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### Abstract

Government securities usually are regarded as a valuable and reliable mechanism for modern investments. This is because they provide the funding for domestic government with a low return on yield with time. The enable the state to raise finances necessary for development agenda of the government. In addition, it plays a crucial role of mobilization of resources and allocation in the economy. The relationship between changes in interest rates and performance of the securities returns is an important aspect of the economy as it has a greater bearing on the overall performance of the economy and shows the level of confidence of investors in that economy. This is even more important in the current financial setup characterized by increased international trade and the integration of the global financial markets. The objective of the study was to determine the effect of interest rates on the performance of bonds at the Buenos Aires Stock Exchange (BCBA) in Argentina. Significant extent. The study found that inflation rate had a negative correlation with stock market returns at the BCBA and we can therefore conclude that higher inflation rates tends to discourage performance of bonds listed at the BCBA leading. Exchange rates were also found to be negatively related to stock market returns at the BCBA and therefore an increase in exchange rates to a decrease in stock market returns at the BCBA. The study established that although there is a negative influence of interest rates on bond performance at the BCBA. This study recommends that there is need for central bank to regulate the interest rate levels prevailing in the country bearing in mind that they influence government securities. The investigation found that trade rates and swelling rates have a negative association with bond execution recorded at the BCBA. The factors were additionally observed to be significant determinants of bond execution. This investigation suggests that policy formulators should focus on the common rates of these chose autonomous factors as they can contrarily influence bond yield recorded at the Buenos Aires Stock Exchange.

**Keywords:** Interest Rates, Economic growth, Inflation Rate, Exchange Rate, Buenos Aires Stock Exchange & Argentina.

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#### **1.1 Background of the study**

Government securities usually are regarded as a valuable and reliable mechanism for modern investments. This is because they provide the funding for domestic government with a low return on yield with time. The enable the state to raise finances necessary for development agenda of the government. In addition, it plays a crucial role of mobilization of resources and allocation in the economy (Longei & Abdallah, 2017). Structured bond markets are gaining more importance to raise capital. The term structure of interest is currently a key issue for academics, researchers and investors. Many theories with strong empirical evidence on the term structure behavior exist, which help in conclusion about bond market behavior (Friewald, Jankowitsch & Subrahmanyam, 2017). The relationship between bond performance and interest rates has been analyzed by many economists' theorist and investment analyst all over the world. Despite of this attention directed to this analysis term structure theories remain at a state of confusion among scholars and investors in the bond market (Eisfeldt, Lustig & Zhang, 2017).

This research analyzed theories to explain the impact of rates of interest and how this affects bond performance. The study was guided by the liquidity premium and segmented market. Liquidity Premium Theory of Interest Rate asserts that short term and long-term bonds cannot be substituted by each other. Segmented Markets Theory argues that bond market varies because of differences in maturity period (Hicks, 1946). He argued that bond market is segmented. Segmentation and each segment are unique and separate from the other. The yield in these segments is determined by demand and supply forces existing in the segments (Culbertson, 1957). Those who borrow and lend have strong preferences for assets or liabilities of a specific date, and they can move away from this maturity, i.e. their preferred habitat, if interest rate incentive is available. The theory implies investors in bond will invest bonds of specific maturity length which lies within their interest.

The performance of the government securities in Argentina is a powerful indicator of economic performance of the wider economy (Oji, 2015). Measuring the efficiency of the bonds in reacting to macroeconomic indicators such as interest can therefore provide useful information to policy makers. There are a number of monetary policies that can influence the current rate at which the coupon can be purchased. This study used interest rate for the monetary policies and governments bonds for government securities. Each of the variables in discussed in the subsequent sections. Hajilee and Al Nasser (2017) finds that it is crucial to identify the relationship that exists between the interest rates and securities prices. Learning of this connection between changes in interest rates and protections returns at various time scales is of undoubted interest for financial specialists, corporate directors and strategy producers, as it gives basic data to chance administration and arrangement deciding. Chen, Clouse, Ihrig and Klee (2016) argues that interest rates influence the center activity of an economy regarding creation and utilization through transmission component of swelling, trade rates among other fiscal factors.

