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Monetary Policy Transmission Mechanism in Pakistan: What We Know and What We Need to Know?

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Abstract

This study, drawing on domestic and international literature and new empirical results, finds that monetary policy affects inflation and output in Pakistan, but transmission is slow, incomplete, and uneven across channels due to entrenched structural frictions. The interest rate channel influences short-term market rates, yet pass-through to deposit and lending rates remains weak amid banking concentration, large sovereign portfolios, and distortions from concessional refinance schemes. The exchange rate channel reacts faster, with tighter policy supporting nominal appreciation and easing tradable inflation, but credibility gaps, discretionary interventions, and shallow FX markets reduce predictability. The credit channel tightens private credit, though fiscal dominance, high NPLs, and bank inefficiencies dilute responsiveness. Asset price transmission is largely absent given shallow capital markets and informality. Policy signals can shape inflation expectations, but repeated external shocks and administered energy price changes often dominate the outlook. Importantly, the updated results indicates that post-COVID shocks developments – subsidized credit, commodity price spikes, floods, and exchange rate instability – have exposed the structural weaknesses and raised the premium on reform and fiscal-monetary coordination.

JEL Classification Numbers: C54, E31, E50, E52, E58

Keywords: Monetary policy, transmission channels, transmission lags, inflation, output, Pakistan

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Non-technical summary

SBP's Vision 2024-28 envisions transitioning toward a flexible inflation targeting (FIT) regime. As a prerequisite to this transformation, however, a deeper understanding of how monetary policy transmits through the economy is essential. In this context, this study lays the groundwork for that journey, by reviewing existing domestic and international literature, analyzing new and updated empirical results, and reflecting on the structural features that shape or hinder monetary transmission in Pakistan.

Updated findings show that while monetary policy does influence inflation and output in Pakistan, the process is often sluggish and fragmented. Multiple frictions – ranging from underdeveloped financial markets and fiscal imbalances to administrative constraints – have diluted the impact of policy rate changes. Importantly, the post-COVID period has made these limitations more visible. SBP's subsidized refinance schemes introduced during the pandemic, followed by a series of supply-side shocks, including surging global commodity prices, the Ukraine war, floods, and exchange rate instability, have created a complex economic landscape. In such an environment, cost-push inflation became more entrenched, and forced SBP to raise the rates to an unprecedented level. These developments have underscored the urgent need for reform, better coordination between fiscal and monetary policies, and a rethink of how external shocks are managed.

This study, therefore, should be viewed not as a conclusive statement, but as the starting point of a broader research agenda at SBP. It offers a roadmap for future empirical work that incorporates Pakistan's structural constraints more explicitly. By combining institutional diagnostics with econometric modeling, future research can better capture the nuances of monetary transmission and design more relevant and responsive policy tools.

In this backdrop, looking ahead, several questions merit deeper exploration. For instance, how has the prohibition on government borrowing from the SBP under the amended SBP Act affected the monetary transmission mechanism and the autonomy of monetary policy? To what extent can a central bank effectively respond to supply-side or commodity price shocks in a developing country like Pakistan, where inflation is not purely demand-driven? Could greater financial inclusion and the proliferation of digital payment platforms enhance the sensitivity of households and firms to monetary policy decisions? And as artificial intelligence begins to inform both policy analytics and market reactions, what new tools and data sources could researchers at SBP use to improve nowcasting and policy calibration? These are the kinds of questions that both policymakers and researchers at SBP must begin to tackle in the years ahead. Answering them will not only sharpen the design of monetary policy but also help build a more resilient and responsive macroeconomic framework.

I. Introduction

Monetary policy remains one of the most potent tools available to a central bank for achieving macroeconomic stability, particularly through managing inflation and influencing aggregate demand. Its success, however, relies on the existence of an operational Monetary Transmission Mechanism (MTM) – the sequence of channels over which the stance of monetary policy is communicated to real economic activity and prices. These channels are, but not restricted to, the interest rate, credit, exchange rate, asset prices, and inflation expectations. Although these transmission channels are theoretically well understood and empirically well established in advanced economies, they tend to be much less predictable, weaker in magnitude, and slower to respond in emerging market economies, including Pakistan.

Like many other emerging economies, the macro-financial environment in Pakistan is one in which the central bank has to function in the presence of sustained inflation volatility, repeated fiscal and external sector pressures, and thin financial markets. Monetary transmission not only remains incomplete but also becomes asymmetric and heterogeneous between sectors and agents. Empirical findings usually highlight weak transmission of policy rate movements to market interest rates, narrow private sector credit response to monetary tightening or loosening, and slow or subdued impacts on inflation and output. These consequences reflect more than mere data constraints or econometric specification problems; they are symptomatic of profounder structural rigidities, including a banking system that is concentrated in public sector borrowing, the dominance of informal credit markets, exchange rate rigidities, low financial inclusion, and credibility constraints to the State Bank of Pakistan (SBP).

There has been little empirical literature on Pakistan's monetary transmission, however, to augment our understanding of how macroeconomic outcomes are shaped by the MTM. Earlier research has typically used monthly or yearly data and used Large-Scale Manufacturing (LSM) as a proxy for economic activity. Although useful, LSM describes a limited portion of the economy. In addition, these studies normally establish statistical relationships between policy parameters and macroeconomic aggregates without investigating the associated institutional or behavioral channels. For example, the explanations for the poor sensitivity of private credit to policy rate adjustments are infrequently analyzed in terms of banking market structure, capital adequacy, or risk aversion during tightening periods. In the same vein, the literature has failed to incorporate appropriately the expectations channel – a central channel in inflation-targeting models for the future, and has neither made efforts to control exogenous monetary policy shocks for general macroeconomic trends to avoid endogeneity issues and the "price puzzle" phenomenon.

In addition, most of the domestic literature is spurred by research agendas and sometimes does not have the necessary policy orientation and contemporaneity demanded by a central bank. Policymakers need not only stylized facts or elasticities but operational insights into why some monetary policy levers are effective and others are not – and under what conditions they might be made more effective. This requires a more diagnostic, context-based approach that puts the MTM in

the larger ecosystem of Pakistan's macroeconomic setup, institutional frameworks, financial sector growth, and external limitations. The aim is not only to quantify the average impact of a policy shock, but to identify the conditions for transmission, the frictions that reduce it, and the policy instruments that can fill those gaps.

In this backdrop – guided by the SBP Vision 2024–28, which emphasizes enhancing the efficacy of monetary policy – that this study finds its motivation. However, far from providing an authoritative or exhaustive empirical analysis of Pakistan's MTM, it seeks to provide policy-focused analytical groundwork upon which more extensive empirical work may be constructed. It provides a systematic analysis of the main transmission channels in Pakistan, analyzing not just how they operate given present conditions, but what institutional and macroeconomic facilitators they require to function effectively. For every channel, the study strives to record its importance, limitations, and prospects based on both available empirical evidence and structural diagnostics. These involve assessing the impact of financial market depth and competition, monetary policy signal credibility, exchange rate flexibility, and fiscal dominance effects on interest rate signaling.

On an empirical front, one notable contribution of this study is its emphasis on quarterly macroeconomic statistics and new alternative indicators, which enable a timelier and multifaceted analysis of transmission patterns compared to previous low-frequency studies. Moreover, it adopts a comparative perspective to gauge Pakistan's performance relative to peer economies in domains like credit, interest rate pass-through, financial inclusion, and inflation expectation anchoring. This broader perspective helps in identifying institutional gaps and reform priorities that could strengthen the MTM over time.

It must be emphasized that this study is not a final verdict on the state of monetary transmission in Pakistan. Rather, it is intended as the first step in an evolving research and policy agenda – a framework for organizing future analytical work and empirical inquiry. The transmission mechanism is not a fixed characteristic; it changes with institutional ability, regulatory reforms, market maturation, and credibility achievements. In line with these considerations, the results of this study are to be understood as one contribution to a broader, continuing process of assembling an evidence-based picture of how monetary policy operates in Pakistan, under what circumstances it is likely to be most effective, and where reform at the institutional level can act as a catalyst.

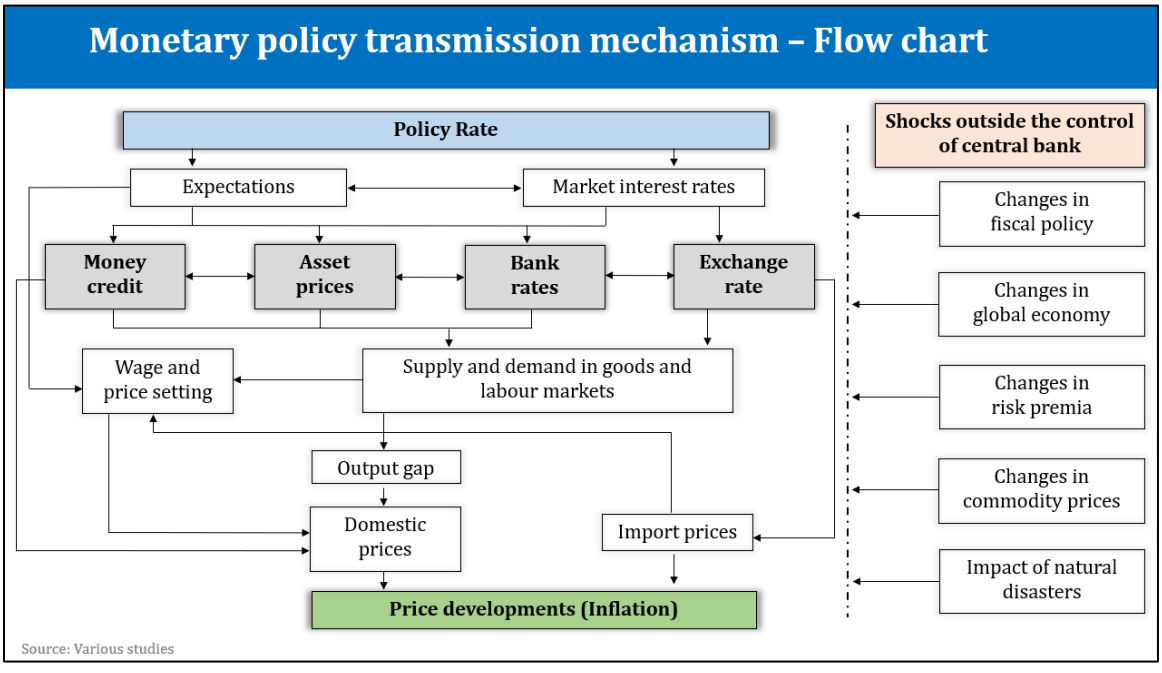
From the point of view of central banking, this study fulfills several purposes. Firstly, it offers a map of current bottlenecks and potential reform levers through all the transmission channels. Secondly, it indicates the necessity of building denser, high-frequency, and policy-specific datasets such as disaggregated credit data to provide stronger empirical work. Third, it emphasizes the importance of better identification techniques to gauge causal effects of monetary policy interventions. Lastly, it gives the analytical framework for structuring future empirical studies based on policy requirements rather than intellectual curiosity. In short, this study intends to realign the monetary policy transmission discourse in Pakistan – from empiricist coefficient estimation to a more far-reaching, institutionally based, and anticipatory analysis. Building on this, with the maturing institutional and data environment, subsequent research can proceed to provide

more sophisticated, evidence-driven findings that inform good policy choices and maximize the credibility of the monetary policy framework of Pakistan.

