Association between Inflation and Price of Assets in Boom and Depression

Abstract

The main purpose of the study is to evaluate the association between the inflation and price of assets in boom and depression in Pakistan. The economic condition of the country goes from the different phases like boom and depression. The monetary policy also tends to be changing with the shifts in the economy. The inflation rate of the country tends to increase in the depression periods which also effects on the assets prices as well. Therefore, this study has been conducted to identify the relationship between inflation and prices of assets considering the economic phases like boom and depression. The study is conducted using the quantitative research design with the secondary data. The data has been obtained for inflation, stock price, and exchange rate and gold prices through different websites. The data has been collected on the quarterly basis from the period of 2012 to 2020. The time series data analysis has been conducted using STATA software. Based on the results obtained from the ARDL test has revealed that the stock prices, exchange rate and gold prices are significantly related with inflation rate considering the interaction of crisis. Therefore, it is concluded that the inflation rate and prices of assets are significantly related considering the boom and depression in the economy.

Keywords: *Stock prices, Gold prices, Exchange rate, inflation rate, boom, depression*

Introduction

The recent global crisis has led to persistent increase in the level of prices of all commodities. In general terms, inflation is the increase in prices that makes the purchasing value of money to decline. Inflation has an evident impact on asset prices and varies in accordance with the economic cycle in the country (Li et al, 2021). This study will investigate the relationship between the inflation and the implication on prices of assets during a depression or boom. The boom is considered to be positive for the country as it provides greater level of employment and decline in the overall interest rates and inflation. It becomes appropriate for investors to capitalize money in various business propositions instead of earning interest by keeping it in the banks (Riesthuis, et al., 2020). Since the economy is in the urge of growth people tend to earn higher

returns on investments. The business opportunities offer employments and greater taxes to the government.

When the investors tend to invest vigorously, and the produced supply of properties and investments becomes greater than the demand resulting in decline of prices (Ilssar and Gat, 2020). Since the economic growth cycle evolves and turns back to the point of origination, after the boom there is always the phase of depression. The depression induced deflation, where the prices of commodities curtail (Hofisi, 2020). Unemployment is at an upsurge and investors look for safe-haven investments like treasury bonds, gold, etc. The interest rate increases and savings become desirable for stockholders, making the business propositions riskier (Bedeux, et al., 2018). Therefore, the study is conducted to evaluate the relationship between the inflation rate and asset prices. The study is significant for comprehension of the economic stability of Pakistan. The relationship between inflation and asset prices assists in evaluating the prevailing factors of inflation and the measures required for its curtailment.

Literature Review

Association between Inflation and asset prices

Various studies have been done on the subject to determine the co-integration of asset prices and inflation. Extensive researches have been comprehended to incorporate the role of inflation in different aspects of the economic cycle and its effect on the asset's prevailing prices (Eldomiat, et al., 2019). The concept derived from these studies is that the increase in asset prices doesn't always indicate economic growth, neither does inflation. When a country is abutting inflation, the asset prices began to increase, this is because the value of money declines. It tends to reduce the buying power of money for consumers, but since there is a causal relationship between economic growth and inflation various prepositions consider the increase in asset prices to be a sign of growth (D'Acunto, et al., 2019). It might not always be the true picture, as the next logical step after inflation is hyperinflation which could result in depression or slump for the country (Garza, Tovar and Barandica, 2020). When the prices obnoxiously increase, the demand tends to fall and the overall economic infrastructure alters.

According to the quantity theory, the inflation of a country is determined by the demand and supply for money (Heinle, Smith, and Verrecchia, 2018). The concept of asset price inflation is when the asset prices become inflated, the asset however in usual terms indicates the goods and services which is monitored by the use of CPI (Consumer Price Index). The effect of inflation on other assets including financial assets and property is different than those of consumer products (Sean, Pastpipatkul, and Boonyakunakorn, 2019). The financial assets are differentiated in accordance with their maturity time. The financial assets with greater duration and maturity terms are negatively affected by the rate of inflation, whereas the assets with short-term maturity are positively affected by inflation in the country (De Haan and Van Den End, 2018). The long-term investments are usually proclaimed with the intention of savings and the short-term investments are attained to achieve arbitrage gain. Inflation can reduce the savings of an individual even when they are not being traded or used, this is because the money loses value and the same amount of money deposition a year back will have lesser value due to inflation (Nkeki, 2018). The same concept applies to fixed income securities where the value of coupon payments deteriorates over time.

