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Assessing The Role of Financial Development in Macroeconomic Stability: A Time-series Analysis of Pakistan

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Abstract

This study aims to investigate the relationship between financial sector advancement and macroeconomic stability in Pakistan over the period of 1980–2021. By analyzing data from the State Bank of Pakistan, the study focuses on the causal relationship between various factors of financial development in Pakistan and the stability of macroeconomic indicators. The study utilizes a balance of payment to GDP as the dependent variable, while the explanatory variables include M2 to GDP, bank claim on private sector ratio to GDP, equity market capitalization to GDP, national saving to GDP, and inflation. The study applies statistical tests such as the ADF unit root test and the modified causality test to observe the causal association among the long-run dependent and independent variables. The results of the study indicate that financial development has various causal relationships with macroeconomic stability in Pakistan. The findings reveal that financial depth, banking sector development, and the size of the equity market have a unidirectional causal relationship with macroeconomic stability, while the saving ratio and control variable inflation have independent causal relationships with the macroeconomic stability of Pakistan. Additionally, the study finds that the saving ratio has a unidirectional causal connection with banking sector development and unidirectional causality with financial deepening. Furthermore, there exists a bidirectional causal association between banking sector development and macroeconomic stability in Pakistan. Our findings suggest the need to accelerate the financial reforms which were initiated by the government in the late 1980s and to improve the efficiency financial systems and governance to stimulate saving/investment and, consequently, long-term economic growth.

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1. Introduction

The relationship between financial development and macroeconomic stability has been widely debated in the literature. While some studies argue that financial development leads to macroeconomic stability (Demirgüç-Kunt & Levine, 1996; King & Levine, 1993), others suggest that macroeconomic stability is a prerequisite for financial development (Levine, 2005; Rajan& Zingales, 1998). Assessing the role of financial development in macroeconomic stability is essential for understanding the complex interactions between the two variables and their implications for economic growth and development.

The study of the relationship between financial development and macroeconomic stability has gained renewed attention in recent years, particularly in the context of developing economies (Akinlo, 2006; Beck & Levine, 2004; Demirgüç-Kunt & Levine, 2009). In these economies, financial development is often limited, and the financial sector is relatively underdeveloped compared to developed economies. Therefore, understanding the relationship between financial development and macroeconomic stability in these economies is crucial for formulating policies that can promote economic growth and development.

According to classical and Keynesian theories, macroeconomic stability refers to an economy's ability to withstand external shocks and promote sustainable economic growth. Achieving macroeconomic stability helps to mitigate the impact of fluctuations in currency and interest rates in the global market. In other words, a stable macroeconomic environment reduces the vulnerability of the domestic economy to external shocks and helps to support long-term economic growth.

The Maastricht criteria is a set of economic guidelines that determine whether a country is eligible to join the European Union. According to these criteria, macroeconomic stability is measured using five key macroeconomic variables, including a steady-state inflation rate, a long-term low interest rate, a reduced debt-to-GDP ratio, a narrowed twin deficit, and stability of the domestic currency. These indicators provide a framework for assessing a country's economic stability and resilience to external shocks.

Real GDP growth rates can be used to gauge the financial performance of any economy. In this context, several empirical studies have identified the main determinants of economic growth and their potential sources of growing inequality across space and time from a theoretical and practical perspective. The development of the financial sector is one of the determining factors of economic growth. Is financial gain causally related to the economy? Goldsmith (1969) wanted the financial system to influence the economic growth rate.

Early studies by McKinnon (1973) and Shaw (1973) revealed a significant link between financial development and economic growth. However, developing and emerging economies require structural reforms in their financial sectors to promote growth and stability. Currently, there are no clear arguments either for or

against the relationship between financial development and macroeconomic stability. Additionally, there is a lack of adequate research on financial economics in Pakistan.

Financial development and macroeconomic stability are two important concepts in economics that are closely related to each other. Financial development refers to the process by which financial markets and institutions become more efficient and sophisticated, while macroeconomic stability refers to the ability of an economy to maintain stable levels of output, employment, and prices.

