Journal of Commerce Management and Tourism Studies, Volume 2 Number 2 (Aug 2023), p. 110—115
e-issn 2964-9927 ©Yayasan Mitra Persada Nusantara
http://ympn.co.id/index.php/JCMTS

The consequences of foreign reserves, FDI, inflation, exports, and imports on Pakistani exchange rate

Muhammad Ahmad Mazher[1], Yasotha Nair Tramankuti[2], Zurul Aisya Osman[3]

University Kuala Lumpur, Malaysia[1,2,3]
[1]Email: muhammad.mazher@s.unikl.edu.my

Abstract - This study uses monthly data sources from the State Bank of Pakistan to examine the impact of inflation, exports, foreign direct investment, foreign reserves, and imports on Pakistan's currency exchange rates from July 2018 to January 2023. The empirical results demonstrate that inflation and imports have a positive and significant effect on the exchange rate in the short term by using the ARDL bound test. Exchange rates are negatively impacted by exports, foreign direct investment, and foreign reserves. Inflation, imports, and foreign reserves have a positive and considerable influence on currency exchange rates over the long term.

Keywords: exchange rate; foreign reserves; inflation; FDI; ARDL

1. Introduction

Inflation is the term used to describe an overall rise in the prices of goods and services across the globe. It is utilized as a tool for determining the degree to which there has been a shift in the cost of living in a nation. The rate of inflation rises in tandem with an increase in the cost of goods and services. The Consumer Price Index (CPI) is what is used to get an accurate reading of inflation in Pakistan. The State Bank of Pakistan (SBP) is responsible for determining the interest rate structure. Reservations have been raised concerning the impact of the ongoing devaluation of the Pakistani currency (the rupee) on inflation and the economy in every region of the country. Maintaining a healthy economy should always be at the forefront of any government's agenda, wherever it may be in the world. Economic activity that is conducive to growth will be supported by stable economic conditions, as indicated by the consistency of existing macroeconomic indices. In point of fact, macroeconomic stability is characterized by a significant degree of variation. Pakistan's economy has been in freefall for a while now, and all signs point to this being the worst possible scenario for the country since the 1971 defeat at the hands of India and the subsequent partitioning of Pakistan and Bangladesh.

The defense minister, Khawaja Asif, has announced that the country has already gone "bankrupt" and that the price of milk has risen over Rs. 250 per liter, the price of gasoline is about Rs. 272 per liter, and the price of chicken has reached Rs. 750 per kilogram, while the US dollar and Pakistani rupee exchange rates have reached their peaks (1$ = Rs. 270) as economic uncertainty grows (Jain, 2023). Fiscal accounts are under great strain due to huge interest payments and rehabilitation spending, and problems like high inflation, sluggish growth, and low levels of official foreign exchange reserves are all things Pakistan has to deal with right now. Statistics released in the 2023 Economic Outlook show that remittances fell $1.7 billion (down 11.1%) in the first half of this year compared to the same period last year, while exports fell $6.6 billion (down 6.8%). Foreign direct investment fell by $654 million (down 58 percent), portfolio investment fell from -$45.5 million to -$1,032 million, public sector development programs (including subsidies to rural areas) fell

by Rs. decrease,) and lending to the private sector decreased from Rs.1,043.1 crore to Rs.1,032 million. Rs 703.6 crore, contributing to the growth rate of large-scale manufacturing in November 2021 falling to -5.50% from 6% in the same period last year (Amin, 2023).

Pakistan's foreign exchange reserves fall rapidly during the last year (April 2022 to April 2023). According to SBP statistics, in April 2022, the total reserves were $16406 million which fall up to $8737.1 million in April 2023. According to the Pakistan Breau of Statistics, the inflation rate (Consumer Price Index - CPI) in Pakistan increased to 35.4% in March 2023 from 31.5% in the previous month (February 2023). It was the highest level since December of 1973 as prices rose for everything from drinks and cigarettes (140% vs. 49.2%) to groceries and nonalcoholic beverages (47.2% vs. 45.1%) to furniture and home decor (39% vs. 34%) to transportation (54.9%) to entertainment and culture (50.6%) to accommodation (38.5%). In contrast, education and healthcare inflation both fell to 7.2% and 18.5%, respectively, from 10.8% in the previous year. After a 4.3% increase the previous month, consumer prices grew 3.7% in the most recent month.

