EFFECT OF DISCOUNT RATE, T BILLS AND CPI ON TRADING VOLUME OF KSE 30 AND 100 INDEXES

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ABSTRACT

This study examined quarterly data of CPI, Discount rate, and T-bill rate to show a relation with KSE 100 index and KSE 30 index trading volume. The data is comprise in two sets because of the above two different indexes. The first linear regression was run from 1995 to first quarter of 2010 on quarterly basis. Second regression was on 2007 to 2010 first quarter. Regression result was significant, support the research question that change in discount rate has significant association with KSE 100 index trading volume, while the other two variables has insignificant effect on the trading volume of KSE 100 index. While in case of KSE 30 index the variables does not pertain any significant relation with the trading volume of KSE 30 index. Further study is needed to find out the impact of CPI, Discount rate, and T-bill on stock returns.

Keywords: consumer price index (CPI), Discount Rate (r), Karachi stock exchange (KSE), Trading Volume (TV) Treasury bill rate (t-bill rate)

1 INTRODUCTION

The purpose of this study is to examine the effects of discount rate, t-bill, and consumer price index (CPI) on KSE-100 index and KSE-30 index trading volumes. It is usually considered that financial markets or trading volumes show response to economic variables such as money supply, unemployment rate; wholesale price index (WPI), consumer price index (CPI), producer price index (PPI), discount rate, and t-bill rates etc

Research has been conducted previously that financial market reacts to these economic variables but our study will be focus to show the relation of discount rate, CPI, and T-bill. This study shows that there is negative relation of CPI and T-bill with KSE 100 index
trading volume while the discount rate shows positive significant relation with KSE 100 index trading volume.

This study also shows the relation of these variables with KSE 30 index trading volume but the finding of these variables show some unique result that is that all the variable are showing insignificant effect on the trading volume. In which the discount rate and T-bill show negative relation and the CPI is showing positive relation with the trading volume of both the indexes.

This study will help the investor in decision making processes to change their portfolio during the announcements of these variables.

2 PURPOSE OF THE STUDY

The purpose of the study is to find out the relation of CPI, Discount rate, and T-bill with KSE 100 index and KSE 30 index trading volume that how much this three variable effect the trading volume of both the indexes.

3 LITERATURE REVIEW

Existing literature has mainly focused on relationship of trading volume with CPI, discount rate and T bills rate. The literature has been arranged in chronological order.

Beaver (1968) believed that as the price changes, the trading volume also tends to change and this unanticipated change is due to the investors’ information and future knowledge about the trading behavior of the market. Also new information is more valid in the present situation of market rather than less precise private information.

Riched P. Castanias (1979) their study suggested that efficient markets and random changes in the public information will together generate observed distribution of price change which will not be generally characterized by “simple” distribution. They argued that variability of daily market factor is the increasing function of the arrival of economic information. Their result showed that market in the aggregate is the efficient processor of the information of very broad impact.

Their study further showed that there is lack of change in the variability on the day of release of CPI, and WPI, in monthly, quarterly and annual. The stock price rises around the days of most economic news events as the reflection of new information. Castanies (1979).

According to everyday return to the Standard and Poor’s composite portfolio around the consumer price index announcement dated from 1953 to 1978. Schwert (1981) found that there is negative response of stock market to the announcement of unanticipated inflation in the consumer price index. But the most interesting findings of their study were that stock market reacts to unexpected inflation when consumer price index is announced. While the stock market does not seem to react to unexpected inflation during the period when the consumer price index is sampled, several weeks before the announcement date.

Carlton (1983) the main achievement of his study was to find out relation of futures trading in existing contracts changes in response change caused by uncertainty due to inflation. His study showed that there was a tremendous negative relation of inflation with volume traded. His study further showed that level of inflation was more significantly correlated with volume trade rather than the unanticipated component of inflation. A related reason for decline in trade is due to increasing inflation in different types of commodities that are deliverable in the future market. He stated that there is important relation between uncertainty created by inflation and volume of future trading. The relation between these different futures markets was examined to show that how this interrelationship was used to find out likelihood of various futures markets dying.
Money supply, CPI and PPI are used to distinguish anticipated and unanticipated components of the announcements which will help to test the financial market response to the new information announcements. The result of Urich.T and Wachtel.P(1984) indicated that there was immediate positive effect on short term interest rate as unanticipated components of the announcement changes occur in the PPI and money supply. However the interest rate does not show any apparent effect of CPI announcement. According to their study if the interest rate responds to money supply announcement due to the expectation of upcoming inflation then they should also be affected by announcement of the inflation rate itself.

