



Spillovers Among Interest Rates, Bond Yields, Stock Market Returns, and Exchange Rates: Evidence from South Asian Economies

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ABSTRACT

This paper analyses how Bond yields, Inflation, and GDP Growth may influence Interest rates, Stock Market Returns, and Exchange rates in South Asian countries i.e. India, Pakistan, Bangladesh, Sri Lanka, and Nepal. Panel data has been collected from the World Bank and IMF for the years 2000-2023. From judging the results, the Pooled Mean Group has been used. The analysis reveals that interest rates in South Asian economies are significantly influenced by bond yields, inflation, and GDP growth. Stock market returns are driven by bond yields and trade openness, while inflation plays a key role in determining exchange rate movements. These relationships are economically justified based on classical economic theories of monetary policy, portfolio diversification, and trade openness. The significant coefficients suggest that policymakers in South Asia should consider these factors when formulating monetary and financial policies to achieve financial stability and inclusive growth. Policymakers should enhance coordination between monetary and fiscal policies, monitor bond market activities, and adjust policy rates based on inflation targets. Strengthening inflation-targeting frameworks and adopting a counter-cyclical monetary policy can help manage inflation expectations and prevent overheating during economic booms and slowdowns.

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1. Introduction

The financial markets have gone global, and this means that the emerging economies feel the impact of changes in the international monetary policy with specific reference to changes in interest rates from economies such as the United State economy. Interest rate spillovers – which are fluctuations in interest rates passing through from one economy to another – have considerable impacts on assets prices, capital flows and stability in South Asian Countries. Given the increases in international monetary integration or relation between and South Asian economies such as India, Pakistan, Bangladesh, Sri Lanka among others, it has now become important to look at the effect of monetary policy on the domestic financial markets. This literature review focuses on the current and future section of the literature (2020-2024) covering theory, method, and results. This brief review also outlines the directions for further research and studies that have not been addressed in prior research. In that case most of the existing studies in the field of macroeconomics and finance have focus their attention to the effects of interest rate changes on financial markets. This means there is realization that interest rate spillovers which explain the means by which movements in one country's interest rate influences the extend of other countries' financial markets have become more in vogue especially in today's integrated financial markets. This phenomenon is particularly important in South Asian economics which are tightly integrated in trade, investment, financial links. This work aims at presenting an extensive analysis of the theoretical/analytical framework, as well as the

previous/empirical literature, and some special cases concerning the transmission of interest rates in South Asia and its financial markets. The review outlines the major methodologies used in the area, discusses the research gaps that remain in the subfield and points to further possible research opportunities.

The presence of monetary policy effect on domestic financial markets has been well documented, the external effect however, emerged as critical in the recent past. Some of the major impacts of the changes in interest rates include; in an environment of financial liberalization, interest rate changes in one economy may have a domino effect in the economies of the neighboring country or countries depending on the level of integration existing between the two financial markets; in mainly the developing world where the interconnectivity between the economies is high in terms of trade and financial flow. This paper propositions an examination of such issues in South Asia including India, Pakistan, Bangladesh, Sri Lanka, and Nepal. Credible characteristics which these countries have in common include export orientation, capital shallowness, and sensitivity to global financial oscillations. As with prior research investigations of spillovers with reference to global interest rate changes, there has been comparatively little consideration of the effects of systematic changes in domestic interest rates within the South Asian context on regional financial market. This study should thus help to fulfil this gap through the use of empirical approaches such as the Panel ARDL models that enable us to examine short run as well as the long run dynamics in the financial markets. The paper does the same thing through Granger causality tests to show directionality to give policy insights to policymakers on how cross-country financial volatility can be reduced. This paper analyses how Bond yields, Inflation, and GDP Growth may influence Interest rates, Stock Market Returns, and Exchange rates in South Asian countries.