The relationship between financial development and macroeconomic stability is complex and multidimensional. On the one hand, financial development can contribute to macroeconomic stability by improving the allocation of resources, reducing information asymmetries, and enhancing risk-sharing. Financial markets and institutions can facilitate the flow of capital from savers to investors, thereby increasing investment and promoting economic growth. In addition, well-functioning financial systems can help reduce the likelihood of financial crises by providing a stable source of funding for businesses and households.

On the other hand, financial development can also pose risks to macroeconomic stability. For example, the expansion of credit and asset prices can lead to excessive risk-taking and a build-up of financial imbalances, which can eventually lead to financial crises. In addition, the interconnectedness of financial institutions can amplify shocks and propagate financial distress across the economy.

In order to achieve macroeconomic stability, policymakers need to strike a balance between promoting financial development and managing the risks associated with it. This requires implementing appropriate regulatory and supervisory frameworks that can prevent excessive risk-taking and ensure the stability of the financial system. It also requires careful macroeconomic management, including prudent fiscal and monetary policies, to prevent the economy from overheating or contracting excessively.

Overall, the relationship between financial development and macroeconomic stability is complex and dynamic. While financial development can contribute to macroeconomic stability, it also poses risks that need to be carefully managed by policymakers. A well-designed regulatory and supervisory framework, combined with prudent macroeconomic management, can help promote financial development while maintaining macroeconomic stability.

The objective of this study is twofold. Firstly, it aims to evaluate the connection between financial development and macroeconomic stability in Pakistan. Secondly, it seeks to investigate how changes in the financial sector, such as increased access to credit and financial services, affect overall economic performance and stability. To address the gaps in the existing literature, this study aims to examine whether there is a long-term dynamic relationship between financial development and macroeconomic stability in Pakistan. Additionally, it aims to clarify the direction of causality between these two variables. By accomplishing these objectives, this study will contribute to a better understanding of the relationship between financial development and macroeconomic stability in Pakistan.

2. Background of the Financial Sector Reforms in Pakistan

Reforms of the financial sector in Pakistan had started by the end of the 1980s. Such reforms were introduced in different dimensions, such as: the privatization of public financial institutions; relaxation of restrictions on entry to the banking industry; measuring aimed at prompting competition in financial markets; reduction of legal reserve requirements; elimination of directed lending; prudential regulation measures; development of securities markets; and capital account openness along with interest rate liberalization.

Financial reforms are considered to be represented in the form of inflation, national savings, scheduled banks' deposits, scheduled banks' lending and interest rate spread. After financial reforms, the banking sector of Pakistan witnessed highly positive financial results. Though banks maintained an upward trend in profitability, the following factors created challenges for the State Bank of Pakistan (SBP): changing ownership structure; transformation in banking system composition; growing market competition; technological advancement; and enhanced focus on corporate governance culture. According to Husain (2005), the banking system plays an important role in the financial sector, accounting for 95% of this sector and demonstrates a positive relationship with the economic growth of Pakistan. The dominance of the State-owned banks in the banking industry was targeted to be reduced from nearly 100% in 1991 to 20% in 2003. Therefore, four central state-owned banks were de-nationalized. The SBP relaxed the entry barrier of private and foreign banks in 1991. The Banking Companies Ordinance (BCO) 1962 was amended in April 2011. The objectives of this new law were to raise the competition in the banking system that would be able to meet the needs of the country's population for financial services, stimulate economic growth, and promote financial stability.

Economists recognize that an efficient and stable financial system stimulates the country's economic growth (Khan, 2002). The evidence in the literature is that macroeconomic stability provides a better environment to a financial sector that makes allocating resources more efficient in the economy. Haque (1997), found that the financial sector plays an important role in the mobilization of resources to increase growth. However, he also revealed that financial development, including stock market development, is correlated with current and future economic growth, capital accumulation, and productivity improvements. It is also argued that financial sector policies in emerging economies should focus on enhancing, rather than inhibiting, the multiple roles of financial markets. Rahman, Khan, and Charfeddine (2021) found the positive impact of financial liberalization on economic growth in both the high- and low-growth regimes; financial liberalization relatively strongly affects real GDP growth in the high-growth regime.

However, weaknesses in some segments of the financial industry might lead to the building up of pressures that could make the economy vulnerable to a financial crisis (Montiel, 2003). This study includes domestic and external elements related to the financial sector and shed light on the economy, such as growth, inflation, fiscal deficit, and share prices, rate of interest, money supply, exchange rate, debt services, reserves, current account deficit, credit, and inflows.