Their study further suggested the effect of CPI and PPI announcement on interest rate, they also found some evidence of inflation announcement effects but they were not as strong as that of money supply.

Using daily data of stock prices Pearce and Roley (1985) found out that economic announcement had effects on stock prices, but the empirical result supported that unexpected component of the announcement had significant effect on stock prices. They did not find any relation between stock market reaction and surprise in consumer price index announcement.

Huberman and Schwert (1985) using daily prices of indexed bonds they found that about 85 percent bound price react to the unexpected inflation which occurs contemporaneously with sampling of individual commodity prices, from 2 to 6 weeks before the announcement. The remaining 15 percent of the reaction to the unexpected inflation occurs on the following day of announcement. Their study showed that bound prices reflect most of the information about the inflation at the same time that the inflation occurs; but the bound prices do not fully reflect the behavior of inflation, since there is a reaction to the to the formal announcement of the CPI. They further stated that there is no additional reaction occurs at the end of the month or 2 weeks later after the announcement of CPI occurs.

The research study of economic forces and its impact on the stock market, that how the stock prices are influencing through the systematic risk of the economy. Chen, Roll and Rose (1986) further argued according to the asset pricing model theory that pathway of the financial market and the macroeconomic basket is going in single direction. The external forces are tending to influence the stock market, and mostly the forces are systematic like long and short term interest rate, unanticipated inflation rate, industrial production and bond rates. Additionally, the natural forces that are exogenous character which affect the physical factor of the systematic risk, and trying to influence the financial stock market and asset pricing. They also argued in the research studies a striking result that the value weighed New York Stock Exchange index has variability in the stock market and found insignificant affect on the pricing against the systematic variables. Along with this, the consumption variable has also insignificant affect with the pricing, and found no variation in the oil prices on asset pricing with overall economic variables. In a nut shell, the stock price exposure is sensitive to the systematic economic news.

Smirlock.M (1986) reported in the research studies about the inflation rate and the long term interest rate showed a significant relation with the long term bond and that of the unexpected inflation. The research studies further suggested that this impact has two dimensions to affect, first is the increase in the expected inflation for the future and the second is the regulatory body monetary policy for the money supply to the market. Along with this assumption there is no positive relation of the future inflation at the time of announcement. The research studies also suggest that there is significant relation of the CPI and PPI with that of the long term bond interest rate for the unanticipated component with the announcement after 79-period rather than before the 79-period. Additionally, the previous study suggested that CPI is responsive towards the short term rates and it has significant effect with the financial market and the macroeconomic information announcement (Urich and Wachtel 1984). The research studies also suggest that the market is affected by the unanticipated factors of the economy rather by anticipated component of inflation.
Three theories which showed positive relationship between volatility and volume, was explained by Schwert (1989). According to the first theory if the investors have heterogeneous beliefs, then the new information will cause change in both the trading and price. Second theory shows that if the investors are using price movements as source of information for their trading decisions then large price movements will cause large trading volume. Third theory suggests that if there is short term “price pressure” exist in the secondary market due to illiquidity, large trading volume that is predominantly either buy or sell order will cause the price movements.

The result of Schwert (1989) shows that there is a positive relation between the trading activity and stock volatility. His study result supports that stock market volatility is higher when trading activity is high there is little evidence for the financial volatility which will help to predict future trading volume growth except for stock volatility from 1920 to 1952. The stock prices and trading volume in the economy are big indicators for the money supply, CPI, PPI, Industrial production and unemployment rate as it changes, brought a tremendous amount of change in the stock prices and trading volume on time to time basis. Schwert’s study shows that the money supply and the CPI are significantly correlated with the stock prices, and changes occur as the money supply and CPI are changing. The other three variables are not significantly associated with the stock prices. On the other hand, the trading volume has no affect on changing the other five variables like money supply, CPI, producer price index, industrial production and unemployment rate. So the sensitivity of the stock prices is more oriented towards a short span of time, this means that stock prices are changing with in short period of time almost one hour.

