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Inflation Targeting Skepticism: Myth or Reality? A Way Forward for Pakistan

ZAFAR HAYAT and SAHER MASOOD

This paper makes twofold contributions. First, it critically reviews empirical literature along the key dimensions of inflation targeting (IT)—skepticism/critique to ascertain whether such skepticism is a myth or reality. Second, it critically reviews the so-called preconditions and operational prerequisites of IT and evaluates Pakistan's existing state to draw lessons on whether Pakistan is in a position to adopt IT successfully. Contrary to the skeptic's views, the review indicates that by and large the benefits of IT are promising not only in terms of macroeconomic performance—as measured by inflation, output, interest rate, exchange rate and their variants—but it also allows flexibility to effectively deal with real, financial as well as external sector shocks. The current state of preconditions and operational prerequisites in Pakistan seems adequate, which better positions the State Bank of Pakistan (SBP) to adopt IT. Statutory prioritisation of price stability, consistent inflation targets, and strict accountability mechanisms as well as aggressive disinflation need to be improved for successful implementation of IT.

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Keywords: Inflation Targeting Skepticism, Performance, Preconditions and Operational Prerequisites if Inflation Targeting, Pakistan.

1. INTRODUCTION

Since adopting inflation targeting (IT) as a monetary policy framework by New Zealand in 1990, the multifaceted critique put forth by the skeptics has overwhelmed it. The main concern about IT essentially emanated from the theoretical postulation that under IT a central bank gives more weight to inflation stabilisation, which in turn increases output variability (Rogoff, 1985; Herrendorf, 1998). Later, Truman (2003) broadly classified the views of skeptics under three major categories. First, the belief that IT is too hard; second, the opinion that IT is too soft, and third—rather extreme—is the view that IT would not work. IT has been perceived by skeptics to be a monetary policy set up that 'only focuses on inflation objective', thereby unnecessarily increasing the variability of growth (Friedman and Kuttner, 1996; Blanchard, 2003). A relatively less popular but contrasting view is that IT is too soft (Genberg, 2002; Kumhof, 2002), especially when compared to exchange rate regimes. The idea is that, in a limited sense,

Zafar Hayat <zafarhayat78@gmail.com> is Senior Economist, IMF ResRep Office, Islamabad. Saher Masood <smasood@imf.org> is Economic Analyst, IMF ResRep Office, Islamabad.

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under IT, discretion allowed to central banks in the form of target ranges for inflation weakens the strength of the target as an anchor of inflation expectations. The viewpoint that IT would not work was primarily based on the argument that it is too demanding, and due to the absence of technical and institutional preconditions, this strategy may not be implemented successfully. This dimension of the IT-skepticism pertains mainly to developing countries, particularly, in terms of lacking expertise and inadequate status of the preconditions of IT (Masson, et al. 1997; Calvo and Mishkin, 2003), which may affect credibility, thereby leading to poor macroeconomic outcomes.

Epstein and Yeldan (2010) believed that inflation should be controlled but did not agree with the prescription of inflation in the 2 percent to 4 percent band. They advocated broadening the responsibilities of central banks by including real variables, such as investment allocation or real exchange rate that directly impact poverty, employment, and economic growth. Chowdhury and Islam (2011) remained skeptical that being an important component of IMF's macroeconomic policy advice, IT has proven to be a hindrance in achieving the millennium development goals, particularly in terms of poverty reduction. They believe that too much focus on price stability may cause output volatility and hence lower economic growth, especially in the developing economies, which are prone to supply shocks.

Negligence in the financial sector is yet another area where skepticism prevailed. Blanchard, et al. (2010) argued that the scope for monetary policy to respond to shocks at lower inflation is limited. Aydin and Volkan (2011) made a similar point that under a conventional IT-framework, monetary policy does not respond to shocks of financial nature unless its effects become visible in inflation and output and that, in general, such a framework does not respond to shocks preemptively (see also Frappa and Mesonnier, 2010; Woodford, 2012; Baxa, et al. 2013 for similar arguments).

In line with the prevailing skepticism regarding IT, numerous Pakistan-specific studies, such as Chaudhry and Choudhry (2006), Akbari and Rankaduwa (2006), Felipe (2009), and Naqvi and Rizvi (2010), also opposed its adoption. By and large, these authors based their argument against the adoption of IT on two significant points. First, they are skeptical that the strategy may hurt economic growth, and second, the preconditions for IT in Pakistan are not in place and, therefore, should not be adopted.

Amid all this multidimensional skepticism around IT, not only an increasing number of countries have adopted IT, but its popularity has grown over time. The SBP also envisions its adoption by 2020 (SBP Strategic Plan 2016–2020). With this background, if the highlighted skepticism is more of a myth than reality, only then the SBP's decision to adopt IT could be justified. However, if the skepticism is more of a reality, then the decision of the SBP to adopt IT may not be a prudent move. The focus of this paper thus is to critically review the empirical evidence to assess whether the highlighted skepticism—along its key dimensions—is a myth or reality to seek lessons and a way forward for the future course of the thus far failed monetary policy set up in Pakistan (Hayat, et al. 2016; Hayat, et al. 2017).[1]

[1]It is important to acknowledge that adoption of IT by Pakistan has been proposed by several studies including Khalid (2006); Zaidi (2006); Moinuddin (2009); Saleem (2010) and Zaidi and Zaidi (2011). They, however, founded their arguments in favour of IT either on the basis of 'instability of money demand function' which potentially renders continuation of monetary targeting less favourable, or that 'IT has performed well in emerging market countries', and therefore it is appropriate for Pakistan to move towards IT.

The review of the critical mass of literature in terms of empirical evidence shows that the prevailing skepticism around IT is more of a myth than reality. By and large, the IT countries (both developed and developing) have performed credibly well not only in terms of performance of the key macroeconomic indicators i.e., inflation, output, interest rate, exchange rate, and their variants, but also in terms of the ability to deal with external shocks as big as the financial crisis. Further, the existing state of the preconditions and the operational prerequisites in Pakistan seems adequate, and therefore the SBP is likely to have attained ground for successful adoption and implementation of IT. Nevertheless, it will have to work out inflation targets consistent with price stability while prioritising the latter to help build credibility and institutional accountability mechanisms with the concerned ministry to ensure its adoption in letter and spirit.

The remainder of the paper is structured as follows. Section 2 discusses the evolution of IT from a theoretical perspective as a remedy for inflation bias and highlights the scope of alternative monetary policy strategies in containing inflation bias. Section 3 brings forth the findings of the empirical literature regarding the actual performance of inflation targeters (ITers) along the lines highlighted by the skeptics. Section 4 assesses the essence of the so-called IT preconditions in general and their existing state in the case of Pakistan in particular. Section 5 highlights and evaluates Pakistan's case for IT in terms of the key operational prerequisites. Finally, Section 6 concludes the paper.

2. IT IN THEORY AND PRACTICE AND THE SCOPE OF ALTERNATE MONETARY POLICY STRATEGIES IN COMBATING INFLATION BIAS

The theoretical foundations of the time-inconsistency problem put forth by Kydland and Prescott (1977) and Barro and Gordon (1983) attracted considerable research (see Gartner (1994) and Gartner (2000) for surveys). The essence of the theory is the well-known outcome of inflation bias, which results from the conduct of monetary policy in a discretionary manner—especially when it tries to attain a higher than the potential growth rate of the economy. Since inflation bias is not desirable, many studies in this context focused on ways of conducting monetary policy, particularly institutional arrangements that may help mitigate inflation bias by constraining discretion.

Broadly, four solutions to the problem have been suggested in the literature; punishment equilibria, incentive contracts, reputation, and delegation. The latter gained relatively more popularity after the influential work of Rogoff (1985), who suggested delegation of the conduct of monetary authority to a central banker who is independent and gives more importance to the inflation objective vis-à-vis the output objective. In subsequent research, the delegation of the monetary authority to an independent central banker is emphasised largely under two main arrangements. The first, is the implementation of the performance contracts, and the second, is the implementation of inflation targets. Person and Tabellini (1993) and Walsh (1995) modeled performance contracts with the presumption that central banks have both instruments as well as goal independence. Under the arrangement of instrument independence, the central bank can choose its policy without government interference, and under the arrangement of goal independence, the central bank can also choose the policy goal (Beetsma and Jensen, 1998).

Later, Svensson (1995) examined the IT regime's performance in addressing the inflation bias problem. The study interpreted IT as the delegation of authority to a policy maker with three main responsibilities: an explicit inflation target, implicit output target, and an implicit weight on output stabilisation. In addition, while following Rogoff's terminology, the study showed that an inflation target can achieve the second-best equilibrium. He, therefore, suggested 'delegation' of the monetary authority to a policy maker with a low inflation target and a relatively higher consideration for inflation stabilisation. Technically, the band of the inflation target should be relatively narrow as the width of the band represents an implicit consideration for output stabilisation. Thus, the broader the band width of the inflation target, the more would be the scope for inflation bias. Similarly, Herrendorf (1998) concluded that IT under instrument independence mitigates the inflation bias. Although, it does not entirely eliminate the phenomenon because the government still has the discretion to revise the target, implying that the central bank does not have goal independence.

With this discussion about the evolution of IT as an outcome of the endeavor against inflation bias, the attention is now turned to briefly discuss alternative strategies to IT and their relative standing in offering a solution to the problem of inflation bias. In practice, central banks use various monetary policy strategies to achieve the goal of price stability. These strategies include exchange rate pegging, monetary targeting, 'just do it', and IT (Mishkin, 1997).[2] Although all these strategies have their own advantages and disadvantages, the focus of the current study is to circumscribe the implications of these strategies for inflation bias and output stabilisation.

The strategy of exchange rate pegging, for example, does not allow discretion to pursue an expansionary monetary policy to reap the gains from the output, hence limiting the scope for the creation of inflation bias. On the other hand, monetary targeting possesses a considerable scope to create inflation bias. Bernanke and Mishkin (1992) are of the view that central banks have hardly been able to adhere to strict rules for monetary expansion. To meet the short-term objectives, such as real output growth and exchange rate stabilisation, the central banks using the monetary targeting strategy to control inflation often deviate from their targets.[3] Similarly, the 'just do it' monetary policy strategy, although forward-looking, offers monetary policy makers an untamed discretion to deal with unforeseen economic shocks. This discretion may potentially create inflation bias. IT, however, is a framework best described as 'constrained discretion' (Bernanke, et al. 1999; Svensson, 2009). An explicit inflation target makes a central bank accountable for its policy actions and, simultaneously, allows flexibilityfor the policy maker to deal with supply shocks. For example, the band of the inflation target provides flexibility for monetary policy makers to adjust to supply shocks. Another source of flexibility with IT central bank is its accountability in terms of core inflation, which is an indicator of inflation adjusted for supply shocks.

Both IT and 'just do it' strategies of monetary policy are prone to create inflation bias via political pressures. The former, however is relatively immune in the sense of

[2]Just do it monetary policy strategy refers to the conduct of monetary policy in a pre-emptive manner without having an explicit nominal anchor. Moreover, there is no unique definition of IT, however, refer to Leiderman and Svensson (1995) and Bernanke, et al. (1999) for some related discussion on the framework.

[3]See Mishkin and Posen (1997) and Clarida and Gertler (1997). Also see Omar and Saqib (2009) for related evidence in case of Pakistan.

being accountable and hence cannot use its discretion to systematically raise the level of output. Moreover, transparency is another distinguishing feature that places IT above the 'just do it' strategy (Mishkin, 1997). McCallum (1996) concluded that IT is generally attractive as compared to other discretionary modes of monetary policy strategies and is likely to yield superior results in the long run. IT derives its superiority from the fact that other discretionary modes of monetary policy lead to inflation bias that results from the pressures on the central bank emanating from the pursuit of short-term gains.

Thus, from the discussion above, it may be inferred that although IT is not a panacea for the inflation bias problem, it seems the best available framework among the alternatives to cure it. The framework confines discretion only to the short-run (to deal with shocks) and enhances long-term commitment to the inflation objective, and therefore helps mitigate the inflation bias problem of a discretionary monetary policy strategy.

3. SKEPTICISM OF AND EMPIRICAL EVIDENCE ON THE MACROECONOMIC PERFORMANCE OF IT

As mentioned earlier, skeptics have broadly questioned IT based on the possibility of macroeconomic nonperformance, inattention to financial sector developments, and inadequacy of preconditions before its adoption. This section critically reviews the empirical evidence to determine whether IT led to improved macroeconomic outcomes, and to what extent the notion of the neglect of the financial sector is founded to support the conclusion of nonperformance and adoption of IT.

3.1. Inflation: Average, Volatility, Persistence, and Expectations

Although the theoretical foundations envisage an improvement in terms of inflation due to the adoption of IT, Ball and Sheridan (2003)—perhaps the pioneering empirical study that is critical of the performance of IT—found evidence, which to the contrary suggested that IT did not seem to have improved the inflation performance. They argued that since the non-targeters exhibited improved inflation performance over the same time, the better performance may not be attributed to the adoption of IT but to factors other than targeting. In their view, since the ITers had higher inflation rates before adopting IT, their results may mark an exaggerated outcome. Ball and Sheridan put this notion in the words, "Just as short people on average have children who are taller than they are, countries with unusually high and unstable inflation tend to see these problems diminish, regardless of whether they adopt inflation targeting. Once we control for this effect, the apparent benefits of targeting disappear" p. 3.

An important criterion to judge the performance of IT strategy, thus, could be its performance in terms of inflation, as price stability is the overriding objective of monetary policy under IT. Being fully aware of the importance of price stability, not only developed but also developing countries (being persuaded by the framework's effective performance and the higher rates of inflation in these countries) adopted IT (Mishkin and Schmidt-Hebbel, 2007; Walsh, 2009) and still others are planning on it.[4] Given the

[4]Roger and Stone (2005) noted that despite frequent target misses no country has left IT strategy due to its flexibility, lack of realistic alternatives and high standards of transparency and accountability.

findings of Ball and Sheridan (2003) for nonperformance of the IT in terms of inflation, it is expedient to survey whether this notion is supported by empirical evidence as per the findings of other studies as well? For an extensive assessment in terms of this crucial indicator, various dimensions, including average inflation, inflation persistence, inflation variability, and inflation expectations, are considered.[5]

3.1.1. *Average Inflation*

While assessing IT, Corbo, et al. (2001) attempted to answer the question of ITers success in reducing inflation rates and found that, on average, they tend to have met the targets for inflation. The study reported that the average deviation from its target in the case of ITers was 12 basis points. Ammer and Freeman (1995), Haldane (1995), Mishkin and Posen (1997), Kuttner and Posen (1999), Bernanke, et al. (1999), Cecchetti and Ehrmann (1999), and Neumann and Von (2002) are some of the other studies with similar findings of a considerable reduction in inflation after the adoption of IT. Petursson (2005), however, documented that the deviation from the target approach is too narrow a perspective for the assessment of IT, and therefore used average inflation both before and after adoption of IT for a sample containing 21 ITers and 6 non-targeting industrial countries. The findings of the study revealed that inflation was successfully reduced in the last five years prior to the adoption of IT from over 30 percent to 4.5 percent in the ITers. In contrast, in non-targeting industrial countries, the inflation was subdued from 5 percent to 2.5 percent. Several other studies (Vega and Winkelried, 2005; Batini and Laxton, 2006), while including developing countries in their samples, found IT to be successful in lowering inflation not only in developed but also in developing economies. Vega and Winkelried (2005) controlled for the level of inflation prior to the adoption and found that adoption of IT decreased average levels of inflation both in developed and developing countries, particularly with a strong effect on the latter.

Concalves and Salles (2008) and Lin and Ye (2009) addressed the self-selection problem highlighted by Ball and Sheridan (2003)—through the technique of propensity score matching—in the context of emerging market economies with extended data sets and found robust evidence contrary to that of Ball and Sheridan. As per their results, emerging and developing countries significantly reduced average inflation rates due to the adoption of IT. While extending the analysis to a set of 180 countries, Mendonca and Souza (2012) found supporting evidence for the reduction in inflation by ITers. They concluded that IT is an ideal framework for developing economies.

3.1.2. *Inflation Volatility*

Since the critique of Ball and Sheridan (2003) involved the dimension of inflation volatility, evidence of the inflation performance of the IT regime has also been sought in terms of the inflation variability. On this point, Levin, et al. (2004) found that the overall inflation variance in both the ITers and non-ITers is roughly similar. They, however further argued that shocks to inflation in the IT countries under the sample period have been larger compared to the non-IT countries, which is indicative of the relatively better performance of ITers. Petursson (2005) also found that inflation variability (using

[5] See Fuhrer (2009) for definition and measurement of inflation persistence.

standard deviations) has reduced after the adoption of IT by the ITers. Addressing the mean reversion notion of Ball and Sheridan (2003) for a set of 36 emerging market economies, Conclaves, and Salles (2008) found that the adoption of IT significantly reduced inflation volatility. Similarly, Lin and Ye (2009), while exploring if IT makes a difference in developing countries, found that 13 developing countries which adopted the strategy successfully lowered not only their inflation but also inflation variability (see also Mendonca and Souza, 2012 for supporting evidence from a larger sample) .

3.1.3. *Inflation Persistence*

Inflation persistence is yet another dimension of inflation in the empirical literature through which the performance of IT has been assessed. For instance, Siklos (1999) found a significant reduction in inflation persistence after adopting IT for a subset of countries, including New Zealand, Canada, Spain, Finland, the United Kingdom, and Sweden. Several other studies have also reached similar conclusions, such as Kuttner and Posen (1999), King (2002), Levin, et al. (2004), and Petursson (2005).

3.1.4. *Inflation Expectations*

Lastly, inflation expectations are an important dimension in assessing the inflation performance of the IT strategy. Johnson (2002) analysed the expected inflation behaviour change for a set of 11 countries. The panel included five IT countries (New Zealand, Australia, Canada, Sweden, and United Kingdom) and six non-targeting industrial countries (Germany, Netherland, France, Italy, United States, and Japan). The study concluded with strong evidence of a large reduction in expected inflation after announcing the inflation targets.[6] Similarly, Gavin (2003) concluded that IT central banks by announcing their objectives effectively are able to anchor expectations. This, in turn, makes it easier for them to achieve the objective of price stability. Levin, et al. (2004) also reached similar conclusions that IT has played an important role in anchoring long-run inflation expectations.

Demir and Yigit (2008), while investigating whether the announcement of inflation targets has been instrumental in building credibility and shaping inflation expectations, found supporting evidence (see also Libich, 2008). Gurkaynak, et al. (2010), while examining the cases of U.K, U.S and Sweden found that in the case of the former (an IT country), long-run inflation expectations are far better anchored than the latter where the volatility of expectations is higher. Johnson (2003) investigated the effect of inflation targets on the level of expected inflation. His results indicate that, after the announcement of targets, predicted forecasts are less than actual forecasts in Australia, Canada, New Zealand, and Sweden. It provides enough evidence that targets reduced the level of expected inflation. Recently Capistran and Ramos-Francia (2010) in order to explore whether IT affects the dispersion of inflation expectations found that the dispersion is smaller in targeting regimes. They further found that the dispersion in

[6]It is however pertinent to mention that the previous literature including Laidler and Robson (1993); Bowen (1995) and Bernanke, et al. (1999) did not find satisfactory evidence of the impact of inflation targets on inflation expectations. The apparent reasons for the lack of such evidence are the limitations in terms of the short time period of IT and only analysing the unconditional impact of inflation targets on expected inflation (Johnson, 2003).

inflation expectations in developing countries is smaller and more significant than in advanced countries.

3.2. Output, Output Variability, and Pro-poor Growth

Like other monetary policy strategies, IT has also been subject to criticism, especially concerning output stabilisation. IT is sometimes perceived as 'inflation only' targeting perhaps with no flexibility or consideration for output and employment. Bryant (1996) and Rivlin (2002), for example, view IT as the choice of a trade-off between inflation and output (Philips curve) and inflation variability and output variability (Taylor curve). However, since a few studies have argued that IT allows reasonable flexibility with the central banker to deal with the output shocks, Debelle (1999) therefore deems this kind of criticism misplaced. He argued that the framework is sufficiently flexible while deriving its flexibility from the targeting bands and policy horizons. In practice, short-run inflation variability is allowed to a certain degree, leaving some room for output variability at low levels to maintain medium-term price stability. Debelle (1999), while exploring wether IT pays adequate attention to output stabilisation, concluded that even in the case of strict IT, output considerations are important due to their crucial role in determining future inflation.

As far as the empirical evidence is concerned, Cecchetti and Eahrman (2000) found results suggesting that both IT and non-IT countries increased their revealed aversion to inflation variability and therefore suffered increases in their output volatility. Ball and Sheridan (2003) and Gambetti and Pappa (2009) explored whether IT made a difference along the dimension of output and output volatility and output and inflation volatility but could not find supporting evidence for improvement. However, Brito and Bystedt (2010) came up with partially contrasting results from Concalves and Salles (2008). They re-evaluated the performance of 36 developing countries and concluded that although the IT countries have lowered their inflation rates but when the inflation-output trade-off is accounted for, there is no significant indication of improvement.

Arestis, et al. (2008) found evidence that adopting IT helped improve the trade-off between the output gap and inflation variability, which in their view, might have occurred due to a relatively higher degree of monetary policy transparency and flexibility in the institutional framework. Truman (2003) and Hu (2003a, 2003b) found that IT has resulted in a significant positive relationship with growth and a significant negative relationship with inflation. Levin, et al. (2004) documented that IT has improved the trade-off between inflation and output volatility in the IT countries. Corbo, et al. (2001), Neuman and Von (2002), and Petursson (2005), among others, have also come up with similar conclusions. Apergis et al. (2005) concluded that forward-looking rules help ensure greater macroeconomic stability.

Concalves and Salles (2008) explored whether IT matters for developing countries while addressing the issues with Ball and Sheridans (2003) methodology. The overall number of countries analysed was 36, out of which 13 countries were those that had already adopted IT. It was found that IT countries witnessed significant decreases in inflation and output variability as compared to the rest with alternative monetary policy regimes. Roger (2010) also reached a similar conclusion in his research.

Mollick, et al. (2011) found that IT has led to improved output growth both in developed and developing countries during marked globalisation years from 1986–2004. They noted that since IT ensures economic growth along with price stability, it is more pro-poor. For example, Kakwani and Son (2008) argued that growth associated with low levels of inflation is pro-poor because this type of growth benefits the poor proportionately more than the non-poor and that a higher level of inflation is related to anti-poor growth.[7] Attention has been drawn in Hayat (2016) towards this crucial point that since a bigger chunk of Pakistan's populace is either living below the poverty line or is close to it, price stability may be beneficial, as on one hand, inflation would be low, and on the other hand sustainable economic growth can be achieved. Consistent with the aforementioned, Hayat (2018) found that in the case of Pakistan, inflation exceeding the 5 percent level is detrimental to real growth, and inflation ranging between 1 percent to 3 percent is significantly growth enhancing. He argued that the existing discretionary monetary policy strategy had induced significant losses to the Pakistani society because historically, in almost 68 percent of the 50 years' time from 1961 to 2010, actual inflation has exceeded the threshold level of 5 percent, thereby causing twofold losses to the society i.e., in terms of high inflation and lower growth than otherwise was achievable.

3.3. Interest Rate Volatility

Interest rates are the primary policy instruments central banks use in monetary policy (Sellon and Weiner, 1996). Several studies have used interest rates to assess the performance of IT strategy. Ball and Sheridan (2003) did not find any significant evidence in terms of reduction of interest rate variability that can be advocated to IT. Nevertheless, Kahn and Parrish (1998) observed that short-term nominal interest rates are lower and less volatile in the post-adoption period compared to the pre-adoption period in IT countries. For the real interest rates, they observed that IT countries had witnessed an increase in the real interest rates reflecting tight monetary policy. A similar finding was reached by Neumann and Hagen (2002) that, on average, the short-term interest rates and volatility have fallen in the IT economies after its adoption. While comparing the variability in short-term interest rates before and after the adoption of IT, Petursson (2005) also found a general decrease in variability after the adoption of IT, a result consistent with the earlier findings of Kahn and Parrish (1998) and Neumann and Hagen (2002).

3.4. Exchange Rate Pass-through and Variability

Vulnerability in exchange rate shocks is one of the concerns— especially from a developing country's perspective—because an increase in imported prices, when passed on to domestic prices, may affect the performance of the IT in terms of achieving its

[7]Recently, Nuguer and Powel (2020) concluded on similar lines that a higher inflation implies high, interest and unemployment rates. Consequently, the poor relying on wage incomes tend to have more debt than savings and are more likely to losing jobs as inflation and interest rates rise. This study also demonstrated that not only low inflation is associated with a reduction in poverty, but a growing middle class i.e., negatively correlated with inequality. For instance, their model suggests that increasing inflation by 1 percent increases the percentage of low-income households by around 7 percent and reduces the percentage of high-income households by around 1 percent.

inflation targets. Much, however depends on whether the adoption of IT increases or decreases the exchange rate pass-through. To explore the effect of IT adoption on exchange rate pass-through, Coulibaly and Kempf (2010) found that not only the contribution of exchange rate shock to price fluctuations in emerging targeters is, more important than the non-targeters, but in the former case the pass-through had declined after the adoption of IT.[8] This finding is consistent with Taylor (2000), who argued that exchange rate pass-through is lower in a low inflation environment because firms expect a deviation from inflation to be less persistent and therefore pass on less of an exchange rate-induced increase in the price of imported inputs to its selling prices. A step further, evidence of a considerable decline in exchange rate pass-through in Indonesia and Thailand at domestic level to the prices of tradable and non-tradable goods was also found by Siregar and Goo (2010)—except in the case of tradable goods for Indonesia.

In terms of the variability of the exchange rate, Petursson (2005) found results consistent with the theoretical arguments that price stability at lower levels is positively related to exchange rate stability. He concluded that IT had decreased exchange rate volatility on average, specifically in countries with a floating exchange rate regime before they adopted IT. It was argued that the increased volatility in the exchange rate in some IT countries is due to the fact that prior to IT those countries practiced a fixed exchange rate regime.

Lin (2010) extended the analysis of Lin and Ye (2009) to see the effects of IT on exchange rate volatility and international reserves while using the propensity score matching methods. He found significantly different impacts on developing and advanced countries. The developing countries showed significant improvements in nominal/real exchange rates and international reserves stability, while such significant improvements were lacking in the latter.

3.5. Response to Financial Sector Developments

As indicated in the introduction, one skepticism about IT is that it is too narrowly focused on price stability to the extent that financial sector developments are ignored (Frappa and Mesonnier, 2010; Woodford, 2012).[9] Several economists even went to strong conclusions about the health of the IT in dealing with the financial sector crisis. For example, the crisis has 'unveiled the fallacy' of IT (Grauwe and Vansteenkiste, 2007); the IT 'has failed' (Leijonhufvud (2008)) and that the IT 'can increase the likelihood of financial crisis' (Giavazzi and Giovannini, 2010). Woodford (2012) nevertheless argued that these charges on IT are not directly relevant to the central claims put forth by the proponents of IT. In his view, the main thesis against IT could be justified only on one aspect of the IT doctrine (which, for some reasons, developed in the previous two decades) that an IT central bank need not pay attention to financial developments except to the extent that they tend to affect the inflation outlook. In part, it was therefore concluded that an IT central bank should take into account the possibility of intermittent disruptions as experienced during the crisis. To this end, Frappa and Mesonnier (2010) found supporting evidence; however, they stressed further exploration of the matter.

[8]A similar result was also reached by Mishkin and Schmidt-Hebbel (2007) but their sample did not include emerging inflation no-targeters as control group (Coulibaly and Kempf, 2010).

[9]See also Woodford (2012).

Amidst this critique, there exist opposing views and empirical evidence, which may not be overlooked. For example, Svenson (2009) argued that conditions that led to the crisis are associated mainly with supervisory and regulatory failures rather than monetary policy failures. He concluded IT as the best monetary policy framework among the alternatives in the wake of a financial crisis. Dale (2009) argued that the characteristics of IT in the form of low stable inflation and transparency have proven helpful in combating the crisis and stresses the need to consider asset prices while conducting monetary policy as it may hinder the achievement of an inflation target. Filho (2010) concluded that IT has suitably dealt with the crisis. On average, IT countries have effectively managed the crisis; particularly, they were able to reduce nominal policy rates more than the non-targeting countries. They also found some evidence that IT countries not only performed well on the unemployment front but showed relatively higher industrial production and output growth rates. Recently, Andersen, et al. (2014) attempted to explore if IT conferred benefits in terms of economic growth to the adopting countries during the financial crisis and found that IT countries performed well vis-à-vis countries with other monetary regimes.

In a most recent attempt, Fouejieu (2017)—a study that is more directly related to the mainstream skepticism put forth by Woodford (2012)—investigated whether the emerging market ITers are financially more vulnerable than the non-targeters and are the former less responsive to developments in financial sector than the latter. In contrast to the Woodford's view, his results based on empirical evidence indicate that the ITers are more responsive to financial risks than the non-targeters.

4. IT PRECONDITIONS AND THEIR EXISTING STATE IN THE CASE OF PAKISTAN

In principle, any monetary policy strategy, whether monetary targeting, exchange rate pegging, 'just do it' or IT, requires certain preconditions to be in place for its successful implementation and effective performance (Mishkin, 2000). For IT, these preconditions have been evolved and identified with the increasing experience of the framework over time. Several authors nevertheless seem to have built their arguments for and against the adoption of IT framework based on such preconditions; particularly in the context of emerging market economies. The more these preconditions exist, the more successful would be the implementation of the IT framework, and thereby the more would be the chances of favourable outcomes. Although this assertion is implicitly assumed in the literature on preconditions yet Amato and Gerlach (2002) found that the IT has successfully been implemented without preconditions being in place.

This section critically reviews what these preconditions are, what their existing state is—with particular reference to their efficacy in Pakistan— and is it necessary for all these preconditions or some of them to be fully in place right before the adoption of IT.

4.1. Central Bank's Independence

Central bank's independence—although equally desirable and important for implementing other monetary policy strategies (Amato and Gerlach, 2002)—is considered one of the preconditions for the successful implementation of IT framework.

Central bank independence can better be understood as 'goal independence' and 'instrument independence'. The former implies that the central bank has the authority to set the goal itself rather than the government or any other entity. Instrument independence, on the other hand, implies that the central bank can choose an appropriate instrument or set of instruments for the achievement of its goal(s).

It is the instrument independence rather than goal independence, which is desirable for the appropriate conduct of monetary policy (Blinder, 1998; Masson, et al. 1997 Amato and Gerlach, 2002). In the case of Pakistan, the SBP enjoys complete instrument independence. Whereas, in terms of the goal independence, the SBP—as required by the statutes—has to consider the government's inflation and growth targets while formulating monetary policy. In a recent study, Hayat (2017) noted that in the case of Pakistan, the way the government's annual inflation and growth targets are set, they do not provide a fundamental framework for achieving price stability.Rather if the SBP would try to achieve the ad-hoc and inconsistent inflation and growth targets of the government, the policy would instead lead to price instability. He further argued that since monetary policy may not be directed or adjusted contemporaneously to achieve explicit growth targets in the same year they are set, statutory amendments in line with the best monetary policy practices across the globe, therefore may help the SBP to successfully implement the IT to yield desirable outcomes.

Another dimension of the central bank's independence is the government's involvement in the monetary policy decision-making process, which normally takes place through the presence of government official(s) on the Board or designated monetary policy committee. Encouragingly, through a recent amendment in the SBP Act 1956, the direct involvement of government via its member on the monetary policy committee has been eliminated (Hayat, 2017), which therefore builds a certain degree of confidence in terms of central bank's independence on statutory front.

4.2. Central Banks' Accountability

Carare, et al. (2002) argued that the central bank's accountability for achieving the prime objective (target) of price stability is another precondition that can help in the successful implementation of IT. This is an essential feature as on the one hand, it keeps the policy maker focused on the target for inflation—which is presumed to be set in a way that leads to and ensures medium to long-term price stability—and on the other hand, it provides insulation against political pressures. Further, it is argued that accountability in the IT framework is ensured through increased transparency and communication with the public—a dimension which is much likely to be under the control of the central bank itself, and as long as willingness is there, improvements are possible—therefore, it should neither be a source of concern nor should it act as an impediment in the way of adoption of IT.

As far as Pakistan's specific case is concerned, proper accountability mechanisms will have to be put in place. Since currently the SBP Act does not stipulate any accountability mechanism for the SBP in case of non-achievement of inflation goal, Hayat (2017) noted that necessary statutory amendments to the SBP Act 1956 (that are currently missing) in line with the best monetary policy practices are required to ensure accountability of the SBP.

4.3. Price Stability as the Superseding Objective of Monetary Policy

Under an IT framework, price stability is the overriding objective of monetary policy (Mishkin, 2004). Clear inflation targets, either in the form of a point or a range, are set and the monetary policy is expected to be geared to achieve those targets. This, however, may not necessarily mean that price stability is the only objective. The experience with the ITers shows that they pursue other macroeconomic objectives if the achievement of such objectives remains consistent with the inflation target (Debelle, 1998). In the case of a conflict with other objectives, more weight is given to price stability. In summary, there remains a clear institutional commitment to price stability rather than other nominal anchors (Mishkin and Schmidt-Hebbel, 2001; Jonas and Mishkin, 2003).

Hayat (2017) noted that the SBP tends to define and achieve price stability in terms of the government's assigned inflation targets, which essentially is a flawed and misleading practice because the government-assigned inflation targets are too high and erratic to be able to lead to price stability in any form. While recognising the acute price instability problem, he advocated the need to define price stability and suggested clear-cut price stability consistent numerical inflation targets band—preferably between 1 percent to 3 percent. It is further argued that since the SBP has dual objectives of inflation and real growth and targets a higher than natural rate of the economy, it would tend to produce higher (price stability inconsistent) inflation rates unless discretion is granted to the SBP is constrained. Therefore, constraining discretion by making price stability as the overriding objective of monetary policy in Pakistan remains one of the major impediments, which will have to be worked on;otherwise, adoption of IT by the SBP may not yield any desirable outcomes.

4.4. Forecasting Inflation

The ability to forecast inflation has been identified as another prerequisite for successful implementation of IT (Debelle, 1998; Carare, et al. 2002; Jonas and Mishkin, 2003; Batini and Laxton, 2006). The IT monetary policy regime is forward-looking by nature and therefore, inflation forecasts are needed for a central bank to be able to act preemptively to counter inflation before it begins to rise (Debelle, 1998). Central banks' capabilities to forecast inflation accurately depends mainly on the level of development of ITers at the time of adoption. However in general, the ITers tends to improve their forecasting capacities. Therefore, central banks may rely on simple models in the initial stages of IT adoption and simultaneously devote resources to its development (Batini and Laxton, 2006). Countries like Brazil, Czech Republic, and Israel used simple three or four equation models for the purpose of forecasting (Carare, et al. 2002). On the other hand, developed countries like New Zealand and Canada used more sophisticated models for forecasting (Drew and Hunt, 1998).

Batini and Laxton (2006), however found that most ITers had little or no forecasting capability at the time of adoption of IT. In practice, the central banks along with other qualitative, relevant information and judgment, adopt a certain monetary policy stance supported by the forecasts of inflation (Carare, et al. 2002). Similarly, Debelle (1998) argued that complete reliance on a model-based forecast of inflation is not the practice even in industrial countries, instead, the decisions regarding the monetary

policy stance are taken on the basis of other information and judgment supported by forecasts. Therefore, such models can be developed over time and should not be treated as a hindrance in the way of adopting IT frameworks by developing countries.

Many studies have highlighted and developed models to forecast inflation for Pakistan. For example, Bokil and Schimmelpfennig (2005) gave a leading indicator model (LIM), (ii) ARIMA, and (iii) a VAR model to forecast inflation in Pakistan. Haider and Hanif (2009) attempted to forecast inflation using artificial neural networks (ANN). Riaz (2012) evaluated the forecast efficiency of food price inflation and consumer price index by using the rationality criterion of forecasts. Hanif and Malik (2015) appraised the forecast performance of different multivariate models against univariate models across Pakistan's low, moderate and high inflation regimes. Hussain and Hayat (2016) showed that the incorporation of inflation expectations improved the forecast performance of univariate models at the SBP.

Recently, the forecasting and policy analysis system (FPAS) has endogenously been developed and implemented by the SBP for internal use. Although the inflation forecasts are currently presented in the SBP's quarterly and annual reports, regular reporting of the medium and long-term forecasts—as is practiced by ITers—remains the need of the hour. From all this discussion, it may be inferred that the SBP has made sufficient advancement in forecasting inflation that may conveniently fulfill the needs of IT to start with.

4.5. Healthy Financial System

The literature related to preconditions of IT suggests that financial system should be sufficiently sound to allow effective transmission mechanisms of monetary policy instruments (Jonas and Mishkin, 2003). Financial stability relieves central bankers from the concerns of health of financial sector as it may be in conflict with inflation targets (Carare, et al. 2002).

In the case of Pakistan, Sophastienphong and Kulathunga (2008) observed that banking sector reforms implemented by the SBP have resulted in notable improvements in the soundness indicators of the financial sector and that Pakistan leads the region in performance and efficiency as well as corporate governance. As per the Financial Stability Review (FSR), issued by the SBP in 2015, the financial system of Pakistan was in a sound and stable state by the end of 2015. The report stated that the asset base of the overall financial sector in Pakistan has increased at a decent pace, and the financial depth has improved. More recently, the financial stress testing exercises of the SBP indicates that the country's financial system is resilient enough to sustain the adverse impact of the Covid-19 international crisis. Thus, the current state of the financial soundness of Pakistan seems good enough to support the adoption of IT.

4.6. Can IT be Adopted if All or Some Preconditions are not Met?

At times the preconditions are misperceived to be the set of conditions that are necessary for adoption of IT (Lucotte, 2012). If this were the case, New Zealand being the first ITer must have had at least a theoretical model before the adoption of IT at least with the so-called preconditions as the set of necessary assumptions for the IT model (to work) before its implementation. Thus, it is surprising to note that although widely

quoted as preconditions, no study, to the best of author's knowledge, seems to have laid down the minimum acceptable yardsticks that must be in place before the adoption of IT. For example, how was the financial sector's health measured—what indicators were used—and how was the minimum level of such indicators determined by the ITers before the adoption of IT? On this point, Lucotte (2012) noted that the experience of emerging countries shows that non-fulfillment of the preconditions is not an impediment to the adoption and success of this monetary policy framework.

Debelle (1998) does not regard it compulsory for all the prerequisites to be in place at the same time in the case of developing countries. Batini and Laxton (2006), to assess the role of preconditions in adopting IT, conducted a survey of 21 IT and 10 non-targeting central banks in emerging markets. They found that although the industrial ITers as compared to emerging market ITers were better in some dimensions, all the preconditions were not in place before adopting IT in any of these countries. They also found that no precondition significantly explained the improvement in macroeconomic performance after adopting IT. In addition to the aforementioned, Svensson (1997), Bernanke, et al. (1999), and Mishkin (1999) believe that the adoption of IT will lead to better macroeconomic outcomes because the initial credibility in these countries is low. Hence, the scope for improvement is greater.

In a recent study, Alpanda and Honig (2014) argued that IT may not only promote some of the preconditions but may be more successful when these conditions are lacking because there is ample room for improvement and preconditions therefore, as such should not stand in the way of adopting IT. This generalisation may work very well for Pakistan. For example, the SBP may achieve price stability if it focuses on inflation i.e. it will not only have to build its capacity to forecast inflation as accurately as possible but will act against it preemptively before the inflation begins to rise. This, in turn, will help effectively anchor inflation expectations if supplemented by appropriate communication policies and forward guidance.

Masson, et al. (1997), while assessing the scope for IT in developing countries, concluded that developing countries can choose IT provided *two* prerequisites are satisfied. The first, is the central bank's independence in terms of fiscal dominance, and the second is the absence of any other nominal anchor rather than inflation, such as exchange rate and output-stabilisation. It was argued that developing countries are plagued either with (i) the issue of fiscal dominance—i.e., seigniorage is an important source of financing— or (ii) low inflation does not tend to be the overriding objective of monetary policy. Although there does not seem to exist a compelling case for Masson et al. (1997)'s arguments, even if it is presumed that these two preconditions are necessary, the question remains whether Pakistan can still adopt IT?

