Impact of Interest Subvention Scheme (ISS) on Farm Households: A Case of Andhra Pradesh and Madhya Pradesh.

Impact of Interest Subvention Scheme (ISS) on Farm Households: A Case of Andhra Pradesh and Madhya Pradesh.

Dissertation submitted in partial fulfilment of the requirements for the degree of Master of Philosophy in Applied Economics of the Jawaharlal Nehru University

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MPhil Programme in Applied Economics

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CENTRE FOR DEVELOPMENT STUDIES

June, 2022

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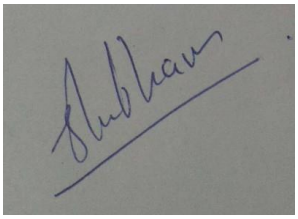

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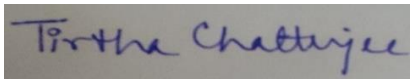

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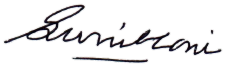

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Dedicated to my Mom and Dad

Acknowledgement

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ABSTRACT OF THE DISSERTATION

Impact of Interest Subvention Scheme (ISS) on Farm Households: A Case of Andhra Pradesh and Madhya Pradesh.

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2019-2021 at Centre for Development Studies

Credit is a critical input for farm households. Access to credit helps farm households in the purchase of inputs like fertilizers, pesticides, machineries etc. The use of these inputs can lead to an increase in the productivity of crops as found by many studies. This can increase the overall welfare of farm households. Credit is available to the households from both formal and informal sources. The informal sources of credit charges very high rates of interest to the farmers. So much so that it becomes very hard for these households to pay back their borrowings. This is why attempts have been made to reduce the use of informal sources of credit and at the same time increase credit disbursement from formal sources which charges reasonable rates of interest from the farmers. Many policies have been introduced to increase the share of formal credit disbursement to the farmers and there has been an increase in the share of credit disbursement through formal sources. One of these policies is the Interest Subvention Scheme (ISS) which was launched by the government in the year 2006-07. This policy provided a relief on the interest rate paid by the farmers on their loans. The idea was that a reduced rate of interest will lead to an increase in credit disbursement through formal sources. The objective of this thesis is to explore the impact of ISS on farm credit and investment behaviour.

To explore the trajectory of agricultural credit policies in around the last six decades, we analyse the Major Policies undertaken in the Banking sector and their impact on agricultural credit disbursement. Under this we have analysed the time from before the Indian Independence till recent years. We have divided this time period into five phases. Each phase discusses major policies undertaken during that period and its impact on agricultural credit. We find that the overall share of agricultural credit from formal sources has increased over the years. Whereas the share of formal sources showed an increasing trend till the year 1991, it showed a declining trend after this period. This can be mainly because of reasons such as the abolition of bank branch licensing policy and reduction of the priority sector lending.

We have used the Village Dynamics in South Asia (VDSA) dataset for analysing the trends in credit related variables in the recent years. This dataset provides data for semi-arid tropics of south Asia. Our analysis of the VDSA dataset showed that when we compare the figures for 2009 and 2014, we

find that the mean interest rate has not declined in the formal sector for agriculture. The mean interest rate for farmers owning less land is found to be higher as compared to the farmers owning more land. The number of loans and the number of households having a loan for agricultural purposes has been increasing over the years. Also, the share of subsidized loans for agricultural purposes from institutional sources have been increasing.

To find the impact of the Interest Subvention Scheme on farm households we have used difference-in-difference analysis for estimation. In a difference-in-difference framework we take two groups, where one is a treatment group and the other is the control group. The treatment group receives some kind of a benefit or policy change which is not received by the control group. The difference-in-difference estimate gives the effect of the benefit or policy change eliminating the other trends which are not due to the policy change. In our analysis, we have taken Madhya Pradesh as our treatment state and Andhra Pradesh as our controlled state. We have taken Madhya Pradesh as the treatment because it provided interest subvention for loans up to Rs 3 lakh as compare to Andhra Pradesh which provided the same only for an amount of Rs 1 lakh. So, the farmers in Madhya Pradesh receive more benefit in terms of the amount of loans under this policy. We have found that the difference between the average interest rate of Andhra Pradesh and Madhya Pradesh is significant for both pre-treatment and post-treatment periods and this gap has increased after the intervention period. Our results suggest that the share of informal sector borrowings has reduced by around 35% in our treatment group (Madhya Pradesh) as compared to our control group (Andhra Pradesh) in the post-treatment period. Our other outcome variables included share of formal borrowings, purchase of implements and savings. Our estimate for the share of formal borrowings and purchase of implements was found to be insignificant. For Savings, the parallel trends assumption was not satisfied, although the coefficient was found to be positive.

This provides some evidence that the Interest Subvention Scheme (ISS) has led to a decline in credit from informal sources. So, the continuation of the ISS in the right manner can lead to a further decline in the credit flow from informal sources and a hopeful increase in the credit flow from formal sources.

Keywords: Interest Subvention, Agricultural credit, difference-in-difference

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Chapter 1

Introduction

1.1) Introduction

Credit is an important input in agricultural production. Credit access can enhance investment in machinery, pumps, tractors, and other capital goods and also be used for spending on fertilizers, pesticides, seeds, and other inputs. The former helps in the growth of agriculture while the latter is an essential element in the production cycle. Farmers finance these investments usually through short-term and long-term credit. Purchase of assets is usually financed by long-term loans while those of inputs are financed by short-term loans. Agricultural credit can lead to an increase in the productivity in agriculture as found by many studies like Narayan (2015).

An important factor on which the households' access to credit depends on is the interest rate at which they receive credit (Turvey et al., 2012; Dehejia et al., 2012). Credit is available to rural households from both formal and informal sources. Formal sources include co-operative banks, Regional Rural Banks (RRBs) and Scheduled commercial banks while informal sources include friends, relatives, moneylenders, and landlords. A major proportion of informal credit is provided by moneylenders who charge an exorbitant rate of interest from the borrowers. In many cases, this rate has been seen as high as 36 per cent per annum (Rajeev and Vani, 2019).

To reduce the prevalence of informal credit, governments have made efforts to increase the flow of formal credit which could reduce their distress.

As a consequence, India has experienced a growth in the flow of agricultural credit but still, a large part of the borrowings come from informal sources. There are many policies which have been introduced to increase the flow of agricultural credit. In 2006, Interest subvention scheme was launched to provide short-term loans to the farmers at low rates of interest. As found by studies like Dehejia et al. (2012) and Turvey et al. (2012), the demand for loans has been shown to be negatively related to the changes in the rate of interest on loans in Bangladesh and China respectively. So, the Interest subvention scheme was expected to increase the flow of credit from the formal sources and subsequently decline the flow of credit from informal sources.

The thesis is placed in this context. The thesis explores the impact of the interest subvention scheme (ISS) which aims to increase the flow of formal credit among farm households. While addressing this question, the thesis is divided into five chapters which are as follows:

The first chapter provides the introduction, review of literature, motivation of the study and the objectives of the study.

The second chapter aims to analyse the journey of growth of agriculture credit in India. This chapter presents the agricultural credit growth in India in five distinct phases. In each phase, I discuss the major policies undertaken in the banking sector and the performance of agricultural credit in India. It aims to show the major changes that were brought by the policies and how they affected the disbursement of agricultural credit in India.

The third chapter analyses the trends and patterns of interest rates, number of loans, proportion of subsidized loans, purchase of implements and savings. We use the Village dynamics in south Asia (VDSA) data for our analysis.

The fourth chapter analyses the impact of the Interest Subvention Scheme (ISS) on farm households. ISS was introduced in the year 2006-07 to increase the amount of short-term credit to farmers. We use the Difference-in-Difference method to find the impact of ISS on the share of informal credit, share of formal credit, savings and purchase of implements.

The fifth chapter of the thesis provides the findings and conclusion.

1.2) Literature Review

This section provides a review of the literature and it has been divided into four sub-sections. The first sub-section discusses the literature on agricultural credit in India, its disbursement across regions, its contribution to GDP and the role of formal and informal sources of credit in the disbursement of agricultural credit. The second sub-section discusses the literature on the elasticity of credit with respect to the rate of interest. It discusses the effect of change in the rate of interest on the demand for loans. The third sub-section discusses the effect of major policy reforms like the 1991 banking sector reforms, the Kisan credit card (KCC) policy etc on agricultural credit. The fourth sub-section discusses the effect of the interest subvention scheme on agricultural credit.

1.2.1) Agricultural credit

According to Das (2009) the ratio of agricultural credit to the value of inputs and the ratio of agricultural credit to the value of output has been increasing in India. Also, region-wise, agricultural credit has been seem to be disbursed disproportionately by scheduled commercial banks. The study further analyses the impact of direct and indirect agricultural credit on agricultural production in India and finds that direct agricultural credit had a positive impact on agricultural output. On the other hand, the impact of the number of accounts of the indirect credit on agricultural output is also positive but with a lag of one year. The paper has used panel data model for estimation. Also, it argues that the

source of informal credit has been declining over the years and formal credit has been increasing. Also, the share of agricultural GDP to total GDP is falling.

Golait (2007) attempts to analyse the issues which Indian agricultural credit has been facing. It has argued that required amount of credit has not been disbursed in the agricultural sector and banks still do not provide credit to small and marginal farmers. The share of credit from commercial banks is increasing over the years whereas that of cooperative banks has been declining. The share of long-term credit in the total credit has been declining which can reduce agricultural investment in the future. The disbursement of credit to agriculture is skewed and the southern region has more accessibility to agriculture credit and the less developed states have less accessibility. The less developed states suffer from a problem of vicious cycle where the less accessibility of credit leads to low productivity in agriculture. This leads to low adoption of technology and pushes farmers to borrow from non-institutional sources.

Narayan (2015) attempts to find the effect of institutional credit on agricultural GDP in India. The study uses data from 1995-96 to 2011-12 and finds that when credit flow from institutional sources increases by 10% it seems to have been associated with an increase in agricultural GDP by 2.1%. Also, institutional credit has a strong association with the use of other inputs. It may act as a mediating input and enable the use of other inputs. The paper analyses a major policy introduced between the year 2004-05 and 2006-07 which targeted to increase the flow of institutional credit to agriculture by twice as much. The author divides the period of study into two sub-periods. The first phase which denotes the pre-doubling period (1995-96 to 2003-04) and the second period denotes the post-doubling period (2004-05 to 20011-12). The paper finds that in the pre-doubling period (1995-96 to 2003-04) of the credit flow, institutional credit has been used to purchase variable inputs like fertilizers. On the other hand, in the post-doubling period (2004-05 to 2011-12), credit has been used in the purchase of tractors. Hence, credit is acting as an enabler in mechanisation.

Surendra (2020) analyses the impact of transitory income shocks on informal loans and how the availability of formal credit impacts an informal lender's ability to meet unanticipated increases in demand. This study uses data from various sources such as the National Sample Survey (NSS), ICRISAT village dynamic survey, primary phone survey, Reserve Bank of India (RBI) etc. The time period on these data sets varies with the latest survey conducted in the year 2020. The paper uses panel data regression for estimation and finds that when rural households experience an unanticipated increase in income, measured by an increase in monsoon rainfall in a district, borrowing from informal moneylenders increases. This occurs because with a positive shock to the income, the construction of houses, repairs and purchase of durable assets increases. Also, when districts experience a contraction in formal credit, moneylenders are no longer able to extend additional loans during periods of increased demand. Moneylenders themselves often borrow from both formal and

informal sources in order to extend loans to their clients. Since moneylenders borrow from institutional sources to extend credit to their clients, they have a vertical relationship with formal lenders and formal financial institutions facilitate smoother functioning of the informal market.

1.2.2) Elasticity of credit

Dehejia et al. (2012) attempts to find the effect of an increase in the interest rate on borrowings in a slum area in Dhaka. This paper uses data from a credit co-operative in Dhaka, Bangladesh. The data is collected from January 1999 to January 2001 and the change in the interest rate is brought in February 2000. The study uses the difference-in-difference method and finds that an increase in the interest rate led to a decline in the loan balance of the treatment group. The paper took the Tikkapara and Kalyanpur bank branches under the treatment group and the Geneva bank branch under the non-treatment group. The treatment was the increase in the rate of interest on borrowings from 2% to 3% in the treatment group whereas there was no change in the rate of interest in the Geneva branch which maintained a rate of interest of 3%. The paper estimate loan elasticities in the range of −0.73 to −1.04. It also finds that after an increase in the interest rate, people took loans more frequently, they took smaller loans and also repaid them earlier than before. They also found that the trend growth rate of the treatment group and the non-treatment group converges in the long-run.

Turvey et al. (2012) attempts to estimate individual household credit demand elasticities. This study uses survey data of farm households in China for the year 2009 and finds that the mean point estimate of a range of elasticities was -0.6. Also, it finds that the elasticity of demand for credit was perfectly inelastic for around 20% of households. 20% of the households had elasticities greater than -0.75, these also included around 15% households which had an elasticity above than -1.0. They do not find an association of the type of agriculture on the distribution of elasticities. This paper also finds that the households with a high saving rate had more inelastic demand compared to households with less saving rate. This shows that households with a high saving rate treat their savings as a substitute to credit for their financing requirements. On the other hand, the low to medium saving households use both their savings as well as borrowings for their financial requirements.

1.2.3) Policies and reforms

Chatterjee (2019) analysed the impact of a major agricultural credit reform in India, the KCC policy. This study uses data from many sources including Village Dynamics in South Asia (VDSA) and India Human Development Survey (IHDS) datasets. It uses data for both the pre- and post-1998 periods, when the policy was introduced. It uses a district-level panel dataset for estimation and finds that the reforms caused an increase the total agricultural output at a large-scale. The biggest increase was found to be in the production of rice, which is also the major crop in India. The use of HYV seeds increased which highlights rise in technology adoption. At the household level, this paper finds that

households took lesser loans but the amount of the loans was high after exposure to KCC policy. The analysis of household data shows that KCC did not lead to new borrowings.

Kalita (2008) analyses the impact of the 1991 banking sector reforms in India. The study uses secondary data from various sources including the Reserve Bank of India and data from the Government of India. It find that the number of bank branches did not increase much during the reform period (post-1991) but the population per branch increased. The per capita deposits and credit by commercial banks has increased by 6 to 7 times during the period of reforms. The borrowings from foreign sources became cheaper due to the banking sector reforms. The financial health of the banks improved as the volume of NPAs declined during the reform period. A larger share of the NPA's was from the non-priority sector. SLR and CRR were brought down and the interest rate was brought under market driven rate structure in the post-reform period. The volume of profits of the scheduled commercial banks increased during the reform period.

