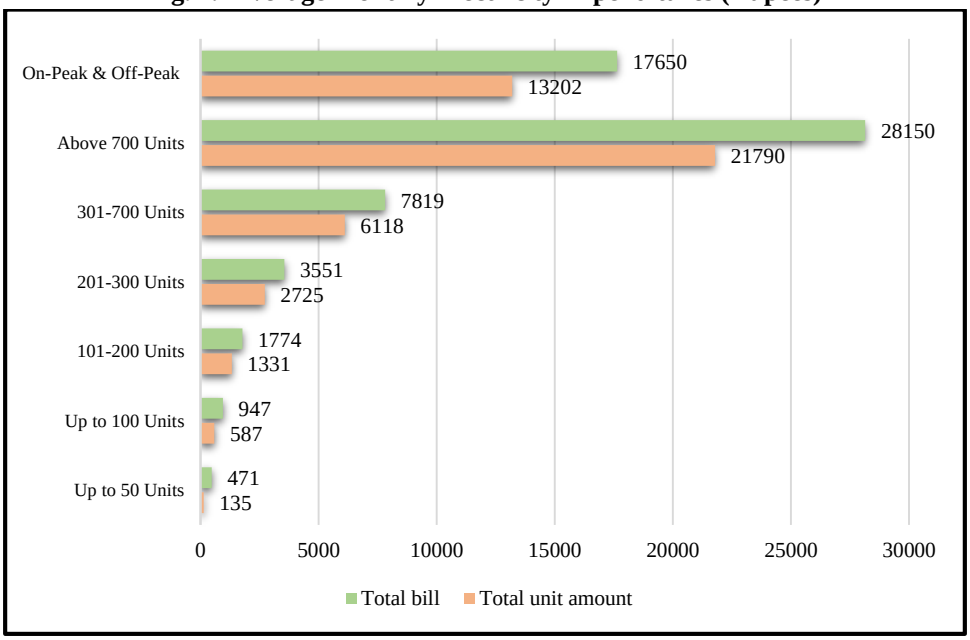
Fig. 6. Average Monthly Electricity Consumption (Units)



Source: Authors' illustration based on a primary survey of Karachi.

Figure 7 illustrates the average expenditures on electricity by households in Karachi. The smaller bar in each slab represents the consumption expenditure of units (kWh), while the bigger bar shows the total amount of the electricity bill inclusive of government charges, fuel adjustment charges, etc. The figure depicts that, on average, households that consumed more than 700 kWh per month paid about three times more than the households that ended up consuming just below 700 kWh. Similarly, the difference in the expenditure between households that consumed in the fourth (201-300 units) and fifth slabs (300- 700units) was about two times. Another significant feature of Figure 7 is that the government charges and other charges such as the TVL fees, fuel adjustment charges, etc., constituted a significant proportion of total bills. Figure 17 shows the disaggregation of total billing components for each slab.

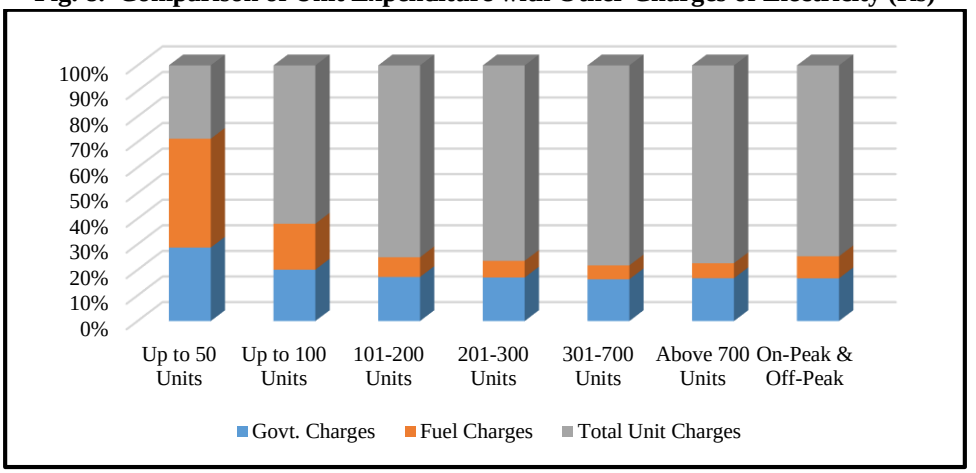
Fig. 7. Average Monthly Electricity Expenditures (Rupees)



Source: Authors' illustration based on a primary survey of Karachi.

Figure 8 presents the comparison of electricity unit charges with other charges of electricity that the households are bound to pay with an electricity bill. These charges consist of government charges and fuel adjustment charges, imposed by the K-Electric. The figure shows that the proportion of total units' charges was highest, followed by government charges and fuel adjustment charges for electricity. The most significant information detected from this graph is that the fuel adjustment charges for the lifeline slab were more than the total amount spent on units consumed, whereas government charges also constituted a significant proportion. This information reveals that, on the one hand, the lifeline slab is supposed to be the most protected and subsidised but, on the other hand, various additional charges significantly increase the total electricity bill. Conclusively, it can be depicted from the figure that households bear an extra burden in the form of these charges.

Fig. 8. Comparison of Unit Expenditure with Other Charges of Electricity (Rs)

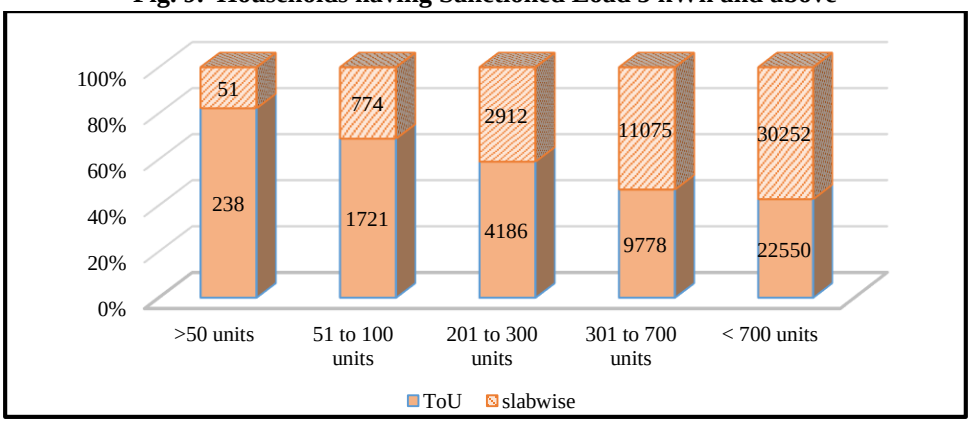


Source: Authors' illustration based on a primary survey of Karachi.

Another foremost reform in the tariff structure is the implementation of the time of use (ToU) metering arrangement. According to this reform, all the new and existing customers having sanctioned loads of 5 kWh and above have installed ToU meters and are, therefore, billed based on the peak and off-peak tariff structure.

Figure 9 shows the electricity expenditure of households having sanctioned loads greater than 5. The amount in rupees mentioned in the bars is the unit consumption amount (government and other charges are not included). This figure is constructed for comparison purposes as the rate of peak hours are charged at the highest rates irrespective of the number of units consumed. In the figure, each bar is divided into two, where the solid part represents the actual expenditure of these households based on the ToU tariff structure and the textured part is constructed on the basis that if these households were billed under the slab-wise tariff structure. The figure reveals that households consuming less than 300 kWh units, on average, were worse off under this new reform. Such households were bound to pay more than two times.

Fig. 9. Households having Sanctioned Load 5 kWh and above



Source: Authors' illustration based on a primary survey of Karachi.

Impact of Recent Increase in Tariff

Table 2 below provides the impact of the recent increase in electricity tariff rates on household expenditures. For each three consumption slabs, from 1 to 300 kWh units, tariff rates were increased at a flat rate of Rs. 1.61, while for all the higher slabs tariff was revised at a flat rate of Rs. 3.33.

Table 2
Electricity Expenditure Before and After the Tariff Increase

Slabs Category	Electricity Units Expenditures (Before Tariff Increase)	Electricity Units Expenditures (After Tariff Increase)	Percentage Change
Up to 50 Units	135.35	135.35	00
Up to 100 Units	587.31	699.38	19.08
101-200 Units	1331.38	1581.60	18.79
201-300 Units	2724.99	3107.18	14.03
301-700 Units	6117.94	7022.17	14.78
Above 700 Units	21790.36	25572.70	17.36
On-Peak & Off-Peak	13201.52	15769.42	19.45

Source: Authors' calculations based on Primary data of Karachi.

In Table 2, the percentage increase in electricity expenditures is calculated by keeping the units consumed constant and applying new rates to calculate the expenditures after the increase in tariffs. It shows that expenditures increased by more than 14 percent for all the slabs. The highest percentage increase was recorded for households having sanctioned load of 5 or above. The impact of the recent tariff revision was also substantial on lower consumption households.

Energy Literacy and Behaviour

Considering all the above issues in electricity management and affordability, it is imperative to educate the general public about sustainable energy consumption habits. Considering it an essential instrument, this study included these important modules in the energy survey that we carried out for this study to understand the cognitive and behavioural aspects of household energy use. Including these aspects in the policy, the design will enable individuals to make appropriate choices in energy use as well.

Various indices were calculated from the literacy, behaviour, and satisfaction modules in the energy questionnaire. Each index was calculated by linear combinations of various indicators.[1]

[1] The list of the indicators for each index is provided in Annexure.

Table 3 shows the energy literacy index computed by employing various energy literacy indicators, given in the questionnaire. The index given below measures the extent to which households in Karachi are energy literate. The values of the index range from 0 (energy illiterate) to 1 (energy literate).

Table 3 shows that residents of not a single town in Karachi were literate enough in the tariff structure, tariff rates, and other aspects of energy. However, residents of Liaquatabad, Jamshed town, Malir town, Gulshan-e-Iqbal town, and Saddar town were relatively more informed.

Table 3

Energy Literacy Index

Town	Mean
Baldia	0.300
Bin Qasim	0.244
Gadab	0.397
Gulberg	0.325
Gulshan-e- Iqbal	0.413
Jamshed	0.455
Kaemari	0.211
Korangi	0.314
Landhi	0.260
Liaqatabad	0.461
Lyari	0.328
Malir	0.425
New Karachi	0.294
North Nazimabad	0.381
Orangi	0.167
Saddar	0.411
Site	0.210
Shah Faisal	0.382

Source: Authors' calculations based on Primary data of Karachi.

Table 4 shows the index that measures the households' behaviour or habits regarding the use of electricity in their daily lives. The index value ranges from 0 to 1, where 0 indicates households having irresponsible behaviour regarding energy utilisation and the index value of 1 indicates good habits of households.

The table shows that the households' behaviour regarding electricity use was moderate (indicated by the dark blue color) in Malir, Lyari, and Gadab. Index values show that citizens' behaviour towards energy use could be improved by educating them. This could help the policymaker in achieving the aim of efficient energy use and conservation of energy resources.

Table 4

Energy Behavioural Index

Town	Mean
Baldia	0.375
Bin Qasim	0.05
Gadab	0.538
Gulberg	0.405
Gulshan-e- Iqbal	0.406
Jamshed	0.223
Kaemari	0.434
Korangi	0.077
Landhi	0.117
Liaqatabad	0.147
Lyari	0.500
Malir	0.675
New Karachi	0.419
North Nazimabad	0.369
Orangi	0.414
Saddar	0.342
Site	0.348
Shah Faisal	0.441

Source: Authors' calculations based on Primary data of Karachi.

Table 5 shows the satisfaction index that measures households' level of satisfaction with K-Electric services. The index was measured using indicators based on power outages asked in the questionnaire. The average value of the index for each town ranges from 0 (extremely unsatisfied) to 1 (totally satisfied). The darker shade in the table shows a relatively higher level of satisfaction compared to the lighter shade which represents lower levels of satisfaction. The index value for each town is around 0.5, which shows a moderate level of satisfaction across households.

Table 5

Satisfaction Index

Town	Mean
Baldia	0.523
Bin Qasim	0.440
Gadab	0.530
Gulberg	0.536
Gulshan-e-Iqbal	0.534
Jamshed	0.502
Kaemari	0.524
Korangi	0.538
Landhi	0.533
Liaqatabad	0.484
Lyari	0.423
Malir	0.477
New Karachi	0.500
North Nazimabad	0.512
Orangi	0.434
Saddar	0.518
Site	0.559
Shah Faisal	0.515

Source: Authors' calculations based on Primary data of Karachi.

4. CONCLUSION AND POLICY IMPLICATION

Over the past few years, the Government of Pakistan has initiated electricity tariff reforms that directly impact household welfare in the country. As a result of these reforms, the government has started curtailing the electricity subsidies, gradually increasing end-consumer electricity prices. However, changing the policy to raise the subsidised electricity tariff decreases the affordability for a consumer and impacts the overall welfare of a household, which is believed to increase energy poverty in Pakistan.

The findings of the study are based on a descriptive analysis of consumption, expenditures, and changes in the recent increase in electricity tariff on household welfare in Karachi city. The first important conclusion drawn from this section is that the government charges and other charges, such as the TVL fees, fuel adjustment charges, etc., constitute a significant proportion of total electricity bills. Secondly, the fuel adjustment charges for the lifeline slab were more than the total amount spent on units consumed, whereas government charges also constituted a significant proportion. Results revealed that households bore an extra burden in the form of these charges. The third important finding was related to the households having sanctioned load of 5 kWh or above. It was found that households consuming less than 300 kWh units, on average, were worse off under the ToU tariff structure. This finding shows that although electricity charges are still subsidised for low-consumption households, the proportion of additional costs should also be curtailed to diminish the adverse effects on the poor.

This study considers that educating the general public about sustainable energy consumption habits is imperative. Considering this as an essential instrument, this study encompassed these crucial modules in the energy survey to understand households' cognitive and behavioural aspects of energy use. Including these aspects in policy, the design will enable individuals to make appropriate choices in energy use. Results show that the general public of Karachi was not informed about the current electricity sector reforms. Similarly, efficiency in end-use also needs to be improved. In this regard, literacy programmes at high-school levels or through advertisements on social media could be initiated. In the past, public service messages for saving electricity were communicated through television advertisements. The same policy should be continued to make individuals energy literate. Energy-efficient appliances should also be promoted to improve electricity affordability, particularly among middle and high-income households. Without any government interference, households can respond to a rise in price either by switching towards more energy-efficient appliances or adopting habits of efficient electricity utilisation. These kinds of efficiency programmes will bring sustainable changes to society. These measures are believed to provide a buffer against the adverse impact of price increases, particularly on middle- and higher-income households. The existing literature on Pakistan also points toward the importance of institutional and end-use efficiencies, including efficiency in production, distribution, and consumption.

Analysis of this study shows that the government is determined to gradually phase out electricity subsidies at a high pace. In this regard, it is recommended to publicise the upcoming rise in price among the general public as not all the individuals in the country are literate enough to anticipate the impact. However, unexpected rises in price aggravate anger among individuals and could obstruct these reform processes' smooth implementation and completion.

ANNEXURE

Box A: Indicators Used for Energy Indices

✓	**Indicators used for Satisfaction Index**
	1. Did you experience power/Load shedding outages in 2020-21?
	2. At what frequency do the load shedding/outages occur?
	3. On average, how many hours does the power breakdown lasts?
	4. How do you rate your customer service phone experience?
	5. How do you rate K-electric restoration response to your outage(s)?
	6. Do any occupants require utility service for medical reasons such as refrigeration for medicine or any critical medical equipment?
	7. Does the load shedding effect Educational activities of household members?
✓	**Indicators used for Perception Index**
	1. Running only full loads when using the washing machine
	2. Using AC at 26^0C
	3. Completely switch off electronic devices (no stand by)
	4. Do you extinguish fire right after cooking
✓	**Indicators used for Literacy Index**
	1. How much do you think 1 Kilowatt hour (kWh) currently costs? Please indicate your best guess without checking your bill or other resources.
	2. Do you know, how much per unit rates of electricity increase during the peak hours?
	3. How much do you think it costs in terms of electricity unit to run a fan for an hour?
	4. In the following, which item consumes more energy in terms of rupees?
	5. In the following, which item consumes more electricity? Q12_5
	6. In the following, which item consumes more electricity? Q12_6

Source: Authors' illustration.

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Mapping Impact of Farmer's Organisation on the Equity of Water and Land Productivity: Evidence from Pakistan

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In 1980, the World Bank began to promote Participatory Irrigation Management (PIM) reforms to overcome inequities in the distribution of irrigation water. This paper attempt to map the land and water productivity under the PIM and Non-PIM irrigation schemes in the Indus Basin Irrigation System (IBIS). This study integrates the remotely sensed datasets along with the traditional survey approach for data collection to holistically understand the performance of different irrigation governance regimes. We found that although the reform area in Sindh is performing better on many equity-related indices, a considerable inequity still persists between the head and tail reaches of the main canal. The variation in crop choices is the main reason for disproportionate economic return per unit of land and water and the role of farmer's organisation to reduce the inequitable distribution of the water resource has limited success so far. However, it is seen that farmers' role in improved irrigation management can be enhanced with better future legislation and devolution of more power and authority rather than only responsibility. We propose that the PIM theory of change, accompanied by mobilisation activities designed to generate hydro-solidarity and support the enactment of new social roles in contexts of social power asymmetries, could improve outcomes under PIM.

Keywords: Farmers Managed Irrigation Schemes, Indus Basin, Water Productivity, Gini Coefficient, Water Distribution Inequity, Irrigation Performance Indices

1. INTRODUCTION

The term hydraulic mission is used by different scholars to refer to the late 18th and 19th century's mega irrigation infrastructure engineering project era (Brian Chatterton, 2011; Molle, Mollinga, & Wester, 2009). The mid-18th century was also a century of colonialism. Colonial powers captured markets for their consumption of surplus production and exploitation of the raw material from these markets. During this era, large dams, barrages/headworks, and canals were constructed to divert the water to high-elevation contours for irrigation purposes. Further unsustainable exploitation of natural resources

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increased during the 19th century after the Soviet Revolution in 1917. This Cold war era witnessed the building of mega infrastructure in different parts of the world like IBIS and the Ammo River basin development in the former Soviet states. During this era, water scarcity was solved through supply-side infrastructure. Irrigation bureaucracy and irrigation professionals were trained to manage this large-scale irrigation infrastructure.

Water shortages, salinity, waterlogging, and significant conveyance losses at the watercourse level are problems for Pakistan's irrigated agriculture. Pakistan diverts 75 percent of the 139 million acre-feet (171 km3) of annual water flow from the rivers of the Indus Basin to its canal irrigation system. However, conveyance losses in the canal system cause 25 percent of this surface water, or 26 million acre-feet (32 km3), to be lost (Mekonnen, Channa, & Ringler, 2015).