As far as fiscal dominance is concerned, the current institutional set up of the SBP board indicates that there is no direct role of finance secretary in monetary policy decision making process as the monetary policy committee is now independent in its decisions. It is also important to note that empirical evidence for Pakistan indicates that fiscal dominance—as measured by seigniorage and government outstanding debt—is an irrelevant and fragile source of inflation bias in the long run (Hayat, et al. 2017). As far as the argument of the absence of any other nominal anchors—such as exchange rate and output stabilisation—is concerned, the latter, in the case of Pakistan, has been found to be the most relevant and relatively robust source of inflation bias. By and large, this

problem—of inducing excess inflation to stimulate real growth—however, can be overcome through self-restraint by the SBP in terms of using the monetary policy for output stimulation at the expense of higher inflation rates as has also been suggested by Hayat, et al. (2016), and Hayat, et al. (2019).

5. OPERATIONAL PREREQUISITES AND THEIR STATE FOR EFFECTIVE IMPLEMENTATION OF IT IN PAKISTAN

In addition to the preconditions, three other prerequisites of operational nature have been identified that may help in the effective implementation of IT. This section is advocated to bring forth these prerequisites from the literature and assess the current state of the preparedness of the SBP for adopting IT along these lines.

5.1. The Choice of an Appropriate Price Measure

To start with, one of the most important requirements under IT is the choice of an appropriate price index that can be used to determine the target rate for inflation, which can be conveniently communicated and may be well understood by the public. This is the nominal anchor, which is used to anchor the expectations of the public and economic agents. This essentially works as a tool for the central bank to develop its credibility by putting its endless efforts to achieve it.

The consumer price index (CPI) is the most popular and widely used index by IT countries (Haldane, 1995; Debelle, 1998; Schaechter, et al. 2000). As CPI overstates the inflation due to substitution bias, an alternative measure is the GDP deflator which has a wide coverage; however, it is not used by the ITers because it is not readily available and is subject to frequent revisions (Debelle, 1998; Schaechter, et al. 2000). Most of the ITers use either CPI or some variant of CPI commonly referred to as ‘core inflation’ or ‘underlying inflation’. There is no unique definition of core inflation. Various authors, however, have defined it in the context of their studies. For example, Eckstein (1981) defined it as ‘the trend increase in the cost of the factors of production’, Blinder (1997) defined it as a ‘persistence part of aggregate inflation’, Bryan and Cecchetti (1994) defined it as a measure that is most correlated with money growth and Bryan, et al. (1997) predicted it as a measure, which is more correlated with a smoothed trend inflation rate. Quah and Vahey (1995) gave its definition in terms of inflation having no long-run impact on output, which they estimated through a VAR system. Cogley (2002) defines core inflation as a response to changes in mean inflation, and Smith (2004) described it as the best forecaster of inflation.

The use of core inflation as a target allows central banks some flexibility to deal with supply shocks. It is also qualified with certain exemptions or escape clauses that allow some flexibility to the central bank (Haldane, 1995). The purpose of using core inflation is that the CPI is sensitive to supply-side shocks. A movement in CPI may result fromsupply-side factors on which the central bank has no control (Haldane, 1995; Debelle, 1998; Amato and Gerlach, 2002). Core inflation measures may also be used as an operational guide by the monetary authorities for analytical and forecasting purposes for the achievement of the target. One of the purposes of the use of the core inflation measures is to guide and keep the monetary policy focused in an appropriate direction (Cutler, 2001).

The use of core inflation thus helps fix the responsibility of the central bank for the price movements over which it has control. Moreover, these measures direct and help the monetary policy makers focus on the demand-driven price movements. Researchers have developed and devised various techniques for the computation and evaluation of core inflation measures. Broadly, core inflation measures are computed through the exclusion approach, limited influence estimators (trimmed mean and median), and the model-based techniques.[10] The most widely used approach for the computation of core inflation is the exclusion approach (Wynne, 1999), practiced since the 1970s (Vega and Wynne, 2001). Silver (2007) argued that countries often use exclusion-based methods when they first instigate inflation targets because they are timely, easy to understand, and transparent in that the user can replicate the measure.

The SBP has been reporting core inflation indicators since 2000s. Tahir (2006) constructed alternative core inflation measures for Pakistan using exclusion and trim-based measures and found that the latter is a better indicator. Similarly, Lodhi (2007) constructed nine alternative core inflation measures and evaluated them against an absolute criterion given by Marques, et al. (2000). Recently, Riazuddin, et al. (2013) obtained a new measure of core inflation through a new method by permanently excluding relatively volatile commodities from CPI basket in Pakistan. The Pakistan Bureau of Statistics now publishes indicators of core inflation even with a bifurcation as core rural and core urban on a monthly basis. Thus, given that not only sufficient and frequent data is available on CPI in Pakistan and that several indicators of core inflation have already been developed, which are regularly reported by the SBP, the issue remains trivial—i.e., it's just about making a choice between the headline and core inflation measures as a nominal anchor.

5.2. Specification of the Inflation Target (Point or Band)

Another operational prerequisite under an IT framework is the specification of an appropriate inflation target, which generally is specified either in the form of a point or a band using a headline or a certain measure of core inflation.[11] Practice varies across IT countries; for example, Australia, Brazil, Chile, Finland, Sweden and U.K. have point targets, whereas most ITers, including Canada, the Czech Republic, Israel, and New Zealand, have bands for inflation targets (Haldane, 2000). The choice between a point and a band inflation target essentially involves a trade-off between a stronger commitment to the inflation target and a certain level of necessary flexibility with the monetary policy makers (Debelle, 1998). A wider band allows greater flexibility, but at the same time, it allows more volatility in observed inflation, which in turn has adverse consequences both for future inflation (see e.g. Wilson, 2006 and Hossain, 2014) and central bank's credibility as the very idea of a strong commitment to the inflation objective is undermined. A wider band may also potentially induce lethargic behaviour

[10]The concept of limited influence estimators (trimmed mean and median) was first proposed by Bryan and Pike (1991) and Bryan and Cechetti, (1994). Subsequently, the methods have been used in various studies and practically numerous central banks estimate such measures for their use. Whereas, Quah and Vahey (1995) brought a new multivariate approach to the core inflation measurement while bringing in some economic theory to distinguish between core and non-core inflation.

[11]There is a slight distinction between a point IT and band IT frameworks. In the former the centre of the target band is explicitly mentioned (Dennis, 1997).

on the part of the central bank as being vigilant and proactive in terms of inflation stabilisation.

There are advantages and disadvantages of both the point and band targets. Haldane (2000), while discussing the reasons why U.K. chose a point inflation target, highlighted three main relative advantages. First, it provides a clear point of referral for the monetary policy makers, thereby keeping them focused, and at the same time, it encourages transparency. Second, it helps anchor inflation expectations of the private sector agents and third is that it enables the conduct of monetary policy in a symmetric way, particularly, when the inflation is on its long-term target. A point target, however, has the disadvantage of increasing the variability in output and has the potential to induce instrument instability of monetary policy (Debelle, 1998). For example, in case of instrument instability, the economy experiences excessive swings in the monetary policy instruments when central banks try to hit the inflation target. Moreover, point targets have been observed to be missed more often, which in turn may create the problem of credibility and reputation if not properly and effectively communicated and explained to the public.

Dennis (1997) noted that although theoretically, the point and band target/s are distinguished, it does not provide a basis for the choice of an appropriate bandwidth. On the other hand, empirical literature tries to address the problem of optimal bandwidth using the criterion that 95 percent of the inflation observations should fall within the target range (see Debelle and Stevens, 1995; Fillion and Tetlow, 1993; and Turner, 1996). Dennis, therefore, argued that the bands produced by these studies are appropriate for the central bank's accountability purposes but are less suited to reflect on the economic costs of inflation.

In the case of Pakistan, although few studies, e.g., Mubarik (2005), Hussain (2005), and Iqbal and Nawaz (2010) have empirically computed threshold inflation rates at 9 percent, 5 percent, and 4 percent–6 percent, respectively, the rates may not be used as inflation targets by the SBP because by definition a threshold inflation rate is a rate of inflation beyond which the inflation starts affecting the real growth negatively, which may not be desirable when viewed from the society's perspective (Hayat, et al. 2017, and Hayat, et al. 2018). A step further, they also investigated if all the historically observed inflation rates below the threshold level are equally beneficial to the society in the context of Pakistan. Consistent with the theory and practice of the notion of price stability, their empirical results indicated that inflation within the range of 1 percent–3 percent is beneficial to society in two ways. First, in this range, the inflation is already low enough to be desired by society as compared to any other higher inflation rates. Second, inflation in this range is desirable because it significantly enhances the real growth as compared to any other historically observed inflation rate (s) in Pakistan. Since inflation rates in the 1 percent–3 percent band closely conform to the very definition of price stability, these rates therefore, may form the basis of an appropriate choice for inflation targets. For example, a point of 2 percent or a band of 1 percent to 3 percent may be considered. This may not only allow achieving a low average inflation and low volatility in inflation but also a stable growth in real economic activity. Technically, the stabilisation of inflation in 1 percent–3 percent range also implies that the policy rates would eventually settle at low levels, and there will be no unnecessary pressures on the exchange rate, which will help

stabilise the external sector. The low and stable interest rate environment would also allow dealing with the unsustainably high accumulated debts, thereby creating space for healthy expenditures in the budget. The price stability in turn would also help promote saving, investment, and growth and will help provide a reasonable cushion to maneuver macroeconomic policies to deal with inundated shocks and crisis.

5.3. Costs of Disinflation

One of the widely discussed operational issues in the literature related to IT is the cost associated with disinflation (King, 1996; Mishkin and Schmidt-Hebbel, 2001). This is particularly applicable in countries where inflation rates are reasonably high (in double digits, for instance) before the adoption of IT. King (1996) argued that the costs of disinflation increase more than proportionately with the increasing speed of disinflation—if the countries have long experienced high inflation rates—because it takes time for the private sector to adjust expectations. Similarly, Mishkin and Schmidt-Hebbel (2001) argued that due to the imperfect credibility of central banks on the back of past higher inflation rates, the inflation inertia is more enormous. This makes a quicker disinflation potentially more costly. Sargent (1986), on the other hand, preferred a sharp decrease in inflation since expectations adjust quickly.

Practical experiences may vary from country to country regarding the speed of bringing down inflation to their desired levels. Canada, for example, attempted to bring down inflation from around 6 percent to a band of 1 percent–3 percent in four years, and New Zealand, on the other hand, aimed to bring down inflation into the band of 0 percent–2 percent rather quickly (King, 1996). Emerging market economies dealt with the disinflation problem by phasing IT gradually from informal to formal with an increasing success in lowering inflation (Mishkin and Savastano, 2000; Mishkin, 2000b; Mishkin and Schmidt-Hebbel, 2001). Although there is no consensus in the literature over a particular speed of disinflation to be optimal, two approaches are often cited: gradualism (Taylor, 1983) and the cold turkey approach (Sargent, 1986). The former view devotes a gradual approach to the disinflation so that wages and prices adjust smoothly to tight monetary policy due to the presence of inertia. The latter prefers a relatively quicker disinflation because inflation expectations adjust sharply, and it is supported by empirical studies, which found lower sacrifice ratios such as Ball (1993) and Zhang (2001).

Deciding on the appropriate speed of disinflation for Pakistan nevertheless is a non-issue for several reasons. First, currently, the inflation is already at higher levels beyond the threshold (5 percent level), which is inimical for growth; therefore the sooner the inflation is brought down to benign levels, the better (Hayat, et al. 2018). Secondly, since there is an inverse relationship between inflation (bias) and real growth (see Hayat, et al. 2018), technically, a relatively quicker disinflation would imply lower inflation bias and higher growth gains. Lastly, if the disinflation is done through a well-informed communication strategy, this would, along the way, not only help the SBP to build its credibility but will also help ease off the political/interest groups' pressures.

6. CONCLUSION

The synthesis of the literature highlights that in the set of monetary policy strategies being practiced; IT is an appropriate available strategy, which helps mitigate

the problem of inflation bias along with enough flexibility to deal with shocks. Although there remained some skepticism and uncertainty regarding IT in the sense that IT is rigid and may affect growth and other macroeconomic indicators adversely, however, no study to the best of author's knowledge has been able to produce substantive evidence to this effect. In contrast, the evidence indicates that IT has performed satisfactorily well in both developed and developing countries. By and large, it has improved the effectiveness of the monetary policy, which is evident from the improved macroeconomic indicators compared to other monetary policy regimes. The skepticism, therefore, seems to be a myth rather than reality. The literature, however, has identified some preconditions, which arguably are important but not strictly necessary for the successful implementation of the IT monetary policy framework before its adoption. Nevertheless, the so-called preconditions as well as IT-related operational prerequisites in the case of Pakistan seem a non-problem, as to a considerable extent, they are already in place while further improvements can be made along the way after adoption. Setting up inflation targets consistent with price stability, chalking out appropriate accountability mechanisms for non-achievement of inflation targets, and dealing with inflation preemptively are some of the main areas that need the attention of the concerned authorities in Pakistan.

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Effect of Urban Land Use on Travel Behaviour: Evidence from Lahore

AMMAR MALIK, EDMUND ZOLNIK, and OMAR RIAZ

In urban areas across Asia and Africa, public investments in road infrastructure subsidise suburban sprawl and privilege car ownership. At the same time, restrictive land use ordinances prevent mixed-use land development, so distances between home and work increase; an outcome particularly burdensome in time and money for marginal groups. To analyse the effects of public investments in road infrastructure on commute times for different modes, the study uses a rare household travel survey from Lahore. A novel multilevel methodology nests individual-level commute times for different modes within a zone level of analysis which controls for differences in urban land use and road infrastructure. Results suggest that individuals who drive to work enjoy significant time benefits over those who walk to work. The policy implications focus attention on the need for infrastructure investments to mitigate the time costs for commuters who walk and who ride the bus.

JEL Classification: R14, R41, R42, R52
Keywords: Urban Land Use, Road Infrastructure, Commute Time

1. INTRODUCTION

The worldwide increase in urban population creates challenges for sustainability. In developing countries, urban areas tend to be centers of economic growth where productivity is high. Chief amongst the factors of production necessary to sustain such growth is infrastructure, particularly transportation. Urban transportation systems facilitate human interaction and form the backbone of a regional economy (Duranton and Turner, 2012). However, a negative externality of new infrastructure, particularly roads, is congestion. Naturally, therefore, public investments in infrastructure for different modes of travel besides private vehicles like cars are necessary to simultaneously maximise the benefits of agglomeration and minimise congestion costs (World Bank, 2009).

Unfortunately, the sustainable transportation literature is devoid of empirical evidence on how road infrastructure investments affect travel behaviour in the context of rapid urbanisation in developing countries to help inform future infrastructure decisions. Given the void in the literature, the study uses a household travel survey as a primary data source on travel behaviour to analyse how road infrastructure and urban land use affect commute times in a developing country. Specifically, the study attempts to answer

Ammar A. Malik <amalik@aiddata.wm.edu> is Senior Research Scientist, AidData, William & Mary, USA. Edmund Zolnik <ezolnik@gmu.edu> is Associate Professor, Schar School of Policy and Government, George Mason University, USA. Omar Riaz <omarriazpk@gmail.com> is Assistant Professor, Department of Earth Sciences, University of Sargodha.

the following questions. What key individual-level factors and/or zone-level factors affect commute times the most? What are the commute time benefits of investments in road infrastructure for individuals who have a car available for the work trip versus individuals who walk to work? The multilevel methodology in the study is ideal for analyzing how investment in road infrastructure and development of urban land use at the zone level affect commuting outcomes at the individual-level; the appropriate level of analysis to analyse travel behaviour.

The outline for the study is as follows. Section 2 reviews the literature to provide context for urban land use, and road infrastructure growth in developing countries. Section 3 describes the study area. Section 4 describes the multilevel methodology and the household travel survey data as well as specification of the multilevel model and hypotheses on the effects of the independent variables. Section 5 presents the key results from the multilevel model. Section 6 highlights the contribution of the multilevel model results to the sustainable transportation literature. Section 7 offers specific policy recommendations as well as future research topics to promote sustainable transportation in developing countries.

2. REVIEW OF THE LITERATURE

The urban economic theory emphasises the linkages between land values and transportation costs in labour markets (Alonso, 1964; Mills, 1964; Muth, 1969). The bid-rent framework, specifically, shows that households balance location rents, transport costs, and commute times in their residential location decision. At the same time, most urban areas around the world are not monocentric in form and function, as urban economic theory suggests, but rather polycentric (Clark, 2000). And, much of the growth in urban areas is not planned, particularly in developing countries. It is the unplanned nature of such growth which makes accessibility between home and work locations problematic (Diaz Olvera, et al. 2008). The relative inaccessibility between home and work locations affects not only the economic outcomes of households but also the regional economy, given that empirical and theoretical research suggests that accessible and affordable transportation services can significantly augment productivity (Baldwin et al., 2010; Lucas and Rossi-Hansberg, 2002). Accessible and affordable transportation services enhance productivity because workers can travel greater distances for higher wages which culminate in greater worker-firm matching and thicker labour markets (Moretti, 2012; Storper, 2013). Likewise, the absence of infrastructure severely undermines the productive spatial sorting of firms and of workers to relocate so as to mitigate the negative externality of congestion costs which culminate from rapid growth (Gwilliam, 2002; Imran, 2010).

Across Asia and Africa, changes in the form and the function of urban areas pose new governance challenges for the delivery of public services such as transportation. In many developing countries, local governments lack the fiscal capacity to deliver, monitor, and regulate the most basic of public services (Bahl, 1999). Further, urbanisation is not uniform in the developing world. In Eastern Asia, urbanisation was primarily driven by a concentration of low-skilled manufacturing work not evident elsewhere (Crescenzi, et al. 2012). In sub-Saharan Africa, greater

worker productivity and higher governance standards did not accompany large-scale urbanisation as was common elsewhere (Henderson, et al. 2013). Regardless of the nonuniformity in urbanisation, transportation services are the backbone of a regional economy to drive human interaction as well as foster economic productivity (Jacobs, 1961).

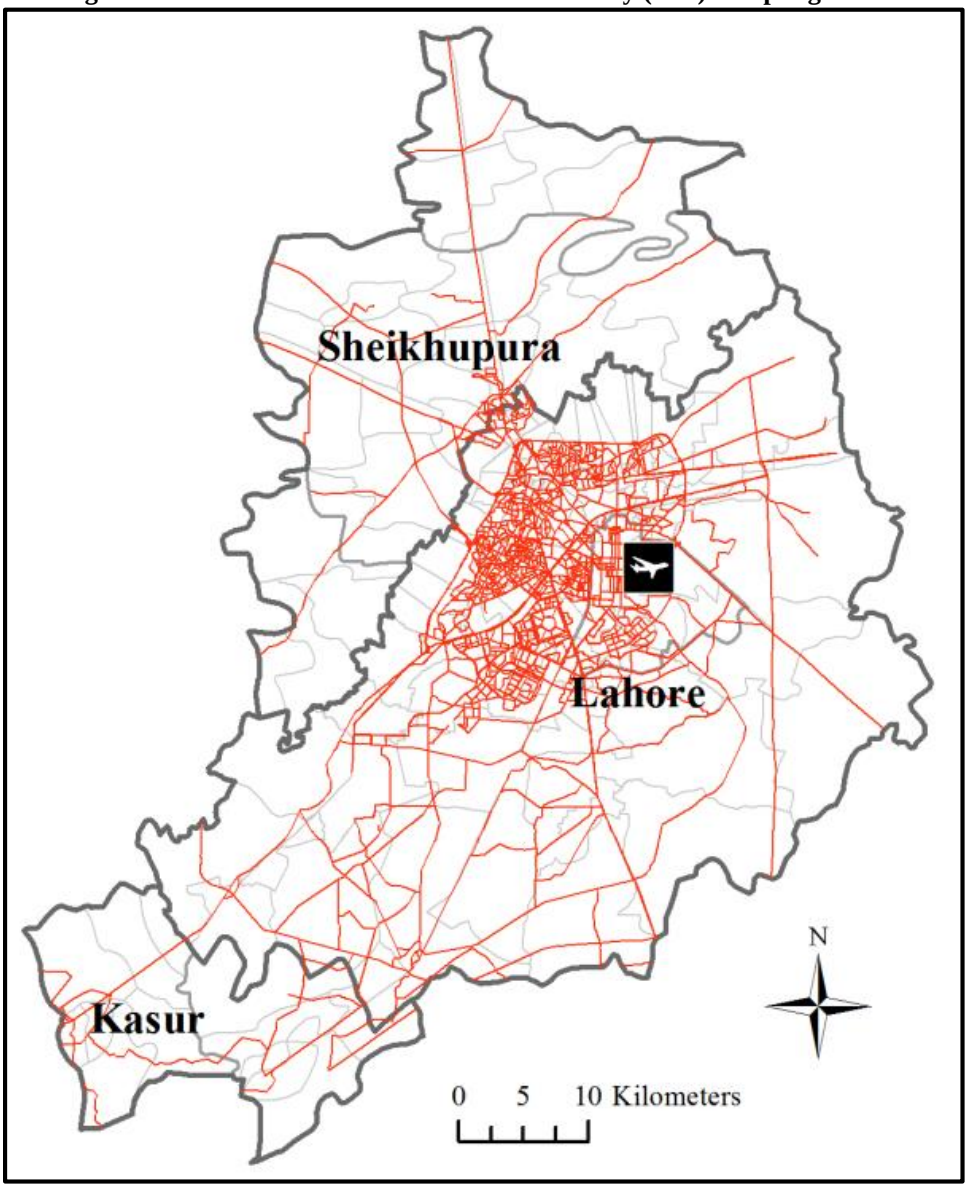
Most conceptual contributions to the urban economics literature rely on empirical research (often panel analyses) in developed countries with standards for economic data collection. Unfortunately, most economic outcomes are context-sensitive, particularly given the nonuniformity in urbanisation in the developing world (Angel, 2012). In addition, the lack of disaggregated data from developing countries hinders intellectual progress in the literature (Glaeser, 2013). The inability to empirically validate economic theory on urbanisation in the developing world means that scholars must often compromise to research the urban contexts of developing countries. Progress in crowdsourced (Crooks, 2012) and remote sensing (night lights) (Henderson, et al. 2013) data collection are innovative, but such sources are not substitutes for primary data sources such as surveys and censuses. The study is, therefore, unique to the transportation sustainability literature in the use of a household travel survey from a rapid-growth city (Lahore) in a developing country (Pakistan). Notwithstanding the intellectual context of the study, the next section introduces the multilevel methodology and the household travel survey data.

3. STUDY AREA

Lahore is the second-most populous city in Pakistan (Pakistan Bureau of Statistics, 2018) as well as the capital of the Punjab (Fig. 1). Population growth in Lahore was the highest in Pakistan between 1998 and 2017 (+116.32 percent) to the extent that it is now a megacity with a population of more than ten million (United Nations, 2015). Amongst the three distinct land use zones in Lahore with regard to population density and to built environment (Lahore Development Authority, 2004), most of the growth has a peripheral orientation. Activity still has a core orientation, but the dispersion of population creates a deficit in the supply of transportation infrastructure to satisfy present and future demand (Malik, 2013).

Developing countries, like Pakistan, invest in transportation infrastructure in order to balance the costs and the benefits of rapid growth (Azulai, et al. 2014). To that end, Punjab invests in bus rapid transit (BRT) infrastructure, also known as the surface subway (Worcman, 1995). In Lahore, a 27-kilometer BRT line now serves 27 stations (Punjab Metrobus Authority, 2018). The Lahore Urban Transport Master Plan (LUTMP) recommends a total of seven BRT corridors. Such investments represent a new approach to infrastructure where most of the money in the old approach was for roads, expressways, and flyovers which change the form and the function of the land market and the labour market (Haque, 2014). In addition, the old approach favours private modes of travel like cars over public modes of travel like buses which ultimately leads to more, not less, congestion. Indeed, the number of motor vehicles per 1,000 population rose from 95 to 238 from 2001 to 2008 in Lahore (Punjab Metrobus Authority, 2018), while pedestrian infrastructure like sidewalks is not available to the majority of commuters who walk.

Fig. 1. Districts in the Household Interview Survey (HIS) Sampling Frame



The following section introduces the multivariate methodology and the travel behaviour data.

4. METHODOLOGY AND DATA

4.1. Random-Coefficient Model

The commute time multilevel model is a two-level model of individuals (*i*) nested within zones (*z*) (Raudenbush and Bryk, 2002). Within each zone, commute time is

modeled as a function of individual-level independent variables plus an individual-level error term as in Equation 1:

$$Y_{iz} = \beta_{0z} + \beta_{1z}X_{1iz} + \beta_{2z}X_{2iz} + \cdots + \beta_{Pz}\beta X_{Piz} + r_{iz} \quad \ldots \quad \ldots \quad \ldots \quad (1)$$

where

Y_{iz} is the commute time for individual i in zone z;
β_{0z} is the y-intercept term for zone z;
β_{pz} are individual-level coefficients (p = 1, 2, … P);
X_{piz} is the individual-level independent variable p for individual i in zone z; and
r_{iz} is the individual-level random effect term.

The y-intercept and some of the regression coefficients at the individual-level are random. A multilevel model in which the y-intercept and at least one of the regression coefficients are random is known as a random-coefficients model. The model of variation between zones is as follows. For the zone effect β_{0z} in Equation 2:

$$\beta_{0z} = \gamma_{00} + \gamma_{01}W_{1z} + \gamma_{02}W_{2z} + \cdots + \gamma_{0Q}W_{Qz} + u_{0z} \quad \ldots \quad \ldots \quad \ldots \quad (2)$$

where

γ_{00} is the constant portion of the random y-intercept term for zone z;
γ_{0q} are zone-level coefficients (q = 1, 2, … Q);
W_{qz} are zone-level independent variables; and
u_{0z} is a zone-level random effect term.

The following subsection discusses the multilevel model's data sources and the hypothesised effects of the individual-level and the zone-level independent variables.

4.2. Data

Data are from a Household Interview Survey (HIS) under the auspices of the Transport Department at the Government of the Punjab in Pakistan. The purpose of the HIS is to collect data on travel behaviour for the LUTMP (Japan International Cooperation Agency, 2012). The time frame for the survey is from October to December 2010. The sampling frame for the survey is the istrict of Lahore, the District of Sheikupura and the District of Kasur (Fig. 1). The sample is a geographically-stratified random sample of zones (n = 228) in Lahore. The total number of households in the sample is 18,054: 15,734 from Lahore; 1,639 from Sheikupura; and 681 from Kasur. The selection criterion for the HIS subsample is as follows: working-age individuals who commute to work. Application of the selection criterion and the exclusion of individuals and zones with missing data left a subsample of 11,649 individuals nested within 205 zones from the HIS.

Data at the individual-level (n = 11,649) include information on the characteristics of individuals and the individual's household (Table 1). The dependent variable is the commute time in minutes for a one-way work-trip. The independent variables at the individual-level control for demographic and economic characteristics that are known to affect commute times. Information on the characteristics of individuals includes age in years; sex; car availability; one-way, work-trip cost in PKR (1 PKR = 0.0082 USD); and commute mode. Information on the characteristics of the individual's household includes:

household size; total monthly household income in PKR; and average monthly household transportation expenditures in PKR.

Data at the zone level (n = 205) include information on the characteristics of zones (Table 1). The independent variables at the zone level control for demographic, economic, infrastructure, land use, and locational characteristics that are known to affect commute times. Information on the demographic characteristics of zones includes population density per square kilometer in 2011. Information on the economic characteristics of zones includes the car ownership rate per 1,000 total population. The car ownership rate is a proxy for the aggregate supply of private vehicles. Information on the land use characteristics of zones includes the percent urban in 2009 (Riaz, et al. 2014). Information on the infrastructure and the locational characteristics of zones includes: the percent kilometers of roads versus total kilometers of roads; and linear distance in kilometers from each zone centroid to the mean center of all zone centroids. Road infrastructure is a proxy for the supply of transportation infrastructure, and distance to the mean center is a proxy for proximity to the geographic center of Lahore.

Table 1

Data Dictionary for Individuals and Zones

Level (n)			Variable	
Individual (n = 11,649)				
	Dependent			
			Commute time	Commute time in minutes.
	Independent			
		Demographic		
			Age	Age of commuter in years.
			Household size	Size of household.
			Sex	Gender of commuter.
		Economic		
			Car	If car is available for use then 1, otherwise 0.
			Income	Total, monthly household income in PKR.
			Transportation expenditures	Average, monthly household expenditures on transportation in PKR (10,000).
		Trip		
			Cost	Work trip cost in PKR.
			Mode	Work trip mode.
Zone (n = 205)				
	Independent			
		Demographic		
			Population density	Total population (1,000) per square kilometer in 2011.
		Economic		
			Car ownership rate	Car ownership per total population (1,000).
		Infrastructure		
			Roads	Zonal kilometers of roads versus total kilometers of roads in 2011.
		Land use		
			Urban	Percent urban in 2009.
		Location		
			Distance to mean center	Linear distance in kilometers from centroid to mean center.

Note: PKR = Pakistani rupees. 1 PKR = 0.0082 USD.

The following subsection discusses the multilevel model's data sources and the hypothesised effects of the individual-level and the zone-level independent variables. Descriptive statistics for the individual and zone-level independent variables are in Table 2.

Table 2

Descriptive Statistics for Individuals and Zones

Level (n)		Variable		Mean	SD
Individual (n = 11,649)					
	Dependent				
		Commute time (min)		45.75	41.41
	Independent				
	Demographic				
		Age (%)			
			15 and younger	1.35	
			16 to 24	12.16	
			25 to 34	25.48	
			35 to 44	25.86	
			45 to 54	22.97	
			55 to 64	9.68	
			65 and older	2.50	
		Household size		5.15	1.98
		Sex (%)			
			Male	95.52	
			Female	4.48	
	Economic				
		Car (%)			
			No	84.38	
			Yes	15.62	
		Income (%)			
			10,000 PKR or less	19.94	
			10,001 PKR to 20,000 PKR	35.02	
			20,001 PKR to 30,000 PKR	20.98	
			30,001 PKR to 40,000 PKR	9.27	
			40,001 PKR to 50,000 PKR	5.73	
			More than 50,000 PKR	9.07	
		Transportation expenditures (10,000 PKR)		0.28	0.34
	Trip				
		Cost (PKR)		26.88	43.77
		Mode (%)			
			Walk	36.62	
			Bicycle	8.65	
			Motorcycle	33.85	
			Car	10.58	
			Van	1.87	
			Public bus	1.98	
			Rickshaw	4.46	
			Taxi	0.05	
			Private bus	1.09	
			Truck	0.08	
			Train	0.01	
			Other	0.76	
Zone (n = 205)					
	Independent				
	Demographic				
		Population density (1,000/km^2)		30.01	38.67
	Economic				
		Car ownership rate (/1,000)		46.29	77.11
	Infrastructure				
		Roads (%)		0.43	0.40
	Land use				
		Urban (%)		47.91	28.61
	Location				
		Distance to mean center (km)		13.74	11.04

Note: PKR = Pakistani rupees. 1 PKR = 0.0082 USD.

4.3. Hypothesised Effects of Individual-Level Independent Variables

At the individual-level, commute times will increase from younger-age cohorts to middle-age cohorts and will decrease from middle-age cohorts to older-age cohorts, consistent with the life-cycle effect on car ownership: "car ownership increases with the age of the household head up to about the age of 50, and thereafter decreases" (Dargay and Vythoulkas, 1999, p. 290). Household size is a proxy for the number of workers per household, which will be synonymous with longer commute times (Cervero and Kockelman, 1997). The empirical evidence (Peck, 1996; Wyly, 1998) suggests that commute times are longer for men than for women even though women are more reliant on slower modes (walk, bicycle or public bus) than men (Stead, 2001). If a car is available, commute times will be shorter since motorised modes are faster than non-motorised modes. The empirical evidence from developed countries suggests that commute times increase with household income (Izraeli and McCarthy, 1985; Schwanen, et al. 2004; Shen, 2000). However, the income effect and, by default, the transportation expenditures effect will differ for the subsample for two reasons. First, most individuals walk to work. Second, the HIS question on monthly transportation expenditures asks for variable costs (gasoline, parking, and public transportation use), not for fixed costs (purchase, registration, and insurance) which do exist for private modes but do not exist for public modes (Litman, 2009). Commute times will increase with higher work-trip costs. Commute times for different modes will depend on whether or not the mode is motorised and whether the mode is private (Dieleman, et al. 2002; Schwanen, 2002). For example, commute times for non-motorised modes such as bicycles will be longer than commute times for motorised modes such as motorcycles, and commute times for private vehicles like cars will be the shortest.

4.4. Hypothesized Effects of Zone-Level Independent Variables

The empirical evidence suggests that commute times shorten as population density increases because commute distances shorten as population density increases (Dieleman, et al. 2002; Schwanen, 2002; Van Acker, et al. 2007). However, given that most individuals in the subsample walk to work (36.62 percent), commute times will lengthen as population density increases at the zone-level. Commute times will be shorter in zones where car ownership rates are higher since motorised modes are faster, even with congestion than non-motorised modes. More road infrastructure and urban land use will be synonymous with shorter commute times because more route choices will decrease commute times for individuals. Again, given that most individuals in the subsample walk to work, the relationship between commute times and distance to the mean center will be negative; the shorter the distance, the longer the commute times.

5. RESULTS

5.1. Individuals

Table 3 lists the coefficient estimates for individuals from the random-coefficients model of individuals nested within zones. Most of the results at the individual-level are consistent with expectations.

Table 3

Coefficient Estimates for Individuals (n = 11,649) from Random-Coefficients Model of Individuals Nested within Zones

	Variable			Coefficient	SE
Demographic					
	Age (%)				
		15 and younger		−6.03***	3.13
		16 to 24		−1.73	1.23
		25 to 34		+0.18	0.99
		35 to 44		Referent	Referent
		45 to 54		−0.37	1.01
		55 to 64		+0.37	1.33
		65 and older		−1.22	2.34
	Household size			+0.44**	0.19
	Sex (%)				
		Male		Referent	Referent
		Female		−0.32	1.72
Economic					
	Car (%)				
		No		Referent	Referent
		Yes			
			Intercept	−5.97*	1.61
			Population density (1,000/km^2)	−0.14**	0.06
			Car ownership rate (/1,000)	+0.09*	0.03
			Roads (%)	+5.70	4.42
			Urban (%)	+0.36*	0.10
			Distance to mean center (km)	+0.03	0.15
	Income (%)				
		10,000 PKR or less		+1.56	1.02
		10,001 PKR to 20,000 PKR		Referent	Referent
		20,001 PKR to 30,000 PKR		−1.86**	1.00
		30,001 PKR to 40,000 PKR		−1.70	1.37
		40,001 PKR to 50,000 PKR		−3.90**	1.71
		More than 50,000 PKR		−6.57*	1.69
	Transportation expenditures (10,000 PKR)				
			Intercept	+8.58*	1.33
			Population density (1,000/km^2)	+0.03	0.04
			Car ownership rate (/1,000)	−0.03*	0.01
			Roads (%)	−0.96	3.82
			Urban (%)	+0.005	0.08
			Distance to mean center (km)	−0.20***	0.11
Trip					
	Cost (10,000 PKR)				
			Intercept	+0.37*	0.01
			Population density (1,000/km^2)	+0.004*	0.001
			Car ownership rate (/1,000)	−0.0005*	0.0001
			Roads (%)	−0.08*	0.03
			Urban (%)	−0.01*	0.001
			Distance to mean center (km)	+0.01*	1.23
	Mode (%)				
		Walk		Referent	Referent
		Bicycle		+9.00*	1.34
		Motorcycle		−9.25*	0.93
		Car			
			Intercept	−16.47*	2.11
			Population density (1,000/km^2)	−0.19**	0.08
			Car ownership rate (/1,000)	+0.01	0.02
			Roads (%)	+5.80	4.79
			Urban (%)	+0.36*	0.13
			Distance to mean center (km)	−0.09	0.20
		Van		+12.22*	2.67
		Public bus		+20.82*	2.58
		Rickshaw		−3.42***	1.79
		Taxi		−6.96	15.60
		Private bus		+21.17*	3.43
		Truck		−56.24*	12.76
		Train		−11.34	37.84
		Other		+0.76	4.09

Note: * = p-value < 0.01, ** = p-value < 0.05, and *** = p-value < 0.10. PKR = Pakistani rupees. 1 PKR = 0.0082 USD.

Consistent with expectations, commute times are shortest for the youngest age cohort. Commute times are slightly more than six minutes shorter for individuals in the 15-and-younger age cohort than for individuals in the 35-to-44 age cohort who are more likely to own a car. Larger household sizes are synonymous with longer commute times; a one standard deviation increase in household size (1.98) increases commute times by slightly less than one minute. Consistent with expectations, if a car is available, then commute times are shorter; commute times are slightly less than six minutes shorter for individuals who have a car available for the work trip. After controlling for car availability at the individual-level, commute times are much longer in zones where car ownership rates are higher and where land use is more urban suggestive of a congestion-inducing effect from high car ownership rates and more urban land use. Looking at variation in the car availability effect, a one standard deviation increase in car ownership rate (77.11) at the zone-level increases commute times by slightly less than seven minutes, and a one standard deviation increase in urban land use (28.61) at the zone-level increases commute times by slightly more than ten minutes. Consistent with expectations, the income effect is negative and the transportation expenditures effect is positive. Commute times are more than six minutes shorter for individuals in the more-than-50,000 PKR income cohort than for individuals in the 10,000 PKR-to-20,000 PKR income cohort, and a one standard deviation increase in transportation expenditures (3,400 PKR) increases commute times by slightly less than three minutes. After controlling for transportation expenditures at the individual-level, commute times are shorter in zones where car ownership rates are higher and where the distance to the mean center is greater. Looking at variation in the transportation expenditures effect, a one standard deviation increase in car ownership rate (77.11) at the zone-level decreases commute times by slightly more than two minutes and a one standard deviation increase in distance to the mean center (11.04 kilometers) at the zone-level decreases commute times by slightly more than two minutes. Higher work-trip costs are indeed synonymous with longer commutes; a one standard deviation increase in work-trip costs (43.77 PKR) increases commute times by slightly more than 16 minutes. After controlling for work-trip costs at the individual-level, commute times are slightly shorter in zones where land use is more urban suggestive of the time-saving effect of more mode choices. Looking at variation in the work-trip cost effect, a one standard deviation increase in urban land use (28.61 percent) at the zone-level decreases commute times by less than one-half minute. Commute times are indeed much longer for non-motorised (bicycle) modes versus motorised (motorcycle) modes. Commute times for bicycles are nine minutes longer than commute times for walking, and commute times for motorcycles are slightly more than nine minutes shorter than commute times for walking. Commute times for cars are indeed the shortest; commute times for cars are more than 16 minutes shorter than commute times for walking. After controlling for car mode at the individual-level, commute times are much longer in zones where land use is more urban suggestive, again, of a congestion-inducing effect from more urban land use. Looking at variation in the car mode effect, a one standard deviation increase in urban land use (28.61 percent) at the zone-level increases commute times by more than ten minutes.

5.2. Zones

Table 4 lists the coefficient estimates for zones from the random-coefficients model of individuals nested within zones. Most of the results at the zone-level are consistent with expectations.

Table 4

Coefficient Estimates for Zones (n = 205) from Random-Coefficients Model of Individuals Nested within Zones

	Variable	Coefficient	SE
	Intercept	+51.39*	1.09
Demographic			
	Population density (1,000/km^2)	+0.10*	0.02
Economic			
	Car ownership rate (/1,000)	−0.06*	0.01
Infrastructure			
	Roads (%)	−2.10	1.87
Land use			
	Urban (%)	−0.29*	0.04
Location			
	Distance to mean center (km)	−0.18*	0.05

Note: * = *p*-value < 0.01, ** = *p*-value < 0.05, and *** = *p*-value < 0.10.