#### **Relationship between Interest Rates and Bond Performance**

Over the last decade, the rate of interest have been moving up and down all over the world. The changes and spread in interest rates for bonds with varying maturity levels is well explained by characteristics of the bond (Lothian, 2017). Similar bonds differing in maturity levels also exhibit differences in terms of yield. In respect to this term structure theory explains variations in yield for bonds and the yield curves due to changes in the interest rates (Koijen, Lustig & Van Nieuwerburgh, 2017).



Preferred habitat theory suggest that most of the short term bonds yield higher compared with long term bonds and that investors like short-term investments (Chen, Clouse, Ihrig & Klee, 2016). According to this theory yield curve is positively sloping. According to market segmented theory yield is explained by the demand and supply forces which are due to price of the bond and interest rates (Eisfeldt, Lustig & Zhang, 2017). According to Pure expectation theory interest for bonds with varying maturity is explained in terms of forward rates and spot rates (Tease, 2018). Hicks in his liquidity premium theory described investors as risk averse and requiring risk premium to invest in long term bonds. This explained why long term bonds yield higher and that they are perfect substitutes (Townshend, 2017).

Becker and Ivashina (2015) asserts that the basic principle is that interest rate and prices relate inversely and the bond prices and bond yield also move inversely. While fixed securities are affected by changes of rates of interests, extend of the risk is determined by the maturity period. The longer the maturity period the adverse the effect on the bond and the shorter the maturity period, the lower the risks of price changes and return. According to Ndunda (2018), most of bonds have a converse connection between their fairly estimated worth and the degree of interest rates: the yield on a bond is controlled by market powers. On the off chance that different bonds in the business sectors are accessible at higher interest rates, the cost of remarkable bonds must decay to stay focused. In a rising interest rate situation, the yield or return of the bond, in this way, is resolved to a limited extent by its yield in respect to different bonds being advertised. While the connection between higher interest rates and lower bond costs for the most part holds, the level of affectability of bond esteems and profits to rates depends for the basic attributes of a particular bond including development, coupon, and credit profile. In any case, not all bonds are influenced similarly by possibly higher interest rates.

#### **1.2 Research Problem**

The impact of the macro economic variables in Argentina especially interest rates have been a major concern to financial analysts and investors. Khursid (2015) contends that an enormous and unexpected increment all in all interest rates can affect government bonds. The relationship between changes in interest rates and performance of the securities returns is an important aspect of the economy as it has a greater bearing on the overall performance of the economy and shows the level of confidence of investors in that economy (Holston, Laubach, & Williams, 2017). This is even more important in the current financial setup characterized by increased international trade and the integration of the global financial markets.

Some of the studies conducted in this field present gaps; Wuhan and Khursid (2015) established that the bond prices fall when rates of interest moved upward and when the rate of interest fall the bond prices also rose up. Mahmudul and Gazi (2015) showed how stock and bond price changed in relation to changes in the rates of interest at the Australia financial market. Evbayiro-Osagie and Osamwonyi (2012) established there was an impact on the stock market index in Nigeria that was as a result of the particular macroeconomic variables. A study by Shrestha and Subedi (2015) established that stock market performance responded positively to inflation and growth in money.