Rest of the study is structured as follows. The next section briefly discusses the evolving literature on MTM and its channels in global context, with emphasize on emerging economies. Third section details the evolution of monetary policy in Pakistan. Fourth section outlines the empirical setup, data for updated estimations and discusses the results for each MTM channel. Fifth section highlights the limitations and existing structural caveats that hinders the MTM in Pakistan and compare the same with peer countries, while last section concludes.

II. Literature review: Channels of monetary policy transmission

Understanding how monetary policy decisions affect real economic variables, such as output and inflation, has been a central theme in macroeconomic research. However, the strength and relative importance of transmission channels vary across countries, particularly between developed and developing economies. As Mishra and Montiel (2013) observe, monetary policy transmission tends to be weaker and more uncertain in developing economies due to structural and institutional constraints. Moreover, there is no consensus on the dominance of any single channel of transmission; rather, their effectiveness often reflects country-specific factors including financial depth, exchange rate regime, and central bank credibility. Similarly, in Pakistan, the economy remains heavily bank-dominated, with limited development of capital markets and persistent fiscal dominance. This environment influences the relative strength of different transmission channels and shapes the country-specific nuances in their functioning. With this in context, drawing on both domestic and international literature, below is a flow chart visualizing typical MTM channels, followed by discussion on their key aspects.



a. Interest rate channel

The interest rate channel remains a cornerstone of the monetary transmission mechanism in both advanced and emerging market economies. It operates through the central bank's influence on short-term interest rates, which affect broader financial conditions including borrowing costs, investment decisions, and ultimately aggregate demand. In advanced economies, this channel has been found to work relatively effectively. Gali and Gertler (1999) underscore the importance of forward-looking expectations and real marginal costs in determining inflation dynamics, highlighting the anticipatory behavioral response to monetary policy shocks. Christiano et al. (2005), through a Dynamic Stochastic General Equilibrium (DSGE) model incorporating nominal rigidities, demonstrate persistent effects of monetary policy on both output and inflation, establishing a theoretical and empirical foundation for the lagged impact of interest rate changes. Similarly, Angeloni and Ehrmann (2003) provide empirical evidence from the euro area, suggesting that while the response of prices to policy changes is relatively slow, the interest rate channel significantly influences investment-led output adjustments.

Emerging market economies, however, often experience weaker and more heterogeneous interest rate transmission due to institutional and structural bottlenecks. Khundrakpam and Jain (2012) show that in India, the interest rate channel accounts for a substantial share of monetary policy's effect on GDP and inflation, but this is contingent on a relatively deep financial system. Acosta-Ormaechea and Coble (2014) find that de-dollarization and financial deepening significantly enhance interest rate pass-through in Euro area's emerging economies. Wang et al. (2023) emphasize the role of market structure, arguing that loan and deposit market power in the banking sector materially affects transmission strength. Likewise, Beyer and Chen (2024) identify asymmetries in deposit rate adjustments, suggesting higher pass-through during rate hikes compared to easing cycles. Recent findings by Checo et al. (2024) further highlight that in emerging economies, monetary tightening also influences financial markets and real activity through risk premiums and corporate balance sheet effects, beyond the conventional consumption-investment pathway.

In the context of Pakistan, the interest rate channel has historically demonstrated limited effectiveness. Agha et al. (2005), employing a VAR-based framework, report that although monetary policy tightening influences inflation and aggregate demand, the interest rate channel remains weak due to underdeveloped financial markets, limited private credit penetration, and a high degree of financial repression. Institutional rigidities such as administered interest rates, poor expectations formation, and the dominance of government borrowing crowd out the private sector, reducing the sensitivity of consumption and investment to policy rates. Hussain et al. (2022) reaffirm these findings, showing that among the four major channels – interest rate, credit, exchange rate, and asset price – the interest rate channel exerts a comparatively weaker influence on macroeconomic variables in Pakistan.

Literature also point toward structural and operational constraints that inhibit the smooth transmission of interest rate changes in Pakistan. For example, Mukhtar and Younas (2019) argue that commercial banks adjust their lending and deposit rates sluggishly in response to changes in

the policy rate, largely due to limited competition in the banking sector and the prevalence of fixed-income deposits. While the adoption of the interest rate corridor and enhanced signaling tools by the SBP have improved monetary policy communication, the real sector response remains subdued. Shahid et al. (2024) finds that although banks adjust their internal pricing in response to policy changes, the broader macroeconomic impact, particularly on inflation and output, is dampened by weak credit intermediation and fiscal dominance. These studies collectively suggest that while the interest rate channel is operational in Pakistan, its potency is conditional on parallel reforms in financial market deepening, fiscal consolidation, and central bank credibility.[1]

b. Credit channel

The credit channel of monetary transmission operates through changes in the availability and cost of credit, influencing borrowing behavior of households and firms beyond the impact of interest rates alone. This channel comprises two key components: the bank lending channel, which affects the supply of loans due to changes in bank reserves or funding conditions, and the balance sheet channel, which alters borrower creditworthiness via asset prices and net worth. In theory, when central banks tighten monetary policy, the supply of credit contracts and firms with weaker balance sheets face higher financing constraints, dampening investment and output.

In practice, the effectiveness of the credit channel in emerging economies varies significantly due to differences in financial structures, regulatory environments, and institutional development. Mohanti and Banerjee (2024), in their study on India, explore the magnitude, timing, and composition effects of the credit channel. Their findings suggest that despite theoretical relevance, the empirical strength of the credit channel remains weak in India, with significant lags and ambiguity in transmission. Similarly, Gumata et al. (2013) assess all five monetary transmission channels for South Africa and conclude that the credit channel is relatively weak compared to the interest rate, exchange rate, and expectations channels. Their results underscore the importance of financial system depth and the reliance on bank-based intermediation in determining the potency of the credit mechanism.

Other cross-country studies have examined the heterogeneity of the credit channel across different macroeconomic contexts. Choi et al. (2022), using a large panel of 105 countries and industry-level data spanning from 1973 to 2019, find that the strength of the credit channel varies significantly across industries and is amplified during certain phases of the business cycle. Their results indicate that credit-sensitive sectors respond more strongly to monetary shocks in downturns, reflecting higher financial frictions. Meanwhile, Ibarra (2016) finds that in emerging economies, the response of output to interest rate shocks depends significantly on whether the output variable is treated as endogenous or exogenous. For each monetary policy shock, the cumulative output response over one to two years, supporting the view that monetary effects via credit channels take time to manifest and are sensitive to model specification and country-specific factors.

[1] See table A1 in Annexure for summarized literature review on interest rate channel.

In Pakistan's case, the credit channel has been found to be relatively more effective than the conventional interest rate channel. Agha et al. (2005) were among the first to empirically assess this using a VAR framework and noted that credit availability influences investment activity and overall economic performance, even though the study also revealed the persistence of the price puzzle. Corroborating these findings, Mukhtar and Younas (2019) emphasize that monetary aggregates continue to play a significant role in Pakistan's monetary transmission, with the bank lending component of the credit channel exerting considerable influence on investment decisions. They also highlight that share prices affect inflation and output via wealth effects, while the interest rate channel remains underutilized. More recently, Hussain et al. (2022) used a structural VAR model and concluded that the credit channel is the most prominent transmission mechanism in Pakistan, followed by the asset price and exchange rate channels. The bank-dominated financial sector, low levels of financial inclusion, and limited access to capital markets make the credit supply mechanism a particularly relevant path through which monetary policy affects output.

These studies collectively suggest that in financial systems like Pakistan's – characterized by fiscal dominance, shallow bond markets, and a reliance on bank intermediation – the credit channel holds greater practical significance. However, the strength of this channel still depends on the responsiveness of banks to policy changes and the creditworthiness of borrowers, both of which can be impaired during periods of financial distress or political uncertainty.

c. Exchange rate channel

The exchange rate channel of monetary transmission operates through the influence of interest rate decisions on exchange rates, which in turn affect net exports, inflation, and economic activity. In open economies with flexible exchange rate regimes and deep financial markets, this channel is expected to be more effective. A contractionary monetary policy that raises domestic interest rates typically appreciates the local currency, reduces import prices, and dampens aggregate demand. However, the strength and speed of this mechanism vary significantly across countries depending on institutional and structural factors.

In advanced economies, the evidence on the exchange rate channel remains mixed. Ito and Mishkin (2006) argue that the exchange rate channel in Japan is relatively weak, primarily due to persistent deflationary expectations and a muted response of trade flows to exchange rate changes. Similarly, the empirical study by Kamada and Nakajima (2015) found that in Japan, exchange rate fluctuations have limited impact on output, suggesting the channel's ineffectiveness in transmitting monetary shocks. Conversely, in economies like New Zealand and Chile, where inflation targeting and floating exchange rates are well established, the exchange rate channel plays a more active role in influencing inflation expectations and consumer prices, though not always output (Peters, 2016). These differences illustrate that monetary policy credibility, exchange rate flexibility, and inflation expectations shape the potency of the exchange rate channel in advanced settings.

In emerging market economies, the effectiveness of the exchange rate channel also varies considerably. A large cross-country study covering 40 emerging and developing economies finds that exchange rate appreciation typically leads to moderate but consistent disinflation, although the

impact on output remains limited (Nordstrom et al., 2009). In China, according to Song et al. (2021), the exchange rate channel accounts for a minor share of total monetary transmission effects, given the relatively managed nature of the renminbi and restricted capital account. Likewise, Ahmed and Islam (2004) report a weak existence of the exchange rate channel in Bangladesh, largely due to shallow foreign exchange markets and administered pricing in key sectors. On the other hand, stronger effects are observed in countries like Egypt, where Mashat and Billimier (2008) found that exchange rate movements significantly influence domestic prices, although not real output. In Azerbaijan, the exchange rate is a notable driver of both consumer and producer prices, indicating that price-level effects are more prominent than output adjustments (Mammadov and Ahmadov, 2021). Similarly, studies in Peru and Uruguay show substantial inflationary effects of currency depreciation, even though output responses remain ambiguous.

