CHAPTER 1

INTRODUCTION

1.1 Introduction:

Monetary policy has assumed an increasing role during the last three decades. This revival in the interest in money and monetary policy after being relegated in the background during depression and war period has led to better understanding of the monetary phenomenon, monetary processes and the theory of monetary policy.

The primary role of monetary policy in advanced economies is that of economic stabilisation with demand management. Generally quantitative tools like Bank rate, open market operations etc. are used to influence money, credit and interest rates. The role of monetary policy in a country like India is somewhat different. Development with stability is the primary objective. However monetary policy alone can do very little to achieve higher rate of growth. General monetary stability depends on the regulation of monetary expansion. Rate of growth of money supply is largely determined by deficit financing i.e. by fiscal policy of the government. Therefore, it appears that Bank has accepted a very limited role of credit management. The Reserve Bank has attempted to regulate total credit in such a way that the credit restrictions do not adversely
effect productive sectors. It is felt that there may be some trade off between credit inflation and under production. This view has not been generally acceptable\(^1\).

Broadly speaking there are two types of monetary controls - quantitative and qualitative. The former aims to influence aggregate monetary variables with a view to regulate changes in general price level and other macro economic variables. Qualitative controls on the other hand aim to influence specific sectors and relative prices. A good deal of work analysing money supply, price level, deficit financing and income is done by noted economists in India\(^2\). Most of these writings concentrate on quantitative aspect of monetary policy. Some economists have tried to analyse development of techniques of monetary management in India\(^3\). Although some attempts have been made to analyse selective credit control in India, it appears no major work is done on the qualitative aspect of monetary policy in India. This study attempts to examine and evaluate the qualitative aspect of credit policy in India. Its salient distinguishing features are explained below.

Most of the work done has attempted to evaluate monetary policy on the basis of macro data with the tacit assumption that the Reserve Bank of India (hereafter RBI) aims at price stabilisation and it (RBI) has got sufficient powers to do so. Some of the writers have acknowledged
the constraints on the monetary policy arising out of the nature of money market and RBI's commitment to help financing of plan expenditure and desire to keep interest rates at low level etc. (4). The present study tries to evaluate policies of RBI on the basis of objective or objectives pursued by it as revealed by policy measures adopted by it. RBI has tried to pursue more than one objective. Some of the objectives are contradictory. For example, to restrain level of advances against a particular commodity and simultaneously to exempt certain categories of activities from the control frame might be contradictory leading either to non-realisation of either of the objectives or under-achievement on both the fronts. In effect this means RBI is short of tools. According to the theory of economic policy, number of tools must be equal to number of objectives in general (5). It is in this perspective that the present study is undertaken.

Even though a number of studies are undertaken on the factors influencing general price level, there are not many studies which have undertaken the analysis of the major factors influencing the determination of relative prices of certain sensitive commodities particularly with reference to the credit policy. The present study undertakes such an analysis. Moreover, most of the analysis carried out by the distinguished writers is
based on the annual data. The present study has undertaken quarterly analysis.

No attempt has so far been made to analyse the factors influencing the level of commercial bank credit given to certain sensitive commodities. The present study attempts to do this. Finally most of the studies have not dichotomised the time series data of the variables according to seasonality. This is done here. Determinants of credit level and that of price level are analysed both in terms of seasonal time series as well as actual time series.

1.2 Scope of the study :-

Monetary policy in India can be said to have been activated since the bank rate change of 1961. However it assumed greater role since the beginning of second five year plan. This is because of the increased plan expenditure and monetary expansion resulting in inflationary pressures. In the situation of rising prices, essential commodities might be hoarded with a profit motive. Therefore RBI had to ensure that hoarding does not take place with the help of bank finance. Hence selective credit controls are employed on advances against sensitive commodities. Secondly planning essentially implies priorities. Hence the growth of priority sectors must be encouraged by the monetary authority. This is
the second aspect of credit policy.

From the above it is clear that credit policy is called upon to play a double role simultaneously i.e. one of providing finance to some sectors (for development purposes) and the other of restraining supply of finance to some other sectors (for speculative purposes). In other words RBI had to help development and ensure stability. This is why RBI kept the goal of development with stability. To achieve this goal the policy of controlled expansion is followed. Tools used for this policy are quantitative and qualitative. Quantitative tools are used to tighten or relax availability and cost of money in general. But even when tighter monetary policy is pursued certain desired activities are exempted from the regulations*. This shows quantitative tools are also used qualitatively.