3. Literature Review

Financial development and macroeconomic stability are interrelated concepts that have been studied extensively in the literature. The financial development theory suggests that a well-developed financial system can contribute to economic growth and stability by enhancing the efficiency of capital allocation, promoting savings and investment, and reducing information and transaction costs. At the same time, financial development can also increase the vulnerability of the economy to external shocks, such as financial crises or sudden capital outflows. Therefore, maintaining a balance between financial development and macroeconomic stability is crucial for sustainable economic growth. In this literature review, we aim to examine the existing literature on the relationship between financial development and macroeconomic stability, with a focus on empirical studies that investigate the link between these two variables. Furthermore, we will explore how changes in the financial sector, such as increased access to credit and financial services, impact overall economic performance and stability. By reviewing the literature and synthesizing the empirical findings, this study will contribute to a better understanding of the relationship between financial development and macroeconomic stability, and inform policy decisions aimed at promoting sustainable economic growth.

The overabundance of empirical studies in the existing literature have probed the linkages between financial depth and economic growth, even though there are mixed results on the effect and causality. The influential studies in the literature of finance-growth postulation are those by King and Levine (1993) and Levine, Loayza, and Beck (2000); their empirical findings propose a positive effect of financial development on successive output growth. Besides the aforementioned studies and some other studies after the financial crisis of 2008–2009 observing the effects of financial deepening on growth, these studies include, Angelopoulou, Balfoussia, and Gibson (2014), Bulut (2017) Koop and Korobilis (2014) and Matheson (2012). In this regard, important cross-country analysis examined by Rajan and Zingales (1998) found that in these countries with underdeveloped financial market, they are highly dependent on external finance which grows more gradually than other sectors of the economy. However, the empirical work by Wurgler (2000) suggests that in countries with deeper financial sectors, capital is allocated more efficiently in the sense that it tends to flow to growing industries. Darrat, (1999) empirically explores the financial development role on GDP growth in Middle East countries. His result revealed that financial depth is an essential determinant of output growth, therefore the aim of government policies is to promote financial deepening in such countries. At the aggregate level, Beck, Levine, and Loayza (2000) estimate that financial deepening promotes GDP growth through increases in efficiency (i.e., total factor productivity), rather than through factor accumulation. In the recent studies of Auerbach and Siddiki (2004), the authors also hold this opinion that financial deepening is not significant determinant economic growth. In their study, Atindehou et al. (2005) used three different indicators of financial development and found a weak unidirectional causality between finance and economic development. In his empirical work, Odhiambo (2007) found conflicting results. According to him, in Kenya and South Africa the demand-side effect was supported, while in Tanzania the supply-side impact was identified. Odhiambo (2008)

reveals unidirectional causality running from economic growth to financial development. Agbetsiafia (2004) vouched for a one-way causal relationship, starting from financial development in Kenya. However, in the case of South Africa, a bidirectional causal relation with financial depth and economic growth was found by Odhiambo (2010). Odhiambo (2008) found that M2/GDP has a grave bearing on the economic growth in Kenya, both in the long- and short-term scenarios. Okunlola, Masade, Folaranmi Lukman, and Ajayi Abiodun (2020) found unidirectional causality from economic development to stock market indicators, and bidirectional causality between economic developments and banking sector variables, and also established no causal relationship between stock market function and the banking sector. Siva Kiran Guptha and Prabhakar Rao (2018) found no uniformity in finance and growth causality among the BRICS (Brazil, Russia, India, China and South Africa) countries.