Commute times are longer in zones where population density is higher; a one standard deviation increase in population density (38.67) at the zone-level increases commute times by slightly less than four minutes. Consistent with expectations, the car ownership rate effect is negative; a one standard deviation increase in the car ownership rate (77.11) at the zone-level decreases commute times by more than four minutes. More road infrastructure is synonymous with shorter commute times; a one standard deviation increase in road infrastructure (0.40) at the zone-level decreases commute times slightly less than one minute. However, the road infrastructure effect is not statistically significant. Commute times are indeed shorter in zones where land use is more urban; a one standard deviation increase in urban land use (28.61 percent) at the zone-level decreases commute times by more than eight minutes. Finally, the distance effect is negative; a one standard deviation increase in distance to the mean center (11.04 kilometers) decreases commute times by slightly less than two minutes.

6. DISCUSSION

Results from the random-coefficients model highlight how urban land use affects travel behaviour differently in developing countries versus developed countries. One example, results on the positive, not negative, population density effect at the zone-level are inconsistent with the sustainable transportation literature; higher population density is synonymous with lower private vehicle usage (Gordon and Richardson, 1989; Newman and Kenworthy, 1989). Context helps to understand such inconsistent results (Van Acker, et al. 2007). First, most study areas in the sustainable transportation literature are Northern American or Western European, not Southern Asian, where the rate of urbanisation is high (United Nations, 2015) and where urban population density is amongst the highest worldwide (Demographia, 2015). Indeed, eight of the ten highest population density cities are Southern Asian; Lahore ranks 154th in population density worldwide. Second, most commuters in the HIS subsample do not have a car available

for the work trip. Indeed, motor vehicles (including cars, buses, and freight vehicles, but excluding two-wheeled vehicles) per 1,000 inhabitants are very low in Pakistan (approximately 18 per 1,000 inhabitants in 2010) in comparison to the United States (797 per 1,000 inhabitants in 2010) and other study areas in the sustainable transportation literature: (Van Acker, et al. 2007) Belgium (559 per 1,000 inhabitants in 2010); (Schwanen, et al. 2004) Netherlands (527 per 1,000 inhabitants in 2010); and (Stead, 2001) United Kingdom (519 per 1,000 inhabitants) (International Road Federation, 2015).

Another example, the road effect at the zone-level is negative; more road infrastructure is synonymous with shorter commute times. However, the road effect is not statistically significant, counter to expectations. The zone-level coefficient for road infrastructure is probably not statistically significant because the variation between zones in road infrastructure is almost equal to the average road infrastructure within zones. Indeed, the coefficient of variation in road infrastructure is approximately 93 percent. Nevertheless, the road effect and the distance effect at the zone-level—greater distance to the mean center is synonymous with shorter commute times—suggests that commuters who drive a car or ride a motorcycle to work enjoy a substantial time advantage over commuters who walk or ride a public bus to work in Lahore. Such results provide empirical justification for the argument to increase the supply of public infrastructures such as the surface subway (Worcman, 1995) or BRT known as Metrobus, which the Punjab Metrobus Authority operates. Metrobus went into operation in February of 2013, after the administration of the HIS from October to December of 2010, but estimates of the potential travel time benefits of BRT from a case study in another developing country are substantial, especially for pedestrians (Vermeiren, et al. 2015).

7. CONCLUSIONS

The implications of the results for sustainable transportation policy in Lahore are to focus on the balance of infrastructure investments for non-motorised modes like walk and bicycles versus motorised modes like motorcycles and cars. In addition, bus is not yet a viable alternative since most commuters walk. In the interest of economic productivity, greater accessibility to more employment centers is necessary, but more dense development is not likely to greatly impact commute times in Lahore.

The small percentage of women in the HIS subsample is justification for future research on the commute challenges unique to women in the Lahore labour market. Indeed, the low representation of women in the HIS subsample means the results from the multilevel model do not reflect the travel behaviour of women in Lahore. One fruitful topic for future research, therefore, is to explore the differences in accessibility to different modes for work trips between men and women in Lahore. Another fruitful topic is to identify and to measure more zone-level characteristics on the supply of public modes such as the new BRT line. The density of BRT stops, for example, is a useful proxy for the supply of such infrastructure. The analysis of the effects of zone-level measures on the supply of infrastructure for public modes is important in order to analyse how BRT benefits commuters in the Lahore labour market and to inform future investments in BRT infrastructure.

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Effectiveness of the Exchange Rate Channel in Monetary Policy Transmission in Pakistan

FAYYAZ HUSSAIN and MEHAK EJAZ

The exchange rate is one of the most important channels of monetary policy transmission to the real economy. However, the effectiveness of this channel depends on the extent of exchange rate flexibility, degree of international capital mobility, and inflation expectations. Like other emerging economies, Pakistan is typically characterised by weak fiscal and monetary institutions, currency substitution, liability dollarisation, and vulnerability to sudden stops of capital flows. These features compel emerging economies to follow managed exchange rate regimes by restricting the mobility of capital flow. All these factors weaken the effectiveness of the exchange rate channel of monetary policy transmission. This study estimates the effectiveness of the exchange rate channel in monetary policy transmission in Pakistan and explores the impact of exchange rate regimes on the channel's strength. The study benefitted from the widely used structural VARs methodology and found that the exchange rate channel is less effective in transmitting monetary policy shocks to the real economy. In recent years, however, greater flexibility in the exchange rate has improved the effectiveness of this channel.

JEL Classification: E520, F210, F310

Keywords: Monetary Policy, Transmission Channels, Pakistan, Exchange Rate, Exchange Rate Regimes, Structural VARs.

1. INTRODUCTION

Monetary policy is one of the important aggregate demand management tools to smooth business cycle fluctuations in the economy. One of the essential channels of monetary policy transmission to the real economy is the exchange rate (Mishkin, 1995). Monetary policy shock affects exchange rate, which, in turn, impacts aggregate demand through different channels such as trade, financial, and fiscal channels.

Monetary policy transmission is relatively weak in developing countries relative to developed countries (Mishra and Montiel, 2013). One of the reasons for less effective monetary policy in these economies is the typical characteristics that make them suffer from fear of floating and, therefore, fixation or stabilisation of exchange rates. These characteristics include but are not limited to weak fiscal and monetary institutions, currency substitution, liability dollarisation, and vulnerability to sudden stops of capital flows (Calvo and Mishkin, 2003). The fixation/stabilisation of the exchange rate weakens the working of the exchange rate channel of monetary policy transmission (Kami, 1997).

Fayyaz Hussain <Fayyaz.Hussain@sbp.org.pk> is Senior Joint Director, State Bank of Pakistan, Karachi. Mehak Ejaz <mehak@uit.edu> is Associate Professor, Usman Institute of Technology, University (UITU), Karachi.

Being a small open economy, Pakistan is also vulnerable to sudden stops of capital flows, foreign liabilities of the government far exceed her foreign assets, and monetary and fiscal institutions have yet to develop fully. In this backdrop, the exchange rate is allowed only limited flexibility that might have weakened the effectiveness of monetary policy transmission in Pakistan through a weak exchange rate channel.

In recent years, however, many emerging economies that moved to using interest rates as operational targets under inflation targeting regimes are allowing greater flexibility in the exchange rate (Brandao-Marques, et al. 2020). Allowing greater flexibility in exchange rate bodes well for gaining monetary autonomy and enhancing the effectiveness of monetary policy transmission (Li and Tsai, 2013). Since Pakistan also intends to switch to flexible inflation targeting regime, the State Bank of Pakistan has announced adopting a market-based flexible exchange rate regime from May 2019.[1]

Moreover, SBP has further liberalised foreign exchange controls related to trade and investment policies from February 2021. SBP has revised its foreign exchange manual to facilitate start-ups, fintechs, and exports.[2] To facilitate business where foreign exchange approvals are required, SBP has launched an online portal to provide such approvals. In collaboration with commercial banks, SBP has also successfully launched Roshan Digital Account (RDA) for non-resident Pakistanis from 10th September 2020.[3] These accounts provide innovative banking solutions for non-resident Pakistanis to invest in real estate, stock exchange, Naya Pakistan certificate, and pay utility bills. These measures are likely to integrate Pakistan with the global financial system. Global financial integration strengthens the exchange rate channel of monetary policy transmission (Gudmundsson, 2008; Meier, 2013).

Against this backdrop, the objective of this study is twofold. First, to assess the effectiveness of the exchange rate channel in monetary policy transmission in Pakistan, and second how this effect changes with the episodes of greater flexibility in the exchange rate. This study is different from the previous studies in the following respects. First, this study considers exchange rate regimes while estimating the effectiveness of the exchange rate channel of monetary policy transmission. Second, international economic environment is taken into account by controlling for global economic growth, global interest rates, and world food prices. Third, we also controlled for public sector borrowings from the banking system to acknowledge the impact of fiscal dominance on monetary policy.

The results show weak transmission of monetary policy shock through the exchange rate channel. Working of the exchange rate channel is, however, better during the episodes of greater exchange rate flexibility. The study also finds that the exchange rate channel is more effective in impacting inflation than domestic economic activity. This reflects the impact of pass-through of exchange rate changes to domestic prices through imported items in the consumer basket and inflation expectations. In particular, one standard deviation appreciation in exchange rate reduces inflation by about 30 basis points.

[1]Pakistan Request for an Extended Arrangement Under the Extended Fund Facility-Press Release; Staff Report; and Statement by the Executive Director for Pakistan: https://www.imf.org/en/Publications/CR/Issues/2019/07/08/Pakistan-Request-for-an-Extended-Arrangement-Under-the-Extended-Fund-Facility-Press-Release-47092

[2]FE Circular No. 01 of 2021 at https://www.sbp.org.pk/epd/2021/FEC1.htm. Background note is placed at https://www.sbp.org.pk/press/2021/Pr1-10-Feb-21.pdf

[3]https://www.sbp.org.pk/press/2021/Pr-10-Feb-21.pdf

The rest of the study is organised as follows. Section 2 discusses the theoretical background, section three reviews the literature followed by a section on exchange rate history in Pakistan. Section five elaborates methodology, and section six describes data. Section seven discusses the results, and the last section concludes the study.

2. THEORETICAL BACKGROUND

The exchange rate channel of monetary policy works through the interest rate parity condition. Specifically, when the central bank lowers policy rates, the return on domestic assets falls relative to foreign assets. This makes foreign assets more attractive, in turn, putting pressure on local currency (Kamin, 1997). This exchange rate depreciation makes domestic goods cheaper than foreign goods, thereby leading to expenditure switching and a rise in net exports and the overall level of aggregate demand (Mishkin, 1995).

However, a part of this trade channel of the exchange rate may be offset by adverse balance sheet effects in the presence of large debt in foreign currency. A depreciating exchange rate may weaken borrowers (whose foreign liabilities exceed foreign assets) net worth, limiting their ability to borrow and contracting economic activity (Krugmen, 1999, Céspedes, Chang & Velasco, 2004; Avdjiev, Bruno, Koch & Shin, 2019).

Two things are essential for the exchange rate channel of monetary policy transmission to work. First is the degree of reaction of the exchange rate to monetary innovations, and second is the extent of responsiveness of economic activity and prices to movements in the exchange rate. The response of the exchange rate to changes in interest rates would be higher provided there is greater substitutivity between domestic and foreign assets (Kamin, 1997). For instance, despite the policy rate in Pakistan remaining around 20 percent in FY-1997, far above the interest rate on the foreign bonds of the same tenor, Pak Rupee witnessed depreciation. This counter-intuitive response of the exchange rate to policy-induced increase in interest rate shows weak substitutivity between domestic and foreign bonds, probably on account of the low level of foreign exchange reserves and the consequently higher risk premium. Lastly, even if international capital flows are sensitive to shocks to policy rates, fixation or heavy management of exchange rate weakens the effectiveness of monetary policy transmission through this channel (Kamin, 1997).

The second important link for the exchange rate channel's effectiveness is the exchange rate's impact on economic activity and prices. The impact of the exchange rate on economic activity depends on the elasticities of exports and imports to exchange rate movement. If the absolute sum of price elasticity of exports and imports is higher than one (Marshall Lerner Condition), then exchange rate depreciation (appreciation) will increase (decrease) net exports and, thereby level of aggregate demand (Robinson, 1937). Along with the exchange rate sensitivity, the effect of the exchange rate on domestic economic activity also depends on the degree of openness of an economy. The exchange rate channel is expected to be more effective in the case of a more open economy (Brandao-Marques, 2020). The effectiveness of the exchange rate channel in the transmission of monetary policy depends on the nature of exchange rate regimes followed and the degree of openness of the economy. For instance, Bryant, Hooper, & Mann (2010), Taylor (1993), and Smets (1995) found that smaller and more open economies tend to see more significant effects through this channel.

Along with aggregate demand, the exchange rate also directly impacts domestic costs through increased prices of imported consumer goods. This is also called the exchange rate pass-through to domestic prices. Exchange rate pass-through is likely to be higher if the consumption basket contains a large number of imported goods. In case prices of imported items are administered by the government, the exchange rate pass-through on domestic prices will be weaker.

The exchange rate pass-through is typically higher in a high inflation environment (Taylor, 2000). In high inflation countries, exchange rate movement is considered an essential signal of future price movement, and wages & prices may change even before the movement in import costs through the cost structure (Kamin, 1997).

The strength of the exchange rate channel of monetary transmission is expected to be negatively impacted if foreign liabilities of government, financial and non-financial firms exceed their foreign assets (Krugman, 1999). For example, with a large share of external liability (external debt), exchange rate depreciation would increase the government's foreign liabilities, reducing the government's net worth. Exchange rate depreciation will also increase the external debt servicing costs of the government. As a result, the sovereign risk premium will increase. These will constrain the government's ability to raise external funds by issuing bonds in the international market. As a result, aggregate demand and prices will be negatively affected. Same holds true for firms and the financial sector whose foreign liabilities are greater than their foreign assets.

To sum up, for the effectiveness of the exchange rate channel of monetary policy transmission, in the first step, interest rate changes must impact the exchange rate. If domestic assets are imperfect substitutes of foreign assets, the central bank intervenes in the foreign exchange market to manage the exchange rate, and capital are less mobile across the border, then the exchange rate will be less responsive to changes in interest rate. In the second step, changes in the exchange rate must affect aggregate demand through net exports. However, higher external debts of the business and the government will adversely impact the strength of the monetary policy exchange rate channel. Apart from the indirect impact on aggregate demand, prices are also affected directly by the increase in prices of imported goods in the CPI basket. This direct exchange rate pass-through is swifter in a high inflation environment (Taylor, 2000).

3. LITERATURE REVIEW

Mishra, et al. (2013) survey empirical literature on the effectiveness of monetary policy transmission in developing countries. They find that monetary policy transmission is relatively weak in developing countries relative to developed countries. One of the reasons for less effective monetary policy in these economies is the acute stabilisation of the exchange rate that weakens the working of the exchange rate channel of monetary policy transmission.

In the case of Pakistan, there are very few studies on the monetary policy transmission channels in general and the exchange rate channel in particular. These studies do not have a consensus on the effectiveness of the exchange rate channel of monetary policy in Pakistan. Most noticeable amongst those is Agha, et al. (2005). Using monthly data from July 1996 to March 2004, they find that Pakistan's exchange rate channel is not robust. Their findings suggest that the credit channel is

the most dominant monetary transmission in Pakistan. However, using monthly data from January 1964 to December 2007, Hussain (2009) shows that the exchange rate channel also plays a vital role in monetary policy transmission in Pakistan. In a relatively more recent paper, Nizamani, et al. (2015) find the exchange rate channel as the least important for monetary policy transmission in Pakistan. They use quarterly data from Q1-1996 to Q4-2012.

Apart from the overall exchange rate channel, literature on its components is also rare. For instance, for the exchange rate channel to work, changes in the policy rate should impact the exchange rate. The relationship between exchange and interest rates is investigated by testing the interest rate parity condition. If interest rate parity holds, then changes in policy rate do affect the exchange rate. For Pakistan, we can find only two studies that tested the interest rate parity condition. First is by Singh and Banerjee (2006). Their results show that real interest rate parity does not hold for emerging economies, including Pakistan. The second study by Omar, et al. (2013) tests interest parity conditions for Pakistan only. Using monthly data from January 2001 to December 2008, they show that the interest parity condition holds for Pakistan.

The second important step in the exchange rate channel of monetary policy transmission is the responsiveness of net exports to changes in the exchange rate. The effectiveness of exchange rate depreciation in improving net exports depends on the Marshall Lerner condition. In Pakistan, there is no final agreement on whether the Marshall Lerner condition holds or not. Shazad, et al. (2017) test Marshal Lerner condition for seven south Asian countries. Their estimates indicate that the Marshall Lerner condition does not hold for these economies as the absolute sum of the price elasticity of imports and exports is less than one. Iqbal, et al. (2015) test Marshall Lerner condition in bilateral trade between Pakistan and its ten trading partners. Their results indicate that the Marshall Lerner condition holds with six of the trading partners, and there is no evidence of the condition for the remaining partner.

Apart from the indirect impact of aggregate demand, the exchange rate also directly impacts prices through an increase in prices of imported goods. Here are some studies that estimated the impact of exchange movements on inflation. McCarthy (2000) find that exchange rates have a modest effect on domestic price inflation, while import prices have a more substantial effect. Ehsan and Hakura (2006), using a panel of 71 countries from 1979–2000, show strong evidence of a positive and significant association between the pass-through and the average inflation rate across countries and periods. Michele, et al. (2007) examine the degree of Exchange Rate Pass-Through (ERPT) to prices in 12 emerging markets in Asia, Latin America, and Central and Eastern Europe. Their results show that exchange rate pass-through into both import and consumer prices is always higher in "emerging" than in "developed" countries.

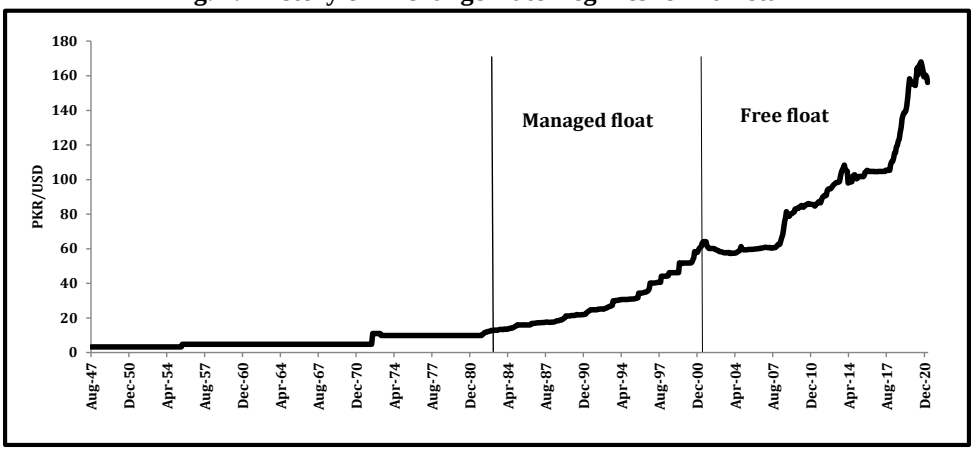
Regarding literature on Pakistan, Hyder and Shah (2005) main findings are: (1) the exchange rate movements have only a moderate effect on domestic prices, i.e., exchange rate pass-through is low, (2) the exchange rate pass-through is more substantial in wholesale price index (WPI) relative to consumers price index (CPI) and (3) the impact of pass-through on domestic prices spreads over 12 months. In another study on Pakistan, Ahmad and Ali (1999) emphasise that the empirical work in Pakistan provides

unwavering proof that the domestic price level responds significantly but gradually to exchange rate devaluation. All these studies show low to moderate pass-through of exchange rate changes on domestic prices. This probably reflects a relatively lower share of imported items in the CPI basket. Further, the government determines the prices of a considerable number of imported CPI items. In short, existing literature shows that exchange rate channel of monetary policy transmission is weak.

4. HISTORY OF EXCHANGE RATE IN PAKISTAN

Pakistan came into existence on 14th August, 1947. At that time, the exchange rates of the International Monetary Fund (IMF) members were fixed under the Bretton Woods system. Under this system, every member country was required to fix its exchange rate to Gold, and IMF filled temporary imbalances in the balance of payments. As per the best global practices, Pakistan also followed fixed exchange rate regimes in the first decades. By March 1973 Bretton Woods system was broken, and member countries were free to float the exchange rate. After the breakdown of the Bretton Wood system, most of the economies moved from fixed exchange rates to floating exchange rate regimes. The regime shift resulted in significant fluctuation in the exchange rate in these countries. With much volatility in the exchange rates of trading partners and global oil prices, Pakistan had to make a big adjustment in the exchange rate. However, Pakistan continued with the fixed exchange rate regime till 1982.

Fig. 1. History of Exchange Rate Regimes for Pakistan

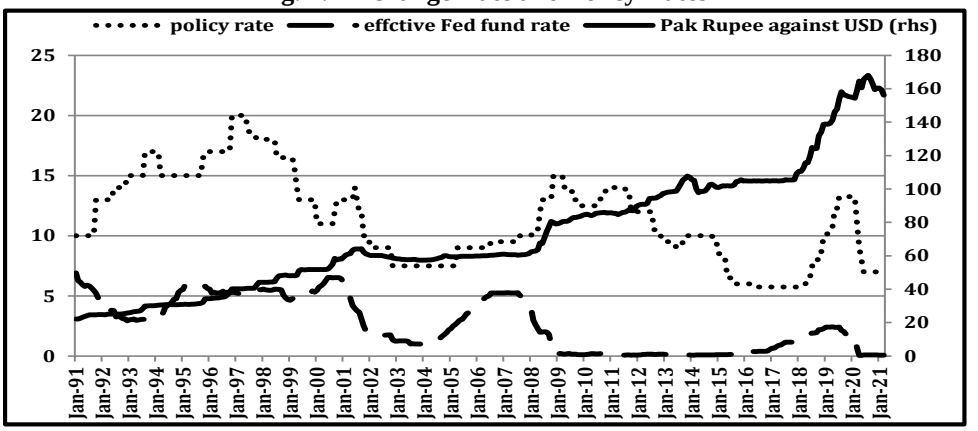


With the difficulties in managing the balance of payments position, Pakistan approached the International Monetary Fund and signed the Extended Fund Facility (EFF) programme in 1981. As per IMF advice under Article IV consultation, Pakistan was asked to adjust its exchange rate significantly. Pakistan had two options, either to make a onetime adjustment or gradual adjustment on a daily basis. Pakistan opted for the second option and shifted to managed float in January 1982. Under this regime, the exchange rate was set on a day-to-day basis, keeping in view (i) exchange rate movements of Pakistan's fourteen major trading partners, (ii) exchange rate movement of 32 major export destinations of Pakistan, and (iii) exchange rate movement of export

competing countries. Pakistan followed managed float till mid-2000. After the nuclear blasts in May 1998, Pakistan switched to a dual exchange rate regime for a short time. In July 2000, Pakistan switched to a free float exchange rate regime and is officially following this regime till now. In this regime, the State Bank of Pakistan intervenes in the foreign exchange market from time to time to smooth unnecessary volatility and quell speculative attacks on the exchange rate. For instance, with the substantial capital inflows after 9/11, the State Bank of Pakistan purchased foreign exchange from the interbank market to avoid abrupt appreciation in the exchange rate. Likewise, in case of a temporary shortage of foreign exchange in the interbank market, the State Bank of Pakistan sells foreign exchange in the market.

In this background, market forces had a relatively limited role in exchange rate determination till 2000. This implies monetary policy shocks or changes in policy rate might have had a limited influence on the exchange rate at least before 2000. A simple plot (Figure 2) of the policy rate in Pakistan and the United States shows that monetary policy did not explain much of the movement in the exchange rate before 2000. For instance, in the 1990s, the policy rate increased to around 20 percent. This should have appreciated the exchange rate. Conversely, the exchange rate depreciated from about 22 rupees per dollar to 40 rupees per dollar in the same period.

Fig. 2. Exchange Rate and Policy Rates



However, after the adoption of the free-floating of the exchange rate in 2000, market forces role has increased in the determination of the exchange rate. This becomes even clearer when we look at the rolling correlation between the interest rate differential between the policy rate of Pakistan and the world proxied by the federal fund rate of the United States. The correlation coefficient between the interest differential on the two currencies and the exchange rate was positive before 2000 (Figure 3). This was counter-intuitive. As per the prediction of interest rate parity condition, the interest rate differential between the local and foreign currencies should be negatively associated with the exchange rate movements. From 2000 onward, this prediction appears correct. However, this association weakened in the post-2008 period, which probably reflects an increased risk premium on the local currency due to the balance of payments crises. The correlation coefficient again turns negative after 2016.

Fig. 3. Rolling Correlation between Exchange Rate and Interest Rate Spread

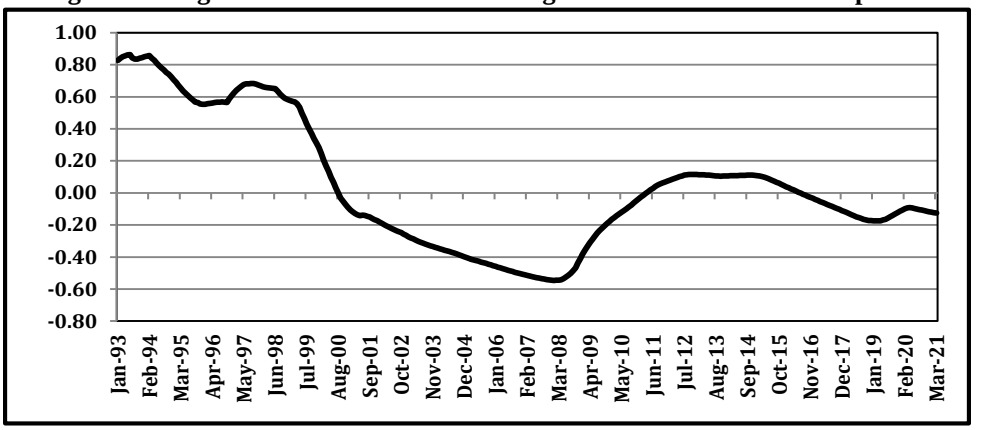
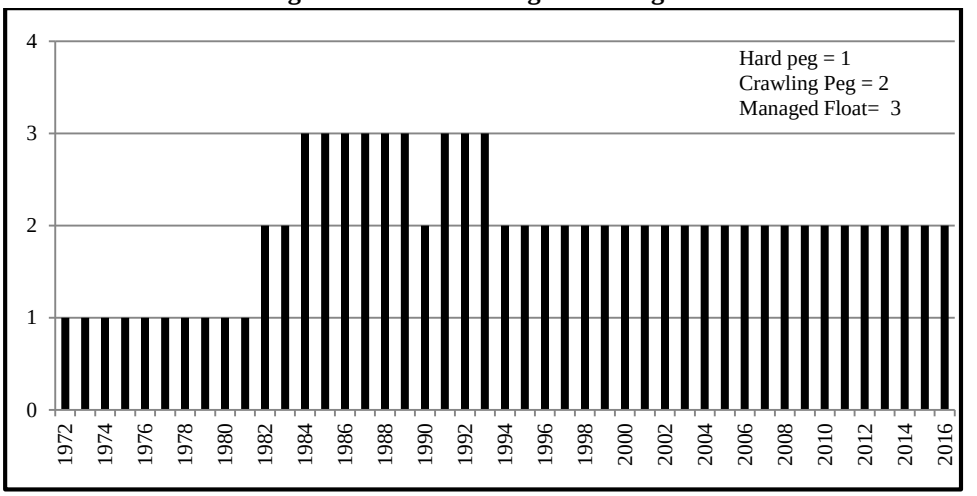


Fig. 4. Defacto Exchange Rate Regime



Apart from the flexible exchange rate, the introduction of FE-25 foreign currency deposits from 1999 onward might also have contributed to the increased sensitivity of exchange rate changes to interest rate differential. With the increase in the policy rate, the interest rate on local currency deposits increases relative to foreign currency deposits. This increases demand for local currency relative to foreign currency, which leads to an appreciation of the local currency. However, expectations of exchange rate depreciation may weaken this link. Specifically, the expected exchange rate depreciation makes foreign currency attractive, which may offset the impact of increased interest rate on local currency deposits. Another possibility for interest rate parity to work is lending against foreign currency deposits. An increase in policy rate increase borrowing costs in local currency; as a result, importers and exporters may increase demand for borrowing in foreign currency against FE-25 deposits. This borrowing against FE-25 deposits will increase the supply of foreign currency in the interbank market, leading to appreciation of the local currency. Other than interest rates, borrowing costs in foreign currency also

include expected exchange rate movements. Expectations of exchange rate depreciation increase borrowing costs in foreign currency that may discourage borrowing in foreign currency and hence limited impact on exchange rate.

Though the State Bank of Pakistan officially follows a free float exchange rate and intervenes in the foreign exchange market only to curb disorderly market conditions, many independent analysts argue that it is not pure free float. For instance, EIlzetzki, et al. (2017) classification of the de facto exchange rate regime suggests that from 1993 onward, Pakistan is following a crawling peg. Despite the fact that Pakistan is officially following free float, it is still categorised in a crawling peg. This excessive stabilisation of the exchange rate may weaken the working of the exchange rate channel of monetary policy transmission in Pakistan.

To address these concerns, the State Bank of Pakistan has announced market-based flexible exchange rate regime from May 2019. Allowing exchange rate flexibility is not only important for keeping the external balances at a sustainable level but would also help SBP gain more independence under inflation targeting regime. Li and Tsai (2013) show that allowing flexibility in exchange rates increases the autonomy of monetary authority.

Other factors that are important for the effectiveness of the exchange rate channels are the openness of the economy. Trade openness, as measured by the ratio of exports plus imports to gross domestic products, fluctuated between 30 to 40 percent. This ratio peaked at 39.9 percent in 1991, and it had again come down to 27.6 percent in 2015. This gradual decline in the openness of the economy might have adversely affected the working of the exchange rate channel of monetary policy transmission in Pakistan.

5. METHODOLOGY

Mishra, et al. (2011), in their survey of literature on the transmission of monetary policy in developing countries, showed that Vector Autoregressive (VAR) has become customary to investigate the effect of monetary policy. Following standard practice in the literature, this study also uses VAR to estimate the impact of the exchange rate channel on monetary policy transmission. This approach has various advantages over other model-based approaches. First, residual in the VAR are pure unanticipated innovations, so they can potentially separate the impact of unanticipated monetary policy shock on the aggregate demand. Second, this takes into account the simultaneity bias between monetary policy variables and real variables like economic activity and inflation, and third, with no serial correlation among the residual of VARs, there is no need to include all the potential determinants of aggregate demand other than the indicators that influence monetary policy decision making of the central bank. This study will use four endogenous variables that include gross domestic product proxied by large-scale manufacturing, consumer price index, policy rate proxied by call rate, and exchange rate. The exogenous variables include global food prices, global gross domestic product proxied by the United States Industrial Production Index, international interest rates proxied by federal fund rate, and fiscal dominance captured by the government borrowing from the banking system. The study uses monthly data on these variables from 1995 to 2020.

The Benchmark *VAR(P)* representation looks as follows:

$$\sum_{i=0}^{p} \phi_i Y_{t-i} = \delta X_t + \epsilon_t \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad (1)$$

Where Y_t is the vector of endogenous domestic variables, X_t is the vector of exogenous variables. ϕ and δ are the lag polynomial and $\in_t$ represents the vector of structural innovations.

To analyse the dynamic impact of monetary policy shocks on the channeling variable exchange rate and goal variables i.e., output and prices, we discuss the impulse responses. We estimate structural impulse responses by using the Cholesky decomposition of the variance-covariance matrix of the reduced form Vector Autoregressive models.

Following Bernanke and Blinder (1992) identification scheme, monetary policy variables appear last in the Cholesky ordering, assuming that the endogenous macro variables could be observed contemporaneously by the policy-makers. We have used the following specific restrictions. First, any shock to the exchange rate has no contemporaneous impact on all the other variables, but other variables do affect it in the same period. Second, with the transmission lag in monetary policy, nominal policy shocks have no contemporaneous impact on output and prices, but it instantly impacts the exchange rate. Third, consumer prices have zero contemporaneous impact on output, but it immediately impacts policy and exchange rates. Fourth, real shock contemporaneously affects all the variables in the system, but other variables do not impact it. The restriction structure looks as follows.

$$\begin{bmatrix} U^Y t \\ U^P t \\ U^R t \\ U^{ER} t \end{bmatrix} = \begin{bmatrix} 1 & 0 & 0 & 0 \\ a_{21} & 1 & 0 & 0 \\ a_{31} & a_{32} & 1 & 0 \\ a_{41} & a_{42} & a_{43} & 1 \end{bmatrix} \begin{bmatrix} \varepsilon_t^Y \\ \varepsilon_t^p \\ \varepsilon_t^R \\ \varepsilon_t^{er} \end{bmatrix}$$

To estimate the impulse responses, we have used monthly data for Pakistan from January 1991 to December 2020.

6. DATA

Data on consumer price index and large-scale manufacturing is collected from Pakistan Bureau of Statistics (PBS), exchange rate, interest rates and public sector borrowing from the banking system are collected from the State Bank of Pakistan and world food prices, the United States Industrial Production iIndex, United States interest rates are collected from International Financial Statistics of International Monetary Fund.

As we are using data on a monthly basis, essential variables such as large-scale manufacturing and prices depict much seasonality. For instance, large-scale manufacturing usually gains momentum when the sugar crushing season starts. Likewise, consumer prices show variation due to seasonal demand for goods and services in winter and summer. To study the underlying trend of the data, we have seasonally adjusted all the variables except interest rates (discount rate and federal fund rate). To further smooth the data, we have taken a log of all the series except the discount rate and federal fund rate.

6.1. Correlation Analysis

Table A1 in Annexure 1 shows the correlation coefficient of the variables used in the model. Looking at the correlations will give some sense of association between the

monetary policy instrument and other variables relevant for exchange rate transmission. Correlation between some of the important variables is as follow: Policy rate and the federal fund rate are positively associated. This indicates that while policy rate setting, monetary authority in Pakistan also considers world interest rates. Second, the policy and nominal effective exchange rates are also positively associated. This also makes intuitive sense, an increase in policy rate is usually associated with exchange rate appreciation through interest rate parity conditions. The correlation coefficient between the policy rate and large-scale manufacturing is negative. This reflects the contractionary impact of monetary policy tightening on growth. Lastly, the correlation coefficient between the policy rate and inflation is also negative. This indicates that monetary policy tightening is associated decline in prices.

Likewise, consumer prices are positively associated with supply-side factors such as world food prices and global oil prices. On the demand side, prices are positively associated with public sector borrowing and negatively associated with exchange rate appreciation.

6.2. Augmented Dicky Fuller Test

We have applied the Augmented Dicky Fuller Test to test the stationarity of the data. First, we tested the stationarity of the data in levels. As in absolute terms, test statistics of the ADF test are low than its critical value at a five percent level of significance for all the series; we fail to reject the null hypothesis of a unit root. Thus, all the series have unit-roots. Then we applied the ADF test to the first difference of these variables. Now, in absolute terms, the test statistics of the ADF test of all the variables are greater than critical values that imply we reject unit root in these series. As all the series are first difference stationary, these series are integrated of order one. Thus, we have transformed the data accordingly.

Table 1

Summary Statistics

	Observations	Mean	Median	Maximum	Minimum	Std. Dev.	Order of Integration
World food price index	143	0.001	–0.002	0.123	–0.176	0.035	I(1)
US Industrial production index	143	0.000	0.001	0.014	–0.042	0.007	I(1)
Federal fund rate	143	–0.020	0.000	0.250	–1.250	0.184	I(1)
Global oil prices	143	–0.001	0.011	0.242	–0.333	0.091	I(1)
Consumer price index	143	0.002	0.003	0.125	–0.126	0.034	I(1)
Large scale manufacturing index	143	0.007	0.006	0.030	–0.009	0.007	I(1)
Policy rate (call rate)	143	0.023	0.000	3.950	–6.420	0.949	I(1)
Neer	143	–0.006	–0.004	0.039	–0.056	0.015	I(1)
Public sector borrowing from banking system	143	0.018	0.015	0.159	–0.051	0.025	I(1)

Note: All the variables are in log difference form except interest rates that are in simple difference form.

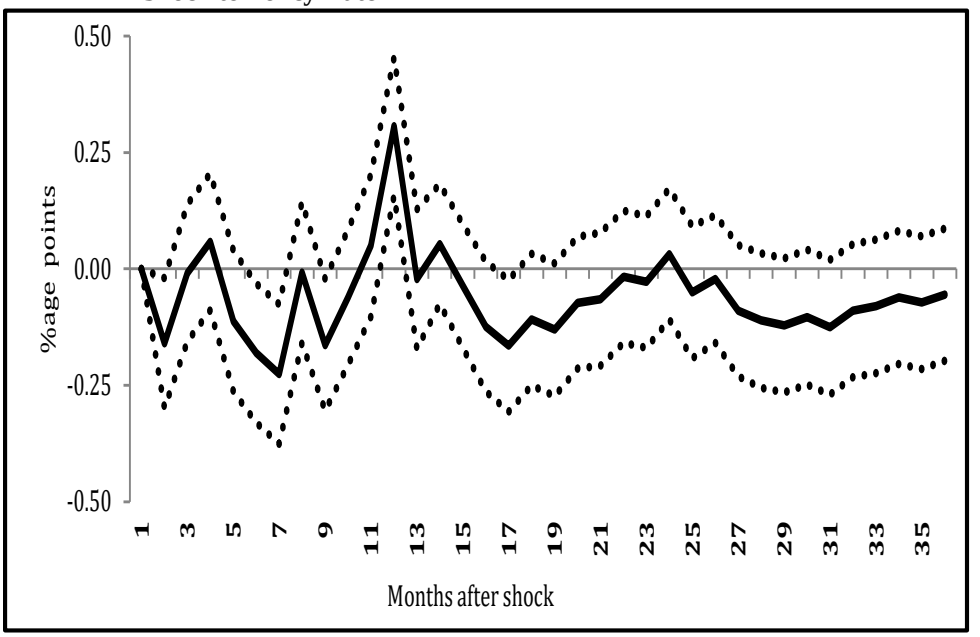
Different lag criteria were giving different optimal lag lengths. Schwarz information criterion chose an optimal lag length of one month, while Akaike information criterion criteria chose a lag length of 12 months. Since one month is too short, we opted for seven months lag.

7. EMPIRICAL RESULTS

The impulse response function shows that one standard deviation unanticipated positive shock to policy rate leads to an appreciation of nominal effective exchange rate. Transmission of this shock is almost complete within twenty months. However, the magnitude of the response of the exchange rate to monetary policy shock appears small and statistically insignificant (Figure 5 c).

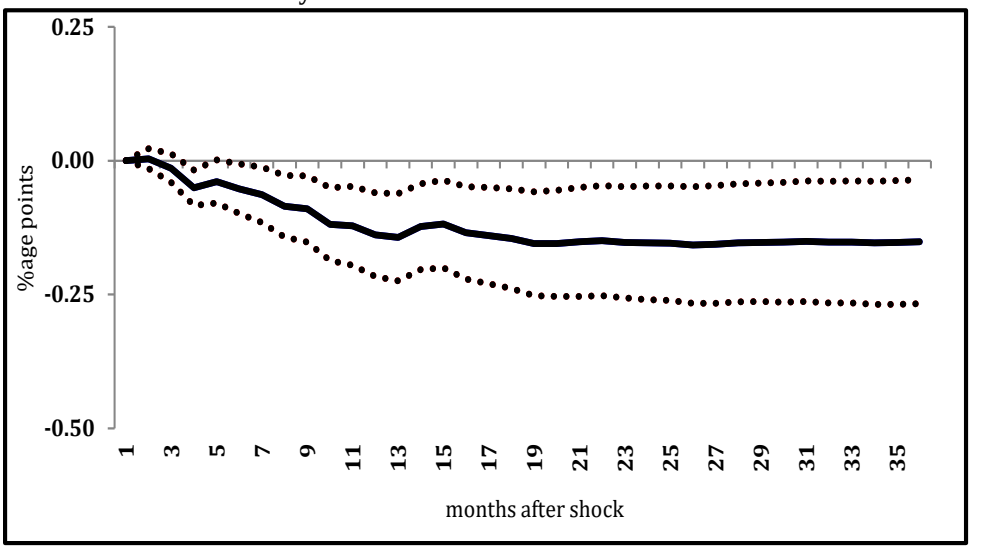
Contractionary monetary policy shock hurts growth. Transmission of monetary policy shock on LSM growth takes time to materialise. After showing some oscillations during the first twelve months, monetary policy shock has a permanent contractionary impact on growth from thirteen months onward. The impact becomes statistically significant in almost seventeen to eighteen months (Figure 5 a).