Empirical review

There have been several studies in highlights regarding inflation and its effect on asset prices. This includes some well-known seminal work done in recent studies. He argued that there is a positive relationship between stock prices and inflation (Cochrane, 2018). He insisted that inflation would increase nominal dividend payments. This idea was supported by a similar theme introduced by Gordon. He persistently argued that the increase in the inflation rate would increase the capital yield and dividend yield on the stock. This is because the discount rate will endorse the inflation rate in its computation (Rubin and Goutsmedt, 2018). The conclusive amalgamation of both theories was that inflation would affect the stock prices positively and would result in an increased value of fro the asset holder.

In contradiction to this theory, the classical economic theories suggest that there is a negative relationship between the assets prices and inflation and that the increase in one would reveal a decrease in the other (Akinsola and Odhiambo, 2017). This theory is supported by the fact

that an increase in inflation will result in an increased cost of capital and thus reduce profit margins for the asset holders. The cost paid will be induced by both debt and equity. The owners tend to obtain more external financing during an inflationary crisis (Goutsmedt, 2017). It is further evaluated that the use of nominal cash flow will always highlight an undervalued amount of asset in inflation and vice versa. Thus the use of the real cost of capital is recommended which will infuse the effect of inflation on both the cost and cash inflows of the asset.

In conclusion, it can be assessed that inflation is highly correlated to asset prices in an economy, and while other factors like GDP (Gross Domestic Profit), government intervention, and monetary policies can inflict the trend of an economic recession or boom, the inflation act as the main catalyst (Ball,2017). The duration of the assets is assumed to be an important variable in depicting the impact of inflation on the value of the assets, along with the impact of interest and coupon rates.

Besides financial assets, there are other forms of assets that share a different form of correlation with inflation. This includes the normal consumer goods and their prices. The empirical findings suggest a direct relationship between the commodities as an asset and inflation (Van, 2019). Studies suggest that the commodity prices revealed by CPI are one of the leading implications of inflation. Inflation affects the overall cost of production of goods and services which is consecutively reflected in the selling prices. The producers manage to transform their cost burden inflicted by inflation to their buyers (Chen and Lee, 2018). Hence, increasing the price of commodities in the prevailing market.

Methodology

The research design adopted for this particular research was quantitative as it enabled the researcher to evaluate independent variables and their correlation with dependent variables. Apuke (2017) has presented that the studies evaluating the association between different variables are more suitable to be conducted through quantitative analysis. Therefore, quantitative analysis is indicated to be more suitable for conducting this study for addressing the objective of this research.

The data collection technique used by the researcher is secondary sources by using various websites. Based on the constraints of the time and accessibility to the data, the researcher has considered the sample size based on the convenience sampling technique. It requires the collection of the data which is easily accessible. Based on this, the sample size in this study is 36 time series which includes 8 year period on the quarterly basis data. The study proclaims quantitative analysis with variables including the exchange rate, inflation rate of the country, gold prices and stock prices over quarterly basis. The data for each of the variable has been collected from the different websites providing the historical data sets of the macroeconomic variables. The table below reflects the sources for each of the variable considered in the study.

Table 1 Proxies and Sources of the Varibales

Variables	Proxy	Sources
Inflation Rate	Consumer Price Index	Trading Economics
Gold Prices	Gold prices in PKR for 10 gm	OPF
Exchange Rate	USD/PKR	Investing.com
Stock Prices	KSE-100 index	Investing.com

Due to the quantitative nature of the study, the data analysis was done using statistical tools of the time series analysis. The software used for the time series analysis is STATA. The unit root test is conducted as the preliminary analysis for indicating the use of ARDL or VAR. The null hypothesis of the unit root test specifies the existence of the unit root in the time series data, whereas the alternative hypothesis displays stationarity in the time series data (Nutahara, 2021).

Based on the outcomes of the unit root tests, ARDL was estimated for indicating the relationship between the variables of assets prices and inflation rate.