2. Literature Review

For many years, there has been a vast amount of research done in the area of interest rate spillovers, both in G7 countries and emerging markets. However, research has been conducted steadfastly studying the South Asian economies is rather scarce. This section is a review of empirical literature relevant to the global and regional contexts of the analysis. Today's global financial markets are linked, and the importance of the U.S. in these markets cannot be overemphasized. The US has the most influence over the rules in global finance given its leadership in exports, FDI, migrants' remittance, and demand. The prominence of the U.S. dollar in international trade and financial markets undermines the structure of the world economy. Global capital movements and equity markets are affected by alterations in U.S. monetary policy and changing perceptions in the world markets. The influence of the United States is not limited to the capital flows transferred to and from the country. The United States has the deepest and most efficient bond and equity markets and those markets' fluctuations generate significant effects in world capital markets. In his paper, Ehrmann, Fratzscher and Rigobon (2011) note that movements in US Government debt rates are transmitted in other economies. Thus, equity market spillovers from the US markets are also relatively large, and cross-effects are higher in the open economies than in the closed ones with relatively small bilateral portfolio investments.

Current developments reveal that many countries have been witnessing an increase in interest rates after many years of relatively low rates. Even though higher interest rates do not directly cause a drop in stock prices, they affect bond prices almost equally, but some sectors of stocks will be more affected (Trevir, 2019). When world interest rates have risen, investors from other countries are gradually reconsidering the level of their interest rate risks. Building on Trevir (2019), the author affirms that higher interest rates coupled with higher dollar rates worsen the debt conditions in developing nations due to the high cost of servicing debts in dollars. The global financial cycle mostly determined by the US cycle is instrumental in making worldwide financial conditions. Bekaert, Hoerova and Duca (2013) claim that global FCI is close to linked with US monetary policy and emerging markets are normally bearish when US interest rates go up and the dollar strengthens. It is called Dollarization, and it becomes a cause for concern most specifically when, due to the contraction of US monetary policy, exchange rate Differences between developed countries and the US, and emerging economies come under pressure on the account of dollar-linked credit. Interest rates being one of the macroeconomic variables have a direct bearing on the growth rate. They are the cost of capital that acts as a basis for borrowing and lending among financial institutions. In the view of the borrower, interest is the price of borrowed funds while for the lender, interest is the price of loan capital (Mahmudul & Gazi, 2009). This dynamic becomes especially important when looking at cross-border interest rate spillovers,

particularly within a structural framework of highly integrated capital markets. Rey and Miranda-Agrippino (2017) explain that global interest rate changes are involved in shaping a global financial cycle thus causing spillovers, not the exchange rate regime. To the same extent, Bruno and Shin (2015) observed that cross-border capital inflows tend to increase the effects of interest rates' transmission.

A considerable body of literature has addressed the impacts of U.S. interest rate shocks on the global economic environment. Given these changes in the realm of globalization, the issue of how changes in interest rates in the U.S. are transmitted to other emerging as well as developed economies has become an area of considerable interest. Analyzing the changes and reactions of foreign domestic markets to the movement in the US interest rate, Frankel, Schmukler and Servén (2004) demonstrated that the reaction depends on the exchange rate regime policy. They observed that under the flexible exchange rate systems, interest rates in some countries are slow to react to changes in the foreign market, which can provide some measure of monetary independence. Additionally, on the influence of the asset price transmission process from the US to other, especially small, economies, as well as in the context of the financial markets, Yang, Mo and Liu (2015) built further. Their study also found that US Treasury bill rates are highly connected to other financial markets, especially during bull markets contrary to bear markets. After the 2008 financial crisis, there have been many empirical articles that focused on shifts in risk-return characteristics and interconnectedness risk within international markets. Specifically, analyzing the intricately intertwined concept of risk and return, Syriopoulos, Makram and Boubaker (2015) pointed to the new character of BRICS markets' behavior observed after the crisis period. Specifically, Bekiros (2014) employed VAR&MGARCH options as a method of the analysis of contagion, decoupling, and spillover effects emanating from the U.S. financial crisis. This paper showed that the interconnection between BRICS countries increased after the crisis contrary to the decoupling hypothesis and emphasizing on the element of financial spillover. Equally, there were contagion effects of the twin crises in the MENA region that reduced bond markets and GDP levels drastically. Similarly, Balli et al. (2015) applied univariate GARCH models to measure spillover effects of the U.S., European, and Japanese capital markets on the Asian and MENA regions. Evaluating the scope of spillover variation across countries, the authors stressed that no doubt the system is integrated, but it is also heterogenic.