Teker and Alp (2014) studied the effect of interest rates on bond value at BCBA and established that the central bank rates, interbank rates and repo rates affected value of guilt edged bonds. There was a positive correlation for the three types of rates and the value of a bond. Becker and Ivashina (2015) analyzed the determinants of corporate bond execution in Argentina and set up that the inner determinants had a negative irrelevant association with bond execution however bond issue



size and coupon rate had a positive association with bond execution. Hajilee and Al Nasser (2017) in the analysis of macro-economic variables of inflation and interest rates on the returns of the stock market at the BCBA and found that interest rates and inflation rates combined contributed to a 66.9% change in the stock market prices. In addition, the study found that a positive link was present between interest rates and the prices of the stock market for companies listed in the BCBA. Eisfeldt, Lustig and Zhang (2017) study was interested in confirming how stock returns were influenced by the macroeconomic variables and found that there was a significant effect existed on the returns of the Argentinian stock market attributed to the money supply, exchange rate and inflation rate. The studies presented various findings that were inconsistent and therefore the current study sough to determine the effect of interest rates on the performance of bonds at the Buenos Aires Stock Exchange.

#### 1.3. Objective of the study

The objective of the study was to determine the effect of interest rates on the performance of bonds at the Buenos Aires Stock Exchange.

#### 2.1 Theoretical Review

The study was inform by Liquidity premium theory of interest rates, market segmentation as well at the preferred habitat theory.

#### 2.1.1 The Liquidity Premium Theory of Interest Rate

The theory was advanced by Hicks in 1946 and he asserted that short term and long-term bonds cannot be substituted by each other. According to this theory investors like short-term bonds because they are not adversely affected by interest rate risk and if that the investors must be compensated through liquidity premium for them to hold bonds with longer term maturity. Hicks argued that as a result of these premiums, the curve on yield slopes upward (Hicks, 1946).

Interest-rate risks emerges from a bungle between speculator's venture skyline and a bond's a great opportunity to maturity. On the off chance that a bondholder intends to sell a bond preceding maturity, changes in the interest rate make capital increases or mishaps. The more drawn out the term of the bond, the more significant the worth changes for a given change in interest rates and the greater the potential for capital incidents. As if there should arise an occurrence of swelling, the hazard increments with the term to maturity, so the remuneration must increment likewise with it (Hwang & Lee, 2016).

The purchaser of long term bonds would require remuneration for the dangers they are taking purchasing long haul bonds. The liquidity premium theory points of view bonds of different advancements as substitutes, anyway not faultless substitutes. Budgetary authorities lean toward short instead of long bonds since they are free of development and interest rate risks. Along these lines, they should be paid positive liquidity (term) premium, to hold whole deal bonds (Nagel, 2016). The yield, in this manner, has two areas, one that is sans peril and another that is a premium for holding a progressively drawn out term bond. Liquidity premium speculations produce yield twists that even more steeply upward slanted. The liquidity premium theory predicts that interest rates of different improvements will move together because the whole deal rates are essentially connected to the transient rates. Long rates will in like way be less capricious in light of the way that bit of the long rate, which is only a run of the mill of the short rates, will smoothen out the whimsies in the short rates. At last, since the hazard premium increases with time to maturity, the



liquidity premium theory divulges to us that the yield bend will regularly slant upwards, just now and then will it lied level or tendency descending (Cherkes, Sagi & Stanton, 2008).

This theory therefore explains why longer maturity bonds yield higher compared to bonds with shorter maturity it also explains what influences investors decision to go for long-term bonds which are adversely affected by interest rate risk.

#### 2.1.2 Segmented Markets Theory

This theory was advanced by Culbertson (1957) and argues that bond market varies because of differences in maturity period. He argued that bond market is segmented. Segmentation and each segment are unique and separate from the other. The yield in these segments is determined by demand and supply forces existing in the segments. Each segment operates independently and it is not affected by the conditions existing in the other segment. According to Culbertson we have segments divided as for those preferring bonds within short maturation duration, investors for medium bonds and those investing within long duration. The segments are characterized by maturity length and for each segment the interest rate and yield on bond is governed by demand and supply (Leontaridi, 2018)

For market segmentation to exist investors must confine within certain limited maturities and that these maturities are usually rigid (Krenn, 2017). Segmentation in the market may be weaker or stronger, weaker segmentation exist where investors have potential to substitute between there maturity preferences and they choose not to do so. The motivation for investors to rely on certain maturity preferences is usually to minimize the risks associated with liquidity and prices. However despite of the segmentation investors are likely to move to other maturity preferences of different maturity period in cases where there yields are affected (Eisfeldt, Lustig & Zhang, 2017). This theory helps my study to have more elaborate explanation on the impact of the different economic forces on bond yield and how they affect return of the bond.