On the other hand, household credit has a negative effect on economic expansion. Ductor and Grechyna (2015) focus on the negative impact of financial advancement on economic progress, while Swamy and Dharani (2020) find an inverted U-shaped correlation between the two. The key reason for the Nonlinear effect of financial development on economic progress may be the existence of overfinancing in many countries, which raises the question of the desirability of a large financial sector (Benczúr, Karagiannis, & Kvedaras 2019). Likewise, some researchers (e.g., Arcand Berkes, & Panizza, 2015; Cecchetti and Kharroubi, 2012; De Gregorio and Guidotti, 1995; Zhao, 2017) have discovered that disproportionate financing hinders economic progress. Ibrahim and Alagidede (2017) show that financing below a certain discretionary threshold level is highly sensitive to economic progress and significantly affects economic development in countries above the threshold. Swamy and Dharani (2020) find an inverted U-shaped relationship between development and finance with a threshold level of 142 % of the estimated GDP. Based on the causality outcomes of the Granger Commission, they stated that financial progress is connected with the best growing rates in the group of advanced economies. Asteriou, and Spanos (2019) show that while pre-crisis financial expansion boosted economic growth in the EU-26 countries, it hindered post-crisis growth.

However, empirical findings on the combined effects of economic and growth linkages are mixed. For example, Abu-Bader and Abu-Qarn (2005), Christopoulos and Tsionas (2004), Demetriades and Hussein (1996), Greenwood and Jovanovich (1990), King and Levine (1993), and Rousseau and Wachtel (2011) found a positive relationship among financial expansion and economic progress. Other series (e.g., Demetriades, & Rousseau, 2016; Naceur & Ghazouani, 2007; Narayan & Narayan, 2013) found that financial markets have either negative or no effect on growth.

4. Materials and Methods

This study applied the econometric technique in determining the effects of financial deepening/ development and other independent variables on macroeconomic stability in Pakistan. The study collected annual data from 1980 to 2021 from the State Bank of Pakistan. The procedure of causality adjustment known

as MWALD, developed by Toda and Yamamoto (1995), enables the inference of long-run causality between variables, overcoming the problems associated with Granger causality testing when variables contain a unit root and the limitations of Zapata and Rambaldi's colleagues with respect to the power and magnitude properties of the test. Toda and Yamamoto (1995) require that the VAR be estimated at a level that minimizes the risk of error in determining the order of integration of the relevant time series and the cointegration properties of the variables. Specifically, the Toda–Yamamoto long-range causality test artificially increases the proper order of the VAR, where k is the maximum integral order (dmax), and ensures that the normal causality Granger test statistic has a standard asymptotic distribution. The ADF unit root test is used to test the stability of a circuit. The variables in this study have used the ratio of gross domestic product to external balance as a proxy for macroeconomic stability as the dependent variable. Henry et al. (2016) used this macroeconomic stability measure in their study. The independent variables are the financial sector deepening/development, and the broad money aggregate, which measures the intensity of financial sector expansion. This is determined by dividing the value of short-term liabilities (M2) by GDP. The impact of short-term liabilities on GDP is used as an indicator of financial depth (Odhiambo, 2007, 2008, 2010). This is on the same track as King and Levine (1993). Among the different macroeconomic indicators, inflation is one of the critical determinants of financial development.

4.1 The Empirical Specification

The model examines the effects of explanatory variables on dependent variable macroeconomic stability MES (balance of payment to gross domestic product), and independent variables financial deepening (FD), banking sector development (BSD), equity market size (EMS), and other variables total saving over GDP (SR) and inflation (INF), to examine the causal relationship among them.

4.2 The Toda–Yamamoto Modified Causality Test

This modified version of causality (modified by WALD) was suggested by Toda and Yamamoto (1995), who addressed the shortcomings of traditional Granger causality tests. The VAR F test is well known to be invalid when there is inconsistent series testing for causality between variables. Toda and Yamamoto (1995) assume that all variables are first-order or variance-invariant, which means that they do not change in variance over time or across different units of analysis. According to Wolde-Rufael (2005), this approach is applicable regardless of the order of integration (I(0), I(1), or I(2)) and regardless of the specific permutation used, making it a practical method for analyzing any compound sequence.