In the case of Pakistan, the exchange rate channel has historically been weak but is gaining relevance. Agha et al. (2005), using a VAR framework, found that exchange rate movements had a limited effect on inflation and output, which was attributed to partial capital account openness, exchange rate management, and low trade elasticity. Hussain and Ejaz (2022) employ VAR on monthly data to estimate the effectiveness of the exchange rate channel in Pakistan. Their findings indicate that the exchange rate channel appears relatively effective in transmitting the impact of monetary policy shocks on inflation, and its effectiveness improves under flexible exchange rate regimes. Moreover, Hussain et al. (2022) employed a structural VAR approach and concluded that while the exchange rate channel remains less effective than the credit or interest rate channels, it is becoming more relevant due to increased import dependency and greater exchange rate flexibility. Despite the adoption of a market-based exchange rate regime in recent years, the inflationary impact of exchange rate shocks in Pakistan is often dominated by global commodity price changes, suggesting that the exchange rate amplifies rather than independently drives price movements.

In summary, the effectiveness of the exchange rate channel is highly context-specific. In many emerging economies, exchange rate changes transmit more visibly to inflation than to output, particularly in economies that are highly dependent on imported goods or with significant foreign currency liabilities. Conversely, in countries with rigid exchange rate regimes, capital controls, or shallow forex markets, the channel's impact is marginal. Nevertheless, as financial integration deepens and monetary policy frameworks evolve, the role of the exchange rate in the broader transmission mechanism is likely to expand.

d. Asset price channel

The asset price channel of monetary policy transmission operates through the impact of policy-induced changes in interest rates on equity prices, real estate values, and other asset classes, which in turn affect household wealth, consumption, and investment. This channel assumes significance particularly in economies with well-developed financial markets, where changes in asset valuations can quickly influence spending decisions and firms' cost of capital. In theory, a decrease in interest rates increases the present value of future earnings and thereby raises asset prices, boosting household wealth and facilitating credit expansion.

In advanced economies, the role of the asset price channel has become more pronounced in recent decades. According to recent findings from the United States, monetary policy shocks now exert a stronger influence on housing markets than before, with the transmission unfolding over several quarters (Hofmann and Peersman, 2024). However, in the Euro Area, the asset price channel remains relatively modest, with studies such as that by Gambetti and Musso et al. (2020) finding that while monetary policy does affect house prices, its contribution to consumption via wealth effects is limited. In contrast, studies on the United Kingdom, such as Meen (2011), suggest that housing wealth plays a more direct role in the transmission mechanism, with interest rate shocks leading to measurable changes in house prices and subsequent consumption shifts.

Emerging economies offer a diverse perspective on the relevance of the asset price channel. In China, recent studies have highlighted that the asset price channel is gaining importance in explaining the overall effects of monetary policy, reflecting the growing size and openness of its equity markets (Song et al., 2021). Similarly, in Turkey, Kaptan (2024) demonstrate that equity price increases can significantly affect investment, though they find limited impact on consumption. In Nigeria, Ufoeze et al. (2018) finds some responsiveness of output to asset price changes, although the effects remain less consistent and statistically weaker than those found in developed markets. In India, Bhattacharyya (2019) suggest that while the asset price channel is not the primary conduit of transmission, it plays a non-negligible role in affecting inflation and output over medium-term horizons, particularly through wealth and balance sheet effects.

In the context of Pakistan, the asset price channel is emerging as a relevant pathway for the transmission of monetary impulses. Agha et al. (2005) and Mukhtar and Younas (2019) emphasize that while bank lending remains the dominant channel, fluctuations in equity prices significantly influence output, although the impact on inflation is less direct. Later studies by Hussain et al. (2022) further confirm that share prices contribute meaningfully to explaining variations in output in response to monetary shocks, particularly when wealth and expectations channels are considered together. Evidence suggests that movements in T-bill yields and equity returns reflect shifts in monetary policy stance and are associated with changes in manufacturing output, albeit with long and variable lags. Other studies (Waheed, 2023) also indicate that asset prices influence inflation indirectly by affecting consumer confidence and investment sentiments, reinforcing the asset price channel's complementary role in the broader transmission framework.

Overall, the asset price channel is increasingly viewed as a supportive yet context-dependent mechanism of monetary transmission. Its effectiveness depends on the degree of financial market development, the depth and volatility of equity and real estate markets, and the extent to which asset prices influence credit conditions and consumer behavior. While more dominant in advanced economies with established capital markets, its relevance is growing in several emerging economies where rising financial sector sophistication and investor participation are enhancing the responsiveness of asset valuations to monetary policy signals.

e. Expectations channel

The expectations channel of monetary policy functions through the central bank's ability to influence private sector expectations regarding future inflation, interest rates, and economic conditions. When monetary authorities credibly signal their intentions, households, firms, and financial markets adjust their behavior accordingly, altering consumption, investment, and wage-setting decisions. In this sense, expectations act as a forward-looking conduit, allowing monetary policy to affect the economy even before traditional interest rate or credit effects materialize.

In advanced economies, the expectations channel is closely linked to the credibility and communication strategies of central banks. According to Hubert (2010), the competence and clarity of central bank communication play a critical role in shaping expectations and easing the constraints on monetary policy. For instance, studies such as Mishkin and Kiley (2025) show that in countries with established inflation-targeting regimes, such as the United Kingdom and Canada, the expectations channel is a dominant mechanism for policy transmission. However, in other economies like Australia, Chile, Israel, and South Africa, expectations play a less prominent role, possibly due to differences in central bank transparency, inflation history, or public trust.

The literature also suggests that inflation expectations tend to be more firmly anchored in advanced economies, particularly those with a strong track record of low inflation and institutional credibility. For example, Deigel and Nautz (2021) find that long-term inflation expectations in the United States respond meaningfully to monetary shocks, validating the importance of re-anchoring as a mechanism for effective transmission. Similarly, Ouakil et al. (2024) investigate the impact of unconventional monetary policy in the Euro area and find that while such measures can temporarily stabilize inflation expectations, their effects on real outcomes are often short-lived. Falck et al. (2021) further highlight the role of expectation heterogeneity, demonstrating that disagreement among agents can alter the direction and magnitude of inflation responses to monetary policy shocks, thereby complicating the management of expectations.

In the context of emerging and developing economies, the expectations channel is generally weaker due to lower institutional credibility and less effective communication frameworks. Ha et al. (2025) report that long-term inflation expectations in EMDEs are often not well anchored, although the adoption of inflation targeting, higher central bank transparency, and stronger macroeconomic fundamentals can enhance the effectiveness of the expectations channel. The IMF (2023) provides additional detailed evidence, indicating that inflation expectations in emerging and developing economies tend to take longer to adjust following inflationary shocks, implying a slower and more uncertain transmission process.

Overall, in case of the emerging economies – including Pakistan, there is a limited research that quantifies the expectations channel of monetary policy. The gradual shift toward a flexible inflation targeting framework and the increased use of forward guidance by the central banks indicate institutional efforts to anchor expectations more effectively. However, relatively higher inflation volatility and weak public trust in monetary authorities continue to limit the expectations channel's full potential. As emphasized in cross-country evidences elsewhere, enhancing the

credibility and communication strategy of the central bank remains crucial for strengthening expectations as a tool for macroeconomic stabilization.

III. Evolution of monetary policy in Pakistan: A brief overview

The development of monetary policy in Pakistan is a testimony to an unfolding dynamic interplay between structural changes at home and the larger trends in global financial architecture. Since its inception in 1948, the SBP has moved from being a directed credit facilitator towards becoming a central bank concerned more with attaining price and financial stability through market-based tools. At the outset, monetary policy in Pakistan was implemented using direct instruments like sector-specific credit dispensations, control of interest rates, and credit ceilings with little scope for fine-tuning monetary conditions to respond to macroeconomic occurrences. The initial SBP Act of 1956 required the Bank to oversee the monetary and credit system in order to promote monetary stability and efficient use of the country's productive resources, although institutional autonomy and instruments needed to carry out this mandate were mostly lacking for a few decades.

Throughout the decades that followed its creation, especially during the 1970s to the 1990s, SBP's monetary policy was mostly focused on lending support to developmental ends via concessional credit in priority sectors. The exchange rate regime too was strictly controlled, with the Pakistani rupee being pegged until 1982, when it shifted to a managed float. At this time, the role of the SBP in shaping aggregate demand was limited, and monetary policy was mostly within the realm of administrative controls as opposed to market indicators. But things started changing in the early 1990s with a series of extensive financial sector reforms undertaken by the Government of Pakistan. Some of these reforms involved the privatization of government-owned banks, capital account liberalization, and increased foreign exchange openness.

The most significant change came in 1992, when SBP launched an auction-based mechanism for the sale of marketable government debt, starting with 6-month Treasury Bills. At the same time, a 3-day Repo facility was initiated, enabling commercial banks to get short-term liquidity against using government securities as collateral. The discount rate of this facility came to surface as a signaling device for the monetary policy stance. The credit-deposit ratio was also introduced as a bridging control in place of sectoral credit ceilings but was discontinued by 1995 in favor of indicative monetary aggregate targets. The establishment of open market operations (OMOs), cash reserve requirements, and statutory liquidity requirements in this phase marked a slow transition from direct to indirect means of monetary control.

SBP's legal and institutional independence was enhanced in 1997 under the SBP Act amendments, allowing it to formulate and implement monetary policy independently and regulate the banking industry. Nevertheless, with more operational flexibility, the system still hinged on the Annual Credit Plan, where monetary and credit expansion goals were determined in consultation with the federal government, using estimated GDP growth and inflation. This indicative planning legacy remained up to the early 2000s. In 2001, SBP officially ended the practice of publishing indicative credit targets and started shifting toward a more market-based monetary policy system.

By 2006, this transformation was enshrined with the abolition of the National Credit Consultative Council, substituted by the Private Sector Credit Advisory Committee, which provided a platform for discussion between private sector stakeholders and the SBP on credit conditions.

In the 2000s, there were also attempts to deepen and diversify the government securities market. Along with 12-month T-bills, longer maturities in the form of Fixed Rate Investment Bonds and Pakistan Investment Bonds were introduced, allowing for the construction of a yield curve and furthering the SBP's capacity to undertake monetary operations across maturities. The exchange rate regime also progressively liberalized, with the current account convertibility being achieved in the 1990s and the partial opening of the capital account following later. By 2006, the SBP started actively tracking short-term money market interest rates as a key operational target to manage aggregate demand and inflation. For better liquidity management, the SBP established the interest rate corridor in 2009, determining the SBP Reverse Repo (ceiling) and Repo (floor) rates. The overnight money market repo rate was to be accommodated within this band, giving an explicit operational framework for policy transmission.