Fig. 5a. Cumulative Impulse Response of Growth to One Standard Deviation Shock to Policy Rate



The transmission lag of monetary policy is even more substantial in case of inflation. The impact becomes statistically significant from four months after the monetary policy shock. Monetary shock (normalised to 100 basis points increase in call rate) decreases inflation by around 15 basis points (Figure 5b). The transmission of monetary policy shock to consumer prices is also complete in 24 months.

Fig. 5b. Cumulative Impulse Response of Inflation to One Standard Deviation Shock to Policy Rate



Appreciation in a nominal effective exchange rate (increase in NEER means appreciation) leads to a price fall (Figure 5e). The impact of exchange rate appreciation takes some time to affect the prices. This reflects the downward rigidity in prices. Transmission of exchange rate changes on prices almost stabilised toward the end of the second year. Specifically, one standard deviation positive shock to the exchange rate, reduces inflation by around 30 basis points.

Fig. 5c. Cumulative Impulse Response of NEER to One Standard Deviation Shock to Policy Rate

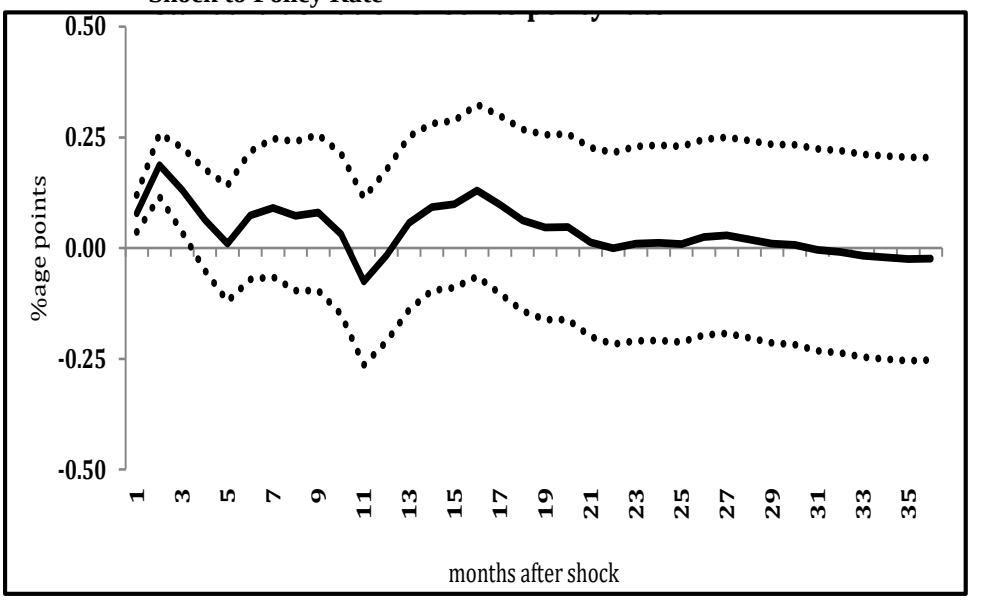


Fig. 5d. Cumulative Impulse Response of Growth to One Standard Deviation Shock to NEER

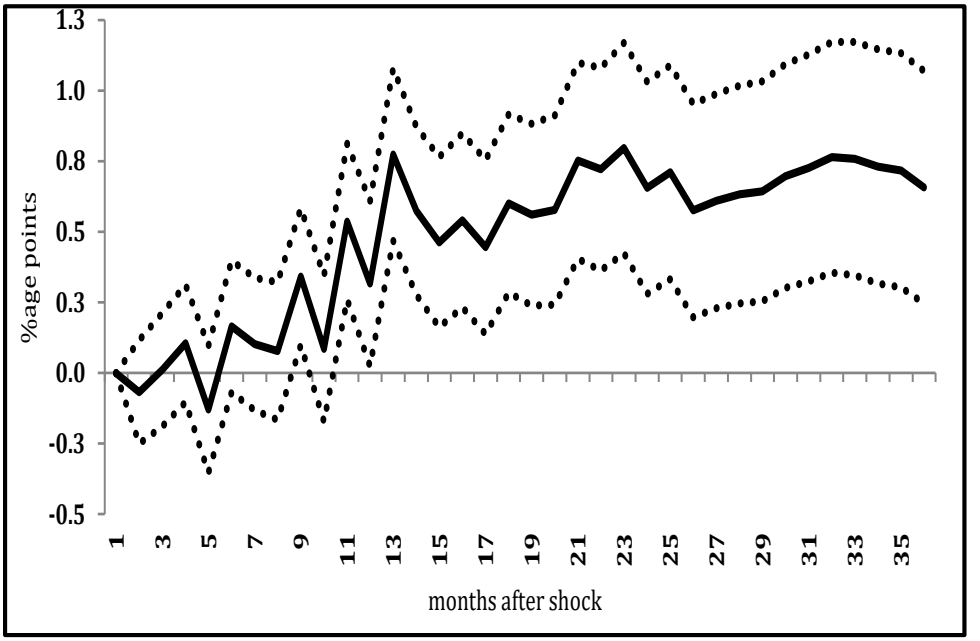


Fig. 5e. Cumulative Impulse Response of Inflation to One Standard Deviation Shock to NEER

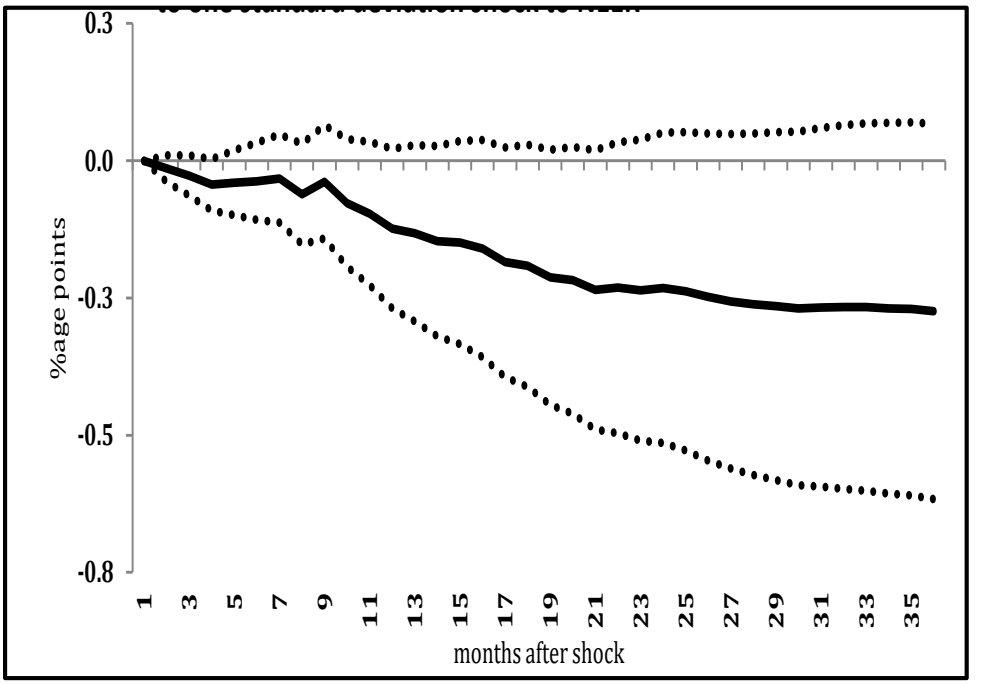
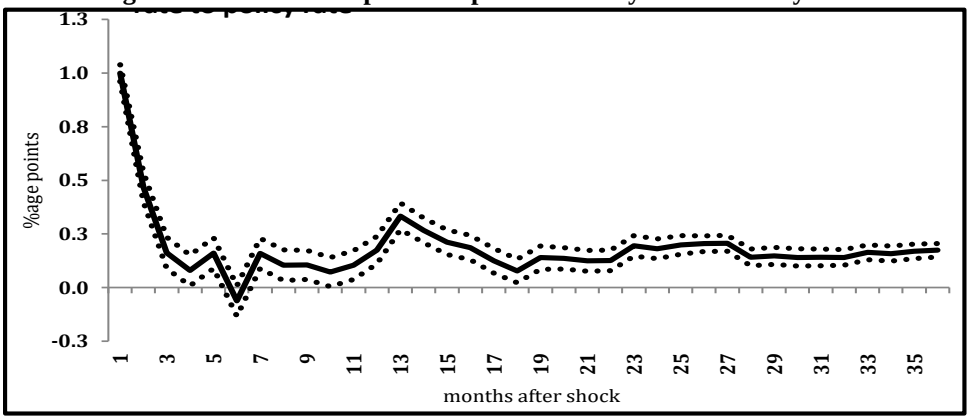


Fig. 5f. Cumulative Impulse Response of Policy Rate to Policy Rate



The impact of exchange rate appreciation on LSM growth appears counter-intuitive. Exchange rate appreciation has a positive impact on LSM growth (Figure 5d). The probable reason for this increase in LSM growth may be explained by the dependence of Pakistan's economy on imports. Specifically, the Pakistan industry is dependent on the import of raw material such as oil, gas, chemicals etc., and machinery to grow. With the appreciation in the exchange rate, these imports become cheaper. The consequent reduction in costs of production of the businesses may explain this increase in LSM production.

7.1. Strength of the Exchange Rate Channel

We have attempted to test the strength of the exchange rate channel in the following way. We ran two regressions, one with the exchange rate channel working and the other with the exchange rate channel shut down. Specifically, in the first case, we have allowed the exchange rate to respond to policy shock and other variables in the system. In the second case, we treated the exchange rate and its potential lags as exogenous variables, i.e., the exchange rate was not allowed to respond to changes in the policy rate and other variables in the system. Then we compared the impulse responses of the two cases.

Fig. 6a. Relative Strength of Exchange Rate Channel: Impulse Response of Growth to Policy Rate

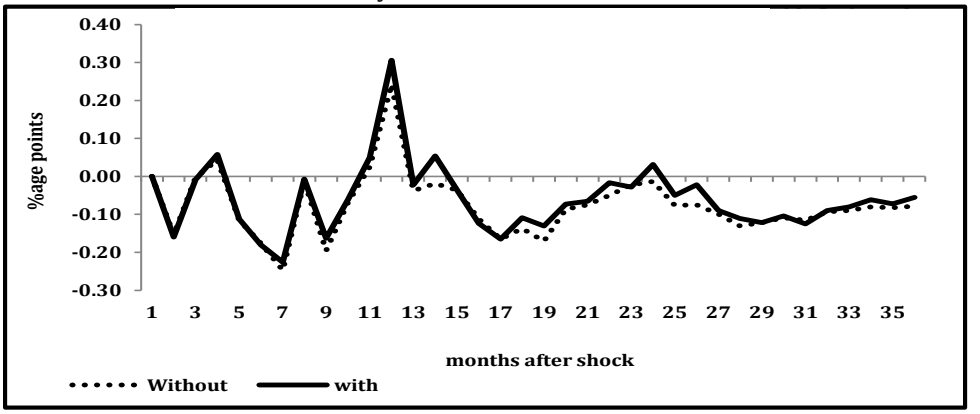
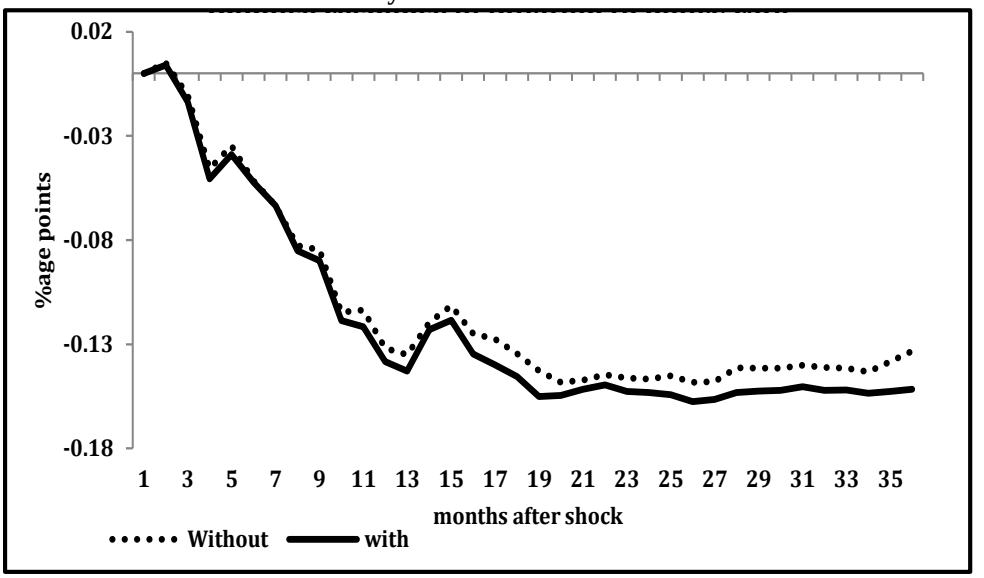


Fig. 6b. Relative Strength of Exchange Rate Channel: Impulse Response of Inflation to Policy Rate



The exchange rate channel does not appear effective for large-scale manufacturing growth. The transmission of monetary shocks on LSM growth is similar with and without the exchange rate channel. However, the exchange rate channel appears relatively effective when we analyse the impact of monetary policy shock on inflation. Though the exchange rate has little impact on aggregate demand, as is shown in LSM growth, a stronger impact on prices probably reflects the impact of exchange rate pass-through on import prices. As mentioned earlier, one standard deviation appreciation in exchange rate is estimated to decreases inflation by 30 basis points.

7.2. Strength of the Exchange Rate Channel under Different Exchange Rate Regimes

As discussed earlier, the exchange rate channel is more potent under a flexible exchange rate regime. To test this hypothesis for Pakistan, we have categorised the exchange regime for Pakistan into managed versus flexible. First, we followed the de-jure exchange rate classification, where Pakistan followed the managed exchange rate till 2000 and shifted to a flexible exchange rate after that. Second, we followed the de-facto exchange rate classification done by Ilzetzki, Reinhart, & Rogoff (2017).

We have used dummy variables to capture the exchange rate regime.

$$Dumerregime = 1, if\ exchange\ rate\ flexible$$

$$Dumerregime = 0, if\ exchange\ rate\ is\ fixed\ or\ managed$$

To investigate the impact of the exchange rate regime on the effectiveness of the exchange rate channel, we interacted the exchange rate regime dummy with the exchange rate. Structural VAR estimates the regression. Finally, impulse responses of growth and inflation to exchange rate are compared with the exchange rate interacted with the regime dummy.

Figure 7 shows the comparison of impulse responses for growth. The impulse response of growth to monetary policy shock under a flexible exchange rate regime (both de jure and de facto) is not much different from the original impulse response.

However, this is not true for inflation. Here the exchange rate channel of monetary policy transmission has become stronger under a flexible exchange rate regime. This is true for both de jure and de facto classification of exchange rate regimes.

7.3. Variance Decomposition

Variance decomposition of LSM growth shows that initially, a large part of the variation is explained by its lags. However, after ten months, most of the variations in growth are explained by interest rate and exchange rate shocks. More CPI inflation also explains a considerable part of the variation in LSM growth.

Fig. 7a. Impulse Response of Growth to Policy Rate under Flexible Exchange Rate Regime

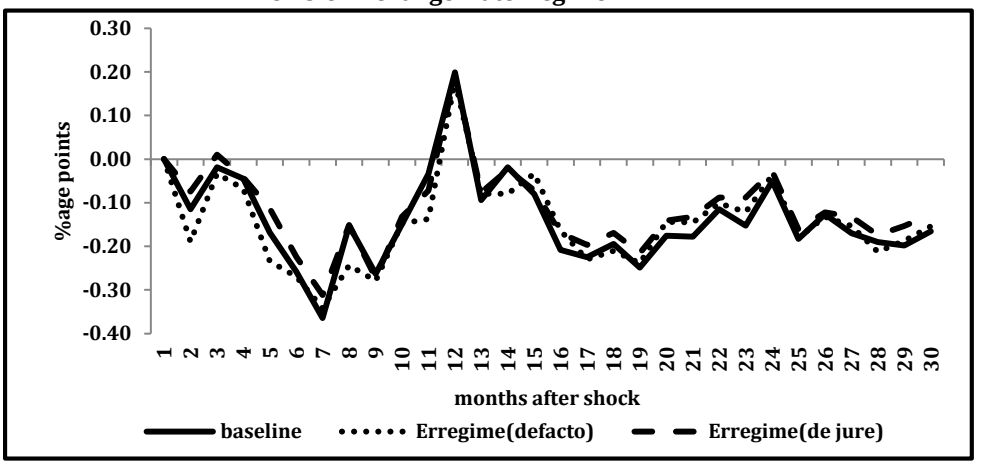
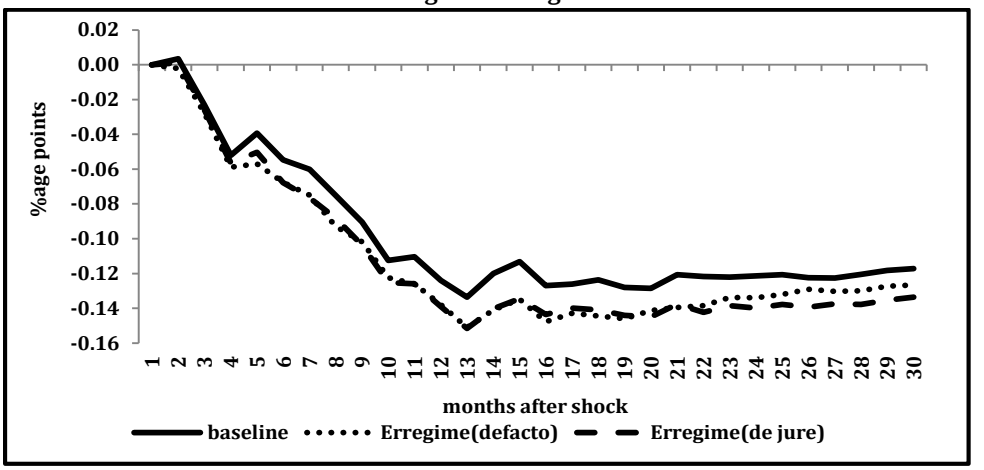


Fig. 7b. Impulse Response of Inflation to Policy Rate under Flexible Exchange Rate Regime



Variance decomposition of CPI inflation shows that adaptive expectations explain around ninety percent of the variations in inflation. Interest rate and exchange rate contribute only marginally to variation in overall inflation.

Likewise, variance decomposition of interest rates and exchange rates are predominantly explained by their own lags. Other variables have a minimal role in the variations of these two financial variables.

Fig. 8a. Variance Decomposition of Growth

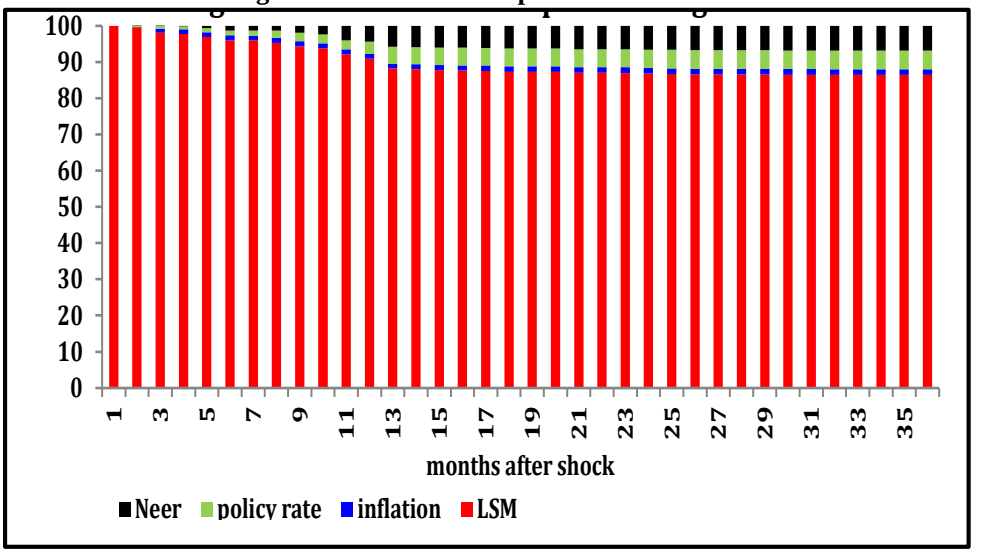


Fig. 8b. Variance Decomposition of Inflation

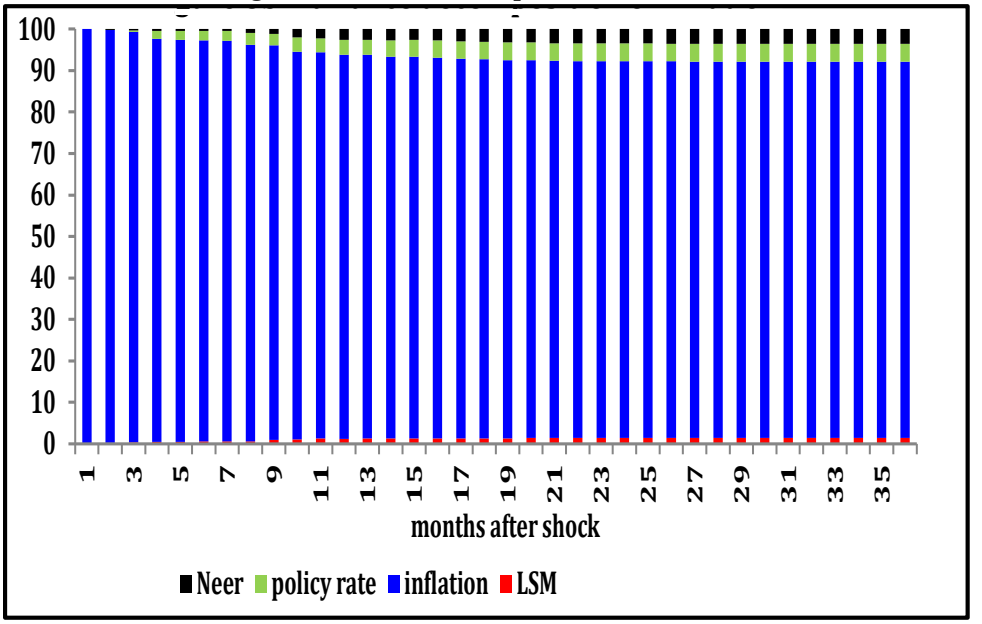


Fig. 8c. Variance Decomposition of Policy Rate

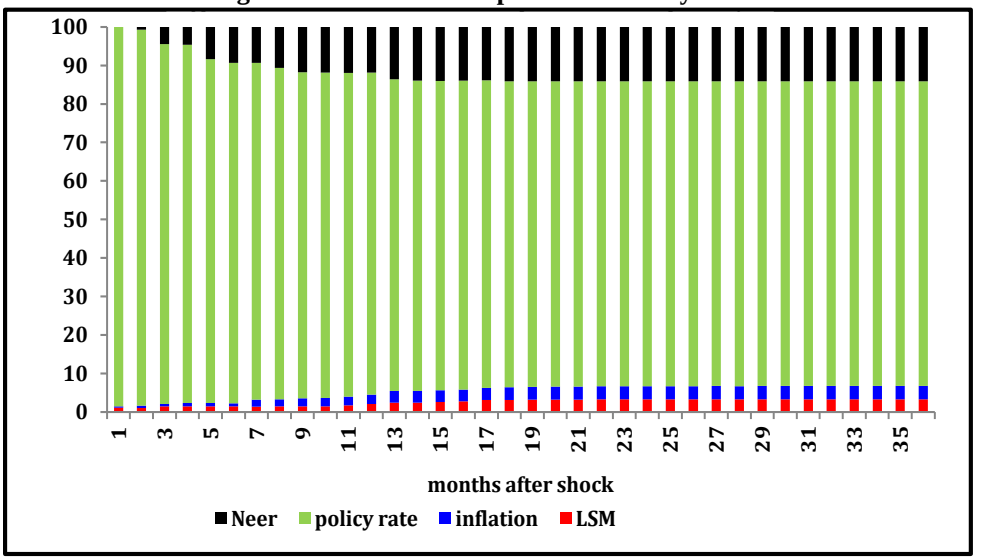
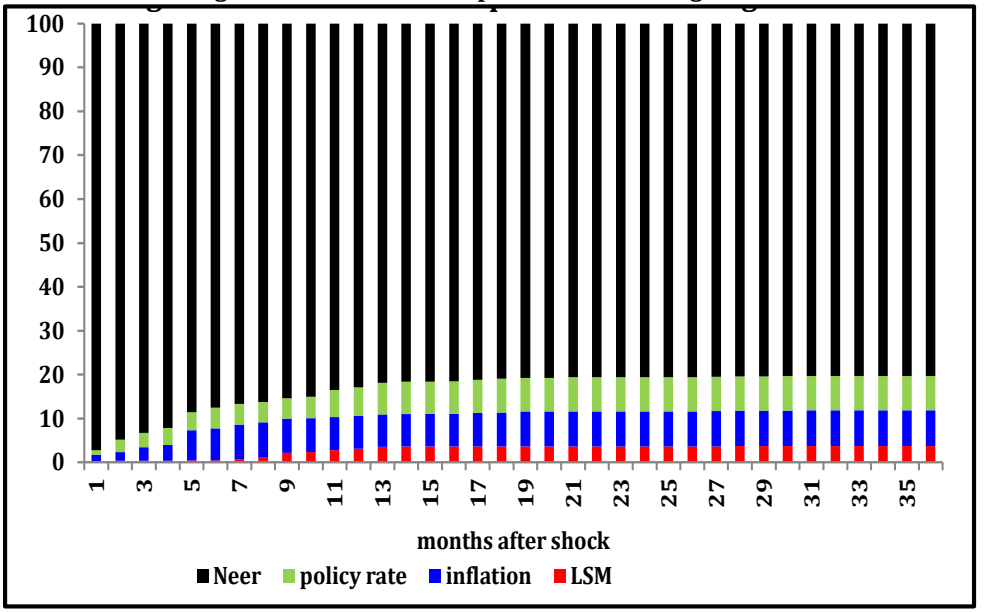


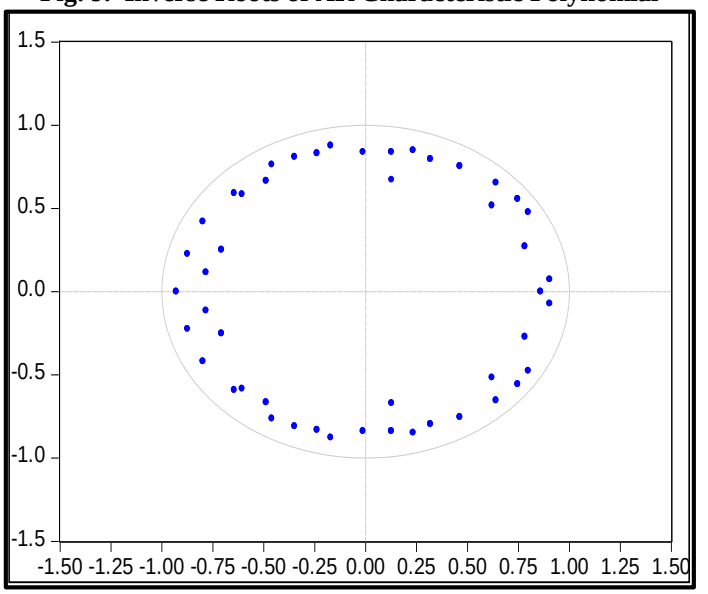
Fig. 8d. Variance Decomposition of Exchange Rate



7.4. Diagnostics

In order to check the stability of VAR, we have plotted the AR roots graph. Inverse roots of the AR characteristics polynomial lie within the unit circle that shows the stability of the VAR. We have also applied the autocorrelation LM test to serial correlation in the errors. We fail to reject the null hypothesis of no serial autocorrelation.

Fig. 9. Inverse Roots of AR Characteristic Polynomial



8. CONCLUSION

This study empirically evaluated the effectiveness of the exchange rate channel of monetary policy transmission. Following the literature on the subject, we benefitted from Vector Autoregressive models for this investigation. We used monthly data on key indicators for the economy that are important for inflation and growth and from a monetary policy formulation and implementation point of view. The data spanned from July 1995 to December 2020.

We did the necessary transformation before using the data in regression. This transformation included seasonal adjustment, taking logs, and differences in the data (for stationary purposes). We also controlled for the exchange rate regime dummy and monetary policy regime dummy in our regression.

The impulse response function showed that monetary policy shocks impact inflation and growth (SBP's goals). It takes almost a year for policy shock to have a significant impact on growth and four months to affect inflation. The impact of monetary policy actions is more pronounced on inflation than growth. One standard deviation positive shock to the exchange rate reduces inflation by around 30 basis points.

Importantly, the effectiveness of the exchange rate channel improves under flexible exchange rate regimes. We also tested the strength of the exchange rate channel of monetary policy transmission by shutting down the exchange rate channel. The impulse response functions showed that the exchange rate channel is relatively stable in impacting inflation. However, its impact on growth is minimal.

Variance decomposition showed that variation in LSM growth was contributed by all the factors like exchange rate and policy shocks. However, variations in inflation were mainly driven by inflation inertia.

Our results passed all the relevant diagnostics, such as inverse roots of AR characteristics polynomial and serial autocorrelation tests.

These findings suggest that adopting a market-based flexible exchange rate by the State Bank of Pakistan will strengthen the effectiveness of the exchange rate channel of monetary policy transmission. Moreover, SBP measures to further liberalise foreign exchange controls would integrate Pakistan with the global financial system. Global financial integration also bodes well for the working of the exchange rate channel.

ANNEXURE 1

Table A1

Cross Correlations of Important Variables in Level

	LSM Index	Consumer Price Index	Policy Rate	NEER	World Food Price	US IPI	Federal Fund Rate	PSB	Global Oil Price
LSM Index	1								
Consumer price index	0.94	1							
Policy rate	-0.66	-0.62	1						
NEER	-0.94	-0.99	0.61	1					
World food price	0.80	0.79	-0.23	-0.79	1				
US IPI	0.82	0.83	-0.67	-0.84	0.50	1			
Federal fund rate	-0.57	-0.67	0.45	0.68	-0.57	-0.32	1		
PSB	0.87	0.97	-0.53	-0.93	0.82	0.69	-0.70	1	
Global oil price	0.88	0.79	-0.47	-0.84	0.84	0.71	-0.49	0.72	1

Except forthe policy rate and federal fund rate, all the variables are seasonally adjusted and in log form.
LSM: Large Scale Manufacturing, NEER: Nominal Effective Exchange Rate, IPI: Industrial Production Index, PSB: Public sector borrowing from the banking system, CPI is used with 10th lag while NEER is used with 6th lag

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Investigating Barriers to Growth of Disabled Entrepreneurs in India: A DEMATEL-based Approach

R. K. JENA

The role of creativity characterises entrepreneurship. Entrepreneurship as a topic is very frequently discussed in India. It is one of the influencing factors for India's modern social economy and prosperity. But all sections of the Indian population, particularly disabled people, are not very confident about self-employment through entrepreneurship. Encouraging them to opt for entrepreneurship as a career is a way to achieve faster economic growth. This study analysed the crucial barriers to growth in disabled entrepreneurship in India by applying the Decision Making Trial and Evaluation Laboratory (DEMATEL) method. The result showed that self-belief is the most crucial barrier to disabled entrepreneurs' growth.

Keywords: DEMATEL, Entrepreneurship, Disabled, India.

1. INTRODUCTION

The problem of social exclusion, structural unemployment, and wage differentiation are among other factors responsible for social parity in India. These social issues are required immediate attention from different stakeholders to find a long-term solution. One promising solution for these problems is the social economy and social entrepreneurship. It is a robust and complementary option for handling similar social issues. The concept of entrepreneurship is now gaining momentum in various countries. The Indian social entrepreneurship programs are now becoming popular due to government policies and schemes. Recently the Indian economy has been growing faster than many emerging economies in the world. In terms of purchasing power parity, India stands at the third position worldwide. Despite the remarkable economic growth, millions of the underprivileged are still deprived of jobs. Therefore, the focus of the present government is to promote inclusive growth and reach all sections of society, particularly people with disabilities. Now, people with disabilities are treated at par with general people to achieve inclusive growth in Indian culture.

'Disability' is a kind of impairment. It results in various types of difficulties in daily activities. Disability can be perceived as "An outcome of complex interactions between an individual's functional limitations and the social and physical environment. Functional limitations can arise from a person's physical, intellectual or mental conditions" (Gould, et al.

R. K. Jena <rkjena@imtnag.ac.in> is Professor, Business Analytics & Information Technology, Institute of Management Technology, Nagpur, India

2021). According to the National Statistical Office (NSO) survey report (2019), the overall percentage of persons with a disability was 2.2 percent.. These people are not getting enough support from society and the government. This is because there is a lack of political drive to address the disability issues, leading to improper resource allocation. The government and society have not done enough to solve the problem of disabled people.

In developing countries like India, disable people are being left out from full participation in social and economic life. Therefore, disability management strategies are needed to reduce the employment gap (Hutchinson, et al. 2021). The disability management strategies are also required to encourage and support their self-employment and entrepreneurial venture (Krüger & David, 2020; Shane, 2003). This paper aims to identify the main barriers to disabled entrepreneurs' in the Indian context. The study also examines mutual relations between barriers and the most prominent barriers concerning disabled entrepreneurs in India.

2. LITERATURE REVIEW

The concept of entrepreneurship is not new. It was first coined in the 1700s. The meaning of entrepreneurship is mainly connected with "self-employment." The entrepreneur is always willing to take risks of new businesses and earn profit. Researchers have emphasised the entrepreneur's role as an innovator. According to market demands, entrepreneurs develop new products or processes to fill the gaps. Entrepreneurial activities drive innovation and contribute to the economic growth of the country. Entrepreneur activities always introduce new and innovative products and services to the market. According to Gurses & Ozcan (2015), "Entrepreneurs are generally in the process of discovering, evaluating, and exploiting opportunities to create future goods and services." Further, Fels & Gedeon (2011) state, "Entrepreneurs must have leadership and management skills, interpersonal skills, negotiation and communication skills, and commitment to the task."

On the other hand, disability is considered a stigma in many developing societies. According to the United Nations Convention, "disability" is defined as "people having long-term physical, mental, intellectual, or sensory impairments." All these barriers hinder their participation in society and nation development equally with other ordinary people. One-sixth of the population in the European Union has a disability that ranges from mild to severe (Muñoz, et al. 2019). It means that around 0.8 billion people are being deprived of development due to different environmental and attitudinal factors. Unemployment is a severe problem for disabled people all around the world due to ecological and attitudinal barriers. Due to the unemployment problem among disabled people, poverty is higher than ordinary people across the globe. In India, the unemployment rate among disabled people is around seventy percent. To achieve India's growth targets, the government should provide employment chances to people with disabilities in the open labour market. The government of India has recognised this as a national problem and invited participation from all the stakeholders. The Union Minister for Social Justice and Empowerment is now very committed to the holistic empowerment of disabled people. Many special schemes under "Make in India" and "Start-up India" initiatives have been introduced to empower the disabled through education, rehabilitation, and employment. The National Action Plan (NAP) has provided a synergistic framework for people with disabilities. The significant objectives of

NAP are to improve employment opportunities for disabled people through proper vocational training. The government also encourages disabled people to start their ventures by providing seed money and adequate training through different schemes (Make-In-India, Start-up India, etc.). The eventual goal of all the steps is to provide them with livelihoods and independence.

All these discussed issues have led researchers to analyse the barriers disabled people encounter to starting a career in entrepreneurship. This is relevant because employers resist recruiting disabled people as they doubt their capabilities due to pure discrimination (Beisland, et al. 2016). Therefore, most people with disabilities look for self-employment as their main livelihood-generating activity. This is known as "necessity entrepreneurship" (Williams & Round, 2009). Wennekers, et al. (2005) argued that self-employment is very important for the disabled to reduce the employment rate and prevent social exclusion. Boldureanu, et al. (2020) opinioned that entrepreneurship can help the disabled move from unemployment to employment and self-efficacy.

Many such barriers should be addressed to create a conducive entrepreneurial environment for disabled people. Several studies have been conducted in different parts of the globe to explore the entrepreneurial barriers confronted by disabled people. These barriers can be classified as social and economic (Davidson, 2011). Maziriri, et al. (2017), in their study, found that lack of equipment and machinery are the most significant barriers faced by entrepreneurs with physical disabilities in South Africa. Ashley & Graf (2018) found that bureaucratic hindrances, fear of failing, lack of familial support, lack of motivation, and self-doubt are significant barriers to the self-employment of disabled persons. Maritz & Laferriere (2016) found three types of barriers, e.g., financial, personal, and societal, which hinder venture creation for the person with a disability. In their study, Caldwell, et al. (2016) explored the effect of motivational and attitudinal barriers on venture creation among people with disabilities in the USA. The findings showed that the stigma associated with disability and the fear of discrimination is significant attitudinal barriers for entrepreneurship. Kitching (2014) observed that difficulty in obtaining start-up financing, an unhelpful attitude of business advisers, and limited access to education and work experience are the main obstacles for persons with disabilities. In their study, Parker Harris, et al. (2014) revealed that asset accumulation poses an important barrier to disable entrepreneurs as they mostly rely on support from friends and family to start a business. Several studies have found that self-belief is the most significant barrier to entrepreneurs with disabilities. The environment sees them as incapable of creating and sustaining the business (Foster, 2010; Parker Harris, et al. 2014). Another vital barrier frequently faced by disabled entrepreneurs is the lack of seed money for the start-up. This may be due to the discriminatory attitude of banking and finance institutions (Boylan, et al. 2003). Further, the lack of appropriate business knowledge and skills in disabled people also creates barriers like lack of confidence, consumer market discrimination, and discriminating attitudes of business advisers (Parker Harris, et al. 2014; Pavey, 2006; Ranjan, et al., 2016).

In addition to the above-discussed common barriers, disabled entrepreneurs also encounter additional barriers specific to their physical disabilities and social environment. Most of these barriers are very deep-rooted in society and impose several restrictions on the disabled (Mohammed, et al. 2017)**.** Some of the essential barriers used in this study were summarised below:

Table 1

List of Significant Barriers

Barrier No.	Barriers	Description	Reference
B1	*Market Prejudices*	Market Prejudices mean attitude and discrimination that denigrates the economic role of products and services. It is a significant barrier for disabled people to access the open market. Market Prejudice limits disabled entrepreneurs' success.	Boylan, et al. 2003; Jones & Latreille, 2011
B2	*Business Contacts*	Entrepreneurship flourishes initially due to support from their business contacts. Disabled persons generally face various types of difficulties in creating and maintaining connections.	Angelocci, et al. 2008; Hoang & Antoncic, 2003
B3	*Access to Finance*	Access to finance is the most essential and crucial barrier to starting any new venture. The discriminatory attitude of banking and finance institutions toward disability creates barriers to entrepreneurship. Due to their stereotypes, lower employment rates, and lack of information on sources of grants, disabled entrepreneurs face more difficulties collecting funds for their ventures.	Boylan, et al. 2003; Foster, 2010; Gould, et al. 2021
B4	*Experience*	Disable people lack different experiences, e.g., management, legal and financial, due to physical challenges.	Shabanpour, 2021; Uddin & Jamil, 2015
B5	*Role Models*	The influence of the role model always plays a crucial factor in the successful life cycle of an entrepreneur. The unavail-ability of role models also creates an additional barrier to becoming an entrepreneur.	Kirkwood, 2009; Maritz & Laferriere, 2016; Martel, et al. 2021
B6	*Self-Belief*	Self-belief is a critical entrepreneurial skill for entrepreneurial success. Self-belief concerns how a person feels about his ability and confidence in their belief. A successful entrepreneur always depends on self-belief. The disabled person often experiences exclusion and rejection in a different dimension of their life, adversely affecting their self-belief. Therefore self-belief hinders their success in creating and managing a new venture.	Foster, 2010; Rizzo, 2002; Shabanpour, 2021
B7	*Government Support*	Government support is significant in creating a conducive environment for the entrepreneurial setup. The favourable environment to support disabled entrepreneurs can be infrastructure-related policies, legal framework, regulations, financing, and taxation issues. Without exceptional support on the above points from the government, it can be challenging to encourage disabled people to become an entrepreneur.	Kirkwood, 2009; Uddin & Jamil, 2015

3. METHODOLOGY

3.1. Development of Instrument and Data Collection

The main focus of this study was to identify and interrelate the barriers responsible for the growth of entrepreneurship culture in disabled people in India. First, the barriers were defined by literature and local experts' opinions. Due to the lack of literature support, the barriers were mainly based on the experts' recommendations. After the identification of barriers, a structured questionnaire was developed for further data analysis. The questions in the survey were framed according to the main objectives of this study. This study used a self-made five-point scale with the following scale items ('1' - "not significant", '2' - "somewhat significant", '3' - "significant", '4' - "very significant", and '5' - "extremely significant") . The detailed questionnaire is available in the appendix. Initially, twenty-five entrepreneurial development and education experts were contacted by phone, WhatsApp, emails, and direct visits during June–December 2019. The expert selection was based on the authors' convenience and personal contacts using purposeful sampling. Purposeful sampling is one of the preferred sampling techniques for DEMATEL-based studies due to the requirement for knowledgeable and experienced participants (Asadi, et al. 2021; Hsu, et al. 2013). Eleven out of twenty-five experts confirmed their participation in this study. The current sample size can be considered satisfactory (Mangla, et al. 2018). The experts' details are given in Table 2.