This process includes the following steps: (1) Find the maximum order of integration in variables; (ii) find the optimal number of VAR(k) delay options; (3) VAR estimation (k dmax). This series of VARs uses significant uncorrelated regression (SUR). When SUR is used to estimate VAR, we use SUR because the Wald test is passed (Caporale, Katsimi, & Pittis, 2002). The final step is to test the null hypothesis of no Granger causality using the Wald test, which follows a distribution with (m) degrees of freedom (χ^2).

$$MES_t = \alpha_0 + \sum_{i=1}^{K} \alpha_{1i} MES_{t-i} + \sum_{j=k+1}^{d_{\max}} \alpha_{2j} MES_{t-j} + \sum_{i=1}^{K} \delta_{1i} FD_{t-i} + \sum_{j=k+1}^{d_{\max}} \delta_{2j} FD_{t-j} + \quad (1)$$

$$FD_t = \beta_0 + \sum_{i=1}^{K} \beta_{1i} FD_{t-i} + \sum_{j=k+1}^{d_{\max}} \beta_{2j} FD_{t-j_{1t}} + \sum_{i=1}^{K} \phi_{1i} MES_{t-i} + \sum_{j=k+1}^{d_{\max}} \phi_{2j} MES_{t-j} + \lambda_{2t} \qquad (2)$$

From Eq. (1), Granger causality from MES_t to FD_t implies that $\delta_{1i} \neq 0 \quad \forall_i$ similarly, in Eq. (2), FD_t Granger causes MES_t, if $\phi_1 \neq 0 \quad \forall i$. For example, the model is estimated using (SUR) Rambaldi and Doran (1996).

4.3 Analysis and Discussion of Empirical Findings

In this part of the study, we explain the results that provide a standard test of the significance of the independent variables in Equations 1 and 2 to explain the impact of fiscal policy deepening on Pakistan's macroeconomic stability.

4.4 Unit root Test Results

Controlling the order of integration of each series is almost a prerequisite for time series data analysis to avoid spurious regression problems (see Granger and Newbold, 1974). Each batch constant is searched using the improved Dickey–Fuller test method. The decision rule is (ADF) that the absolute value of the statistic must be 5% greater than the McKinnon critical value; otherwise, we accept the null hypothesis (Ho) that the data are nonstationary.

Table 1: Results of Unit Root Test of Different Series

Variables	ADF Statistics	MacKinnon Critical Values at Lvel	First Difference	Second Difference	Conclusion
MES	-4.252623* (0.0018)	-3.610453	-	-	I(0)
FD	-4.775141* (0.0005)	-	-	-3.632900	I(2)
BSD	-12.83435* (0.0000)	-	-3.615588	-	I(1)
SEM	-4.717226* (0.0006)	-	-3.639407	-	I(1)
SR	-6.788503* (0.0000)	-	-3.615588	-	I(1)
INF	-4.675594* (0.0006)	-	-3.632900	-	I(1)

Note * represent at 1% level of significance p-values are in parentheses.

Source: Authors' calculation.

Table 1 shows that the MES is somewhat stationary. Meanwhile, the other variables are below the absolute critical McKinnon value at the 5% level of the ADF test statistic. Therefore, serial differences are intended to ensure the stability of the data for these variables, and the stability of the first-order difference and

the second-order difference should be further tested. The higher order of integrating (d_{max}) is 2, which is a prerequisite for Toda–Yamamoto Granger causality (1995).

To study the causality test, the order of integration (dmax) and the best delay k of the sequence under study must be determined. We have applied the Schwartz Bayesian Information Criterion (SBIC) to decide the best possible lag length of the VAR. The results of the VAR ranking criteria are presented in Table 2 and the results of the causality test are presented in Table 3.

Table 2: VAR Lag Order Selection Criteria

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-655.2950	NA	3.53e+10	35.63757	35.81172	35.69897
1	-581.5264	127.5997	1.56e+09	32.51494	33.38571*	32.82193
2	-562.4121	28.92986	1.37e+09	32.34660	33.91398	32.89917
3	-527.4927	45.30084*	5.35e+08*	31.32393*	33.58792	32.12209*

* indicates lag order selected by the criterion

Source: Authors' calculation.

Note: Under this criterion, the maximum lag we select is 1 based on Schwartz information Criterion SC.