The monetary policy decision-making process was institutionalized further with the setting up of a statutory Monetary Policy Committee (MPC) in November 2015 by amending the SBP Act. The MPC had external specialists apart from senior SBP officials and board members, thus bringing Pakistan's monetary management in line with global best practices. The central bank was now formally mandated to design and implement monetary policy towards the achievement of the federal government's inflation and growth goals. Nevertheless, though the SBP had operational independence, it lacked formal independence to determine numerical inflation targets, a role that remained in the hands of the government. Post-2015 was characterized by a more intensive pursuit of medium-term price stability, buttressed by improved monetary policy communication and a gradual transition towards flexible inflation targeting (FIT) framework.

Subsequent changes to the SBP Act in 2021 further entrenched the independence of the central bank by specifying its objectives as explicitly distinguishing between: domestic price stability, financial stability, and complementing the federal government's overall economic policies. Price stability was defined for the first time as low and stable inflation to be guided by the government-determined medium-term inflation target. These changes also fortified the SBP's financial autonomy and accountability framework, while curbing quasi-fiscal activities. The SBP's functional priority now was to link the overnight interbank rate to the policy rate through active money management through OMOs and standing facilities. Concurrently, the SBP also focused on financial sector stability through ensuring smooth payment system functioning and capital markets.

Overall, despite the progress, challenges to the effective transmission of monetary policy remain. The economy still suffers from a high level of fiscal dominance, which makes the job of the central bank in anchoring expectations and managing inflation more difficult. yet, during the last three decades, Pakistan's monetary policy has made a substantive shift from being a mere extension of fiscal policy to a progressively autonomous instrument of macroeconomic management. Although gaps remain in the policy transmission, rules-based monetary policy regime have been significantly enhanced.

Building upon this momentum, latest SBP's Vision 2024-28 presents a detailed and future-oriented plan to further strengthen the monetary policy architecture. Centered around the overarching goal of price stability, Vision 2024-28 focuses on the complete operationalization of a flexible inflation targeting regime complemented by improved forecasting capabilities, better public communication, and more profound market development. The vision emphasizes ensuring robust analytical strength of the MPC through timely study and medium-term inflation projections, integrating structural risks like climate change and digitalization into policy analysis, and ensuring enhanced transparency through increased public participation. The Vision also emphasizes the role of monetary operations and the deepening of financial market depth to support policy transmission. It also places priority on generating applied research for macroeconomic reforms and building a national data ecosystem to support evidence-based policy decisions. Collectively, this strategic roadmap signals SBP's commitment to aligning with global best practices while responding to the evolving economic realities of Pakistan.

IV. Updated MTM empirics for Pakistan: Data, methodology and results

This section outlines the dataset, variables, and econometric framework employed to examine the transmission channels of monetary policy in Pakistan. It provides the basis for empirical investigation into how monetary policy influences key macroeconomic variables, specifically output and inflation, while addressing challenges related to endogeneity in the identification of monetary policy shocks.

a. Data sources and variable selection

The analysis is based on time series data covering the period 1991 to 2025. Data are sourced from the SBP, Pakistan Bureau of Statistics (PBS), and the World Development Indicators (WDI) of the World Bank. Variable selection is guided by standard monetary transmission theory and is designed to capture the primary channels through which monetary policy affects the economy.

The variables include: consumer price index (CPI) as a measure of inflation; SBP policy rate; short-term interest rates including treasury bill yields; commercial bank lending and deposit rates; large-scale manufacturing index and quarterly real GDP as a proxy for real economic activity; private sector credit; broad money (M2); central bank budgetary financing (PSB); PSX-100 index to represent asset prices; inflation expectations; exchange rate (PKR/USD); trade flows (imports and exports); and global indicators such as oil prices and international commodity price indices. All series are log-transformed or differenced as needed to achieve stationarity, verified through unit root tests.

b. Identification of monetary policy shocks

A major econometric challenge in the analysis of monetary policy is the identification of exogenous policy shocks, given that the SBP adjusts its policy stance in response to current and anticipated economic conditions. This simultaneity introduces endogeneity, potentially biasing the

estimation of the causal effects of monetary policy. A well-known implication of this issue is the "price puzzle" (Sims, 1989), where an increase in the policy rate is followed by a rise in inflation, contrary to theoretical expectations. This puzzle typically reflects omitted forward-looking behavior of the central bank within the empirical model.

To address this, the study follows a narrative identification approach inspired by Romer and Romer (2004). A Taylor-type reaction function is first estimated to model the systematic component of monetary policy decisions. The residuals from this regression, representing deviations of the policy rate from its predicted value based on contemporaneous and lagged macroeconomic fundamentals, are treated as exogenous monetary policy shocks. These residuals are interpreted as unanticipated or discretionary actions by the central bank, isolating the true policy innovation from endogenous responses to macroeconomic developments.

c. Econometric specification and channel decomposition

The empirical analysis begins with the estimation of a reduced-form Vector Autoregressive (VAR) model to capture the joint dynamics of output, inflation, and monetary policy. A recursive identification strategy is employed using Cholesky decomposition of the residual covariance matrix. The variable ordering assumes that real output responds with a lag to policy changes, followed by prices (CPI), while the monetary policy instrument (e.g., policy rate or identified shock) reacts contemporaneously to macroeconomic conditions.

To examine the relative importance of individual transmission channels, the baseline VAR is augmented with representative variables for each channel. Specifically, the interest rate channel is captured through lending and deposit rates; the credit channel via private sector credit; the exchange rate channel through the PKR/USD exchange rate; the asset price channel via the PSX-100 index; and the expectations channel using available inflation expectations data.

The strength of each channel is assessed by comparing impulse response functions (IRFs) from two model specifications: one in which the channel variable is treated as endogenous, and another where it is exogenized; effectively "shutting off" the channel. The difference in the magnitude and persistence of the IRFs across these two models quantifies the contribution of each channel to the transmission of monetary policy shocks.

The general form of a VAR(p) model, where p is the number of lags, can be written as:

$$Y_t = c + A_{t-1} + A_{t-2} + \cdots + A_{t-p} + \epsilon_t$$

where: Y_t is a (k×1) vector of endogenous variables at time t; c is a (k×1) vector of constants (intercepts); A_i is a (k×k) matrix of coefficients for lag i; ϵ_t is a (k×1) vector of error terms (innovations). Furthermore, The VAR models for each channel are specified as follows (with Cholesky ordering shown): Credit channel: IPI/GDP, Prices, PSC, MP; Exchange rate channel: IRDF, ER, NX, GAP, CPI MP; Asset price channel: DR, PSX, CCI, Gap, CPI MP; Interest rate channel: IPI/GDP, Prices, PSC, REER, PSX, MP; Expectations channel: IPI/GDP, Prices, PSC, REER, MP

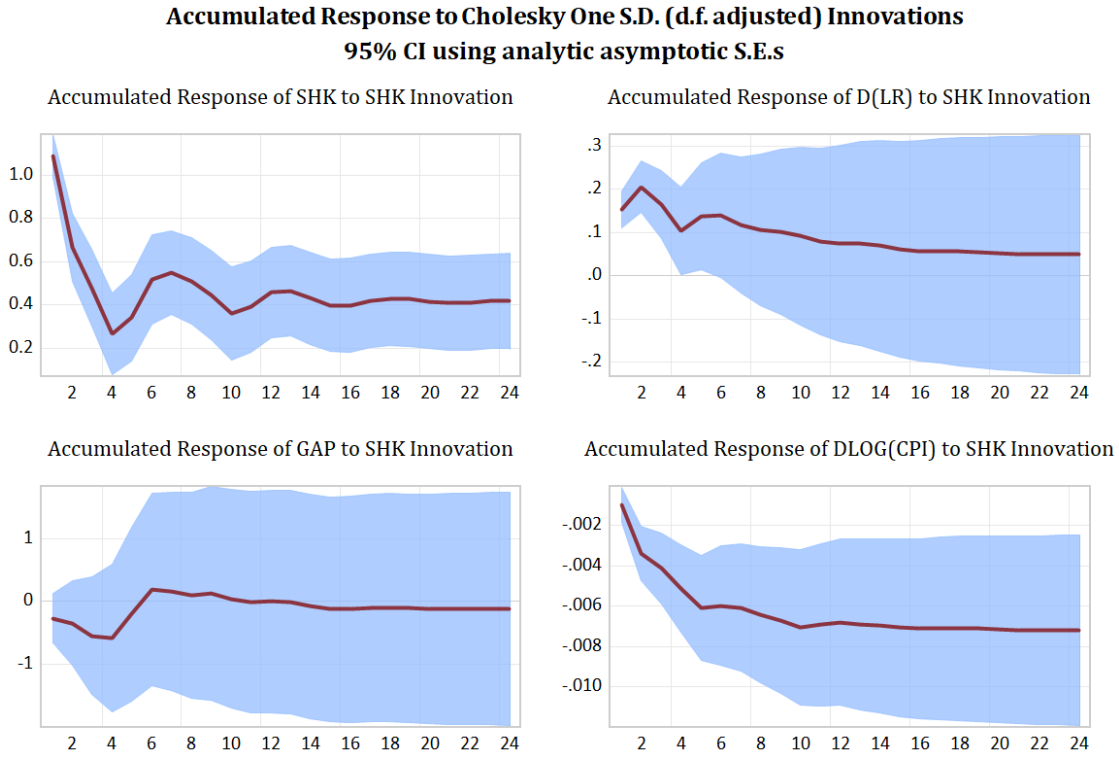
where: MP is the unanticipated monetary policy shock; IPI is the Industrial Production Index, or gap, which is a trend deviation of the IPI; GDP is quarterly real GDP data, backcasted from 2001; Prices refer to the Consumer Price Index (CPI); PSC denotes credit to the private sector; PSX is the Pakistan Stock Exchange Index; REER is the Real Effective Exchange Rate; TB6 is the 6-month Treasury bill rate, used as the monetary policy indicator; IRDF is the interest rate differential of the SBP policy rate and the federal fund rate; NX is net exports; and CCI is a consumer confidence index proxy of consumption. Moreover, the optimal lag length is determined using standard information criteria (AIC, SIC, HQ). Six months is chosen to adequately capture the transmission dynamics without compromising degrees of freedom.

d. Results and discussion

Following discussion is based on preliminary updated empirical findings on the monetary policy transmission channels in Pakistan. The analysis is based on the VAR/SVAR model outlined in the methodology section.