Schwert’s (1989) study also shows the relationship of the stock prices with the five announcement of the by extending the work of Pearce and Roley (1985), but they do not show any significant relationship with the trading volume, rather than they obtained a precise estimate for the stock prices with the other five announcements. Pearce and Roley (1985) did not show a significant relation of stock price and CPI, but shows only with that of the money supply. The research studies also indicated that the stock prices are very volatile and have changing with in 1 hour of short span of time, it is better to examine their reactivity on each other, the data is taken for a short period of time that is one hour. Generally speaking the stock prices according to the Federal Reserve is reacting on the same velocity with the money supply to all over the market. The study also shows that the trading volume has no reaction on the above five announcement but it has volatility with other participants in the economy. (Jain.C.Prem 1988)

Kim.V and Verrecchiat.R.E (1991) suggested in the research studies that how the trading volume and the price are inter-related on each other, and how the investors show their interest towards this announcement. Investor’s belief only the information available at that time and on the basis of that information they can forecast about the share price of the company. The investors make their portfolio on behalf of the information available before the announcement and make a safe ground for the future, and this leads to the positive volume of trading. They also suggested that trading volume is very sensitive towards the variation of price and measure of reliable and valid information to the investors. The study also suggested that trading volume is also an indicator for the information rather than varying the price, but there might be other variable in the market which impact the trading volume directly.

A research study was conducted for the period 1962 to 1990 and reported the relation between stock price and discount rate, which further suggested that the market financial position was controlled by the monetary policy through the Federal Reserve and it has ultimately affect the discount rate change. When the discount rate increase, it has negative impact on the market financial position while it result a good market situation when the discount rate going to decrease, and discount rate change is good indicator for market information. The research of Jensen and Johnson (1993) also suggest that the market reaction toward the discount rate change is sensitive towards the monetary policy and the rate change differently depending upon the situation of the market and other unanticipated economic components. The research studies also suggest that the prediction of the
technical rate change may be a good indicator for the future profit opportunity, and this information is very strong indicator for stock market portfolio.

Wu and Guo (2003) reported in the research studies about the price volatility and trading volume, and show a positive relation with the trading volume and that of change in the price. The studies also suggest that how the trading volume and price is affecting by the implication of anticipated component like the belief structure, short selling and the availability of the funds by the investors. Along with this, the speculation plays a vital role in price volatility of asset market. Wu and Guo (2003) also report the equilibrium speculation of the price when the investors have finite wealth and short selling is traded freely. The study also suggested that single-period speculation is stronger and unique rather than multi-period speculation, and this can fluctuate the equilibrium level of the price. Furthermore, the research studies explained the concept of price level and trading volume and their positive relation between them, and show as the funds increase, which tend to increase the price equilibrium and it influence to decrease the price volatility. On the other side when the short selling is increased by the controlling authority, the equilibrium level of the price is going to decrease which influence the price volatility to increase.

Trading volume and price momentum predict stock returns in the U.S market which move in the non liner fashion. The effect of momentum appears strong among high volume stocks than low volume stocks; this effect shows an exploitable deviation from market efficiency. Scott.J, Stumpp.M and Xu.Peter (2003) argued that this phenomenon was a result of reaction of the investors to earning news this effect was most pronounced for high growth companies.

Adam.G, McQueen.G, and Wood. R (2004) reported in their research studies that how the unanticipated inflation has responding towards the stock return through the size-based stock portfolio by abrupt changes in the PPI and CPI on regular basis. They find out that how the stock responds, which path to follow and how this response vary the overall economy? In the research studies they further pointed out that there is an impact on stock returns by varying the inflation rate, and declared that unexpected change in the CPI and PPI brought changing in the stock price to decrease. Along with stock price to decrease with CPI and PPI announcement, the size-based stock portfolio has less significant response towards the small stocks rather than large stocks. In the research studies declared that how the stock returns response very quickly towards the unanticipated inflation and it take very few minutes to respond. The inflation and stock relationship is dependent on each other, and this relationship is stronger in the large stock rather than the small stock portfolio which ultimately impact the economy positively.