Qualitative tools are used to prevent use of bank finance for hoarding of certain important sensitive commodities. That is why regulation (called selective credit controls in India) are applied against paddy and rice, wheat, other foodgrains, groundnut, cotton and jute, gau etc. To ensure proper geographical distribution of credit either with the objective of preventing hoarding in surplus states or help public food management programmes, these regulations were differentiated making

* For example, exceptions were provided in the calculation of net liquidity ratio for advances to Food Corporation of India, small scale industries, etc.
state-wise classification. Credit policy has one more additional dimension. Ceilings on advances to individuals are prescribed to avoid concentration of economic power.

But even within the above framework of qualitative controls, certain activities were thought to be encouraged or not hampered. This is the reason why Documentary bills (D/D Bills), advances given by newly opened branches of a bank, etc. were exempted.

Thus quantitative tools are used qualitatively and qualitative tools are used with greater flexibility and imparted greater selectivity.

The present study highlights the qualitative aspect of quantitative monetary policy during the period 1971-74. Evaluation of this policy is not done. But the study aims to evaluate qualitative monetary policy (i.e. Selective Credit Controls, hereafter S.C.C.) as applied to five commodities viz. paddy and rice, wheat, groundnuts, cotton and jute and sugar. S.C.C. are also applied against sugar, jute, shares and clean advances also. However, these are not analysed here for want of sufficient data and secondly we think the above five commodities are fairly representative. They are highly important for the economy as a whole. Problem with analysis of sugar, which was thought to be included in the study initially
but dropped subsequently, is that its prices were controlled
prices and supply was also determined by government orders
of release for most of the time.

As noted earlier even when selective credit controls
were applied such activities as were desired to be encoura-
ged were exempted from control frame. Thus advances given
against warehouse receipts were exempted from controls.
An attempt is made to pass some observations on this
aspect. For want of data detailed analysis of this
could not be carried out. A number of other exceptions
were also provided from the regulations, which could not
be evaluated for want of data.

In effect this study tries to evaluate qualitative
policy in its restrictive aspect as applied to selected
five commodities. Primarily, evaluation is done on the
basic of analysis of each directive from the point of
view of need and effectiveness. This is done for each
regulation applied on advances against commodity selected
for our study during the period '51-71. Therefore attempt
is made to evaluate for the whole period with the help of
growth rates, correlation and regression exercises. The
period chosen is between 1951-71. It may be noted that
selective credit control on the regular footing were
effected from '56 only. But the period between '51-76 is
retained for the purposes of continuity, comparison and to
cover plan period. Again data for the period since 1971
plag-quoted. Again data for the period since 1971 are not available. Hence the choice of the above period.

There is an impression that F.C.E. started in India after 1956. However, it is shown that R.U.I tried to influence the use of credit which is analogous to qualitative monetary controls even prior to 1956 on a number of occasions.

1.3 Sources of data:-

As pointed out earlier, the commodities selected for this study are paddy and rice, wheat, groundnut, cotton & kapas and gur. The variables used for this analysis are supply, demand, level of credit and price level of the commodity concerned and the wholesale price index.

(a) Supply of commodities :-

Since one does not get data on supply of above commodities on a quarterly basis, it was decided to use market arrival data published in the various issues of Bulletin of Food statistics as supply proxy. However, the publication does not provide data for the earlier periods. The data gap for different commodities is different. Methodology adopted to bridge the data gap is explained in a subsequent section. Over the years
coverage of data has also changed. In the earlier period the coverage is less. Estimates are obtained for both the period for which no data are available as well as for the period for which coverage is less. This is done by regression method.

Thus data for rice, wheat, groundnut and gur were obtained from the above referred sources. It may be noted that foreign trade sector is excluded. This is because commodity-wise data on a quarterly basis were not available and secondly for the above commodities imports might not be that important. However this is a limitation of the study.

As for cotton is concerned figures of Indian mills consumption of cotton as well as stocks held by mills were obtained from various issues of Bombay Cotton Annual. There is no data gap here. However here also foreign trade sector is not included. Secondly the data relate to consumption of cotton by mills only. Here consumption plus change in stock holding is taken as a proxy for supply.