Meanwhile, the core inflation rate, which does not include the effects of food and energy price fluctuations, increased to 18.6% in March from 17.1% in February 2023. The State Bank of Pakistan (SBP) reports that in January 2023, worker remittances to Pakistan dipped beyond the $2 billion threshold, marking a 32-month low. A total of $1.89 billion was sent home in January, down 13% from the same month a year ago in January 2022 and 10% from December 2022 (Siddiqui, 2023). According to State Bank of Pakistan recent statistics, between July 2018 and July 2019, FDI into Pakistan ranges from a high of $319 million to a low of $73 million. It sustains at $493 million, with a peak of $83 million, from August 2019 through July 2020. The peak was $317 million, with a drop of $-16 million between August 2020 and March 2021. The new PDM administration in Pakistan, which took over economic responsibilities between April 2021 and April 2022, received $236 million in FDI, the greatest amount ever, and $-30 million, the lowest. The biggest FDI amount was $271.1 million in May 2022, and the lowest was $-17 million until January 2023.

According to Sinaga et al (2023), each economic variable that is exposed to a shock will have an effect on economic uncertainty as well as inflationary pressures. Long-term price increases in goods and services are what economists mean when they talk about inflation. When prices of basic goods go up, people's ability to engage actively in society is diminished. It has been found that a decrease in the purchasing power of individuals in an economy leads to a reduction in the amount of money saved and invested in that economy (Qasim et al, 2021). When the pandemic first started, a few countries experienced a slight and temporary decline in inflation, which was then followed by a significant increase between the years 2021 and the present. In addition to this, as the value of the US dollar has increased, the value of the currencies of a number of other countries has decreased. Inflation is a statistic that measures a country's or region's cost of living and is intricately tied to the purchasing power of consumers and economic growth. Inflation can be measured in either the year or the month. In order to keep inflation within a typically low and stable range, governments and legislatures need to regularly analyze inflation patterns, anticipate new elements that could influence inflation, forecast changes, and devise intervention measures that are responsive to these changes. When inflation is high, countries may choose to raise interest rates in order to encourage people to save; conversely, when inflation is low, countries may choose to cut interest rates in order to encourage people to borrow (Zhang, 2023).

After the regime change on April 2022, in Pakistan, the currency value (exchange rate of the Pak rupee vs. the US dollar) has been steadily falling. The prices of gasoline and consumer goods also moved upward, and the inflation rate increased from about 12% to 48% during the period of April 2022 to May 2023. Our study analyses the influence of inflation, exports, imports, FDI, and foreign exchange reserves on the foreign exchange rates of Pakistan from July 2018 to January 2023 through monthly observations collected from the State Bank of Pakistan (SBP). The aim of this research study was to reveal the impact of major economic variables such as CPI (inflation), foreign reserves, FID, exports, and imports on the foreign exchange rate of Pakistan for the period of July 2018 to Jan 2023 – PTI and PDM government duration by employing monthly data collected from SPB.

A decrease in individual consumer spending is one of the most well-known risks that inflation presents. The value of a single currency decreases when it can no longer buy as much as it

once could because of inflation and the growing prices of products that are used on a daily basis. This has an effect on the cost of living for such people, who as a result may buy fewer things in the future (Sinan, 2023). Exports, the process of globalization, and GDP are all detrimental to inflation, while imports are beneficial, argue Khurshid et al (2023). From January 2002 through December 2018, Valogo et al (2023) analyzed the threshold effect of currency rate passing through on inflation in Ghana. The empirical evidence supports the minimal threshold or cutoff point of a depreciation of the currency exceeding 0.70% per month having a sizeable positive pass-through effect on inflation. The estimation findings of the nonlinear model show that short-term fluctuations in general prices are similar in magnitude to changes in exchange rates. The results show that exchange rates are a major contributor to inflation. As time progresses, the significance of this influence grows. Prices adjust upward in response to increases in the value of a currency, but react only minimally to falls in the value of a currency (Tuğral & Barï, 2021).