Table 2

Experts' Demographic Information

Category	Descriptions	Count
Educational Qualification	PhD	04
	UG & PG	07
Work Experience	5 to 10 Years	03
	11 to 15 Years	03
	16 to 20 Years	03
	20 Years and above	02
Gender	Male	09
	Female	02
Disability	Yes	03
	No	08

The experts were highly skilled professionals from academia, industry, and government officials. Overall, 11 completed questionnaires were collected. The mean scores of the barriers and their standard deviations are presented in Table 3. The mean value of all the barriers was more than 2.5. That means all the barriers significantly influence the growth of disabled entrepreneurship. Finally, the experts were requested to make changes (if any) to the list of proposed barriers; but, all the experts mutually agreed on the list of these seven barriers.

Table 3

The Mean Score of Barriers to Disabled Entrepreneurship

S. No.	Key Barriers	Mean	SD
B1	*Market Prejudices*	4.21	0.58
B2	*Business Contacts*	4.33	0.71
B3	*Access to Finance*	4.49	0.88
B4	*Experience*	2.98	0.76
B5	*Role Models*	2.91	0.88
B6	*Self-Belief*	4.11	0.40
B7	*Government Support*	4.19	0.54

The details about the DEMATEL techniques used in the study are discussed below**:**

3.2. Decision Making Trial and Evaluation Laboratory (DEMATEL) Technique

Most real-world problems deal with multiple data with different characteristics, e.g., some are objective or precise, and some are subjective or uncertain. Therefore, researchers have developed various statistical and non-statistical-based decision-making methods to model these complex real-world problems. Multiple-Criteria Decision-Making (MCDM) is one technique that has recently gained unprecedented popularity and a wide range of applications (Asadi, et al. 2021; Cinelli, et al. 2014; Velasquez & Hester, 2013). One of those methods, i.e., DEMATEL, was used to interrelate barriers to India's disabled entrepreneur's growth.

The DEMATEL method was first created at the Battelle Geneva Institute in 1971. The DEMATEL model helps solve the causality problems of a complex system that is difficult to comprehend or articulate. These techniques also help elucidate the causal relations among barriers (Shih-Hsi Yin, et al. 2012). DEMATEL has been a widely accepted tool for solving the cause and effect relationship among various variables having different evaluation criteria (Si, et al. 2018; Sumrit & Anuntavoranich, 2013). Many researchers also used this method to analyse and form the relationship between cause and effect among evaluation criteria (Shao, et al. 2016) or derive interrelationships among factors (Lin & Chang, 2009). DEMATEL method was chosen in this study due to the following characteristics:

- DEMATEL is more micro-oriented than other MCDM techniques, e.g., *Interpretive Structural Modeling (ISM) and* Analytic Hierarchy Process *(ANP).*
- DEMATEL helps to draw Causality among variables.
- DEMATEL helps to identify the priority among variables through the Network structure.

CRAN package 'dematel' was used to solve R's Decision Making Trial and Evaluation Laboratory Technique. DEMATEL process flow (Shane, 2003; Xie & Liu, 2019) is explained step-by-step as follows:

Step1: Opinion Matrix (Z)

The opinion matrix (Z) was calculated by taking an average of all the responses gathered from the different experts (Table 4).

Table 4

Opinion Matrix (Z)

	[B1]	[B2]	[B3]	[B4]	[B5]	[B6]	[B7]
[B1]	0.0	2.0	2.2	1.8	1.8	3.4	3.2
[B2]	2.0	0.0	3.4	0.0	1.9	3.4	1.4
[B3]	3.4	1.8	0.0	1.9	1.4	4.0	1.0
[B4]	0.0	4.0	3.0	0.0	1.4	4.0	1.0
[B5]	0.0	1.9	0.0	1.8	0.0	2.9	0.7
[B6]	0.0	0.0	1.9	1.8	0.6	0.0	1.4
[B7]	3.8	1.4	3.4	0.6	1.0	3.2	0.0

Market Prejudices (B1), Business Contacts (B2), Access to Finance (B3), Experience (B4), Role Models (B5), Self–Belief (B6), Government Support (B7)

Step 2: Normalised Initial Direct—Relation Matrix(D)

The normalised initial direct-relation matrix (D) was derived from 'Z' using Eqn. (1) and Eqn. (2) and shown in Table 5.

Table 5

Normalised Matrix (D)

	[B1]	[B2]	[B3]	[B4]	[B5]	[B6]	[B7]
[B1]	0.000	0.096	0.105	0.086	0.086	0.163	0.153
[B2]	0.096	0.000	0.163	0.000	0.091	0.163	0.067
[B3]	0.163	0.086	0.000	0.091	0.067	0.191	0.048
[B4]	0.000	0.191	0.143	0.000	0.067	0.191	0.048
[B5]	0.000	0.091	0.000	0.086	0.000	0.139	0.033
[B6]	0.000	0.000	0.091	0.086	0.029	0.000	0.067
[B7]	0.182	0.067	0.163	0.029	0.048	0.153	0.000

$$D = \propto * Z \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad (1)$$

Where

$$\alpha = min\left[\frac{1}{\max 1 \le i \le n \sum_{j=1}^{n} |z_{i,j}|}, \frac{1}{\max 1 \le j \le n \sum_{i=1}^{n} |z_{i,j}|}\right] \quad \ldots \quad \ldots \quad \ldots \quad (2)$$

Step 3: Total Relation Matrix(T)

The total relation matrix(T) was calculated from matrix 'D' by using $T = D(1 - D)^{-1}$). The matrix T is shown in Table 6 below.

Table 6

Total Relational Matrix(T)

	[B1]	[B2]	[B3]	[B4]	[B5]	[B6]	[B7]
[B1]	0.098	0.187	0.238	0.166	0.159	0.343	0.228
[B2]	0.170	0.077	0.255	0.081	0.150	0.309	0.140
[B3]	0.225	0.173	0.130	0.168	0.139	0.353	0.136
[B4]	0.089	0.257	0.257	0.176	0.136	0.349	0.122
[B5]	0.038	0.132	0.075	0.120	0.038	0.220	0.073
[B6]	0.046	0.052	0.145	0.119	0.062	0.090	0.098
[B7]	0.259	0.156	0.277	0.118	0.125	0.328	0.095

Step 4: Determine Prominence and Net Effect Values

First, calculate the sums of rows (R_i) & sum of columns (C_j) from matrix 'T.' Then the Promin-ence($R_i + C_J$) & Net Effect ($R_i - C_J$) values were calculated (Table 7).

Table 7

Row Sum and Column Sum Matrix

R_i	C_j	$R_i + C_j$	$R_i - C_j$
0.162	0.100	0.262	0.062
0.130	0.104	0.234	0.026
0.150	0.161	0.311	–0.011
0.168	0.052	0.220	0.116
0.055	0.054	0.109	0.001
0.032	0.321	0.353	–0.289
0.161	0.066	0.227	0.095

***Step 5: Threshold Value* (β)**

The threshold value (β) was calculated using $\beta = \frac{\sum_{i=1}^{n}\sum_{j=1}^{n} t_{i,j}}{N}$, where 'N' was the number of elements in matrix 'T.' The value of 'β' was calculated as 0.160. The elements in matrix 'T' were highlighted with higher values than 'β,' as shown in Table 8.

Table 8

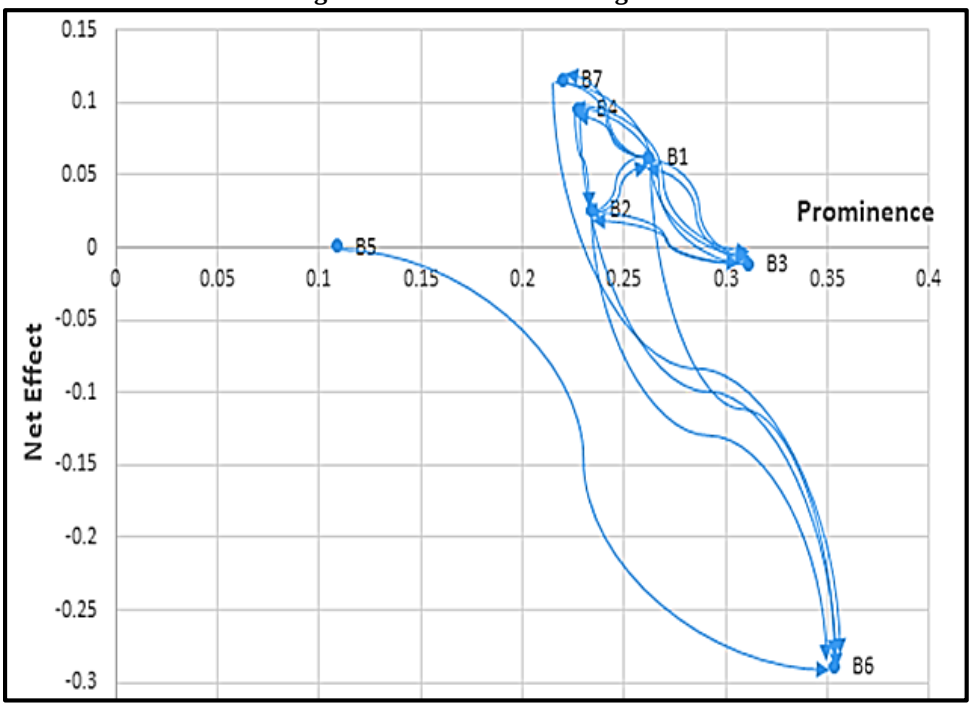
Identifying the Values More Than β

	[B1]	[B2]	[B3]	[B4]	[B5]	[B6]	[B7]
[B1]	0.098	**0.187**	**0.238**	**0.166**	0.159	**0.343**	**0.228**
[B2]	**0.170**	0.077	**0.255**	0.081	0.150	**0.309**	0.140
[B3]	**0.225**	**0.173**	0.130	**0.168**	0.139	**0.353**	0.136
[B4]	0.089	**0.257**	**0.257**	0.076	0.136	**0.349**	0.122
[B5]	0.038	0.132	0.075	0.120	0.038	**0.220**	0.073
[B6]	0.046	0.052	0.145	0.119	0.062	0.090	0.098
[B7]	**0.259**	0.156	**0.277**	0.118	0.125	**0.328**	0.095

Step 6: The Cause and Effect Relationship Diagram

To draw the cause and effect diagram, first, all the values ($t_{i,j}$) of Table 5 was scanned to find values greater than 0.160. Then all such values were connected, as shown in Figure 1. For example, the value of $t_{2,1}$ (0.170) > β (0.160), the arrow in the cause and effect diagram was drawn from B2 to B1 (Figure 1).

Fig. 1. Cause and Effect Diagram



All the relationships represented by a solid line, i.e., B1-B2, B1-B3, B1-B7, B2-B3, B3-B4, have a significant two-way relationship. Other meaningful relationships were shown in the figure (Figure 1), i.e., B1-B4, B1-B6, B2-B6, B3-B6, B4-B6, B5-B6, B7-B3, and B7-B6.

4. RESULTS AND DISCUSSIONS

The primary objective of this study was to identify and relate essential barriers to the growth of entrepreneurship among disabled people in India. The result of this study identified four significant barriers as net-cause barriers. These four barriers were Self-Belief (B6), Access to Finance (B3), Market Prejudices (B1), and business Contacts (B2). Experts viewed Self-Belief (B6) as the most crucial barrier with the highest prominence score (0.535) based on prominence scores. Therefore Self-Belief was one of the most significant impact barriers to the growth of disabled entrepreneurs in India, and it had a positive net effect on other barriers(Foster, 2010; Jones & Latreille, 2011). The barrier Self-Belief (B6) was also the one barrier having the most significant negative net-effect scores (–0.289). It implied that the other barriers must first be addressed to remove B6. It was also observed that the Access

to Finance (B3) influences other barriers, e.g., 'B1', 'B6', and affected by the barrier 'B1' and 'B4'. It indicates that to achieve Market Prejudice (B1) and self-belief (B6), disabled entrepreneurs need more financial access, which is assured from their entrepreneurial experience. The third prominent barrier found in this study was Market Prejudice (B1). However, Self-Belief (B6) was found to have the greatest' T' value on Market Prejudices (B1) (Table 3). It implies that improving the self-belief of the disabled entrepreneur can influence and increase market prejudices (Uddin & Jamil, 2015).

Furthermore, four barriers, Government support (B7), Experience (B4), Market Prejudices (B1), and business Contacts (B2) with a net-effect value over zero, became the most significant barriers in the context of entrepreneurial context (Figure 1). Except for Government support (B7), which generally has been assumed as the most significant barrier for disabled entrepreneurs, it was interesting to note that 'Experience (B4)' also has a powerful influence on other barriers. It was observed that Self Belief (B6) has the highest prominence value and has been significantly influenced by all other barriers. This means that before enhancing the self-belief, it is more critical to ensure that all other barriers are addressed well. Finally, considering the results from Table 3 and Figure 1, it was noticed that Self Belief (B6) has both high prominence and a positive net effect. Thus, it was concluded that improving self-belief is one of the best ways to enhance disabled entrepreneurial success.

Based on the above finding, all the stakeholders, e.g., government, and NGOs, should take the necessary steps to boost entrepreneurship among disabled people in developing countries like India. Detail of the suggestions and possible direction to different stakeholders concerning essential barriers are being discussed below:

Financial Support

Financial support is found as one of the net cause barriers for the disabled. Therefore, the government should frame policies to help disabled people through financial assistance, subsidised loans, and tax exemption. At the same time, all the stakeholders should open their communication channels to inform them about the various sources of funds and sensitise them regarding different funding agencies (Bernard, et al. 2006; Huang, et al. 2009).

Lack of Experience

Lack of experience was a prominent barrier that influenced other barriers in the hierarchy (Figure 1) to create obstacles for disabled people. Therefore, steps to improve their experience through proper entrepreneurial education and training are essential. The different agencies (government or private) should support them to gain entrepreneurship skills, which ultimately help the disabled people overcome their lack of experience. Proper awareness programs should be arranged to train them to identify the business opportunities, write business plans, deal with customers, and develop products/services. All the above steps may increase their chances of success.

Lack of Self-Belief

The research findings show that the lack of self-belief is the main barrier to the entrepreneurial success of disabled people in India. Different entrepreneurial awareness

programs are required to boost their self-belief (Uddin & Jamil, 2015). Therefore different agencies like government entrepreneurial cells, banks, and other related institutions should focus on confidence-building measures to overcome the barriers arising from lack of self-confidence. This will result in bridging the gaps between the agencies and disabled entrepreneurs.

Government Support

Government support is found to be the most affecting barrier to entrepreneurial development among people with disabilities. The Indian government acknowledges this issue by launching schemes like National Handicapped Finance and Development Corporation (NHDC). The NHDC scheme's objective was to encourage and assist disabled people in their entrepreneurial endeavors. The NHDC also helps disabled entrepreneurs by providing loans with easy terms and conditions. But few schemes can't solve the problem alone. Past studies have suggested that customised, one-to-one or small group-based assistance may help in-compared to generalised support (Arnold & Ipsen, 2005; Dotson, et al. 2013). Recently the government of India launched different schemes like Make-in-India, Start-up India, and Stand-up India to boost entrepreneurial culture among youths. All these schemes have special provisions for disabled people. The government of India is now playing a crucial role in developing technical skills among people with disabilities to ensure continual improvements. Assistive technology is becoming an important tool to improve disabled peoples' economic activities and participate in the mainstream economy (Angelocci, et al. 2008).

4.1. Study Implications

This study's result increases the possibilities of opening up potential fields of entrepreneurship research such as "disabled entrepreneurship," particularly in the Indian subcontinent. As evident from the finding of this study, self-belief and government policies, among other barriers, play a critical role in the entrepreneurial development of a person with disabilities. Therefore, governments could also play a significant role in supporting disabled entrepreneurs based on the crucial barriers found in this study. Another contribution of this study is that it prioritises the important barriers that create a huddle for disabled entrepreneurs in India. Since most of the entrepreneurial studies in India have focused mainly on entrepreneurship in general contexts, this research can be viewed as more specialised in this respect. Last but not least, this study contribution will strengthen the literature in the domain of disabled entrepreneurship in the Indian subcontinent.

5. CONCLUSION, RECOMMENDATIONS, AND LIMITATIONS

The study was conducted to identify interrelated barriers responsible for entrepreneurial success among entrepreneurs (disabled) in India. The DEMATEL technique was used to define the relationship between the barriers. The analysis showed the importance of the various barriers responsible for entrepreneurial growth among people with disabilities**.** Financial Support, Lack of Experience, Lack of Self-belief, and Government Support were among the critical barriers to the success of disabled

entrepreneurs in India. This study considered the views of industry experts and academicians for identifying and prioritising the barriers under study. On the other hand, the findings inferred in this study may not be consistent with other entrepreneurs in India.

5.1. Recommendations

Based on the findings of this study, the following recommendations are presented:

- There is a need for the government to develop a policy framework for disabled people that should enhance their participation in different schemes related to entrepreneurial activities.
- The Indian government should develop a substantial dedicated fund to facilitate the training and development required for entrepreneurial skill development among people living with disabilities. At the same time, government and other stakeholders should ensure that people with disabilities are engaged and benefit from entrepreneurial policy initiatives.
- There is a need for a total social paradigm shift in the general publics' stigmatisation of disabled people to accommodate them in the mainstream of society. This can be achieved through public awareness and the enactment of laws and regulations toward inclusivity and tolerance.

5.2. Limitations

This study is not free from limitations. Firstly, the observations from this study were highly influenced by experts' opinions based on their experience and knowledge of entrepreneurship in India. The finding of this study may be helpful in other developing cities/countries with some variations. Secondly, this research was limited to identifying and prioritising the various barriers for disabled entrepreneurs' in India. The observed significant barriers may further be evaluated to find their causal relations through other related techniques like Fuzzy DEMATEL/Grey DEMATEL/ ISM techniques. There is also a further scope to conduct a study to identify different success factors of disabling entrepreneurship in India. Further studies may compare and contrast various barriers and success factors to gain a profound impact of all these factors on disabled entrepreneurship. Therefore, the finding of this study could provide a valid prescription for policymakers to tackle different problems in the context of a disabled entrepreneur.

Appendix A. Questionnaire

Section A – Please choose appropriately:

1. What is your academic qualification?

(a) Under Graduate; (b) Postgraduate; (c) Ph.D; (d) If any other, please specify_____

2. What is your work experience (in years)?

(a) <5 ; (b) 5–10 ; (c) 11–15 ; (d) 16–20; (e) >20

3. What is your gender?

(a) Male; (b) Female

4. Do you belong to disable category?

(a) Yes; (b) No

Section B – Significance of the key barriers to the growth of disabled entrepreneurs in India

Rate the following key barrierss on a 5-point Likert scale ('1' - "not significant", '2' - "somewhat significant", '3' - "significant", '4' - "very significant", and '5' - "extremely significant")

(Please tick only ONE in each row).

		Ratings				
S. No.	Barriers	1	2	3	4	5
1	*Market Prejudices*					
2	*Business Contacts*					
3	*Access to Finance*					
4	*Experience*					
5	*Role Models*					
6	*Self-Belief*					
7	*Government Support*					

Section C – Contextual relationships between the barriers to the growth of disabled entrepreneurship

Kindly indicate the direct influence that a barrier has on other barriers, using an integer scale of "no influence (0)", "low influence (1)", "medium influence (2)", "high influence (3)", and "very high influence (4)".

Please do this exercise to fill (0/1/2/3/4) all the cells indicated below

Barriers	B7	B6	B5	B4	B3	B2
B1						
B2						
B3						
B4						
B5						
B6						

Market Prejudices (B1), business Contacts (B2), Access to Finance (B3), Experience (B4), Role Models (B5), Self–Belief (B6), Government Support (B7)

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Evaluating the Short Run and Long Run Impacts of Unconditional Cash Transfers on Food-Seeking Behaviour: New Insights from BISP, Pakistan

GHULAM MUSTAFA, NASIR IQBAL, and FAIZ UR REHMAN

We examine the impact of the cash transfer programme on food-seeking behaviour among ultra-poor segments of society. Food-seeking behaviour includes per adult's daily calorie intakes, food diversity, stable availability of food, and a composite index of food security. The empirical analysis is based on three rounds of panel household surveys (2011, 2013, and 2016) using the regression discontinuity design (RDD). The results have shown that BISP beneficiaries, relative to non-beneficiaries, have a higher level of calorie intakes. The cash transfer helps them diversify their food basket with stable food availability and improved food security level in both short and long-run periods. Moreover, BISP cash transfer increases access to quality food groups such as meat, fish, and fruits in the long run. These beneficial influences of the cash transfer reveal much stronger long-run impacts as compared to short-run effects. The findings of this paper provide helpful policy insights related to the importance of the cash transfer programme. The BISP cash transfer appears to be an effective social assistance programme that holds sustainable long-run effects on ensuring household food and dietary requirements through incomeand substitution effects.

Keywords: Food-seeking Behaviour, BISP Cash Transfer, Regression Discontinuity Design (RDD)

1. INTRODUCTION

We explore the impacts of the cash transfer programme, namely the Benazir Income Support Programme (BISP), on food-seeking behaviour among the ultra-poor in Pakistan. The standard microeconomic theory regarding consumer behaviour suggests that the positive income increases normal goods consumption. The Angel curve describes the positive relationship between income and consumption; specifically, households are more tending to spend a significant share of their income on food items (Almas, et al. 2019; Ibok, et al. 2019; Ren, et al. 2018; Gupta, 2009; Deaton, 1980). The low-income households are confined to demonstrating a low consumption pattern due to their budget

Ghulam Mustafa <gmpideian@gmail.com> is PhD Fellows at the School of Economics, Quaid-i-Azam University, Islamabad. Nasir Iqbal <nasir@pide.org.pk> is Associate Professor at Pakistan Institute of Development Economics (PIDE), Islamabad. Faiz ur Rehman <faiz@qau.edu.pk> is Associate Professor in Economics, School of Economics, Quaid-i-Azam University, Islamabad.

Authors' Note: The paper is heavily drawn from PhD thesis of first author titled "Essays on impacts of social safety nets in Pakistan: The case of BISP". The authors thank the Benazir Income Support Programme (BISP) for providing free of cost data for empirical analysis.

constraints. Financial constraint impedes them from meeting their dietary requirements, especially when they are exposed to the idiosyncratic and covariate shocks. Given the limited resilience of the vulnerable households, their consumption pattern is contracted, enhancing the probability of becoming chronic food insecure (Khan and Shah, 2011; Arif and Bilquees, 2007). Therefore, any assistance in the form of additional income would be expected to impact the consumption pattern of the poor households positively, ultimately supporting them to increase their food consumption to meet their dietary requirements. Such food security improvement comes across due to a positive income effect (Hameed, et al. 2021; Akbar, et al. 2020; Almas, et al. 2019).

The implementation of cash transfers (CTs) is considered the most prominent form of additional income, primarily provided to address the prevalence of hunger and poverty among ultra-poor households in developing countries (Bhala, et al. 2018; Handa, et al. 2018). The world has experienced a rapid increase in the provisions of cash transfer programmes (CTPs) as a policy option to achieve sustainable development goals (SDGs) because CTPs are found significantly contributing to poverty reduction (World Bank, 2017). In line with the global cash transfer trend, Pakistan launched the Benazir Income Support Programme (BISP) as its flagship programme to achieve consumption smoothening among the ultra-poor against negative economic shocks. Impact assessment reports and available literature regarding BISP have documented the positive and significant impact of the programme on food consumption due to the positive income effect, helping the beneficiaries improve their food security (Iqbal, et al. 2020; Mustafa, et al. 2019; GoP, 2014).

Like BISP, evidence from other social protection programmes for developing countries demonstrates that cash transfers have shown positive and significant impacts on poverty reduction and food security through consumption smoothing due to a positive income effect (Almas, et al. 2019; Masino and Nino-Zarazua, 2019; Cirrilo and Giovannetti, 2018; Asfaw, et al. 2017; Bazzi, et al. 2015; Attansio and Lechene, 2014; Angelucci and Giorgi, 2009). Various studies have used calorie intake, food consumption, and food diversity score as the food security indicators (Burgh, et al. 2018; Ahmed, et al. 2016; Ahmed and Farooq, 2010; Swindale and Blinsky, 2006). The results suggest that CTs are causing an increase in daily kilocalorie intakes among the beneficiaries (Bhalla, et al. 2018; Todd and Gregory, 2018; Hidrobo, et al. 2018; Whiteman, et al. 2018; Tiwari, et al. 2016; Miller, et al. 2011).

Most of the available studies focus on the influences of cash transfers on overall food security or food expenditures. Still, little attention is paid to the behavioural change of the beneficiaries as they receive additional income in the form of cash transfers. The question arises how do cash recipients substitute low-quality food items for nutritious food items? What food items are beneficiaries purchasing due to the positive income effect that emerges through cash transfer. The aforesaid questions lead to understanding the nature of the food-seeking behaviour of the beneficiaries.

The answer to such questions is partially missing in the literature. Likewise, most of the literature has ignored what happens with food-seeking behaviour over a relatively long period because poor households are highly exposed to covariate shocks, which may leave the impacts of CTs susceptible. Therefore, this study focuses on weaving up these mentioned questions, which are expected to contribute to cash transfers and food security

literature. We explore the short-run and long-run impacts of BISP cash transfers on households' food-seeking behaviour in Pakistan. The programme's design and coverage make it a considerably important case study to achieve the said objectives of the study.

For empirical analysis, fuzzy regression discontinuity design (RDD) has been implemented using three household panel data rounds (2011, 2013, and 2016). Estimated results suggest the positive and significant impacts of cash transfer on beneficiaries' food seeking behaviour—positive income effect encourages beneficiaries to diversify the basket of food items from low quality to higher quality food items, which brings about an increase in overall food security of the beneficiaries in both short-run and long-run periods.

The subsequent part of this paper is given as follows. Section 2 offers a discussion on the theoretical framework, while Section 3 entails programme design, description of data, and methodological framework. Section 4 is furnished with results and discussion. Finally, Section 5 concludes the whole study.

2. THEORETICAL FRAMEWORK

The theory of change supports the two objectives of the BISP cash transfer: short-term and long-term. The short-term objective is to support the poorest people against the adverse effects of food inflation. Nonetheless, long-term disbursement of the BISP-cash amount would allow cash recipients to plan desirable investments in food consumption, nutrition, health, and education. In return, such potential investment would help households to improve human and physical capital, which may graduate them out of chronic poverty (GoP, 2014). The available literature regarding cash transfers has shown the positive and significant impacts of unconditional cash transfers on household wellbeing (i.e., Villa & Nino-Zarazua, 2019; Ribas, 2019; Angelucci, et al**.** 2015; Fiszbein & Scady, 2009; Nawaz & Iqbal, 2020, 2021).

In the short run, the BISP theory of change suggests that cash transfers affect household expenditure: food and non-food expenditures. The medium-term impacts are expected to increase calorie intake and food diversification, ultimately improving the beneficiaries' nutritional status in the long run (Appendix Figure 1). Likewise, non-food expenditure enhances health utilisation and educational attainment in the medium-term; however, it may lead to morbidity and school progression in the long run.

Moreover, the linkages of the BISP cash transfer and household expenditure can be explored in consumer behaviour by Stone Gary's utility function as employed by Kamakura and Mazzon (2015). They proposed that the cash transfer disbursement could affect the budget constraint because additional income enables households to expand their budgetary allocation on food and non-food consumption. Specifically, a cash transfer programme is launched to target extremely poor households. It is also possible that targeted households splurge on more food and non-food goods. There may be an unanticipated shift in consumption preferences due to a budget change.

Kamakura and Mazzon (2015) suggest that the budget allocation model helps understand two different aspects of the consumption patterns of the beneficiaries of the programme compared to the non-beneficiaries. First, this model helps to understand how households spend discretionary income (cash transfer) on consuming food items to increase their calorie intake and nutritional status. Second, this model also helps

understand how poor households prioritise their discretionary income to multiple items, specifically food items. Moreover, this model allows us to compare the behaviour of beneficiaries and non-beneficiaries of cash transfers.

Following Du and Kamakura (2008) and Kamakura and Mazzon (2015), the underlying study transforms their model to the food expenditure to explore the linkage between BISP cash transfer and food outcomes among the beneficiaries. The household maximises direct utility function $G(c_i)$ over a set of j non-negative quantities $c_i\ (c_{1i}, c_{2i}, c_{3i}, \dots c_{ji})$ for all food consumption categories which are subject to budget constraint $p_c c_i = m_i$, where $p_c\ (p_1, p_2, p_3, \dots p_i) > 0$ is the taken for the prices of competing-categories of the food items, while m_i is total income. We use the following Stone Gary utility function:

$$G(c_i) = \sum_{j=i}^{j} \alpha_{ji} \ln(c_{ji} - \beta_j) \quad \dots \quad \dots \quad \dots \quad \dots \quad \dots \quad (1)$$

In Equation (1), $\alpha_{ji} > 0$ is indicating the household-specific taste parameter, which reflects the food consumption priorities for different categories with $(c_{ji} - \beta_j)$>0. This allocation household spends more on that category, which produces the maximum marginal utility per unit (rupee) such as $\frac{(\frac{\partial c_i}{\partial c_{ji}}) = \alpha_{ji}}{(c_{ji} - \beta_j)}$, while giving their current food consumption levels c_i and while until budget limit approaches to $\sum_{j=i}^{j} c_{ji} = m_i$. Likewise, Kamakura and Mazzon (2015), the study has specified this model directly on the value splurged on each consumption category by ignoring the prices. Originally this model explains that households' preferences are reflected through expenditure supported by the BISP theory of change. It is also assumed that poor households spend more on food items to meet their dietary requirements. Such dietary requirements increase the food security level of poor households through calorie intake and expansion of the food basket or food diversity.

3. THE PROGRAMME, DATA DESCRIPTION, AND METHODOLOGICAL FRAMEWORK

3.1. Programme Design

BISP is one of the most extensive social protection programmes in South Asia (Watson, et al. 2017). The government of Pakistan launched BISP to cushion the adverse impacts of food inflation in 2008. The BISP was designed to maintain the consumption smoothing of the ultra-poor households. Moreover, the programme's broader objectives were to fulfill the country's redistributive goals by disbursing the minimum level of cash transfer to the ultra-poor households, which is extended to over 5 million beneficiaries (GoP, 2016; Iqbal & Nawaz, 2019, 2021).

In the beginning, beneficiaries were selected through parliamentarians due to the unavailability of data and proper criterion about eligible people, which raises doubts about the transparency and effectiveness of BISP. In the second phase, the "Poverty Scorecard" survey, which is known as National Socioeconomic Registry (NSER), was conducted in 2009-10, which enables BISP administration to calculate

the poverty scorecard using Proxy Mean Testing (PMT) based on 23 socioeconomic predictors of poverty. To identify the eligible for BISP, a threshold of 16.17 was specified. Below this cut-off, those households are considered eligible, which have married women, with some exceptions.[1] These ever-married women must hold Computerized National Identity Card (CNIC). They must register themselves in local offices of BISP to be considered BISP beneficiaries (Ambler and Brauw, 2019; GoP, 2016). Initially, eligible households enrolled under BISP were given Rs. 3000 quarterly. However, the benefit level gets increases steadily. Currently, the BISP transfers are Rs. 6000 quarterly per family.

3.2. Data Description

Three rounds of household panel data, collected by Oxford Policy Management (OPM), to document the BISP impact assessment reports: baseline survey 2011, follow-up survey 2013, and follow-up survey 2016. A baseline survey is conducted from 488 clusters from 90 districts of four provinces, such as Punjab, Sindh, Khyber Pakhtunkhwa, and Balochistan. The baseline survey covers 8,675, while follow-up 2013 covers 8,221 same households available in the baseline survey. Some households were dropped during data cleaning due to missing and incomplete information from surveyed households, and we selected data for the base year 2011 is also 8221 households (GoP, 2014). In the follow-up survey in 2016, 11,395 households were surveyed, and out of these, 3,713 households were panel households with a baseline survey. These household surveys contain detailed information on the socioeconomic characteristics of the beneficiary and non-beneficiary (Ambler and de Brauw, 2019; Mustafa, et al. 2019). The sample distribution of the beneficiary and non-beneficiary households available in all three surveys is given in Table 1.

Table 1

Distribution of Sample Size

	Baseline Survey (2011)		1-Follow-up Survey (2013)		3-Follow-up Survey (2016)	
	Beneficiary	Control	Beneficiary	Control	Beneficiary	Control
Punjab	819	2198	802	2215	2397	1982
Sindh	1346	981	1303	1024	2235	1355
KPK	833	1075	820	1088	1635	1096
Balochistan	251	718	251	718	367	328
Pakistan	*4972*	*3249*	*5045*	*3176*	*6634*	*4761*
Total	8221		8221		11395	
Panel Households	–		8221		3713	

[1]These exceptions include households could receive cash transfer which have PMT score between 16.17 and 21.17 conditional on: (1) family containing at least one disable member, (2) presence of at least one senior citizen, and fewer than three members, and (3) households which have four or more children below 12 years.

The key limitation of the above-mentioned dataset is the attrition rate of households. The attrition of households is estimated at 10 percent in follow-up 2013, while almost 50 percent attrition rate in a follow-up survey of 2016 is observed compared to baseline survey 2011. Such a high attrition rate in 2016 has raised the question of the quality of the panel setting of these household surveys (Ambler and de Brauw, 2019).[2]

Due to the high rate of attrition in 2016, the study has utilized the following three settings of survey datasets as Ambler, and de Brauw (2019) have adopted in their study to estimate the impacts of BISP on labour supply in the long-run and short-run: (i) cross-sectional setting of the follow-up survey 2013 of the panel sample with respect to baseline 2011. This helps to investigate the short-run impacts of cash transfer, (ii) the cross-sectional setting of 3700 panel households with respect to the baseline survey, and (iii) the overall cross-sectional sample of the 2016 household survey. Ambler and de Brauw (2019) have used the 2016 survey to estimate the relatively long-run impacts of BISP on labour supply.

3.2.1. *Measuring Food Security*

A composite Food Security Index (FSI) is generated to capture food security's continuous availability and accessibility dimensions. Three indicators are combined to generate FSI: per adult Kilocalorie intake, food diversification, and the number of days food is available during a week. These three indicators are normalised to make indicators unit-free. Then, normalised variables are combined by adopting an equal weighting method. The resultant FSI ranges between 0 and 1. Values ing closer to 1 indicate more food secure a household is, and vice versa.

Kilocalorie intakes are computed using the food consumption module of surveys 2011, 2013, and 2016. Consumption of food commodities is converted to kilograms and liters. Then, the respective commodity is multiplied by the calories recommended in that food commodity. Per adult equivalent is measured by specifying weight 0.8 for less than 15 years and 1 for above 15 years old family members (Peng and Berry, 2019; Carletto, et al. 2013). This approach is widely used in Pakistan to measure per adult equivalent consumption (GoP, 2016; Iqbal and Awan, 2015).

These surveys capture the weekly consumption of 13 food groups. These include wheat, rice, maize, cereal, vegetables, fruits, meat (sheep & goat), beef, poultry, fish, milk and dairy products, eggs, and sugar. Consumption of these food groups determines food diversity. It helps to understand the consumption of quality food items. Food diversification is also measured by counting the 13 groups of food items (Kenny, et al. 2018; Drescher, et al. 2007).

Moreover, food stability is measured by the number of days food groups are available during a week, and the inclusion of this indicator determines the stability dimension of food security (Pangaribowo, et al. 2013). A detailed description of the variable construction is given in Table 2, while descriptive analyses of the variables are given Table 2. In sum, all these food security indicators determine thefood-seeking behaviour of BISP beneficiaries. The descriptive analysis is presented in Table 3 (see Appendix).

[2]See Appendix-B given the study conducted by Ambler and de Brauw (2019). They have tested the how attrition rate affect the results for same data and years of surveys.

Table 2

Brief Description of Variables

Variable Name	Brief Description of Variables	Unit
Treatment Variable	It takes a value of 1 for beneficiaries of BISP, and 0 for non-beneficiaries	Binary
	Outcome Variables	
Food Security Index (FSI)	An index is generated by combining weekly food stability, kilocalorie intake, and food diversity score. Values of index range between 0 and 1. FSI indicates a higher level of food security if values are closer to 1, and vice versa.	Index
Food Diversification	Counting 13 food groups gives a food diversity score for a household. The higher value of the score, the more food diversification.	Number
Kilocalorie Intakes	Kilocalories of consumed food commodities are multiplied by consumption of respective food items and divided by per adult equivalent score.	Kilogram
Food Stability	Food stability is measured by the average number of days access to all food groups in a week.	Days
	Control Variables	
Dependency Ratio	The ratio of non-working age groups (less<15+above 64 years) to working age group (15-64 years)	Ratio
Female Ratio	The ratio of total female members to total male members in a household	Ratio
Head's Education	Completed years of schooling	Years
Gender of Head	The binary variable takes 1 for male, 0 otherwise	Binary
Age of Head	Age of household head up to survey is being conducted	Years
Household Income	Total monthly income earned by all family members	PKR

3.3. Methodological Framework

3.3.1. *Identification Strategy and Relevant Issues*

As we have discussed earlier, the eligibility criterion of BISP cash transfer is based on the cut-off point of the PMT score, which makes BISP receipt non-random. To evaluate programme impacts, a simple comparison between treatment and control groups is not practical because it could confound the programme's effects with other systematic differences between beneficiaries and non-beneficiaries. The design of the programme is congruent with the implementation of RDD,[3] which provides a comparison between marginally ineligible and eligible households (above and below 16.17 PMT score). This design estimates the local average treatment effect (ATE) owing to its local nature,

[3]Regression discontinuity design (RDD) is a widely used method to quantify the impact of intervention. In RDD, probability of assigning treatment is conditional on observed covariate jumps discontinuously at the threshold, which induces variation in treatment assignment that assumed to be uncorrelated with potential confounders. It was firstly introduced by Thistlewaite and Campbell (1960). However, during last decades, a growing body of literature has implemented RDD to evaluate impacts of some public programmes (Imbens and Lemieux, 2008; Lee and Lemieux, 2010; Imbens and Kalyanaraman, 2012; Calonico, et al. 2016; Ambler and de Brauw, 2019).

covering households closer to both sides of the eligibility criterion (Ambler and de Brauw, 2019). Furthermore, it can be sharp and fuzzy RDD.[4] Nonetheless, as far as BISP is concerned, a fuzzy RDD seems more intuitive compared to sharp discontinuity because there are some households lying below 16.17 cut-off, but they are not receiving a transfer. Similarly, few households are lying above the eligibility threshold; however, they are receiving cash transfers. Such eligibility of households is because of some exceptions of eligibility of BISP. In this case, BISP poverty score is taken as instrument, which allows implementing fuzzy RDD empirical strategy. In line with other studies, this paper implements fuzzy RDD to evaluate the impacts of cash transfer (GoP, 2016; Ambler and de Brauw, 2019; Nawaz and Iqbal, 2020, 2021). The fuzzy RDD estimator employs a local linear regression, and it includes data-driven bias correction.[5] The estimator applies a triangular kernel for data included in regression analysis (Lee and Lemieux, 2010). The specification of the RDD is given as follows.

$$Y_i = \beta_0 + \lambda BISP_i + \beta_1(X - c) + \beta_2 BISP * (X - c) + \mu_i \quad \ldots \quad \ldots \quad (2)$$

Equation (2) suggests that Y_i represents the outcome variable such as per adult equivalent calorie intakes, food diversity score, stable availability of food, and composite food security index, while c represents the poverty score cut-off for BISP 16.17, and X is the continuous poverty score variable, and while BISP is a binary variable which takes value 1 if X ≥c, which also indicates the BISP cash transfer binary variable (treatment variable). Let h be the bandwidth of the data which indicates c-h≤ X ≤ c + h, which indicates the range of h, just above and below the cut-off of the BISP poverty score. For the empirical purpose, the underlying study has implemented fixed bandwidths 5 & 3, and optimal bandwidth is also used to estimate the robustness of the results. Due to bandwidths at threshold, RDD provides a local average treatment effect e.g. $BISP(for1) - BISP(for\ 0) = \lim_{\varepsilon \downarrow 0} E[Y_i|X_i = c + \varepsilon] - \lim_{\varepsilon \uparrow 0} E[Y_i|X_i = c + \varepsilon]$. In simple words average local treatment effect compares the average outcomes of treatment group with the control group at the threshold e.g. $E[Y_i(\text{beneficiries}) - Y_i(\text{controle group})|X = c]$. The specification indicates that the RDD approach holds internal validity, but it may fail to hold external validity regarding the programme's impact on outcome variables (Calonico, et al. 2018).