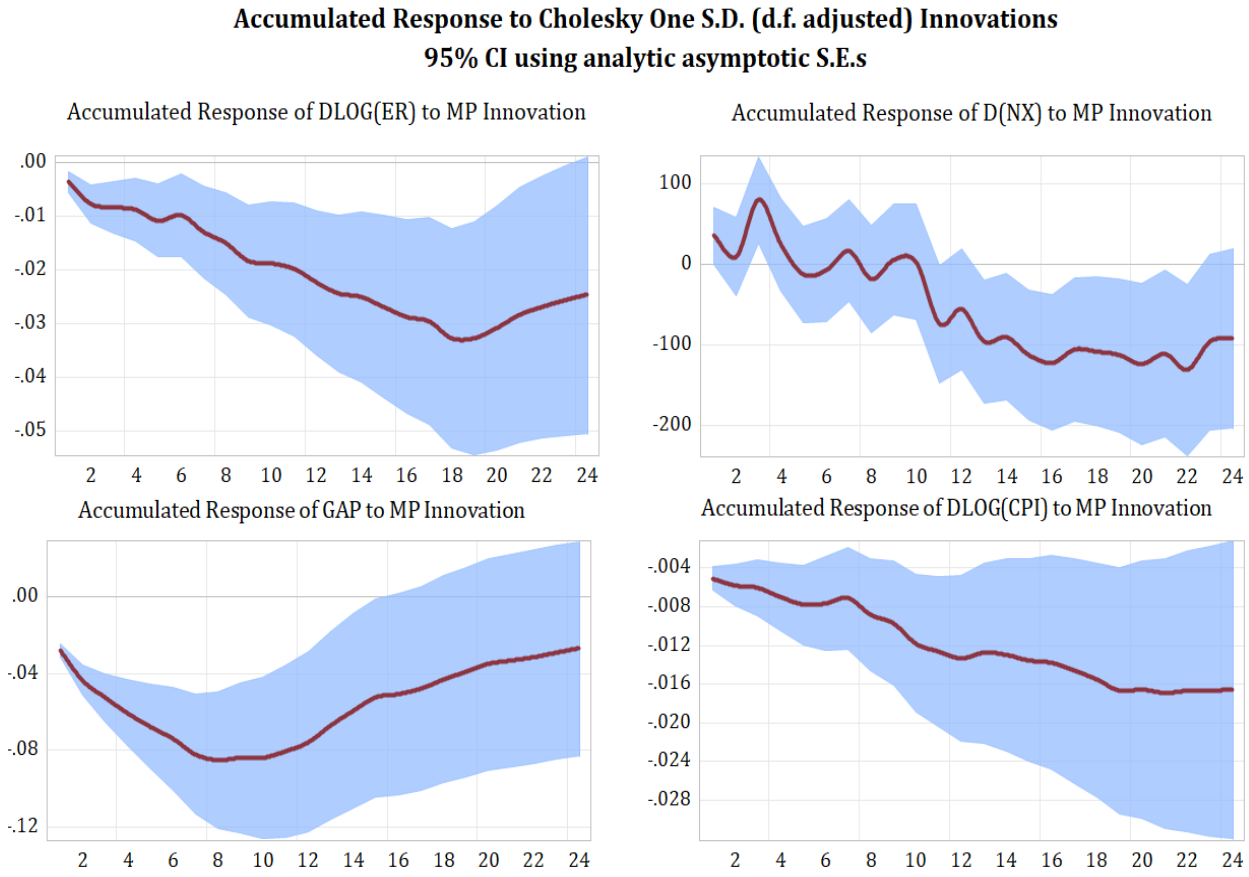
i. Interest rate channel

The empirical results provide clear evidence of an operative interest rate channel in Pakistan. Specifically, a 1 percentage point increase in the policy rate is associated with an estimated 0.75 percentage point rise in the commercial bank lending rate and a 0.60 percentage point increase in the six-month treasury bill rate within a two-month horizon. These upward adjustments in market interest rates contribute to tightening financial conditions by discouraging borrowing and investment activity, thereby reducing aggregate demand. The pass-through to inflation is found to be moderately strong but delayed, with statistically significant effects emerging after a lag of approximately three to four months. This lagged response reflects the time it takes for monetary tightening to translate into reduced pricing pressures in the broader economy. Overall, the findings underscore the relevance of the interest rate channel as a key instrument for influencing demand conditions and achieving the central bank's inflation stabilization objectives.



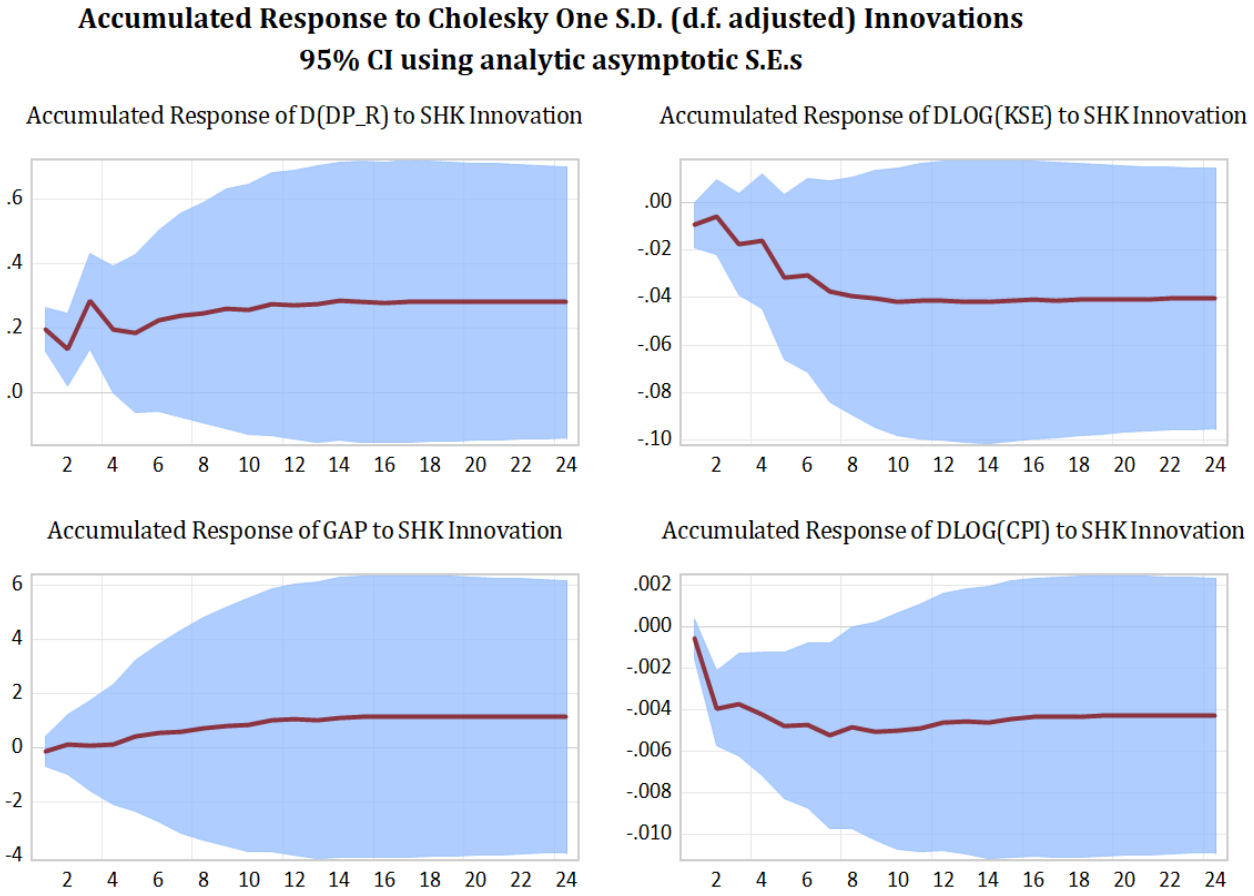
ii. Exchange rate channel

The exchange rate channel is found to be operational in Pakistan, with relatively immediate effects following changes in the policy rate. Empirical estimates indicate that a 1 percentage point increase in the policy rate leads to an appreciation of the nominal exchange rate by approximately 1.2 percentage points. This response is driven by increased foreign capital inflows and a reduction in domestic demand for foreign currency, reflecting improved interest rate differentials and policy credibility. The resulting appreciation lowers the domestic price of imported goods and services, thereby exerting downward pressure on inflation, particularly in tradable goods sectors. Notably, the exchange rate adjustment is both statistically significant and visible within the first month of the policy shock, highlighting the relatively fast transmission through this channel. These findings are consistent with theoretical expectations and underscore the effectiveness of the exchange rate channel in economies characterized by high trade openness and a substantial import share in the consumer price index.