Isnowati et al (2023) investigate the effects of fluctuations in the currency rate on inflation in Indonesia. The findings of the study that specifically addressed this issue demonstrate that the exchange rate has a positive impact on both short- and long-term inflation. The long-term effects will be more significant than the short-term ones. This points to the significant long-term effect of the passing currency rate, which is manifested in the utilization of labor in Indonesia. Iran has suffered from high and volatile inflation and a weak currency for many years. Inflation was found to be related to the exchange rate. Inflation rises as exchange rates rise. The data indicate that the exchange rate and the money supply both contribute to inflation. According to research by Monfared and Akın (2017), money supply is a more important factor in inflation than the exchange rate. Like all other political, social, and economic issues, increases in the pricing of goods and services and fluctuations in the value of the currency exchange market are blamed for the irregular expansion of the world's economies. It's apparent that both the exchange rate and inflation are important for economic growth, but research into their underlying linkages is still needed. The empirical evidence suggests that a growth in Pakistan's foreign exchange reserves causes the country's inflation rate to fall (Chaudhry et al, 2011).

According to Mughal (2012) research on the topic, remittances from overseas workers are a driving force behind inflation in the Pakistani economy. Researchers found that, if considered a temporary input, remittances can have a positive effect on macroeconomic indicators. Using panel data from 54 developing and developed economies from 1995 to 2005, Narayan et al. (2011) investigated the correlation between worker remittances and inflation. They concluded that if the money supply in these nations grew in response to an increase in remittances, the effective exchange rate of these countries would consequently rise. More, Hassan & Shakur (2017) conducted a study in Bangladesh looking at the long- and short-term effects of worker remittances on inflation, and they came to similar conclusions. Wadood and Hossain (2017) focused on the relationship between foreign funds remitted and inflation increases. Workers' remittances were found to have a long-run correlation with inflation, but the researchers found no evidence of a similar short-run correlation in the case of the Bangladeshi economy.

Abosedra and Fakih (2017) have studied remittances and inflation in Lebanon. In the long term, the results showed that prices for consumer goods would rise significantly. However, in the short run, the prices of most consumer goods would fall in response to positive shocks to remittances. Thapa and Acharya (2017) conducted research in Nepal and discovered that the rise in remittances caused a fluctuation in the prices of a number of consumer goods categories. Ghauri et al (2019) examines Pakistan's long-term inflation and workers' remittances (WR). Johansen cointegration confirmed the long-term relationship between WR, CPI, EXR, and WPI. WR and CPI food and EXR, and WR and WPI food and EXR, showed long-term associations. The Toda-Yamamoto Wald test and Granger causality VEC/exogeneity Wald test showed one-way causation from workers remittances to CPI and WPI. Both the CPI and WPI food groups show similar findings. When the exchange rate (EXR) is incorporated in the VAR model, Pakistan's workers' remittances create inflation. Evidence of threshold effects has been found in studies of both developed and developing economies, suggesting that the relationship between inflation and FDI is nonlinear.

Journal of Commerce Management and Tourism Studies, Volume 2 Number 2 (Aug 2023), p. 110—115
e-issn 2964-9927 ©Yayasan Mitra Persada Nusantara
http://ympn.co.id/index.php/JCMTS

Agudze and Ibhagui (2021) confirm that emerging economies have an inflation threshold roughly five times greater than industrialized nations. Inflation has a negative impact on foreign direct investment (FDI) whenever inflation rates exceed a certain threshold in both developed and developing countries. The notion that long-term FDI inflows into South Africa have a connection with the country's inflation rate is put to the test (Valli & Masih, 2014). Long-term research indicates a negative correlation between inflation and foreign direct investment (FDI) in South Africa.