There are some assumptions regarding RDD: First, the identification assumption to implement RDD validates the differences between the outcome of beneficiaries and non-beneficiaries only reveal through BISP impacts. It demonstrates that the presence of systematic differences between these two groups do not vary discontinuously at 16.17, an eligibility poverty score cut-off. Ambler and de Brauw (2019) and GoP (2014) have found that this problem is not attached to BISP, because no other social safety net in the country uses the same eligibility threshold level. The second important task is to demonstrate discontinuity, which means that it should be confirmed whether BISP targeting is intended or not. If targeting is not intended, then applying RDD by using eligibility cut-off is invalid. The design of BISP targeting is intended due to the

[4] To see difference between sharp and fuzzy RDD can be reviewed from Lee and Lemieux (2010).

[5] To estimate fuzzy RDD, we implement "rdrobust" command using the STATA software. This implementation provides bias-corrected confidence intervals (CIs) for local ATE at specified threshold for both sharp and fuzzy RD as described by Calonico, et al. (2016).

specification of the cut-off (16.17). Thirdly, the manipulation of the forcing variable will invalidate the implementation of RDD. Logically, it seems very difficult because the PMT score is constructed based on 23 indicators which makes households unable to manipulate it. Individuals can only show themselves as poor, but it may take them very far from the cut-off point. Ambler and de Brauw (2019) have suggested that no evidence of manipulation around cut-off is found through the implementation of statistical tests. This study also estimated the impact of the probability of being a BISP beneficiary on socioeconomic characteristics in the base year 2011. The results indicate that the RDD implementation endorses this assumption's validation. A detail description of the application of this test is given in Table 4 (see appendix).

4. RESULTS AND DISCUSSION

4.1. BISP Cash Transfer and Households' Food-seeking Behaviour— Food Security Analysis

Table 5 comprises the short run (from baseline survey 2011 to follow-up survey 2013) impacts of BISP cash transfer on households' food outcomes, which are pursued by households' food consumption behaviour. The estimated results from robust RDD have suggested that BISP cash transfer has a positive impact on the food security index (FSI) for those households which are lying around the eligibility with a fixed bandwidth of 5 during the years of baseline 2011 to the follow-up 2013. It implies that recipients of BISP cash transfer tend to more consuming on food items, which ultimately improves, on average, the food security index of beneficiaries by 0.34 points as compared to non-beneficiaries of the programme in the short run.

To check the sensitivity of the findings, we have changed the fixed bandwidth from 5 to 3, which would further reduce the sample. The findings remain positive and statistically significant in the case of fixed bandwidth of 3, which demonstrates that those beneficiaries who are lying around fixed bandwidths of 3 are found to have much-improved level of food security index by 0.98 points as compared to the control group during 2013. These findings further imply that those beneficiaries who nearer to the threshold point are found to enjoy relatively higher level of food security. Nonetheless, in the case of optimal bandwidth, effects are not significant (Table 5).

Moreover, the study used a follow-up survey in 2016 as a relatively long period. It is discussed in section 3.2 that the follow-up survey will be used for only panel households and the whole sample separately. Table 6 suggests that BISP recipients are experiencing a higher level of food security at fixed and optimal bandwidths. In the case of both panel sub-sample of follow-up 2016 and its full sample, the impacts of BISP cash transfer are estimated to be positive and significant. And these impacts remain consistent in all fixed bandwidth (5&3) and optimal bandwidth around the cut-off point of the BISP poverty score, although the estimates are relatively smaller than the estimates of 2013.

The results demonstrate that RDD estimates of food diversity score (FDS) are found statistically insignificant at both fixed and optimal bandwidths. These results reveal that BISP transfer does not have impact on the food diversity of beneficiaries during baseline 2011 to the follow-up 2013 (see Table 5), while in the long run (follow-up 2016), the BISP cash transfer has positive and significant impacts on food diversity score

Table 5

BISP and Households' Food Outcomes: Cross Section 2013 (Panel Households)

	(1) Food Diversity Score (FDS)	(2) Daily Kilocalorie Intake	(3) Food Stability (FS)	(4) Food Security Index (FSI)
		Bandwidth (h)=3		
Bias-corrected RD estimate	–1.604	9.637*	1.259*	0.984**
	(1.077)	*(5.660)*	*(0.718)*	*(0.321)*
Sample size left of the cut-off		1936		
Sample size right of the cut-off		2134		
		Bandwidth (h)=5		
Bias-corrected RD estimate	–0.631	4.484**	0.589*	0.340**
	(0.441)	*(1.855)*	*0.3531)*	*(0.1730)*
Sample size left of the cut-off		2932		
Sample size right of the cut-off		2256		
	One common MSE-optimal bandwidth			
Bias-corrected RD estimate	–0.09519	–0.63105	.33623	.05918
	(3.2164)	(*2.3687)*	*1.0969)*	*(0.5309)*
Sample size left of the cut-off	938	896	937	944
Sample size right of the cut-off	906	843	865	912
Bandwidth (h)	1.337	1.240	1.318	1.368
Bandwidth bias (b)	2.195	2.092	2.171	2.171
Overall sample size		8159		
Sample size left of cut-off		5484		
Sample size right of cut-off		2666		

Source: Author's own calculations. Significance level *** p<0.01, ** p<0.05, * p<0.1.

Note: Standard errors are in parentheses. These standard errors are obtained by clustering PSUs. Baseline (year-2011) variables are controlled, which include log of monthly household income, female ratio, dependency ratio, gender of head, age and education of head, and baseline respective outcome variable.

by 17 percent to 20 percent among the beneficiaries as compared to the non-beneficiaries which are lying around 5 & 3 fixed bandwidths and optimal bandwidth as well (Table 6). It implies that no significant difference exists between treatment and control groups in seeking the food diversity score in the short run (during 2013), but strong statistically significant differences between both groups in seeking a food diversity score are found in the long run (follow-up 2016).

Another indicator of the composite food security index (FSI) is daily per adult equivalent kilocalorie intakes. RDD estimates for the short run indicate that BISP transfer contains positive and significant impacts on daily kilocalorie intakes at fixed bandwidths of 5 & 3, while insignificant at optimal bandwidth around poverty score cut-off (Table 5). Likewise, follow-up 2013, BISP cash transfer demonstrates the positive and significant impacts on daily kilocalorie intakes, which are estimated for both panel sample and a full sample of 2016. These positive and significant impacts are observed at both fixed and optimal bandwidths. The findings for long run imply that BISP cash transfer helps the beneficiary households increase their calorie intakes by 13 percent to 30 percent compared to non-beneficiary households (Table 6).

Food stability (FS), estimated by average days in a week availability of all food groups, is also used as an indicator of composite FSI. BISP positive and significant effects on determining food stability among beneficiaries compared to non-beneficiaries who are around fixed bandwidth at the poverty score cut-off (see Table 5). RDD results for the long run (see Table 6) indicate that BISP transfer has positive and significant impacts on the food stability of panel beneficiaries at fixed and optimal bandwidths around the poverty cut-off.

Table 6

RDD Estimation for BISP Cash Transfer and Households' Food Outcomes: Follow-up 2016

	Cross section follow-up 2016 (only panel sample)				Cross section follow-up 2016 (full sample size)			
	(1) Food Diversity Score (FDS)	(2) Daily Kilocalorie intake	(3) Food Stability (FS)	(4) Food Security Index (FSI)	(5) Food Diversity Score (FDS)	(6) Daily kilocalorie Intake	(7) Food Stability (FS)	(8) Food Security Index (FSI)
	Bandwidth (h)=3				**Bandwidth (h)=3**			
Bias-corrected RD estimate	0.176*** *(0.059)*	0.134** *(0.054)*	0.094* *(0.055)*	0.112*** *(0.016)*	0.061*** *(0.020)*	0.052*** *(.020)*	0.211*** *(0 .017)*	0.205*** *(0.006)*
Sample size left of the cut-off		781				3231		
Sample size right of the cut-off		651				3080		
	Bandwidth (h)=5				**Bandwidth (h)=5**			
Bias-corrected RD estimate	0.165*** *(0.049)*	0.301*** *(0.044)*	0.126*** *(0.045)*	0.090*** *(0.013)*	0.041** *(0.017)*	0.039** *(0.018)*	0.624*** *(0.015)*	0.251*** *(0.005)*
Sample size left of the cut-off		1228				4575		
Sample size right of the cut-off		998				4972		
	One common MSE-optimal bandwidth				**One common MSE-optimal bandwidth**			
Bias-corrected RD estimate	0.201** *(0.09138)*	0.026 *(0.067)*	0.136** *(0.069)*	0.096*** *(0.023)*	0.066** *(0.0318)*	0.062* *(.03379)*	-0.008 *(0.0251)*	0.214** *(0 .00921)*
Sample size left of the cut-off	400	497	466	357	1322	1059	1425	1386
Sample size right of the cut-off	342	419	372	299	1093	850	1215	1161
Bandwidth (h)	1.704	2.067	1.861	1.445	1.149	0.872	1.264	1.214
Bandwidth bias (b)	2.950	3.619	3.290	2.758	2.168	1.741	2.271	2.081
Overall sample size (HH)		3427				11322		
Sample size left of cut-off (HH)		2429				6351		
Sample size right of cut-off (HH)		998				4971		

Significance: *** p<0.01, ** p<0.05, * p<0.1

Note: Standard errors are in parentheses. These standard errors are obtained by clustering PSUs. Baseline (year-2011) variables are controlled, which include log of monthly household income, female ratio, dependency ratio, gender of head, age and education of head, and baseline respective outcome variable.

4.2. BISP Cash Transfer and Households' Food-seeking Behaviour— Choice of Food Items

The previous discussion has revealed the positive and significant influences of cash transfer on household food security, which is measured by calorie intakes, food

diversity score, stable availability of food, and composite food security index on the basis of aforesaid three indicators. But, this analysis does not explain how households' behaviour changes when they have to make choices regarding different food items due to BISP cash transfer. RDD implementation with a fixed bandwidth of 5 around the cut-off of poverty score indicates that, in the short run, BISP cash transfer significantly affects the weekly availability of rice, vegetables, meat, poultry, fish, milk, eggs, and sugar product. These findings substantiate that beneficiaries tend to consume more rice, vegetables, poultry, fish, eggs and sugar products compared to the non-beneficiaries during the periods of baseline 2011 and follow-up 2013, while a reduction has been observed in the consumption of meat and milk products in short run. Furthermore, RDD estimation indicates that wheat, maize, cereal, fruits, and beef products are statistically insignificant, which demonstrate that beneficiaries and non-beneficiaries of the programme contain insignificant difference in aforesaid food items in short run (Table 7).

While relatively long-run analysis demonstrates that beneficiaries of BISP cash transfer are showing tendency to increase the consumption of wheat, rice, maize, vegetables, meat, eggs, fruits, and poultry related products during baseline 2011 to the follow-up 2016, as compared to the non-beneficiaries. BISP cash transfer helps the beneficiaries to increase the fruits and meat products in the follow-up survey 2016 as compared to 2013. In contrast, cereal and milk products tend to be decreased by the beneficiaries even in the long run (Table 7). A similar trend in households' food consumption behaviour is estimated in the full sample of follow-up 2016 with additional households.

Table 7

RDD Application on the Availability of Different Major Food Group

	(1) Wheat	(2) Rice	(3) Maize	(4) Cereal	(5) Vegetable	(6) Fruits	(7) Meat	(8) Beef	(9) Poultry	(10) Fish	(11) Milk	(12) Eggs	(13) Sugar
Bandwidth=5	**Cross section of follow-up 2013 (panel sample)**												
RD estimate	–0.0429	3.865	0.5316	1.6785	5.5387	–1.680	-1.279	-0.112	1.135	1.665	–0.220	3.700	1.8886
	(0.821)	*(2.385)*	*(1.580)*	*(1.303)*	*(2.315)*	*(1.266)*	*(0.311)*	*(0.640)*	*(0.687)*	*(1.691)*	*(1.793)*	*(1.691)*	*(0.911)*
p-values	0.601	0.105	0.359	0.198	0.017	0.185	0.000	0.860	0.099	0.010	0.029	0.072	0.038
Left of cut-off	2918	2918	2918	2918	2918	2918	2918	2918	2918	2918	2918	2918	2918
Right of cut-off	2251	2251	2251	2251	2251	2251	2251	2251	2251	2251	2251	2251	2251
Full sample size	Total sample size=8120, Total sample left of cut-off=5467, Total sample right of cut-off=2623												
Bandwidth=5	**Cross section of follow-up 2016 (panel sample)**												
RD estimate	0.8603	1.2934	0.4583	–0.3818	1.1661	0.8307	0.0930	0.0793	0.2962	0.0631	–1.2131	0.7521	0.0424
	(0.265)	*(0.449)*	*(0.214)*	*(0.128)*	*(0.407)*	*(0.256)*	*(0.043)*	*(0.126)*	*(0.169)*	*(0.095)*	*(0.445)*	*(0.417)*	*(0.224)*
p-values	0.001	0.004	0.033	0.003	0.004	0.001	0.032	0.531	0.081	0.509	0.006	0.072	0.850
Left of cut-off	1227	1227	1227	1227	1227	1227	1227	1227	1227	1227	1227	1227	1227
Right of cut-off	998	998	998	998	998	998	998	998	998	998	998	998	998
Full sample size	Total sample size=3426, Total sample left of cut-off=2428, Total sample right of cut-off=998												
Bandwidth=5	**Cross section of follow-up 2016 (total sample size)**												
RD estimate	0.2016	0.3143	0.2412	0.0107	.0189	0.1311	0.0503	0.1339	0.1394	0.0773	-0.3933	0.4544	-0.0607
	(0.089)	*(0.194)*	*(0.090)*	*(0.054)*	*(0.163)*	*(0.099)*	*(0.018)*	*(0.042)*	*(0.062)*	*(0.041)*	*(0.153)*	*(0.145)*	*(0.054)*
p-values	0.024	0.107	0.008	0.842	0.908	0.186	0.007	0.002	0.025	0.060	0.010	0.002	0.266
Left of cut-off	4573	4573	4573	4573	4573	4573	4573	4573	4573	4573	4573	4573	4573
Right of cut-off	4972	4972	4972	4972	4972	4972	4972	4972	4972	4972	4972	4972	4972
Full sample size	Total sample size=11325, Total sample left of cut-off=6353, Total sample right of cut-off=4972												

Note: Standard errors are given in parentheses, which are adjusted for clusters in PSUs. Baseline household characteristics are used as covariates such as *gender of head, age of head, education of head, log of monthly household income in the baseline survey, female ratio, and dependency ratio*

Aforesaid results conclude that: (i) beneficiaries of BISP cash transfer have experienced the increase in diversification of food items, (ii) the positive income effect due to BISP cash transfer helps households to shift their food intakes from standard food items to more nutritious food items such as fish, meat, beef, and fruits, and (iii) long-run impacts are much stronger and significant as compared to the short run impacts of the BISP cash transfer because in short run programme beneficiaries are not showing the higher level of fruit and meat consumption. Finally, a decrease in milk products is continuously observed amongst the BISP cash-receiving households in both the short and long run.

5. CONCLUDING REMARKS

Cash transfers are among the important policy tools to combat poverty and food insecurity in developing countries, including Pakistan. Pakistan launched the BISP as a national cash transfers programme to address poverty and food insecurity. This study investigated the short-run and long-run impacts of unconditional cash transfer programme on food-seeking behaviour as measured in food diversity, quality, and access among the deprived segments of the society in Pakistan. The empirical analysis is based on three rounds of panel household surveys using the Regression Discontinuity Design (RDD). Three rounds were conducted in 2011, 2013, and 2016. The RDD with data-driven biased correction in CIs is implemented by specifying fixed and optimal bandwidths at the eligibility cut-off.

The estimated results show that BISP cash transfer has positive and significant impact on the level of food security among recipients of cash transfers in both short- and long-run periods. Similarly, results obtained by RDD reveal positive impacts of cash transfer on food stability and daily kilocalorie intakes in both periods; nonetheless, long-run effects are found much stronger among beneficiaries. Findings regarding impacts on food diversity score showcase insignificant impacts in the short run; but significant effects in the long run (follow-up 2016) are estimated. Further results highlight that BISP beneficiaries are increasing consumption of quality food products such as meat, fish, and fruits along with vegetables and rice products in the long run. Results obtained from comparing the mean difference of food outcomes validate results obtained through implementation of RDD empirical strategy except findings regarding food diversity score for the short run. A simple mean comparison without using regression analysis indicates a significant difference in food diversity score between both follow-up 2013 and baseline survey 2011.

Findings of this paper provide useful policy insights related to the importance of the cash transfers programme. The BISP cash transfer appears to be an effective social assistance programme that holds sustainable long-run effects on ensuring household food and dietary requirements through income and substitution effects. Therefore, it is suggested that government should continue this programme and extend it up to the nutrition-specific outcomes for ultra-poor households to meet their dietary requirements.

APPENDIX

Table 3

Summary Statistics: Base Year (2010-11)

	(1) Beneficiaries	(2) Non-beneficiaries	(1)-(2) Mean difference	p-value
Daily per adult Kilo calorie intakes	1972.304	1985.122	-12.818	0.525
Food diversity score	5.510907	5.586911	-0.076004	0.109
Food security index	0.383569	0.391563	0.007994	0.568
Household size	7.587253	7.093875	0.493378	0.000
Dependency ratio	1.207877	1.382223	-0.174346	0.000
Female ratio	1.190612	1.192214	-0.001602	0.938
Unemployed ratio	1.762281	2.003495	-0.241214	0.000
Head age	45.0531	46.40717	-1.35407	0.000
Head education	2.007157	2.468231	-0.461074	0.000

Table 4

Household's Demographic Variables in Baseline 2011

	Head gender	Marital status of head	Head education	Dependency ratio	Family size
		Fixed Bandwidth 5			
RDD Estimate	-0.465	-0.0872	-0.279	-0.073	0.565
S.E	(0.621)	(0.216)	(0.309)	(0.065)	(0.723)
Sample size right of poverty score	985	985	985	985	985
Sample size left of poverty score	1220	1220	1220	1220	1220
Household asset variables in baseline-2011					
	Own house	Has Mud-house	No. of rooms	Has toilet	Livestock ownership
		Fixed Bandwidth 5			
RDD Estimate	0.074	0.014	0.034	0.078	0.089
S.E	(0.079)	(0.065)	(0.027)	(0.073)	(0.087)
Sample size right of poverty score	985	987	983	981	984
Sample size left of poverty score	1218	1218	1220	1216	1218

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Key Takeaways from Lectures & Panel Discussions

Compiled by

IDREES KHAWAJA

IFTIKHAR AHMAD

SAMAN NAZIR

ZEHRA GARDEZI

and

FAHD ZULFIQAR

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Commentary

Presidential Address

Opportunity to Excel: Now and the Future

NADEEM UL HAQUE and DURR-E-NAYAB

Availability of opportunities implies that people have a range of life options, specifically economic, to pick from, and have a realistic chance to adopt what they want to do and succeed in it. For Pakistan, where nearly sixty percent of the population is aged under 30 years, opportunities become even more significant. The fact that we live in a world where technology is changing the way things are done at an unprecedented pace makes it very easy for those not keeping up to be left far behind, without opportunities.

Is Pakistan offering such opportunities to its people to take up and excel? Is the country doing what needs to be done for its population to excel in the future?

I. OPPORTUNITY NOW

Youth Unemployment

The reported unemployment rate of 6.9 percent is considered comfortable and frequently makes headlines. Far more females and those living in urban areas (7.9 percent) are unemployed than their male and rural counterparts (6.4 percent).

- A large part of the working-age group is not part of the labour force (79 percent female, 68 percent male, and 55 percent in total). These people are either discouraged workers or have other means of income to support them that they do not need a wage. The former is more likely, especially for males. Despite policy initiatives, the female labour force participation rate (LFPR) remains shockingly low (79 percent). The socio-cultural reasons seemingly continue to deter females from participating in the labour force.
- It takes about a decade or more for youth to be employed. All cohorts reach the national average at about the age of 30. Both males and females at a younger age have a higher probability of unemployment till 30s. Between ages 20-29, female unemployment is, on average, between 20 percent-14 percent.
- Over 31 percent of the youth with degrees, including professional ones, are unemployed, with females at 51 percent and males at 16 percent. Rural graduate unemployment is much higher than urban, begging the question of mobility.

Nadeem Ul Haque <nhaque_imf@yahoo.com> is Vice Chancellor, Pakistan Institute of Development Economics, Islamabad. Durr-e-Nayab <nayab@pide.org.pk> is Joint Director, Pakistan Institute of Development Economics, Islamabad.

Paid and Unpaid Labour

- It is believed that unpaid labour is confined to agriculture and in rural areas only. Data tell otherwise. Although more prevalent in agriculture, unpaid labour can be found in all industries, including manufacturing, construction, transportation, and retail. Likewise, the phenomenon is present in urban areas as well. Unpaid labour is, thus, prevalent across all industries in both rural and urban areas. Another indication of a lack of opportunities for quality jobs.
- Of the paid labour, the quality of jobs for both males and females needs consideration. The average monthly wage is below the minimum wage despite the males working longer than the average duration for a full-time worker. The females work slightly less than the average full-time work week but get paid much lower than the minimum payment.
- Services remain the largest employer, with retail and wholesale trade the largest segment in the urban areas, while agriculture continues to employ the majority in rural Pakistan. Surprisingly construction employs about 8 percent of the labour force in both urban and rural areas reflecting the harsh regulatory and zoning laws in urban areas that PIDE research has been highlighting (Haque and Nayab, 2006; Haque and Nayab, 2007; Haque, 2015; PIDE, 2020a, 2020b; Ali, 2020).

Urban Areas and Jobs for the Youth

Do urban areas provide more lucrative jobs, especially to those educated? The trends clearly show signs of a highly regulated market or a mismeasure of urban and rural areas given that no significant wage difference shows up in the average wages across the two regions, specifically for those with no or little education.

In PIDE we have pointed out that (Arif, 2003; Haque and Nayab, 2007; Haque, 2013, 2016, 2020):

- The urban definition used in the census and government surveys does not adequately capture cities or city populations and their boundaries.
- Cities are heavily regulated to create bureaucratic sludge lowering productivity and wages.
- The LFS seems to point to a need to study and understand our labour and product markets more carefully, as PIDE has been pointing out for years. Why are the urban areas not providing the kind of opportunities they should?
- The LFS shows that one-third of the youth, in rural and urban areas, are disconnected from the system as they are neither employed nor enrolled. The disconnect is higher for young females, with 60 percent neither working nor studying. Socio-cultural norms, encouraging early marriage and childbearing, and reluctance to be in the labour market contribute to this trend.

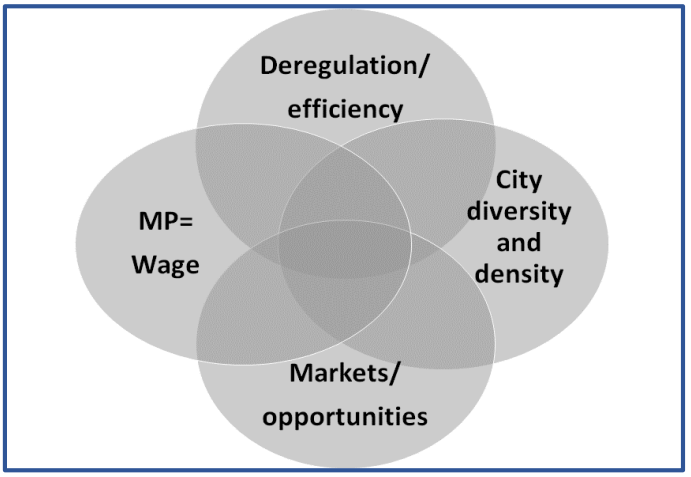
II. WHERE ARE WE GOING WRONG?

- Social infrastructure (spaces for performance, sport, intellectual and cultural activities in communities) along with the requisite organisation (leaders and competitive structures for nurturing talent) need to be given priority in the policy.

- Individuals perform best and are the happiest through achievements and finding their true potential. Self-actualisation is desirable, and policy and governance must give it some priority.
- Talent is normally distributed in all societies, but it requires social "hard and soft" infrastructure to be realised. Such infrastructure must seek to set up a competitive structure for talent (e.g., competitions like a spelling bee, math marathons, and the like) in all areas. For too long, this has been neglected.
- The focus on mere education without complementary activities restricts opportunities and starves talent. In the past, universities had extracurricular activities which have been starved over time to the detriment of well-rounded, ambitious students. The policy must move beyond education to incentivise capabilities of all kinds (Sen, 1997).
- The policy is too focused on traditional sectors and has a mercantilist approach (Haque, 2006). Either it encourages agriculture and industry, and within those exports, or it thinks of entrepreneurship only as quick profits.

III. CREATING OPPORTUNITIES

As per the PIDE agenda, following nexus has been detailed to articulate how opportunities can be created.



(1) Sludge (excessive regulation and documentation) is preventing the growth of firms, investments, and entrepreneurship. The government's footprint is large, crowding out investment and economic activity (Haque and Ullah, 2020). The government processes are cumbersome, and the regulatory space for investment is also severely lacking.

(2) PIDE RAPID (2021) and the FEG (2011) note the country's lack of market development. Markets are mere competitive devices. To allow all forms of competition to happen, the government must foster creative regulatory frameworks.

(3) Opportunities abide from street/sidewalk economy to the corner store, neighbourhood businesses, shopping malls, entertainment, leisure spaces, and many more. This is contrary to our city master planning, where flyovers, roads

and excessive zoning and height restrictions encourage a soul- and opportunity-killing sprawl. The current trend needs to be reversed.

(4) According to LSF, a relatively small proportion of the labour force seems to be employed in construction. Despite the PM's pronouncements on increasing construction activity, the emphasis seems to be on sprawl and road construction. This means that city space for opportunity remains limited. The whole approach toward construction needs rethinking. The current sprawl with the limited public, community, commercial, and entertainment space offers no opportunity to youth. Denser, instead of sprawling, should be the idea around which cities are developed.

(5) The talent-focused opportunity approach will allow creativity and entrepreneurship to flourish everywhere. Eventually, a network of activities will be developed, and many new and fresh activities will emerge. GDP will increase as we connect with more global supply talent and knowledge networks. In one calculation, GDP is merely a sum of all earnings. As new activities are allowed to happen and even fostered, GDP will increase, creating further opportunities.

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Quaid-i-Azam Lecture

Institutional Development

ARSHAD AHMAD

Transdisciplinary Approaches

None of the challenges and issues we confront in society, including the pandemic, can be solved from a single disciplinary lens. Once we see these challenges through a transdisciplinary lens, the underlying structures and systems start to reveal themselves. So far, most educational institutions use traditional approaches focused on fragmented, discipline-focused knowledge to address issues and challenges. First, let's admit that traditional approaches have not worked as intended, and most interventions to counter social issues have barely made a difference.

Transdisciplinary approaches are the highest level of disciplinary interaction. It goes beyond *multidisciplinary* approaches where disciplines provide several perspectives on a particular issue or problem. For example, bringing together economists, humanists, and scientists to solve a problem. Transdisciplinary approaches go further than *interdisciplinary* approaches, which involve multidisciplinary experts in defining the problem and integrating their respective frameworks to generate solutions. According to Klein,[1] *transdisciplinary* approaches not only integrate disciplines in a comprehensive framework but also require collaboration between different sectors of society and multiple stakeholders to address complex issues. Transdisciplinary approaches are a process; they are not a means to an end.

A good example of transdisciplinary approaches is how universities strengthen centres of excellence. Their strength is derived when faculty break entrenched disciplinary silos and blur internal departmental boundaries. Another example is when centres reach out through cross-disciplinary programmes that directly engage communities.[2] This appears to be what PIDE is doing.

Centres are often defined by "what" questions that guide their research agendas and the challenges that define their work. They evolve by asking what choices are we willing to make today? By addressing the "why" questions, Centres reveal their philosophical stance, which tends to frame the interventions they deploy.

For example, the seminal work of Sen and Mahbub ul Haq, and Elinor Ostrom, expanded the lens of economics to include broader philosophical and anthropological notions of human development. Their focus was on the richness of human life and human capability, where development is a means rather than an end.

Arshad Ahmad <arshad@lums.edu.pk> is Vice Chancellor, LUMS, A Not-For-Profit University, D.H.A. Lahore Cantt.

[1]Klein, J.T. (1996). Unity of knowledge and transdisciplinarity: Contexts of definition, theory and the new discourse of problem solving. In International Encyclopedia of Life Support Systems (EOLSS, UK). See: http://www.eolss.net/sample-chapters/c04/e6-49-01.pdf

[2]See for example, the REACH programme at the University of Toronto's Monk School of Global Affairs.

Human Development

Approaches that value merit, integrity, and resilience are likely to be sustained. One such approach is found in a comprehensive study on youth development that the United Nations Development Programme commissioned in Pakistan.[3] The said report highlights the student's confidence in teachers, which is a positive aspect. Therefore, more than anyone else, teachers deserve our encouragement, our support, and our appreciation.

Ecological Approaches

Let me introduce a different set of philosophical assumptions to describe another (prospective) intervention that speaks to experiential learning. Vision of ecological development is summarised as "*A living mosaic of gardens on a sub-continental scale in the 21st century in which intelligent machines act as companion gardeners to wisdom, to preserve and enhance the quality of human life in line with cultural, aspirational and spiritual traditions."* This provides a different epistemology to address the grand challenges of our time considering renewable energy, food security, and environmental preservation.

Intellectual Development

Pedagogically, the *Perry Schema for Intellectual and Ethical Development*[4] provides yet another theory of change underlying the learning and teaching exchange we are planning in Skardu. Perry proposed that college students journey through at least four major stages of intellectual and moral development: from *dualism*, where first-year students want to hear "right and wrong" answers, to *multiplicity*, where different perspectives are explored, to *relativism*, where "it all depends" as positions become relative, to *commitment* when students have the confidence to commit to holding positions on issues that matter.

The ruptures in development are caused by periods of confusion and sometimes failure, which one can also interpret as necessary conditions for shifting perspectives. The Perry Schema can also be used to design assessments that better measure coincides with where students are at in their development. More recently, the work of Carol Dweck[5] on fixed and growth mindsets brings fresh insights into how intelligence can be developed through embracing challenges, persistence, effort, feedback, and inspiration (See Figure A).

Policies, Cultural Systems & Leadership

Perhaps the difference between successful and unsuccessful policies rests on the underlying traditions, which shape habits of the mind that comprise the cultural mindset of the department, school, or institution. Generally, faculty find themselves preserving their

[3]Najm, A., Bari, F., & Ahmad, S. (2017). Unleashing the potential of a young Pakistan. National Human Development Report. United Nations Development Programme.

[4]Perry, William G., Jr. (1970), Forms of Intellectual and Ethical Development in the College Years: A Scheme (New York: Holt, Rinehart, and Winston); reprinted November 1998; Jossey-Bass; ISBN: 0787941182

[5]Dweck, C. S. (2014). Teachers' mindsets: "Every student has something to teach me." *Educational Horizons, 93*(2), 10–14. https://doi.org/10.1177/0013175X14561420

micro-cultures whereas leaders find themselves in broader meso or mega cultures, which they try to change.

Cultural systems where leadership values merit and integrity tend to reinforce hard work, risk-taking, and innovation. As these values become pervasive, development tends to flourish. On the other hand, despite identical policies in another system, leadership that reinforces conformity and avoids challenges tends to reinforce a culture of perversion. This might partly explain why national education policies in Pakistan, exacerbated by weak leadership have produced such a culture. This also explains why we see a proliferation of meaningless research, plagiarism, fake and predatory journals, spurious authorship, certification without education, senseless systems for admissions and recruitment, and unreliable and manipulated university rankings.

We have often heard the refrain that "culture eats strategy for breakfast". However, when policies and leadership produce perverse systems, repackaged interventions do not stand a chance. The reform agenda must dismantle fixed, deterministic systems. It must encourage questioning and creative thinking. It must balance social inclusion and yet maintain high expectations.

One big step to get started would abolish and replace the archaic point system of recruitment with best practices followed in the rest of the world. Recruit new faculty, Heads, Deans, VCs, and Commissioners with a developmental and growth mindset. Ensure they are accountable for accomplishing meaningful outcomes. Give them sufficient time to change underlying structures and systems.

Another step is to expect leadership to share power and responsibility while making transparent how scarce resources are being allocated given the hard constraints the institution finds itself in. Finally, an unwavering commitment to values such as merit and integrity does over time evolve into a different cultural mindset.

Impact

Impact assessment is not only important for determining whether we are making a difference but is also situated within institutional demands for transparency in developmental interventions. As focus shifts on outcomes-based education and there is greater demand for accountability in higher education, the need for impact assessment will become even greater.

As mentioned, while a few programs succeed at measuring impact well, most leave the assessment to chance. Christopher Knapper, a colleague and educational guru in Canada said the following about educational development: "…in terms of effects on higher education practice, we would earn at best an A for effort, but probably a D for impact…".[6] If we wish to improve and develop "significant and meaningful descriptions of what and how [our] work makes a difference … we should [not] be exempted from exploring for ourselves and others the impact of our work".[7] To provide a roadmap to measure impact, we developed a practical "how-to" guide containing a step-by-step process to systematise what you may already be doing on an informal basis.

[6] Knapper, C. (2003). Three decades of educational development. *International Journal for Academic Development,* 8(1–2), 5–9.

[7]Weimer, M. (2007). Intriguing connections but not with the past. *International Journal for Academic Development, 12*(1), 5–8.

Invited Lecture: Key Takeaways

Evolution of Technology and the Driving Forces

SAYIED ATIQ RAZA

Narrating his own story of struggle, the speaker informed the audience how he kept switching jobs during the earlier part of his career to climb the ladder. Next, he opted to become a venture capitalist and launch startups of his own. Instead of sticking to one firm and one business, he would sell a dying firm and buy stakes in an emerging one making money in the process. The lesson in his story is that to make a career, one must struggle, work hard, and take calculated risks. Above all, to be a successful entrepreneur, one must keep an eye on opportunities and seize these when they arise.

The lecturer emphasised the importance of changing semiconductor technology. The turning point in this regard was the development of microprocessors. The initial drivers were Word Processing and Computer Games. Word processing was the Business Driver Wang Labs and BusiCom. Games were the driver of Consumer Use. Then came Apple, which opened the door to manifold technological evolutions.

Digital transformation for business is the integration of digital technology into all areas resulting in fundamental changes to how the business operates and how they deliver value to customers.

Massive computing technologies are used in analysing data and machine learning. The pioneers of modern machine learning come from psychology, defense, and figuring out ways to look at processes and phenomena by the power of vision. Image recognition technology and cognition were the founding thematic areas of research for machine learning. It is predicted that machine learning will advance to the level that it will be indistinguishable from the human brain.

China is on the path to global technology dominance. China's digital payments market is today 50 times larger than that in the US.

The rise of FinTech in Banking is the result of three mega-trends: Artificial Intelligence, Blockchain Technology, and Cloud Computing. But there are challenges in adopting FinTech due to several risks, including technical, regulatory, and cyber security

The ability to understand, dissect and raise questions comes from having complete knowledge which comes from reading—developing ideas and putting these to practice successfully calls for serious reading.

Sayied Atiq Raza is Executive Chairman, Virsec Systems, California.

Sir Syed Ahmed Khan Lecture: Key Messages

Pakistan Must Position Itself to Benefit from AI, Automation, and Bio-engineering or Risk Losing Out

MAHBOOB MAHMOOD

Technology is progressing very rapidly and becoming central in our lives. It took IBM over 20 years to develop a program to beat the reigning chess master of the time. It took three years to develop a computer champion of the 300 times more complex Chinese game the 'Go'. Then it took only seven months for a computer AI program, developed with no knowledge of the game or its rules, to beat the old 'Go'.

An AI-based program, which is purely local, has been developed to help children learn. The program is called "Parhai Buddy". We need to realise that AI, automation, and bioengineering are all coming together soon, and Pakistan must position itself to benefit or risk losing out. What we see today in terms of work, education or learning is changing rapidly. The drivers of the change are:

- Artificial Intelligence
- Automation
- Bio-Engineering

If an office clerk gets a file on the table, undertakes the required paperwork, and processes the administrative cycle daily as a matter of routine, then the AI can assess a repeated pattern of clerks' daily tasks and perform those repeated "predictable" tasks much more efficiently and effectively than the clerk can. AI's ability to perform repeated tasks better than humans will change the future of work for blue-collar and white-collar jobs.

More specifically, the greater the predictability of the tasks involved in a job, the greater the chances of replacement of human beings with machines. For example, a doctor with a patient sitting in front, waiting for a diagnosis of his/her illness, recalls similar previous cases, based on textbook knowledge or his/her personal experience. The computer using AI can look through the history of millions of similar cases stored in the database to make decisions—human beings (Doctors) having limited cognitive abilities can recall only a few cases, whereas the computer can process millions of such cases in a flash of a second—this gives AI an edge in diagnosing illness. Doctors' job being diagnostics is predictable and therefore replaceable with AI. However, a nurse's job being physical care of the patient, as per the patient's need, is less predictable and is therefore not easily or is at least not fully replaceable.

In the future, there will be no long-term singular full-time jobs. The job eligibility criteria are changing—many multinationals, instead of asking for specified degrees and experience, focus on the skill set, work attitude, creativity, and ability to learn new things.

Mahboob Mahmood is CEO, Knowledge Platform.

Pakistan exports significant unskilled manpower overseas. Our export of manpower could be adversely affected as the skillset demanded may change with greater use of technology and AI. For instance, drivers will be replaced by safer AI driving systems. Therefore, four key areas need our attention to prepare for the changing nature of work and skill set. These include:

- Autonomous Learning
- Language
- Future of work
- 21st Century Skills

The traditional model of learning through mentors and teachers is undergoing a change—reliance on human mentors would reduce and they would be replaced with cell phones, computers, and the internet. The role of the mentor would remain as a mere facilitator rather than a teacher. In sum, the learning process would become 'autonomous'.