Irrigation plays a vital role in Pakistan's economy and prosperity, yet its irrigation infrastructure is chronically underfunded. The Irrigation system in Punjab is financially unsustainable, as it recovers only 20 percent of the O&M costs (Commission, 2012). Water pricing and recovery of the costs of irrigation investment, operation, and maintenance have been contentious issues for many decades. Current irrigation system inefficiencies in Pakistan result from poor cost recovery for irrigation and drainage and underinvestment in operation and maintenance (Tsur, Dinar, Doukkali, & Roe, 2004). Other underlying issues include inefficiencies in the public sector, the design of the irrigation system, the nature of the agricultural society and its system of land tenure, and the political economy that results from the interaction of all these elements (Mekonnen, et al. 2015).

To overcome these challenges World Bank in a policy paper of 1992, Bank describes three priority areas for future water management as main pillars: water as an economic good; improved institutional arrangement involving greater stakeholder participation, private sector, and NGOs; comprehensive management of water (Briscoe, Anguita, & Peña, 1998). International Conference on Water and Environment—held in 1992, a.k.a. Dublin Conference, concluded: "water has an economic value in all its competing uses and should be recognised as an economic good" (Lundquist, 1997). Following the Dublin principles, the United Nations Conference on Environment and Development (1992) also endorsed the idea—of water as an economic good (Gleick, Wolff, Chalecki, & Reyes, 2002).

Therefore, the participatory introduction of the institutional reform in Pakistan was interlinked with the reform's international context and streamlined with the neoliberal economic agenda of water reforms and decentralised governance. Many developing countries adopted these reforms under the Bank's guidance and funding (Liebrand, 2019; Santiso, 2001; Vermillion, 1997). Third-world countries with economic dependence on the Bank's lending face severe financial indebtedness challenges (Santiso, 2001). The state's functioning and performance in service provision and developmental activities were questioned. Under these circumstances, market forces and the private sector were portrayed as the "only" compelling alternative to government, and the state is claimed to be inefficient (Desmond McNeill, 1998). The "only" option left behind includes the water users and other private sectors in water management as an integral part of an alternative form of participatory water governance movement (M. O. Wilder, 2002). This alternative decentralised governance was believed to improve "resource allocation, efficiency, accountability, and equity". Water pricing and participatory governance were considered

as a means to achieve the goals mentioned above. After its widespread adoption, the "new" decentralised governance provides a tremendous body of literature highlighting its impacts and outcomes and discussing different strategies of decentralisation in different countries and contexts (Bandyopadhyay, Shyamsundar, & Xie, 2010; Ghumman, Ahmad, Hashmi, & Khan, 2014; Mukherji, Fuleki, Suhardiman, & Giordano, 2009; Parthasarathy, 2000; Raby, 2000; Reddy & Reddy, 2005; Senanayake, Mukherji, & Giordano, 2015; Sinclair, Kumnerdpet, & Moyer, 2013; Suhardiman, Giordano, Rap, & Wegerich, 2014; Uysal & Atiş, 2010; Douglas L Vermillion, Samad, Pusposutardjo, & Arif, 1999).

The World Bank has had a long history of lending in Pakistan's water sectors since the Indus Water Treaty (1960). Initially, this lending focused on infrastructure development, and then in the 1980s, its focus shifted from infrastructure development to transforming the institution. In 1994, the Bank studied the water sector and prepared a report entitled "Pakistan—Irrigation, and Drainage: Issues and Options". This report points out that in Pakistan, as in many other countries, the government treats irrigation water as a public good, whereas it is a private tradable good, for which markets can operate (Briscoe & Qamar, 2005).

In the early conceptualisation, these reforms faced challenges from two quarters; one is the powerful irrigation bureaucracy which considered these reforms unfeasible because farmers can't manage the technical structure and other large landowner farmer's associations labeled these reforms as an attempt to privatise the irrigation system. Through these tactics' irrigation, bureaucracy amended the initial idea and limited power distributed to farmers' organisations established in the nested irrigation governance as shown in Figure 1.

Despite the difficulties the PIM process has encountered in Pakistan, some case studies show that minors and farmer-managed distributaries are doing better than they did before the reform. Research that evaluated the effectiveness of state-managed and farmer-managed irrigation systems in Punjab, where irrigation management transfer was implemented in the pilot phase (Ghumman, et al. 2014; Latif, et al. 2014). In this study, multiple distributional equality criteria were used to compare the performance of both state-managed and farmer-managed distributaries. As an evaluation indicator, the Delivery Performance Ratio (DPR), geographical and temporal coefficients of variation, farmers' net income, and land and water productivities are utilised. Results showed that all of the aforementioned metrics were performed substantially better by the farmer's management distributary. This study also showed that despite the performance of farmers' managed irrigation systems being superior to state-controlled irrigation systems, the FMIS system's performance was also subpar.

Contrarily, a recent World Bank analysis found that farmers' organisations that administer distributaries have higher rates of water theft than bureaucratically controlled irrigation systems. The discharge data obtained in Punjab were used in this investigation. The results of this study also show that water theft was more prevalent along the channels when there was a greater land disparity and large landowners were located near the head of the channel.

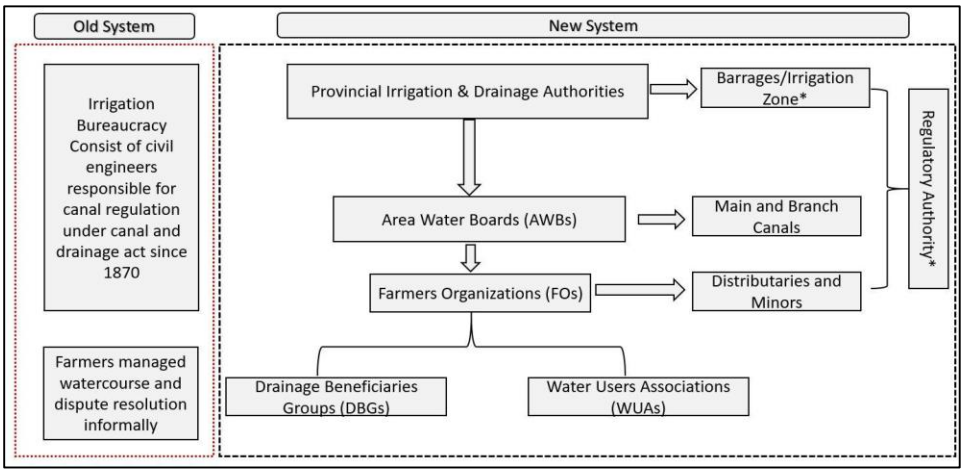
This article updated the previous Pakistani analyses by using the remotely sensed data for performance comparison between PIM and Non-PIM irrigation schemes rather than solely relying on data provided by Irrigation Department and data collected through donor-funded surveys. The prime objective of this study is to assess whether reforms have any impact to improve the distributional equity of canal water economic dividend.

1.1. Irrigation Water Management and Governance in IBIS

Water shortage was addressed during the colonial era using supply-side measures such as massive dams, barrages/headworks, and canals (Yu et al., 2013). To oversee this extensive irrigation system, specialists and bureaucrats in irrigation management were educated. IBIS, one of the biggest contagious irrigation systems, is, therefore, a supply-driven irrigation system that typically diverts water from barrages or headworks to main canals, which then feed branch canals, which in turn feed tertiary level irrigation systems, known as distributary/minor irrigation systems. Further distributary and minor diverted water to an exit are applied largely using surface irrigation—flooding method. Up to the tertiary tier, the irrigation department alone is responsible for managing this irrigation structure, which is controlled by a layered framework. The community only controls watercourses below the tertiary tier. IBIS has a special warabandi system that distributes water to each field along each watercourse on a pro-rata basis; this area is also referred to as the water allotment. Water is dispersed progressively across fields based on the warabandi timetable after being drained from the outlet (known as Pacca Warabandi).

To undertake the watercourse lining initiative (directed by the agricultural department), informal community organisations were initially grouped into Water User Associations/Water Course Associations (Byrnes, 1992). These WUA/WCA supplied human work as well as a certain cash contribution (which fluctuated over time). Following that experience, the World Bank increased its pressure on the government to grant these community organisations access to tertiary and secondary levels of organisational structure.

Fig. 1. Comparison of Centralised Irrigation Department with Participatory Reform



2. METHODS AND MATERIALS

2.1. Reform and Non-Reform Area Canals Description

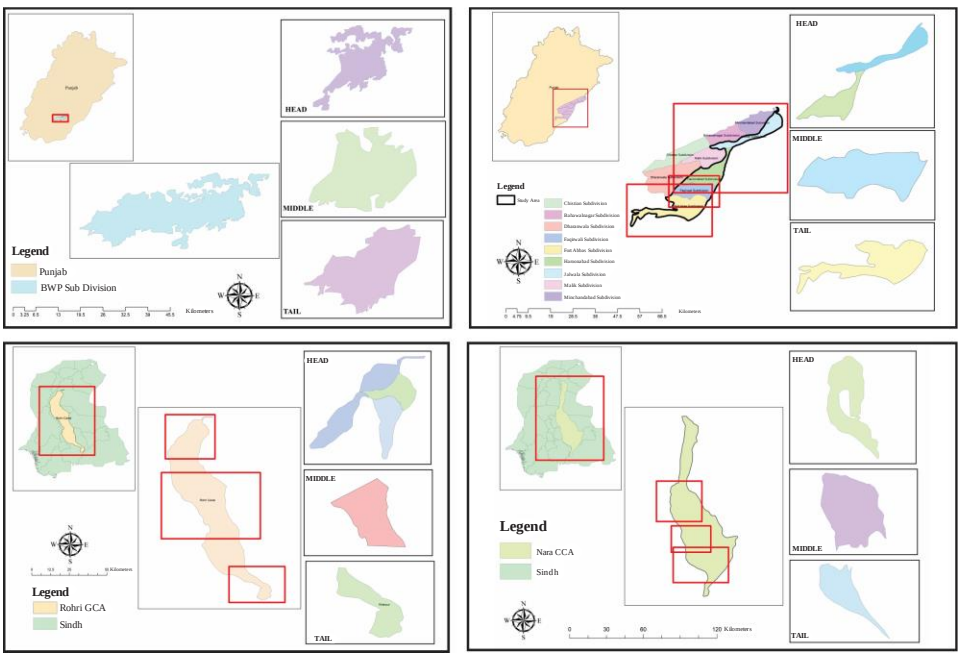
For this study, the canal command regions of Punjab and Sindh were chosen. For a comparative examination of the reform, two canals from each province were looked at; one was in a region where the participatory governance system is/was applied, and the

other was in one where the provincial irrigation department alone governs. Bahawalpur and Bahawalnagar canal circles in Punjab were chosen for this purpose because of their nearly identical geophysical and climatic qualities. The princely realm of Bahawalpur included Bahawalpur and Bahawalnagar. The Sutlej Valley project was created by the Nawab of Bahawalpur with the ai of British funding on the Sutlej River. Rohri and Nara canals in Sindh were chosen because of their geophysical and climatic qualities. On the Left Bank of the Indus River are both of these canals. Due to part of its alignment with the Indus River floodplain zones, the Rohri Canal Command offers certain comparative advantages. Wheat and cotton are the main crops grown along these canals. To comprehend the irrigation system performance geographically, each main canal system was separated into three regions, namely the head, middle, and tail, as illustrated in Figure 2.

2.2. Remote Sensing-based Irrigation Performance Indicators

To evaluate the water usage performance indicators internationally, remote sensing data is frequently employed. This reliable approach helps resource managers make efficient judgments regarding the regulations and allocation of water throughout time and space. A greater knowledge of the actual functioning of various irrigation schemes and their water delivery system is possible thanks to remote sensing-based measurements of the Normalised Difference Vegetation Index (NDVI), actual evapotranspiration, and evaporative fraction. In this work, in addition to the conventional survey-based estimates, we also estimate the time series of cropping intensity, sufficiency, dependability, and economic water productivity.

Fig. 2. Study Area Selected Canals Command



The Punjab irrigation network has shown the head Suleimanki and Islam command area (Upper Left and Right). Head Suleimanki command area, where the PIM reform was introduced, whereas head Islam command area under the provincial irrigation department of Punjab. The Sindh irrigation network has shown the Nara and Rohri command area (Below Left and Right). Nara command area, where the PIM reform was introduced, whereas Rohri command area under the provincial irrigation department of Sind

The real evapotranspiration was calculated using the SEBAL single-source energy balance model. It was a tried-and-true, widely-used technique for calculating real ET (Bastiaanssen, 1995; Bastiaanssen, et al. 1998; Allen, et al. 2007; Glenn, et al. 2011; Jia, et al. 2011; Liou and Kar, 2014). Incorporating the energy balance utilising some land surface parameters, such as albedo, net radiation, canopy cover, surface temperature, and leaf area index, is the direct empirical technique known as SEBAL. The basis for remote sensing-based ET estimate is provided by the surface energy balance equation.

$$Rn = LE + H + G$$

Where,

Rn is the net radiation,
LE is the latent heat exchanges,
H is the sensible heat, and
G is the soil heat flux

Energy balance may be utilised to identify the decrease in ET brought on by water scarcity. The accuracy of the ET calculations from this approach can be increased using other models. But only if the local level interpolation and calibration of these models were done appropriately. For this investigation, the USGS Earth Explorer was used to obtain the cloud-free MODIS sceneries from January 2015 to December 2021. During this time, estimates of the seasonal real ET were made for both the Rabi and Kharif seasons.

2.3. Performance Indicators

For the comparative examination of the chosen PIM and Non-PIM canal command regions, many performance metrics were employed. Comparing a system's performance over time, comparing its performance in different regions, and allowing comparisons between other systems at various spatial scales were all goals of employing comparative indicators (Molden, et al. 1998). Indicators of performance assist in identifying variations in performance between schemes, seasons, and irrigation sources (Kloezen, 1998). Finding the holes in management policies is also helpful. Performance indicators were not cost-effective and data-intensive, in contrast to process indicators (Kloezen, 1998). We choose to employ the comparative performance indicators suggested by IWMI due to the complexity of the process indicators and their calculation (Molden, et al. 1998). The literature (Murray-Rust and Snellen, 1993; Rao and Rao, 1993; Kloezen, Garcés-Restrepo and Johnson III, 1997; Vermillion, 1997; Dermenc, Büyükcangaz and Kucu, 2003; Hasan, 2004; Cuamba, 2016; Efriem and Mekonen, 2017) cites various scales at which these performance indicators were most. Below is a list of the chosen performance indicators with a brief demonstration.

Cropping Intensity (CI %) = Actual Cropped Area/Gross Command Area
Adequacy of Canal Water Supplies = Average Seasonal Evaporative Fraction
Reliability of Canal Water Supplies = Coefficient of Variation (CV) of Evaporative Fraction
Head to Tail Ratio CI = CI of Head Command Area/ CI of Tail Command Area
Water Productivity (Rs/m^3) = Gross Return/Actual Evapotranspiration (ET_{act})
Gini Coefficient of Agricultural land productivity
Output per Unit of Command Area (Rs/acre) = Net Return/Command Area Irrigated

2.4. Land Use/Land Cover Classification

Using LandSat8 and Sentinel-2 data with 30 and 10-meter resolutions, respectively, LULC categorization for the chosen locations was done. The Earth exploration website provided the satellite visualisation used in the TIFF data output (The US Geological Survey, 2014). From 2015 through 2021, the satellite picture was gathered during the Kharif and Rabi crop seasons. On Top of Atmosphere, the digital quantities were converted into reflectance values (TOA). Later on, a value comparison was used to identify the spectral and textural features. Picture characteristics from the Sentinel-2 image were also delineated for the calculation of cropped area in the research region. The research took into account the spectral, textural, and direct image reflectance properties of the satellite images. Moreover, one index computed as Normalised Difference Vegetation Index (NDVI), and their mathematical expressions are given below:

$$NDVI = NIR\text{-}RED/NIR+RED$$

Where NIR is near the infrared and red band. NDVI classified different land objects as:

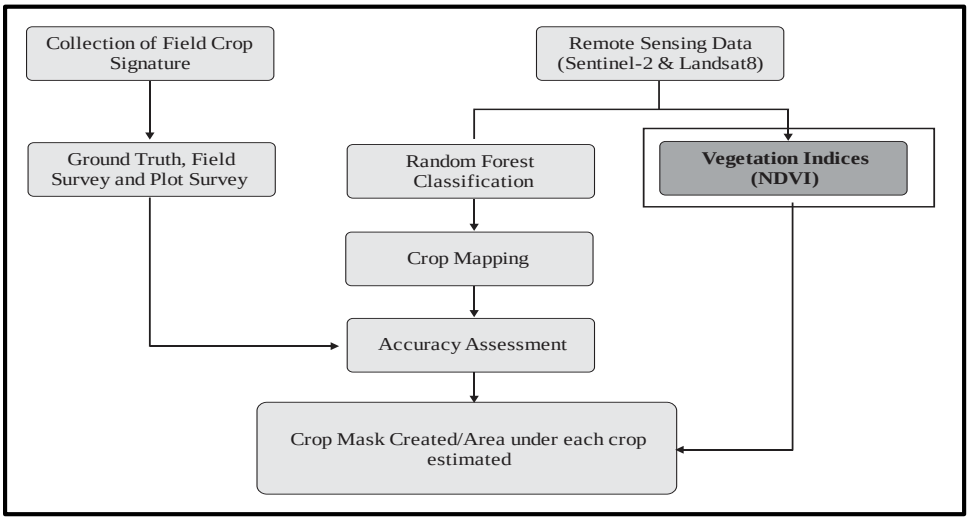
Class	NDVI Range
Water	-0.28-0.015
Built-up	0.015-0.14
Barren Land	0.14-0.18
Shrub and Grassland	0.18-0.27
Sparse Vegetation	0.27-0.36
Dense Vegetation	0.36-0.74

We estimated the cropped area using NDVI values greater than or equal to 0.2. Beginning in this range, the cultivated area changed based on crop development stage and canopy type. To properly compare the cropping intensity for a time series spanning 2015–16–2021–22, we used the same timeframe for the Kharif and Rabi seasons.

Cotton, sugarcane, rice, bananas, mangos, fallow land, water, forests, built-up areas, etc. are some of the several categories for the LULC. For the categorisation of a satellite picture, a supervised classification method (maximum likelihood) was used (Elbeltagi, et al. 2021; Reddy, Patode, Nagdeve, Satpute, & Pande, 2017; Reddy, et al. 2017). The signature file was made using the same image feature dataset as a classification input (Le

Cam, 1990; ESRI, 2012). An iterative technique was used for every region. In the initial phase, every cell in the region was categorised. Second, the classification has been fully visualised, the signature file has been changed, and the classification is complete or approved (Reddy, et al. 2017). The visual inspections were conducted using Google Earth and Sentinel high-resolution satellite pictures (where applicable). The field survey and plot survey were used to cross-check the features. The same LULC categories as on the map have been assigned to these maps. In Fig. 3, the chosen approach was displayed.

Fig. 3. Flow Chart of Methodology



3. RESULTS AND DISCUSSION

3.1. Land Use/Land Cover Classification Change

After categorisation, eight LULC classes were achieved: banana, cotton, rice, sugarcane, fallow land, water bodies, built-up, and mango. Table 1 displays the accuracy of the producers and users for various classes. The user and producer accuracies of the confusion matrix were investigated. The entire accuracy of the image classification was assessed using the categorised picture. The user's accuracy (UA), producer's accuracy (PA), overall accuracy (OA), and Kappa Coefficient were used to quantify the correctness of LULC maps, respectively (Lizarazo, 2014; Pande, et al. 2021; Rossiter, Furey, McCarthy, & Stengel, 2020).