(b) Income Data:

We have taken aggregate income (or expenditure) as an important determinant of demand. However data on income on a quarterly basis are not available. It was
therefore decided to use data on money supply and multiply it with income velocity. Average of money supply (currency + demand deposits) of the quarter was then multiplied by the velocity of the year assuming that velocity is constant during a year. The result is aggregate expenditure which is taken as a proxy for income. Data on money supply are collected from various issues of Reserve Bank of India Bulletin. Figures of National Income were taken from National Income Statistics, published by C.S.O. It may be noted that instead of taking money supply as proxy for income we have incorporated velocity also*. 

(c) Commodity-wise - credit data:

These data are available in the various issues of Reserve Bank of India Bulletin. Data after 1971 are not available. RBI has published data on commodity-wise advances on a regular basis. However data on advances against certain commodities for the earlier period could not be obtained as they were grouped with some other head. Thus for the earlier period wheat data were grouped with other foodgrains. Hence for this period analysis could not be done. Separate data on exempted categories are not available hence analysis of this aspect could not be undertaken.

* Prof. P.C. Bhagwati in a recent work on national income and price level has taken money supply as a proxy for income.
(c) Commoditywise price data:

These are taken from various issues of Reserve Bank of India Bulletin and Index Number of India. These data are available in four distinct series. (1) with 1939 base (2) with 1952 base (3) '61-'62 base and (4) '70-'71 base. In order to bring uniformity, conversion is undertaken and the entire data are converted to '52-'53 base. The conversion is done using conversion factor.

(e) Data on wholesale price index (all commodities):

These data are available in the form of regular series in the RBI bulletin. Here also we get different base periods. These data are also converted to '52-'53 base using a conversion factor.

1.4 Problem of data gap:

As noted in the earlier section data on market arrival of some of the earlier periods are not available. The following table shows commoditywise data gap on market arrival:

<table>
<thead>
<tr>
<th>Commodity</th>
<th>Data available from</th>
<th>Data gap</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rice</td>
<td>From 1963-64 onwards</td>
<td>1951-63</td>
</tr>
<tr>
<td>Groundnut</td>
<td>From 1963-64 onwards</td>
<td>1951-63</td>
</tr>
<tr>
<td>Gur</td>
<td>From 1962-63 onwards</td>
<td>1951-62</td>
</tr>
</tbody>
</table>
In order to obtain estimates of these data linear regression method was employed. However available data indicate a seasonal pattern. To take care of this aspect even in the earlier periods, regression was carried out on the basis of respective quarters. Thus on the basis of the observations of the first quarter, a regression exercise is run which would give estimates of first quarters of the earlier period. Similar exercises were run for second, third, and fourth quarters. Estimates of data of the earlier periods were thus obtained. It seems this procedure would give estimates of the earlier periods while maintaining seasonal character. Regression exercises were carried on taking market arrival as dependent variable and production as independent variable. This is illustrated with one example as follows:

**Example:**

Procedure as explained above was carried out to obtain estimates of market arrival of earlier quarters. Here data are available from '63-'64 while estimates are obtained for the period '51-'63. Table No. 1.2 shows estimates of coefficients.

Using this coefficients and figures of production estimates of earlier period are obtained. Similar exercises are run for other three commodities also and data gaps are bridged.
Table No. 1-2
Wheat : Estimated Coefficients of Linear Regression

<table>
<thead>
<tr>
<th>Quarter</th>
<th>$a$</th>
<th>$b$</th>
<th>$r^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>II</td>
<td>-472.76</td>
<td>0.008</td>
<td>.01</td>
</tr>
<tr>
<td>(April-June)</td>
<td></td>
<td>(.6893)</td>
<td></td>
</tr>
<tr>
<td>III</td>
<td>-76.72</td>
<td>0.3196</td>
<td>.67</td>
</tr>
<tr>
<td>(July-September)</td>
<td></td>
<td>(.8046)</td>
<td></td>
</tr>
<tr>
<td>IV</td>
<td>10.037</td>
<td>0.3399</td>
<td>.69</td>
</tr>
<tr>
<td>(October-December)</td>
<td></td>
<td>(.8915)</td>
<td></td>
</tr>
<tr>
<td>I</td>
<td>50.59</td>
<td>0.0050</td>
<td>.72</td>
</tr>
<tr>
<td>(January-March)</td>
<td></td>
<td>(.8812)</td>
<td></td>
</tr>
</tbody>
</table>

Note: Figures in the brackets are standard errors.