Table 3: Granger Non-Causality Test Findings

Null Hypothesis:	Modified Wald Statistic	P- values	Degree of Freedom	Direction of Causality
FD does not Granger cause MES	8.148479	0.0171	2	FD⟶ MES
MES does not Granger cause FD	0.024311	0.8761		
SE3 does not Granger cause HD	9.124426	0.0104	2	
MES does not Granger cause BSD	8.666717	0.0032		BSD⟷ MES
SEM does not Granger cause MES	7.462001	0.0063		SEM⟶MES
MES does not Granger cause SEM	1.008158	0.3153	1	
SR does not Granger cause MES	0.700025	0.4028	1	Independent
MES does not granger cause SR	0.514777	0.4731		
INF does not Granger cause MES	0.521067	0.4704		Independent
MES does not Granger cause INF	2.133922	0.1441	1	
BSD does not Granger cause FD	6.06339	0.0482	2	BSD⟶FD
FD does not Granger cause BSD	4.347411	0.1138		
SR does not Granger cause BSD	7.587842	0.0059		SR⟶BSD
BSD does not Granger cause SR	1.226061	0.2682	1	

Source: Authors' calculation.

The estimated results presented in Table 3 showed that there is no sufficient evidence to support the claim that each of the financial development variables did not Granger cause macroeconomic stability. These variables' results differ from the significance level of the p-values of the modified Wald (MWALD) statistic. There is a unidirectional causal relation between financial deepening, banking sector growth, equity market size, and macroeconomic stability, which means that a well-developed financial sector affects the macroeconomic stability of Pakistan. The efficient banking industry and increase in the equity market's size also affect the country's macroeconomic stability. However, at the same time, the relationship among saving ratio, inflation, and macroeconomic stability is independent, these variables did not Granger cause macroeconomic stability. Our study found that there is a unidirectional causal relationship between banking sector development (BDS) and financial deepening (FD), with BDS causing FD. Additionally, we found a unidirectional causal relationship between the savings ratio (SR) and BDS, with SR causing BDS. In other words, the results suggest that a well-developed banking sector can promote financial deepening, and a higher savings ratio can lead to increased banking sector development. However, a bidirectional causal association exists between banking sector growth and macroeconomic stability.

The results of this study show that all the independent variables in the adjusted long-run Wald regression (MWALD), except SR and INF, are causally related to Pakistan's macroeconomic stability. These results confirmed the previous expectations of the results. It also supports the theory of financial intermediation and the objectives of financial sector reforms in Pakistan, such as the liberalization of the financial sector in the late 1980s. The findings of this study confirm findings of other empirical strides such as Okunlola et al. (2020) and Siva Kiran Guptha and Prabhakar Rao (2018). Shan and Morris (2002) using the same methodology. The findings of our study are consistent with the results of Henry et al. (2016), which reported a unidirectional causal relationship between financial deepening and macroeconomic stability, as well as market capitalization to GDP. Additionally, our study found a bidirectional causal relationship between the percentage of commercial bank credit to GDP (which is an indicator of banking sector development) and total savings to GDP in Nigeria, with the former being independent of the latter. Our results also support the findings of Samson and Elias (2010). Wang and Wang (2012) report that most traditional financial development indicators positively correlate with economic growth. They found that, in addition to the broad money-to-GDP ratio, various measures of financial development led to output significance of up to 1%. They also find that net domestic credit is boosted by output growth, suggesting unidirectional causality.

5. Conclusion and Recommendations

This study concludes that various financial sector measures, such as financial deepening, banking sector development, stock market size, savings rate, and controlled variable inflation, have a negative but insignificant impact on macroeconomic stability. This result supports the performance forecasting and financial intermediation theories. These financial development activities have various causal relationships with Pakistan's macroeconomic stability. Financial depth, banking sector expansion, and stock market size have a

unidirectional causal association with macroeconomic stability and the savings and control relationship, while variable inflation has an independent informal relationship with Pakistan's macroeconomic stability. There is a unidirectional causal association among the savings rate and the development of the funding sector and a unidirectional causal association among the development of the banking sector and financial deepening. To improve Pakistan's economic stability, the banking sector needs to be strengthened, and the lending environment needs to be reformed. The SBP should announce an expansionary monetary policy that increases low-cost investment loans to increase the economy's productive capacity. To improve macroeconomic stability, banking sector loans should go directly to the economy's productive sector. The capital market should further deepen its operational efficiency and facilitate the implementation of monetary policy objectives. Our findings suggest the need to accelerate the financial reforms, which were initiated by the government in the late 1980s, and to improve the efficiency of the financial systems and governance to stimulate saving/investment and, consequently, long-term economic growth.

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