User's Accuracy (UA) = n_{ii} /n_{irow}
Producer Accuracy (PA) = n_{ii}/n_{icol}
Overall Accuracy (OA) = 1/N Summation n_{ii}*100
Kappa Coefficient = Overall Accuracy-Random Accuracy/1-Random Accuracy

The total precision for the Nara and Rohri canal commands is 93 percent and 95percent, respectively. For both the canal command, the Kappa coefficient value is greater than 90, which is regarded as a good categorisation category. The capacity to distinguish between land and sea is high. Because they were big, numerous, and more distinct from

the other classifications, the mango and banana fields were simpler to classify. Due to their low NDVI values, the water bodies and rice cells were challenging to distinguish. The reflectance range was the same for cotton fields, fallow land, and both.

Table 1

Accuracy Assessment of Land Use/ Land Cover Classification for Rohri and Nara Command Area

	Nara Canal Circle		Rohri Canal Circle	
LULC Classification	Producer Accuracy (%)	User's Accuracy (%)	Producer Accuracy (%)	User's Accuracy (%)
Banana	66.67	100	100	100
Cotton	100	100	94.44	100
Rice	100	88.89	90	90
Sugarcane	100	90.91	92.86	100
Fallow Land	92.31	100	83.33	83.33
Water	83.33	100	100	92.31
Built-up	100	90.91	92.31	85.71
Mango	80	100	N/A	N/A
Overall Accuracy	95.05		93.33	
Kappa Coefficient	0.94		0.92	

The total precision for the Nara and Rohri canal commands is 93 percent and 95 percent, respectively. For both the canal command, the Kappa coefficient value is greater than 90 percent, which is regarded as a good categorisation category. The capacity to distinguish between land and sea is high. Because they were big, numerous, and more distinct from the other classifications, the mango and banana fields were simpler to classify. Due of their low NDVI values, the water bodies and rice cells were challenging to distinguish. The reflectance range was the same for cotton fields, fallow land, and both. This inequity led to an economic inequity between the head and tail reaches of the canal system and was estimated as the Gini coefficient.

3.2. Comparative Performance of PIM and Non-PIM Irrigation Schemes

Comparative performance analysis of different canal irrigation schemes is a way to improve canal or basin-scale water regulation. Since the 19th century, after the scaling up of irrigation schemes, a wide range of literature has been produced to measure these irrigation schemes, productivity, and efficiency in many ways. Hence, to assess the productivity and efficiency of these irrigation schemes, different indicators/indices were designed based on the nature of data availability. Initially, these performance indices methodologies relied on traditional survey approaches and canal-level data measurement through a rating scale. These data collection methods' accuracy was compromised under different conditions and contexts. Water resource specialists came up with different ways where this data scarcity and collection-related subjective biases could be minimised objectively.

After advancements in remote sensing techniques and free access to better temporal and spatial resolution scale remote sensing data, the use of these datasets became popular

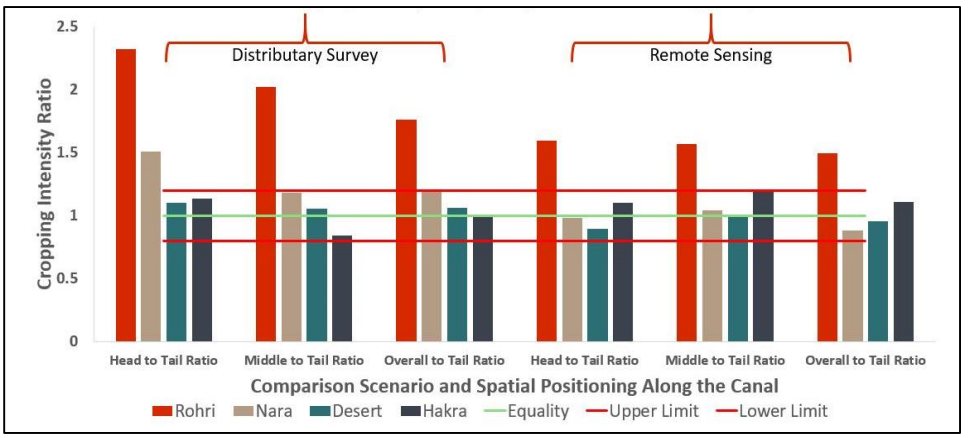
among researchers to better assist traditional data collection methods. Different irrigation schemes' performance can be compared from different perspectives, like distributional equity, efficiency in resource use, and environmental sustainability. In this section, our focus remains on distributional equity, and its consequences resulting in agricultural economic return inequity. In the following section, we discuss section-wise results.

3.2.1. *Cropping Intensity Comparison*

Annual cropping intensity was estimated through crop reported in a distributary level main survey and remote sensing approach using NDVI as a proxy indicator to estimate the overall area under crop in each season. Remote sensing analysis was performed at the subdivision scale, whereas in the main survey, we selected the distributary in each subdivision. To compare canal performance, we estimated the cropping intensity ratios at three scales, i.e., head-to-tail, middle-to-tail ratio, and overall-to-tail ratio, and compared the canals from the equality lens. A cropping intensity ratio indicator equal to one means perfect equity. However, if the value is greater than one, it means the head section is a more cropped area as compared to the tail section. Similarly, if the value is less than one then the tail section is a more cropped area as compared to the head section. Head-to-tail inequality in the canal system largely has two reasons. The first is a technical reason. As the canal approaches the tail, its system losses increase, which ultimately negatively impacts the tail section, generally termed as inequality due to the canal system, i.e., hardware problem. The second reason is the mismanagement of the canal schedule favouring the head/tail section or any targeted area. It is generally termed the software problem (Power Asymmetry) of the canal system. Keeping the above scenario in mind, we used a 20 percent plus/minus uncertainty level as a permissible limit.

Data analysis suggests that the Rohri canal has more inequity between head and tail reaches than the Nara Canal area in Sindh. In the Punjab, the difference in cropping intensity between head and tail reaches remained largely within the permissible limits. The reason for this apparent equality relies on the conjunctive use of the saline and marginally fresh groundwater at the head, middle, and tail sections of the canal. We analysed the estimated evaporative fraction data to validate these initial findings further.

Fig. 4. Comparison of Cropping Intensity Estimated at Distributary and Sub-division Scale



3.2.2. *Adequacy and Reliability of Water Supplies*

Figure 5 provides the adequacy of the canal water supplies in the selected canal command area and the canal system's spatial position. Adequacy is defined in this study as the average seasonal evaporative fraction, and reliability is the temporal variability or the temporal coefficient of variation of the evaporative fraction across a season. Evaporative fraction levels of 0.8 or greater suggest little stress, whereas values below 0.8 indicate increased moisture scarcity due to insufficient water supply. Similarly, lower coefficients of variation indicate a more consistent water supply throughout the growing season (Ahmad, Turral, & Nazeer, 2009).

A comparison of the evaporative fraction for the selected canals shows the seasonal variation of the canal water supplies in each respective command area. During the rabi season, over-allocated canal water from the wheat crop demand, and during the Kharif season, it marginally meets the crop water requirement of the cotton crop. The head, middle, and tail reach variation showed that canal regulation is inadequate and unreliable, and Kharif season water scarcity is easily managed through an existing available water resource with better canal regulation. In the Nara canal, the rabi season canal regulation seems much better than other canal commands simply because the Nara canal has a Chotiari reservoir facility for managing the regulation in a better manner. The length of our canal system is so long that once the water diverts from the source to the canal, there is no storage facility available in the canal system where the water can be stored if it is not needed at the field. During the field investigation, farmers reported this seasonal inadequacy of canal supplies as shown in Figure 6. The investigation showed that due to the over-irrigation of the wheat crop, the wheat yield was hampered.

Farmers adapted to this inadequacy by changing the crop choices to annual crops such as sugarcane and banana (in the case of Sindh), especially in the head and middle reaches. This shifting of crop choices in head and middle reaches due to enough availability of canal supplies indicates huge crises for the tail area in the early Kharif season. Hence, the late sowing of cotton crops reduces the cotton crop yield too. The difference in canal water adequacy and reliability between head, middle, and tail reaches was more significant in Sindh canals than in Punjab canals, as shown in Figure 5.

The foremost explanation for this phenomenon is simply the less variation in the selection of high delta crops in Punjab canals. We observed that the adequacy and reliability difference between head and tail in Punjab is much better than that of Sindh. Can we conclude that canal water distribution in Punjab is equitable as there is less variation between the head and tail reaches of the canal? We hypothesise that the apparent equity in cropping intensity and canal water adequacy/reliability between head-to-tail sections is primarily due to groundwater use. However, this adaptation strategy does not provide an equal agricultural economic return. To validate the above-stated hypothesis, we analysed the land use and land cover classification, and the main distributary level survey-reported agricultural return.

LULC classification reveals that the overall area under cotton crop decreases in both canal command areas of Sindh, with the rate of change in acreage in the cotton crop being 8.7 percent and 7.7 percent in Nara and Rohri canal command areas, respectively. The high delta crops were more visible along the head of the canal network, and as the spatial distance from the main or branch canal increased, the proportion of high delta crops

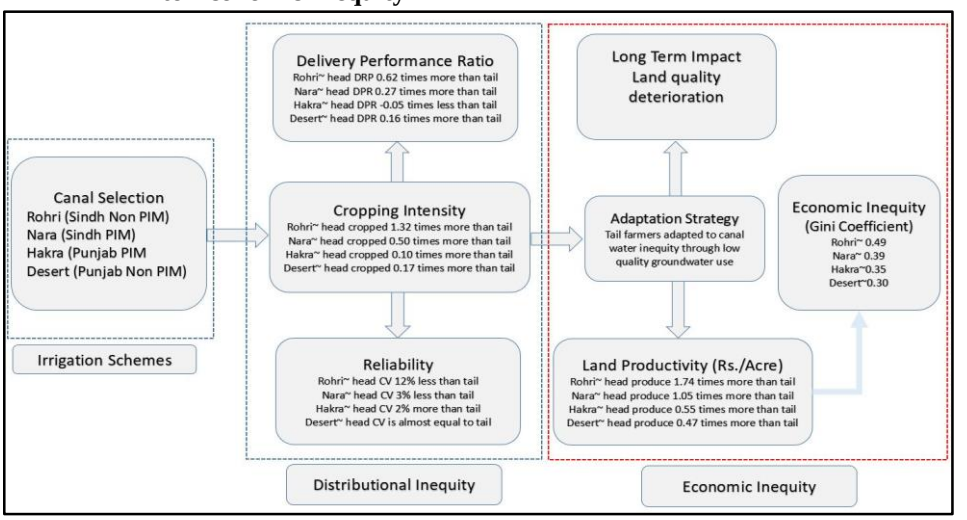
decreased significantly. The variation in the crop choices for the head section ultimately influenced the low cropping intensity at the tail reaches of the canal system. This situation showed another form of inequity between the head and tail sections. This inequity led to an economic inequity between the head and tail reaches of the canal system and was estimated as the Gini coefficient.

3.3. Water Inequity Leads to Economic Inequity

In the previous section, we analysed different indicators to assess the distributional equity between head and tail sections in different canal systems. Figure 5 provides an overall summary of this section that shows how the land and water productivity estimates per unit and cubic meter of water used differ between the head and tail reaches.

We estimated the annual gross return and net return (Rs.) from the crop production survey at the distributary level. The comparison of the gross and net returns of land productivity (Rs/Acre) shows that the overall desert canal had the highest gross and net returns compared to the other three canals. The head, middle, and tail reach canal comparison show that the Rohri canal middle section had the highest gross return, and the desert canal had the highest net return at the head section. From an equity perspective, Rohri and Nara canals have more variation between head, middle, and tail reaches than the Desert and Hakra canals. Hakra canal has a better annual cropping intensity than Nara and Rohri, but this does not yield better gross and net returns. The higher cropping intensity achieved through the conjunctive use of saline and marginally fresh groundwater compromised the per acre yield of the major cash crop, i.e., cotton, and compromised the land quality due to the continuous use of groundwater for cropping. Other than yield compromise, groundwater use has an economic cost associated with its extraction, which further reduces the net return. Canal water scarcity also confirmed this pattern by examining the Delivery Performance Ratio (DPR) data.

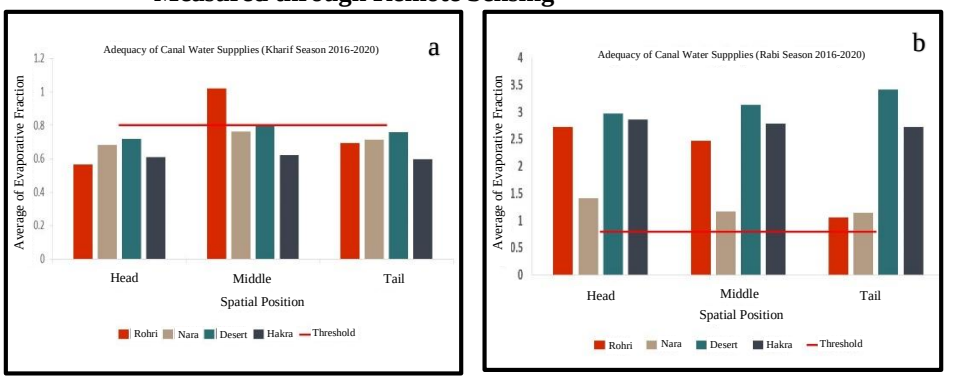
Fig. 5. Summary Results Showing How Distributional Inequity Leads to Economic Inequity



If Nara and Rohri have better DPR than the Hakra canal and even the Desert canal, then why is the gross and net return of Rohri and Nara not exceptionally higher as one would expect? This apparent anomaly can be partially explained by the fact that Nara and Rohri have low cropping intensity due to waterlogging and higher salinity. A low net return of Rohri and Nara canals provides another clue to the grim reality that respondents in both Rohri and Nara canal areas reported in the survey. According to them, due to the poor state of irrigation infrastructure at the tertiary level canal system, the watercourse is unable to deliver the canal water under gravity flow conditions. Hence, even head-reach farmers also need to lift canal water for irrigation, which has an economic cost, thus reducing the net return. Another sharp contrast between the Sindh and Punjab canal systems is that the head and tail distributary land productivity in Punjab is significantly less than in Sindh. The partial explanation for this lower inequity is explained through the percentage difference of higher cash crops at the head reaches, and low cropping intensity at the tail reaches.

Economic Water Productivity (Rs/m3) [EWP] is an indicator of water use efficiency (WUE), widely used for efficiency comparison and also to assess the economic value of water at any desired scale. The World Bank recently estimated the EWP at the provincial level and reported Punjab having an EWP of 0.08 $/m3 for Punjab and 0.06 $/m3 for Sindh (William J. Young, Arif Anwar, Tousif Bhatti, Edoardo Borgomeo, Stephen Davies, William R. Garthwaite III, E. Michael Gilmont, Christina Leb, Lucy Lytton, Ian Makin, 2019). Our estimate at the canal level given in Figure 8, shows that overall, Rohri, Nara, Desert, and Hakra canals had 0.08, 0.12, 0.07, and 0.06 EWPs ($/$m^3$), respectively. We estimated annual crop water use (m^3) from actual evapotranspiration for the crop water year and used it as a denominator for gross per unit land productivity for the EWP estimate. The difference between our estimated results and the World Bank's results is that they used the provincial level gross return estimates and provincial level crop water use. This comparison provides an interesting insight that Punjab, Desert, and Hakra, being at the tail of the provincial canal network, perform near the provincial average but Sindh, Rohri, and Nara perform above the provincial average, which means that Sindh's remaining irrigation network performs much below the provincial average. Through this economic analysis at the canal and the provincial levels, we were forced to conclude that inequity associated with canal regulation is one of the sources of inequity related to agricultural returns, and this inequity, up to a certain extent, is managed through an improved canal schedule.

Fig. 6. Adequacy and Reliability in Kharif Season and Rabi Season Measured through Remote Sensing



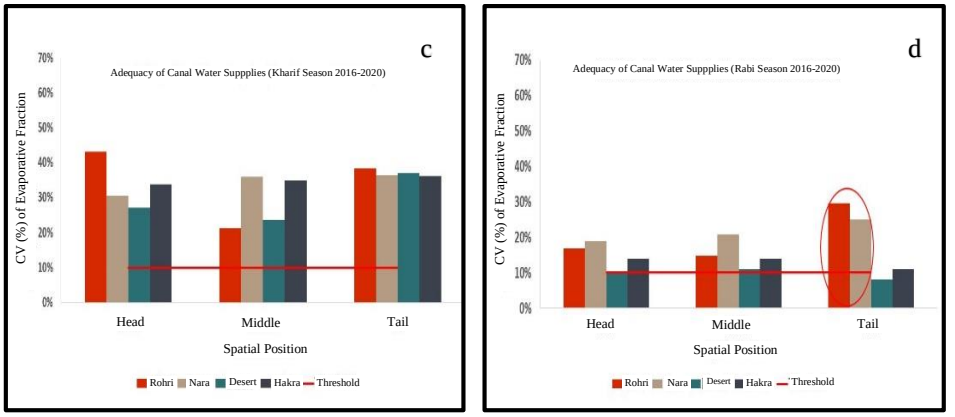


Fig. 7. Adequacy and Reliability in Kharif/Rabi Seasons (a and b) and Changes in Crop Choices (c and d)