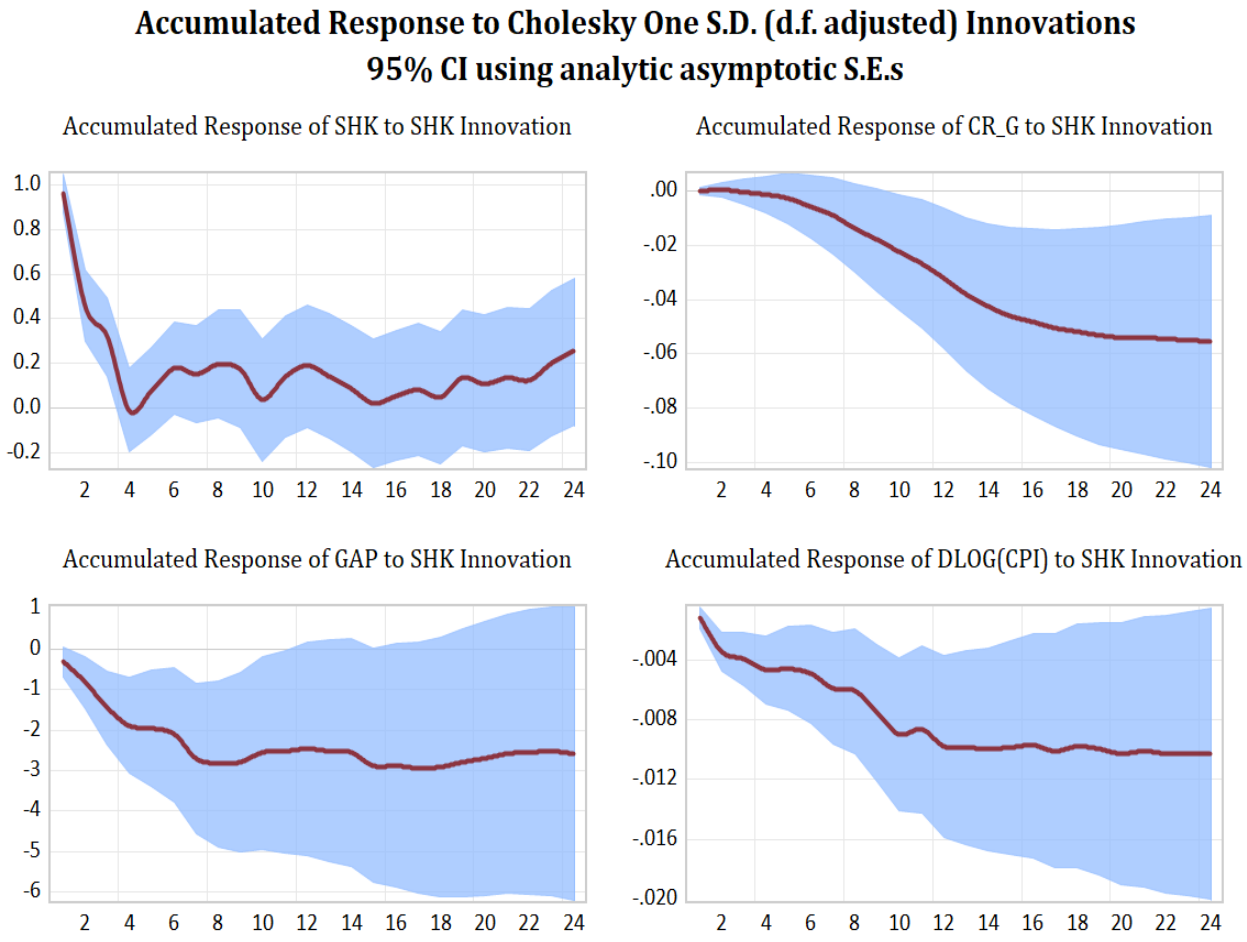
iii. Asset price channel

The asset price channel of monetary policy appears to be largely inactive in the context of Pakistan. Empirical evidence indicates that increases in the policy rate do not yield a statistically significant response in asset prices, particularly in equity markets as proxied by the PSX index, nor do they materially influence household consumption patterns. This weak transmission suggests that changes in interest rates are not effectively capitalized into asset valuations or perceived household wealth, thereby limiting their impact on aggregate demand. Several factors may contribute to this muted response, including structural inefficiencies in financial markets, low levels of financial literacy and inclusion, shallow investor participation, and the underdevelopment of non-bank financial channels. These limitations impede the effectiveness of the asset price channel and highlight the need for broader financial market reforms to enhance its role in the monetary policy transmission mechanism.



iv. Credit channel

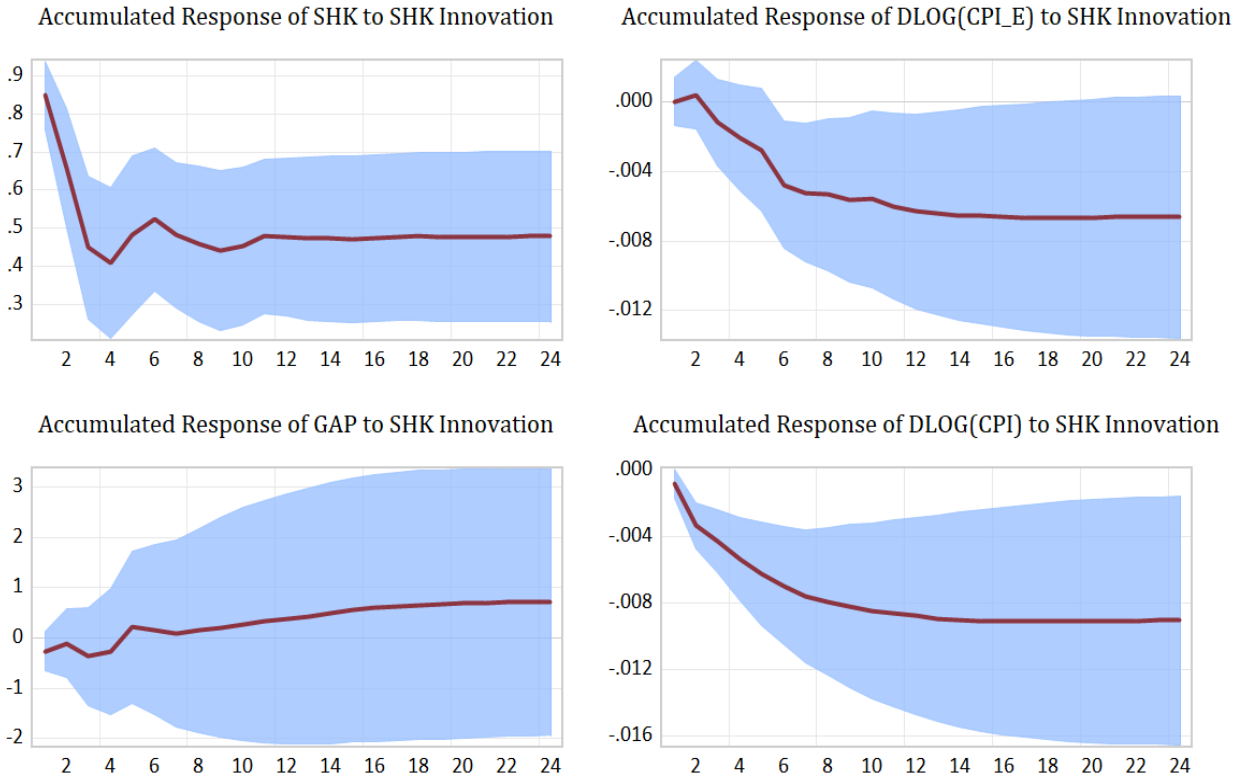
The results for the credit channel indicate that monetary policy exerts a significant influence on private sector credit in Pakistan. An increase in the policy rate is associated with a marked reduction in credit extended to the private sector, reflecting higher borrowing costs and a contraction in banking system liquidity. This outcome supports the presence of an active credit channel through which tighter monetary policy indirectly curtails credit availability and investment activity. Moreover, the empirical analysis shows that other macro-financial variables, such as the output gap and inflation, also have statistically significant effects on credit dynamics. This suggests that the credit channel in Pakistan operates not only through interest rate movements but also through broader monetary and financial conditions. These findings underscore the relevance of the credit market as a key conduit for the transmission of monetary policy impulses to the real economy.



v. Expectations channel

The empirical findings suggest that the expectations channel is operative in Pakistan, though its effectiveness is constrained by structural limitations. Monetary policy shocks and global oil prices emerge as key determinants of inflation expectations, while the output gap also displays responsiveness to changes in the policy stance. These dynamics indicate that forward-looking behavior plays a role in shaping inflationary outcomes, consistent with modern monetary theory. However, the overall strength of the expectations channel remains limited due to factors such as low levels of financial literacy, underdeveloped financial markets, and weak communication and transmission mechanisms. Furthermore, external shocks, particularly volatility in global commodity prices, often exert a stronger influence on inflation expectations than domestic policy signals, thereby diminishing the central bank's capacity to fully anchor expectations. These findings highlight the need for enhanced transparency, improved public communication, and stronger institutional credibility to bolster the effectiveness of this transmission channel.

Accumulated Response to Cholesky One S.D. (d.f. adjusted) Innovations
95% CI using analytic asymptotic S.E.s



Overall, as exhibited in table below, the comparative analysis of monetary transmission channels, drawing on updated empirical estimates and earlier studies, reveals a weakening in the overall effectiveness of monetary policy in Pakistan. While all five channels, interest rate, credit, exchange rate, asset price, and expectations, remain functionally operative, their strength, particularly in terms of inflation control, has diminished based on latest estimates. For instance, the interest rate channel, traditionally central to SBP's monetary operations, now exhibits a weaker impact on both inflation and output relative to earlier findings by Agha et al. (2005) and Hussain et al. (2022). Whereas previous studies identified moderately strong inflation responses, the current estimates suggest a subdued pass-through, indicating reduced potency of the policy rate in anchoring price dynamics. A similar trend is evident in the credit channel, which continues to transmit policy impulses to output but with diminished influence on inflation. The exchange rate channel, while relatively immediate in effect, also displays reduced transmission intensity, with only modest impacts on both inflation and real activity, highlighting persistent frictions in external sector dynamics and limited exchange rate pass-through.

The asset price and expectations channels exhibit more nuanced trends. The asset price channel, historically weak in the Pakistani context, now shows stronger responsiveness in terms of output, potentially reflecting improved market sensitivity to financial conditions, but continues to have little traction on inflation outcomes. Meanwhile, the expectations channel, which was largely absent from earlier studies due to data limitations, now registers some measurable influence,

particularly on output. However, the inflation response remains muted, suggesting that while forward-looking behavior exists, it is not yet fully anchored or responsive to policy signals.

Comparison of empirical results of monetary policy transmission in Pakistan

	Emerging Economies (Average)		Agha et al. (2005)		Hussain et al. (2022)_PAK		This Study	
	Inflation	Output	Inflation	Output	Inflation	Output	Inflation	Output
Interest rate channel	0.4 to 1.2	0.8 to 2.0	0.2	0.8	0.1	0.6	0.1	0.5
Credit channel	0.4 to 1.0	0.6 to 1.8	0.3	1.2	0.2	0.8	0.1	1.1
Exchange rate channel	0.4 to 1.1	0.6 to 1.5	0.1	0.6	0.1	0.5	0.04	0.3
Asset price channel	0.2 to 0.6	0.2 to 0.8	0.1	0.4	0.1	0.7	0.01	1.2
Expectations channel	0.1 to 0.5	0.5 to 0.9	-	-	-	-	0.01	1.0 to 2.0

Collectively, these findings underscore that while the monetary transmission mechanism in Pakistan remains operational across its various channels, it has become less effective in achieving its primary objective of price stability. This weakening can be partly attributed to policy actions during the COVID-19 pandemic, particularly the introduction of targeted refinance schemes at concessional rates by the SBP. While these measures were necessary to support liquidity and economic activity, they introduced segmentation in interest rates and diluted the pass-through from the policy rate to broader financial conditions. In the post-pandemic period, the transmission mechanism was further challenged by a succession of external and domestic shocks. The Ukraine-Russia war led to a severe deterioration in Pakistan's terms of trade, driven by surging global energy and food prices. On top of that this external shock, the 2022 floods disrupted agricultural supply chains and elevated food inflation to record levels, intensifying supply-side pressures that limited the effectiveness of demand-management tools.