1.9 Construction of Index Numbers :-

As the data were in the form of quintiles, wheat and index numbers, it was thought to construct index numbers of the former two. Thus index number of market arrival, index number of level of credit and index number of income are constructed. For constructing index number '83-84'
As is pointed out earlier that the analysis is carried out not only in terms of actual Index Numbers but seasonal index numbers as well. The objective is not only to find out seasonal pattern of market arrival, credit, income and prices but also to find out determinants of seasonal prices and seasonal credit.

1.6 Construction of seasonal index numbers:

A multiplicative model of the time series is assumed for finding seasonal index numbers. After the construction of index numbers, moving average of four quarters were obtained and then again moving average of two quarters was taken. Thereafter index number of the quarter was expressed as a percentage of such trend values of the quarter. Let us call it \( \% \). To obtain seasonal index numbers three year moving average of \( \% \) of the same quarter were worked out. For example, four percentages of the second quarter's moving average of three years was taken and so on. Thus a seasonal series of each quarter was obtained. Thereafter the values were presented in a sequence. Since four quarters are taken, total of seasonal index number must be equal to 100.

This can be done by smoothing process which is not done here; as the total in most of the cases was around 125. This study hence analyses both in terms of actual index
numbers and seasonal index numbers. Some graphs prepared on the basis of seasonal data are also presented.

1.6.4 Years and quarters:

Data presented are in the form of financial years. Thus 1951-52 would mean a period from April 1951 to March 1952. Each year consisting of four quarters is presented in the sequence of II, III, IV and I quarters. As an illustration for 1951-52 the quarters are presented below:

<table>
<thead>
<tr>
<th>Months</th>
<th>Quarter</th>
</tr>
</thead>
<tbody>
<tr>
<td>April 1951</td>
<td>II</td>
</tr>
<tr>
<td>June 1951</td>
<td></td>
</tr>
<tr>
<td>July 1951</td>
<td>III</td>
</tr>
<tr>
<td>September 1951</td>
<td></td>
</tr>
<tr>
<td>October 1951</td>
<td>IV</td>
</tr>
<tr>
<td>December 1951</td>
<td></td>
</tr>
<tr>
<td>January 1952</td>
<td>I</td>
</tr>
<tr>
<td>March 1952</td>
<td></td>
</tr>
</tbody>
</table>

1.7 Growth rates:

A very useful analysis can be done with the help of growth rates. The study uses growth rates of market arrival, credit, price of the commodity under discussion, wholesale prices (all commodities) and income (i.e., expenditure) for the purpose of analysis. Growth rates are worked out from actual index numbers. These are compound growth rates between two points of time. The
The formula used is as follows:

\[ x = \left( \frac{\text{Anti log} \left( \frac{\log P_t - \log P_0}{n} \right)}{100} \right) - 1 \times 100 \]

where \( x \) = growth rate, \( P_t \) = value in time \( t \),
\( P_0 \) = value initially, \( n \) = number of time periods.

Growth rate is in terms of percentage. It may be noted that growth rates are worked out from one quarter of the year to the same quarter of the next year and so on. So for one year we have four growth rates over the previous year. Not only such annual growth rates of the same quarter are worked out but for period analysis growth rates of five years, ten years, fifteen years and twenty years are also worked out. Here also it always pertains to some specific quarter.

1.0 Correlation analysis:

Correlation analysis is a very useful tool of analysis for determining the strength of correlation and type of relation. Together with regression results it can be of great value. Correlation coefficients of both seasonable time series as well as actual index numbers were obtained with regression results as computer output. They were obtained for all the periods. Correlation coefficients of first difference of the actual index number as well as seasonal index numbers were also obtained.
1.9 The model :-

Since RBI's preoccupation is to attempt to prevent price rise of a particular commodity it is essential to know the process of price formation of a particular commodity. In the inflationary situation hoarding might be undertaken with the help of bank finance, which might result in reduced availability of goods and hence aggravate the price situation. Therefore RBI applies selective credit controls against sensitive commodities to prevent hoarding with the help of bank finance. This would help in restraining price rise. This means credit is an intermediate target variable. It is therefore essential to know the variables that are influencing the level of credit. Two simple models are presented below to understand both the variables viz. price and credit.