#### **2.2 Empirical Review**

Wuhan and Khursid (2015) studied how investment in China was affected by rates of interest. Their main objective was to test how interest rates affected investment at Jiangsu province of China. The period under study was from 2003 - 2012. Co-integration test was employed for long-run, while for short run, VECM was used. They found out that the association was long-term between the variables and that in the long run the relation was negative and positive in the short run. They concluded that, the bond prices fall when rates of interest moved upward and when the rate of interest fall the bond prices also rose up. Rising interest rate increased cost of investment and therefore demand for investment reduced which in general also lowered return of the bonds. The study is of relevance as it points out how interest rate affected investment in bonds.

Mahmudul and Gazi (2009) showed how stock and bond price changed in relation to changes in the rates of interest at the Australia financial market. The period under study was from January 1988 – March 2003. A sample of 15 developing and developed countries from this period was used. Random walk theory was applied in the study. Randomness of market, were tested using market return. Market returns where gotten from monthly price indices. The relationship between the variables was determined by using regression analysis. The results showed that the share prices were affected by change in interest rates and that the relation was a negative relationship. They concluded that share prices moved in opposite direction just as it is evidenced in the bond prices.



Evbayiro-Osagie and Osamwonyi (2012) explored the correlation between macroeconomic variables and the Nigeria capital market index. The study covered the period from 1975 to 2005 and data for each year was used. The macroeconomic economic variables that were selected for the study were "inflation rate, interest rates, GDP, exchange rate, money supply and fiscal deficit. With the use of the Vector Error Correction Model for the data analysis, the study sought to establish the short run and the long run connection between the macroeconomic variables and the stock market index". It was concluded from the study that there was an impact on the stock market index in Nigeria that was as a result of the particular macroeconomic variables.

Teker and Alp (2014) investigated the causality relation between stocks market and the rates of interest in Turkey, Brasil, China and Hungary. The study findings revealed that causal link, direction varies between maturities and Nations such that in Hungray, the market showed causal link between the stock market and rate of interest while in China, and the market predicated a low causal relation. However, the findings established that apart from Brazil, each returns on stock market are Granger implication of 3-month T-bill rates and the causality relationship of T-bonds between which indicate low returns of a country, apart from Hungary.

Anurag (2015) conducted a study on various factors affecting bond market a case study for India. Bonds of maturities ranging from 1yr to 10yrs were used in the study. Factors understudy included interest rate, expansion, spot rate, repo, turn around repo rates and unrefined petroleum costs. Relationship and relapse examination was applied. The outcomes demonstrated that bond returns had a positive connection with all components aside from the spot rate and the turnaround repo rate. Using correlation table he established that inflation had a higher positive correlation than that of other variables and that economic growth was affected by long-term rates through inflation expectation. He found that inflation had a higher positive correlation with return for short maturity bonds and relationship declined as maturity period increases. The study also found that exchange rate has negative correlation on bond return. The concluded that there was a relation between the variables and bond return of different maturities and that bonds of different maturities moved together with given variable meaning that any variable affected the bond price of a shorter maturity same as that of longer maturity.

Mouna and Anis (2013) examined the exchange rate volatility together with changes in interest rates and how this effected on banks returns, a case study of Tunisia. The study used OLS and GARCH models of statistics. They established that rates of exchange and market index had an impact in determining the dynamics of the bond returns. Additionally, they found that interest and exchange rate volatility are the major determinant of stocks and bond returns volatility. From the study it was evident that exchange rate and market index played a key role in determining the rate of in return in bonds just as it determined the stock returns in the market. This also affected the volatility in the bond investment in the market. Therefore, interest rates and exchange rate a crucial variables to consider in the bond market investment.