Devaraja T.S. (2011) provides an overview of rural credit in India. It argues that usurious money lending practices persisted from the colonial period itself. Repayment of the previous debt was found to be the most significant motivation for borrowing according to a report in the year 1929. After independence, India focused on credit disbursement through cooperatives and in 1969, 14 largest banks were nationalised. Nationalisation was followed by the attempts of bank branch expansion to the unbanked, under banked rural and semi-urban areas with licensing policies introduced in the year 1970 and 1977. Due to these policies, the number of rural bank branches increased from 1443 in 1969 to around 35000 in the early 1990s. This increase was mostly in the unbanked areas. There was also a huge decline in the population per branch during this period. Apart from this, the increase in credit-deposit ratio and share of priority sector lending led to an increase in rural credit as a proportion of total credit. Also, informal borrowings share declined from around 75% in the period 1951-1961 to less than around 25% in the year 1991. Formal sector borrowings on the other hand increased more than twice in the period 1971 to 1991. After the 1991 reforms, the number of bank branches started declining sharply. It declined from 35000 in 1993 to 30000 in 2006. Also, the share of credit to agriculture out of total credit declined from 19% in the year 1990 to below 11% in the year 2005. The informal moneylenders also made a comeback as the share of informal sources of credit increased after the 1991 reforms.

1.2.4) Interest Subvention Scheme

Rajeev and Vani (2019) analyse the impact of the interest subvention scheme (ISS) on the credit disbursement in Karnataka, which is a drought prone region with low irrigation and in need of more support in the form of credit. It uses NSSO's Debt and Investment Survey, 59th (2003) and 70th (2012-13) round data and also primary and field survey data for analysis. Since NSSO does not provide data

on loans under the subvention scheme. So, this paper have used data for loans under an interest rate of 7% and greater than 0%. It finds that at the all-India level 38% of the loanee farmers availed institutional credit at 7% rate of interest or less. This percentage was 27% for Karnataka. Subsidized credit was received by only 30% of marginal and small farmers and 70% of large farmers. Financial literacy is important in increasing the flow of agricultural credit. However, the percentage of marginal and small farmers who were quite aware of the Interest Subvention Scheme in Karnataka was only 40% and most of them did not know about the incentive for prompt repayment. Also, of the marginal farmers, 18 per cent in Karnataka and 34 per cent at the all-India level got loans at 7 per cent or below, while it is twice as much for the other classes. The probability of repayments of short-term crop loans within 12 months of the loan taken increases with lower interest rates. At the all-India level, this figure increased from 2.8 per cent of farmers (including all interest rate categories) to 5 per cent (for loans under 7 per cent rate of interest). Similarly, for Karnataka, this figure increased from 0.62 per cent to 2 per cent.

A study by the Bankers Institute of Rural Development was conducted in the year 2015 with the aim to assess the impact of the scheme on the increase in crop loans, repayment of crop loans, profitability of the co-operatives etc. This study uses data from District level Co-operative Banks (DCCBs) in Uttar Pradesh and Haryana. The data is taken from two DCCBs, one each in U.P. and Haryana. It finds that there has been an increase in the crop loans in recent years. This increase is higher after the introduction ISS. Also, the increase in U.P. is more as compared to Haryana. Also, the increase is at a higher rate from 2011-12 to 2013-14. Improvement in the recovery of loans is also seen which is more prominent after the incentive for prompt repayment was announced in the year 2011-12. Uttar Pradesh has seen a higher recovery when compared to Haryana. This is because of the additional incentive given by the government of Uttar Pradesh. This study also shows that because of ISS, the Co-operative banks especially the DCCBs are suffering losses. In Haryana's Jhajjar DCCB, the loss is around Rs 7.7 lakh in the year 2013-14. On the other hand, for Uttar Pradesh's Bijnor DCCB the loss is around Rs 148 lakh for the same year. The loss suffered shows a difference across DCCBs because of the different amount of Interest subvention and incentive given in the two states and also the difference in delay time across the banks.

1.3) Motivation of the study:

Existing literature on agricultural credit in India have focused on the disbursement of agricultural credit through various sources, regional disparities in the disbursement of agricultural credit and the impact of agricultural credit on productivity. Many policies have been introduced to enhance the flow of agricultural credit and we have seen an increase in the flow of agricultural credit from institutional sources over the years. One of these policies introduced in the year 2006-07 is the interest subvention

scheme. This policy aims at increasing the level of short-term credit flow in agriculture and reducing the interest burden on the farmers.

The interest subvention scheme aims to increase the level of short-term credit disbursement to the farmers. The low rate of interest can reduce the financial burden on the farmers. This can lead to an increase in the borrowings by them as found by studies like Turvey (2012). An increase in the credit disbursement can lead to an increase in the use of inputs such as fertilizers, pesticides, high-yielding variety of seeds etc which have proved to increase productivity in agriculture (Narayanan, 2015). The increase in productivity will lead to income generation in the agriculture sector and the incomes and the standard of living of the farmers will increase. So overall, the interest subvention scheme can lead to an increase in the welfare of the farmers.

There are very few studies on the Interest Subvention Scheme and its impact on households. In this scenario, it becomes important to analyse the impact of the Interest Subvention Scheme on farm households. The dearth of literature on this policy is the main motivation for this study.

1.4) Objectives of the study

This study has four objectives, which are

1) To find out the impact of Interest Subvention Scheme on Formal sector borrowings.
2) To find the impact of Interest Subvention Scheme on Informal sector borrowings.
3) To find the impact of Interest Subvention Scheme on the Savings of the households.
4) To find the impact of Interest Subvention Scheme on the purchase of Implements.

1.5) Data source and methodology

We have used ICRISAT's Village Dynamics in South Asia (VDSA) data for our analysis. VDSA was a project started together by ICRISAT and the Bill and Melinda Gates Foundation (BMGF) for understanding the dynamics of rural poverty. With funding from BMGF, ICRISAT started the project known as VDSA. The project focuses on making time-series data available on individual, household, district and at field-level. The project aims to reduce the incidence as well as the severity of absolute poverty in the semi-arid tropics of South Asia. It provides longitudinal data for the semi-arid tropics of South Asia. Under this data set we have analysed data for two states in India, Andhra Pradesh and Madhya Pradesh from the year 2009 to 2014.

We have used the Difference-in-Difference method for estimation. '*In a difference-in-difference design, the average gain over time in the non-exposed (control) group is subtracted from the gain*

over time in the exposed (treatment) group, which removes potential biases from comparisons over time in the treatment group that could be the result of time trends unrelated to the treatment' (Deschacht and Goeman, 2015, Page number: 5). In our analysis, we have used two states, Madhya Pradesh and Andhra Pradesh as the treatment and control groups. We have used Madhya Pradesh as the Treatment group and Andhra Pradesh as the control group which is based on the additional subvention on interest rate provided by these states on loans. The details on the methodology are provided in chapter 4 of this thesis.

Chapter 2

Major Policies undertaken in the banking sector and the Performance of Agricultural credit in India.

2.1) Introduction:

In this chapter, we will look at the performance of agricultural credit in India under some major policies undertaken in the banking system. This chapter divides the agricultural credit trends in India into five phases to provide a clear picture of the performance of agricultural credit in each phase. This is done because all these phases had some particular policy focuses which affected agricultural credit in a different way in comparison to the other phases. First, we started with the period prior to Independence, second, we have analysed the period from 1947 till 1969, this is the period where the disbursement of credit to agriculture from the formal sector was dominated by cooperatives, third we have analysed the period between 1969 and 1991 because this period saw the nationalisation of major banks in India and the growth of credit by commercial banks, fourth we have analysed the period between 1991 and 2004 to show how the 1991 banking sector reforms have affected agricultural credit in India and lastly, the period from 2004 to the present has been discussed to show how the policy of the government to double the flow of agricultural credit in the country has affected the growth of agricultural credit.

Over the years, there have been many policies which were introduced to lower the share of credit disbursed to agriculture by the informal sector and increase the share of the formal sector in the same. India had experienced a growth in the share of institutional credit over the years. This is contributed by the rise in the credit share of cooperatives after 1947, the increase in the disbursement by commercial banks after the nationalization and the increase in the bank branches as well as priority sector lending during this period. The 1991 reforms brought a fall in the share of institutional credit to agriculture because of the decline in the expansion of bank branches and priority sector lending. Though we have come across a revival in the share of institutional credit in agriculture from the 2000s but still it remains lower than the level of 1991. So, we have not been able to entirely solve the problem of informal credit in agriculture as still a large part of credit comes from this sector.

We have divided the time period of our analysis into five phases which are given below:

1) Prior to Independence
2) 1947 to 1969
3) 1969 to 1991
4) 1991 to 2004 and

5) 2004 to present

Each phase explains the major policies undertaken in the banking sector and the performance of the agriculture credit.

2.2) Phase 1: Prior to Independence

There are two sources of agricultural credit, credit from the formal sector and credit from the informal sector. Sources of formal sector credit include commercial banks, cooperative banks, Regional rural banks etc. And sources of informal sector credit include moneylenders, landlords, traders, friends etc. Over the years there have been many attempts by the governments to increase the share of formal sector credit and reduce the share of informal sector credit. Credit from the informal sector carries with them very high rates of interest. This puts a huge financial burden on the farmers. The problem of informal credit has been bothering policymakers since the colonial period itself when a very huge part of the credit was provided by the informal sector.

The burden of the interest rates was so huge that many farmers would not be able to repay the loans in full. These loans would then be converted into mortgage loans. In many cases, the creditors would settle the loans by taking the bulk of the produce of the farmers. Since the farmer now was left with less amount of produce to sell in the market, their incomes would be lower. This again made the farmers unable to make payments for the loans and due to this, even the short-term loans were not repaid over a long duration. The farmers fell into this vicious cycle. The Central Banking Enquiry Committee (CBEC) in 1929 was an important report which documented these practices. It also argued that the biggest factor behind borrowing in 1929 was the need for paying the previous debts (Devaraja T.S., 2011).

Apart from high-interest rates, moneylenders used other kinds of exploitative practices as well. Recording of higher interest rates in the books than which should be charged, purchasing of crops of farmers at a lower price, charging of high rates of interest on the unpaid rent amount of the tenants etc.

To address the credit-related problems, some of the steps taken by the colonial administration included the enactment of the Deccan Agricultural Debtors' Relief Act (1879) which discouraged the charging of very high interest rates and selling of land as a result, setting up of land mortgage banks, provision of low-interest loans under the Land Improvement Loan Act of 1883 and the Agriculturalists Loan Act of 1884 for current needs (Devaraja T.S., 2011).

With the cooperative credit societies Act of 1904 and 1912, the focus began to make cooperatives as providers of rural credit. The cooperative movement was a huge success in Europe but faced a lot of hurdles in the Indian context. This is because there were high socio-economic division in rural parts of

India which made it difficult for the cooperation to actually persist among all. In most of the cases, these cooperative credit societies were under the control of moneylenders and rich landlords and the idea of cooperatives was lost in power and caste politics. An outcaste person had to sell their labour to a member of panchayat at a lower rate than the market to get a loan from the cooperatives (Devaraja T.S., 2011).

2.3) Phase 2: 1947 to 1969

During the pre-independence era, cooperatives acted as an alternative to informal credit sources. According to the Ministry of Statistics and Programme Implementation (MOSPI) cooperative societies are defined as '*a voluntary association of individuals having common needs who join hands for the achievement of common economic interest. Its aim is to serve the interest of the poorer sections of society through the principle of self-help and mutual help. The main objective is to provide support to the members. Nobody joins a cooperative society to earn profit. People come forward as a group, pool their individual resources, utilise them in the best possible manner, and derive some common benefit out of it'*. There are different types of cooperative societies such as consumer's cooperative society, producer's cooperative society, cooperative credit society, housing cooperative society etc. After Independence, credit from cooperative societies saw an increase. The share of cooperatives in Agricultural credit rose from 6.2% to 12.5% (Hoda and Terway, 2015). Also, the share of agricultural credit from informal sources declined from 89.8% in 1951 to 79.1% in 1961 (Hoda and Terway, 2015).

Table 1: The proportion of cash debt from different sources

	1951	1961	1971
Proportion of cash debts from institutional sources	8.7	18.4	31.6
Proportion of cash debt from moneylenders	82.9	61.9	36.1

Source: Table adopted from Binswanger and Khandker (2007), table 1

Table 1 shows that the proportion of cash debt from institutional sources increased from 8.7% in 1951 to 18.4% in 1961. So, there was a rise in the credit from institutional sources and a corresponding decline in the proportion of cash debt from moneylenders from 82.9% in 1951 to 61.9% in 1961. In the same period, Agricultural credit as a proportion of Agricultural GDP and Agricultural credit as a proportion of Total GDP rose from 0.5 to 3.3 and 0.3 to 1.3 respectively (Mohan, 2006).

However, there was a slowdown in the cooperative movement as a large number of cooperative institutions were found to be saddled with the problem of frozen assets, because of heavy over-dues in repayments (Hoda and Terway, 2015).

Until now, cooperatives were seen as the main instrument of credit flow to agriculture from formal sources. But the coming years saw some huge changes due to these problems. In the late 1960s with the start of the green revolution, the requirement of credit also raised in the country. The green revolution focused on increasing agricultural production by use of fertilizers, high-yielding variety seeds (HYV), tractors, increasing irrigation etc. This spurt the need for both short-term and long-term credit for the farmers and as a result, the demand for credit increased (Gadgil, 1986).

The increase in demand for credit in this time period exposed the inability of the cooperatives to fulfil this demand. As a result, the government had to find a solution in social control of commercial banks which till now did not have much role. This led to the nationalisation of 14 major banks in the year 1969.

2.4) Phase 3: 1969 to 1991

This era started with the nationalisation of 14 major banks in India. The inability of the cooperatives to fulfil the credit requirements lead to the social control of banks, so that credit to agriculture can be increased.