Results and Discussion

Descriptive Statistics

Table 2: Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
Inflation Rate	36	7.06	2.000	4	11.4
Stock Price	36	33061.60	9830.42	13761.76	48155.93
Gold	36	49405.82	5664.72	40380	60871
Exchange Rate	36	117.008	24.65	90.52	167.2
LNSTOCKRET	35	0.033	0.111	-0.332	0.239
LNGOLDRET	35	0.004	0.078	-0.208	0.185
LNEXRET	35	0.016	0.041	-0.069	0.145

Table 2 above reflects the descriptive statistics which summarises the data regarding each of the variables. The inflation rate has identified mean value of 7.06% and standard deviation of 2% which shows that average inflation rate over the period of 2012 to 2020 is 7.06% quarterly. Furthermore, stock prices has identified the mean value of PKR 33061.60 and standard deviation of PKR 9830.42 which shows average stock price during the period to be 33061.60. Gold has identified the mean value of PKR 49405.82 with the standard deviation of PKR 5664.72. It shows that average gold prices during this period is PKR 49405.82 that can deviate above or below by PKR 5664.72 which also shows higher volatility of gold prices. Exchange rate has identified the mean value of 117.008 USD/PKR with standard deviation of 24.65. It indicates that exchange rate has higher volatility as it has average value over the period 117.008 USD/PKR and can deviate above or below by 24.65. Stock return has mean value of 0.033 with standard deviation of 0.111 which shows average return on stock to be 0.033% and shows higher volatility. Gold return has identified the mean value of 0.004% with the standard deviation of 0.078% which also reflects

higher volatility with average return on gold of 0.004%. Exchange rate return has identified to have the mean of 0.016% with standard deviation of 0.041% which shows average return of exchange rate to be 0.016% with the relative volatility.

Unit Root Test

Table 3 Unit Root Test

Variable	Intercept	Significance	First Difference	Significance
Inflation Rate	-1.798	0.3816	-5.363	0.00
Stock Price	-1.813	0.3741	-1.813	0.0395
Gold	-1.798	0.3815	-1.798	0.0407
Exchange Rate	0.052	0.9626	-6.367	0.00
LNSTOCKRET	-7.107	0.00		
LNGOLDRET	-6.38	0.00		
LNEXRET	-6.214	0.00		

Table 3 above shows the unit root test. The null hypothesis of the unit root test indicates the presence of the unit root in the time series data and the alternative hypothesis shows stationarity in the time series data. Inflation rate, stock price, gold and exchange rate has identified the P-value greater than the significance level which accepts the null hypothesis and hence the unit root is present in the data. The first difference is identified to have significance level for inflation rate, stock price, gold and exchange rate which is 0.00, 0.0395, 0.0407 and 0.00 respectively. Furthermore, stock return, exchange return and gold return has identified P-value of 0.00 which indicates that the data is stationary. Based on the outcomes, ARDL model is approximated which shows the association between the variables.

Association between Inflation and Stock Prices

Table 4 ARDL for Inflation and Stock Prices

D.LNSTOCKRET	Coef.	Std. Err.	t	P>|t|
ADJ				
LNSTOCKRET				
L1.	-1.026	0.129	-7.95	0
LR				
InflationRate	0.005	0.009	0.55	0.584
Crisis	-0.053	0.029	-1.86	0.075
LNSTOCKRETXCRISIS	0.990	0.252	3.93	0.001
SR				
_cons	0.022	0.066	0.33	0.743

Table 4 shows the relationship between the inflation rate and stock return amid the crisis for indicating the association between the variables in booms and depression. It is indicated from the outcomes that the stock return is adjusted to -1.026 or 102.6% which indicates that stock return of Pakistan converge to the long run equilibrium at adjusted speed of 102.6% through lagged variables of stock return. Furthermore, the long run has shown that inflation rate and stock return are insignificantly related. However, the stock return amid crisis has significant relationship.

Association between Gold return and Inflation Rate

Table 5: ARDL Model for Gold Return and Inflation Rate

D.LNGOLDRET	Coef.	Std. Err.	t	P>|t|
ADJ				
LNGOLDRET				
L1.	-1.389	0.173	-8.03	0
LR				
I Inflation Rate				

			Std. Err.	t	P>|t|
	L1.	-0.006	0.005	-1.07	0.298
	Crisis				
	L1.	0.000	0.017	-0.01	0.995
LNGO	LDRETXCRISIS				
	L1.	0.975	0.229	4.25	0
SR					
I	Inflation Rate				
	D1.	-0.027	0.016	-1.68	0.108
	LD.	-0.012	0.014	-0.9	0.377
	L2D.	0.015	0.014	1.09	0.29
	L3D.	0.046	0.015	3.04	0.006
	Crisis				
	D1.	0.000	0.023	-0.01	0.995
LNGO	LDRETXCRISIS				
	D1.	0.750	0.223	3.36	0.003
	_cons	0.051	0.055	0.94	0.359