#### 2.3 Conceptual Framework

The conceptual framework shows that the independent variable is the interest rate which is shown in terms of central bank interest rate. It shows the extent to which the price of the bond will change due to change in interest rates prevailing. The dependent variable in the study is the bond yield which shows the rate of return expected for the bond in terms of current yield. The control variables include economic growth, inflation rate and exchange rate. The conceptual framework is as shown in Figure 1. Stratford Peer Reviewed Journals and Book Publishing Journal of Economics Volume 4//Issue 1//Page 65-76 //December //2020/ Email: info@stratfordjournals.org ISSN: 2616-5800





#### **Figure 1: Conceptual Framework**

#### **3.1 Research Methodology**

This study used a descriptive research design. The research used secondary data from the data center of the Buenos Aires Stock Exchange and the Central Bank of Argentina. This data covered quarterly data for a period of 10 years from 2008 to 2018 and it include government bond trading data in the BCBA bond yield for a similar period and central bank interest rates. In data analysis, bond prices and the CBA interest rates was used to for data analysis. The control variables include economic growth, inflation rate and exchange rate. SPSS was used to conduct the analysis. A regression model was used to explain the relationship in the variables.

#### 4.1 Results and Findings

#### **4.2 Correlation Analysis**

Correlation analysis was conducted to determine the relationship between the independent and dependent variables. The results are shown in Table 1.

	Bond	Interest	Economic	Inflation	Exchange
Variables	Performance	Rate	growth	Rate	Rate
Bond					
Performance	1.000				
Interest Rate	577**	1.000			
	0.000				
Economic					
growth	.417**	-0.257	1.000		
-	0.005	0.092			
Inflation Rate	497**	.552**	334*	1.000	
	0.001	0.000	0.026		
Exchange Rate	303*	.357*	-0.036	.470**	1.000
2	0.046	0.017	0.816	0.001	

#### **Table 1: Correlation Analysis**

The correlation results showed that interest rate (-0.577, 0.0000) had a negatively and significant relationship with bond performance. Economic growth (0.417, 0.005) had a positive and significant relationship with bond performance. Inflation Rate (-0.497, 0.001) had a negative and



significant relationship with bond performance. Lastly, exchange rate (-0.303, 0.046) had a negative and significant relationship with bond performance. This shows that an increase in interest rate, inflation rate and exchange rate had a decreasing effect on bond yield while an increase in economic growth led to an increase in bond performance.

#### **4.3 Regression Analysis**

A regression model was used to explain the relationship in the variables. The results were presented using tables and regression model to give the analyzed research results. The regression analysis presented the fitness model, ANOVA and regression of coefficients. The fitness model is a s shown in Table 2.

#### Table 3: Fitness Model

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.662a	0.438	0.38	1.155

The results showed that interest rate, economic growth, inflation rate and exchange rate were satisfactory variables in explaining bond performance as they had an Rsquared of 0.438. This indicated that interest rate, economic growth, inflation rate and exchange rate explained 43.8% of bond performance.

#### **Table 3: Analysis of Variance**

	Sum of Squares	df	Mean Square	F	Sig.
Regression	40.541	4	10.14	77.596	0.000
Residual	52.035	39	1.334		
Total	92.575	43			

The results show that the general model was statistically significant. Further, the outcomes suggest that the independent variables are good indicators of bond performance. The F-statistic was 77.596.

#### **Table 4: Regression of Coefficients**

	Unstandardiz	ed Coefficients	Standardized Coefficients		
	В	Std. Error	Beta	t	Sig.
(Constant)	21.484	13.973		1.537	0.1320
Interest Rate	-0.174	0.064	-0.397	-2.718	0.0100
Economic Growth	0.181	0.090	0.260	2.007	0.0052
Inflation Rate	-0.196	0.205	-0.153	-2.957	0.0340
Exchange Rate	-0.081	0.142	-0.079	-0.571	0.5710

The model was laid as below.