He Huang (2008) research study that information available to the international market of any country’s’ financial market is transmitted from one country to another. The study shows the relationship of price and volatility effects, and shows the US economy financial market impact on the German stock index domestic market including price, trading volume of the stock, volatility, inventory holding cost and the information available for trading. If the information available is asymmetric and not related to the market dynamism, this leads to private opinion of US stock by the German investors in trading, thus a heterogeneous interpretation skill create private information to the investors domestically. This private information then took place and creates a gap between the real situation of the economy and domestic market. And all the processes take a few minutes for bid and ask prices of stock which brought a big change in the portfolio of domestic market. The study also shows that how the US economy news spread to the international financial market and to which extend it brought changes in the economy as well as the German domestic news. The study suggests that US economy is directly and firmly related to the German domestic market and also influencing the international market. This indicates that US news affect the trading volume on a large scale and results in the heterogeneous opinion of the private information in the German domestic financial market.
4 RESEARCH QUESTION

Does change in CPI has significant association with KSE 30 and KSE 100 index trading volume?

Does change in Discount rate has significant association with KSE 30 and 100 index trading volume?

Does change in T-bill rate has significant association with KSE 30 and 100 index trading volume?

5 METHODOLOGY

5.1 Analytical Model

Simple linear regression technique is applied through SPSS on the 61 quarters on the first set of data which starts from 1995 to first quarter of 2010 for discount rates, T-bill rate, consumer price index and KSE 100 index trading volume to test that “change in the above three variables has significant effect on KSE-100 index trading volume any positive and negative sign shows the association and the hypothesis were accepted at 0.05 level of significance.

Similarly the same technique is used for KSE 30 index but the main difference is in the data set, the second set of data starts from 2007 till the first quarter 2010 of, which constitute 13 quarterly observations.

The following model is used to find out the relation of CPI, Discount rates, and T-bill with KSE-100 index and KSE-30 index trading volume and to test that change in the above three variables has significant association with change in KSE -30 index trading volume and KSE-100 index trading volume.

\[ TV = \alpha + \beta_1 \text{(CPI)} + \beta_2 \text{(r)} + \beta_3 \text{(T-bill)} + \epsilon \]

Where TV = Quarterly trading volume for both KSE 30 and 100 index,

CPI = Quarterly Consumer price index,

r = Quarterly discount rates,

T-bill = quarterly treasury bills rates.

Whereas \( \alpha \) and \( \beta \) are regression parameters for the independent variable and \( \epsilon \) is the error term. Same model was used by Jain (1988), Smirlock (1986), Pearce and Roley (1985) for the examining of such announcements on financial markets.

5.2. Description of variables

5.2.1 Stock Volume/Trading Volume:

The number of shares of a security that are traded during a specified period of time is called as stock volume. It tells you how many times the shares are traded between buyers and sellers.

Stock volume shows the volume of a single stock (single public company); It can be used to show the flow of money to or from a single stock that is security, in order to analyze trading activity in this stock, to define the liquidity of a particular stock and to define the current sentiment, as well as to predict changes in this feeling and the price trend of this stock.
Stock volume can be used to analyze a single stock for the purpose of trading this stock or options or futures of this stock. The volume of a single stock does not reflect the health of the economy and cannot be used to evaluate an industry or stock market mood.

5.2.2 Consumer Price Index (CPI):

Consumer price index shows the change in consumer products in a given period of time. CPI is used to measure the buying power of say $1. It also compare prices of items in different years. Prices from a given are referred as nominal or current prices. It is the average price of products and services purchased by the consumers. It indicates the change in consumer prices for a defined time period. When an increase in the index is shown it clearly depicts the level of inflation at consumer end. CPI is calculated for different regions, types of products, types of consumer etc. CPI is calculate for given set of goods/services in order to find out the change in the index on monthly or annually basis.

Formula to calculate CPI is given as

\[ CPI = \frac{\text{basket in any given year}}{\text{price of same market}} \times 100. \]

5.2.3 Treasury Bills

T bills are short term money market securities. It is a very simple security. The main reason of its simplicity is that T bills are raised by the government in order to raise funds from the public.

