CHAPTER – 3

DATA SOURCES AND METHODOLOGY FOR MEASUREMENT

The methodology of the study, as well as the study's database, is discussed in this chapter. This chapter includes the source of data, variables and time period, as well as the techniques of data analysis used in this study. A discussion of limitations is included as well.

3.1 Need for the Study

Based on the review of the published literature, it appears that several studies have been conducted at International, National, and State-level perspective on different facets of agricultural finance. Despite the fact that these studies carry great importance, there are still many important aspects of agricultural finance that are lacking, specifically whether financial institutions influenced agricultural growth to the intended degree. Considering the previous studies, a more in-depth analysis is required. In this context, the aim of this study is to determine the extent to which, if at all, growing short-term, medium-term and long-term credit by commercial banks to agriculture contributes to the growth of the agricultural sector. Having said that, how does it support agriculture and by what means?

This study uses time-series data to examine specific questions: Are institutional credits productive in the agricultural sector? What has been the compounded and instantaneous growth rate of direct institutional credit since 1991? What is the impact of commercial bank credit on capital formation in the agriculture sector? Using detailed time series data for the period 1991-2014, this study empirically analyze the impact of agricultural finance on agricultural output and input demand.

The distinguishing feature of this study is that, it developed an econometric model that attempts to identify the impact of credit provided by commercial Banks on capital formation and growth in agricultural sector in India. Moreover, this study examines the growth and performance of agricultural finance by scheduled commercial banks, as well as the impact of deposits, branch expansion and inputs on agricultural credit supply.

3.2 Objectives of Study

The general objective of this study, therefore, is to conduct a study of finance provided by scheduled public and private sector commercial banks to the farmers of the agricultural sector in India. Subsumed in this general objective are the following specific objectives:

I. To examine the growth and impact of agricultural credit on agricultural output and input.
II. To identify the major determinants of agricultural credit.
III. To study the impact of commercial banks loan policies on the economic stability of agriculture.
IV. To examine the impact of long term agricultural credit on capital formation in the agricultural sector.
V. To evaluate the challenges of agricultural finance in India.

3.3 Hypotheses of the Study

The present study is guided by testing of the following Hypotheses

1. There is a significant impact of credit on output and input of the agricultural sector.

2. There is a significant growth of credit provided to the agriculture sector by commercial banks.

3. There is a significant relationship between the growth of deposits and credit provided to the agriculture sector by commercial banks.

4. There is a significant impact of interest rate on the supply of agriculture credit.

3.4 Main Divergence of the Present Study

The study analyzed the data on the credit provided by the Scheduled commercial banks under the public and private sector both, to the agricultural sector in India. In addition, this study empirically examined the impact of credit flows in the agricultural sector by commercial banks on agricultural productivity and inputs demand.

Time Span: The period of empirical analysis is from 1991 to 2014.

3.5 Sources of Data

Descriptive approaches were used in this study. This is the research work about, how commercial banks (Public and Private sector) play an important role in agricultural development by providing finance to the farmers. This study depends on quantitative research design because quantitative research is an excellent way of finalizing results and proving or disproving the hypothesis. The present study is depending exclusively on secondary data. To access different aspects and characteristics of commercial Banks and Agricultural credit, this study utilizes secondary data, published by various government agencies.

Especially secondary data will be collected from various reports and publications of Reserve Bank of India. RBI annual Published data related to Banks, among these main publications and statistical tables related to Banks in India, Data Based reports of RBI, Report on trend and progress of banking in India, Basic statistical returns of scheduled commercial banks, financial stability reports, Handbook of Statistics, Rural development statistics and the various issue of Economic Survey of India.

In order to achieve the objectives of the study a time series data on the relevant indicators is collected.

3.6 Data description

When describing variables in this study, commercial banks are referred to as public and private sector scheduled commercial banks excluding foreign banks. The agricultural credit variable includes direct and indirect credit provided by both public and private sector commercial banks. Total deposits refer to the time deposits and demand deposits of public and private sector commercial banks.

3.7 Analytical Model

In order to achieve the objectives of the study, time-series data on relevant indicators have been collected. The appropriate methodology employed is based on the objectives of the study.