Table 2: Break-up of Institutional and Non-Institutional Agricultural credit

Sources of credit	1951	1961	1971	1981	1991	2002	2013
Institutional	10.2	20.9	32	56.2	66.3	61.1	64
Government	-	6.2		4	5.7	1.7	1.3
Cooperative societies/banks etc.	6.2	12.5		27.6	23.6	30.2	28.9
Commercial banks	4	2.2		23.8	35.2	26.3	30.7
Insurance, provident fund	-	-		0.8	0.7	0.5	0.1
Other agencies (includes financial corporations/institutions, financial companies)	-	-		-	1.1	2.4	3
Non-Institutional	89.8	79.1	68	43.8	33.7	38.9	36
Moneylenders	39.8	25.3		17.2	17.5	26.8	29.6
Relatives, friends etc.	-	-		11.5	4.6	6.2	4.3
Traders and commission agents	-	-		5.8	2.2	2.6	
Landlords	21.4	15		3.6	3.7	0.9	0.4
Others	28.6	38.8		5.7	5.7	2.4	1.7
Total	100	100	100	100	100	100	100

Source: Table adopted from Hoda and Terway (2015)**,** table 1(b)

Table 2 shows the share of agricultural credit disbursement from both the formal and informal sources. We can see that after the nationalisation, the share of institutional credit to agriculture doubled, increasing from 32% in 1971 to 66.3% in 1991. On the other hand, the share of Non-institutional credit to agriculture halved, reducing from 68% in 1971 to 33.7% in 1991.

The dominant part in the rise of Institutional credit was played by commercial banks. In fact, the share of cooperatives in Agricultural credit is seen to have declined from 27.6% in the year 1981 to 23.6% in 1991.

In the same time period i.e., between 1981 and 1991, commercial banks contributed to the whole rise in the Agricultural credit. This is clear from the 11.4% (35.2% - 23.8%) increase in the share of commercial banks between 1981 and 1991, where the rise in the overall institutional credit in this period was 10.1% (66.3% - 56.2%).

Table 3: Relative share of borrowings of cultivator households from different sources

Sources	1951	1961	1971	1981	1991	2002	2010
Non-Institutional of which	92.7	91.3	68.3	36.8	30.6	38.9	29.7
Moneylenders	69.7	49.2	36.1	16.1	17.5	26.8	21.9
Institutional of which	7.3	18.7	31.7	63.2	66.3	61.3	68.8
Cooperative societies/banks	3.3	2.6	22.0	29.8	23.6	30.2	24.9
Commercial banks	0.9	0.6	2.4	28.8	35.2	26.3	25.1
Unspecified	-	-	-	-	3.1	-	1.5
Total	100	100	100	100	100	100	100

Source: Table adopted from (T.S., Rural Credit in India - An Overview of History and Perspectives, 2011), table 1

Table 3 also shows that after the first decade of nationalisation, the relative share of borrowing of cultivator households from cooperative banks increased between 1971 to 1981 from 22.0% to 29.8% and then showed a decline in the next decade. On the other hand, the share of commercial banks showed a tremendous increase from 2.4% in 1971 to 28.8% in 1981. So, in this period both the share of commercial banks as well as cooperative banks was increasing in overall borrowings of cultivator households. The next decade shows a further increase in the share of commercial banks from 28.8% in 1981 to 35.2% in 1991.

In tackling the problem of agricultural credit, there is a need for both these sources of institutional credit to work together. So, policymakers need to focus on both commercial banks and cooperative banks to address this problem.

An important point to note from table 2 is that there was a steep increase in the flow of agricultural credit from 1971 to 1981 but the growth rate declined in the period 1981 to 1991. The share of institutional credit to agriculture between 1971 and 1981 increased by 24.2% whereas it increased by 10.1% between 1981 and 1991. So, it can be said that the poor performance of the flow of agricultural credit did not start just after the banking reforms of 1991 but from the previous decade i.e., from the year 1981.

Under short term and long-term credit, short term credit as a percentage of agricultural GDP was always higher than long term credit as a percentage of GDP. Long term loans in agriculture are taken for investments in capital assets like machinery, pumps, tractors etc. On the other hand, short term loans are taken for expenditure on inputs like fertilizers, pesticides, seeds etc. The former helps in the growth of agriculture while the latter is an essential element in the production cycle.

The increase in the flow of credit was possible due to the increase in the number of bank branches in rural areas. The spread of banking to unbanked areas received focus attention after nationalisation (Hoda and Terway, 2015). To achieve this, the policies which were used were the adoption of bank licensing policy. In 1970, RBI formulated its first "socially coercive" licensing criteria, In which for every new branch that has to be opened in a banked area (with one or more branches), the bank had to open at least 3 branches in unbanked rural or semi-urban areas. In 1977, this ratio of banked: to unbanked branches was further increased to 1:4.

Table 4: Trend of the Number of Bank Offices, Credit Outstanding, Deposits and Credit-Deposit ratio.

Year	Number of Bank Offices		Credit Outstanding		Deposits		Credit-Deposit ratio (%)	
	Rural	% to total	Rural	% to total	Rural	% to total	Rural	% to total
1969	1443	17.6	115	3.3	306	6.3	37.6	71.6
1972	5274	36.0	257	4.6	540	6.5	47.7	67.2
1975	7112	35.5	608	6.0	1171	8.5	51.9	73.5
1978	12534	42.5	1530	8.4	2664	10.1	57.4	69.1
1981	19453	51.2	3600	11.9	5939	13.4	60.6	68.1
1984	25541	52.9	6589	13.5	9603	13.4	68.6	68.3
1987	30585	56.2	11127	15.3	17527	14.7	63.5	61.0
1990	34867	58.2	17352	14.2	28609	15.5	60.7	66.8
1993	35360	56.3	22906	14.1	41410	15.0	55.3	58.9
1996	32981	51.2	29012	11.4	61313	14.4	47.3	59.8
1999	32840	49.3	42091	11.0	102697	14.7	41.0	54.8
2002	32443	47.8	66682	10.2	159423	14.2	41.8	58.4
2005	32082	46.9	109976	9.5	213104	12.2	51.6	64.9
2008	30572	44.5	175816	8.4	226049	10.8	56.3	72.5

Source: Table adopted from Devaraja T.S. (2011)**,** table 1

Table 4 above shows the result of the licensing policy. The number of bank offices in rural areas increased from 1,443 to 34,867 between 1969 and 1990. Most of this increase occurred in unbanked areas and the number of banked locations in this period increased from around a thousand to over 25,000 (Devaraja T.S., 2011).

The 1:4 licensing rule introduced in the year 1977 was successful. This is evident from the fact that between 1977 and 1990, 80% of all new branches opened were in unbanked locations.

Rural bank offices as a percentage of the total increased from 17.6% to 58.2%. Much of the increase came between the period 1969 and 1981 showing an increase from 17.6% to 51.2%.

Credit outstanding in Rural India increased from 3.3% in 1969 to 14.2% in 1990. A huge part of this increase again came between the period 1969 to 1981 when it increased from 3.3% to 11.9%. The percentage of rural deposits increased from 6.3% to 15.5% between 1969 and 1990. It grew from 6.3% to 13.4% between 1969 and 1981.

Credit-deposit ratio showed an increasing trend between 1969 and 1990, showing a rise from 37.6% to 60.7%.

After nationalisation, branch expansion was deliberately skewed towards previously unbanked or under-banked rural and semi-urban areas (Devaraja T.S., 2011).

Also, the launch of Lead Bank Scheme was done. Under this scheme, a bank was termed as a 'lead bank' which surveyed the credit needs and was expected to provide credit facilities to people and develop the banking system. Also, banks were directed to maintain a credit deposit ratio of 60% in the rural and semi-urban areas.

Due to this reason, between June 1969 and December 1975, 10,543 branches were opened and around 50% of these were opened in rural areas i.e., around 5,364 (Hoda and Terway, 2015).

Table 5: Trend of Rural Bank Branches and Population per Branch

Year	Rural Branches	Population per Branch
1975	5598	87442
1981	8471	64650
1991	11344	57992
2001	14597	52319
2011	23097	36335

Source: Table adopted from Hoda and Terway (2015), table 2

Table 5 above shows the growth in rural bank branches as well as the fall in the population per branch. The number of rural bank branches grew from 5,598 in the year 1975 to 11,344 in the year

1991 registering an increase of 102.64%. In the same period, the population per branch reduced from 87,442 to 57,992 showing a decline of 33.68%.

If we look at the period between 1975 to 1981, the number of rural bank branches increased from 5,598 to 8,471, this was an increase of 51.32%. In the same period, the population per branch declined from 87,442 to 64,650 showing a decline of 26.06%.

In the period 1981 to 1991, the number of rural bank branches increased from 8,471 to 11,344 showing a rise of 33.91%. In the same period, the population per branch declined from 64,650 to 57,992 showing a decline of 10.30%.

Table 6: Growth rate of Rural Bank Branches and Population per Branch

	Rural Branches	Population Per Branch
1975-1981	51.32	-26.06
1981-1991	33.91	-10.30
1975-1991	102.64	-33.68

Source: Based on table 5

The above table 6 clearly shows that the growth in the number of rural branches was higher between the period 1975 to 1981 but reduced between the period 1981-1991 which explains the slow growth of agricultural credit in this time period. Population per branch also showed a higher decline during the period 1975-81 as compared to the period between 1981-1991.

The increase in the flow of credit during this period can be attributed to many policies which took place during this period.

In the year 1972, the concept of priority sector lending was introduced. Commercial banks under this were directed to advance a proportion of their lending to these priority sectors, which included agriculture and small-scale industries. The formal definition of priority sector included agriculture and allied activities and small-scale and cottage industries. The target which was set in 1975 to be achieved for lending to the priority sector was 33%, which had to be achieved by March 1979. This target was increased in the year 1979 to 40% (to be achieved by 1985).

In 1980, sub-targets were set up, under this 16% of the lending was supposed to go to the agriculture sector and 10% had to be targeted to "weaker sections".

Table 7: Share of Priority Sector Advances in Total credit of Scheduled Commercial Banks (%)

Year	Share of Priority Sector Advances in Total credit of Scheduled Commercial Banks (%)
1969	14.0
1972	21.0
1975	25.0
1978	28.6
1981	35.6
1984	38.1
1987	42.9
1990	40.7
1993	34.4
1996	32.8
1999	35.5
2002	34.8
2005	36.7
2008	42.9

Source: Table adopted from Devaraja T.S. (2011), table 2

The share of advances to the priority sector in total credit of commercial banks increased from 14% in 1969 to 40.7% in 1990 as shown in table 7 which is taken from. This share also shows that the majority of the increase in lending was between 1969 and 1981 increasing from 14% to 35.6%. The increase from 1981 to 1990 was just around 5% increasing from 35.6% to 40.7%.

The low rise in the priority sector lending in the latter period is also due to the low rise in the banking of unbanked areas during this period.

Another important event during this decade was the establishment of Regional Rural Banks (RRBs) in the year 1975. The Narasimham Committee on rural credit (1975) recommended the establishment of Regional Rural Banks (RRBs). The establishment of RRBs was done as it was viewed that commercial and cooperative banks together were also not able to meet the agricultural credit needs. So, it was decided by the government to establish RRBs in the year 1975. This was expected to increase the flow of institutional credit especially to small and marginal farmers.

Last but not the least, the establishment of NABARD took place in the year 1982. The establishment of NABARD was expected to increase the flow of credit to agriculture and lead to the development of the agriculture sector. NABARD was provided with the refinancing functions related to the state cooperatives and RRBs which the RBI handled until then. NABARD has played a key role in the provision of financial assistance, development of institutions and increasing rural credit disbursement.

Apart from the policies adopted by the government and RBI, certain events which facilitated the growth in credit were the start of the green revolution in the late 1960s. The green revolution increased the demand for credit in agriculture through the use of inputs such as high yielding varieties of seeds, fertilizers, pump sets for irrigation etc (Mohan, 2006).

2.5) Phase 4: Post-1991 to 2004

The year 1991 brought major liberalisation reforms in the country. The country was opened to the outside world for trade. Along with it also came major reforms in the banking sector. These reforms were carried out in two phases:

1) The First Narasimham Committee (1991)
2) The second Narasimham Committee (1998)

The first Narasimham Committee aimed at increasing the productivity, profitability and efficiency of the banking system. It provided banks with more flexibility and autonomy in their working. On the other hand, the second Narasimham Committee aimed to make the banking system more stable by bringing some structural changes.

The banking sector showed considerable improvements until 1991 for agriculture credit. The share of institutional credit has increased to over 60% in 1991 from around 7% in 1951. There was considerable expansion of rural bank branches, there was a decline in the regional disparities in banking (Kalita, 2008).

But after the nationalisation, the banking sector started suffering from declining efficiency and productivity. There was a rise in the operational expenditure of the public sector banks because of the increase in the number of branches, staff level, poor supervision and high unit cost of administering loans to the priority sector (Kalita, 2008). These reasons led to the adoption of reforms in the year 1991.

Some of the major recommendations made by the first Narasimham Committee report were:

i. Abolition of the licensing policy in branch expansion.
ii. Encouragement of expansion of foreign bank branches.
iii. Priority sector redefined to comprise small and marginal farmers, weaker sections, small business operators and tiny industrial sector.
iv. Deregulation of interest rates.
v. Tightening of prudential norms, which included measures like introduction of international best practices norms on capital to risk asset ratio (CRAR) requirement and strengthening risk management, capital adequacy norms, restriction on the line of activities, accounting and provision of NPA's and supervising the banks.
vi. Set up of at least one rural banking subsidiary by public sector banks which will be treated at par with RRBs.

The second generation of reforms was initiated in 1998 by the second Narasimham committee. The major recommendations were:

i. Merger of strong public sector banks and the closure of weaker banks.
ii. Measures like recapitalization can be done for weak banks and complete closure in some cases if necessary.
iii. For facing the problem of Non-performing assets (NPA's), an asset reconstruction fund was set up.
iv. For improving the health of the banking system, the capital adequacy norms should be increased from the present 8% level.
v. Promotion of a competitive spirit among public sector banks and private sector banks.
vi. Reduction of targeted credit.

Table 8: Number of Scheduled Commercial Banks, Bank Offices and Rural and Semi-urban Bank offices

	June, 1980	March, 1991	March, 2000	March, 2005
Number Of Scheduled Commercial Banks (SCB's)	154	272	298	288
Number of Bank offices	34594	60570	67868	68355
Number of Rural and Semi-urban Bank offices	23227	46550	47693	47485

Source: Table adopted from Kalita (2008)**,** table 1

Table 8 above shows the progress of commercial banks in India. The number of scheduled commercial banks which increased at the rate of 76.62% between the period 1980 to 1991, increased only at 9.56% in the period between 1991 and 2000. The number of bank offices saw a similar trend. The number of rural and semi-urban bank offices increased at 104.41% between 1980 to 1991 but increased at only 2.45% between 1991 and 2000 and even showed a decline between 2000 and 2005. So, branch expansion stopped after the reforms and even showed a decline between the period 2000 and 2005.