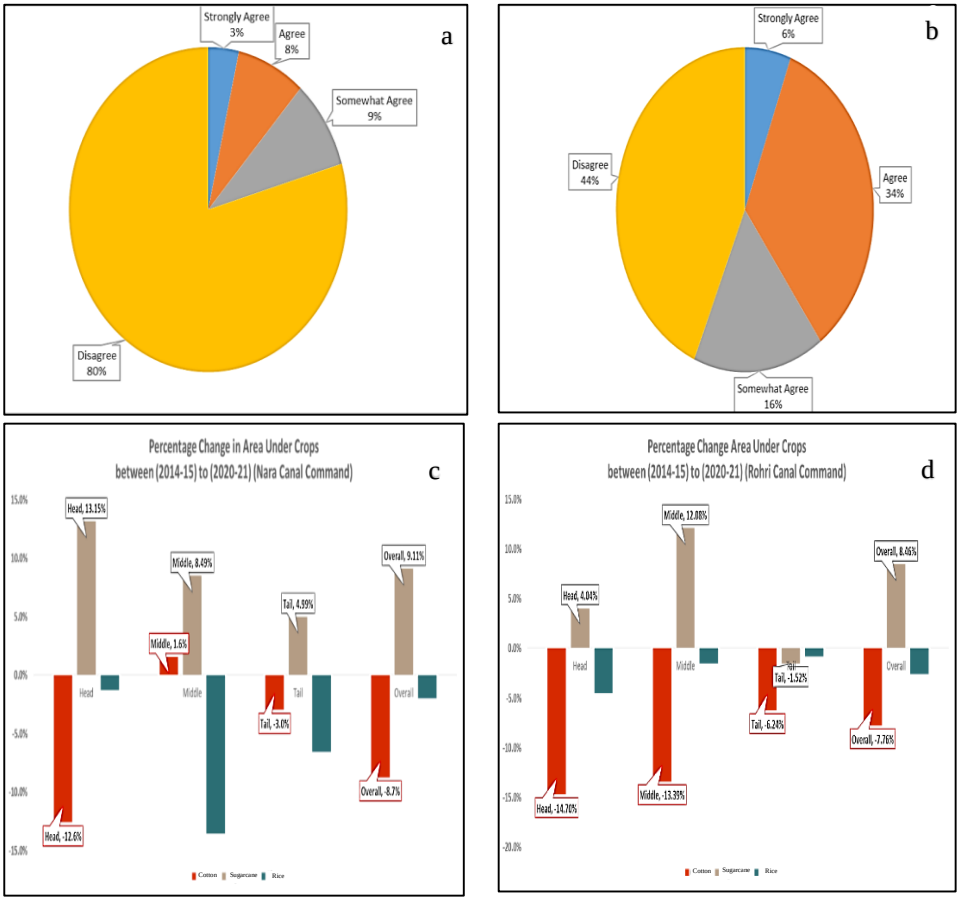
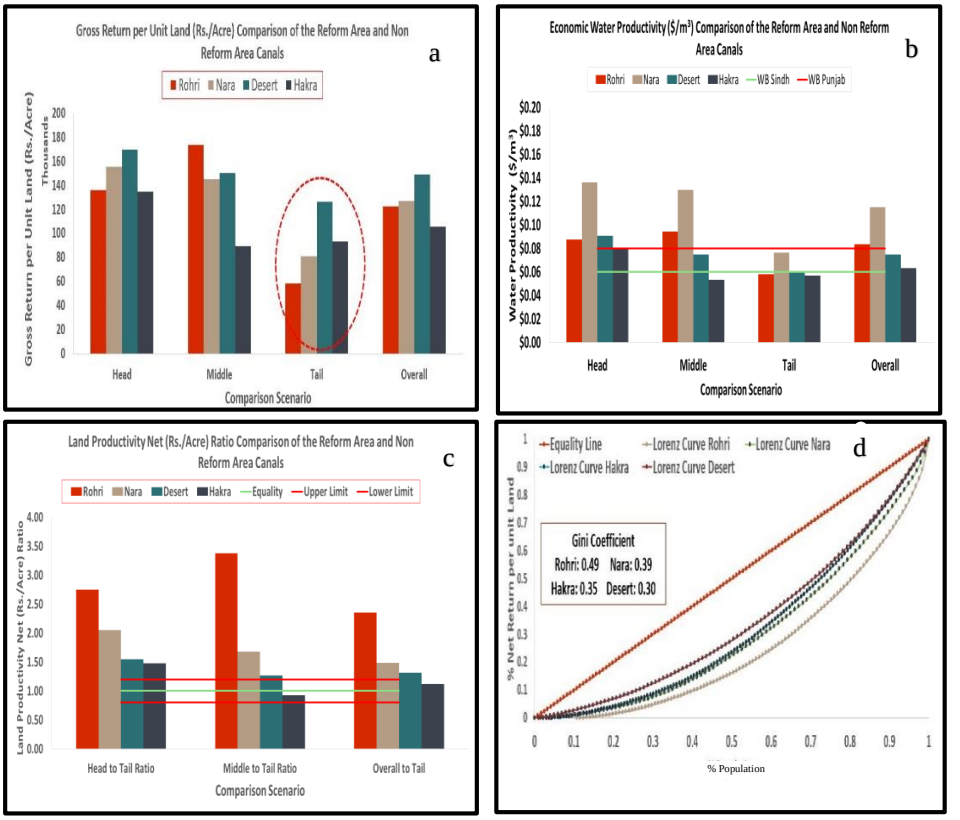


Figure 8. (a) Gross Return per Unit Land (Rs/Acre) Comparision, (b) Comparison of Water Productivity (Rs./m3) in Selected Canals at Spatial Position, (c) Net Land Productivity (Rs./Acre) Ratio Comparison, and (d) Gini Coefficient Comparison of the Selected Canals



4. CONCLUSION

Based on the quantitative evidence following key conclusions are drawn;

(1) From a head-to-tail cropping intensity ratio perspective, the reform area in Sindh performs better than the non-reform site, whereas, in Punjab, both canals have performed within the permissible limits.

(2) Equity in cropping intensity does not translate into water distribution equity between head and tail reaches of Nara and Rohri canal because the head gets more water for high delta crops than tail reaches.

(3) Overall, the area under the cotton crop is declining in both Nara and Rohri canal commands, and the area under sugarcane is increasing.

(4) The variation in crop choices between head and tail sections leads to inequity in water distribution and agricultural economic returns per unit command area.

(5) Economic inequity is the result of canal water distributional inequity. When compared to Nara, Rohri has more economic inequity, while Hakra has more variation when compared to the Desert canal.

Ethical Approval

Ethical approval for the survey instrument used was taken from the Research Advisory Committee of the US-Pakistan Center for Advanced Studies in Water Jamshoro.

Consent to Participate and Publish

All participants were briefed about the objective and purpose of the research study and written consent was taken before the data collection and to publish the research findings as well.

Competing Interest

All authors declare there is no competing interest

Availability of data and materials

Data used for the analysis of this study available upon request.

Authors Contribution

Conceptualisation: M. Arfan; Formal analysis: M. Arfan, A. Ullah; Writing—original draft: M. Arfan; Review and editing: K. Ansari, Muhammad Ali. All authors have read and agreed to the published version of the manuscript.

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Commentary

Seventh and Eighth Reviews under the Extended Arrangement under the Extended Fund Facility, Requests for Waivers of Nonobservance of Performance Criteria, and Extension, Augmentation, and Rephasing of Access

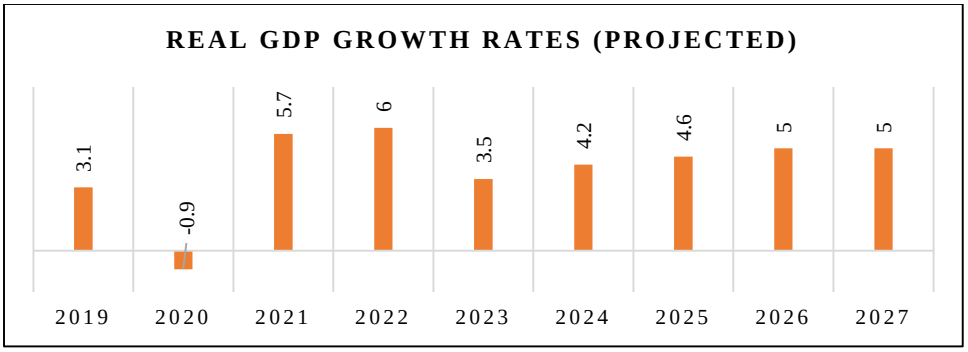
A PIDE COMMENTARY

International Monetary Fund (IMF) issued a staff report on the seventh and eighth reviews of the extended arrangement under the Extended Fund Facility (EFF) on September 1, 2022. As per the review report, the authorities of Pakistan are allowed to draw USD 1.1 billion, keeping in view the measures taken by authorities to address fiscal and external challenges. The IMF board has also approved the extension of the EFF till June 2023 along with extra Special Drawing Rights (SDR) of 720 million and that brings the total access under the EFF to about USD 6.5 billion.

The review report has also identified some priority measures to be considered by the Pakistani authorities, such as the implementation of an approved budget, market-determined exchange rate policy, proactive and prudent monetary policy, the expansion of the social safety net, and structural reforms related to the performance of state-owned enterprises (SOEs) and governance. The set of measures that have been identified contains both short-term and medium-term measures to promote long-term growth. In this regard, the Pakistan Institute of Development Economics (PIDE) has also been working extensively to identify the measures that are necessary to remove the bottlenecks in the economy to improve productivity and increase growth. Therefore, the objective of this document is twofold, i.e., a commentary on the measures suggested by the review report, and what other measures should be part of the programme.

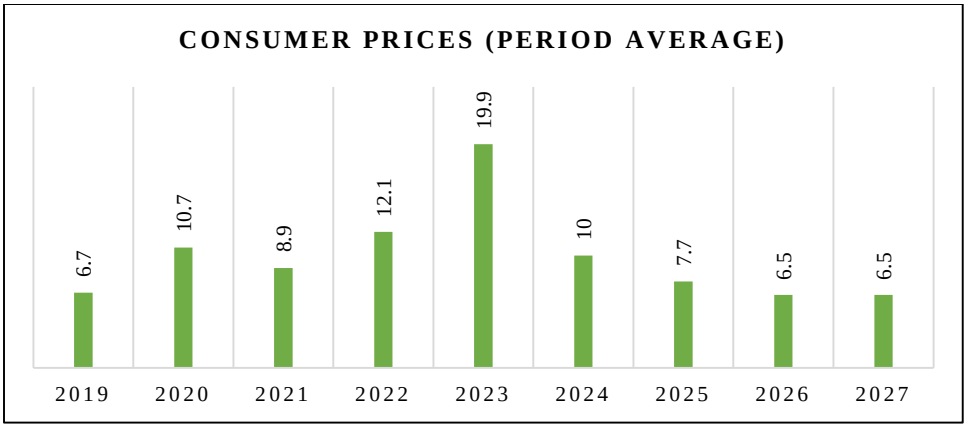
1. GROWTH IS LIMITED BY STRUCTURAL BOTTLENECKS THAT THE PROGRAMME DOES NOT ADDRESS

The PIDE reform agenda (RAPID) notes that Pakistan needs a sustainable growth rate of around 8 percent over a long period, given the population pressure. However, the review report shows that the economy of Pakistan starts overheating at a growth rate of around 6 percent. PIDE notes that it is primarily due to the low investment rate in the economy accompanied by a worsening long-term trend of investment as a percentage of GDP. Additionally, there are ***substantial regulatory and productivity constraints*** in the economy that the programme should be addressing *(see PIDE Reform Agenda (RAPID) and PIDE Sludge Audit. I).*



2. WHERE SHOULD THE INTEREST RATES BE?

The review report suggests that the State Bank of Pakistan (SBP) will continue a tight monetary policy, as per the standard prescription, to restrain higher inflation expectations. According to the review, the SBP and the IMF staff agreed to a tight monetary policy to achieve positive real interest rates. However, the real rate remains negative! And is likely to remain negative through the programme period. This implies that the nominal interest rate should be 20 percent or even more. However, it would be challenging for the SBP to curtail inflation through monetary tightening due to the following facts:



- The SBP started to tighten the monetary policy in November 2021[1] but failed to achieve positive real rates and control inflation.
- The review report projects that the broad money growth will be around 12 percent during the FY-2023. Therefore, PIDE argues that the demand-side pressure will not be a major driver of inflation in near future. The current wave of inflation may be more supply-side shock driven.
- PIDE estimates suggest that supply-side pressures will contribute to inflation by more than 80 percent during FY-2023.[2] Hence, ***further tightening of the***

[1]From November 2021 to July 2022 the SBP has raised the policy rate by 800 basis points—from 7 percent to 15 percent.

[2]In-house calculations, see PIDE Analytics 01 for the methodology.

monetary policy may not be desirable. Interestingly, the Risk Assessment Matrix of the review report also points out that several supply shocks including the disruption of supply chains, higher energy prices, and higher commodity prices are more important for inflation. Nevertheless, a further tightening of the monetary policy ***may reduce the exchange rate pressures***. The current external sector pressure is due to surging import demand. A tight monetary policy may reduce external sector pressure through effective import demand management. But the review report did not take a clear stance on this issue.

We also agreed with IMF that all concessionary interest rates should be eliminated to ensure that the policy rate has teeth. Unfortunately, we do not see the programme recommending a time path to achieve this goal. There should be a sunset clause.

3. WHY DEVELOPMENT FINANCIAL INSTITUTIONS (DFIS)?

We also note that DFIs have not worked in Pakistan's crony environment. Instead of boosting industrialisation, they created an environment of subsidies and rent-seeking. Several of these DFI's had to be closed down, with huge losses that the government tool over.

4. FISCAL POLICY AND PUBLIC DEBT

4.1. Taxation

Budget Position (Billion Rupees)

	2019	2020	2021	2022	2023	2024	2025	2026	2027
Revenue	4,901	6,273	6,903	8,075	10,370	12,272	13,721	15,344	17,032
Tax revenue	4,473	4,748	5,755	6,828	9,220	10,645	11,910	13,320	14,771
Direct taxes	1,446	1,524	1,732	2,147	3,053	3,537	3,967	4,443	4,966
Federal excise duty	234	250	277	346	470	550	612	694	776
Sales tax/VAT	1,465	1,597	1,990	2,722	2,954	3,423	3,860	4,328	4,821
Customs duties	685	626	765	785	993	1,141	1,277	1,416	1,571
Petroleum surcharge	206	294	424	135	855	911	983	1,073	1,112
Gas surcharge and other	14	33	39	60	75	101	113	128	143
GIDC	21	9	19	25	30	34	43	58	65
Provincial	402	414	508	608	790	947	1,055	1,179	1,317
Nontax revenue	427	1,524	1,147	1,247	1,150	1,627	1,811	2,024	2,262
Expenditure	8,345	9,649	10,306	12,776	14,284	16,174	17,783	19,594	22,054
Current expenditure	7,274	8,597	9,111	11,403	12,335	13,861	15,177	16,652	18,803
Federal	4,946	6,081	6,292	8,348	8,778	9,785	10,655	11,598	12,701
Interest	2,091	2,620	2,750	3,100	4,067	4,418	4,705	4,964	5,287
Domestic	1,821	2,313	2,524	2,778	3,475	3,703	3,862	3,995	4,240
Foreign	270	306	226	312	569	677	809	943	1,047

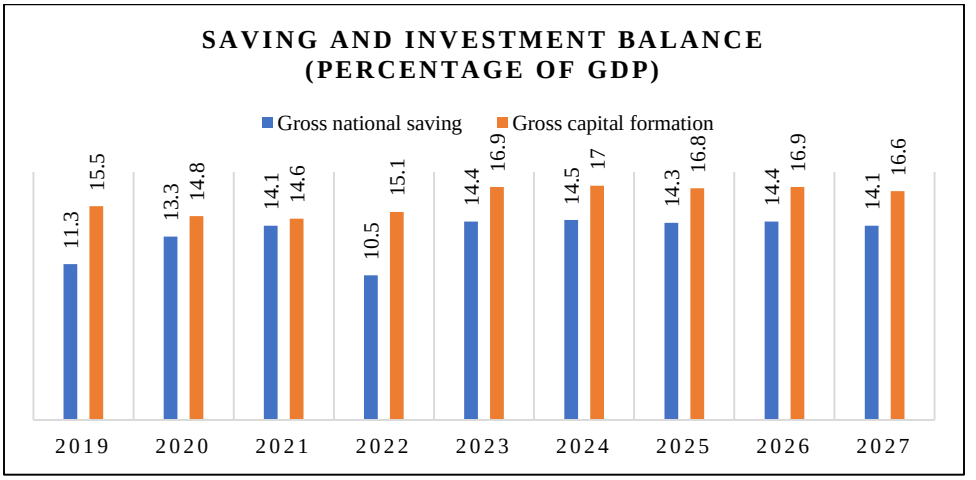
The review report has not addressed the structural issues of taxation in Pakistan. Instead, ***the proposed measures in the report would make taxation more complex.*** The measures proposed are either focused on new taxes or increased rates for existing taxes without highlighting the coverage issues. Key taxation issues in Pakistan such as differential treatment, withholdingisation, complex tax codes, and minibudgets have not been included in the review report. many important reforms are more buoyant and less

distortionary, but the review report has overlooked them altogether. PIDE suggests the following measures related to taxation:[3]

- Rationalise the withholding tax (WHT) regime to simplify the tax structure.
  - Eliminate the revenue-non-spinner WHTs. For instance, 45 WHTs contribute less than 1 percent (merely Rs. 11 billion) to total tax collection. Elimination of these 45 revenue non-spinner WHTs will simplify the tax structure.[4]
- Increase general sales tax (GST) coverage and focus on the point of sale (POS) integration, which is still incomplete.
- Tax on agricultural income is still missing. PIDE recommends income tax should be universal.
- Pakistan still maintains distortive taxes, such as having a filer and non-filer distinction:
  - There is no significant change in the number of tax filers – 2.29 million filers in FY-2021, from 2.28 million in FY-2020.
  - Introduction of clauses such as deemed income for property taxation.
- Refunds to the poor who pay income tax on their purchases, including the Benazir Income Support Programme (BISP) recipients, are not a priority.

4.2. Programme Unbalanced and Tax-Heavy

The review report retained the significance of revenue generation through taxation, but ***it does not stress expenditure reforms***, which is low-hanging fruit in the case of fiscal adjustment. After the 18th amendment, the primary functions were devolved to provinces, but still overlapping roles by the Federal Government are still in place. The government's footprint is expanding instead of decreasing, with new government entities being created without reviewing the existing organs of the state.



[3]See PIDE Policy Viewpoint No. 17.
[4]See Saood and Khalid (2022).

Additionally, the medium-term budgetary framework (MTBF) has not been optimally used for budget development in Pakistan. There are ***no indications on how the fiscal cost would be reduced and savings can be generated***.

PIDE suggests:[5]

- Close down inefficient public sector entities.
- Zero-based budgeting and a good expenditure review.
- Performance-based budgeting should be invigorated.
- Limit on ministries and divisions as recommended in the 18th amendment.
- Limit on setting up new agencies, and any new agencies to be set up only after proper costing and open parliamentary approval.
- Unlock the huge dead capital in the form of public assets.
- Pension reforms are essential. Financial Liabilities are growing without any substantial reform in sight. Moving to a contributory system and pay-off developed based on a comprehensive actuarial analysis is required.
- Cleaning up of the public sector development programme (PSDP).[6]

4.3. Nobody Knows the Extent of Contingent Liabilities

Contingent liabilities are a huge empty hole in the fiscal management system. Guarantees are provided based on the assumption that the contingent liabilities would not go beyond a certain threshold. However, the limits are breached. Often these liabilities are funded from the budget to clear the balance, thus, putting unwanted pressure on the fiscal resource. The debt management office needs to develop an elaborate framework and strict compliance with the thresholds that are required.

The treasury single account (TSA) issue is mired in the capacity of the Ministry of Finance (MoF). TSA-1 has not been fully implemented due to many bottlenecks and resistance. ***The review report suggested the implementation of TSA-2 without considering the situation on the ground***.

PIDE suggests:[7]

- Without civil service reform, capacity issues will not allow far-reaching changes. The same is true in the case of tax administration and other aspects of SOE reforms.
- No amount of technical assistance will solve the problem created by obsolete colonial systems and poor incentives.