T Bills normally matures within one year from the date of its issue. They are issued with one month, six months or with one year of maturity.

T bills are purchased for a price that is less than its face value. After maturity the government pays the holder with the full face value. Effectively your interest is the difference between the purchase price of the security and what you get at the maturity. Treasury bills are issued through a competitive bidding process at auction. The biggest reason of the popularity of T bills is its affordability to individual investors.

The only downside of T bills is that you would not get a great return because treasuries are exceptionally safe.

5.2.4 Discount Rate

The preceding standardized rate of interest in Pakistan was accounted at 12 percent. The interest rates in Pakistan are determined by the State Bank of Pakistan. This official interest rate benchmark decided by the State Bank of Pakistan is the discount rate. From 1992 until 2010, Pakistan's mean interest rate was 12.78 percent. The highest interest rate in Pakistan reported has been 20.00 percent in October 1996 while the lowest reported has been 7.50 percent in November 2002.

5.2.5 Data Collection

This study consist of two data sets one starts from 1995 to first quarter of 2010 and second set starts from 2007 to first quarter of 2010. The data is in two set because of the KSE 30 index, as it became fully functioned in 2007 and no post data was available. The quarterly trading volume (number of shares traded) of both the indexes is obtained from Karachi stock Exchange as the trading volume is available on daily basis, so the data has been converted to monthly basis by taking the average of the trading days in a month, average was calculated by taking the sum of trading volumes and then dividing it by the number of trading days in the month. And then the data was changed into the quarterly basis by taking the average of three months. CPI the consumer price index data is taken from Federal Bureau of Statistics. The data of discount rates and T-bill is available on State Bank's website.
**Data Analysis**

**Table 1: Coefficients of Variables**

<table>
<thead>
<tr>
<th>Dependent Variable</th>
<th>Independent Variables</th>
<th>β</th>
<th>P value</th>
<th>F</th>
<th>R square</th>
</tr>
</thead>
<tbody>
<tr>
<td>KSE 100 index</td>
<td>CPI</td>
<td>0.071</td>
<td>0.49</td>
<td>24.343 (0.000)</td>
<td>0.56</td>
</tr>
<tr>
<td></td>
<td>Discount rate(r)</td>
<td>-0.623</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td></td>
<td>T-bill</td>
<td>-0.128</td>
<td>0.384</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>KSE 30 index</td>
<td>CPI</td>
<td>0.313</td>
<td>0.369</td>
<td>31.306 (0.000)</td>
<td>0.913</td>
</tr>
<tr>
<td></td>
<td>Discount rate(r)</td>
<td>-0.155</td>
<td>0.79</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td></td>
<td>T-bill</td>
<td>-1.086</td>
<td>0.196</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

*Source: Spss regression output*

The value of F in the above TABLE 1 show that the overall model for both the KSE 30 index and KSE 100 index trading volume is significant, as its value is above the level of significance which is 4. The level of significance is 24.343 in case of KSE 100 index trading volume and 31.306 in case of KSE 30 index trading volume. The result shows that the overall models are significant.

The value of R square shows us that how much the independent variables are explaining the dependent variable. Looking to the TABLE 1s table it's clear that the independent variables are explain 56% by the dependent variable in case of KSE 100 index trading volume which is dependent variable in data set one. While in case of the KSE 30 index trading volume its 91% which is quite sound.

The value of coefficient which is beta shows us the relation of dependent variable with that of independent variable in sense of direction and magnitude. The result of CPI (consumer price index) shows us that it has a positive relation with KSE 100 and KSE 30 index trading volume if the consumer price index which is the independent variable increase by one unit the dependent variable which is trading volume for both KSE 100 and KSE 30 will increase 0.071% and 0.313% respectively. The value of Discount rate shows negative relation with both the cases i.e. KSE 100 and KSE 30 trading volume which means that if the discount rate increases with 1% the trading volume will decreases 0.623 and 0.155 respectively. The value of t-bill shows a similar relation to that of discount rate with both KSE 100 and KSE 30 trading volume means that if the T-bill increases by 1% the trading volume of both the indexes will decrease by 0.128 and 1.086 respectively.