Other research like Syriopoulos, Makram and Boubaker (2015) explored the mark spillover effect between US markets and the BRICS countries namely Brazil, Russia, India, and China by employing bivariate VAR-GARCH models. Emerging markets were identified to experience strong flows and volatility overflows suggesting a high sensitivity to the United States economy. Huo and Ahmed (2017) look at the impact of the Shanghai-Hong Kong Stock Connect scheme on market integration while Creti, Joëts and Mignon (2013) analyzed the conditional correlation between commodities and the US stock markets using the DCC-GARCH model. They discovered that during the 2008 financial crisis, the conditional correlations between commodities and stock markets, and the S&P in general were rather high, with gold antagonistically related to the stock markets. This finding implied that the financialization of the commodity markets limited their diversification benefits other than in the case of gold. There has been significant literature on the transmission of effects of U.S. monetary policy to emerging economies. Lakdawala, Moreland and Schaffer (2021) used the VAR model to examine the flow-through impact of the US policy on several emerging countries and found that US policies exert an extremely significant impact on the macroeconomic system of these countries. Similarly, Elsayed and Sousa (2024) examined the monetary policy spillovers, focusing on the currencies that being major players themselves – the U.S. dollar, Japanese yen, British pound, and the euro over a period starting August 5, 2013, to September 27, 2019. Employing a Time-Varying Parameter Vector Autoregression (TVP-VAR) methodology, they determined that the spillover effects are on an increasing trend when the trends of interest rate are also high, hence implying that expansive monetary policies globally, strengthen the cross-border transmission influence. Zhang et al. (2022) investigated the additional channel of the transmission mechanism of the U.S. monetary policy shock on China's output and other economic factors using the VAR model. Their results showed that China's macroeconomic performance was affected by the U.S. operations in monetary policy, thereby indicating that the U.S. economic policy was not restricted to its national realms. Likewise, Pham and Nguyen (2019) look at the impact of global monetary policy shocks on Asian countries using BVAR models. Working with the view that changes in policy interest rates are monetary policy transmission they found that these interest rates in Asian countries

generally moved in the same direction as the federal fund rate of the Federal Reserve in America but the response usually happens one quarter later showing evidence that monetary policy transmission is timed.

Su (2020) extended the literature in another direction by examining volatility spillovers. His study found that shocks that induced long-term uncertainty were the main causes of volatility spillover; this paper, therefore, offered the much-needed understanding of how uncertainty leads to more financial market volatility during a period of EHS. The COVID-19 shock stimulated a great deal of research on how financial markets behave during crises; several studies investigated the issue of market integration and fluctuations. Sahadudheen and Kumar (2023) analyzed the return and volatility transmission in four Indian markets including oil, gold, foreign exchange, and equity before and during the GFC as well as the COVID-19 pandemic. It was further found that crisis-time volatility spillovers dominated those of returns. However, during the COVID-19 crisis, there is a generally observable increase in the volatility spillover, which may indicate increased market disruptions resulting from the pandemic. Building on this discourse, Elgammal, Ahmed and Alshami (2021) established bidirectional spillovers between equity and gold markets as well as unidirectional spillovers from energy markets to equity and gold markets during the COVID-19 period. This underscores the emerging close coupling of financial markets during economic shocks. Similarly, Abuzayed et al. (2021) showed the evidence of bivariate contagion spillovers between global, and country-level markets; the contagion spillovers increased during the pandemic. This finding provides some support to the opinion that global financial integration is higher during crises. Ajmi, Arfaoui and Saci (2021) also pointed out that integrated linkages between the stock, gold, and crude oil markets became stronger throughout the COVID-19 period.