4.4. Debt Profile and Management

The expectation that the debt-GDP ratio would decline in the face of a stagnant economy and ***a current account deficit of 3 percent of GDP is untenable***. The debt-GDP trajectory is on an upward trend. Given the fact that fiscal retrenchment is not possible and without comprehensive fiscal reforms, the sustainability of debt is only a distant dream.

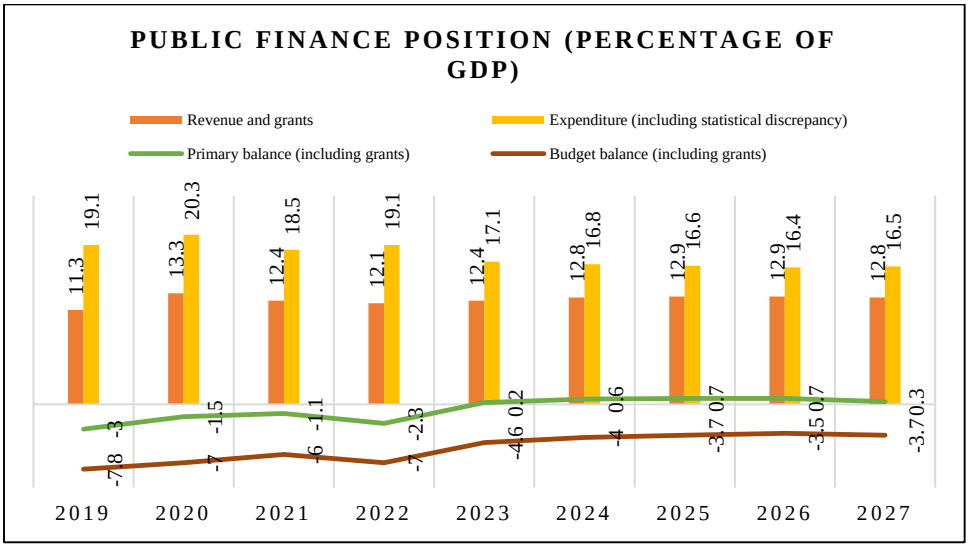
[5]See PIDE One Year Growth Strategy (2022).
[6]See Reforming the Federal Public Sector Development Report (2021).
[7]See Sattar (2022).

External liabilities are gradually shifting from multilateral to bilateral and commercial sides, which has increased the debt servicing cost over time. While domestic debt, specifically the front debt mix, has been converted into long-term debt with high-interest costs. Therefore, debt servicing would require more external resources and substantial improvement in external inflows. The review report has also projected an increase in external flows. PIDE notes that attracting external flows, without adopting structural reforms seems daunting.

Moreover, the secondary market yields on government bonds have also been significantly raised. All these concerns indicate that Pakistan may need another Fund programme shortly.

PIDE recommends:

- ***Establish an independent debt management office (DMO)*** by consolidating the national savings, the MoF debt management, and SBP's debt management functions. The proposed DMO would be able to bring the savings into formal channels by introducing new instruments to the market. Such instruments will create additional resources for the rapid completion of projects without creating new debts.



5. THE CONTINUING SAGA OF STATE-OWNED ENTERPRISES (SOES)

Once again, SOE reforms have been highlighted in the review reports. Various methods or management approaches to improve SOEs performance have been debated, and some of those are also mentioned in the review report. PIDE notes that:

- While the SOE Act is not available in the public domain, it is important to note that the ***SOEs need autonomy with accountability***, which cannot happen if the practice of taking all decisions by the ministries at the central level without transparency remains intact. The autonomy of the SOEs can only be achieved by empowering the boards and the managers instead of the secretaries and ministries.

- The Asian Development Bank (***ADB) is advising on regulatory reforms at the cost of local expertise***.
- A large part of the problem lies in the lack of institutional reforms, which has eroded the capacity of the state institutions.

6. IGNORING AN OVER-REGULATED ECONOMY

PIDE has substantial work on tariffs and regulations, which should be included in future programmes.[8] The real estate sector goes far beyond the programme document. Rather than trying to curb activity in the sector and treating it as a pariah, the need is to ***create a real estate market.***

The Public Procurement Regulation Authority ***(PPRA) system reform has been suggested but without any assessment***. Officials feel it causes huge time delays and increased costs in the public procurement processes. A discussion between the Auditor General and PIDE has also confirmed the inefficiencies of the PPRA system. Once again, the World Bank (WB) is supposed to provide technical assistance (TA) in this regard. It is a noteworthy point that it was the WB that developed the PPRA system for Pakistan. PIDE notes that a Pakistani agency must be asked to provide TA instead of relying upon foreign technical assistance.

7. OVER-EMPHASIS ON CORRUPTION

Pakistan has suffered for 75 years from a violent campaign against corruption, which is hard to disentangle from the ongoing power struggle. The National Accountability Bureau (NAB) and the investigative agencies have hurt more innocent people than caught criminals. Unfortunately, most of our anti-corruption campaigns have been political in nature. Such campaigns have also led to very intrusive officialdom and documentation. All of this ***has eroded our social capital and scared away investment***. Due to this corruption campaign, decision-making is paralysed and risk-taking has ceased.

PIDE notes:

- The inefficient incentive system fosters poor governance and facilitates corruption.
- PIDE Sludge report[9] notes that huge rents are available.
- The protection policy also fosters poor results.

8. NO FINANCIAL SECTOR REFORMS! WHY?

While the attention to financial sector health is welcome, financial sector reform finds little mention in the review report. PIDE notes that small banks would either close down or merge with larger banks, so the competitiveness of the banking system needs to be considered.

PIDE notes:

- The banking spreads are larger than in the nationalised days.
- Banks draw deposits from rural areas and small cities and invest in larger cities.
- Entry into the banking system is virtually prohibitive.

[8] See Pakistan One Year Growth Strategy, PIDE.
[9] See PIDE Sludge Audit Vol. I

- Non-banking financial institutions have also been severely limited.
- Opening a bank account is extremely difficult.

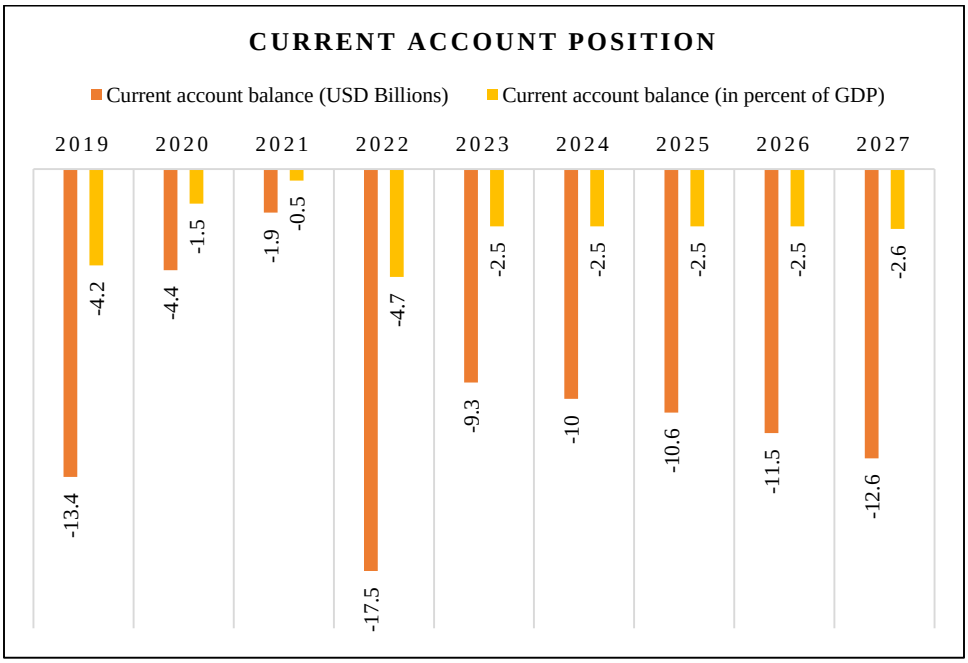
9. REVERSAL OF OPENNESS

While we appreciate the reaffirmation of the commitment to an open economy, it should be noted that in the last three programmes we have increased tariffs, regulatory duties, and surcharges to increase distortive bands, which in turn have led to inefficiencies in the economy.

Recently, we have also seen huge controls on current account transactions. Investment and market transactions are increasingly being based on speculation about these policies as well as the exchange rate. The programme should think of developing ***clear rules and guidelines to set a time path to open the economy*** with few tariff lines.

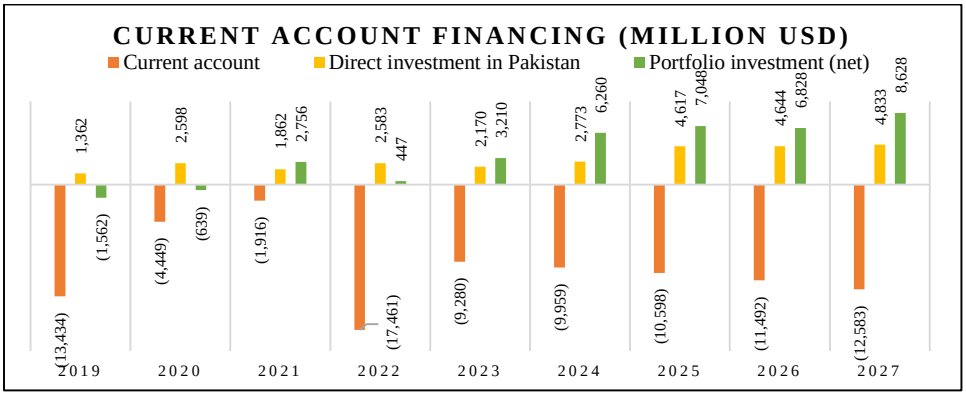
9.1. Balance of Payments

The review report projects a 47 percent reduction in the current account deficit in FY-2023, with the deficit shrinking from USD 17.3 billion in FY-2022 to USD 9.3 billion in FY-2023. These projections are based on the assumed increase in the export bills by USD 3.2 billion and a USD 3.3 billion decreases in the import bills. Furthermore, the projections also assumed adherence to the 'market-based' exchange rate. Now the question arises ***what will be the real effective exchange rate (REER)*** given that we have imposed bans, regulatory duties, surcharges, and extreme foreign exchange controls along with the heavy foreign exchange interventions? Although PIDE agrees and advocates the market-based undervaluation of the exchange rate, there are two important considerations to keep in mind:[10]



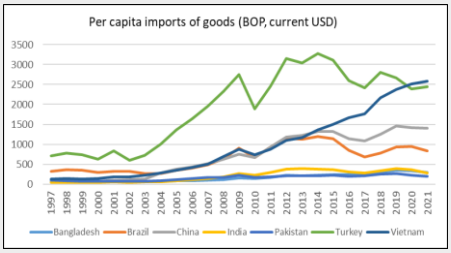
[10]See Jalil (2021, 2022).

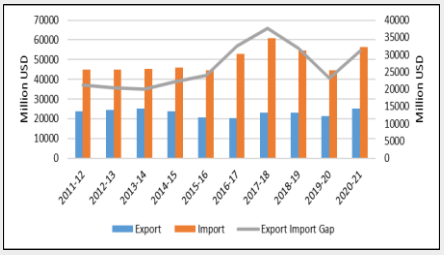
- ***The SBP must restrain from market interventions*** and learn from past experiences. Currency crises in Pakistan have always emerged due to heavy interventions in the foreign exchange market through exchange controls.[11]
- The SBP must ***focus on foreign exchange reserves building*** instead of the exchange parity.



BOX-1: On Imports and Import Bans

Considering the depleting reserves situation and worsening balance of trade, the Government looks towards import restrictions. PIDE notes that contrary to popular belief, Pakistan's per capita import of goods is rather static and much lower compared to similar developing economies. Instead, Pakistan has an export problem that contributes to its balance of trade worsening, with no significant increase is witnessed in exports during one last decade.





The government recently imposed an import ban on over 800 commodities terming them luxury and/or non-essential items. The ban though did not prove effective and in two phases got completely eradicated within three months. A large part of the import ban's ineffectiveness comes from the fact that the goods termed luxury and non-essential form a tiny part of the country's annual imports, hence, not having any significant impact on the overall trade position.

Total Imports FY- 2021	Rs. 8,982,441 million	USD 56,380 million
Import Value of products banned through S.R.O. 598(I)/2022	Rs. 382,868 million	USD 2393 million (At constant ER of USD 1 = PKR 160)
Share in total imports (percent)	4.26percent	4.26percent

Furthermore, the ban also did not manage to curtail the currency depreciation as the rupee depreciated by around Rs. 25 against the US dollar during the three months the ban was imposed.

For details: see PIDE Policy Viewpoint No. 39:2022

[11]See Hina and Haque (2020).

10. THE ENERGY SECTOR CONTINUES TO BLEED

The IMF thinks that the only solution is to increase prices for the consumer that reduces Pakistan's competitiveness.

10.1. Circular Debt

Circular debt first broke out in 2006. Since then, this is the third IMF programme focusing on a deteriorating circular debt with little impact. We always emphasise increasing prices and passing on the burden to consumers without worrying about structural losses. PIDE notes that ***tariff increases without structural changes can increase inefficiencies and sector losses.*** Consumer-end tariffs are highly sensitive to the losses in the transmission and distribution systems and bill recoveries. Per unit increase in price by Rs. 1 adds to an additional loss of more than Rs. 10 billion.[12]

- Only increasing tariffs has not resolved circular debt or power sector inefficiencies. ***The power sector needs serious decentralisation of decision-making and management overhaul.*** Technical issues, such as line losses and bill collection, need to be solved locally by the local management.

10.2. DISCOs' Management will Never be Decentralised

State-owned distribution companies (DISCOs) are corporatised but only on paper; it is unclear under which law the DISCOs are governed. Over the years, rather than the decentralisation of power, the government's footprint on the sector (power division) has become even larger.

- PIDE suggests that unless all companies are made responsible and accountable for all their decisions and finances, it would not be possible to bring efficiency to the power sector. These ***companies need independent boards with zero influence from bureaucracy***.
- ***The billing system has to be decentralised*** and carefully targeted with technology-based pre-paid smart meters. Pre-paid smart meters will also bring transparency to billing, effective demand management, and commercial efficiency to distribution companies.

10.3. An Obsolete Tariff Structure that Sets Up Convenient Losses

PIDE further notes that a tariff structure in which costs are not recovered from all consumer categories is discriminating in nature. Besides, creating financial difficulties for the government, such a structure also ***generates inefficiencies in the system and misleads investment decisions*** in the supply system. In Pakistan, more than 60 percent of electricity is produced by thermal sources providing costly electricity. Furthermore, the tariff mechanism adopted provides electricity charges, different across categories, creating inefficiencies and making electricity expensive for the economy's productive sectors (industry and businesses).

[12]See Malik (2020).

- Pakistan's ***power sector needs fair pricing***, where each consumer pays according to their consumption on a progressive trend. The best way is to move from increasing block tariff to a flat linear tariff without slabs and consumer differentiation.
- There will be no competition when accounts of inefficient and efficient DISCOs are treated as one, and the uniform tariff is charged. PIDE notes that moving from a uniform tariff to a different flat rate across DISCOs will also significantly minimise inefficiencies. Tariffs should be based on the actual cost of services in all geographical markets.
- However, the fat (linear) tariffs may not be a win-win situation for all (e.g., poor households). PIDE notes that ***direct cash transfers***, compared to electricity subsidies, have proved to be a better welfare alternative for low-end consumers. Since we already have a social protection system, there is no reason to subsidise electricity. The same goes for agriculture, which consumes about 9 percent of electricity.
- Besides, ***the energy subsidy plan itself is very unrealistic***. The domestic consumption of electricity is more than 50 percent. On average, 75percent of domestic consumers use 300 or fewer units of electricity. There is ample evidence that the households opt for options to remain in lower slabs, for instance, they install two to three meters in a residential premise dividing load. They also temper meters or steal electricity or pay a fixed amount to the lower staff of a company.

In Pakistan, the idea of ***energy conservation and demand management has not remained popular*** because of the government's neglect and a lack of public awareness of its overall benefits. PIDE notes that we can reduce 20 percent to 25 percent of energy demand through its productive use in various sectors.[13]

10.4. Energy Planning is not Happening

Energy planning has to be done holistically and not through whimsical projects. Pakistan's power sector needs ***coordinated planning*** to realise an optimal power generation mix from imported fuels and indigenous resources.

To overcome the governance and financial problems, the government, under pressure from international financial institutions (e.g., the World Bank and the ADB), started the reform process in the sector. After over three decades, no progress has been achieved; rather the sector is worse off, facing even more challenges.

Once again, the WB and the ADB are providing technical assistance to the power sector. Perhaps it is time to let the local people do the necessary reform.

- PIDE suggests a moratorium on IPPs in the future, including the proposed solar project***. All new investments should be based on competition and the financial dynamics of the sector***.
- PIDE recommends ***audits and reaffirming the contracts*** for the private projects already in the system.

[13]See Malik (2020) and Malik & Urooj (2022).

10.5. Develop the Electricity Market Don't Just Talk About It

Developing a **competitive electricity market** is the only viable solution to all problems in the power sector. We have talked about creating a market for the last 20 years, and now is the time to give it the impetus it needs. Establishing a power exchange market like the competitive trading bilateral contract market (CTBCM) in Pakistan in the current scenario seems impracticable. The market should start with ***bilateral contracts and wheeling power***, keeping transmission constraints and participants' capacities in mind. Distributed generation is a norm in electricity markets globally. However, DISCOs and its managerial authority, the Power Division, are creating hurdles in allowing 'wheeling' and 'net-metering' regimes, which are supposed to bring competition to the sector. NEPRA should facilitate these by discouraging the hurdle-creating entities.

10.6. What is Privatisation? How will it Happen? What is the Value?

On the privatisation of state-owned energy companies, it is worth noting that we do not have ***the capacity for efficient and transparent contracting*** and ensuring its implementation. The lesson drawn from the privatisation experience in the last three decades is (not only in electricity utility but in other sectors) that privatising for the sake of it, without a due thought process, ends up as a wrong decision.[14]

11. SOCIAL PROTECTION: HOW LARGE? FISCAL IMPLICATIONS

Social protection has become a political instrument. The expenditures on social protection observe an increasing trend and stand at around Rs. 316 billion in the review report. While well-meaning, the programme is seeking further expansion along with indexation.

PIDE estimates of poverty suggest the poverty rate in Pakistan is around 21.5 percent. We note that BISP already covers those people far more than the ultra-poor. Still, social protection is an expanding agenda in Pakistan, and the provinces have social protection policies as well. Social protection is being done through utility stores, the provision of health cards, the National Rural Support Programme (NRSP), the Pakistan Poverty Alleviation Fund (PPAF), micro-finance networks, fuel subsidies, public sector education provision, and a state-owned pension scheme. PIDE notes that:

- It is not clear what is the objective of social protection.
- Is it the precursor to universal basic income?
- Do we have the fiscal resources to do this?

Perhaps there is a need to undertake a critical review of this whole system and seek consolidation and productivity gains. In addition, there is no concept of graduation or mobility in these schemes. Conceivably this is indicative of the economic pessimism in the country. PIDE notes that the ***overlapping expenditures for social protection are not considered***

[14]See Malik (2020).