Interest rate deregulation was carried out with the motive of giving banks more freedom to set interest rates which would be profitable for the banks. The interest rates would now be market-driven.

Under directed lending, the committee had recommended the reduction of the directed credit from 40%. The government did not reduce the percentage of directed credit but the definition of the directed credit was broadened. The committee had suggested the inclusion of activities related to poultry, dairying and food processing.

Table 9: Share of Priority sector lending

Public Sector Banks								
	1997-98	1998-99	1999-00	2000-01	2001-02	2002-03	2003-04	2004-05
Priority sector	41.8	39.2	40.2	43.7	43.1	42.5	43.6	43.3
Agriculture	15.7	14.2	14.3	15.7	15.9	15.4	15.1	15.7
Small Scale Industries	17.5	16.1	14.6	14.2	12.5	11.1	10.4	9.4
Other priority Sector	8.7	8.9	9.7	12.0	13.5	15.0	18.1	18.1
Private Sector Banks								
	1997-98	1998-99	1999-00	2000-01	2001-02	2002-03	2003-04	2004-05
Priority sector	40.9	41.4	38.0	38.2	40.9	44.4	47.3	43.3
Agriculture	9.7	9.5	8.3	8.5	8.5	11.2	14.2	12.1
Small Scale Industries	20.6	18.9	16.5	14.4	13.7	8.2	7.3	5.4
Other priority Sector	10.6	13.0	12.0	14.2	14.4	22.1	25.7	24.5

Source: Table adopted from Kalita (2008), table 4

Table 9 above provides the growth in the priority sector lending by commercial banks from 1990 to 2004-05, there has not been much rise in the share of priority sector lending by both the public sector banks and private sector banks. The same trend is visible for agriculture at the disaggregated level.

Although, the lending to small-scale industries has declined and the lending to other priority sector has increased.

Although table 7 shows that as a share of the total credit, the priority sector advances has declined from 40.7% in 1990 to 36.7% in 2005. Also, the share of agriculture in total bank credit has fallen from 19% in the year 1990 to around 11% by the year 2005 (Devaraja T.S., 2011). This can be because of the decline in the number of rural bank offices. The number of bank offices in rural areas as a percentage of the total declined from 58.2% in 1990 to 46.9% in 2005 (Table 2).

So, in particular, agricultural sector credit declined after the reforms due to a decline in the priority sector advances and rural bank branches.

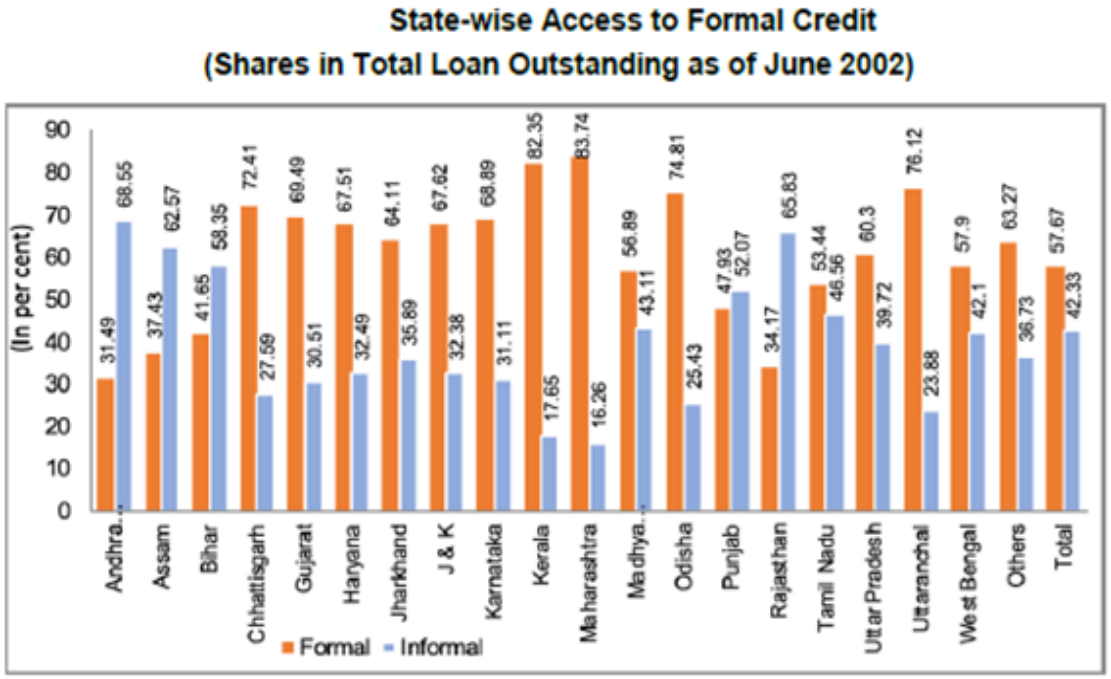
Also, the share of agricultural loans in total for loans up to Rs 25,000 showed a decline in the year 1990 and the share of marginal farmers in loans also declined by 6% between 1991 and 2000.

The share of institutional agricultural credit declined from 66.3% in 1991 to 61.1% in the year 2002. On the other hand, the share of non-institutional agricultural lending saw a revival from 33.7% in 1991 to 38.9% in 2002.

The reforms brought back the moneylenders, which provided most of the credit from the non-institutional sources and their share also increased by around 50 per cent between 1991 and 2002. Under the formal institutional credit, the share of cooperatives increased from 23.6% in 1991 to 30.2% in 2002. On the other hand, the share of commercial banks declined from 35.2% to 26.3%. So, cooperative banks saw a revival in their credit share after the reforms.

The state-wise share of total loans outstanding under formal and informal credit is discussed by Rajeev and Vani (2019). The paper shows that Andhra Pradesh had the lowest and Maharashtra had the highest share of formal sector borrowings among the states according to NSSO 59th round. The figure below provides the difference in the share of the formal and informal sources of credit in states.

Figure 1: State-wise access to formal credit



Source: Figure adopted from Rajeev and Vani (2019)**,** figure 3.3

Maharashtra, Kerala, Uttaranchal, Orissa and Chhattisgarh had the highest proportion of formal credit in their total credit. On the other hand, Andhra Pradesh, Rajasthan, Assam, Bihar and Punjab showed a higher proportion of Informal credit in total.

Also, the share of indirect credit in agriculture increased from the year 1995 and the share of direct credit started declining. On the other hand, the share of short-term credit increased and long-term credit declined.

The ratio of agricultural credit as a proportion of agricultural GDP and total GDP has been rising since the 1950s. From the 1990's agricultural credit as a proportion of agricultural GDP increased from 7.4% to 15.1% in 2003-04. Also, the share of agriculture credit in Total GDP increased from 2% in the 1990s to 3.5% in 2003-04 (Mohan, 2006).

In the same time period, the short-term credit as a percentage of the value of input has also increased from 9.79% in 1993-94 to 25.10% in 2003-04 showing the increase in the purchase of inputs from short-term credit disbursement.

Long-term credit as a proportion of private sector capital formation also increased from 63% to 76% from (1990-91 to 1999-2000) to 2001-02. This growth rate here is lower than the growth rate which occurred between (1980-81 to 1989-90) to (1990-91 to 1999-2000) where the increase was from 33% to 63% (Mohan, 2006).

Region-wise there were wide disparities in the disbursement of agricultural credit, where the southern region had the highest share of agricultural credit as a proportion of Net State Domestic Product (NSDP) followed by the northern and central regions in the period 1996-2001. North-Eastern and Eastern regions performed the lowest and second-lowest respectively. The higher share of the southern region may be due to the much better cooperative movement (Mohan, 2006).

According to NSSO 59th round, there are disparities in the access to formal credit by caste and gender. Compared to the general category which received 66% of credit from formal sources, the same share for the SC category of farmers is the lowest at 46%. Also, the same share is low for women-headed households where 46% of the credit is from formal sources (Rajeev and Vani, 2019).

Overall credit disbursement in the 1990s declined heavily as compared to the level of the 1980s. As shown by Ramakumar and Chavan (2007) the growth rate of credit outstanding for agriculture and allied sectors grew at 8.7% during the period 1980-90 and at just 1.8% during the period 1990-2000.

Kalita (2008) finds that the number of bank branches has not increased during the reform period. On the other hand, the population per branch has increased. Enhancement of competition and opening up of the banking sector have not affected the fulfilment of priority sector norms by the commercial bank group. Commercial banks have still been able to fulfil the priority sector lending targets laid down by the RBI. The amount of Non-Performing Assets (NPAs) has also reduced during the reform period and the NPAs in the public sector remain higher than that of the private sector. There has been an increase in the volume of profits of commercial banks after the reforms.

According to Devaraja T.S. (2011), there has been a continuous decline in the share of rural credit from 15.3 per cent in 1987 to 8.4 per cent in 2006. There also has been a decline in the share of rural deposits from 15.45 per cent in the year 1990 to 10.8 per cent in the year 2006. The rural-credit deposit ratio has also shown a decline from 69 per cent in 1984 to around 41 per cent by the end of 1990s. The share of agriculture in total bank credit declined from 19 per cent in 1990 to around 11 per cent in 2005. This paper also shows that the proportion of priority sector lending still remained as high as 37% in 2005, but we must keep in mind that the definition of the priority sector was changed which dilutes the focus on agriculture and weaker sections in several ways. The paper also finds that the disbursement of short-term and long-term loans to marginal farmers declined by around 6 per cent between 1991 and 2000.

Our findings suggest that the 1991 reforms led to a decline in the share of agricultural credit from 66.3% in the year 1991 to 61.1% in 2002. This is because the reforms led to the abolition of the bank branch licensing policy adopted by the government in previous years. This led to the fall in the growth of rural bank branches. The rural bank branches which grew at 102.64% between 1975 and 1991 grew at only 28.67% between 1991 and 2001. Also, the share of priority sector lending declined from

40.7% in 1990 to 34.8% in 2002 and the definition of priority sector lending was changed that diluted the focus on agriculture. These two factors have led to the fall in the disbursement of agricultural credit post-1991. Such that the share of the formal sector declined and the informal sector increased in the disbursement of agricultural credit. Much of the increase in the share of the informal sector was due to moneylenders who provided most of the credit. So 'the 1991 reforms brought back the moneylenders'.

2.5.1) Kisan Credit Card (KCC)

Kisan credit card scheme was introduced from the year 1998. It provides credit to farmers for both short-term and long-term loans. It also covers loans for consumption.

Loans through KCC are provided by a plastic card which can be used as a debit card in ATMs (Hoda and Terway, 2015).

KCC was launched with the view of providing credit to the agriculture sector with reasonable rates of interest.

The share of KCCs issued by cooperatives has been declining and the share of commercial banks has been increasing. Commercial banks accounted for around 55% of the total cards issued and 69% of the total amount of credit issued in total credit in 2011. Hence, commercial banks have played a very important role in the disbursement of credit through KCC (Subbarao, 2012).

Chatterjee (2019) finds that with more exposure to the KCC programme the production of rice had increased by about 88,000 tonnes. This highlights the increase in agriculture production after exposure to the KCC programme. It also shows that the adoption of technology increased because there was a rise in the adoption of HYV seeds in production. It also finds that the households are likely to have fewer but bigger loans with exposure to the programme.

2.6) Phase 5: 2004 to present

After the low disbursement of credit in rural areas and the agricultural sector in particular in the 1990s, In 2004, the government announced a policy with the intention of doubling the flow of credit to agriculture over a period of three years. It included the target of raising agricultural credit by 30% every year, financing loans for around 50 lakh farmers every year, target for bank branches to make investments in every year in two to three agricultural projects, restructuring of debt, one-time settlement and to provide some assistance financially to redeem loans from moneylenders.

Officially it was claimed that the increase in credit delivery started from 2004 but Ramakumar and Chavan (2007) argues that the revival of credit delivery started from the year 2000. The growth rate of

agricultural credit between 2000 and 2006 was 20.5% which when compared to the growth in the 1990s i.e. 1.8% was significantly higher.

A major proportion of the increase in the growth of the agricultural credit was due to the growth of indirect credit. The rate of growth of direct credit was 17%, whereas the rate of growth of indirect credit was 32.9%. Also, while the increase in the growth of indirect credit started after 1995 but the growth was much higher after 2000.

From the 1990s, definitional changes in the indirect credit began which enhanced the scope of indirect credit. This can be one of the factors for the growth of indirect credit.

2.6.1) Interest Subvention Scheme (ISS)

To reduce the burden of interest rate on the farmers, a policy was introduced in the year 2006-07 known as the Interest Subvention Scheme (ISS). Under this scheme, the central government has announced a subvention of 2% interest rate to Public Sector Banks, Regional Rural Banks (RRBs) and Cooperative Banks on loans up to Rs 3 Lakh. Banks has to provide short-term crop loans at 7% interest rate at the ground level and the government will provide a subvention of 2% on these loans. Private Sector Banks were also covered under ISS from 2013-14. Private Sector Banks's rural and semi-urban branches were covered under the scheme.

In 2009-10, another major change in the policy took place. Government of India came up with additional subvention for those farmers who repay the loan on or before the due date of loan, up to maximum period of one year. This was termed as an incentive for prompt repayment.

This scheme has been continuing with some changes in the rates over the years. The changes in both the rate of subvention and the rate of incentive have been given in table 10 below.

Table 10: Rate of Interest under Interest Subvention Scheme

Year	Rate of Interest (Subvention)	Rate of Interest (Incentive for prompt repayment)	Effective Rate of Interest
2007-08	2%	-	7%
2008-09	3%	-	6%
2009-10	2%	1%	6%
2010-11	1.5%	2%	5.5%
2011-12	2%	3%	4%
2012-13	2%	3%	4%
2013-14	2%	3%	4%
2014-15	2%	3%	4%
2015-16	2%	3%	4%
2016-17	2%	3%	4%
2017-18	2%	3%	4%

Source: taken from NABARD website, tentatively around September 2020.

This scheme provides loans to farmers at an effective rate of 4 per cent. This reduces the burden on the farmers for interest payments to a large extent.

Provision of loans at a lower rate can lead to an increase in the use of required inputs, and increase productivity, income and well-being of the farmers.

The scheme is implemented at the national level but the states are free to provide any additional interest Subvention to the farmers. Some states have provided an additional subvention. For example, Uttar Pradesh has provided an extra subvention of 1.7% for Cooperative Banks and a rebate of 1 per cent for repayments on time to farmers unlike in Haryana where the state government did not provide any additional interest rate subvention until 2013-14. This means that the effective rate is less in Uttar Pradesh as compared to Haryana.