If we look at the top ten richest persons in the world, then eight of them happen to be connected to the technology business in one or the other way. This clearly suggests that the future will be different both in terms of the nature of work and the workplace, especially with reference to AI. To keep up with the changing nature and pace of work, one must take learning into one's own hands—self-learning and planning for growth are equally vital. Youngsters may utilise help and guidance from teachers, schools, and universities, but they must do it on their own.

In the future, the skills that would matter include effective communication, collaboration, critical thinking, problem-solving, creativity, networking, and innovation in products and services.

Learning the global language i.e., English, is exceedingly critical with all due respect to the national languages. Given that about 45 percent of the material on the web is in English and Chinese, it is important to learn these languages to excel in any field, be it research, business, AI, etc. It is said that those who don't learn from the past ought to repeat it; similarly, those who don't study the future are destined to miss out on it therefore it is essential to prepare for the future—the future of the world is the future of every individual.

The correct, productive, and effective use of mobile phone devices is very important. All the knowledge of the world is accessible through mobile phones. Use it the right way to learn new skills, technology, AI, and of course, the English language on your own - "you may not be interested in Artificial Intelligence and Automation, but Artificial Intelligence and Automation are interested in you, so you either accept it and use it to grow yourself or take the 'Universal Basic Income".

Invited Lecture: Key Takeaways

Is Pakistan Ready for the New Normal

HANS TIMMER

Two important questions need to be addressed today—One, is there a new normal, and if yes, what it is? And two, if there is a new normal, is Pakistan ready for it?

Based on World Bank's research and experience in other countries, yes, there will be a new normal and the years ahead will be different from what we have experienced in the past. The answer to the second question is that Pakistan is not fully ready yet for that new normal. Yet, Pakistan has a great potential to benefit more from the new normal relative to the gains secured in the past.

It is noteworthy that the world was never the same again after every major global crisis. In fact, each crisis contributed to the development of new technologies, helping to make important changes to the world's economic power. Each time, new policies were framed and followed to address new problems or take seriously old problems paving the way for new solutions.

What we experience during a major crisis is that established firms suffer losses and sometimes shut down. This creates an opportunity for new firms to emerge, this is how creative destruction happens. When such changes occur in economic paradigms, economists come up with different kinds of models to address emerging issues.

For example, after the 1930's great depression, the world was never the same again. Before the 1930s, governments were spending roughly 6-7 percent of GDP, but afterward, the governments started to spend around 35 percent of GDP under the new normal. There was this new paradigm under Keynesian economics which realised that governments had a big role to play in stabilising the economy. As a result, such a great recession never happened again.

Similarly, another oil crisis during the 1970s and 1980s also led to a new normal – capital controls and inward-looking policies, being incapable to adjust to major relative price changes, were given up in favour of openness - Latin America gave up import substitution, Europe integrated into financial markets, and China opened up.

Then, in 2008, the global financial crisis occurred, and again the same happened. Following the crises, new developments occurred in the existing financial sector. Cryptocurrency like Bitcoin and Blockchain appeared just after the crisis. Similarly, the gig economy and digital platforms like Uber and Airbnb emerged. Next, digital technologies completely changed the way commerce is taking place now.

Now we have Covid-19, and it is reasonable to reflect on the questions such as what will be the next change. To answer this question, we must understand the problems that countries face and the emerging solutions. These changes will define the new economic structure, which will comprise the new normal.

Hans Timmer is Regional Chief Economist for South Asia, World Bank.

One lesson from the Covid-19 pandemic is that countries, including Pakistan, were unprepared to absorb such a huge natural crisis. The social safety nets were not in place in all countries, especially for the population falling in the middle-income category. In many countries, the healthcare sector had no buffers, so the healthcare system collapsed. Even regarding macroeconomic policy, there was a lack of evidence on how to react to a sudden supply shock.

Pakistan did quite well under difficult circumstances to react to this shock, especially the interventions of the central bank deserve credit. There was an extension of social protection in Pakistan that put a limit to the shock. Nevertheless, it was something new that policymakers had to react to. Now building up resilience to external shocks will be part of the new normal.

There are some other risks, for example, climate change risks, having low probability but high impact. So far, many were inclined to dismiss the risk because of the low probability, but now we have seen the magnitude of such a shock on an economy and the people. So, we tend to take it much more seriously, and it will be part of the new normal.

A second lesson from this pandemic is that the impact of shocks in the face of inequality became much more apparent. Inequality has always been there, but it deepened during the crisis. The pandemic did not hit everybody in the same way. The middle-class people working in the formal sector were able to observe social distancing. They also often managed to work from home, thus enjoying income security. However, a large segment of the population was hit much harder than the formal sector.

About 80 to 90 percent of the people had no opportunity to observe social distancing, and they often did not have a reasonable opportunity to access healthcare and sanitation. They had no safety nets, and they lost their job. This segment of the population was hit harder. Furthermore, there was greater inequality in terms of gender, which we saw worsening. Now even when jobs are returning, evidence suggests that males manage to take up the returning jobs first, with women seen at the end of the line. These are certainly new issues that must be addressed, and countries are trying to address these. Hence, fighting inequality will be much more a part of the new normal than the old normal.

The third and last lesson of the crisis, and the most consequential one for future growth in Pakistan, is the emergence of new technologies - now we can work from home, and for this to happen at a greater magnitude, the internet and the communication systems are a necessity. In South Asia as well, there has been a huge shift towards e-commerce platforms because it is much safer to get the products delivered to your home than to go to the shops. Hence, the information system will be part of the new normal. In the new normal, there is a much more dominant role of services in the economy. World Bank has just published a report that argues that services-led development is now an option in South Asia and in Pakistan, and this is important for Pakistan.

Therefore, the new normal is inevitable, and the world will be different because new problems and new solutions have emerged from the governments, in the market sector, as well as in technologies. Now the question is Pakistan ready for the new normal? As far as the resilient part is concerned, it can be said that Pakistan is ready because the majority have a consensus that certain risks are intolerable and must be addressed. This is especially

true for the climate change debate, which everybody understands, can no longer be ignored. For Pakistan, macroeconomic instability is a major issue because, obviously, a country being dependent on fossil fuel imports is at risk. Therefore, policies that reduce the dependence on fossil fuels will also help in achieving macroeconomic stability. The same is true for the subsidy reforms that are never easy to do.

However, the inequality must be addressed in a sustainable way. The use of instruments such as subsidies or price controls though can help in the short run but at the same time, it distorts the economy and haunts it. The point is that just transfers, subsidies, and price control are not the ultimate solution. To reduce inequality, it is important to provide access to markets and finance to the large group of people in Pakistan that are not part of the formal sector. This would require a rethinking of economic policies.

Finally, the services sector is part of the new normal. The development in the IT sector has increased the productivity of the services sector. It also unleashes the potential, especially in the informal sector, by providing the home-based workers with the platforms to sell not only in the domestic market but also overseas for better prices. So, it is important to open up the informal sector because it has great potential for Pakistan.

To reflect upon more, Pakistan has a comparative advantage in services. Pakistan has never been successful in manufacturing, not to the extent that we can witness for other developing countries. The curve that indicates the relationship between income per capita and share of services has shifted upwards, meaning that at every level of development, the share of services is now higher than it used to be. If we plot the same curve for Pakistan, it is way the curves of other countries. Hence, Pakistan enjoys a comparative advantage in services; however the policies are geared towards the services sector.

Pakistan seems to be stuck in a bad equilibrium. There is a relatively small formal sector (industry) with relatively few big corporations, and they are well protected against competition. There are already many import restrictions, with even greater demands for more restrictions. Firms in the formal sector have almost exclusive access to commercial banks, they are well connected, and they feel comfortable in the space. Their exports and their production are not diversifying. On the other hand, countries like Vietnam not only are growing faster, but they are also much more transformative and moving up the value chain.

On the other hand, there are outsiders that do not have access to markets, those who do not have the kind of access that the big corporations have, and do not have access to financing and hence find it very difficult to be productive. Big corporations actually benefit a lot from the system because they not only use formal labour but they also employ even more informal labour because it is cheaper. This means that a dual system is a kind of equilibrium, and it tends to perpetuate itself. Pakistan has a great opportunity to start thinking about how productivity in the informal sector could be increased as part of the new normal.

To summarise, yes, there will be a new normal. The service sector of Pakistan is in its infancy with huge potential. Besides manufacturing, Pakistan needs to focus on this sector to unleash its true potential.

Mahboob ul Haq Lecture: *Key Takeaways*

Technology, Globalisation and A Need for A New Model of Development

DANI RODRIK

The transformations in the current global context—including the need to create opportunities for young people - force us to think of a new development model – There is a shift in patterns of structural transformation that has made the traditional model of development less relevant today.

The standard model of structural transformation divides the economy on a sectoral basis - agriculture, manufacturing, and services. It suggests that as development occurs, there is a movement of resources—particularly labour, from low productivity / traditional agriculture to urban occupations that are more formal and organised. In the course, of this transformation, the economy experiences a significant increase in overall productivity– which is essentially the engine of growth in the standard story of structural transformation/model of industrialisation. As the economy grows, there is a further movement towards services—the tertiary sector expands, but this deindustrialisation only occurs after a certain (economic) maturity has been reached and does not bring too many challenges for development *per se*.

However, what is happening in many developing countries today is very different not only from the standard industrial model but also from the experience of the 'miracle economies' like Japan, Singapore, South Korea, and, more recently China. What is being witnessed instead is a weak process of industrialisation whereby the movement of labour out of the countryside is towards informal services. The process of urbanisation is not necessarily associated with increases in productivity because these informal services are not just precarious but also have relatively low productivity. To the extent that there is growth in manufacturing, the bulk of it is concentrated in small scale, low technology, informal, and thus low productivity parts of manufacturing.

Therefore, the two key trends that undermine the traditional model of development are (i) premature deindustrialisation, and (ii) dominance of informality within manufacturing. Examples of successful industrialisation are Taiwan & Vietnam, where the rise in total manufacturing employment is followed closely by the rise in informal employment. In contrast, the recent experience of industrialisation in Ethiopia and Tanzania shows a rapid increase in manufacturing employment but few gains in informal employment.

Employment growth within manufacturing is concentrated in the small and informal firms with the worst productivity performance. On the other hand, productivity growth is concentrated in large firms that do not absorb a lot of workers. Such patterns of *manufacturing dualism* being witnessed in developing countries are very worrisome since,

Dani Rodrik is Professor at John F. Kennedy School of Government, Harvard University, USA.

ideally, it should be the high productivity firms that should be expanding and absorbing employment.

Standard explanations of dualism in developing countries (ranging from the market or government failures to high labour costs, restrictions on firms' entry and, exit, and poor business environment) do not fully explain the dichotomy. The puzzle isn't that there is poor productivity performance—**there is a segment of firms that is ,exhibiting good productivity, but the puzzle is that they are not generating high employment.** One explanation would be that these firms are using capital-intensive modes of production.

However, in a labour-abundant country, it is surprising that the gains in productivity would come entirely through capital deepening—which should be kept in check due to relative factor prices. Recent research by the speaker suggests that what is happening in terms of the technology choices of the larger firms is essentially a consequence of a global technological change. Production within manufacturing has progressively become more capital intensive (less reliant on low-educated and low-skilled labour), and larger firms in developing countries (competing with global firms) are increasingly forced to employ technologies that are skill-intensive—despite the abundance of low-skilled labour in their countries.

The technological changes in manufacturing have been biased against low-skilled labour. If we observe the incidence of employment by different skill groups in manufacturing—low, intermediate, and high, we see that the entire decline in employment in the share of value-added in manufacturing is accounted for by the decline in the share of the low-skilled labour. This is a global technological trend that has a significant consequence for comparative advantage to a developing country because the technological changes are biased against the factor of production (low-skilled labour) that the low-income countries are most abundant in.

There is a process of global technological innovation, but it is biased against low-skill labour. It pushes costs of production down only for capital-intensive technology. In world markets, global prices for capital-intensive technology fall. Firms in developing countries cannot compete while using labour-intensive technologies and are forced to adopt capital-intensive technologies and end up producing a lower quantity.

The consequence of such biased technological change for a developing country occurs in the form of a triple-negative shock on employment prospects. First, there is a reduction in output because the change in technology has reduced the country's comparative advantage. Second, because the production technique has become more capital intensive, there is an additional loss in employment. The third is the dynamic effect of a reduction in employment elasticity to positive productivity shocks. This occurs because the production structures now in place have a steeper cost curve due to scarcity of capital and components to capital (e.g. skills). The dynamism of employment when the economy is doing well (when there is positive profitability) is lower. As a result**, the prospects for industrialisation-driven growth have become much weaker** across the world for developing countries.

What then is the alternative to this standard model? We may begin by considering the reasons why industrialisation is a potent engine of growth, to begin with. One is the process of productivity dynamics—that historically there has been an unconditional convergence in the formally organised manufacturing to the productivity frontier. Second,

traditionally manufacturing had the ability to absorb labour and there were few supply-side constraints to manufacturing because of the "reserve army" of relatively low productivity workers. Third, the absence of demand-side constraints—the size of the home market was not a constraint. Alternatives may exist within agriculture and services, but it is difficult to identify the sector that may fulfill the historical role of manufacturing.

Opportunities for productivity increase in agriculture exist, but it will not be a labour absorbing sector. The high productivity and tradable sectors (IT, finance, insurance, business outsourcing) have the right technological characteristics but are also very skill intensive and so may not absorb as much labour. Employment opportunities in services are relatively low productivity and are in the non-tradable sector. These opportunities will eventually run into demand-side constraints and will not be as potent an engine of growth as tradable services and tradable manufacturing can be.

Where will the good (productive) jobs come from? Instead of focusing on the most productive and most competitive firms (traditionally export champions) which are oriented toward the world market, developing countries may need to work with small firms that are producing for the home market. This will require a mix of interventions both on the demand and the supply side of the labour market to build firm capabilities. Industrial policy should focus on promoting higher quality jobs in small and medium-sized firms through employer-linked training policies, wage subsidies, customised business incentives, etc.

In thinking about a development strategy, growth policy and social policy have become one and the same. It is not possible to have growth without creating productive jobs and expanding the middle class. At the same time, structural factors behind poverty and social inequality cannot be addressed without creating good jobs for relatively low-skilled workers.

Allama Iqbal Lecture: Key Takeaways

Opportunities in Khyber Pakhtunkhwa

TAIMUR SALEEM KHAN JHAGRA

Typically, we do not think big enough and do not try to make a change or put to practice a big idea - this seems to be one of the reasons why Pakistan, despite all the potential, has not grown the way other countries have.

Here are the highlights of the initiatives of the KP government during around four years of political tenure. The key to growth, prosperity, and improving the job market is the availability and better use of financial resources. Recognising this, the province focused on increasing its revenues through the KP revenue authority—the province emphasised building its revenue-raising capacity by shifting control of the revenue authority from the excise department to the finance department, and by having new leadership at the helm in the Authority. Thanks to reforms introduced, the revenue generated by the KP revenue authority has increased manifold—from Rs.10 billion to Rs.27 billion in three years, which reflects significant growth. Just the revenue from sales tax on restaurants increased four

Taimur Saleem Khan Jhagra is Finance Minister, Khyber Pakhtunkhwa.

times during the last three years. Similarly, there is revenue growth from the Board of Revenue (from land transfer fees) and the Excise department.

The increase in tax revenue was achieved despite reducing the rates by increasing the tax base. The province tried to create this overall tax cycle where the government delivers services to people, and people reciprocate by contributing to the government. The distribution framework guarantees that local revenue is spent in the area from where it is generated so that people can readily see the effect of their contribution.

Several initiatives were taken to further improve governance. A new local government system has been launched, with powers devolved up to the village level. Issues, like absenteeism of teachers and doctors, especially in remote areas, have been addressed, and reforms have been implemented in the police department. Moreover, an innovative project like the 'Billion Tree Tsunami', was launched which has been now scaled up to the national level.

Bringing the change was not easy as the country faced multiple challenges— besides the overall economic crisis that the country faced, there was this once-in-a-century pandemic that wreaked havoc with the daily routine and business activity.

Following the focus on revenue growth, the province also rationalised the spending by prioritising the development spending. The provincial government revisited the development schemes and dropped projects worth Rs. 200 billion by establishing the right priorities – the money saved has been diverted to the high-priority projects. It is the political government that conceived the idea of rationalisation and made it happen.

The non-salary spending in the province has increased by almost 60 percent in the last two years (2020 & 2021), and this has started to show impact in the form of BRT service, better; roads, hospitals, and schools. The government also wants to cause a change in the job market, and attracting the PIDE's conference to Peshawar was one of the important steps to introduce new ideas in this context.

Universal health coverage is a flagship project of the province whereby any person can have indoor hospital treatment to the extent of Rs. 1.0 million. With universal health coverage, the province has transformed both healthcare delivery as well as the health insurance industry. This has created a competitive environment for public and private hospitals as well as shown the way how the health service delivery may spread across the province over the next couple of years.

M.L Qureshi Memorial Lecture: *Key Takeaways*

New Frontiers in Behavioural Science: Scarcity, Nudge, Sludge and Social Norms

Cass Sunstein

Sludge—excessive time consumed in performing a task—imposes a burden on society. Administrative burdens, reporting requirements, paperwork requirements, waiting time, in-person appearances, and much more operate as a kind of an essential between

Cass Sunstein is Professor at Harvard Law College, Harvard University.

human beings and something that connects their life. Sludge imposes time-tax (opportunity cost), monetary cost, and psychological costs upon society. There should be a sludge audit to quantify the magnitude of such costs—knowledge of the sludge magnitude would provide the basis for the efforts aimed at sludge-reduction

One of the many ways to reduce sludge would be to nudge people into doing something. Nudges, however, are a function of human behaviour, therefore, it is important to understand human behaviour regarding what motivates a person to do something or refrain from another. Human beings suffer from cognitive scarcity, and they have a limited processing capacity in their mind. If we are sick, elderly, or suffering from incapacity, the cognitive ability will be reduced further. We have spent a great deal of time debating economic scarcity over the last hundred years. Now, we need to spend a great deal of time in the next hundred years debating cognitive scarcity.

Reducing sludge or encouraging people to do something calls for change in human behaviour. Knowledge of the emerging social norms is important in changing behaviour—the knowledge that people are increasingly wearing masks, increasingly driving safely, increasingly worried about the environmental impact of their behaviour, or increasingly stopping smoking—such knowledge can influence change in human behaviour. To influence behaviour in the intended direction suitable knowledge must be widely shared with the targeted group.

Here are some examples of human behaviour that policymakers may use. If people are enrolled automatically in a savings program with an option to opt-out, this increases the participation rate dramatically relative to when people are asked to enrol themselves. Evidence from North America suggests that if poor students are asked to enroll in free meal programs at school the enrolment rate is low. However, if they are enrolled automatically the participation rate increases significantly. People spend more than their debt limits or do not pay their debts timely—a law that introduces consequences for exceeding debt limits or not paying timely has helped reduce debt tremendously. Evidence also suggests that the automatic enrolment of people in cleaner energy programs has the consequence of reducing greenhouse gas emissions significantly.

Human beings are Imperfect choosers, and this fact is manifested in five principle behavioural findings. These are:

(1) Unrealistic optimism
(2) Present bias
(3) Status quo
(4) Limited focus
(5) Imperfect risk assessment

Unrealistic Optimism. Optimism has benefits, but unrealistic optimism can lead to adverse consequences including consequences for health, safety, and the economy. For example, evidence suggests that 90 percent of the drivers feel that they drive safer than the average driver. 94 percent of the professors feel that they are better than the average college professor. And perhaps 100 percent of the people believe that their sense of humour is better than the sense of humour of the average person (though we do not have evidence on this). This kind of unrealistic optimism can create health, safety, and economic problems.

Present bias. Human beings suffer from the 'present bias' i.e., they tend to focus on today and tomorrow but do not focus on farther into the future—the future, in fact, tends

to be a foreign country that most people are unlikely to visit. If people focus only on the 'present' and not on the 'future', they can make decisions that can, for example, impair their health, or if people are suffering from poverty, with the present bias, they may not do enough to improve their lives.

Inertia/Status quo. Human beings also suffer from Inertia. This means that the status quo has a lot of force—if we can make a decision that would change our life for the better, quite often, we may not make that decision due to the magnetic force of the status quo.

Limited focus. Out of the assortment of things that one could see, each of us sees only a subset— if while sitting in a room, we are listening to a lecture—though a number of things could be happening in that room the audience might be focusing on the lecture only—though focusing on a specific thing at a point in time is good, but for a consumer making choices regarding what to buy or a student choosing what to study or an employee making choices, what to that day, the limited focus could mean that people may ignore something that affects their welfare.

Imperfect risk assessment. Human beings may accord higher or lower probability to the occurrence of an event depending on whether the event which drives the risk perception has happened or not in the recent past. Human beings' perception of risk might be lower if an event has not occurred in the recent past, and this lower perception could drive action or non-action and hence be a source of a problem.

Nudges are behavioural responses to the sources just described above. The central characteristic of nudges is that they preserve the freedom of choice. A GPS device is a nudge—it tells you a certain route which you may like less than your familiar route, and you can decide to take your familiar route, but still, the GPS device is immensely helpful—it can tell what route you may take and while allowing you to override the suggestion.

Empirical work on nudges is being discussed using the FEAST framework. The 'E' in the FEAST stands for 'easy'. In essence, it says that to change behaviour, make it 'easy' for the people to go through the process of change. For example, to increase acceptance of the Covid-19 vaccine, make it easy for people to get vaccinated. The same goes for quitting smoking, encouraging savings, enrolment in a health plan, or getting an education. One way to increase participation is to make it automatic i.e., enroll all and then allow people to opt-out if they do not want to continue. Evidence suggests that such automatic enrolment increases participation by as much as 26 percent—however, there is no evidence that such automatic participation is effective— i.e., if people are made to sit in a lecture, they may not essentially learn from such a lecture. Therefore, the better nudge is to make it simpler rather than just automatic.

'S' in the FEAST framework stands for 'social'. A social norm is a powerful knowledge. Telling people that most people are doing something virtuous encourages others to do likewise. Similarly, telling people that only a small proportion of people are practicing deviant behaviour helps in restraining people from doing things that are considered socially bad. For example, in one country, telling the doctors that our country tops the list of countries prescribing the most antibiotics helped reduce the use of antibiotics. Similarly, if the majority pays taxes, then telling the defaulters about their default is invoking the social norm to nudge people into paying taxes. With respect to the environment too we are learning that if people are informed that other people are increasingly engaging in environmentally friendly behaviour then this is a powerful

nudge—this will help save; nations from pollution and nation's money as well—yet this is the emerging social norm rather than the majority norm but still a powerful nudge.

'A' in the FEAST framework stands for 'attractive'—to make people accept the change – the change must be made attractive. For example, wearing masks is difficult; however, some young people are nudging others to wear masks by wearing masks that catch attention. Similarly, one can try to make social distancing and staying at home tolerable, if not attractive.

'T' in the FESAT framework stands for 'timely'—this says that the nudge must be timely. For example, with respect to Covid-19, it has been observed that telling people just while they are entering a store, that mask-wearing is obligatory, works. On the other hand, telling people in July to avoid going out in winter without being fully protected may not work. So, the lesson is, to nudge timely!

'F' in the FEAST framework stands for fun. To encourage people to do something (difficult), one should try turning 'the doing' into fun. [For example, children may hate doing simple mathematics like addition and subtraction—those trained in teaching children have introduced games that involve addition and subtraction – thus imparting math skills to children has been turned into fun]. To overcome the damaging impact of covid-related rumours, some countries have introduced the phrase; humour over rumour—thus joking over the preposterous nature of rumours one is likely to overcome their damaging impact. Likewise, to encourage the use of vegetables, if we just say that eating vegetables is good for health, this may not encourage people to eat more vegetables however, people can be nudged into eating vegetables by cooking delicious veg dishes and dressing these to look 'attractive'.

Sludge

The take-up rate for programs designed to offer some benefit to the public is 40-60 percent (in the United States). This means that a significant proportion of those entitled to benefits is not taking up those benefits. The question is why? The answer is that sludge inhibits!

The American government imposes 11 billion hours of paperwork on the American public. This includes doctors, nurses, patients, students, truck drivers, small businesses and people trying to get visas, etc. The figure of 11 billion just scratches the surface - the time tax i.e., the personal time consumed in going through the process while trying to get benefit or avoid relevant bureaucracy is not included in this.

The sludge is damaging because, given the burden of paperwork and the time tax imposed, people may decide not to do the thing in question because they don't have 15 hours to spend on this or even if they have the time, given the complexity of the procedure, they cannot figure out how to do it—if people must go to a faraway place to avail a benefit, while they have little children or elderly relatives to take care off, they may decide not to take the benefit or at least delay availing till the time they manage to overcome the situation.

If people suffer from the 'present bias', they may think they will navigate this difficult task tomorrow but then tomorrow never comes. Or they just might think that 'I will do it, but then status-quo prevails (doing my job takes precedence) and they never do it. Or being 'optimistically driven', they may think that they will handle the sludge, but that could be an unrealistic optimism— they never overcome sludge.

These behavioural findings are compounded by the problem of scarcity—quite often, the people who have faced sludge are in the worst position to handle sludge. This is adequately depicted in the words of a person who is entitled to some benefit and is asked to fill out a complicated form to avail of the benefit— he says: "when I was 50, I could have filled these forms, now I am 87—you are asking me to fill out these forms now!". What is true of the elderly is also true of the disabled, mentally ill, those facing depression, or women—upon whom a disproportionate weight of the sludge is imposed in many societies—taking care of the children and household chores in addition to being an earning hand. Thus, the sludge prevents the vulnerable from getting what they are entitled to and thereby compounds the problem of inequity, and of course, it impedes opportunities, education, employment, and economic growth.

What to do? The obvious solution is to cut down sludge. The question is, how to reduce sludge! The first step towards sludge reduction is the sludge audit—figure out the magnitude and kind of sludge involved in different activities, including the sources from which the sludge emanates—agency, officials, forms, etc. To determine the magnitude of sludge, one would have to estimate the time and monetary cost involved in performing a task.

Understanding and reducing sludge is a serious problem for perfect choosers, and it could be a devasting problem for the imperfect choosers that most of us are. The next step towards sludge-reduction is to wage war on a sludge—figure out the cost and benefits of the time consumed and costs (monetary as well as psychological) incurred in the performance of a task and pose questions like; does this task require the eight weeks being currently spent in doing this? Or can this task be completed in, say, one week without comprising the objectives of the programme?

One of the good things about covid has been that it has concentrated attention on sludge-reduction—facilitating people in doing things in minimal time. With persistent attention to reducing sludge, the goal of minimal sludge will become achievable. To conclude, another thing that covid has reiterated, if not taught us, is that 'time' is a very precious thing—let us give more of it to humanity by cutting down sludge.

Panel Discussions: Key Takeaways

Opportunities to Excel

Panelists:

Yahya Akhunzada
Secretary Education, Government of Khyber Paktunkhwa

Jehan Ara
Katalyst Lab, Former President, PASHA Software House

Shimail Daud
Former President, Rawalpindi Chamber of Commerce, Owner Maryam Memorial Hospital

Adnan Jalil
Former President, Small Chamber of Commerce, Peshawar

Muhammad Atif Hanif
Senior Executive Vice President
Bank of Khyber

Moderator:

Dr. Jahenzaib Khan
Deputy Chairman, Planning Commission of Pakistan

All gaps around a person and all that is negative around a person is an opportunity—filling the gaps or turning something negative into positive is an opportunity—If garbage is lying in front of your home and the streets around, then just picking the garbage could be turned into a profitable venture—people have already turned garbage-picking into a multimillion-dollar industry. Similarly, if people do not have information about tourist attractions or educational facilities in a town, then designing tools to provide such information for a price is an opportunity. There are hundreds of problems to be solved, and every problem reflects an opportunity—focus on finding a solution to the problem, and you will get your entrepreneurial idea to pursue. The next stage is to put the idea to practice.

Cook *khayali pulao* (build a castle in the air): cooking *khayali pulao* i.e., day-dreaming, is very important. One should dream big and then give his/her best to put the dream into a reality—again being passionate about one's dreams is important—what one's mind can see is achievable—prerequisite of course is: access to appropriate skills.

Sputnik moment. The launch of the first artificial satellite in space by Russia led to a realisation in the United States that the Soviet Union was ahead of them in science and

technology, especially the knowledge related to outer space. This led the then President, Eisenhower to tell the American public to produce more scientists in 10 years and, for this to happen, scrutinise school curriculum and standards. Thus, the realisation that they were behind the Soviet Union, which could have far-reaching consequences, led the United States to strive hard to close the gap. This kind of realization makes individuals and nations identify opportunities, do what is required to access these opportunities, and excel with hard work and patience.

Excellence means reaching the zenith of something—this **does not come automatically**—one must work very hard to achieve excellence, and to work hard for something, one must be very passionate about it—it is the hard work fuelled by a passion that brings about excellence. Moreover, excellence is relative and would mean different things for different people depending on their current state and circumstances.

Excellence cannot come, and **opportunities cannot be easily availed without education**. However, education is not sufficient to achieve excellence or for that even avail opportunities – it must be supplemented with several things like vision, passion, and hard work. The base of excellence is information—for example, to excel, one needs to know what is required to achieve excellence—what international standards must be met, where are the facilities for training for excellence, and what prerequisites must be met to enter those training facilities—be these educational institutions or skill development ventures.

To achieve excellence, it is important that one should **set goals** for himself/herself and not just the goal but milestones right up to the highest goal. It is also important that goals should be challenging—without challenging goals achieving excellence is not possible. If a person consistently fails to achieve milestones, this means that he/she is not on the path to achieving the goal. However, failure is not something bad, what is important is that a person should be ready to learn from failures and should have the ability to rise after each fall—failing to achieve milestones should lead to either resetting goals or renewed strategy for achieving goals.

Degrees merely indicate that the holder possesses a certain minimum level of knowledge in a specific field; however, **degrees do not guarantee a job**—employers', prefer a certain level of skill and proficiency even in fresh graduates that they might be looking for. Though having a reference (*sifarish*) might serve in securing some jobs but the perception that a reference is always essential is certainly not true—a large majority manage to secure a job without a reference. Therefore, the fresh graduates, while looking for jobs should be ready to work as interns, even for free—this way, they would be getting the skills and experience the employers are looking for.

Therefore, the message for the youth of Pakistan is that to **identify, carve and seize an opportunity, one must prove** his/her mettle in the job market or an entrepreneurial venture. A person would have to do sort of the heavy lifting. To that end, atomic habits reflected in; hard work, discipline, and above all, a love for reading is required.

Opportunities: The Role of State

Panelists:

Dr. Muhammad Mohsin Khan
Director IMSciences, Peshawar

Gonzalo Verala,
Senior Economist, World Bank

Omar Gilani,
Partner at The Law and Policy Chambers, Advocate High Court

Ahmed Waqar Qasim,
Senior Research Economist, PIDE

Moderator:

Dr. Ishrat Husain,
Former Adviser to PM, Former Governor, SBP

The whole debate of the state versus markets is completely irrelevant and outdated today. Every country needs to have a strong and effective state alongside a vibrant and dynamic private sector working together. Also, both the government and the private sector must listen and take on board the civil society to undertake initiatives successfully.

Youth & Jobs: Almost two-thirds of our population is in the age group that contributes to the youth bulge. To prevent the youth bulge, from turning into a youth bomb, jobs must be created for the youth or at least let them create opportunities themselves. Evidence suggests that it costs around Rs. 950,000/- to create a job in government relative to Rs.150,000/- only in the private sector. Given this, job creation should be left to the private sector, with the government focusing only on ensuring an enabling environment.

Footprint: Though a breakdown of national accounts expenditures suggests that the footprint of the government in the economy is around 20 percent of GDP however, considering the state-owned enterprises, the taxation, the regulatory framework, and the policy interventions, the government is much more intrusive than what the national accounts suggest – A PIDE study (Haque and Rafi, 2020) suggests that footprint of the government in the economy is 67 percent of GDP. To encourage the businesses to operate, the footprint of the government must be scaled down drastically.

Market Performance: The market underperforms primarily for two reasons:

- The market structure in Pakistan is over-regulated, and the incentive structure for innovation is not in place. The system incentivises rent-seeking instead of innovation. For businesses to come up, exist and flourish, the government should be out of the market, set the rules, develop the enforcement capacity, and enforce the rules efficiently.
- Neither the markets nor the state alone can bring an economic transformation. We need to figure out how the government can be an enabler. Despite opportunities,

there are challenges in this respect - the preference of the state in Pakistan is to preserve the status quo rather than to facilitate a transformation. Resultantly, we see a low investment rate, weak export competitiveness, and low productivity.

Market Structure in Pakistan: The market structure in Pakistan is highly regulated even though the state has serious capacity issues. The administrative burden is quite high, and the transactions/economic activity is constrained by hosts of frictions, especially where the government is involved. These frictions, known as sludge, impose extra costs on the individuals and therefore, on the economy. The costs include monetary costs, the cost of time spent, and the effort exercised to wade through the frictions. The GDP, being nothing but the sum of transactions in the economy, is adversely affected when the transactions fail to happen or are severely delayed due to frictions.

Sludge: The evidence documented in the PIDE's Sludge series suggests that the administrative frictions are quite high and vary by sector. Opportunities exist and are created in competitive markets that are efficient. Two prerequisites characterise efficient markets—the ease of entry and exit into the market and the contract enforcement. Pakistan is way behind on both these counts. To allow opportunities then, Pakistan must ensure free entry and exit into markets, ensure that the contracts executed are honoured in an expected manner—in terms of time as well as cost, and reduce the footprint of the government in the economy—to ensure a level playing to all.

Status Quo: A couple of examples tell how the government preserves the status quo rather than transform itself. Frist is the determination of the input-output coefficients. This is to determine the input ratio (of a certain output) that a firm uses for its production process. The figures are used by the government to determine the tax exemption, particularly on import duties. Despite being a technical matter, Pakistan has a bureaucratic setup to determine those input-output coefficients rather than the firms doing it themselves. Under the given setup, it would be very difficult for firms to innovate and set up businesses in Pakistan.

- Imagine if *Tesla* wanted to set up business in Pakistan, the concerned bureaucrat would probably be telling Elon Musk that *Tesla* cars have too much software and that the input-output ratio is not right. So, if a bureaucrat determines a business's input-output coefficients, it is difficult for a firm to innovate. If a business aims to depart from the status quo and use different inputs or different technology, it would probably not be allowed.
- PIDE has recently focused a lot on identifying and estimating sludge involved in different activities. The findings suggest that the sludge involved in seeking approvals from the government makes innovation quite difficult.

Where are opportunities, then? To create opportunities, the government must empower people with citizenship. Roughly 2.5 percent of the population in Pakistan does not have citizenship. Around three to four million people of Afghan origin reside in the country and are excluded from the mainstream due to the non-issuance of ID cards. This cannot be ignored because when we talk about opportunities, we must discuss those who are totally excluded—if the Afghans were to have a better legal status, they can contribute more formally to the economy by expanding their present mostly informal ventures. The

same goes for people of Bengali/ Bihari, Somali, Yemeni and Palestinian origin living in Pakistan – opportunities are minimal for such people due to a lack of appropriate legal status. This 2.5 percent of the population of Pakistan is living in a state of statelessness—the country needs to enfranchise everyone to allow them to give their fuller to the economy.

Low effective rate of revenue: Though the import duties in Pakistan are quite high (20 percent on average) but still the effective rate of revenue collected is rather low due to the exemptions available to many firms that import intermediate goods or capital equipment. Quite often, such exemptions are available to large and existing firms but not to the new and small firms—a situation that needs to be corrected to provide a level playing field – something crucial to foster a competitive environment, which is at the heart of innovation and growth.

The Role of Judiciary: Given the enabling business environment perspective, the judicial arm lacks knowledge of the underlying economic dimensions of issues that land in the court. This at times, leads to uncalled-for decisions that do not go well with the investors—local as well as foreign. On contract enforcement, a serious engagement between the state and the judiciary is necessary—the effort and time involved in settling court cases, coupled with 'stay orders' wreak havoc with setting up and operational costs that an entrepreneur has projected while conceiving a business venture, potentially turning a viable business proposition into an unviable one—the cost of this to the economy are phenomenal.

Opportunities for Firms to Grow

Panelists:

Muhammad Ahmed Zubair
Chief Economist, Planning Commission of Pakistan

Turab Hussain
Associate Professor, LUMS

Zehra Aslam
Economist, World Bank

Omer Siddique
Senior Research Economist, PIDE

Moderator:

Najy Benhassine
Country Director (Pakistan), World Bank Group

There is a strong linkage between total factor productivity (TFP) and economic growth—literature suggests that in G5, G7, and G20 countries, TFP growth has led to income growth rather than factor accumulation. A study suggests that in 60 percent of the

cases, 3 percent or higher TFP growth has led to 8 percent or higher GDP growth. However, this does not establish causality, which also has other determinants.

TFP-Growth Nexus: TFP growth in Pakistan has remained low since 1972, averaging 1.62 percent, which was low compared to other countries in the region except for India. In the '80s, the private sector played a huge role and combined with liberalisation and large-scale public-sector investment led to high GDP growth. In the '90s, liberalisation measures did not translate into higher TFP or GDP growth as sequencing was not optimal and the hangover from the massive borrowing in the '80s persisted. This led to a decline in TFP growth and a concurrent decline in GDP. In the 2000s, measures like privatisation, trade openness, deregulation, financial deregulation, focus on the banking sector, and relaxation of sanctions post 9/11, led to TFP growth as well as GDP growth. In the 2010s, TFP increased but GDP growth in Pakistan declined mainly due to idle capacity, which increased even as investment increased. Growth was driven by input accumulation and became unsustainable. These trends were visible in the agriculture, industry, and services sectors. To conclude, periods marked by trade openness, liberalisation and privatisation have shown an increase in TFP and a simultaneous increase in the GDP.

Firms & Exports: Large firms enjoying scale economies can tap into the global knowledge pool, which could increase investments over time. Therefore, big firms could potentially become engines of employment generation. Externalities and spillover effects from large firms could potentially benefit small firms as well.

- Preliminary analysis of the top 500 firms shows that there are very few large firms in Pakistan in the knowledge-intensive sectors. Moreover, the typical size of a large Pakistani firm is smaller than that in comparable economies, with the largest firms reporting sales of $1-2 billion. Firms in Vietnam, Malaysia, Turkey, and India report much higher sales.
- Exporters database shows that exports are led by a few large firms and several smaller firms. The average size of exports for a Pakistani exporter was just $1.4 million, equivalent to 1/3rd of a Bangladeshi exporter.
- Large firms in Pakistan mostly exist in the extraction sector, such as mining and gas distribution, whereas in developed countries, these are in knowledge-intensive sectors like telecom, trade, etc. Spillover effects for smaller domestic firms only accrue where knowledge-intensive firms exist.
- High-growth firms are few and far between, with most firms plagued by weak and volatile growth in sales. Smaller size means increased vulnerability to price volatility. With limited growth in sales, investment tends to remain low. Thus, the average capital growth of these firms in Pakistan is lower than the firms in comparable economies. Similarly, among firms listed on the stock exchange, stock depreciates over time because an increase in investment does not cover depreciation cost.
- In terms of profitability, there are a great number of loss-making firms that have been operating for up to 10 years and have been making a loss for three years. The loss-making firms depress the overall investment environment. These firms largely tend to be state-owned or family-owned enterprises.

Golden Triangle: A study of the 'golden triangle', districts that comprise around 28 percent of the industry, including the cities of Gujrat, Gujranwala, Wazirabad, and Sialkot,

sheds light on reasons for the lack of growth. The light engineering industry which exists in districts like Gujrat, Gujranwala, and Wazirabad, is categorised by 2-3 large players, each with residual share distributed among small enterprises. The latter are labourer turned proprietors, with 8-9 employees, no access to credit except in the informal sector, no accounting mechanisms, and focused on cheaper inputs leading to a lack of standardisation. Over 15 years, diseconomies of scale force such firms out of business due to a lack of professional management. It is worth mentioning that Pakistan may soon lose its comparative advantage in exporting surgical goods as skills might be replaced with technology.