The P-value shows us the level of significance of the independent variable with that of dependent variable. The two variables i.e. T-bill, CPI has insignificant effect on the dependent variable that is KSE 100 index trading volume. While the discount rate shows the significant effect with KSE 100 index.

The P value for KSE 30 index of all the three variables shows insignificant effect with the dependent variable KSE 30 index trading volume.

**6 RESULTS & CONCLUSION**

The regression results were statistically significant and have shown a negative relation of discount rate, and T bill with that of trading volume of KSE 100 and KSE 30 indexes. The TABLE 1 show's that the discount rate explains a significant amount of variance in the KSE 100 index trading volume. While the other two variables i.e. CPI and T bills shows insignificant association with KSE 100 and KSE 30 index trading volume. The study suggested in case of KSE 30 index trading volume all the independent variable shows insignificant effects. The R square value (0.56) and (0.913) for KSE 100 and KSE 30 index trading volume suggested that there is 56 percent and 91 percent variation in KSE 100 and
KSE 30 index trading volume due to the variables having CPI, Discount rate and T bills. Using hourly data by Jain (1988) found that CPI announcement has significant negative effect on stock price and trading volume. So our results contradict these findings.

While using daily data by Pearce and Roley (1985) they did not find any relation between consumer price index surprise announcements and stock market.

Jensen.G.R, Johnson R.R (1993) found that when the discount rate increase, it has negative impact on the market financial position while it result a good market situation when the discount rate going to decrease, and discount rate change is good indicator for market information. The same behavior is shown by the discount rate in this study, for KSE 100 index trading volume only. But the same condition does not prevail for the KSE 30 index trading volume, there could be number of reasons such as that the KSE 30 index contains on top 30 companies so it doesn’t show full picture of the market. Secondly in 30 index majority of the investors invest for high return which means that they are risk takers, and T-bills are much more secure and having low returns.

Thirdly the availability of data of KSE 30 index trading volume is limited as compared to that of KSE 100 index trading volume.

While the other two variables i.e. t-bills and CPI has insignificant effect on KSE 100 and KSE 30 index trading volume. There are so many reasons for their insignificance because there are so many other variables which affect the trading volume like the economic instability, political instability, public holydays, and seasonal variation in sectors like textile etc, income level. Foreign debt means that if the foreign investment increases which will increase the money supply and due to that increase people will invest more so in that way the trading volume will fluctuate in positive direction.

The results can be summarized as Discount rate and T Bills rate has a negative relationship with the trading volume where as CPI has a positive relationship with the Trading volume.

If the CPI increases the foreign investor gets more benefit from it because the value of the pak rupee in terms of their home currency. Whereas the local investors are affected by currency devaluation.

The CPI affects the individual investor more than the institutional investors because the institutions manage a portfolio of investment which reduces their risk to a minimum level. As the return on T Bills increases risk averse investors will invest in T Bills rather than investing in stocks which leads to the shrinkage of trading volume of KSE 30 and 100 indexes.

REFERENCES


ANNEXURE

Table-2
KSE 100 Index trading volume.

ANOVA\textsuperscript{b}

<table>
<thead>
<tr>
<th>Model</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regression</td>
<td>5.840E17</td>
<td>3</td>
<td>1.947E17</td>
<td>24.343</td>
<td>.000\textsuperscript{a}</td>
</tr>
<tr>
<td>Residual</td>
<td>4.558E17</td>
<td>57</td>
<td>7.997E15</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>1.040E18</td>
<td>60</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

\textsuperscript{a}. Predictors: (Constant), t_bills, cpi, discount_rate
\textsuperscript{b}. Dependent Variable: trading_volume

Table-3
KSE 30 Index trading volume.

ANOVA\textsuperscript{b}

<table>
<thead>
<tr>
<th>Model</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regression</td>
<td>1.910E8</td>
<td>3</td>
<td>6.368E7</td>
<td>31.306</td>
<td>.000\textsuperscript{a}</td>
</tr>
<tr>
<td>Residual</td>
<td>1.831E7</td>
<td>9</td>
<td>2034073.227</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>2.093E8</td>
<td>12</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

\textsuperscript{a}. Predictors: (Constant), t_bills, cpi, discount_rate
\textsuperscript{b}. Dependent Variable: TV_30index