PIDE has prepared a Reform Agenda for Growth and the One Year Growth Strategy. The latter is our minimum structural adjustment programme that could form the basis of a Fund programme.

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61:2 (2022) pp. 309-313

Policy

The IMF Choice

NADEEM UL HAQUE

Strangely "to go or not to go to the IMF" continues to dominate the economic debate in Pakistan. All manner of statements have come out of the economic leaders in the government and their advisers. "We don't need to go to the IMF if we ban importing luxury items." "We can borrow our way out of our problems for our problems are only current financing." "With borrowing, IMF will reduce any conditions." These statements merely show the lack of understanding of the role of the IMF.

As always, government has relied on hurriedly put together committees where people float in and out to consider this existential question. But the answer remains elusive.

So, let us clear the confusion.

Q1. Should We Dump the IMF?

The answer unequivocally is "NO" in the short run and "YES" in the long run if we work hard and make thoughtful well researched policy and have the ability to implement it.

The reason is simple and lies in an understanding of the global architecture. The IMF by global consensus is the last resort lender. Its blessings and certification are necessary for continuation of aid flows and retaining confidence of international markets. If the situation was normal in Pakistan, such a certification would not have been necessary. But with low and declining reserves, markets are jittery and hesitant to deal with Pakistan. Strong decisive action is necessary with or without the IMF. However, the reason for creating the lender of last resort was to calm jittery markets with an *IMF certification.*

Through our history, we have repeatedly gone to the IMF. No effort has been made to deal with our long-term policy and structural deficiencies. Instead, we thought all our problems lay in corruption. It is time, we re-evaluated our approach to policy. Thus far all governments failed to ward off the IMF only because policy has remained whimsical and lacked careful thought.

Q2. But Mahatir did not go to the IMF?

Indeed, he did not. Neither did he beg to put off reform. For anyone willing to examine the situation, he took the IMF medicine- exchange rate change, reducing deficits

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and undertaking reform—but refused to go to the IMF. He did all that was necessary to put Malaysia on track. Yes, his personal credibility and strong policy action kept the IMF away.

Q3. Friendly countries have come to help Pakistan and that will allow us to negotiate better with the IMF?

The cold hard truth is that no country helps another without a return. We need to be clear that loans need to be repaid. There is no such thing as a default.

The reason for going to the IMF is not borrowing money but to adopt a comprehensive set of policies to address the problem of declining reserves and widening deficits. Whoever designs a set of policies to deal with the ongoing haemorrhaging of the economy (the widening twin deficits and declining reserves) will have to target a return to normalcy (manageable deficits and a build-up of reserves) in a reasonable time frame of 3–5 years. Ultimately books have to balance. Haemorrhaging cannot be allowed to continue.

Markets watch problems that are arising and want to see a credible solution. Borrowing today to repay next year while problems remain unaddressed is no solution. When anyone (IMF) prepares an adjustment program they will have to plan policies that will include repayments on these borrowings. Much more may need to be done if the situation worsens.

Q4. The IMF has not been the solution in the past? Will their policies not hurt Pakistan?

Yes, Pakistan has been in an IMF program repeatedly. 22 programs in 70 years and yet achieved no lasting solution. Yes, IMF programs have been expedient and unwilling to touch deeper structural issues. That is the IMF fault. But all our governments have also not been ready to take any tough decision. They have always been eager for easy solutions.

To date we have clung feverishly to the Raj unwilling to tax agriculture, retaining colonial lifestyles including gifts from the exchequer without due process, maintain subsidies for the rich, stripping merit out of the system, and allowing social, judicial and governance capital to depreciate. For decades now, all commentators echo a sense of despondency with government and its inability to develop a state and its policy. All this has nothing to do with the IMF. These are secular trends. Unless we develop a modern functioning state, economic policy will never be properly made.

The IMF or any other donor or external friend can help us with putting our house in order. We must build a modern state and a modern society that is responsible and ready to participate in the global economy of the 21st century. Without that we will continue to bleed and require the IMF again and again.

Q5. So, what would you suggest for economic policy?

Sadly, our economic ministries lack the capacity to do this given that we have never prioritised thinking in our government and that the government hires no economists.

The recommended program would be:

- Develop a system where the exchange rate can never be overvalued by the whims of one man no matter who. A policy for exchange rate management should be put in place that focuses on the build-up of reserves and not on losing reserves as in the past decades.
- Over a year develop a serious tax policy reform for the following objectives:
  - Simplify taxes by removing withholding taxes and all presumptive taxes.
  - Remove all exemptions and get rid of the ability of the government to give exemptions.
  - There should four taxes only:
    (i) Income tax with progressivity.
    (ii) Corporate income tax in line with the rest of the world.
    (iii) A GST with a lower rate than the current–say 8 percent but with careful implementation that widens its use and prevents avoidance.
    (iv) A sensible tariff system devoid of regulatory duties and large exemptions and penalties.
- Eliminate subsidies except for those targeted toward the poor.
- Government to stop all commodity procurement that ties up bank credit to the tune of Rs. 400 billion and provides budgetary subsidies to rich farmers. No more procurement prices.Commit to an independent public sector expenditure review commission through a panel of local experts (no more than 5) to review public sector agencies and expenditure processes to curtail waste. Members of this commission will be paid and in office with staff and budget and with powers of inquiry and getting testimony.Government to develop a power market with decentralised discos and Gencos that are managed and operated on a profit-making basis. Defined subsidies will be given but the circular debt will be eliminated through governance and metering reform. In 3 years' time most prices will be market determined in the power market.
- Gas Companies will be restructured to develop a gas market around the LNG system that has developed. They will be restructured into smaller companies but operating on a profit-making centre not on the current model of return on assets.
- Fresh gas pipelines will be curtailed.
- A plan will be developed to limit household gas supply and move gas to development of electricity.
- New gas companies will be empowered to explore and develop gas fields.
- The PSEs will be combined as intended by the government but with an independent holding company. But then key is to maximise autonomy. Professional management with complete autonomy to restructure, liquidate and manage investments for yield and growth will be critical.
- Revive regulation by professionalisation and autotomising regulatory agencies beyond politics and administration. Reform the public investment project for efficiency and yield. In the immediate 5 years, commit to no more public sector development projects. Meanwhile, develop plans to consolidate investment and

current budgets as in the rest of the world. In doing so move away from our current input-based budget framework to performance budgeting through the Medium-Term Budgetary framework (MTBF). Only mega projects that involve many sectors and agencies will remain with the Planning commission. The Planning commission will manage the MTBF and the performance-based management system.

Q6. Will this set of policies revive growth and employment and help the middle class?

These reforms are necessary if long term fiscal control is to be achieved. For decades, governments have taken the approach that fiscal control means only arbitrary tax increases. The corruption dialogue has increased the suspicions everywhere. The result is increased cost of businesses and investment. All this has done is create repeated crises and slow down growth.

Arbitrary and poorly thought out policies have slowed down growth and productivity as well as investment.

These measures will easily take about 3–4 years to implement even with a fully committed and strong government. But they alone will not accelerate growth.

To meet the employment needs of our youthful and growing population Pakistan must grow at over 8 percent per annum for the next 25 years. For this additional reform is a must. To do this, the government must undertake reform for:

- Developing serious policymaking and governance, by rolling back the colonial administration and legal system. In doing so, develop processes for serious analysis, research and policy development, and monitoring and evaluation. Without a concerted effort to reform our inherited colonial system, the economy will never work to capacity. We cannot run with a colonial legal and judicial system. The world has moved and so must we.
- The civil service must be reformed to do modern governance through rights, policy, monitoring and evaluation and not by direct controls and patronage. Such a system confuses control with policy and leads to waste.
- Currently one closed civil service system controls all government with junior grades and civil servants responsible for local government, mid-level responsible for provincial government and as they get senior, they control the federation. This is inefficient, wasteful, and destructive of local productivity and development.
- Even our democratic processes—election systems, power sharing, workings of parties parliamentary and government systems, term limits, constituency sizes—need review to ensure that effective legislation and parliamentary evaluation routinely happens.
- Develop capacity for market regulation that fosters competition, innovation and entrepreneurship as well as bankruptcy.
- Review markets to ensure competitive practices and markets with entry and exit.
- Phase out all protection and subsidies in a 5-year framework even if it means some industry must exit.
- Develop an approach to pricing water on actual use everywhere to begin rationalising its use and a as prelude to a sensible water policy as scarcity is beginning to take root.

- Local government is recognised by this government as important for service delivery and therefore for growth and broader development. Local government must empower city and metropolitan areas to grow into investment, entrepreneurship and innovation powerhouses that they are in rest of the world. Local government of the type required cannot happen with the colonial civil service with deputy commissioners and commissioners, positions that were meant for rural magistracy.
- The incumbent government picked the right slogan "5 million houses, 10 million jobs." It appropriately notes the role of the construction industry in a city as a leading industry. It also correctly pinpoints how building industry has a knock on effect on the economy. However, the government is being misled into thinking that government land and capital must go into this project of house building. If this project is to be done well, it must be seen as more than house building.
- Local governments must be prepared for the change in policy to provide a supporting role to denser development. Sprawling cities with housing colonies having single family homes, densified housing unit as a flat. It will raise tower cranes all over Pakistan by prioritising high rises and denser developments. · The current approach to city development has impeded development and hence stifled investment to the point that national investment and growth are being choked. Fragmented cities, poorly managed without imagination by an alien bureaucracy and no local representation. This needs to change.
- Government must stop hogging prime land for housing its officials and its offices for this is retarding investment and employment. If this land is released for investment in properly packaged city regeneration package for high-rise, mixed-use development, it will generate jobs and economic growth.

Q7. Are you saying there is a huge agenda even beyond the IMF?

We need the reform for ourselves not the IMF.

With years of research, this agenda seems clear and succinct. However, it is a huge agenda and will take years to implement even with capacity of high quality which we do not have. As it is this agenda is hard to comprehend in its fullness and we see commentators rush to the old, failed model of "government begging from foreigners and giving goodies to locals."

Society must begin to understand how we can grow the economy, and get out of this failed stabilisation approach which is seeking to preserve colonial models of the past for an apartheid society.

The decision is not whether to go to the IMF or not. It is whether to move from colonial Raj to the twenty first century. For that we need to undertake a lengthy and careful agenda of economic, administrative, legal and social reform. The IMF is only a stepping stone. The government must step over it fast and lead reform!

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Policy

The Issue of Own Money

USMAN QADIR and MOHAMMAD SHAAF NAJIB

Charging own money on vehicles has become a norm in Pakistan's automobile industry. Own is a form of premium charged by the car dealers over and above the price of the vehicle for express delivery of the vehicle. An artificial shortage, primarily due to low production numbers, allows dealers and other investors to pre-book vehicles and charge own from end buyer for immediate transfer of ownership once the demand for vehicle rises in the market.

As per our estimates, ***in the last five years at least PKR 150-170 billion was paid as own money on cars in Pakistan, with own being charged on 80 to 90 percent of vehicles. This means, Pakistani car consumers pay an additional PKR 30-34 billion annually in undocumented transactions under the disguise of own money for the purchase of cars.***

In the last five years, Pakistan produced less than a million vehicles under the cars and jeeps category (See Fig 1). During the same period, Morocco produced twice as many vehicles while Turkey's production remained over six times more than Pakistan. Moreover, Brazil's vehicle production remained nearly thirteen (13) times more than vehicles produced in Pakistan.

In addition to low production numbers, lack of effective regulations allows the automobile companies, dealers, and other investors to foster the own money culture in the automobile market. While the invoice amount of vehicle is paid through banking channels directly to the automobile manufacturer, the own money transactions occur through cash only, thus, creating a significantly large black economy in the automobile sector of Pakistan. PIDE Knowledge Brief No. 41:2021[1] details the ground realities of the nuisance of the own money culture.

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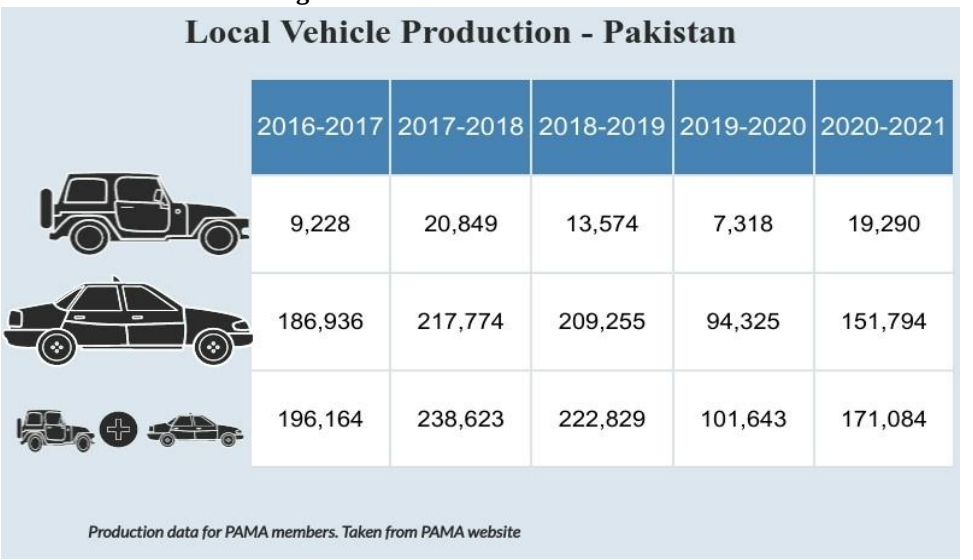
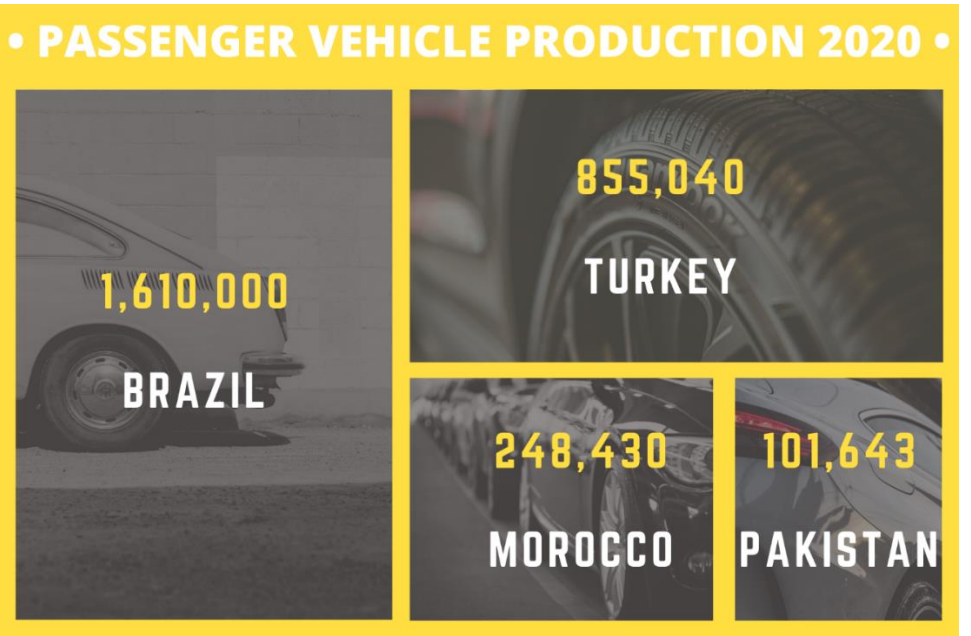
[1] https://pide.org.pk/research/the-nuisance-of-own-money-in-automobile-purchases/

Fig. 1. Vehicle Production - Pakistan



POLICY MEASURES

Given that the production of automobiles in Pakistan is being done on-demand, rather than mass manufacturing, just in time or even lean production, the justification for charging own money does not make sense. The question is, what can the government do about this nuisance from a policy point of view—both in the short term and in the long run.



Source: Brazil and Turkey: Statista.com. Morocco: CEIC Data. Pakistan: PAMA.

The answer to this question lies in short term measure(s) that the government can adopt, and the transformation in manufacturing that must be encouraged in the long term. As the source of the problem is on the supply side, in the short term the government must impose a ban on automobile bookings. Given the untapped demand in the domestic market, manufacturers must start manufacturing at capacity and supplying their vehicles in the market for sale as soon as they are manufactured. Customers will then purchase their desired vehicle directly from the showroom after negotiating the price rather than booking them in advance.

Long- and Short-Term Policy Measures

- Short term: Stop bookings of vehicles that have not been produced yet
- Long term: leverage benefits and concessions to push for expansion of productive capacity

There is no reason why a model like that in other countries cannot be adopted here, with a minimum price for each model of vehicle is notified below which a dealer will not sell a vehicle. Dealers should be free to charge premiums for their services, but consumers are free to shop around and choose the premium they are willing to pay. Setting a price cap or ceiling in the market translates to intervening in the market, and our experience has shown time and again that will not work and only creates further distortions.

Existing Framework	Proposed Framework
Consumer gives down-payment for booking of vehicle	**OEM manufactures vehicles according to productive capacity and delivered to dealer for sale.**
Consumer is provided with two options:	OEM specifies a minimum price to be charged for the vehicle, and dealer is free to charge a premium for additional services.
Option 1: To pay a large sum of money to book their vehicle and wait months for vehicle delivery.	The premium varies by dealer and is not fixed as vehicles are readily available at multiple dealerships.
Option 2: pay a premium, own money, and get the vehicle immediately.	The invoice must document the dealership premium in addition to the minimum sale price specified by OEM.
Following Option 1, company orders the parts and assembles the vehicle on demand.	**Customer inquires with multiple dealers to purchase a vehicle.**
Delivery date is tentative and changes subject to availability of parts.	**Customer negotiates the best possible deal for themselves.**
Total cost at time of booking is tentative and can change by the time the vehicle is delivered.	**Customer acquires vehicle and invoice documenting full price paid for vehicle.**
Customer has no definitive information regarding actual delivery date and final price of vehicle. Customer is liable for paying the final price of the vehicle at the time of delivery, whenever that may be.	
Following Option 2: Dealer pre-books vehicles and offers to customer an already delivered vehicle.	
Dealer offers immediate transfer of ownership of vehicle against the "own" premium.	
Customer is compelled to choose option of paying "own" premium.	

Regarding the long-term measures, the snapshot of productive capacity in the country, and comparative perspective has highlighted that there is scope for expansion of production capacity in the economy. That is why the recent focus on attracting new entrants into the market is a promising start. Now the government must leverage any concessions or benefits the new entrants and incumbents receive to push for an expansion of production capacity in the coming years. To lower costs it would be in the interest of manufacturers to source parts locally, for which the automotive parts industry needs to develop in terms of their manufacturing processes and quality control. This has been accomplished successfully in the past, in tractors and motorcycles segment of the market. However, this effort requires thinking past immediate profits and windfall gains and aiming for sustained growth and profits in the long term.