Compounding these challenges, the SBP's decision to impose import restrictions in late 2022, aimed at addressing external imbalances, unintentionally reduced competitive pressures in domestic markets, enabling firms to exercise greater pricing power. As a result, inflation remained persistently high despite substantial monetary tightening, reflecting the growing influence of cost-push dynamics and entrenched inflation expectations. These structural distortions are clearly reflected in the latest empirical results, which show a muted inflation response across all traditional transmission channels, even as output exhibits stronger reactions in areas such as the asset price and expectations channels. This divergence suggests a growing decoupling in the transmission mechanism – where monetary policy continues to affect real activity but falls short of stabilizing prices. The findings highlight the urgent need for coordinated macroeconomic reforms to restore the credibility and effectiveness of monetary policy. This includes strengthening financial market functioning, enhancing central bank transparency and communication, and rebuilding the SBP's capacity to anchor expectations in an increasingly volatile and externally vulnerable economic environment.

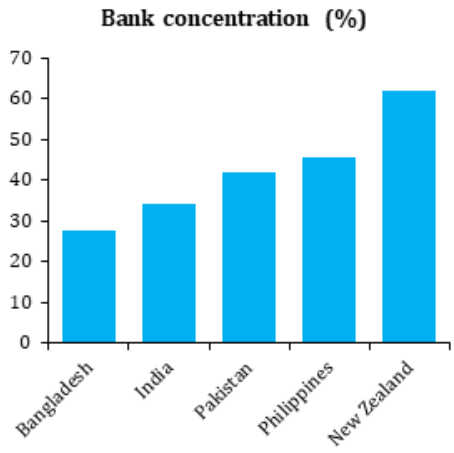
V. Possible caveats for limited monetary policy transmission in Pakistan

Despite meaningful progress in institutional reforms, such as the formation of an independent MPC, transition toward a market-based exchange rate regime, and increasing reliance on interest rate-based policy instruments, empirical results show that monetary policy in Pakistan continues to face considerable transmission lags and leakages. These limitations are not confined to any one transmission channel but stem from underlying frictions embedded in the structure of the banking system, the composition of credit markets, exchange rate management practices, capital market depth, and the formation of inflation expectations. Together, these factors diminish the responsiveness of inflation and output to monetary policy shocks, reduce policy credibility, and complicate macroeconomic stabilization efforts, particularly during periods of high inflation or external stress.

This section examines such caveats that may contribute to the relatively weak transmission of monetary policy in Pakistan, drawing on both domestic structural limitations and cross-country comparisons. While this study does not explicitly incorporate such structural weaknesses into the empirical modelling framework, it acknowledges their importance and offers a roadmap for future research to endogenize such constraints within econometric models. Doing so would allow for a more comprehensive understanding of the frictions that impair transmission and would enhance the precision and policy relevance of empirical findings.

a. Banking concentration and the interest rate channel

The interest rate channel is typically regarded as the primary transmission mechanism for monetary policy, as it directly influences borrowing costs, consumption, and investment decisions. However, in Pakistan, the effectiveness of this channel is significantly hindered by structural weaknesses in the banking system. When central banks adjust policy rates, these changes are expected to be transmitted through the term structure of interest rates, eventually impacting credit demand, savings behavior, and aggregate spending. Yet, in Pakistan, this process remains weak and delayed.

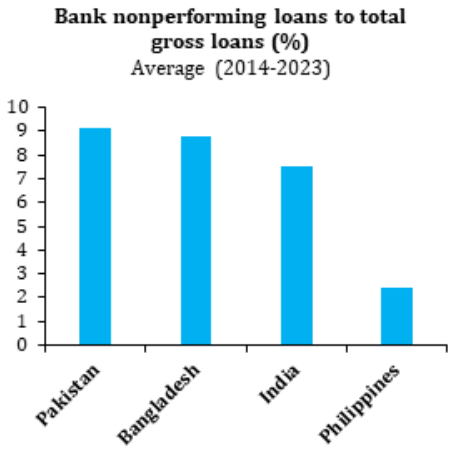


One critical reason is the high concentration within the banking sector. The top three commercial banks account for over 40 percent of total banking assets, resulting in an oligopolistic structure where competitive pressures are limited. In such an environment, changes in the policy rate do not translate smoothly into lending and deposit rates. Large banks with market power tend to adjust rates more slowly and asymmetrically, especially during tightening phases. This weakens the monetary authority's ability to steer short-term rates across the financial system.

Moreover, the existence of state-owned or state-subsidized banks, which often operate with soft budget constraints and are less sensitive to profit motives, further undermines the link between the policy rate and market rates. These institutions may continue to extend credit based on government priorities or social mandates, rather than in response to market signals. Earlier subsidized loan programs, such as export finance schemes, introduced rate segmentation, reducing the sensitivity of a large portion of borrowers to monetary policy. Consequently, despite changes in the SBP policy rate, aggregate credit conditions and borrowing behavior remained largely unaffected.

b. Credit market imperfections and the credit channel

The credit channel of monetary policy works through the amplification of interest rate effects via the external finance premium—the additional cost of external borrowing relative to internal funding. This premium widens during monetary tightening, leading to a contraction in private credit and investment. In Pakistan, the credit channel is hindered by both demand- and supply-side rigidities, which weaken its impact on real activity.



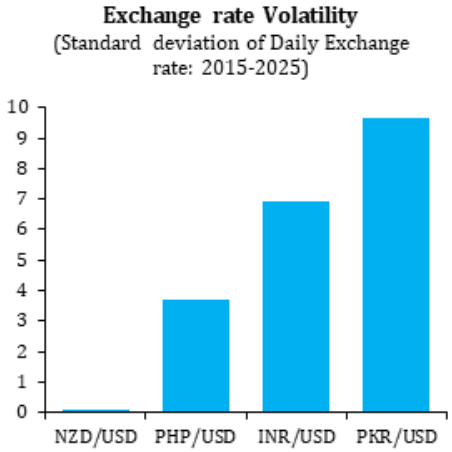
Two sub-channels merit special attention: the balance sheet channel and the bank lending channel. The balance sheet channel operates by influencing the financial health of borrowers. Higher interest rates increase the debt burden and reduce the value of collateral, such as real estate or financial assets, making borrowers appear riskier. This increases the probability of loan default and discourages banks from extending credit. In Pakistan, the effectiveness of this channel is reduced by elevated non-performing loans (NPLs), currently among the highest in regional comparisons, and by banks' preference to lend to the government. A higher NPL ratio and the crowding-out of private borrowers mean that even modest policy tightening leads banks to curtail credit, often indiscriminately, rather than reprice risk.

The bank lending channel is further constrained by operational inefficiencies. Though Pakistani banks maintain adequate capital buffers, their cost-to-income ratios (CIR) remain high, around 50 percent, which implies poor cost efficiency. Banks with high CIRs are less able to absorb rising funding costs during tightening cycles and respond by cutting back on credit more sharply than necessary. This behavior leads to over-tightening in credit conditions, amplifying the real effects of monetary policy in unintended ways. Consequently, while the volume of credit responds, the qualitative distortions (such as credit rationing) undermine the allocative efficiency of monetary policy.

c. Exchange rate rigidity and shallow forex market

The exchange rate channel influences domestic prices and output through changes in the relative price of imports and exports. An interest rate hike, by attracting capital inflows or reducing demand for foreign exchange, typically leads to an appreciation of the domestic currency, thereby lowering the cost of imported goods and easing inflationary pressures. This mechanism, however, is weakened in Pakistan due to the structure and functioning of the foreign exchange market.

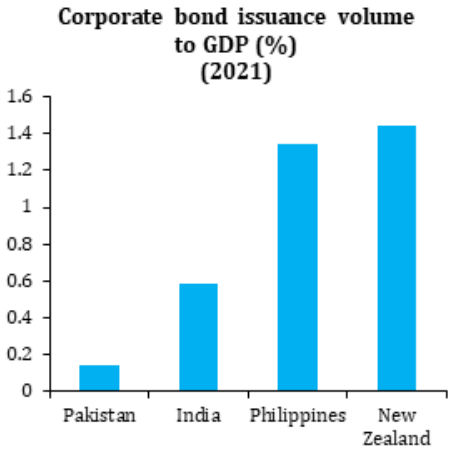
Although Pakistan has formally adopted a market-based exchange rate regime, the transition from a pegged system has been uneven. The foreign exchange market remains shallow and prone to episodes of volatility, sudden stops, and administrative interventions. These characteristics reduce the credibility and predictability of exchange rate movements, thereby muting their effectiveness in transmitting monetary policy signals. When the exchange rate adjusts in large, discontinuous steps rather than in response to marginal policy signals, its stabilizing role is compromised.



Moreover, Pakistan maintains strict capital account controls, which limit the substitutability between domestic and foreign assets. In such a setting, changes in interest rate differentials do not induce capital flows or exchange rate adjustments in the way they do in more open economies. The result is a muted exchange rate response to monetary policy, which in turn weakens its role in curbing imported inflation or influencing investor expectations.

d. Underdeveloped capital markets and the asset price channel

Monetary policy transmission through the asset price channel occurs when changes in the policy stance influence asset prices in the economy, particularly equities and the value of collateral. These changes subsequently affect consumption and investment through the wealth effect and by altering the financing costs of investment.



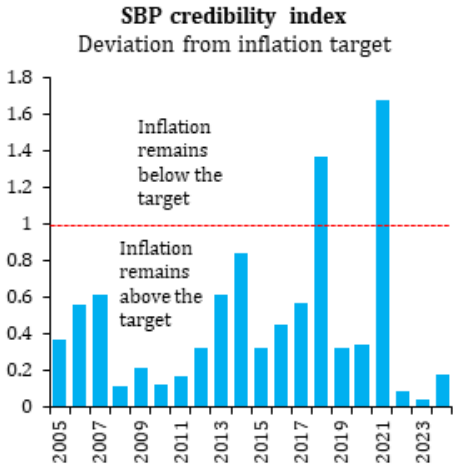
The effectiveness of this channel largely depends on the development and significance of bond, equity, and real estate markets. In economies where long-term bond markets are well-established, an increase in short-term interest rates typically leads to a decline in bond prices. This decline reduces overall wealth, thereby dampening aggregate demand. The more developed and integrated these asset markets are, the more effectively they transmit monetary policy signals.

In Pakistan, however, bond and equity markets remain underdeveloped, which limits the activation of the asset price channel. Thus, monetary policy changes have limited observable impact on asset valuations, indicating weak transmission through this route.