Subbarao (2012) shows that the Weighted Average Lending Rate (WALR) of agriculture did not decline significantly after the introduction of ISS in the year 2006-07. As compared to the WALR of the aggregate credit, the WALR of Agriculture credit was just below it.

According to Rajeev and Vani (2019), only around 38.3% of the total farmers are able to avail credit at an interest rate up to 7% from the formal sector, based on NSSO 70th round (year 2013). The study also finds that the probability of repayments of short-term crop loans within 12 months of the loan taken increases with lower interest rates. At the all-India level, this figure increased from 2.8 per cent of farmers (including all interest rate categories) to 5 per cent (for loans under 7 per cent rate of interest). Similarly, for Karnataka, this figure increased from 0.62 per cent to 2 per cent.

A Study by the Bankers Institute of Technology (BIRD) in 2015 has found that there has been an increase in the flow of credit in Uttar Pradesh and Haryana after the introduction of ISS. The increase is higher in UP because it has provided more interest subvention as compared to Haryana. The flow is higher after the year 2011-12. Also, improvement in the recovery of loans has been seen after 2011-12.

Table 2 shows that the agricultural credit from institutional sources increased from 61.1% to 64% from the year 2002 to 2013. The last decade saw a decline in the share of the institutional source of credit, so the increase from 2002 to 2013 indicates an improvement in the disbursement.

Among the institutional sources, commercial banks were the reason for the increase in the flow.

In the same time period, the share of non-institutional sources declined from 38.9% to 36%. So, the policies in this decade led to some revival of institutional credit and a decline in non-institutional credit.

On the other hand, according to landholding size, the proportion of credit from institutional credit was Medium (68%), Semi-Medium (64.9%), Large (59.9%), Small (59.4%) and Marginal (51.3%) where small and marginal farmers had the lowest share.

The number of bank branches during this period also increased. As table 5 shows, the number of rural bank branches witnessed a huge increase of 58.23%. It increased from 14,597 to 23,097. The same table also shows the decline in the population per branch. Population per branch declined by 30.55%.

The credit-deposit ratio of rural banks increased from 64.9% to 72.5% from 2005 to 2008 (Table 4). Also, the share of priority sector loans in the total credit of commercial banks saw an increase from 36.7% to 42.9% in the period 2005 to 2008 (Table 7).

Clearly, the policies in this period led to an increase in agricultural credit. This was clearly the reason of increase in the number of rural bank branches, increase in credit-deposit ratio and increase in the lending to the priority sector.

The impact of the Interest Subvention Scheme is still not clear and there is a need for more studies on this scheme. However, the above factors definitely contributed to the growth of agricultural credit in this period.

2.7) Conclusion

The problem of informal credit markets and moneylenders has been bothering farmers from the colonial times. To address this period during this period the cooperative banks were introduced through the introduction of some laws. After the independence, the share of cooperatives in the total credit increased. But cooperative banks could not solve the problem of informal credit on a large scale. So, the government had to opt for the nationalisation of 14 major banks in India as to increase the flow of credit to agriculture.

After nationalisation, the share of institutional credit increased to double and the share of non-institutional credit halved showing a tremendous progress in the disbursement of credit to the agriculture sector. Commercial banks played a major role in the disbursement of credit from the formal sources as their share increased in this period more than cooperative banks. On the other hand, the cooperatives did not contribute much to the increase and even showed a decline in their share between 1981 and 1991.

From 1991 to 2002 we see that the share of cooperatives had increased but the share of commercial banks had declined more, leading to a fall in the overall share of institutional credit. Hence credit by commercial banks has proved to be the most important element in the disbursement of credit to agriculture.

In tackling the problem of agricultural credit, there is a need for both these sources of institutional credit to work together. So, policymakers need to focus on both commercial banks and cooperative banks to address this problem.

The share of institutional credit to agriculture between 1971 and 1981 increased by 24.2% whereas it increased by 10.1% between 1981 and 1991. So, it can be said that the poor performance of the flow of agricultural credit did not start just after the banking reforms of 1991 but from the previous decade i.e. from the year 1981.

The fall in the growth of bank expansion from the 1980s led to the decline in credit disbursement during this period. The growth of the share of priority sector lending also showed a decline during this period.

Agriculture credit declined after the reforms as a result of the decline in the expansion of rural bank branches and priority sector lending. The share of the informal sector in agriculture credit increased and the reforms brought back the moneylenders.

In the period after 2004, the share of priority sector lending increased from 36.7% in 2005 to 42.9% in 2008. The number of rural bank branches increased and the rate of growth of rural bank branches also doubled in this decade (2001 to 2011) when compared to the previous decade (1991 to 2001). The rate of growth of rural bank branches increased from 28.67% between 1991 and 2001 to 58.23% between 2001 and 2011.

2.8) Findings

The number of cooperative banks increased after independence but this was not able to address the problem of informal sector credit. The failure of cooperative banks to address the problem of informal credit led to the nationalisation of 14 major commercial banks in India. Commercial banks played a major role in the disbursement of agricultural credit after nationalisation and the share of institutional credit to agriculture doubled in the next two decades. After the 1991 reforms, the share of commercial banks in the disbursement of agricultural credit declined. This led to a fall in the share of institutional sources of credit in total. The poor performance of the disbursement of agricultural credit from formal sources started after 1981 and accelerated highly after the 1991 reforms. The fall in the growth of rural banks and in the share of priority sector lending from the 1980s led to a decline in the disbursement of agricultural credit from the formal sources. The share of institutional sources in agricultural credit declined after the reforms due to the sharp decline in the expansion of rural bank branches and priority sector lending. From 2004, both, the rural bank branches and the share of priority sector lending increased. Also, the share of institutional credit in agriculture increased and the share of non-institutional sources declined till 2013.

Chapter 3

Trends using VDSA Data

3.1) Introduction

This chapter looks at the trend in some variables like mean interest rates, number of loans, Subsidized loans, purchase of implements and savings. We have used ICRISAT's Village Dynamic in South Asia (VDSA) data. Under this source, we have used data for five states which are Andhra Pradesh, Gujarat, Karnataka, Maharashtra and Madhya Pradesh. We have used data from 2009 to 2014. VDSA also provides data for three eastern states which are Bihar, Jharkhand and Odisha but the data for these states are given only from 2010 till 2014. But a major policy change took place in the year 2011 when the incentive for prompt repayment was increased from 2% to 3% under the Interest Subvention Scheme. To see the difference in the pre and post 2011, data for at least two years prior to the policy change was essential for us to analyze. This is the reason that we have used data for the above mentioned five states from 2009 to 2014.

Table 1: Mean Interest rate of loans taken for different purposes.

	Purpose of Loan			
Year	All Purposes	Agricultural Loans	Other Productive Purposes	Consumption
2009	19.76	15.9	23.43	25.28
2010	19	15	24.26	22.33
2011	13.08	11.84	18.52	12.54
2012	13.35	12.4	18.99	12.29
2013	11.69	11.35	18.05	9.47
2014	12.44	11.89	15.56	11.93

Source: VDSA dataset

Table 1 above shows the trend in the mean interest rate of loans taken for different purposes. The purpose of the loan is divided into three main categories which are loans for Agriculture, loans for Consumption and loans for some other productive purposes which include loans for purposes like business, purchase of livestock, purchase of land, expenditure incurred on repairs etc. The above figure takes into account both the formal and the informal sources of loans. We discuss the two separately in the next table.

Our analysis is based from the year 2009 to 2014. The second column shows the trend in the mean interest rate including all the purposes of loans. It shows that the mean interest rate is 19.76% in the year 2009. It shows a declining trend overall. Though the mean interest rate in 2014 is slightly higher than that in 2013. The mean interest rate is 12.44% in the year 2014 which is lower than the year 2009. The mean interest rate for agricultural loans is also showing a declining trend overall. It shows that the mean interest rate declines from 15.9% in 2009 to 11.89% in 2014. Similarly, the same declining trend is visible for other productive purposes and consumption purposes as well. The mean interest rate for other productive purposes is declining from 23.43% in 2009 to 15.56% in 2014. The mean interest rate for consumption shows a decline from 25.28% in the year 2009 to 11.93% in the year 2014.

When we compare the three purposes of loans, we see that the mean interest rate is the lowest for agricultural loans in the year 2009. This figure was 15.9% for agricultural loans and the corresponding figures for other productive purposes and consumption purposes were 23.43% and 25.28% respectively which are much higher when compared to loans for agricultural purposes. These figures decline over the years. As compared to 2009 the mean interest rate for consumption purposes shows a decline of 52.8% in the year 2014, for other productive purposes this decline was 33.59% and for agricultural loans this decline was 25.22%. Clearly, we see that the decline in the mean interest rate for consumption loans is the highest and lowest for agricultural loans. This inequality in the decline of these two purposes makes the figures for the year 2014 somewhat equal, although the figure in the year 2009 showed a high gap.

Table 2: Mean interest rate for different purposes of loans (formal/informal source of borrowings).

Time	Agri. Formal	Agri. Informal	O.P.P Formal	O.P.P Informal	Cons. Formal	Cons. Informal
2009	8.22	33.87	12.76	31.33	14.94	33.2
2010	10.17	30.48	15.56	30.78	15.43	29.71
2011	9.23	17.48	11.23	23.29	10.38	13.09
2012	9.12	19.43	13.79	23	12.82	12.15
2013	8.58	18.29	13.52	21.98	10.5	9.22
2014	8.4	20.04	12.18	17.65	11.35	12.11

Source: VDSA dataset

Table 2 shows the mean interest rate of the different purposes of loans divided by the formal and informal source of borrowing. When we compare the mean interest rate from the formal sector of borrowing, we see that consumption loans have shown the highest decline in the mean interest rate.

This decline is around 24%. Loans for agricultural purposes have not shown a decline in the mean interest rate in the year 2014 compared to the year 2009. On the other hand, the decline in the category of other productive purposes is not much. But the mean interest rate for agriculture is less compared to other categories for all years.

Loans for all the purposes is showing a decline in the mean interest rate for the informal sources. The decline is the highest for loans for consumption (63.52%) and the least for agriculture (40.95%).

Table 3: Mean interest rate of loans from formal and informal sources.

Year	Formal	Informal
2009	10.07	32.96
2010	12.15	30.31
2011	9.67	15.79
2012	10.56	15.64
2013	9.69	13.48
2014	9.28	15.39

Source: VDSA dataset

Table 3 above shows the mean interest rate of loans from formal and informal sources separately. These figures include all the purposes of loans. The table shows that the mean interest rate is declining for both the formal and informal loans. The decline in the mean interest rate of informal category is 53.30% which is much higher than the decline in the formal category which is 7.8%. So, the decline in the mean interest rate of the informal sector is more than five times to that of loans from formal sector.

Table 4: Mean interest rate for different states.

State-Wise for Agriculture Loan					
Year	Andhra Pradesh	Gujarat	Karnataka	Maharashtra	Madhya Pradesh
2009	18.99	8.61	16.55	12.07	25.26
2010	17.29	9.32	13.37	13.61	14.42
2011	14.78	10.05	13.47	8.46	16.92
2012	16.25	7.92	14.91	8.17	16.67
2013	16.59	6.83	10.45	7.41	11.39
2014	14.38	10.58	9.94	9.98	12.77

Source: VDSA dataset

Table 4 above shows the mean interest rate for different states. Clearly, we see that the mean interest rate is declining for each state except Gujarat. Madhya Pradesh had the highest mean interest rate in the year 2009 compared to all other states. It has shown the most decline. It declined from 25.26% in 2009 to 12.77% in the year 2014. This is a decline of 49.44%. Maharashtra, Karnataka and Andhra Pradesh showed a decline of 17.31%, 39.93% and 24.27% respectively. The mean interest rate of Gujarat on the other hand has increased by 22.88%.

Table 5: Mean interest rate of loans taken from formal or informal sources for agricultural purposes State-Wise.

Time	A.P Formal	A.P Informal	Guj. Formal	Guj. Informal	K.N Formal	K.N Informal	M.H Formal	M.H Informal	M.P Formal	M.P Informal
2009	7.3	35.39	7.17	27.33	10.59	28.76	8.1	35.88	7.58	34.91
2010	10.65	31.16	7.51	13.45	8.79	27.12	10.87	45	8	36
2011	9.27	31.71	9.75	10.44	8	28.36	9.74	6.14	7.5	34.91
2012	9.49	29.85	7.36	8.62	11.56	25.43	8.13	8.29	9.42	26.33
2013	10	29.17	7.12	6	7.01	25.33	8.58	4.29	7.17	22.67
2014	9.01	28.53	8.54	12.57	5.73	25.45	9.72	10.55	7	32.73

Source: VDSA dataset

The above table shows the mean interest rate of loans taken from formal or informal sources for agricultural purposes. When we look at the mean interest rate from the formal sector, we see that For Andhra Pradesh, Gujarat and Maharashtra the numbers are rising. For Karnataka it is reducing, coming down from 10.59 in 2009 to 5.73 in 2014 showing a decline of 45.89%. For Madhya Pradesh, there is a decline of only 7.65%.

For all the states the mean interest rate for the borrowings from the informal sector is seen to be declining over the years. The least decline is seen in Madhya Pradesh (6.24%) whereas the most decline is seen for Maharashtra (70.59%). Gujarat has also shown a big decline of 54%.

Table 6: Mean interest rate of loans taken by the different land classes of farmers for agricultural purposes.

Landholding size according to owned Land and for Agricultural Loans					
Year	Landless	Marginal	Small	Medium	Large
2009	25.33	17.03	16.79	15.21	10.95
2010	18.27	17.95	16.23	13.28	7.31
2011	18.91	13.81	12.36	10.52	7.04
2012	24.15	15.2	12.99	10.68	7
2013	14.18	12.1	12.25	10.92	5.28
2014	17.18	12.09	13.64	10.77	7.16

Source: VDSA dataset

Table 6 shows the mean interest rate of loans taken by the different land classes of farmers for agricultural purposes. The mean interest rate for landless farmers was the highest in 2009 and has shown a decline over the years. It reduced from 25.33% p.a. to 17.18% showing a decline of 32.17% in its value. But it still remains much higher when compared to other categories of farmers. On the other hand, large farmers have the lowest mean interest rate for all years. For the large farmers, the mean interest rate declined from 10.95% to 7.16% showing a decline of 34.61%. From the table, it is clear that there is a negative relation between the size of land and the mean interest rate. That is, the mean interest rate is lower for farmers with high amounts of land and the mean interest rate is high for farmers with low amounts of land.