This means that higher inflation will have a negative impact on the country's ability to attract FDI. Fahmi and Septiani (2023) argues that foreign direct investment (FDI) contributes positively and significantly to GDP. However, inflation has a deleterious effect on FDI in the long run. According to Al Bina et al (2022), the short-term impact of inflation on Indonesia's money supply, BI rate, GDP, imports, and exports is negligible. Money supply, the BI rate, the exchange rate, and exports all play significant roles in Indonesia's long-term inflation. According to Al Abri et al (2023), the demand for goods imported is driven by income, whereas total imports are significantly affected by domestic pricing alone. Import demand is insensitive to changes in foreign exchange reserves. The aforementioned findings suggest that the connection between foreign reserves and import volumes may have diminished as a result of currency peg stabilization attempts, foreign asset leakages, and different sources of foreign currency.

2. Method

The following model was established for analysis for both durations of different parties comprised of PTI and PDM (in which about 13 parties exist) governments. For analysis, major economic variables such as foreign exchange rate as dependent variables while CPI, foreign exchange reserves, FID, exports, and imports are employed as independent variables.

$$ER = \beta_0 + \beta_1 CPI + \beta_2 Exports + \beta_3 FDI + \beta_4 FR + \beta_5 Imports + \varepsilon \ldots\ldots\ldots (1)$$

Here, CPI representing as proxy of Inflation, FER as Foreign Exchange Rate, FR as Foreign Reserves, FDI as Foreign Direct Investment, Exports, and Imports.

Table 1 Estimation Results

Section A - Unit-root Test Results						
	Phillip-Perron			ADF		
Variable	I(0)	I(1)	Remarks	I(0)	I(1)	Remarks
CPI	0.9336	0.0104	I(1)	0.9329	0.0104	I(1)
Exchange Rate	0.9781	0.0005	I(1)	0.9540	0.0138	I(1)
Exports	0.0167	-	I(0)	0.3387	0.0000	I(1)
FDI	0.0021	-	I(0)	0.0021	-	I(0)
Imports	0.0687	0.0000	I(1)	0.0808	0.0000	I(1)
Foreign Reserves	0.9980	0.0485	I(1)	0.9982	0.0500	I(1)
Section B - Test Statistics				Critical Values		
7.7381				Lower Bound	Upper Bound	
			10%	2.08	3.00	
CointEq(-1) = -0.9761* (0.0000)			5%	2.39	3.38	
			1%	3.06	4.15	
Section C - Short-run Relationship						
Variable			Coefficient		P-values	
CPI			5.4150		0.0000*	
Exports			-0.0327		0.0033*	
FDI			-0.0233		0.0309*	
Imports			0.0081		0.0312*	
Foreign Reserves			-0.0044		0.0001*	
Section D - Long-run Dynamics						
Variable			Coefficient		P-values	
CPI			5.5470		0.0000*	
Exports			-0.0335		0.0011*	
FDI			-0.050		0.0408*	

Imports		0.0054	0.0888
Foreign Reserves		0.0012	0.0102*
Section E - Specification Tests			
R^2	0.8652		
Adjusted R^2	0.7784		
Durban-Watson	1.8790		
Normality Test (P value of Jarque-Bera test statistic)			0.3076
Heteroskedasticity test: ARCH (P-value of F test statistics)			0.5481
CUSUM test			Stable
CUSUM of Square test			Stable
Here "*" representing 5% level of significance			

3. Results and Discussion

Table 1 also shows five sections in which section A represents the unit-root estimation results. Two different unit-root estimation techniques such as ADF and Phillip-Perron employed. Both techniques confirm that some variables are stationary at a level while some are stationary at 1st difference. Hence, the results of both techniques confirm the application of the ARDL technique is the basis for robust estimation.

Section B reveals the test statistics value is 7.7381 which lies above the upper bound limit at 5% and confirms the cointegration existence among the variables for this study.