 $Y = 21.484 - 0.174X_{1} + 0.181X_{2} - 0.196X_{3} - 0.081_{4}$ 

Where;

Y= Bond Performance (Bond Yield)



X<sub>1</sub>= Interest Rates (CBA Interest Rate)

X<sub>2</sub>= Economic Growth (GDP Growth Rate)

X<sub>3</sub>= Inflation Rate (Consumer Price Index (CPI)

X<sub>4</sub>= Exchange Rate (CBA Exchange Rate)

Regression of coefficients results in Table 4.5 shows that interest rate and bond performance are negatively and significantly related at ( $\beta = 0.174$ , p=0.010). Economic growth on the other hand was positively and significantly related to bond performance at ( $\beta = 0.181$ , p=0.0052). Inflation rate was negatively and significantly related to bond performance at ( $\beta = -0.196$ , p=0.0340). Lastly, exchange rate was negatively and insignificantly related to bond performance at ( $\beta = -0.081$ , p=0.5710).

The results indicated that an increase in CBA interest rate would lead to a decrease in bond performance by 0.174 units if all factors were held constant. The results also show that increase in economic growth would lead to improvement of bond performance by 0.181 holding all factors constant. Further, the results indicate that an increase in inflation rate would lead to decrease in bond performance by 0.196 units if all factors were held constant. Lastly, an increase in exchange rates would lead to a reduction in bond performance by 0.081 units.

These finding are consistent with Wuhan and Khursid (2015) who studied how investment in China was affected by rates of interest. They concluded that, the bond prices fall when rates of interest moved upward and when the rate of interest fall the bond prices also rose up. Rising interest rate increased cost of investment and therefore demand for investment reduced which in general also lowered return of the bonds. Mahmudul and Gazi (2009) showed how stock and bond price changed in relation to changes in the rates of interest at the Australia financial market. The relationship between the variables was determined by using regression analysis. The results showed that the share prices were affected by change in interest rates and that the relation was a negative relationship.

Evbayiro-Osagie and Osamwonyi (2012) explored the correlation between macroeconomic variables and the Nigeria capital market index. It was concluded from the study that there was an impact on the stock market index in Nigeria that was as a result of the particular macroeconomic variables. Teker and Alp (2014) investigated the causality relation between stocks market and the rates of interest. The findings established that apart from Brazil, each returns on stock market are Granger implication of 3-month T-bill rates and the causality relationship of T-bonds between which indicate low returns of a country

#### **5.1 Conclusions**

The study therefore concludes that higher interest rates lead to reduced bond returns even to a significant extent. The study found that inflation rate had a negative correlation with stock market returns at the BCBA and we can therefore conclude that higher inflation rates tends to discourage performance of bonds listed at the BCBA leading. Exchange rates were also found to be negatively related to stock market returns at the BCBA and therefore an increase in exchange rates to a decrease in stock market returns at the BCBA.

This study concludes that independent variables selected for the study interest rates, exchange rates and inflation influence bond yield at the BCBA in any case, not to an enormous degree as they represent 43.8 percent of the adjustments in securities exchange returns. The way that the four free



factors clarify 43.8% of changes in bond execution suggest that the factors excluded in the model clarify 56.2% of changes in bond execution. The general model was observed to be significant as clarified by the F measurement.

#### 6.1 Recommendations of the Study

The study established that although there is a negative influence of interest rates on bond performance at the BCBA. This study recommends that there is need for central bank to regulate the interest rate levels prevailing in the country bearing in mind that they influence government securities. The investigation found that trade rates and swelling rates have a negative association with bond execution recorded at the BCBA. The factors were additionally observed to be significant determinants of bond execution. This investigation suggests that policy formulators should focus on the common rates of these chose autonomous factors as they can contrarily influence bond yield recorded at the Buenos Aires Stock Exchange.



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