Table 7: Mean interest rate of loans taken by the different land classes of farmers from formal and informal sources.

Time	Landless Formal	Landless Informal	Marginal Formal	Marginal Informal	Small Formal	Small Informal	Medium Formal	Medium Informal	Large Formal	Large Informal
2009	12	42	8.42	32.16	8.13	36.19	8.19	32.98	7.95	30
2010	13.62	30.67	10.69	30.06	9.82	32.51	10.3	28.71	7.31	-
2011	12.18	25.64	10.05	19.18	9.25	18.98	8.95	14.7	7.71	-
2012	19.33	28.28	9.18	23.56	9.65	19.81	8.68	15.95	7.1	6
2013	12.86	16.5	9.17	18.03	8.7	19.63	8.53	17.98	5.44	4
2014	15.27	19.09	8.56	17.72	8.97	22.39	7.87	20.59	6.89	9

Source: VDSA dataset

Table 7 above shows the mean interest rate of loans taken by the different land classes of farmers from formal and informal sources. From the table, we can see that the mean interest rate for landless farmers from the formal sector is increasing over the years. On the other hand, it is seen to be reducing at some level for the large farmers. For the marginal, small and medium farmers it is quite the same. The mean interest rate has increased by 27.25% for landless farmers and has reduced by 13.33% for large farmers. Also, the mean interest rate for the landless farmers when compared to the other categories is still much higher, almost twice as much in the year 2014.

For the informal source, we can see that the mean interest rate is reducing for the landless farmers as for the other categories of the farmers. We saw in Table 6 above that the mean interest rate for landless farmers for loans combining the formal and informal sources both was reducing. Table 7 clarifies that the decline was due to the fall in the mean interest rate of loans from the informal sources since the mean interest rate from the formal sector loans is rising. The decline in the mean interest rate of informal sector loans for the large farmers is seen to be the greatest, but this should be read with caution because the number of large farmers in this category was very less, i.e., in most cases, it was less than 10 and even zero for a particular year.

Table 8: Number of loans taken for different purposes.

Number of Loans according to purpose			
Year	Agriculture	Other Productive Purposes	Consumption
2009	608	254	561
2010	516	217	275
2011	667	215	608
2012	675	241	660
2013	629	231	565
2014	647	189	447

Source: VDSA dataset

Table 8 shows the number of loans taken for different purposes. It shows that the number of loans is increasing for Agricultural purposes. On the other hand, it is declining for other productive purposes and consumption.

Table 9: Number of loans taken for agriculture from formal and informal sources.

Number of Loans from Formal/Informal Institutions for Agriculture		
Year	Formal	Informal
2009	382	163
2010	393	123
2011	456	211
2012	460	215
2013	450	179
2014	453	194

Source: VDSA dataset

Table 9 shows the number of loans taken for agriculture from formal and informal sources. The number of loans is increasing from both the formal and informal institutions. The increase in the formal institution is higher than the increase in the informal institution.

Table 10: Number of households which have taken a loan.

Number of Households having a Loan (All Purposes)	
Year	Number of HH with a Loan
2009	627
2010	698
2011	712
2012	715
2013	730
2014	706

Source: VDSA dataset

Table 10 shows the change in the number of households which have taken a loan. It includes loans for any purpose. The number of households having a loan has shown a consistent increase over the years. The numbers have increased from 627 in 2009 to 706 in 2014. There is an increase of 12.6% in the number of households who have taken a loan.

Table 11: Number of households which have taken a loan for agricultural purposes.

Number of Households having a Loan for Agricultural Purposes	
Year	Number of HH with Agri Loan
2009	250
2010	290
2011	297
2012	314
2013	303
2014	337

Source: VDSA dataset

Table 11 shows the change in the number of households which have taken a loan for agricultural purposes. It shows an increase from 250 households in the year 2009 to 337 households in 2014. That is there is an increase of 34.8% in the number of households that have taken a loan for agricultural purposes.

Table 12: Number of loans taken for agricultural purposes state-wise.

Number of Loans by State for Agriculture and All Purposes										
Year	A.P (Agri)	A.P (All)	Guj (Agr)	Guj (All)	K.N (Agri)	K.N (All)	M.H (Agri)	M.H (All)	M.P (Agri)	M.P (All)
2009	192		42		106		176		34	
2010	207	492	49	67	64	166	174	218	22	65
2011	228	511	83	108	82	203	242	584	32	85
2012	238	528	47	78	87	239	261	644	42	88
2013	227	440	50	91	96	225	223	579	33	90
2014	240	415	81	128	103	235	174	414	49	92

Source: VDSA dataset

Table 12 shows the number of loans taken for agricultural purposes state-wise. It also includes loans taken for all purposes.

The number of loans for Agriculture by every state above is showing an increasing trend except for Maharashtra, which has shown an increase before the year 2013 and a decline in 2014.

The number of loans for all purposes is showing an increasing trend except for Andhra Pradesh.

Table 13: Percentage share of loans taken under subsidized rates of interest.

Percentage of Loans taken with interest rate up to 7% p.a. from formal/informal sources under Agricultural Loans		
Year	Formal	Informal
2009	62.04	2.45
2010	37.91	2.44
2011	69.44	30.56
2012	70	30
2013	76.36	23.64
2014	77.13	22.87

Source: VDSA dataset

Table 13 shows the percentage share of loans taken under subsidized rates of interest (with interest rate up to 7% p.a.) out of the total loans taken from formal institutions and out of the total loans taken

from informal institutions. It includes loans for agricultural purposes only. The table shows that the share of subsidized loans is increasing over the years in the category of loans taken from the formal institutions. On the other hand, when we look at the loans from informal institutions, we see that this share has shown many fluctuations and there is not a consistent pattern in the trend. But when we compare the values of the year 2009 and 2014, we see that the share has increased.

Table 14: Percentage share of loans taken under subsidized rates of interest for different purpose of loans.

Percentage of Loans taken up to 7% p.a. for a particular purpose			
Year	Agriculture	Other Productive Purposes	Consumption
2009	43.82	10.15	15.42
2010	29.46	9.22	17.82
2011	43.18	28.37	58.22
2012	37.04	21.99	55.76
2013	43.72	18.18	64.6
2014	45.29	26.46	53.02

Source: VDSA dataset

Table 14 shows the percentage share of loans taken under subsidized rates of interest (up to 7% p.a.) for different purpose of loans. An increase can be seen in the share for consumption and other productive purposes. For agriculture, the share has been somewhat constant. The increase has been the highest for consumption loans and the lowest for agricultural loans.

Table 15: State-wise percentage share of loans taken under subsidized rates of interest in total.

Percentage of Loan under each State with Interest rate up to 7% p.a. for Agriculture					
Year	Andhra Pradesh	Gujarat	Karnataka	Maharashtra	Madhya Pradesh
2009	34.9	76.19	36.79	52.84	29.41
2010	15.46	2.04	57.81	41.95	40.91
2011	19.74	55.42	51.22	57.44	50
2012	15.97	34.04	24.14	59.77	45.24
2013	17.62	44	54.17	61.43	72.73
2014	32.08	50.62	55.34	45.4	79.59

Source: VDSA dataset

Table 15 shows the percentage share of loans taken under subsidized rates of interest (with an interest rate up to 7%) in total for the five mentioned states. The table is based on loans for agriculture. In the year 2014, Madhya Pradesh has the highest percentage share and Andhra Pradesh has the lowest. When comparing 2009 with 2014, we see that Gujarat, Maharashtra and Andhra Pradesh has shown a decline in their shares. On the other hand, Karnataka and Madhya Pradesh have shown an increase.

Table 16: Number of Loans by States for Agriculture

No. of Loans by States for Agriculture					
Year	Andhra Pradesh	Gujarat	Karnataka	Maharashtra	Madhya Pradesh
2009	67	32	39	93	10
2010	32	1	37	73	9
2011	45	46	42	139	16
2012	38	16	21	156	19
2013	40	22	52	13	24
2014	77	41	57	79	39

Source: VDSA dataset

The number of loans for agriculture is increasing for every state except for Maharashtra.

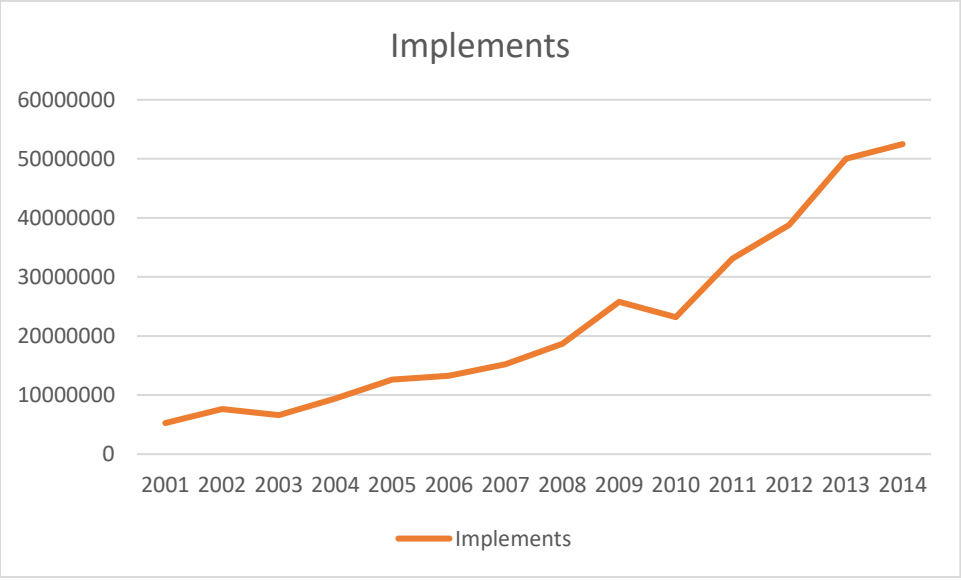
Table 17: Number of Loans by Purpose.

No. of Loans by Purpose			
Year	Agriculture	Other Productive Purposes	Consumption
2009	241	20	39
2010	152	20	49
2011	288	61	354
2012	250	53	368
2013	275	42	365
2014	293	50	237

Source: VDSA dataset

The number of loans has shown an increasing trend over the years for every purpose. Loans for consumption purposes has increased much more in 2014 compare with 2009 although it has declined in 2014 compared to 2013.

Figure 1: Purchase of Implements.

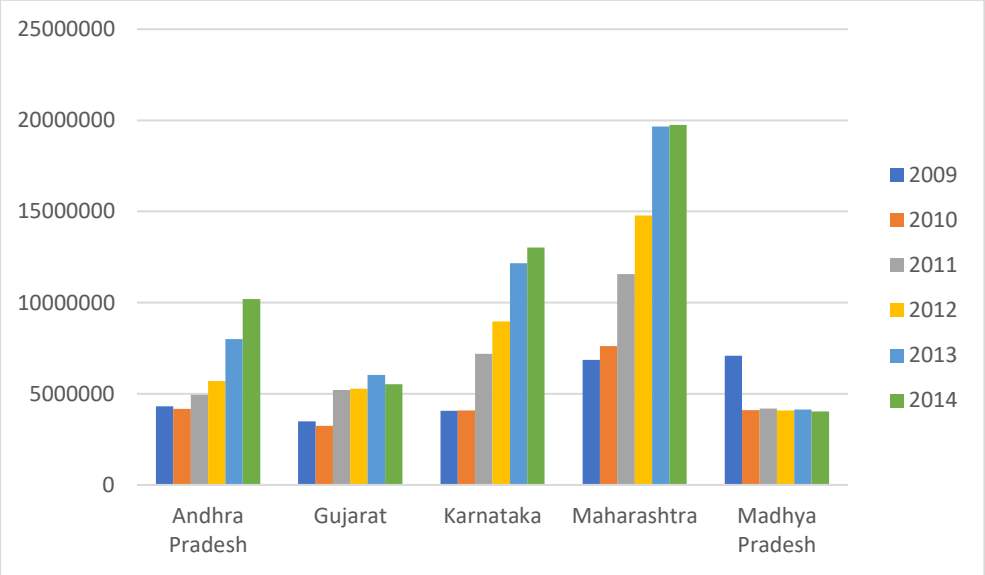


Source: VDSA dataset

The above figure shows the trend in the purchase of implements. It shows that the purchase of implements has been rising from the year 2001 to 2014. The increase is steeper from the year 2011. This can be due to the introduction of additional subvention for prompt repayments under the Interest

subvention scheme. This scheme was launched for short-term loans for the purchase of agricultural inputs.

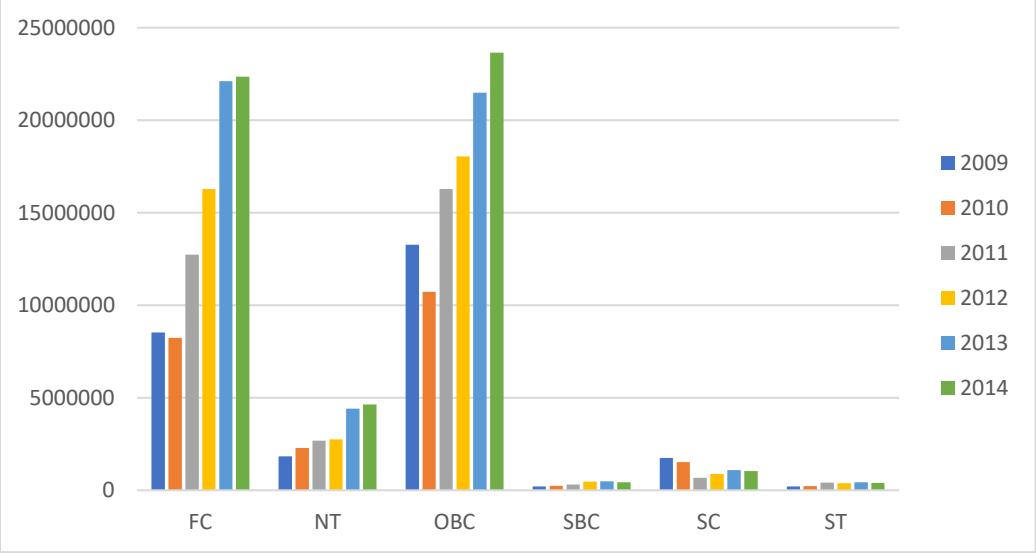
Figure 2: Implements State-Wise



Source: VDSA dataset

State-wise, Andhra Pradesh, Karnataka and Maharashtra have been showing an increasing trend in the purchase of implements from 2009 to 2014. Gujarat and Madhya Pradesh have not shown any specific trend in this period.