Additionally, the composition of financial portfolios plays a crucial role. In settings where most savings are intermediated through the domestic banking system and only a small share of household or corporate portfolios is invested in market-sensitive securities, the asset price channel remains constrained. In contrast, more diversified portfolios, with significant exposure to financial assets whose value fluctuates with market conditions, tend to be more sensitive to monetary policy actions.

e. Policy credibility and the expectations channel

Among the five channels, the expectations channel is theoretically the most powerful and forward-looking. A credible central bank can influence inflation and output by shaping expectations about future interest rates, price stability, and economic conditions. However, in Pakistan, this channel faces several hurdles.



Inflation expectations are often backward-looking, shaped by recent inflation trends, food and energy prices, and informal information sources rather than by central bank guidance. The SBP has taken steps to improve its communication, including forward guidance and transparency through regular Monetary Policy Statements. However, limited public trust, political pressures, and a history of inconsistent policy implementation undermine its credibility. This problem is compounded by fiscal dominance, where the monetary authority is implicitly constrained by the government's financing needs.

Moreover, surveys suggest that financial literacy in Pakistan remains low, which weakens the transmission of policy intent to the general public. In such an environment, even well-calibrated monetary policy actions may fail to influence inflation expectations, wage-setting behavior, or long-term contract pricing. This limits the central bank's ability to pre-emptively anchor expectations and respond to shocks with forward-looking instruments.

VI. Conclusion and way forward

This study was carried out under the strategic umbrella of the SBP Vision 2024-28, which outlines the Bank's objective of transitioning toward a full-fledged Flexible Inflation Targeting (FIT) framework. However, a key pre-requisite for this transition is an empirically well-founded knowledge of the monetary transmission mechanism in Pakistan's distinctive macro-financial environment. Prior to adopting a regime that is based on interest rate signals to control inflation expectations and anchor price stability, it is important to examine carefully how and through which channels monetary policy impulses filter into the economy. Build on earlier work, this study therefore aims to offer a first step to a more comprehensive diagnostic of the monetary transmission mechanism in Pakistan, while also identifying the structural constraints that limit its effectiveness.

Rather than focusing on empirical refinement alone, the study has prioritized a wide-ranging literature review, drawing from both domestic and international research. Its primary purpose is to synthesize the existing evidence on the functioning of various transmission channels and highlight the broader macroeconomic, institutional, and financial factors that shape their effectiveness. In so doing, the study not only compares Pakistan to peer economies but also presents a guide for future research that might include these structural qualifications in empirical models – making policy analysis more relevant and accurate.

Our initial updated findings suggest that monetary policy in Pakistan remains functional, but its transmission is partial and uneven across channels. The interest rate channel, though moderately effective in affecting short-term market rates, is hindered by limited pass-through to bank lending and deposit rates. This shortfall largely stems from structural rigidities, including high banking sector concentration, heavy exposure of banks to government securities, and existence of earlier distortionary concessional refinance schemes. These features blunt the incentive of financial intermediaries to adjust pricing in line with the policy rate, thereby muting the intended effects of monetary tightening or easing.

The exchange rate channel shows more immediate response, with tighter policy leading to nominal exchange rate appreciation that helps temper tradable inflation. However, this channel's efficacy is diminished by credibility gaps, discretionary interventions, and shallow foreign exchange market, all of which introduce volatility and reduce the predictability of exchange rate behavior in response to monetary signals. Tight capital controls further limit arbitrage and weaken asset substitutability, which are crucial for effective exchange rate-based transmission.

The credit channel reveals some efficacy in passing monetary impulses, especially in contraction of private sector credit under more stringent conditions. However, this is largely neutralized by fiscal dominance, where banks find it worthwhile to lend to the government rather than riskier private borrowers, and high NPL ratios and high operation inefficiencies. These combined lower banks' responsiveness to policy changes, necessitating more vigorous monetary adjustments to deliver desired macroeconomic results.

The asset price channel, on the other hand, is mostly dormant. Shallow capital markets, existence of undocumented economy, weak public participation in financial securities, and lack of

wealth effects translate into limited effects on asset prices and, consequently, on investment or consumption decisions. This prevents one of the possible feedback channels through which monetary policy will have an effect on aggregate demand.

At the same time, our initial work on the estimation of the inflation expectations channel suggests that it works in Pakistan. Our preliminary evidence indicates that inflation expectations themselves react to policy changes, as the effectiveness of the channel as a whole is truncated by low levels of financial literacy, recurrent external shocks, and institutional limitations. Periodic balance of payments pressures, unpredictable and discretionary changes in administered price of energy, and international commodity price volatility tend to overwhelm the inflation outlook, undercutting the central bank's capacity to anchor expectations via forward guidance or signaling of interest rates.

Overall, this study concludes that the monetary policy in Pakistan is effective but in a partial manner. Transmission channels exist but with lags, with low elasticity, or with structural leakages. Notably, as highlighted, this study is not a last word – in fact, it is a stepping stone to a wider research agenda at the SBP, set under the Vision 2024-28. It seeks to redirect the attention away from empirical measures towards a better understanding of the structural and institutional underpinnings necessary for successful policy transmission. Further research needs to start from this base by embedding these structural restrictions in quantitative models and trying out alternative policy instruments or coordination devices. This will not only enhance the effectiveness of monetary policy in Pakistan but also enhance public confidence in the SBP and its ability to bring macroeconomic stability under the envisioned inflation targeting framework.

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Annexure: Selected literature review

Authors	Main Findings	Impact on Inflation/ Output	Transmission Lags	Country
Wang, Y., Whited, T. M., Wu, Y., & Xiao, K. (2022).	This study explores that the deposit and loan market power channels are quantitatively important in explaining monetary transmission. This study emphasizes the role of market structure in monetary policy transmission.	Output: 0.2-0.3 Inflation: 0.4-0.6		US and Europe (advanced economies)
Acosta-Ormaechea and David Coble (2011)	Acosta find that interest rate channel is effective in most euro-area economies. They also suggest that de-dollarization in some of those economies may lead to more effective transmission through the interest rate channel.	Output: 0.01	12 -36 months (varies as per economy)	Advanced and emerging economies.
Gali & Gertler (1999)	The findings suggest that explain inflation dynamics, emphasizing the role of forward-looking expectations and real marginal costs (proxy: labor income share).	Inflation: 0.02	12 months	US
Angeloni et.al (2003)	The response of prices is slower comparatively and takes effect in the next few years. In the euro area most of this transmission takes place via the Investment channel compared to the United States where most of the output adjustment is due to changes in consumption. However, the results suggest that though not dominant the interest rate channel is rather prominent in transmitting monetary policy shocks in the Euro area.	inflation: 0.1-0.2	12 months	Euro area
Christiano et al. (2005)	Monetary policy shocks affect inflation and output through Dynamic Stochastic General Equilibrium (DSGE) model with nominal rigidities. Their work is seminal in explaining the lagged and persistent effects of MP.	Inflation: 0.1-0.3	12-24 months	US
Beyer and Chen (2024),	The monetary policy pass through remained most effective through interest rate channel. However, the pass-through to deposit rates is also ambiguous at the same time. Likely higher pass-through in a hiking cycle reduces private sector credit, creating a conducive savings environment.	Inflation: 0.1-0.3	12-24 months	Euro Area
Checo, Grigoli and Sandri (2024)	The monetary transmission twirls considerable traction in financial and macroeconomic conditions in emerging market economies (EMEs). Hence concluding that policy rate tightening helps in lifting the bonds yields, curbing real activity, strongly impacting leveraged firms resulting in inflation reduction in the long term.	Output: 0.02 Unemployment: 0.005	9 months	Emerging markets
Khundrakpam et al. (2012)	Interest rate channel is the strongest channel in India as it accounts for half of the total impact of monetary shocks on GDP growth and about one-third of the total impact on inflation.			India
Mohanti and Banerjee (2014)	This study explores the effectiveness of the credit channel of monetary policy transmission in India from the perspective of magnitude, timing, and composition puzzles. The study concludes the weak presence of credit channels in India.	Output: -0.001	3Qs for output and 4 Qs for inflations	India
Gumata, N., Kabundi, A., and Ndou, E. (2013).	Gumata tested all five channels of monetary policy transmission mechanisms for South Africa, and Credit channel is rather weak as the transmission mechanism	Inflation: 0.05		South Africa

Authors	Main Findings	Impact on Inflation/ Output	Transmission Lags	Country
	is more strong for interest rate, followed by followed by the exchange rate and expectations Channel.			
Ibarra (2016)	The findings suggest that of the accumulated responses shows that for a 25 basis points shock in the interest rate, the accumulated response of output in percentage points when both variables are endogenous is 0.84 for 12 months and 0.94 for 24 months. However, the accumulated response of output when this variable is exogenous is only 0.70 for 12 months and 0.80 for 24 months.	Output: 0.84	12 months	Mexico
Choi et al (2022)	Used industry-level (22 industries) data on output and prices with monetary policy shock estimates for 105 countries for 1973-2019 to analyze how the effects of monetary policy vary with industry characteristics. the findings suggest strength of the various monetary transmission channels indeed varies with the state of the business cycle. Especially the interaction the credit channel tends to be larger. On the other hand, proxies for other channels of monetary policy. do not exhibit business-cycle dependency.	Inflation: 0.07 Output: 0.11		105 Countries
Romer and Romer (1989)	Introduced narrative approach to analyze real effects monetary disturbances.	Inflation: -0.12 Output: -0.12	36 months for output	US
Hussain et al (2022)	The study analyzed evolution and strength of various channels of monetary policy transmission mechanism in Pakistan using SVAR models. Study found that credit channel is relatively more effective in transmitting the changes in monetary policy to the economy.	Inflation: 0.1 Output: 0.15	18 months	Pakistan
Mukhtar and Younas (2019)	The results show that the monetary aggregates targeting agenda is still operative in effecting the output and general price level. Bank lending have a non-trivial part through the investment channel and share prices through wealth effect on price level and output, while the conventional interest rate channel seemed to be ineffective in the transmission mechanism process in Pakistan.	Inflation: 0.026 Output: 0.6	8 lags	
Agha et al (2005)	The 'price puzzle' is still there, prices start to fall after six months bottoming out after 28 months	Inflation: less than .020 ppt Output: -0.001 from 4th Q onwards	9 months	Pakistan
Cheema and Naeem (2013)	The study finds that bank credit channel does not provide additional leverage to authorities for the conduct of monetary policy. It means that increase in interest rate does not decrease the bank credits because banks make adjustment against monetary policy shocks by using their liquid financial instruments. however, the result show that there is a long run cointegration relationship between bank credit to private business sector and inflation, interest rate, bank deposits, exchange rate, industrial production index and asset prices.			Pakistan