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61:2 (2022) pp. 319–327

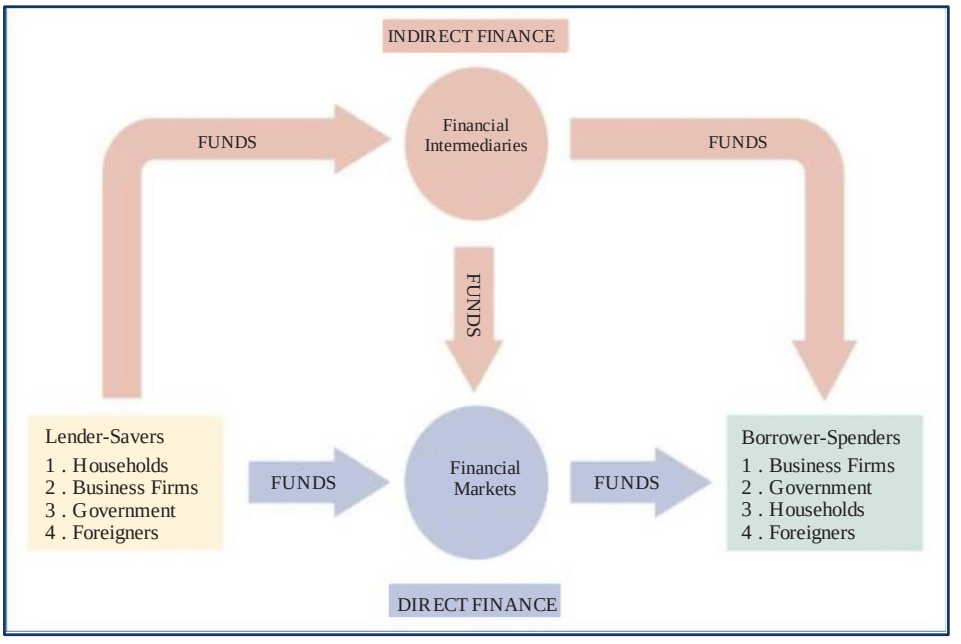
Policy

The Poor State of Financial Markets in Pakistan

SHAHID MEHMOOD and AHMAD FRAZ

THE ROLE AND STRUCTURE OF FINANCIAL MARKETS

Financial markets (bond and stock markets), in conjunction with financial intermediaries (banks, insurance companies, pension funds) perform the important task of channelling surplus loanable funds from households, businesses, government and foreigners to households, businesses and governments in an efficient manner. This transfer of funds proceeds through a 'direct' and an 'indirect' channel, depicted in the diagram. A brief description of the structure of the financial market their main function and working is presented in the following table.



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Structure of the Financial Market	
Type	Function
Debt and Equity Markets	The most common method to obtain funds in financial markets is through debt instruments like bonds or mortgages. Aside from that, the same can also be done through issuing 'equities' (such as common stock, a claim to share in net income of a business or firm). All these are bought and sold in debt and equity markets.
Primary and Secondary Markets	A primary market is where a new issue of a security (like stock or bond) is sold, while secondary market is where the re-selling of these securities takes place. A state bank (like SBP) selling government securities constitute a primary market, while places like stock exchanges where these securities are re-sold constitute the secondary market. Investment banks are an important component of primary market since they underwrite securities. Brokers and dealers are important components of secondary markets, where they help to sell securities.
Exchange and Over-the-counter Markets (OTCM)	These types of markets are primarily concerned with secondary markets. In 'exchanges', buyers and sellers meet at one place (like PSX) to deal in securities. In contrast, buyers and sellers need not be at the same place at the same time in OTCM. Buying and selling could be done from different locations. Around the globe, majority of stocks are traded OTC. Exchanges are no longer geographic as most of the trading is electronic. OTC means a bilateral trade with no exchange intermediary. Exchanges are a regulated platform to facilitate trading between two parties, providing the benefits of liquidity, transparency, safety etc. Stocks globally are generally exchange traded.
Money and Capital Markets	The distinction between these two rests in time of debt maturity. Debt and equities with duration of less than a year (short-term) are traded in Money markets, while those with durations of longer than a year are traded in capital markets. Banks and corporations normally turn to the money market to trade excess surplus in funds. Long-term capital market securities, such as stocks and long-term bonds, are often held by financial intermediaries like insurance companies and pension funds.

FINANCIAL MARKETS ARE IMPORTANT FOR GROWTH

In 1858, British Prime Minister William Gladstone expressed the significance of financial markets in the following words: "Finance is, as it were, the stomach of the country from which all other organs take their tone". Significant research exists to indicate that there is a direct relationship between the development of financial markets and economic growth. Whether it's a firm level, industry level or cross country study, the positive effects of the growth of a well-functioning financial market on economic growth is well established.[1]

Financial markets are also a source is price discovery and transparency in corporate governance through listing and disclosure requirements. One of the major issues, information asymmetry between buyers and sellers, is partly resolved through

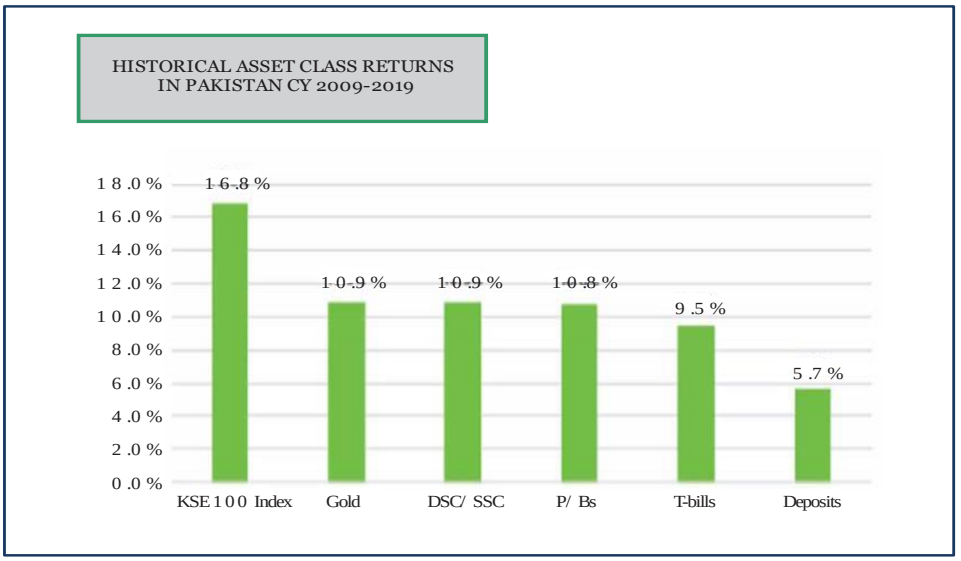
[1]For example, see Levine, Ross (2004) 'Finance and Growth: Theory and Development'; Levin, Beck and Asli (2004) 'Finance, Inequality and Poverty: Cross-country Evidence'; Lopez and Spiegel (2002) 'Financial structure and macroeconomic performance over the short and long run'.

well-functioning financial markets. Various products (bonds, stocks, derivatives like futures, options, swaps, etc., and bank CDs) are designed to suit the particular objectives and risk tolerance levels of investors. Larger and deeper financial markets result in provision of more liquidity to market participants, while smaller markets tend to be short on liquidity, with higher liquidity premiums.[2]

In order to assess how financial markets have performed in Pakistan over time, an analysis of its various components needs to be made. The following paragraphs present a brief overview of these.

STOCK MARKET REMAINS UNDERDEVELOPED

Stock market remains significantly under-developed in Pakistan despite 70 years of efforts and technical assistance from various aid agencies. Although stock market's returns in Pakistan have been higher than other asset classes, not even a percent of Pakistan's population invests in the stock market! The numbers of investors stood at a sorry 236,000 at end Dec 2019, out of a population of 220 million.[3]



Total capitalisation stands at a Rs 7.3 trillion, with average daily stock turnover in regular market standing at 208 million trades in March 2020.[4] However, looked at from monthly trading volumes, there can be significant variations. For e-g, trade volume stood above 460 million shares on 5th December 2019, dropped below 200 million as Covid-19 struck, and then rose again to 467 million shares on 9th July 2020.[5] The total number of stock brokers stands at 284.[6] Stock market capitalisation at the end of June 2020 was 15.6 percent of

[2]Levine, Ross (2004) 'Finance and Growth: Theory and Development'.

[3]In China, the number stands at approximately 100 million. In Iran, the number currently stands at 8 million.

[4]'5 year progress report', PX, available at https://dps.psx.com.pk/progress-report.

[5]'SECP measures well received by Capital Markets', BR, 10th July 2020.

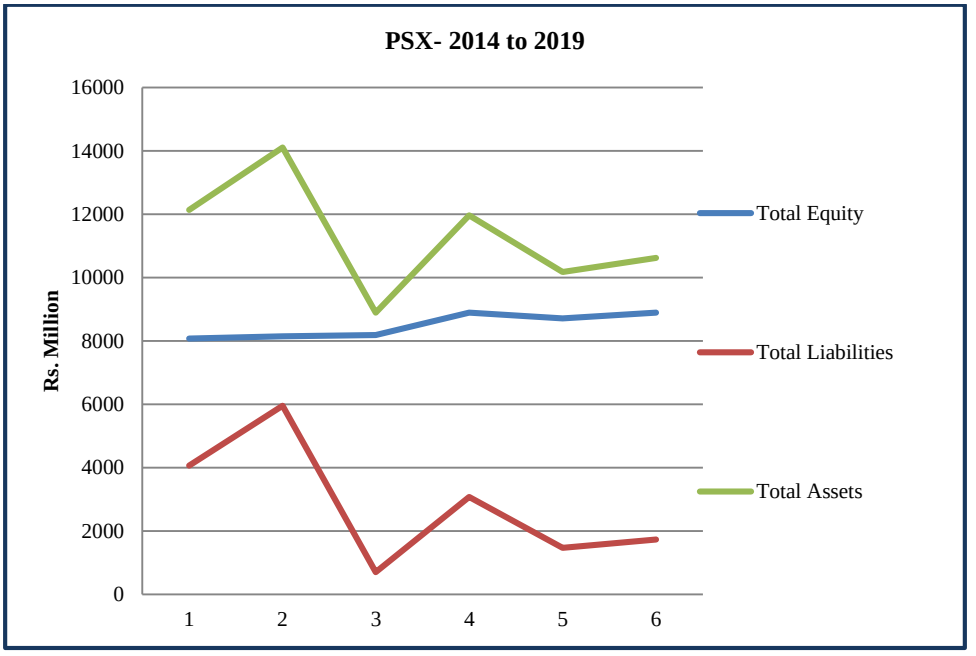
[6]PSX.

Pakistan's nominal GDP, which is significantly less when compared with developed nations, and even lower than peer countries in terms of similar per capita levels. For e-g, in Bangladesh, the ratio stands at approximately 30 percent.

The number of listed companies, worryingly, has remained stagnant or falling over the last 5 years. At the moment, there are 531 listed companies, compared to 638 in 2012. There was only one Initial Public Offering (IPO) last year, compared to the average of about 25 in the 1990s.[7] Its performance tends to be heavily reliant on the decisions of the central government, especially what it announces subsidies and 'relief' packages. Textile related industries (Composite, Weaving, Spinning) constitute the largest share of listed firms on PSX at 25 percent of the total (i.e., 132 firms).[8] But it is heavily reliant upon taxpayer money sponsored bailout and support packages. Despite the support and presence of largest number of firms, this sector's market capitalisation stands at a disappointing 3 percent of the total (i.e., Rs 189 billion).

ISSUES HAMPERING GROWTH OF STOCK MARKET

The stock market is dominated by a few large brokerage houses, and their actions have a substantial effect upon the performance of the PSX.[9] There is a strong perception among investors that a few influential brokers still call the shots despite separation of ownership and management at PSX.[10] Moreover, it is thought that insider information issue is not properly regulated, leading to retail investors being preyed upon.



[7]'Delisting signals a lack of faith in the market', Dilawar Hussain, *DAWN*, 3rd February 2020.
[8]Data on PSX taken from https://dps.psx.com.pk/sectors.
[9]'How those big stock brokers are breaking the market', Mansoor Ahmed, *The NEWS*, 22nd June 2019.
[10]'What's keeping PSX investors away?', Dilawar Hussain, *DAWN*, 16th September 2019.

Only 30-40 percent companies are providing 80-90 percent liquidity to the market. More than 60 percent of market capitalisation in the PSX, for example, comes from only 5 sectors (out of a total of 34). The total liabilities of PSX (as a company listed on the exchange) have witnessed an upward trajectory, the total equity has remained stagnant while total assets have been declining.[11] During the same time period, expenses of the company as percentage of revenue increased from 81 percent to 93 percent.[12]

Firms that belong to families tend to be averse to listing at PSX for various reasons (fear of predatory taxation, onerous corporate governance requirements like audits and disclosures, etc.), and revert to banks rather than gaining required capital through listing. This explains one major reason for lower number of companies on PSX. Anchor investors including three Chinese Exchanges hold a 40 percent stake in PSX but marked improvements in the performance of various participants are still wanting. Despite PSXs best efforts to educate a wider populace, stock market participation still remains at less than a percent of the total population.

BANKS, INSURANCE AND THE 'PLAY SAFE' APPROACH

Banks and insurance companies are two major components of financial markets. Theoretically speaking, banks channel deposits into the economy through lending, which expands the scope and size of the capital markets, primarily through credit invested into stocks and equities. The growth of capital markets, in turn, lowers the risk of bank equity capital, allowing banks to earmark extra capital needed for additional risk taking.[13] Insurance companies are considered a significant part of financial markets stability courtesy of their investment in financial market instruments, and the fact that they do not face the same kinds of systemic risks as banks, thus imparting a certain degree of stability. Further, their participation indirectly ensures the participation of the population that is insured, thus deepening the reach of financial markets.[14] Their role has also been termed as important in terms of providing market liquidity in adverse economic situations.[15]

In Pakistan's case, however, one does not witness any pronounced participation by these two in financial markets. Both of them tend to exhibit the 'play safe' approach. Banks rely heavily on the public sector rather than financial markets. Raising profits through T-bills and PIBs is one of the major parts of banks' assets, with lending amounting to 50 percent of total deposits on average. At the end of June 2019, 83 percent of banks' total investments were in T-bills and PIBs.[16] From January 2019 to December 2019, banks' credit to the government sector increased by a whopping 93 percent (from Rs 3 trillion, 486 billion to Rs 6

[11]Source: PSX.

[12]Source: PSX.

[13]'Banks and capital markets: a two-way nexus' (2010), Biagio Bossone.

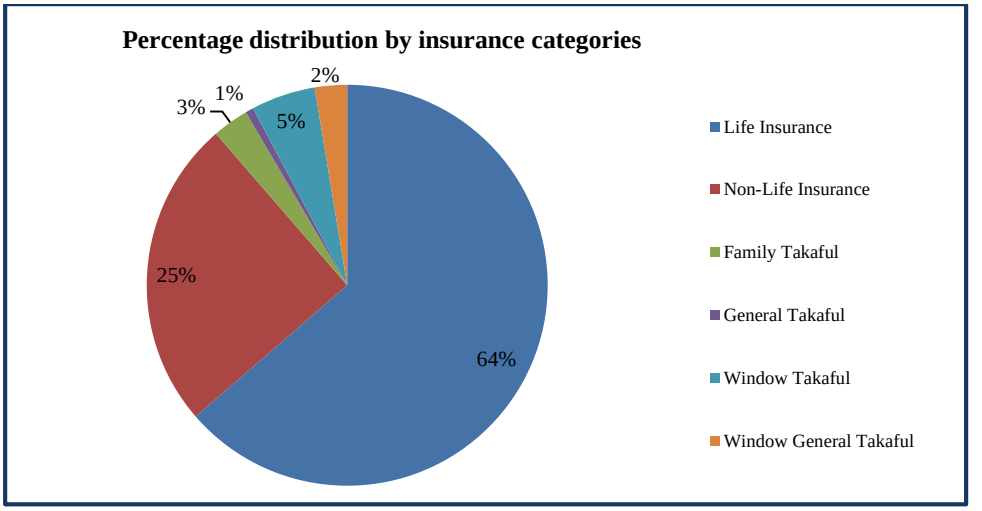
[14]https://www.ecb.europa.eu/pub/pdf/fsr/art/ecb.fsrart200912en_05.pdf

[15]'The role of insurance in in ensuring financial market liquidity' (2010), Phillip Trainer.

[16]It is pertinent to mention here that of the 83 percent, 55 percent is in the short term T-bills while 28 percent in long-term PIBs. This ratio was almost equal at 43 percent in December 2016 (86 percent of banks' investment even back then were in these instruments). But from thereon, there was a pronounced departure towards short-term T-bills. See chart 4, p.4, 'Mid-Year performance review of the banking sector (Jan-June 2019), SBP.

trillion, 728 billion).[17] Similar numbers are absent when it comes to taking recourse to financial markets.

A somewhat similar case exists as far as the insurance industry is concerned. Pakistan's insurance penetration and coverage is one of the lowest in the world, standing at 0.9 percent of the GDP. At present, there are 36 insurance companies of which seven exclusively deal with life insurance. These seven companies realise 63 percent of the gross premiums of the industry, whose size stands at an estimated Rs 308 billion.[18] The insurance is mainly concentrated on life insurance, and the market is centred towards those whose income falls in the category of around Rs 70 to 80k per month, implying that certain forms of coverage (especially health insurance) is quiet abysmal. Above all, insurance companies are not an active part of the financial markets, from where these funds could be channelled to private businesses. Their main investment, like banks, is in PIBs and treasuries.



The presences of middle men and products like 'bancasurance' (coming together of banks and insurance companies) have spread considerable misinformation about the nature and working of insurance schemes.[19] Majority of the buyers have little or no understanding of what they are buying since deceptive marketing tactics are prevalent. Most of the insurance plans are sold as some kind of an investment scheme that will garner a handsome return for the buyer. But majority of the buyers, for example, aren't made aware that they will have to bind their investment for a certain time.

REGULATOR RELATED ISSUES

There is genuine lack of understanding and capacity when it comes to expanding the role of financial markets, especially at the bureaucratic level. Historically, its work has been impeded due to several reasons, one of them being the

[17]Source: SBP.
[18]'Insurance Year Book, 2018-19', Insurance Association of Pakistan.
[19]'The great life insurance swindle', Profit Pakistan.

constant changes at the top. In past 21 years, only 3 out of 13 commissioners have completed their terms! Overall, there is considerable uncertainty regarding the continuation of rules and regulations. The Companies Act 2017 was recently amended in April 2020 by the government, but the amendments were taken back in July.[20] Similarly, the procedures governing Asset Management Companies were recently revised again through an SRO.[21] Whether good or bad, continued revisions are an apt reflection of the arbitrary nature of decision making in terms of this important sector.

Sectoral approach is being followed on functional basis with teams divided into their own portfolios resulting in regulatory burden. There is also an impression of there not being clear rules, regulations and mandate to fulfil its obligations, or to help in expansion of financial markets. For e-g, insurance laws do not allow for investment in long-term securities (like mortgages). Similarly, there have been repeated episodes of broker custody defaults, which recently led Security and Exchange Commission of Pakistan (SECP) to again amend its rules.[22]

SECP consolidated all exchanges into PSX and then sold 40 percent to anchor investors including three Chinese Exchanges. Now we have a demutualised exchange sold to Chinese investors. However, the owners of the single stock exchange do not seem to be ready to develop the market.