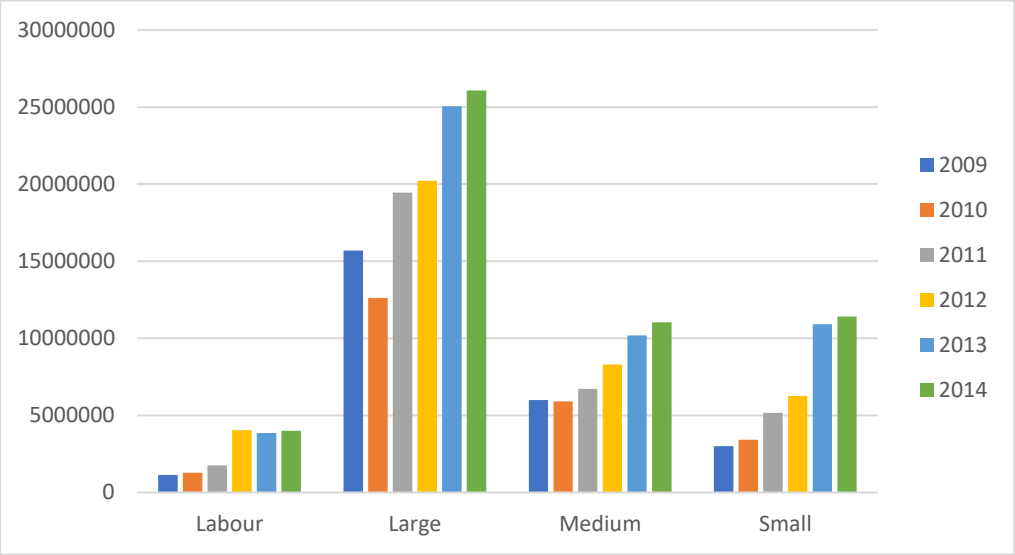
Figure 3: Implements Caste-Wise



Source: VDSA dataset

Caste-wise, there are wide disparities in the purchase of implements, as shown by the above figure. VDSA provides data based on six caste groups. These are: Forward Caste (FC), Other Backward Caste (OBC), Special Backward Caste/Socially and Economically Backward Caste/Extremely Backward Caste (SBC/SEBC/EBC), Scheduled Caste (SC), Scheduled Tribe (ST) and Nomadic Tribe (NT). From the above figure, we can see that the amount of purchase of implements is much higher for Forward Caste and Other Backward Caste when compared to other caste groups. Also, the caste-groups FC, OBC and NT are showing a rising trend, whereas we cannot see a particular trend for SBC, SC and ST groups.

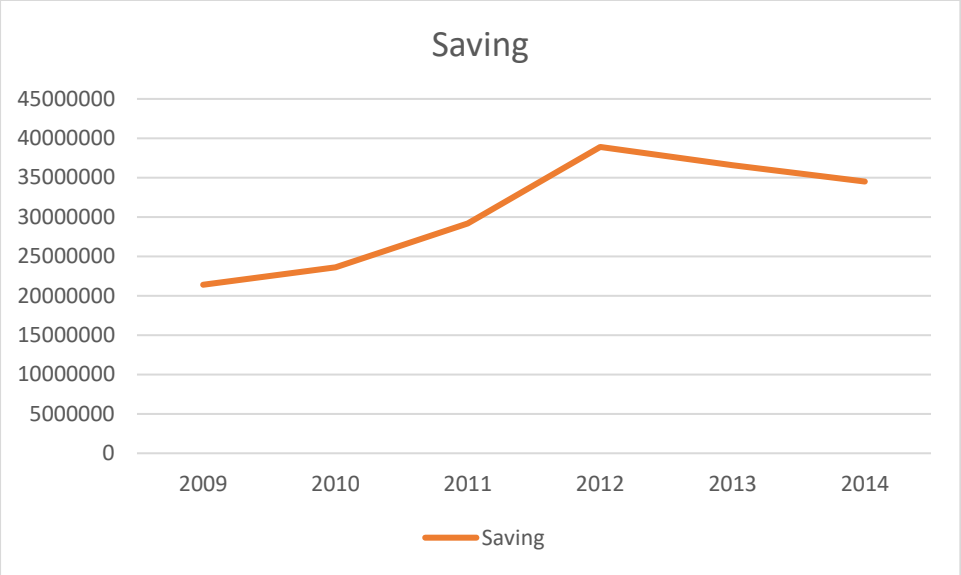
Figure 4: Implements Land-holding Wise



Source: VDSA dataset

For large, medium and small farmers, the rise in the purchase of implements has been very clear in recent years. Over the years, the purchase of implements shows an increasing trend for these three categories. For the labour class, the amount of implements purchased is higher in the year 2014 as compared to the year 2013 but is low when compared to the year 2012. The trend rise in the amount of implements purchased can be a result of the introduction of the interest subvention scheme in the year 2006 and an increase in the rate of subvention in the year 2009 and 2011.

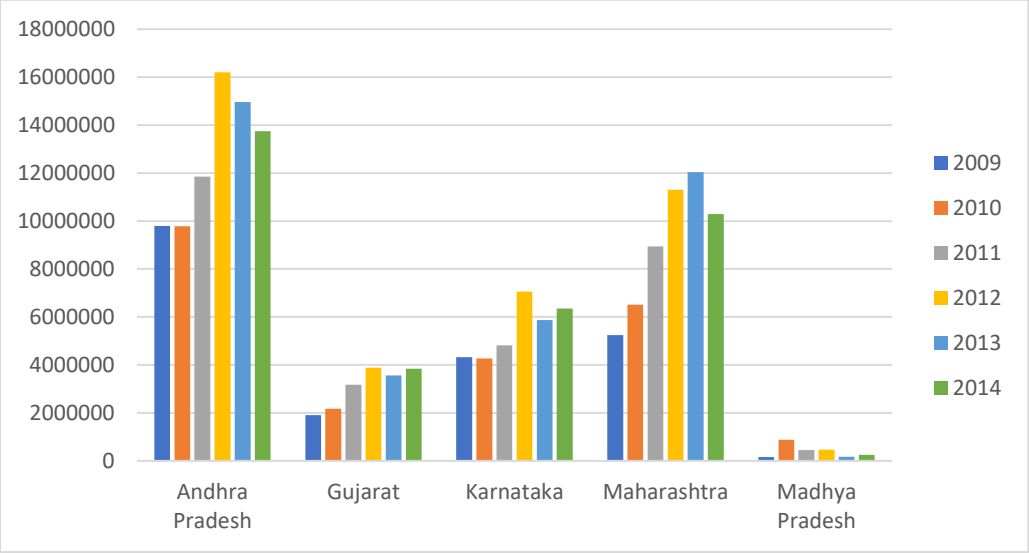
Figure 5: Savings



Source: VDSA dataset

The above figure shows the overall savings over the years. It shows that the savings are rising over the years from 2009 till 2012. From the year 2012, there is a decline till 2014.

Figure 6: Savings State-Wise

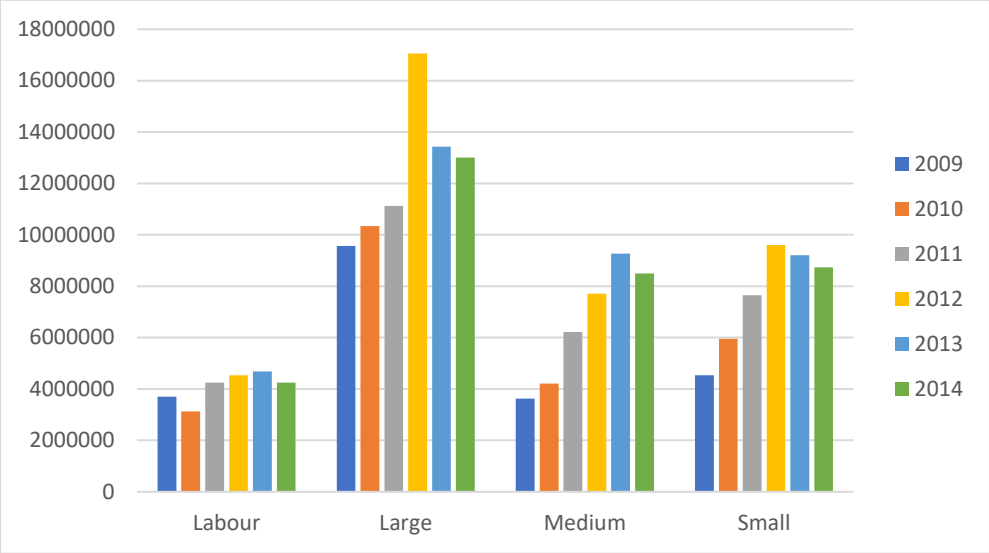


Source: VDSA dataset

Andhra Pradesh has the highest amount of savings followed by Maharashtra, Karnataka and Gujarat. The savings of Madhya Pradesh is the lowest and very less compared to other states; this is because only one district was surveyed for Madhya Pradesh, whereas for all the other states, two districts were surveyed. For Andhra Pradesh, Gujarat, Karnataka and Madhya Pradesh, there is a decline in the

amount of savings in the next year from the year 2012. This may explain the decline in the overall savings trend before.

Figure 7: Saving Land-holding Wise



Source: VDSA dataset

The above figure shows the apparent disparity in the amount of savings across the land class of farmers. Clearly large farmers have a higher amount of savings and labour the least amount of savings. For large and small farmers, the highest amount of savings was in the year 2012, from which we see a decline. This might also be one of the contributions for the decline in the overall amount of savings. For every category, recent one or two years have shown a decline.

3.2) Conclusion:

The mean interest rate for agricultural loans, consumption loans and loans for other productive purposes shows a declining trend from 2009 to 2014. For agriculture, this rate has been lower for all years when compared to the other two categories. This is because of the low level of mean interest rate from the formal sector in agriculture comparatively. The decline in the trend has been the lowest for agriculture and the highest for consumption. Under which loans for consumption has shown a decline in the mean interest rates both in informal as well as formal sector. On the other hand, for agriculture, there has not been a decline in the formal sector when comparing the figures for 2009 and 2014. The decline in the mean interest rate of consumption loans overall is twice as much when compared to agriculture loans.

When comparing for all loans for formal and informal sector, the decline in the mean interest rate of informal sector loans has been more than five times to that of loans from formal sector.

State-wise, the mean interest rate for all kind of loans has shown a declining trend for Andhra Pradesh, Karnataka, Maharashtra and Madhya Pradesh. It has risen for Gujarat. Madhya Pradesh has shown the highest decline among states. On the other hand, for agriculture purposes, it is increasing for the formal sector for Andhra Pradesh, Gujarat, and Maharashtra and declining for Karnataka and Madhya Pradesh. But for the informal sector, the mean interest rate is declining for all states.

According to the land size, it is clear that there is a negative relation between the size of land and the rate of interest. The mean interest rate for farmers owning less land is high. On the other hand, it is low for farmers owning more land. The landless farmers are facing the highest mean interest and the large farmers the lowest. The mean interest rate for the formal sector is rising for landless labours. For marginal, small and medium farmers, it has not shown a decline. But it is declining for the large farmers at some level.

This clearly signals that the banking system may be still hesitant in providing loans to the lower class of farmers as found by studies before as well like Golait (2007). Also, the mean interest rate for landless labours is almost twice as much when compared to other category of farmers.

The number of loans and the number of households having a loan for agricultural purposes, both have increased over the years.

The percentage share of loans taken under subsidized rates from the formal sector has been increasing over the years.

In 2014, Madhya Pradesh had the highest percentage share of subsidized loans under its total loans for agriculture, and Andhra Pradesh had the lowest. Also, Madhya Pradesh has shown the most increase in its share.

The number of loans for agriculture overall and by states are increasing over the years except for Maharashtra.

The purchase of implements is increasing over the years and more steeply since 2011, when the incentive for prompt repayment was introduced under the Interest Subvention Scheme for short-term agricultural loans. This may be an indication of the Interest Subvention Scheme being effective. State-wise, Andhra Pradesh, Karnataka and Maharashtra have shown an increasing trend over the years.

Caste-wise, the disparities in the amount of purchase of Implements is clear. Forward caste (FC), Nomadic Tribe (NT) and Other Backward Class (OBC) are showing a clear increasing trend over the years. Also, by land class, large, medium and small farmers are showing an apparent rise in the purchase of implements over the years.

Savings shows a decline in the amount after the year 2012 after rising from 2009. Andhra Pradesh has the highest amount of savings followed by Maharashtra, Karnataka and Gujarat. The disparity in the amount of savings is also clear for different land classes.

Chapter 4

Impact of Interest Subvention Scheme (ISS) on Farm Households: A Case of Andhra Pradesh and Madhya Pradesh.

4.1) Introduction:

Studies like Dehejia et al. (2012) shows that changes in the rate of interest causes important responses in the demand for loan. The reduction in the interest rate can lead to more disbursement of credit through an increase in the demand for loan. As an input in agriculture, credit has been found to act as a mediating input enabling the use of other inputs. It is also associated with an increase in the productivity in agriculture (Narayanan, 2015). Credit by farmers can be for short-term or long-term. Short-term credit helps in the use of inputs required in the production cycle, and long-term credit helps in the growth of agriculture. Both of which can lead to an increase in productivity.

Over the years, there have been several attempts to increase the flow of credit to agriculture in India through institutional sources. These efforts have proved to be effective, and we have seen a rise in the flow of credit from institutional sources. One of the policies introduced in the year 2006-07 by the government was the interest subvention scheme. This scheme was based on the premise that a decline in the rate of interest on loans from the formal sector may increase the flow of credit from the formal sector and reduce the credit inflow from the informal sector.

This paper aims to examine the effect of Interest subvention scheme on the borrowings, savings and purchasing behaviour of the farmers. We have used the difference-in-difference method for estimation and have found a significant negative effect of the scheme on the informal borrowings of the farmers.

4.2) Interest Subvention Scheme:

To reduce the burden of interest rate on the farmers, a policy was introduced in the year 2006-07 known as the Interest Subvention Scheme (ISS). Under this scheme, the central government has announced a subvention of 2% interest rate to Cooperative Banks, Regional Rural Banks (RRBs) and Public Sector Banks on loans up to Rs 3 Lakh. These loans were usually provided at a 9% rate of interest. Under this scheme, the banks would have to provide short-term crop loans at 7% interest rate at the ground level, and the government will provide a subvention of 2% on these loans. Private Sector Banks were also covered under ISS from 2013-14. Private Sector Banks's rural and semi-urban branches were covered under the scheme.