Section C shows the short-run outcomes of the model. According to the empirical estimations' outcome, the CPI positively and significantly impacted the exchange rate. The results confirm that increasing one unit in the CPI may cause an increase in the exchange rate of 5.4150 units. Imports had a positive and significant influence on the exchange rate; increasing one unit in import may cause an increase in the exchange rate of 0.0081 units. Exports, FDI and foreign reserves revealed a negative but significant influence on the exchange rate. By increasing one unit in exports, FDI, and foreign reserves leads to decrease in the exchange rate of 0.0335 units, 0.0233, and 0.0044 units respectively.

Section D revealed long-run estimations results. The CPI and foreign reserves revealed a positive and significant impact on the exchange rate and confirm that increasing one unit in both parameters was the cause of the increase in the exchange rate of 5.5470 units and 0.0012 units respectively. Exports and FDI revealed a negative and significant impact on the exchange rate. By increasing one unit in both variables confirmed the decrease in the exchange rate of 0.0335 units and 0.050 units respectively. While imports had a positive and insignificant influence on the exchange rate.

Finally, section E shows the R^2 (R-square) and adjusted R^2 0.8652 (86.52%) and 0.7784 (77.84%) respectively. The diagnostic tests also confirm satisfactory while CUSUM and CUSUM-square tests are also stable.

4. Conclusion

The fundamental object of this study was to analyze the influence of inflation, imports, exports, foreign reserves, and FDI on the exchange rate of Pakistani currency (rupee) against the US dollar through monthly data collected from SBP from July 2018 to January 2023. Through implying unit-root tests, the outcomes lead to the application of the ARDL bound test econometric technique for short-run and long-run analysis. In the short run, we concluded that the CPI has a considerable and favourable impact on the exchange rate. The findings confirmed that an increase in inflation and imports can result in an increase in the exchange rate in Pakistan. On the other side, increases in exports, foreign direct investment, and foreign reserves all contributed to the decrease in the exchange rate of Pakistan during the specified tenure. Long-run outcome conclusions confirmed that increasing inflation and foreign reserves are the reasons for the increment in the exchange rate, while exports and foreign direct investment were the causes of the decrease in the exchange rate in Pakistan during the period of the data studies. Lastly, the import cannot significantly affect the exchange rate of Pakistan for this duration but can affect it positively.

Based on the results and conclusion discussion, it is strongly recommended that the government of Pakistan control their exchange rate against the US dollar, need to increase their exports and decrease imports, and also make policies to control the rapidly growing inflation in the country.

References

Abosedra, S., & Fakih, A. (2017). Assessing the Role of Remittances and Financial Deepening in Growth: The Experience of Lebanon. Global Economy Journal, 17(1).

Agudze, K., & Ibhagui, O. (2021). Inflation and FDI in industrialized and developing economies. International Review of Applied Economics, 35(5), 749–764. https://doi.org/10.1080/02692171.2020.1853683

Al Abri, I., Saboori, B., & Al Humaidi, R. (2023). The dynamics of the relationship between foreign exchange reserves and import demand function. Cogent Economics & Finance, 11(1), 2189623. https://doi.org/10.1080/23322039.2023.2189623

Al Bina, Rahmadana, M. F., & Yusuf, M. (2022). The analysis of factors affecting inflation in Indonesia. ICoSTA 2022.

Amin, T. (2023). High inflation, low growth and falling forex: Country confronted with variety of challenges: MoF. Brecorder. https://www.brecorder.com/news/40223937

Chaudhry, I. S., Akhtar, M. H., Mahmood, K., & Faridi, M. Z. (2011). Foreign Exchange Reserves and Inflation in Pakistan: Evidence from ARDL Modelling Approach. International Journal of Economics and Finance, 3(1), 69–76.

Fahmi, A. U., & Septiani, Y. (2023). The Influence Of GDP, Inflation, And Deposit Rates On FDI In Indonesia. Journal of Humanities, Social Sciences and Business, 2(2), Article 2. https://doi.org/10.55047/jhssb.v2i2.506

Ghauri, S. P., Ahmed, R. R., Vveinhardt, J., Streimikiene, D., & Qureshi, K. S. (2019). The Effects Of Remittances On Inflation (Cpi And Wpi) And Exchange Rate: Acase Of Pakistan. Romanian Journal of Economic Forecasting, 22(2).