Table 5 above shows the relationship between inflation and gold prices amid crisis for indicating the relationship in booms and depression. It shows that gold return is adjusted to -1.389 or 138.9% which shows that gold return of Pakistan converge toward the long run equilibrium at adjusted speed of 138.9%. Furthermore, in long run it has identified the insignificant relationship between the gold prices and inflation rate. It has significant relationship with gold return amid crisis. In short run, it has also identified insignificant relationship between inflation and gold prices. However, significant relationship has been identified amid the crisis.

Association between Exchange Rate and Inflation

Table 6: ARDL model for inflation and exchange rate

D.LNEXRET	Coef.	Std. Err.	t	P>|t|
ADJ				

	LNEXRET				
	L1.	-1.653	0.266	-6.21	0
LR					
	Inflation Rate				
	L1.	-0.0001	0.002	-0.06	0.951
	Crisis				
	L1.	-0.008	0.007	-1.19	0.248
LNEXR	ETXCRISIS				
	L1.	1.317	0.201	6.54	0
SR					
	LNEXRET				
	LD.	0.599	0.196	3.06	0.006
	Inflation Rate				
	D1.	-0.00020	0.0033	-0.06	0.951
	Crisis				
	D1.	-0.013	0.0115	-1.17	0.256
LNEXR	ETXCRISIS				
	D1.	0.760	0.181	4.2	0
	LD.	-1.480	0.412	-3.59	0.002
	L2D.	-0.248	0.304	-0.82	0.424
	L3D.	-0.561	0.278	-2.02	0.056
	_cons	0.0104	0.022	0.48	0.635

Table 6 shows the association between inflation and exchange rate. It is indicated from the table above that exchange rate has the adjustment rate of -1.653 or 165.3% which indicates that the exchange rate converge towards the long run equilibrium at the adjusted speed of 165.3%. However, the long run and short run equilibrium has not indicated significant relationship between the exchange rate and inflation rate. The exchange return has significant relationship amid crisis.

Discussion

The study is aimed at identifying the relationship between the inflation rate and asset prices considering different asset prices such as stock prices, gold prices and exchange rate in booms and depression. The study has adopted the time series data analysis and ARDL technique has been used to indicate the relationship between the variables. It has been identified from the analysis that the inflation rate is significantly related to stock return, exchange return and gold return amid crisis. The findings are consistent with the findings of different studies conducted previously. The research conducted by Fahlevi (2019) has identified that the inflation rate and stock prices are significantly related. Furthermore, the study of Osabuohien et al (2018) has provided that the exchange rate has the significant relationship with the inflation rate. On the other hand, the study conducted by Hashim et al (2017) has revealed that the gold prices are significantly related with the inflation rate.

Conclusion and Recommendations

The aim of this research was to comprehend the relationship between inflation and asset prices in Boom and depression economic cycle. The research uses secondary method as data collection technique and the premise of the study in quantitative. The time series data analysis has been conducted using STATA software. The findings of the study illustrates that the stock prices, exchange rate and gold prices are significantly related with inflation rate considering the interaction of crisis. It can also be established that the inflation rate and prices of assets are significantly related considering the boom and depression in the economy.

Since Pakistan has been indulged in an inflationary spiral, it has become more than necessary for the government to alter policies to control inflation. Since Pakistan has been a major

importer the price fluctuation embellish the existing inflation and has transformed it into a double digit inflation rate. The government can intervene in curtailing the inflation through contractionary monetary policy by reducing money supply in an economy. It reduces the supply of money in the economy and hence the spending. The retraction of supply increase demand and the value of money upsurges and stabilises in the long run.

Although the findings of this research highlighted the association of inflation and asset prices in Boom and Depression, some limitations restricted the scope of the study. This includes the sample size incorporated, more years of data can be included in the study to provide more extensive results. Furthermore, there are different other asset classes as well which can be used for enhancing the findings on the association between asset prices and inflation. The restricted scope on one country might provide with the limited findings. The future studies can also incorporate the different regions together for enhanced findings on the boom and depression specifically referring to the global crisis.

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