Private Sector: Evidence suggests that allowing the private sector dynamism to take its course leads to higher productivity growth. PIDE research has demonstrated that in Pakistan the government's footprint on the economy is around 67 percent of GDP, which means that further deregulation would help. Monetary and psychological costs to doing business inhibit growth, while the inefficiency of legal systems exacerbates the situation. Removal of tariff and non-tariff barriers to the export sector would lead to growth. Government must devise efficient regulatory and monitoring mechanisms to boost productivity.

Way Out:

- The government's influence on the economy should be minimal. Firstly, the government should intervene only if it appears that the industry is failing. Secondly, the government must ensure the provision of necessary public goods and infrastructure. Thirdly, time and monetary costs associated with regulation must be reduced.
- Regulations could be evaluated by the government departments themselves, by the private sector stakeholders, or by neutral evaluators. The law must be enforced with a set timeline to be effective. Stringent regulation had a disproportionately large effect on smaller enterprises compared to larger firms that have the wherewithal to deal with the same.
- Punjab passed the Smart Regulation Act of 2019, which aims to put into effect a 'regulatory guillotine' based on a few tests for regulation, including whether it is legal, whether it is necessary, whether it is business-friendly and whether it is expensive.
- The policies that incentivise foreign investment need to be harmonised with relevant laws like the Investment Act of 1976 and the Protection Act of 1992, otherwise, regulations will hinder policy liberalisation at the implementation stage.
- Pakistan does not have a clearly chosen paradigm or set of economic principles, for example, our emphasis on the welfare state conflicts with the demands for a market economy.
- We were stuck in a suboptimal equilibrium of GDP growth, where economic sovereignty has been compromised; as soon as we reach a growth rate of 4 percent, we start facing the balance of payment problem and are left with no option but recourse to the IMF.

- Instead of a five-year planning cycle, Pakistan needed a three-year transformation plan which, instead of focusing on enhancing existing production structures, should identify new areas for resource allocation.
- Creative destruction is necessary to drive out inefficient firms, and the idea of the revival of sick industries must be abandoned. Instead of benchmarking past performance, the country should strategise to compete with comparable economies. Lastly, the reformation process would likely take place over multiple generations.

Shaping Success in Creative Arts and Media

Panelists:

Hijab Fatimah
Designer, Artist & Director, Gachrung

Haya Fatima
Filmmaker

Sarmad Khoosat
Actor & Director

Wajahat Malik
Documentary Filmmaker

Naseem Zehra
National Security Specialist/Journalist

Moderator:

Fasi Zaka
Columnist and Anchor

Creative arts and media are in for dynamism and disruption. Previously, these industries used to have editors and producers as gatekeepers who decided who would get a big audience. It was hard to break in, but massive audiences were guaranteed. These days those structures are being dismantled, leading to infinite possibilities. Paradoxically, with entry barriers lowered, it is becoming harder for the content creators, because they must curate their own audience.

Technology & Filmmaking: The film medium is dependent on camera and sound equipment. In 2010, the pieces of equipment were less accessible. With the advancement in technology, short films can now be made using smartphones instead of DSLRs. The number of Pakistani documentary films has increased massively over the last ten years. This provided multiple opportunities to excel for the filmmakers in developing narratives and layered storytelling. The viewership has also increased, which would have a positive impact on the quality of content.

Peculiarity in Arts: Strong adherence to one's cultural and historical roots helps in the fields of visual merchandising, visual arts, and filmmaking. It is so because this adherence marks the artist's peculiar style, which eventually gets acknowledged at the local, national, and international levels.

Mainstreaming Arts & Media: Technological advancement, intellectualisation of media, and social and moral acceptance of creative arts and entertainment have also resulted in normalising and hence de-stigmatising the entertainment business within which creative arts and media proliferates.

Opportunities due to stardom: The idea of artistic creativity is also intertwined with stardom. If an artist becomes a star, he/she gets endorsements for international products and brands. Henceforth, maintaining the fine line between creative arts and the commercialisation of arts is critical.

***Are opportunities class-driven*?:** Opportunities are often for those who enjoy the privilege of one or the other kind. Access to foreign education and social capital built with the international creative artists and media persons are a few instances of these privileges. The privileges defined along the axis of economic prowess, majoritarian identity, gender, and linguistics play out in accessing opportunities in creative arts and media.

Academia & Arts: Opportunities in both academia and professions of creative arts and media are widespread. The channels, such as broadcasters and executors, via which content could be displayed have vanished, and the content creator can display his/her content on a YouTube channel, for instance. To a larger extent, excessive regulation of content and red tapes are no more hindrances. Hence, creative arts, especially filmmaking, has become more of a democratic, approachable, and affordable space.

The question of structure & design: The industry of creative arts needs structure, integrity, and design. The lack of support from the government for this industry in Pakistan has been the biggest challenge even during the golden era of Urdu film production in Pakistan. Hence, media content primarily with respect to filmmaking requires fresh narrative styles, aesthetics, screenplays, tonality, characterisations, and musicality.

Opportunities Now

Panelists:

Arfa Sayeda Zehra
Professor, FCCU University

Pervez Hoodbhoy
Nuclear Physicist/ Activist

Neda Mulji
Senior Manager, Professional Development at Oxford University Press

Zia Banday
Senior Research Fellow, PIDE

Moderator:

Dr. Durr-e-Nayab
Director Research, PIDE

To solve the unemployment problem of Pakistan, we need to ask ourselves a question like, why is there a significant difference between Pakistan and its neighbours, particularly India, in terms of industrial development and exports. We need to ask why Pakistan is behind India and why a small country, Israel, has developed while Pakistan has not. The answer lies in 'thinking', and thinking comes from education, and even mere education is not enough. Quality education is required to develop a 'thinking community'.

Education-Society Nexus: The situation on the ground is just the opposite of what is required - Pakistan's educational system has killed curiosity, thinking, and the desire to learn. It has failed to produce good minds. However, educational institutions, schools, colleges, and universities are not solely to be blamed for not bringing up curious-minded students; rather, society is to be blamed for it.

The Question of Religiosity: One of the main causes of brain drain is religious bigotry in Pakistan. The second cause is that merit does not prevail in Pakistan—A system that cannot distinguish between good and bad, cannot further the development of a society.

Taleem, but also Tarbiyat: We need to ask, what are opportunities, and where do they come from? Means are required to create, and the means are possessed by those in power – the politicians etc. *Taleem* (education) and *tarbiyat* (discipline and soft skills) are equally important. Rather one without the other is not possible—our system has failed on both counts.

Nurture Opportunities: Neither opportunities nor unemployment comes out of the blue – we reap what we sow—once we develop a pitch for nurturing opportunities, only then we will manage to reap opportunities otherwise, we will have unemployment—opportunities are available in a society where humans are equal in terms of their rights, where there is justice, and where there is transparency in behaviours.

Brain Drain: We face a brain drain from the country, and this furnishes evidence that sufficient opportunities to let the talent flower do not exist in Pakistan. Because the opportunities to work for self-recognition do not exist in the country—a ripe ground for the opportunities to be created is the one in which the system of merit and equal access prevails. It is these conditions that one should be striving for.

English as gatekeeper: Part of the opportunities that we have in this world and the opportunities that we have within our country come from being able to speak the language of the coloniser, i.e., English.

Opportunities via Universities: Universities are centres of learning and opportunities. There are three aspects of creating opportunities for youth in universities: mentorship, coaching, and research. These are important for personal as well as professional development, and these create opportunities for the youth.

Are there pro-poor opportunities?: People are poor because they are not empowered. Street vending is a pro-poor opportunity but is looked upon as encroachment by the administration. The administration is so averse to street vending that despite the existence of street vending no attempt is made to collect data on it. Around 99 percent of the street vendors are working without a license and this makes them vulnerable to exploitation.

- The Islamabad administration, Ehsaas, and PIDE have worked together and launched a project for the betterment of the street vendors. The Prime Minister of Pakistan later suggested extending it to other parts of the country. So far, the project has covered approximately 375 vendors in Islamabad and about 160 of them have the newly designed efficient carts. The key message from the street vending project is that poverty has nothing to do with money - poverty results from disempowerment.

Disruptions: The Future of Work

Panelists:

Farrah Arif
CEO & Founder, EdTech Worx

Yasir Ashfaq
CEO, Pakistan Microfinance Investment Company.

Faisal Khan
Principal Investigator, NCBC, Precision Medicine Lab.

Hassan Daud Butt
CEO, KP Board of Investment and Trade.

Hira Irshad
CEO & Founder, APPRUS Technology

Moderator:

Dr. Nadeem Ul Haque
Vice Chancellor, PIDE

Curiosity and Creativity: There could not be two opinions that we need creative individuals and that education is the key to creativity. We need to impart an education that fosters curiosity, critical thinking, and hence creativity. A large segment of the population is illiterate, and a lot many do not go to school. To begin, we should focus on imparting education to all and sundry. The next issue to focus upon is, ensuring quality education.

Passion and Creativity are to be supplemented by research: passion and creativity are a must to carve or identify an opportunity and grab it. But carving a new opportunity or identifying an existing one does not happen in a vacuum – strong research is required to explore where opportunities exist and what are the feasible ways to make good use of opportunities.

Applied Research: whatever little bit of research is happening is being undertaken for the sake of personal career development – the focus is on quantity and reinventing the wheel—problem-solving is not the focus of research. To identify opportunities, applied

research and its adequate dissemination to the stakeholders are important—this would happen only if researchers were able to explain their findings in plain terms to professionals/practitioners.

Emphasis on Social Science: No doubt, research in natural science must be encouraged, however, the emphasis on natural science in Pakistan, has come at the cost of neglect of social science. The knowledge generated through social science research impinges upon decisions of wide-ranging importance. For example, without research in social science, we would not know how a person—consumer and producer, etc. typically behaves in certain situations—lacking such knowledge can lead to poor decisions and policy failures.

Freelancing: Pakistan is a major country for the supply of freelancers. We should be looking at freelancing with a pinch of salt. Yes! It provides employment to the educated youth and is earning valuable foreign exchange for the country, but there is a downside to it as well—the growth of freelancing implies that good enough jobs are not available in the country for the educated youth—our graduates should be worth much more than $8 a day that freelancing typically pays. Secondly, the conventional job's payoff not only monetarily but yield the benefits typically attached to socialisation and teamwork in addition to the discipline and professionalism that office work teaches. All these things are absent in freelancing.

Vibrant Financial System: Availing financially remunerative opportunities, among other things, call for a vibrant financial system. Many people who can identify opportunities do not have the financial resources to pursue these opportunities. A vibrant financial system can put the resources required at the disposal of people who apparently have viable ideas to pursue.

Appropriate ecosystem: A suitable ecosystem that would allow the stakeholder to put their ideas to practice is essential to availing opportunities—this would require a certain kind of environment, including conducive regulation and minimal government intervention to say the least.

Teamwork: To disrupt teamwork is often required—this is best captured in the words of a janitor who, when asked by the then president of United States, John F. Kennedy, while on a visit to NASA, 'what you do here' responded 'I am putting a man on the moon.'

Little government: Disruption entails entering uncharted arenas—systems may not be in place for such a journey. Regulations may look at it as a non-permissible activity therefore, disruptions best happen in an environment of lesser regulations and an enabling government.

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Policy

The Assumed Shortage of Housing in Pakistan

DURR-E-NAYAB

"We are short of 10 million housing units" has been the clarion cry in politics, media and the donor-driven research for the last 10 years.

Given an average household size of well over six persons,[1] this means that nearly one-third of the population is without housing. Do we see such a huge number of people living on footpaths, side of roads, under bridges or in any open area? Thankfully, NO!

We cannot find any clarity on where this huge figure of 10 million housing shortage came from!

- Media (print, electronic and social) uses it referring to it as a World Bank estimate, while various World Bank[2,3] publications quote a report submitted to the State Bank as the source, along with a study done by the International Growth Centre (IGC)[4] (a DFID funded global research effort out of the LSE and Oxford).
- The IGC report cites a SBP[5] report, but interestingly, the said report gives a lower per annum figure than the one quoted by the IGC.
- A more recent State Bank document[6] cites no source and just uses the number as a given.
- Some WB documents refer to a House Building Finance Company Limited's presentation[7] as the source but nowhere does one find the exact method used to reach the oft-repeated number.

The worst part is that the government also uses this estimate without ever questioning its validity. And sadly, we have based policy on this assumption and initiated a large public housing effort at a considerable cost.

A few indicators to judge the housing conditions include congestion or crowding, security of tenure, provision of civic amenities, structural quality and cultural adequacy.[8]

Durr-e-Nayab <nayab@pide.org.pk> is Joint Director, Pakistan Institute of Development Economics, Islamabad.

[1]Average household size comes to 6.56 persons using the PSLM 2019-20.

[2]Enclude, "Final Report: Diagnostic Survey of Housing Finance in Pakistan". Submitted to the State Bank of Pakistan. November 2015.

[3]World Bank, Project appraisal document on a proposed credit, in the amount of US$145 million to the Islamic Republic of Pakistan for a housing finance project, March 8, 2018.

[4]International Growth Centre (IGC). "Housing inequality in Pakistan: The case of affordable housing." February 2016.

[5]State Bank of Pakistan, "Quarterly Housing Finance Review", March 2014.

[6]State Bank of Pakistan, "Infrastructure, Housing and SME Finance Department", March 2019.

[7]House Building Finance Company Limited. "Affordable Housing for Low Income Group." Presentation. November 11, 2016.

[8]UN Habitat, Metadata on SDGs Indicator 11.1.1, March 2018.

The Pakistan Social and Living Measurement (PSLM) survey, conducted by the Pakistan Bureau of Statistics (PBS), provides us with the opportunity to look into most of these factors, and we do so using its 2019-2020 round. Since urban and rural Pakistan exhibit quite different trends we look at them separately, along with some provincial patterns.

IS CONGESTION THE SOURCE OF "HOUSING SHORTAGE"?

Using the definition given by the UN-Habitat[9], "*a house is considered to have a sufficient living area for the household members if not more than 3 people share the habitable room that is a minimum of 4m² in area*". The 4m² was rightly upgraded to 9m², as the measurement was too small.

We do not get room sizes in the PSLM, but the number of living rooms is covered in the survey. Since 9 sq² is a typical size even in informal settlements so we would go by the number of persons per room to estimate congestion.

Our estimates suggest that 4.37 million households, equaling 12.3% of the total households, live in congested conditions, with over two-thirds of these in rural areas (3.04 million), as shown in Table 1. Young children generally live/sleep in their parents' room so we do not include children aged under 5 years, and half-count those under 12 years, while estimating occupancy per room.

So, if congestion is the rationale behind the 10 million housing deficit, our estimates give a much lower number.

Table 1

Number and Proportion of Households Living in Congested Conditions

	Total Number of Households (million)	Households with Occupancy of over 3 Persons per Room (million)	Proportion Living in Crowded Conditions (%)
Rural	21.8	3.04	14.0
Urban	13.7	1.33	9.8
Pakistan	**35.5**	**4.37**	**12.3**

Source: Author's estimation using the PSLM 2019-2020 dataset.

Some inter-provincial differences are also found (see Table 2).

Table 2

Proportion of Households Living in Crowded Conditions (%)

	Rural	Urban	Total	Number of HH Living in Crowded Conditions (millions)
Khyber Pakhtunkhwa	11.1	12.0	11.2	*0.58*
Punjab	12.8	10.8	12.0	*2.28*
Sindh	21.7	8.1	14.2	*1.33*
Balochistan	10.1	7.8	9.5	*0.18*

Source: Author's estimation using the PSLM 2019-2020 dataset.

[9]Op cit.

Unlike many countries, joint/extended families are still prevalent in Pakistan, with strong cultural values attached to it. The rates, however, are not as high as one would think as 74 percent of the households have nuclear set-ups, with not very divergent trends exhibited by rural and urban Pakistan (see Table 3).

Table 3

Family Structure in Pakistan (%)

	Nuclear	Extended/Joint	Total
Rural	72.4	27.6	100.0
Urban	75.8	24.2	100.0
Pakistan	73.7	26.3	100.0

Source: Author's estimation using the PSLM 2019-2020 dataset.

Is the extended/joint family structure the reason behind this congestion? Table 4 shows that joint/extended households do have a larger size (i.e. average household members) and a slightly higher rate for congestion, but the living arrangement is not exactly a huge factor in determining congestion.

Table 4

Living Arrangement, Mean Household Size and Prevalence of Congestion

Living Arrangement	Mean Number of Household Members	Proportion Living in Congested Conditions (%)
Nuclear	5.53	11.8
Joint/Extended	8.51	13.8
All	6.56	12.3

Source: Author's estimation using the PSLM 2019-2020 dataset.

IS THE OCCUPANCY STATUS LEADING TO THE NOTION OF 'DEFICIT'?

Security of tenure, gauged by the occupancy status in the PSLM, shows that this cannot be the case either as Pakistanis predominantly live in owned houses. As Table 5 shows, only a small proportion (11 percent) lives in rented houses. The sensational deficit estimate makes no mention of the fact that the ownership of dwellings is as much as 82% in Pakistan and rented space is only 11percent. In any case, living in rented houses does not represent a 'deficit'.

Contrary to common perception, living in a rented house does not show 'housing deficit'.

Table 5

Occupancy Status

	Rural	Urban	Pakistan
Owner	89.1	70.1	81.8
Rented	3.3	23.6	11.2
Rent free	7.5	6.2	7.0
Total	100.0	100.0	100.0

Source: Author's estimation using the PSLM 2019-2020 dataset.

ARE THE HOUSES STRUCTURALLY STABLE AND HAVE ACCESS TO AMENITIES?

This is where the concern should be. The quality of structure and access to civic amenities need to improve. Table 6 shows that access to basic civic services, like waste disposal, clean drinking water, safe fuel for cooking and a much-improved sewerage system are the issues that need attention to alleviate the quality of housing. Even the very high access to electricity (for light source) does not mean an uninterrupted supply.

Table 6

Quality of Structure and Access to Amenities (%)

	Floor	Roof	Walls	Fuel for Cooking	Source of Light	Waste Disposal	Drinking Water	Toilet
Standard[1]	63.0	77.1	83.1	48.5	96.0	23.6	67.2	72.5
Sub-standard	37.0	22.9	16.9	51.5	4.6	76.4	32.8	27.5

Source: Author's estimation using the PSLM 2019-2020 dataset. Note: 1. Refers to better/preferred option for the particular characteristics, and not the actual standard of material/service being used/availed.

SO, WHAT ABOUT THE DEFICIT?

There is certainly not a "deficit of 10 million housing units" in Pakistan. There may be "inadequate housing" in the country, but not a "housing shortage". The deficit is in the quality of life in the houses, not the absence of housing units.

Even if we take into account the high fertility rate and rising population in the country, an additional demand of 0.7 million households every year, as suggested by the IGC study (2016)[10], is very high. Going by the mean household size, it means an additional 4.5 million people needing accommodation—an estimate that appears far from reality. The mean age of the head of the household in Pakistan is 44 years,[11] and given the cultural milieu, young adults do not generally live on their own, thus, suppressing the demand for additional housing that could have been there because of the youth bulge.

CONCLUSIONS

The notion of housing shortage, and the belief that it creates employment, have led the government to push for and subsidise the construction sector. Along with fiscal pressure, it has created an unnatural demand in the real estate market. And while the

[10]Op cit.

[11]Estimated from the PSLM 2019-2020.

'shortage' is more in the rural areas, all the housing initiatives are taking place in the urban areas. A forthcoming PIDE study on sectoral productivity over the last decade also shows the construction industry to be among the least productive ones. Any protected/subsidised industry remains unproductive, and the construction industry proves to be no exception.

Migration from rural areas is given as another reason for increased housing demand in urban areas. It is a movement that we at PIDE support. Instead of considering it a problem, we believe that it is through cities that growth happens.[12] Better urban planning, supporting large-scale, mixed-use housing, can go a long way in providing quality affordable accommodation to people. Doing so would deal with whatever housing shortage is there, and more importantly, tackle the quality issue as well.

PIDE has also shown that housing shortage arises from the harsh zoning laws and building regulations that favour cars and single-family homes[13]. In addition, PIDE has shown that the shortage of opportunities and high rates of sub-optimal employment[14] reduce the purchasing power of people.

PIDE thesis is that the shortage is that of opportunities not housing. However, sensational figures and perhaps the push for loans has led to a distortion in policy of putting housing before opportunity. Furthermore, opportunity too has been constrained by the same factor as housing which is excessive regulations (see PIDE Sludge Series[15]). Clearly, deregulation which is the need of the time has been delayed because policy is driven more by sensational figures than good analysis.

Finally, government should take seriously the PIDE recommendation that local universities and think tanks must be involved in policy, policy research and policymaking. Nothing without being thoroughly reviewed should be taken to the policy table. Our experience tells us that reliance on consultants without domestic oversight has too often proved costly. And the 10 million housing shortage estimate is nothing but yet another proof of this cost!

[12]Haque and Nayab, "Cities: Engine of Growth", PIDE, Islamabad, 2007.
[13]"The PIDE Reform Agenda for Accelerated and Sustained Growth", PIDE, Islamabad, 2020.
[14]Haque and Nayab, "Opportunities to Excel: Now and the Future", PIDE, Islamabad, 2020.
[15]PIDE Sludge Series—various issues estimating the cost of bureaucracy, PIDE, Islamabad, 2020, 2021.

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Policy

Ameliorating Drug[1] Shortages in Pakistan

SHAHID MEHMOOD

INTRODUCTION

In mid-March 2022, a letter by Pakistan Young Pharmacist Association (PYPA) caught the headline of major newspapers in Pakistan.[2] The letter, written in the context of the prevalent shortage of paracetamol, more or less alleged that the drug manufacturing companies were deliberately causing the shortages. They argued that drug manufacturers wanted to compel customers to buy a higher dose of the said drug (665 mg) since it had a significantly higher price than lower doses.[3]

The letter again brings to light the critical (but lesser discussed) issue of persistent drug shortages in Pakistan. Every year, critically needed drugs tend to vanish off the shelves, to be either found in black or imported to meet shortages (the below table contains a few sample cases of shortages since two decades). Mehmood (2017),[4] after a survey of the major drug markets in Rawalpindi and Islamabad, found that 48 registered drugs were unavailable (drug manufacturers had stopped producing them), while 67 registered brands were experiencing shortages of varying degrees. Drug shortages, however, are not a recent phenomenon; in fact, it goes back to the time of the creation of the country. On 30th March 1954, during the Constituent Assembly session, Mr. Abdul Monem Khan pointed to the severe shortages of medicines in the country. The Health Minister, Mr. Tafazzal Ali, replied that import orders had been placed to ameliorate the shortages. In 1976, Arthur Homer Furnia, a US Health sector specialist, noted the shortages of medicines, especially in government facilities where the trend of siphoning off medicines was common.[5]

SAMPLE LIST OF DRUGS THAT EXPERIENCED SHORTAGES

Year	Drug Name	Used for	Regulated Price (Rs)	Black Market Price (Rs)
2001	Dalintin	Eppilepsy	55 per 100 tablets	500 per 100 tablets
2003	Buscopan	Stomach & Kidney pain	75 per pack	150 per pack
2012	Panadol C.F	Fever and Pain	Rs 18 per 10 tab's	Rs 50 per 10 tab's
2013	Typehrix	Typhoid Vaccine	Rs 400 per injection	Rs 1,000 per injection
2018	Ritalin	Attention Disorders	Rs 286 per pack	Rs 500-700 per pack
2022	Panadol	Fever and Pain	Rs 1.70 per tablet	Rs 5 per tablet

Shahid Mehmood <shahid.mohmand@pide.org.pk> is Research Fellow, Pakistan Institute of Development Economics, Islamabad.

[1]'Drug' is the allopathic name for medicine, and is used here because only allopathic medicines are under consideration. 'Medicine' denotes a wider variety, including allopathic, homeo, and Ayurvedic, etc.

[2]'Pharmacists seek PM Imran's help as Paracetamol shortages gives headache'.

[3]665 mg is priced at R per tablet, while lower dose 500 mg is priced at Rs 1.70.

[4]'Access to essential medicines: Findings of survey'.

[5]'The Dynamics of Health: Islamic Republic of Pakistan'.

The difference is that in 1954, there was hardly any pharmaceutical plant in the country. In 1976, there were less than 100. Now, there are around 750! But shortages persist. What, then, causes these persistent shortages? The following lines briefly present the leading causes and proposes solutions to lessen future shortages.

THE ROLE OF REGULATIONS

Government-mandated regulations is the most significant contributor to the shortages. Readers would need to understand the pharmaceutical industry dynamics to understand the issue. In the context of shortages, two aspects are highly critical - drug pricing policy and that 95 percent of the raw material for manufacturing medicines is imported. First, as 95 percent of the raw material for manufacturing medicines is imported, this puts the industry in a precarious position given global supply disruptions (as in Covid-19) and higher cost of imports (duties, tariffs, rupee depreciation, etc.)

Presently, industry officials state that not a single Active Pharmaceutical Ingredient (API), out of the 1,200 or so used, is being manufactured in Pakistan (even in normal circumstances, domestic manufacture of APIs was never above 45, and quality-wise, they don't match foreign competitors).[6] This implies is that Pakistan is entirely dependent upon the import of APIs to manufacture drugs at this moment. Given the rupee's losses against the dollar, raw material is now quite expensive. Expensive raw material, in turn, means a higher cost of manufacturing the same product (along with a steep rise in energy prices, etc). Production becomes unfeasible unless the producer gets this cost covered (government pricing policy fixes profit margins).

Historically speaking, the Government of Pakistan (GOP) has always been shy of granting drug price increases (primarily because it is seen as a politically sensitive issue). The political maneuverings, however, have ended up propelling shortages.[7] That is exactly what we saw in the recent case of a countrywide shortage of Panadol.

Depreciation of the rupee and other factors (like supply disruptions, higher freight costs) shot up the raw material price of paracetamol from Rs 600/kg to Rs 2,600/kg. The industry has asked the GOP to increase the price, met by persistent refusal. As production became financially unfeasible, firms stopped producing products containing the ingredient paracetamol (like Panadol). Only now, as shortages became debilitating amidst consumers' misery, did the official regulator, the Drug Regulatory Authority of Pakistan(DRAP) propose increasing the prices. The proposal, however, remains at the Cabinet table. Meanwhile, consumers have lost millions of rupees in paying for imported paracetamol products[8] or ones found on the black market.

Government Endemic of Hepatitis-C

It's an expensive medicine. In 2016, it cost Rs 32,000 per 28 tablets in Pakistan. A cheaper alternative was its proposed manufacture in Pakistan, under the generic name 'Sofosbuvir', costing around Rs 10,000 per 28 tablets. Since 2014, 14 applications were approved by the regulator (DRAP) out of 61 received for manufacturing this drug locally. In February 2016, only 9 companies were allowed to sell generic brand of Sovaldi in Pakistan. Between 2013and 2017 (when the domestic manufacturers started manufacturing the drug), however, consumers had to pay billions of rupees extra for imported Sovaldi, mostly found in black at exorbitant rates.

[6]Discussions with industry officials.

[7]See box on Hepatitis-C. Taken from 'Access to essential medicines: Findings of survey', PRIME Institute.

[8]There are online retail shops like MEDICALMARTPK.COM that offer imported Panadol and other such variants, aside from plethora of other imported drugs whose generic variants are manufactured by domestic producers.

HOW DOES THE INDUSTRY RESPOND?

As the recent Panadol shortages became rampant, around 27 thousand boxes containing Panadol tablets were confiscated from Peshawar in one specific instance. As expected, the media blamed the 'drug mafia', inadvertently accusing the pharmaceutical manufacturers, dealers, and sellers of conspiring to cause the shortages. However, this accusation has little substance, often repeated whenever drug shortages occur. As discussed above, pricing and supply-related issues were the foremost reason for these shortages!

Regarding the confiscation of Panadol boxes from storage, one big retailer usually mops up the remaining supplies of a drug that suffers shortages and then sells it back at exorbitant prices.[9] Stopping this practice, by law, is the job of provincial governments.[10]

Over time, drug manufacturers have responded differently to the issues persistently faced in pricing regulation. One particular strategy is to move to manufacture higher potency doses. The movement towards 665 mg dosages of Panadol, whose price is much higher than 500 mg dose, is a reflection of this strategy. Similarly, another strategy is to stop production of a certain drug, apply for its production under a new generic name, and under a different category (like 'Neutraceuticals', whose prices are less regulated) and at a higher price. Put simply, higher prices of drugs help maintain the profit margin (fixed by pricing policy) and the production costs, making production financially feasible.

Yet another strategy (usually used by lower quality drug manufacturers) is to sell in-demand raw material at black market rates or smuggle it. In March, Anti-Narcotics Force (ANF) caught 1,086 litres of Ketamine (API used in psychotropic drugs) worth Rs 34 billion that was to be smuggled to the UAE.

CONCLUSION

The availability, and affordability of drugs affects our health and lives. Quality and effective medicines have a significant role in ensuring a healthy workforce. Georgieva (2019) estimated 1.5 percent per annum growth in GDP due to a healthy workforce. Poor health, in contrast, reduces global GDP growth by 15 percent per year (Remes, Dewhurst and Woetzel, 2020).

In Pakistan, unfortunately, the population carries a heavy disease burden.[11] To make matters worse, many critically needed drugs suffer from persistent shortages, primarily driven by government regulations, especially its pricing policy![12] There are other factors, which again illustrate gaps in regulations and implementation.

One drug suffering persistent shortage since its introduction in 2001 is Ritalin. An invaluable drug in terms of Attention Disorders (like ADHD), it contains a 'controlled' substance (Methylphedate), which can have the same effects as opium. There is enough evidence to indicate that due to loose controls on sales, large quantity of Ritalin is consumed by those who don't need it in the first place. A 2019 survey found that the drug was being used extensively by students in Pakistan's medical colleges.[13]

[9]Shared with the author by industry officials, retailers and hospital officials. The large retailer gets advanced information on coming shortages, and starts buying all the supply from stores within a city.

[10]As per DRAP Act 2012, Coordinating and supervising sales of drugs is provincial government's domain.

[11]For e.g, see 'WHO country cooperation strategic agenda (2011-2017)', WHO.

[12]For a detailed discussion on drug pricing and its outcomes, see PIDE evaluation 'Regulating the pharmaceutical industry: An analysis of DRAP'.

[13]'Prevalence of Methylphenidate misuse in medical colleges in Pakistan: A cross-sectional study'.

In conclusion, given ground realities, drug shortages will likely be a presence in the future.

Policy Suggestions

The following suggestions are aimed at ameliorating the persistent shortages of drugs:

(1) The GOP should leave drug pricing to the market. It has done enough damage to the industry and consumers. At best, its role in terms of pricing should be that of coordinator of prices. For example, prices should be allowed to move in accordance with input prices, and price adjustments should be immediate rather than late
(2) The federal cabinet should have absolutely no role to play in fixing drug prices because pricing then becomes a political decision, biased toward lowering or maintaining prices
(3) The main job of the federal and provincial drug regulators should be the maintenance of quality, subsidise R&D, and tracking of sales, especially of those substances that fall under the 'controlled' category, so that there is no misuse.

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Books

Nadeem Ul Haque, Mahboob Mahmood, Shahbano Abbas, Ali Lodhi. *The University Research System In Pakistan*. 2020. 200 pages.

The *University Research System In Pakistan* is a thoroughly researched work, providing an extensive discussion on the state of university research in Pakistan. It highlights problems being faced by researchers and compares them with global research practices. The authors recommend reforms at the institutional level, the type of research funding, the metrics of measurement, and the adaptation and promotion of a research culture that provides incentives for teamwork and mentorship for the new entrants in the industry.

Research on the barriers and possible solutions is vital for quality and problem-oriented research that produces products that can compete with global research. The authors give a diagnosis of the problems of the research in Pakistan by identifying key problem areas and their possible solutions. We can sum up the purpose of the book as follows:

> "*The rapidly changing world has brought new challenges requiring innovative and problem-solving research. Pakistan's university research system lacks the essentials required for competing in the modern world. Therefore, the situation necessitates exploring where the problem exists and what can be the possible solutions*".

The book posits that the Higher Education Commission (henceforth, HEC)[1] has no doubt done a remarkable job and has improved Pakistan's university research and teaching by giving incentives, funds, technical support, and faculty training programs in the world's leading universities. However, there have been some bad incentive schemes that have led to poor results.

The lack of quality research on the subject has also been one of the reasons our research system has been unable to provide solutions to local problems. As is discussed below, the authors maintain that the "bias" of the HEC towards physical sciences has also been a reason that we have not been able to produce good social science researchers. Therefore, this book has filled a gap in the literature on the subject and has also been a comprehensive document presenting solutions to the problems identified.

The book presents detailed statistics and is rife with a visual display of infographics. The authors have capitalised on the already existing data by making the data narrate a holistic story of the research industry of Pakistan, its dynamics, and the often neglected role of universities. But at the same time, the book's text is enriched by the solid

[1] The regulatory body of higher education in Pakistan, headed by a chairman. It replaced the University Grant Commission, which was its predecessor.

foundations provided by a key informant and expert interviews with whom the book has referred to as "stars of the industry". The methodology of the study, therefore, is a fusion of qualitative methods and quantitative visual tools. The authors provided credible evidence from a sample based on the number of participants in the study. It included 181 participants who either participated in interviews or focused group discussions. Fourteen academic and research institutions have been a part of this study.

In the sample, 28 percent were professors, 17 percent were associate professors, 19 percent were assistant professors, 11 percent were lecturers, and 25 percent were in the 'others' category. The sample is representative, and the views and opinions of the experts have indeed provided meaning to the statistics and the other indicators of the industry; their views have been the lens through which the research's problems are viewed, and certain solutions are recommended. The sample could have been more representative if it had included students with research degrees.

The research system in Pakistani universities has come a long way. This journey has not been easy, and the HEC has played a significant role in acquainting the Pakistani teaching institutions with the research practices. However, there exists considerable room for improvements and reforms. Research in Pakistan needs a culture of mentorship, collaboration, and availability of funds. The young entrants do not have a mentor to look up to. The total number of professors is estimated to be 6,300, while new entrants in the industry are estimated to be around 39,000, which means that for every professor, there are lecturers. These seven lecturers require mentorship, guidance, and support. Still, this considerable ratio shows that we do not have enough seniors to guide the lower lot. As a result, we do not have quality research capital in terms of human resources, and quality research products that could be sold.

The problems are not just limited to this as there is yet another big area of concern that the authors have pointed out which has resulted in disincentivising good research, and that is "teamwork". The HEC has made it an incentive to work solo. The book quotes Sohail Naqvi (Haque et al., 2020) as saying that research is teamwork and that only teams can produce good research. Research never takes place in isolation (exceptions aside). However, as the book points out correctly, we do not have a "teamwork culture." In a team, the members can put in their effort based on their expertise, and thus, quality research is produced.

Teamwork, good teams, and collaboration in producing quality research need funding. Therefore, funding is also an area of concern when it comes to the diagnostic approach adopted by the book. Access to a wider donor market is needed to facilitate. The study points out the heavy emphasis on agriculture research, for which funding has been provided by educational institutions with specialised agriculture departments or by some government bodies. There is a dearth of research avenues. Pakistan's research spending has decreased even in the agriculture sector by 23 percent, while in other countries, the share has grown. For instance, it has increased in Malaysia, India, and China by 87 percent, 82 percent, and 119 percent, respectively. Although agriculture is a promising area, still the private sector involvement in funding agriculture research is very low.

Pakistan does not fund universities as it should have done. We agree with the authors as data shows that universities spend more on infrastructure than on research. This finding is also supported by other studies, such as (Moborkosheva 2015),[2] which reported that

[2]Muborakshoeva, M. (2015). Impediments to enhancing research within universities in developing context: the case of Pakistani universities. *Journal of International and Comparative Education (JICE)*, 1-13.

Pakistan's research faces the problem of a shortage of funding available for research. Furthermore, there are also issues of disbursement, inefficient use, and corruption at the university level

The lack of funding is also reflected in another connected problem of overemphasis on physical sciences. This finding of the publication under review is also supported by many other studies, such as Moborkosheva (2013), who quotes Junaidi (2014) figures that in real terms the research funding had decreased by 11 percent when accounted for inflation in 2014.[3]

The book sheds light on the funding of research from another angle as the authors give an emphatic defence in favour of their argument that there should be a public-private partnership model. Another aspect is the incentives for social science research relevant to the local context, as this has been a major gap in our research analysis. Both of these findings in the book are in line with certain studies on Pakistani research systems such as Moborkosheva (2015).[4]

The authors opine and present the emphatic case that in the current HEC model, more than the required weight was placed on the "number of publications" rather than the quality of those publications. This imbalance has resulted in poor-quality research.

Research in Pakistan is a euphemism for several publications. It is not to say that number of publication do not matter. It is undoubtedly one of the measures, but other important factors should also be included in the measurement, such as the gap the research has filled, its impact factor, its relevance to the Pakistani context, and most importantly, the research should justify the cost.

The book presents a well-informed critique of the HEC's overemphasis on several publications as a criterion for promotions from Associate professors to Professors and the ranking of universities. This is an issue in the country. For example, there are quantitative criteria for promotions, such as several publications. If an academic has a certain "number "of papers in HEC-recognised journals his/her requirement for promotion is almost complete. For each paper, there are points rewarded. The Paper of sole authorships is given more weightage and importance; hence, HEC, in the effort to promote research, has created some perverse incentives. Anecdotal evidence suggests that in many cases, low-quality sole authorship is given preference over a quality piece written by a team of two or three.

However, this is a problem in the global research industry. Some studies, for instance, Ioannidis et al. (2014) indicate that over-emphasis on quantity leads to poor quality and erroneous research. Other studies that criticise the ranking or assessment of research include Ioannidis et al. (2007),[5] which does a critical appraisal of university ranking systems that are in use globally. While taking support from Van Raan (2007)[6] that the number of publications as a measure is extremely skewed and is, therefore, an unreliable indicator of "quality of research."

[3]Junaidi, I. (2014). Education budget decreased despite promises. *The Dawn*.

[4]Muborakshoeva, M. (2015). Impediments to enhancing research within universities in developing context: the case of Pakistani universities. *Journal of International and Comparative Education (JICE)*, 1-13.

[5]Ioannidis, J. P., Patsopoulos, N. A., Kavvoura, F. K., Tatsioni, A., Evangelou, E., Kouri, I., ... & Liberopoulos, G. (2007). International ranking systems for universities and institutions: a critical appraisal. *BMC medicine*, *5*(1), 1-9.

[6]Van Raan, A. F. (2005, June). Challenges in ranking of universities. In *Invited paper for the First International Conference on World Class Universities, Shanghai Jaio Tong University, Shanghai* (pp. 133-143).

In terms of findings, the book gives a very informative, detailed analysis of the university research system. It has been a result of handwork as suggested by the 14 participating institutions and the 181 experts, including Professors and researchers. And as discussed above, most of the results align with other domestic and international research.

The book is a unique and important document as it attempts to diagnose the problems and impediments faced by the Research Industry in Pakistan. The prescription offers to inform the recommendations if bought by the policymakers, we can expect a positive shift in the research in Pakistan. The extensive survey, the relevance of the sample, and the literature review testify to the quality of the findings. The gap filled by this book also points out the fact of how neglected this area has remained. This book is a must-read for all those who want to investigate what is wrong with our research.

Fida Muhammad Khan and
Aqeel Anwar Chaudhry

Pakistan Institute of Development Economics,
Islamabad.

PAKISTAN SOCIETY OF DEVELOPMENT ECONOMISTS

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For conditions of eligibility for Membership, see reverse.

EXTRACTS FROM THE CONSTITUTION OF THE PAKISTAN SOCIETY OF DEVELOPMENT ECONOMISTS

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.

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We must await- almost certainly vainly-a better controlled experiment to appear elsewhere. We, like the actors, believe the activities of the family planning program to have been important, probably in the timing of the onset of fertility decline and certainly in the pace of that decline. But we strongly doubt whether a total fertility rate little above three would have been reached had the society of the early 1970s remained largely unchanged. It was a society that offered fewer opportunities and demanded fewer economic decisions from parents."

From Caldwell, John C., et al. "The Bangladesh Fertility Decline: An Interpretation." *Population and Development Review*, vol. 25, no. 1, 1999, pp. 67–84.

Selected by Durre Nayab

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Pakistan Institute of Development Economics

Quaid-i-Azam University Campus, Islamabad, Pakistan

E-mail: pide@pide.org.pk

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