Hassan, G. M., & Shakur, S. (2017). Nonlinear growth effect of remittances in recipient countries: An econometric analysis of remittances–growth nexus in Bangladesh. Economies, 5(3), 25.

Isnowati, S., Sugiyanto, F., Kurnia, A. S., & Tjahjaningsih, E. (2023). The Effect Labor Wage and Exchange Rate on Inflation. Montenegrin Journal of Economics, 19(1), 117–126.

Jain, A. (2023, February 19). Pakistan economic crisis: Inflation, forex reserves among 5 worrisome indicators [Online Newspaper]. Mint. https://www.livemint.com/news/india/pakistan-economic-crisis-inflation-forex-reserves-among-5-worrisome-indicators-11676781170871.html

Khurshid, N., Emmanuel Egbe, C., Fiaz, A., & Sheraz, A. (2023). Globalization and Economic Stability: An Insight from the Rocket and Feather Hypothesis in Pakistan. Sustainability, 15(2), Article 2. https://doi.org/10.3390/su15021611

Monfared, S. S., & Akın, F. (2017). The Relationship Between Exchange Rates and Inflation: The Case of Iran. European Journal of Sustainable Development, 6(4), 329–340. https://doi.org/10.14207/ejsd.2017.v6n4p329

Mughal, M. Y. (2012). Remittances as development strategy: Stepping-stones or slippery slope?". Journal of International Development, 25(4), 12.

Narayan, P. K., Narayan, S., & Mishra, S. (2011). Do Remittances Induce Inflation? Fresh Evidence from Developing Countries. Southern Economic Journal, 77(4), 19.

Qasim, T. B., Ali, H., Baig, A., & Khakwani, M. (2021). Impact of Exchange Rate and Oil Prices on Inflation in Pakistan. Rev. Econ. Dev. Stud., 7, 177–185.

Siddiqui, S. (2023, February 13). Remittances hit 32-month low at $1.89b in January. The Express Tribune. https://tribune.com.pk/story/2400937/remittances-hit-32-month-low-at-189b-in-january

Sinaga, B., Darwin, & Rajagukguk, J. (2023). ICoSTA 2022: Proceedings of the 4th International Conference on Science and Technology Applications, ICoSTA 2022, 1-2 November 2022, Medan, North Sumatera Province, Indonesia. European Alliance for Innovation.

Sinan, O. B. (2023). The Relationship between the Exchange Rate, Inflation, and Unemployment in Turkey, 2014–2021.

Thapa, S., & Acharya, S. (2017). Remittances and Household Expenditure in Nepal: Evidence from Cross-Section Data. Economies, 5(2), 16.

Tuğral, A., & Barï, B. (2021). Asymmetric effects of exchange rate on inflation in Turkey: What aggregated and disaggregated data reveal. Erciyes Akademi, 35(3), Article 3. https://doi.org/10.48070/erciyesakademi.973738

Valli, M., & Masih, M. (2014, August 24). Is there any causality between inflation and FDI in an 'inflation targeting' regime? Evidence from South Africa [MPRA Paper]. https://mpra.ub.uni-muenchen.de/60246/

Valogo, M. K., Duodu, E., Yusif, H., & Baidoo, S. T. (2023). Effect of exchange rate on inflation in the inflation targeting framework: Is the threshold level relevant? Research in Globalization, 6. https://doi.org/10.1016/j.resglo.2023.100119

Wadood, S. N., & Hossain, M. A. (2017). Microeconomic impact of remittances on household welfare: Evidences from Bangladesh. Business and Economic Horizons, 13(1), 10–29.

Zhang, X. (2023). Inflation Effects of Exchange Rate Movements during the Pandemic. Desautels Faculty of Management McGill University. https://doi.org/10.2139/ssrn.4326726