THE STATE OF FINANCIAL MARKETS IN PAKISTAN

This review suggests that the state of financial markets in Pakistan should be of serious concern to the policymaker. Most commentators argue that the major issue facing the financial market and its performance is that there is no domestic constituency/demand for reforms. An example is the SECP, which only came into being after Asian Development Bank (ADB) pushed for its founding. ADB is in the process of approving another $900 million loan, part of which would be allocated to development of capital markets.[23] It again raises the important question of why do we need donors to pinpoint these issues? Is there a domestic constituency for reforms?

Out of the 33 banks, only 3 are investment banks but they hardly issue anything. This serves as an indication of the lack of depth and maturity of the financial markets in Pakistan because leading investment banks like Goldman Sachs, JP Morgan, etc., have an important role to perform in the economy. Not only do they manage personal and institutional wealth funds, handle mergers and acquisitions and act as financial advisors to governments on financial markets (raising debt, for example), but they also underwrite new stock issues! Also, they help corporations raise debt through corporate bonds by attracting investors in these instruments. Therefore, the mere presence of 3 investment banks points to:

(a) A lack of demand by corporations/businesses to raise debt through Corporate Bonds, Term Finance Certificate (TFC), Sukkuk Certificates, Registered Bonds, Corporate Bonds, etc.

[20]'Govt. withdraws six amendments to Companies Act 2017', *The NEWS*, 9th July 2020.
[21]'SECP revises procedures for Asset Management Companies', Sohail Sarfaraz, BR, 11th July 2020.
[22]'SECP amends rules to ensure investment protection', Profit Pakistan, 3rd February 2020.
[23]'ADB to provide Rs 274 bn to Pakistan', *The NEWS*, 25th April 2020.

(b) A lack of interest in terms of other stated functions (underwriting new stock issues, for e-g).

In terms of 'a', the percentage of issued corporate bonds stands at 0.17 percent of the total bonds issued in PKR, while its 37 percent in terms of total issue of dollar denominated bonds.[24] In terms of 'b', the falling number of firms at PSX has already been mentioned as a source of worry.

There are no new issues to talk about, volumes are shrinking, primary and secondary markets are non-functioning or functioning below par. Three leading players of the Pakistani financial markets are Pakistan Stock Exchange (PSX), Central Depository Company (CDC) and National Clearing Company of Pakistan Limited (NCCPL), whose role is seen as monopolistic which implies that the optimum level of market competition is absent.[25]

CONCLUSION

There have recently been steps aimed at improving the financial markets and their performance. Government, for example, raised Rs 200 billion Sukkuk debt through competitive book building. Institutional investments in NSS have been banned (to incentivise recourse to financial market), the process of IPOs has been digitalised, etc., but there still remains a lot more to be done to expand the scope of financial markets in Pakistan.

Recently, The Karachi Electric Supply Corporation (KESC) issued debt in China rather than resorting to PSX.[26] What explains this perplexing behaviour is the way that the financial markets function in Pakistan, and its structure. Firms like KESC rarely need to issue long-term debt in Pakistan's financial markets because short-term debt takes care of their operational costs.

The safest short-term securities are the riskless government securities (t-bills), which cater to firms' requirements for short-term investing with guaranteed returns. Therefore, there is little need to search for, or introduce, long-term innovative debt instruments since the issue of short-term public deb takes care of financing requirement of majority of institutions that demand credit. Similarly, the presence of schemes like National Savings, which offer lucrative returns for little or no risk, serves as an added disincentive for institutions like commercial and investment banks to introduce innovative debt products in the financial markets. These institutions are more than happy to serve the government and large-scale commercial customers rather than rolling out innovative products for raising debt.

To sum it up, the development of Pakistan's financial markets are mainly restrained by poor governance at the institutional level and the actions of financial

[24]cbonds.com/countries/Pakistan-bond.

[25]PSX is concerned with trading in stocks, NCCPL performs the clearing and settlement function, and CDC is the custodian of investments.

[26]Statement by KESC representative, 3rd PIDE webinar on Financial markets in Pakistan.

market participants, especially the large players who are risk-averse. Some suggestions to improve the overall situation are stated in the following lines.

- The government, especially the federal government, will have to take lead in terms of correcting the direction that could set the financial markets on a sustainable growth/expansion trajectory. Aside from dealing with the governance issues at the institutional level (like at SECP), it needs to consider the avenues of financing its expenditures and how these deter expansion of financial markets.
- Efforts need to be made to lessen serious dearth of new, innovative financing products allowing instruments like BADLA financing would increase the depth, liquidity, transactions and reach of the financial markets.
- Analyse taxation structure and regulations related to financial markets, especially Capital Gains Tax (CGT). For e-g, there is a strong perception that the cumbersome and time-consuming account opening and registration process for foreigners as they get discouraged and overwhelmed with the current registration structure and look for better investment alternatives in region/markets.
- An over regulated market puts firms at a greater probability of financial default and results in a narrow representation of the economy. For e-g, mandatory information disclosures should be reduced since issuers are uncomfortable in terms of publishing information about some of their proprietary products. Plus, ease of regulations would incentivise family owned firms to list and raise money through financial markets rather than banks.
- PSX is going to be profitable is when its dividend from its subsidiaries and affiliated companies are included so as to run it as a profitable business. It must strategies and should think of its stakeholders. The board related issues must be evaluated as more focus on the composition of the board by introducing the effective rules of staggered board.
- Although PSX has made strides in applying technological in the form of Automated Trading System (ATS), digital experience should be enhanced further as per the modern trends such as payment gateway, online biometric verification, etc. must be employed and consistently upgraded.
- HR quality must be improved by engaging relevant professionals as no proper accreditation mechanism exists at the PSX and SECP levels.
- The monopoly of PSX is perceived as a major issue in development of stock market. We must have more markets. We might move towards establishing different exchanges like SME Exchange, technological exchange, etc. with fewer regulations to provide them an opportunity to raise their required capital.
- The whole ecosystem (brokers, investors, etc.) need to perpetuate culture of investing in capital markets, and so does the SECP. They need to allocate funds for marketing rather than SECP, whose role should mainly be as a supportive institution.

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RESEARCH FOR SOCIAL TRANSFORMATION AND ADVANCEMENT
RASTA Competitive Grants Programme for Policy-oriented Research
Pakistan Institute of Development Economics, Islamabad
www.pide.org.pk/rasta

DDR CALL FOR RESEARCH PROPOSALS (Nov '22)

The '***Research for Social Transformation and Advancement***' (RASTA) is the largest economics and public policy research grants programme in Pakistan. RASTA's mission is to develop an extensive research network of academia and think tanks across Pakistan producing high-quality, evidence-based policy research to inform Pakistan's public policy process. The objectives of RASTA programme are to:

(i) Reduce research-policy gap by stimulating economic and social science research and debate across Pakistan.
(ii) Provide a knowledge-sharing / generating platform where different actors can present and share evidence-based research to inform decision-making in the government.
(iii) Revisit the public policy agenda in line with the evidence produced in this programme.
(iv) Build capacity and improve policymaking and implementation by involving and engaging local universities, think tanks, policymakers, practitioners, and other stakeholders.

With these objectives, the programme seeks to develop local thought communities and generate knowledge. Substantial outputs will be completed in critical areas of public policy that will produce insightful research and facilitate goals that the Government wants to achieve according to its vision. So far, RASTA has awarded 49 research projects in four rounds of the Competitive Grants Programme (CGP) worth PKR 129 million, and commissioned 18 research projects under Demand Driven Research (DDR) programme worth PKR 182 million. More information about RASTA is available at: www.pide.org.pk/rasta.

The RASTA is pleased to invite research proposals on specific research topic under DDR, i.e., ***Cities Regeneration***. To give clarity to what exactly is expected from the research projects, detailed TORs are provided for the guidance of interested applicants. It is anticipated that this approach will help the potential applicants to formulate questions and design their research in line with the TORs, and also prepare good research proposals that will increase their probability to win DDR research grant from RASTA. Details are provided in the section below.

Note: Although applicants are encouraged to formulate/ submit research proposals on the given topic, the research design may vary according to the choice of locale and anticipated business plan.

DDR CALL FOR RESEARCH PROPOSALS (Nov '22)

RASTA Demand Driven Research (DDR) programme invites research proposals on the following topic:

CITIES REGENERATION

City regeneration is a forgotten subject in Pakistan as all efforts are encouraging urban sprawl (See: Haque (2015, 2020) and Haque & Nayab (2019). Proposed studies may seek to develop ideas on city regeneration in Pakistan.

The *scope* may include:

(A) Identification of an area in your city that has a large opportunity cost and is ready to rejuvenate. It should be a prime locale that is in despair, crowded, and rezoning and redesigning could increase investment significantly. Such areas are often occupied by old disused/underutilised buildings/offices but have large land that can benefit the city. For instance, government residences or land owned by Pakistan Railways, Auqaf, and/or Evacuee Trust Property Board, all carry extensive land holdings.

(B) In these areas, the study must plan to rezone and redesign for maximum benefit to cities, economy, and employment. City regeneration usually involves mixed-use high-rise developments with community and public spaces that maximise economic and social benefit. Innovative equity enhancing solutions are suggested. All such rejuvenation will be based on maximal private investment. Government seed investment must be recoverable. Land value capture must be considered.

(C) The study must justify reasons for selecting certain locale. Explicitly identify the opportunity cost. Explore and present detailed plan for rejuvenation keeping in view (i) to make modern spaces of walkability, density, mixed use with community, public and flexible spaces to allow people to adjust their demands, and (ii) rezoning and design – not on public investment. Private investment must be at the heart of all plans.

(D) The study must present calculations: (i) costs to the state of infrastructure and development, (ii) gains to the state and economy in terms of revenue generation, both short- and long-term, (iii) possible investment by the private sector – must catalyse enough private investment to generate a surplus for the government, not a deficit, (iv) possible foreign investment, (v) employment gains, both short- and long-term, (vi) resulting numbers of new housing units, commercial units, & other kinds of spaces – creating gentrification and poor housing balance, and (vii) other gains to the community and public space.

(E) Study examples from international practices of such city rejuvenation in European, Asia and/or American cities (read Dag Detter & Stefan Fölster's *The Public Wealth of Cities: How to Unlock Hidden Assets to Boost Growth and Prosperity*). Create case study by taking one case of such regeneration as an example and illustration of what the proposed research is suggesting. This should be of a high standard covering aspects of the regeneration in detail.

(F) The regeneration (business) plan must have enough information with maps and detailed knowledge of the area to outline (i) the evolution of that

particular locale, (ii) existing zoning, building rules, and proposed changes in existing regulations, (ii) the existing shortages and indicators of demand and how the proposed plan would address these, (iii) flexible mechanisms to allow changing demand to meet evolving needs, (iv) how will the regeneration plan change the lifestyles, commerce, and entrepreneurship, and (v) while gentrification might happen, can there be safeguards for inclusion.

DDR GRANT DESCRIPTION

This is RASTA demand Driven Research (DDR) call for research proposals, November 2022. Research proposals are invited on the above listed research topic.

Considering nation-wide scope of the Call, multiple projects (from different cities and/or locale) may receive funding. Proposed studies must conduct/present a comprehensive background research and incorporate the scope given above. Preferably, the study would require a research team comprising of economists, town planners, and architects.

Submit proposals using prescribed (RASTA D-1, D-2, & D-3 Forms, available on RASTA website) by Wednesday **30th November 2022**, midnight (PST).

All submissions will be thoroughly reviewed, and progress of research projects will be closely monitored by the 'Research Advisory Committee' (RAC) of RASTA. Following are the broad principals of the programme:

(1) The maximum duration to complete the said project will be 06 months (per study).
(2) The maximum grant available for the said project is PKR 3.5 million (per study).
(3) Proposals will be evaluated by the choice of the problem (locale) and expected knowledge outcomes for countrywide or local development.
(4) It is mandatory to justify how the proposed research is relevant & valuable to public policy in Pakistan and justify the contribution and establish link with the existing government policy/ strategy.
(5) Applications will be thoroughly reviewed and discussed by the members of the RAC and the Review Panel before reaching the Award decision.
(6) Only shortlisted teams will be invited to present their proposals before the RAC in the DDR Review Workshop.
(7) Mentor(s) will be assigned to provide technical assistance on each award study and M&E Desk at RASTA will facilitate the research process.
(8) The Mentors and the PMT will monitor progress and evaluate all the deliverables, i.e., inception report, mid-term (interim) report, & final report.
(9) All data collected and work produced under RASTA will have to be submitted for authenticity checks.
(10) Multiple conferences/workshops/webinars will be organised allowing all reviewers, RASTA Fellows and sector specialists to see progress and develop network learning.

(11) There are no purchases (of both hardware and software) allowed under DDR.
(12) Female applicants, university students and researchers from less developed areas of Pakistan are encouraged to participate in the RASTA programme.
(13) To keep it fair, RAC members' family members (including parents, spouse and children) are NOT eligible to participate in DDR projects.

APPLICANTS' QUALIFICATION

Research proposals are solicited from qualified individuals (and/or group of individuals) interested in the economic development and public policy issues of Pakistan, including faculty members and staff at international and local universities and research institutes within and outside Pakistan. Freelancers, policy specialists and/or practitioners may also submit proposals to win the DDR Awards. Research proposals are encouraged from Pakistani graduate students enrolled in PhD and thesis-based MS/MPhil degree programmes at Pakistani and foreign universities, and/or from faculty members to support the research of these students.

DDR APPLICATION GUIDELINES

Elements of the Grant Application

English is the language to be used in the RASTA DDR Grants Programme. All DDR applications must include the following:

(1) RASTA Form D-1 (Cover Sheet)
(2) RASTA Form D-2 (Research Proposal - Technical)
(3) RASTA Form D-3 (Proposed Budget)
(4) Additional Documents:

- *For professional applicants*: A brief curriculum vitae (1-3 pages) for Principal Investigator/Co-PI.
- *For university student applicants*: (i) Official transcript of graduate coursework completed and list of planned additional course enrolment, and (ii) A letter of recommendation from the applicant's research supervisor.

Submission Process and Deadline

Download the RASTA Application Forms (D-1, D-2 and D-3) from RASTA website. Complete forms (in MS Word format) must be submitted electronically to rasta@pide.org.pk before the given deadline. Complete applications will be acknowledged by return email within 14 days after the submission deadline.

- Do NOT mention your name and/or organisation anywhere except in Form D-1 (Cover Sheet). The application will not be processed in case of non-compliance. There is no need to submit a hardcopy of the application.
- The deadline for applications submission is **30th November 2022** by midnight, Pakistan Standard Time (PST). Incomplete applications and applications received after deadline will not be considered.

Budget Guidelines

The maximum grant available for a project is 3.5 million. Remuneration of maximum Rs. 150,000 per month for each member of the research team. A research team can be comprised of a maximum of four members, including the PI. The Co-PIs should not get paid more than the PI. Income tax on remuneration will be deducted at source. For field visits/data collection, TADA/accommodation costs can be included as per the Federal Govt rules. A maximum of 03 percent contingency and 10 percent institutional overhead of the calculated budget are permissible; to be included within the upper limit of the grant.

Disbursement of Funds

The disbursement of award money will occur in three tranches linked to the deliverables:

- 30 percent upon selection of the proposal for an award and submission of *Inception Report*
- 30 percent upon satisfactory acceptance by the review panel of an *Interim Report* & presentation at the Mid-Term Review Workshop; and finally
- 40 percent upon satisfactory acceptance by the review panel of the project's final *Research Paper/ Report* & presentation at the RASTA event.

  - *Note: There is No provision for any hardware/software purchases including data, books, laptop, software, equipment etc.*
  - *Publishing, printing and dissemination of the study is the responsibility of RASTA. Fellows shall provide duly verified receipts of all expenses. If there is any unspent balance, it will be adjusted in the 3rd instalment. Detailed accounting procedures will be shared with the RASTA Fellows.*

EXPECTED OUTPUTS & RESEARCH DISSEMINATION

RASTA Fellows are expected to present their papers in the RASTA Conference and at other national and/or international conferences/research events. There would be two types of publications: (a) RASTA Conference Papers/Reports, and (b) RASTA: Local Research, Local Solutions Volumes.

All Fellows will be asked to produce one or two RASTA Policy Briefs for wider research dissemination.

The RASTA programme will organise multiple research events. RASTA Fellows are expected to make two presentations of their work: (a) a presentation corresponding to their interim research report at the Mid-Term Review Workshop, and (b) a final presentation corresponding to their research paper at the RASTA Conference. Members of the RAC and other invitees from public and private sectors will participate in these events.

RASTA PROJECT MANAGEMENT TEAM

The RASTA programme is managed by the Project Management Team (PMT) at PIDE, Islamabad. The RASTA PMT manages all programme activities under the leadership of Dr Nadeem Ul Haque, Chairman RAC / Vice Chancellor, PIDE Islamabad and Dr Faheem Jehangir, Project Director, RASTA / Senior Research Economist, PIDE

Islamabad.

The PMT, stationed at an independent Project Management Unit, is responsible for the administration of grant selection procedure made by the scholarly RAC, disbursement of funds based on the fulfilment of the grant requirements by recipients, and other operational aspects of the programme. For more details about the RASTA PMT, visit RASTA website.

RASTA RESEARCH ADVISORY COMMITTEE

The RASTA is guided by a scholarly Research Advisory Committee (RAC), chaired by Dr Nadeem Ul Haque, Vice Chancellor, PIDE Islamabad. The members of the RAC are well-reputed national and international researchers, academics, practitioners, international economic development scholars, and senior federal and provincial government officials. The role of RAC is critical from the call for applications stage to final submission of the research paper. Each member of RAC critically reviews research proposals, participates in the decision to award funds, monitors the progress, and mentors some awarded research studies during the course. For more details about the RAC, visit RASTA website.

FOLLOW & CONTACT RASTA

For queries and/or correspondence related to the RASTA programme, write to **rasta@pide.org.pk**

For latest updates and activities, follow **@RASTA_PIDE** on Twitter.

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ARTICLE 5

5.3 *Membership:* There shall be a select category of Members of the Society. The minimum criteria of eligibility for election as Member of the PSDE are:

(a) Previous *ex-officio* membership of the society;

or

(b) Master's degree in Economics, Business Administration, Public Administration, Agricultural Economics, Statistics Econometrics or Economic Demography and/or an evidence of proven scholarship in these areas of specialisation.

5.4 *Election of Member:* All persons satisfying the minimum eligibility criteria as specified in Article 5.3 may apply for Membership on the prescribed form after having their nominations duly proposed and seconded by any two *Ex-officio* Members/Members of the Society, provided that no such application shall be required of a former *Ex-officio* Member of the Society who may enrol as Member on payment of the prescribed fee at the invitation of the Council. Election to Membership shall be decided by a simple majority of the Executive Council at a constitutionally valid meeting.

THE PAKISTAN DEVELOPMENT REVIEW

Editor: **Nadeem Ul Haque**

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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