1.9.1 Price model :-

\( D_t = a_0 + a_1 P_t + a_2 Y_t + a_3 Y_{t-1} + a_4 C_r_t + a_5 C_{r-1} + a_6 P_{t-1} \)

\( s_t = s_0 + s_1 P_t + s_2 R_t^{st} + s_3 R_{t-1}^{st} + s_4 P_{t-1} \)

\( D_t = S_t \)

In the above model

\( D_t = \text{Demand in quarter } t \)
\[\begin{align*}
P_t &= \text{Price in quarter } t \\
Y_t &= \text{Income in quarter } t \\
Y_{t-1} &= \text{Income in quarter } t-1 \\
Cr_t &= \text{Credit in quarter } t \\
Cr_{t-1} &= \text{Credit in quarter } t-1 \\
\rho^t_{t-1} &= \text{Trend value of price in quarter } t-1 \\
S_t &= \text{Supply in quarter } t \\
MA_t &= \text{Basket arrival in quarter } t \\
MA_{t-1} &= \text{Basket arrival in quarter } t-1
\end{align*}\]
Out the value of the factor \( \frac{(a_4 + a_6)}{a_1 + c_1} \) can have negative sign or positive sign. If it has negative sign coefficient of \( n_t \) will have plus sign. Empirical results indicate that \( n_t \) has plus sign which indicates that trend prices of past have positive influence over current prices. Therefore we write the coefficient with plus sign. It may be noted that \( p_t \) is a trend value of past period. This is obtained by first taking moving average of four quarters and then of two quarters. This is in fact used for calculating seasonal index numbers. The trend value of price of past period is included in the model because prices are also influenced by its past values. This would help in reducing autocorrelation and removing bias to some extent. Using \( p_t \) might give autocorrelation and bias in the estimate (\( \sigma \)).

Taking \( \frac{a_6 - c_2}{a_1 + c_1} = \alpha = \text{Intercept} \)

\[ \frac{c_2}{a_1 + c_1} = b_1 \text{ or coefficient of } p_{t-1} \]

\[ \frac{c_3}{a_1 + c_1} = b_2 \text{ or coefficient of } X_{t-1} \]

\[ \frac{a_2}{a_1 + c_1} = b_3 \text{ or coefficient of } Y_t \]

\[ \frac{a_2}{a_1 + c_1} = b_4 \text{ or coefficient of } Y_{t-1} \]

\[ \frac{a_4}{a_1 + c_1} = b_5 \text{ or coefficient of } C_t \]
\[
\frac{b_5}{a_1 + c_1} = b_6 \text{ as coefficient of } C_{t-1} \\
\frac{c_6}{a_1 + c_1} = b_7 \text{ as coefficient of } r^t_{t-1}
\]

(5) \[P_t = \omega t - b_1 M_{t} - b_2 M_{t-1} + b_3 Y_t + b_4 Y_{t-1} + b_5 C_{t} + b_6 C_{t-1} + b_7 r^t_{t-1} \]

To convert this mathematical model into a regression model the disturbance term is added. Therefore

(6) \[P_t = \omega t - b_1 M_{t} - b_2 M_{t-1} + b_3 Y_t + b_4 Y_{t-1} + b_5 C_{t} + b_6 C_{t-1} + b_7 r^t_{t-1} + \epsilon_t \]

and finally the estimated model becomes

(7) \[P_t = \omega t - b_1 M_{t} - b_2 M_{t-1} + b_3 Y_t + b_4 Y_{t-1} + b_5 C_{t} + b_6 C_{t-1} + b_7 r^t_{t-1} + \epsilon_t \]

Identification conditions of the above were examined. The above model is estimated commoditywise. This same model is used for all the five commodities and therefore it is not repeated in the chapters. In the last equation, \(M_t\) and \(M_{t-1}\) are determinants on supply side while \(Y_t\) and \(Y_{t-1}\) are determinants of demand. \(C_t\) and \(C_{t-1}\) are also variables on demand side. However as the exercises are worked-out with quarterly data we face sign problem quite often.
as for as credit is concerned, sign problem arises partly because of interdependence of market arrival, credit and prices. As the empirical results show has plus sign and indicates that trend value of price of quarter in influence price in quarter positively.