In another study, Vuong, Nguyen and Huynh (2022) looked at the volatility connectedness of the US and China stock markets, and similarly, while COVID-19 enabled negative Connectedness of risk, it also promoted positive Connectedness of volatility between such two large economic entities. Before the formation of COVID-19, these two economy's markets were seemingly more inefficient and were less aligned, COVID-19 has forced these markets to be more in phase. In like manner, Jebabli, Kouaissah and Arouri (2022) analyzed the volatility spillovers between the GFC and the COVID-19 crisis. Their results showed that volatility spillovers have increased post the onset of the COVID-19 crisis which means that COVID-19 had a deeper and more unique effect on the transmission mechanism of the markets than the GFC. Samitas, Kampouris and Polyzos (2022) discussed how lockdowns and the spread of the virus could lead to immediate market contagion in 51 stock markets – both developed and emerging. In the COVID-19 crisis, their study compared the interconnection and synchronization of global financial markets and also insisted that it is crucial to understand the mechanism of contagion in widespread unexpected situations.

3. Data and Methodology

The study analyzed the relationship between interest rates, stock market returns, and exchange rates in five South Asian economies: From the year 2000 to 2023, India, Pakistan, Bangladesh, Sri Lanka, and Nepal. The measures used as dependent variables included; the call money rates set by the central bank, stock market returns, exchange rates, while bond yields, inflation, GDP growth and trade openness were measures used as independent variables. Information was retrieved from resources in the global databases of the World Bank's Development Indicators as well as International Financial Statistics issued by the IMF. The model is specified as follows;

$$\text{Interest rate} = a_0 + a_1 \text{Bond Yields} + a_2 \text{Inflation} + a_3 \text{GDP Growth} + u_i$$

$$\text{Stock Market} = b_0 + b_1 \text{Bond Yields} + b_2 \text{Trade} + v_i$$

$$\text{Exchange rate} = c_0 + c_1 \text{Inflation} + w_i$$

To test the impact of the independent variables on the dependent variable, econometric analysis was performed. To test the variables for stationarity panel unit root tests namely Levin, Lin & Chu test and Im, Pesaran and Shin (IPS) test were carried out. Specifically, the direction of the short-run causality test for each independent variable with interest rates, stock market returns, and exchange rates was also employed together with the Panel ARDL long run. While

the long-term variables were analyzed using long-term coefficients from the estimated ARDL model.

4. Results and Discussion

4.1. Panel Unit Root Test Results

The paper focuses on the interconnectivity between interest rates and performance of stocks, exchange rates, bond yields, inflation and GDP growth, and trade openness. Consequently, the results indicate that interest rates are stationary at 5% threshold level, stock returns, exchange rates, bond yields, inflation, GDP growth and trade openness are stationary. The p-values for these tests all less than 0.05 therefore the null states non-stationarity is rejected. This implies that the financial returns are likely to be expressed in terms of stationary processes and the test falls just below 5%. The results also show that the exchange rate has no unit root and is integrated of order zero, while the bond yields also have no unit root and are integrated of order zero. In summary, the paper contributes knowledge in specifying the long run relationship between interest rates, stock return, exchange rate and trade openness. All the variables are stationary, since the p-values of all three tests –LLC, IPS and ADF-Fisher – read < 0.05. This makes it possible to employ the Panel ARDL model.

Table 1: Panel Unit Root Tests

Variable	LLC (p-value)	IPS (p-value)	ADF-Fisher (p-value)	Stationarity
Interest Rate	0.001	0.000	0.000	Stationary
Stock Returns	0.013	0.015	0.012	Stationary
Exchange Rate	0.045	0.032	0.027	Stationary
Bond Yields	0.021	0.018	0.014	Stationary
Inflation	0.032	0.029	0.025	Stationary
GDP Growth	0.001	0.000	0.000	Stationary
Trade Openness	0.005	0.008	0.007	Stationary

4.2. Pooled Mean Group (PMG) Estimator

The panel ARDL model was estimated by employing the Pooled Mean Group (PMG) technique. The results are summarized below:

Table 2: Panel ARDL test results

Dependent Variables	Independent Variable	Short-run Coefficient	Long-run Coefficient	p-value
Interest Rate	Bond Yields	0.21	0.45	0.000
	Inflation	0.15	0.22	0.001
	GDP Growth	0.10	0.18	0.023
Stock Market Returns	Bond Yields	0.19	0.38	0.002
	Trade Openness	0.07	0.12	0.045
Exchange Rate	Inflation	0.13	0.31	0.000

By using the PMG model, the study performs a profound analysis of interest rate, bond yield as well as inflation to GDP growth rate, stock return, trade openness and exchange rate. Concerning the long-run relationship between these variables, the model examines short-run and long-run comovement. Holding all else constant, an increase of one percent in bond yields, results in a long run increase of the interest rate of 0.21 percent as seen in the coefficient table below. This is a positive relationship which is statistically significant; thus, indicating that high returns on bond increase the attractiveness of the instrument, thus forcing central banks to adjust the rates to stability. Higher interest rates may also be attributed to the government's attempt at was controlling inflation or to convey a better economic outlook. This is an upward slope which is positive and statistically significant meaning that an increase of 1% in inflation leads to a 0.15 % in the interest rate. Generally, central banks react to inflation by raising the interest rates to curb unsustainable high progression of prices in an economy. This is aligned with the theory of naked monetary policy, whereby; an increase in interest charges lowers demand to meet the objective of inflation. The coefficient of 0.18 mean is that, an increase of 1 percent in GDP growth rate is paralleled by only 0.18 percent increase in the interest rate. This positive and significance relationship may perhaps be explained by higher economic activity that leads to enhanced demand for credits. To mitigate on excessive heat in the economy, central banks are known to increase the interest rates especially during the successive quarterly or yearly increases in GDP.

The coefficient of 0.19 mean that a 1% change in bond yields results to long term and slight changes of 0.19% to stock market returns. Despite a negative correlation between bond yields and stock returns the positive slope could be explained by at least two factors; that bond yields are associated with economic growth expectancies thus encouraging investments in bonds as well as in shares. It could also recommend the investors change their portfolio position which in one way or the other affect the stock prices. To the extent that this means that stock return outcomes for the year are positively related to trade openness with a coefficient 0.07 for each percentage point increase in this variable. This is a very important finding, especially because trade liberalisation is supposed to be a important factor that drives economic growth, creates new opportunities for investments and boost investors' confidence. When exporting and importing go up, it results to large markets that are good for companies which in turn have a bearing on the value of shares on the stock market. The result shows the long run effect whereby a one percent increase in inflation will lead to a 0.13% depreciation of the exchange rate (currency devaluation). This result is inline with the nominal exchange rate, purchasing power parity theory that suggested that inflation diminishes the value of the home currency in terms of the foreign currency. Everytime the domestic prices increases, the demand for the foreign currencies also increases and therefore the local currency is depreciated.

5. Conclusion

The analysis confirms long-run co-integration relationships between interest rates, bond yields, stock market returns, inflation, GDP and exchange rate in the economy of South Asian countries. More specifically, bond yields, inflation and GDP growth effectively, heighten rates of interest reflecting policy, monetary activity and investors'. The findings also show that stock market returns are also determined by bond yield and trade openness ultimately meaning that performance of bond market and trade liberalization has an important role to play in stock market. Moreover, inflation causes a sharp rise of exchange rates, a fact that clearly demonstrates that the pressure on inflation most definetly leads to currency depreciation. These findings point out the linkages and complexity of the financial markets call for a coherent architectural policy response that can accommodate spillover effects, respond to volatility, and can foster sound growth in South Asia. To achieve this, there should be balanced coordinated fiscal and monetary policy the Department of Treasury should closely watch the fibrilization of bond markets and GDP indicators as it is adjusted. Global policy makers should enhance the implementation of IT by achieving clear targets, improving communication and providing forward guidance on inflation expectations to central banks. Monetary policy should also be counter cyclical to allow central banks to increase interest rates during the economic upturn to curtail on the excess, and decrease the rates during the downturn to spur investment and consumption. It will also expose the prospects for central banks to effectively influence inflation expectations and thereby stabilize the economy.

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