- **To calculate the Growth rate of different parameters** at aggregate and disaggregate level two functional specification of growth rate will be used i.e. linear and exponential model:

  Model: Agricultural credit $_t = \alpha_0 + \alpha_1 time + \mu_t$

  Dependent Variable: Agricultural Credit by commercial Banks

  Independent Variable: Time

- **To find Agricultural credit Function the following model will be use:**

  Model: Agricultural credit $= \alpha_0 + \alpha_1$ ***(Investment in Securities)*** $+ \alpha_2$ ***(rural coverage of Banks)*** $+ \alpha_3$ ***(Lending rate of agricultural credit)*** $+ \alpha_4$ ***(interest subsidy)*** $+ \mu$

  Dependent Variable: Agricultural credit

  Independent Variable: Investment in Securities, Rural coverage of Banks, Lending rate of agricultural credit, interest subsidy.

- **To find credit elasticity of Agricultural output (Agricultural GDP)**

  Method: *Cobb-Douglus Production Function*

  Dependent Variable: Agricultural Output (Different Crops, Agricultural GDP)

  Independent Variable: Agricultural Credit

- **To find Credit Elasticity of Inputs**

  Method: *Bivariate and multivariate regression model.*

  Dependent Variable: Agricultural Inputs Demand
  (Fertilizers, Electricity consumption, Seeds, Tractors etc.)

  Independent Variable: Agricultural Credit

- **To find relation b/w Growth of Deposits & Credit in Agriculture**

  Model: Agricultural credit $_t = \alpha_0 + \alpha_1$ ***(Growth of Bank Deposits)*** $+ \mu_t$

  Dependent Variable: Agricultural Credit

  Independent Variable: Growth of Bank Deposits

α is the parameters of the intercept and slopes of the coefficients, while μ represents other variables that could have lent further explanation to explained variables but not included in the model.

Besides these methods, correlation, ratios, percentages and growth rates are used for analysis. The shares have been calculated in percentage terms.

3.8 Definitions of selected variables

- **Agricultural Credit by Commercial Banks**: refers to the total amount of direct and indirect outstanding credit provided to the agricultural sector by public and private sector commercial banks. The amount is expressed in rupees crores.
- **Investment in Securities*:*** Specifically, refers to commercial banks' investment in both central and state government securities. There is a possibility of banks having less loanable funds available due to high investments in securities. Rupees crores are used to express the value. The amount of investments in government securities is considered in this study to be the percentage of total bank deposits.
- **Rural Coverage of Banks**: refers to the number of rural bank branches of scheduled commercial banks in comparison to total number of bank branches. The values are expressed in numbers.
- **Lending Interest Rate of agricultural credit:** refers to the lending rate or interest rate charged by commercial banks on agricultural credit. In order to analyze the interest rate, it is expressed as percent. Here the interest rate is calculated as a weighted average of the annual rate.
- **Interest Subsidy (IS):** refers to the subsidies granted by the central government to commercial banks on agricultural loans. Values are expressed in rupees crore.
- **Agricultural GDP:** is the Gross Domestic Product (GDP) derived from the agricultural sector. Values are expressed in rupees crore.

- **Agricultural Inputs Demand:** defined as the use of Fertilizers, Chemicals, Number of Tractors, Number of power tillers, Labor etc.
- **Growth of Bank Deposits:** refers to the deposits made to commercial banks in the form of time deposits, demand deposits and other saving deposits. Values are expressed in rupees crore.

3.9 Scope and Significance of the Study

An analysis of how an improved financial system and healthy institutional credit growth can lead to improved agricultural performance is presented. In this regard, it would seem fair to conclude that the study's findings would prove useful to policymakers when planning future programs and the findings would also be helpful to banks when deciding on credit facilities to agricultural sector.

3.10 Limitations of the Study

There are a few limitations to the study, particularly the fact that it covers only the post-reform period and focuses only on private and public sector commercial banks. Furthermore, foreign commercial banks were excluded from the study. Despite the limitations discussed, the research on this topic may prove useful to commercial banks and financial institutions.