1.9.2 Credit model

The following underlying model of the credit market is assumed:

\[ \begin{align*}
\text{CR}_t^0 &= f(A_t, A_{t-1}, P_t, P_{t-1}, P_0, \theta) \\
\text{CR}_t^5 &= f(A_t, A_{t-1}, P_t, P_{t-1}) \\
\text{CR}_t^0 &= \text{CR}_t^5
\end{align*} \]

Market arrival of the current and the preceding period are important to the traders on the demand side. Demand for credit would be higher, greater the market arrival. Market arrivals are important in determining supply of credit as the RBI considers supplying more credit when market arrival is greater. The price levels of the current and the preceding period are also important on both the sides. Higher the price level, greater is likely to be the demand for credit. On the supply side, RBI would try to restrain the supply of credit when price level is higher. Additional factors on the demand

* This is explained in detail in Chapter No. 9.
expected prices and the rate of interest. Expected prices are assumed to have positive influence on demand for credit. Interest may be inversely related to the credit demand. However, we assume that demand may be highly interest inelastic and hence this factor is ignored in the subsequent analysis. In general, the above market may be in disequilibrium i.e. supply of credit being generally less than the demand for credit at an interest rate lower than the equilibrium rate. Hence the RBI would have to ration the credit supplied. This explains all the credit control measures including ceilings etc.

The above model has identification problem. Therefore it would not be possible to get unique values of the structural coefficients from the following reduced from equation.

\[ CE_t = \alpha + b_1 \Delta t + b_2 \Delta t_{-1} + b_3 P_t + b_4 \nabla_t \]

\[ b_5 \nabla_t + \mu_i \]

\[ \therefore CE_t = \alpha + b_1 \Delta t + b_2 \Delta t_{-1} + b_3 P_t + b_4 \nabla_t - \nabla_t \]

\[ b_5 \nabla_t \]

where \( P^E_t = \frac{P_t - P_{t-1}}{P_{t-1}} \), this is taken as proxy for expected prices. Other variables are same as defined in the price model.
We have ignored identification problem because
we are not really interested in getting estimates of
structural coefficients. We are primarily interested in
analyzing and interpreting the results of the reduced
form estimation.

It is interesting to note that RBI has never
provided a formula on the basis of which a bank can
decide proper necessary level of finance. In other
words RBI has not defined what level of credit can be
deemed as hoarding. However, market arrival, price level
current as well as past and the expectations about these
factors are considered while fixing the ceiling level as
well as level of margin. If lower level of credit is
to be permitted margin and ceiling are tightened. Banks
are also asked to pay attention to above factors and
prevent hoarding with the help of bank finance.

1.10 Periods and types of regression exercises

The above two equations are run for both seasonal
time series as well as actual index numbers. The period
covered is between '51-'71. This period is sub divided
as follows:

<table>
<thead>
<tr>
<th>Definitions of periods</th>
</tr>
</thead>
<tbody>
<tr>
<td>Period</td>
</tr>
<tr>
<td>I</td>
</tr>
<tr>
<td>II</td>
</tr>
</tbody>
</table>
Co it can be seen that generally five year period is taken. But the first ten year period and second ten year period exercises are also carried out. This would facilitate comparison. It may be noted that the period '66-'71 is not a period of fourth plan but a period of three annual plans and first two years of fourth plan. Period '51-'71 covers first four periods and is useful for understanding long run aspects. It may be noted that the non-availability of data of a particular variable has forced to run the regression without that variable for a certain period. Similarly construction of the seasonal index numbers has taken away some observations because first trend series was obtained on the basis of four quarter and then two quarter's moving average was taken. Subsequently while constructing seasonal index number a moving average of three quarters was taken. Due to above loss, the number of observations in either the first exercise or the last or both is reduced. Sometimes because of non-availability, series is regrouped hence instead of seven periods as noted earlier we get less number of periods for some commodities.
The regression exercises run are of three types

(1) **Linear** (2) **First Difference** (3) **Double Log**.

(1) **Linear**: These are run assuming linear relationship between dependent variable and independent variables.

(2) **First Difference**: These are run with two purposes in mind. One is to avoid serial correlation and the other is to find out the relationship between changes in the magnitude of independent variables and changes in the magnitude of dependent variable.

(3) **Double Log**: An attempt is made to find out how model behaves if multiplicative form is taken, e.g.,

\[
\begin{align*}
F_t &= a + b_1 y_{t-1} + b_2 y_{t-1} + b_3 y_{t-1} + b_4 y_{t-1} + b_5 y_{t-1} + b_6 y_{t-1} + b_7 y_{t-1} \\
\log y_t &= b_1 \log y_{t-1} + b_2 \log y_{t-1} + b_3 \log y_{t-1} + b_4 \log y_{t-1} + b_5 \log y_{t-1} + b_6 \log y_{t-1} + b_7 \log y_{t-1}
\end{align*}
\]

**Stepwise regression** was run which gives maximum \( R^2 \) picking up significant variables up to 20 % level of significance. If nothing is written below the variable it indicates that it has not appeared in the computer output. Standard errors, t values, \( R^2 \), F ratio and Durbin-Watson statistics are obtained for each exercise. These are used for testing hypotheses.
SCHEMATIC DIAGRAM NO. 1
ACTUAL AND SEASONAL TIME SERIES.
FORMS AND PERIODS OF REGRESSION.

TIME SERIES.
Thus in case of all the seven periods data available for any commodity there would be 42 results for one model. This is presented in schematic diagram no. 1. However because of regrouping at times the number of actual results may be less. Each regression exercise shows the period concerned.

1.11 Chapter scheme:

The study is spread over the following nine chapters:

(1) The present chapter is an introductory chapter in which purpose of the study, data availability, bridging of data gap; construction of index numbers, method of constructing seasonal index numbers etc. are explained. The scope of the study is also explained. The model is presented. Method of analysis is also explained.

(2) This chapter discusses role of qualitative controls. Limitations of quantitative tools are pointed out. Role of qualitative monetary controls in different situations is discussed. Various tools of qualitative controls are analysed. The problem of effectiveness of these measures and conditions of its success are presented. After pointing out limitations of these tools it is discussed whether they should be substitute for quantitative controls or not.

(3) This chapter discusses the monetary policy of P.U.
It is attempted to show that the quantitative tools are used qualitatively. Bank rate changes, quasi-cumulative rate system, net liquidity ratio system and other policy measures are shown to have been used qualitatively.

(4) There is an impression that selective credit controls started operating in India since 1956. But RBI has used these weapons even prior to 1956 on a few occasions without its explicit reference. On account of these measures it shows here without evaluation as data are not available.

(5) This chapter discusses qualitative or selective credit controls applied by RBI on advances against rice. Directive-wise discussion is carried out. Summary is noted at the end of each period. The number of periods is four '51-'56, '56-'61, '61-'66 and '66-'71. The analysis is carried out with the help of index number of market arrival, credit and price. Where necessary index numbers of income and wholesale prices are also used. An attempt is also made to show pattern of seasonal fluctuations of the variables. Annual growth rates as well as growth rates of the period are also used for the purposes of analysis. With the help of correlation coefficients and regression analysis an attempt is made to point out the most relevant variables influencing price and credit for the seasonal time series as well as for the actual index numbers.
(6) Adopting the method of the above chapter, this chapter discusses controls applied on advances against wheat.

(7) This chapter tries to evaluate regulations on advances against groundnut following the methodology of chapter 5.

(8) This chapter discusses the regulations on advances against cotton and kapes and gur.

(9) This is a concluding chapter in which broad conclusions of the study are made out. Some implications of the study and further area of research is also presented.

At the end of the study experience of ODA is presented in the form of an Appendix. Some data which are used in a number of chapters are also presented in various Appendices. Thus tables of index number of income and wholesale prices (all commodities) and tables of growth rates of these variables (annual as well as periodwise) are presented. Data of procurement is also presented in an Appendix. Bibliography is also presented.

As pointed out earlier next chapter tries to explain role of qualitative controls.
REFERENCES


6. Bulletin of Food Statistics is an annual publication of Ministry of Food and Agriculture, Government of India.


9. Seven exercises of linear, seasonal, price model.
    Seven exercises of first difference, seasonal price model.
    Seven exercises of double log, seasonal price model. This comes to 21. Another 21 exercises of actual index number of price model. This comes to 42.