In 2009-10, another major change in the policy took place. Government of India came up with additional subvention for those farmers who repay the loan on or before the due date of loan, up to maximum period of one year. This was termed as an incentive for prompt repayment.

This scheme has been continuing with some changes in the rates over the years. Table 1 below shows the changes in the rates over the year.

Table 1: Rate of Interest under Interest Subvention Scheme

Year	Rate of Interest (Subvention)	Rate of Interest (Incentive for prompt repayment)	Effective Rate of Interest
2007-08	2%	-	7%
2008-09	3%	-	6%
2009-10	2%	1%	6%
2010-11	1.5%	2%	5.5%
2011-12	2%	3%	4%
2012-13	2%	3%	4%
2013-14	2%	3%	4%
2014-15	2%	3%	4%
2015-16	2%	3%	4%
2016-17	2%	3%	4%
2017-18	2%	3%	4%

Source: taken from NABARD website, tentatively around September 2020.

This scheme provides loans to farmers at an effective rate of 4 per cent. This reduces the burden on the farmers for interest payments to a large extent. Provision of short-term loans at a lower rate can lead to increase in the use of required inputs, increase productivity, income and well-being of the farmers.

The scheme is implemented at the national level, but the states are free to provide any additional interest Subvention to the farmers. Some states have provided an additional subvention. For example, Uttar Pradesh has provided an extra subvention of 1.7% for Cooperative Banks and a rebate of 1 per

cent for those farmers who repay on time, unlike in Haryana, where the state government did not provide any additional interest rate subvention until 2013-14. This means that the effective rate was less in Uttar Pradesh as compared to Haryana till 2013-14.

4.3) Motivation of the study:

The interest subvention scheme was launched in the year 2006-07 with the aim of increasing the flow of short-term credit to agriculture. This scheme has been in place from a long time, but we still do not find much evidence of the impact of this policy. There are few studies which have attempted to find the impact of this policy on farm households which are Rajeev and Vani (2019) and a study by the Bankers Institute of Rural Development (BIRD) conducted in the year 2015. There are several studies like Turvey et al. (2012) and Dehejia et al. (2012), which have shown that changes in the rate of interest can cause changes in the demand for loans. If this is true for Interest Subvention Scheme as well then this policy may be causing responses in the demand for loans and other variables in India. So, studies which attempt to look at the effect of this policy on farm households can prove to be informative for policymakers and provide a reflection on this policy.

We have attempted to analyse the effect of this policy on some variables. The findings of this study can add to the literature on the interest subvention scheme. The dearth of literature on this policy is the main motivation for this study.

4.4) Objectives of the study

This study is based on four objectives, which are

1) To find out the impact of Interest Subvention Scheme on Formal sector borrowings.
2) To find the impact of Interest Subvention Scheme on Informal sector borrowings.
3) To find the impact of Interest Subvention Scheme on Savings of the households.
4) To find the impact of Interest Subvention Scheme on the purchase of Implements.

4.5) Data source and methodology

For our analysis, we have used Village Dynamics in South Asia (VDSA) dataset of ICRISAT. It provides longitudinal data on social and economic indicators of the semi-arid tropics of Asia and Africa. We have used data for Andhra Pradesh and Madhya Pradesh from 2009 to 2014. We have used these two states because no combinations of any other states could satisfy the parallel trends assumption (explained in section 4.5.1 below). The detailed rate of interest for all states is given in table A2 in the Appendix. The detail about the dataset was discussed in chapter 1 of this thesis.

Our estimation is based on two states, i.e., Andhra Pradesh and Madhya Pradesh. We have used data for pre-and-post intervention periods, and based on table 2 below, we have used Madhya Pradesh as the Treatment group and Andhra Pradesh as the control group. This is because Madhya Pradesh has provided loans at 0% interest rate from the year 2012-13 for loans up to Rs 3 lakh. On the other hand, Andhra Pradesh has provided loans at 0% interest rate from the year 2011 for loans only up to Rs 1 Lakh. This means that Madhya Pradesh have provided loans of more amount (i.e., 2 Lakh more) as compared to Andhra Pradesh at zero percent rate of interest. This additional benefit provided in terms of a higher upper limit of the loan has been taken as the Treatment. The year of the intervention has been taken as 2012-13.

The table below provides information on the additional subvention that the two states have provided. This data is gathered through online newspaper articles and information from Bank's online portals. We did not come across any formal and detailed information on the additional subventions given by the states so this source has been used.

Table 2: Additional Subvention by states

States	Loans available at the rate of interest	Year	For specified amount	Time restriction	Any specific bank mentioned
Andhra Pradesh	0%	Rabi - 2011	Up to 1 Lakh	-	
Madhya Pradesh	0%	2012-13	Up to 3 Lakh	If paid on time	Cooperatives

Source: Online newspaper articles and information from Bank's online portals.

We have used T-test to analyse the difference between the interest rate of formal sector lending of the two states for both pre- and post-treatment periods. Table 3 below shows the T-Test results of the difference in the average interest rate of Andhra Pradesh from that of Madhya Pradesh. It shows that for both categories, i.e., less than 1 lakh and less than 3 lakh, the difference in the average interest rate is significant for both pre-treatment and post-treatment periods. It shows that for both the amounts (less than 1 lakh and less than 3 lakh), the difference between the average interest rate of Andhra Pradesh and Madhya Pradesh has risen after the treatment.

This suggests that the difference between the average interest rate between Andhra Pradesh and Madhya Pradesh has increased after the introduction of the treatment in Madhya Pradesh.

Table 3: T-Test of the difference in the average interest rate of A.P. and M.P.

	2009-2011	2012-2014
	Pre-Treatment	Post-Treatment
Less than 1 Lakh	1.73***	2.00***
Less than 3 Lakh	1.55***	1.83***

Source: VDSA data.

For the method of estimation, the difference-in-difference estimation has been used. To find out the effect of a policy on the outcome variable, a pre-post assessment may be used. That is, the outcome after the implementation of the policy is compared with the outcome before the policy. But if there are other time-dependent trends in outcomes which are unrelated to the policy change then the analysis may lead to inaccurate conclusions. The difference-in-difference estimation addresses this problem. In a difference-in-difference estimation, we use two groups in which one is exposed to the policy, and the other is not exposed to the policy. But both the groups are experiencing the same trends (unrelated to the policy). We compare the outcomes after and before the policy change in the two groups and subtract the effect of these unrelated trends in outcomes. This is done by taking two differences in outcomes. The first difference is taken in the outcome after and before the policy change in the two groups, as shown in table 4 below as $(\bar{Y}_{1T} - \bar{Y}_{0T})$ and $(\bar{Y}_{1C} - \bar{Y}_{0C})$. The change in the outcome related to the policy change and which is free of the time-trends unrelated to the policy is given by the difference- $\beta_{DiD} = (\bar{Y}_{1T} - \bar{Y}_{0T}) - (\bar{Y}_{1C} - \bar{Y}_{0C})$.

Table 4: The Difference-in-Difference research design

	Time: 0	Time: 1	Difference
	Pre	Post	
Treated Group (Madhya Pradesh)	$\bar{Y}_{0T}$	$\bar{Y}_{1T}$	$\bar{Y}_{1T} - \bar{Y}_{0T}$
Control Group (Andhra Pradesh)	$\bar{Y}_{0C}$	$\bar{Y}_{1C}$	$\bar{Y}_{1C} - \bar{Y}_{0C}$
Treatment Effect (Difference-in-Difference)			$\beta_{DiD} = (\bar{Y}_{1T} - \bar{Y}_{0T}) - (\bar{Y}_{1C} - \bar{Y}_{0C})$

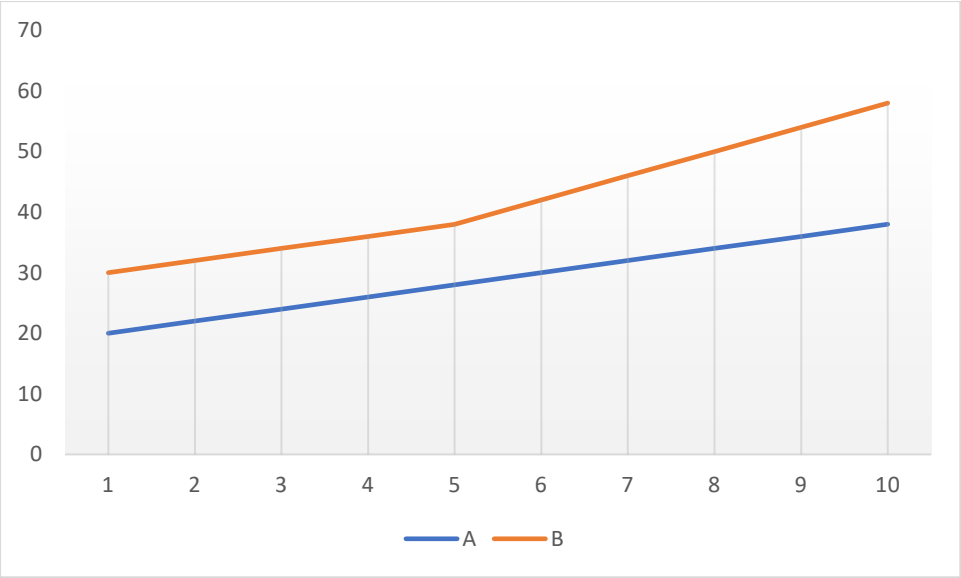
Source: Table adopted from Deschacht and Goeman (2015)

The variable $\bar{Y}$ shows the average for each of our dependent variables Share of formal borrowings/Share of informal borrowings/Savings/Purchase of implements. The index T/C shows whether it is the Treated group or the Control group, and the index 0/1 shows the time period before the intervention or after the intervention.

4.5.1) Parallel Trends Assumption

Estimation through difference in difference method requires the fulfilment of parallel trends assumption. '*The parallel trends assumption states that, although treatment and comparison groups may have different levels of the outcome prior to the start of treatment, their trends in pre-treatment outcomes should be the same. This implies that, absent treatment, outcomes for the treatment and comparison groups are expected to change at the same rate'* (Ryan et al., 2018, Page number: 1). This assumption is essential to show that the trend in the outcome, which moves similarly in the two groups prior to the treatment, moves at different rates after the treatment. Due to this, we get the difference in the outcome between our treated and non-treated group after the treatment, which is given by our difference-in-difference estimate. To explain what is parallel trends assumption we consider figure 1 and figure 2 given below.

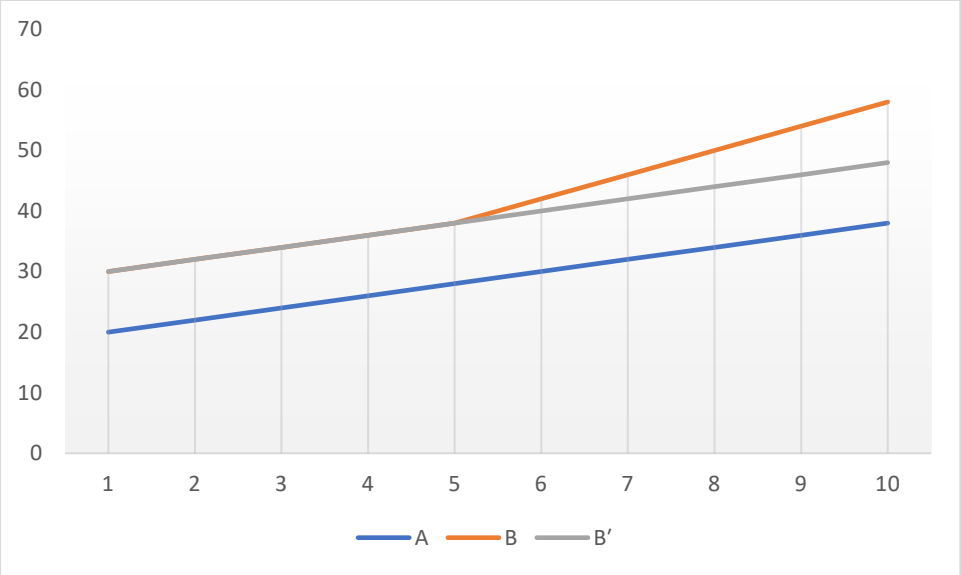
Figure 1: Parallel trends assumption



Source: Hypothetical data.

Let us first consider figure 1, which shows hypothetical trend lines of two states, State A and State B, for a common variable, let's say, formal sector borrowings. The blue line shows the trend of formal sector borrowings for state A and the orange line shows the trend of formal sector borrowing for state B. The X-axis shows the time period from year 1 to year 10, and the Y-axis shows the amount of formal sector borrowings in lakh rupees. Now let's suppose that a treatment has been introduced from period five in state B and the same has not been introduced in state A. Before period five, the two lines are parallel. On the other hand, after period five i.e., after the introduction of the treatment, trend line of state B starts increasing at a higher rate as compare to state A. This makes the trend line of state B steeper. This suggests that before the treatment, the trend line of both states increased at the same rate. But after the introduction of the treatment, formal borrowings of the state which received the treatment increased at a higher rate.

Figure 2: Parallel trends assumption



Source: Hypothetical data.

Now let's look at figure 2. Figure 2 shows an additional line B′. This is the trend line for state B if it had not received the treatment. Line B and line B′ are overlapping each other till period five. But after the introduction of the treatment in period five, line B increases at a higher rate and line B′ continue to be parallel, showing the trend in the absence of the treatment for state B. The difference between the two lines B and B′ is the effect of the treatment and is given by the difference in difference estimate.

To use the difference in difference estimation, the assumption that the two trends are parallel before the introduction of the treatment has to be satisfied. This is our parallel trends assumption.

In this study, before using the difference in difference estimate, we have checked for the assumption of parallel trends. The equation for checking the parallel trends assumption is given in section 4.5.2 below as equation 1. The null hypothesis for the parallel trends assumption is that the trends of the two group before the treatment are parallel and the alternative hypothesis is that the trends of the two groups before the treatment are not parallel. Hence, a significant value implies that there is statistical difference in trend between the two groups in the pre-treatment period and an insignificant value implies that there is no statistical difference in trend between the two groups in the pre-treatment period.

4.5.2) Regression Equation

We have used four outcome variables which are Share of Formal Borrowings, Savings, Share of Informal Borrowings and Purchase of Implements. We have used equation 1 below to check for the parallel trend assumption and equation 2 for the difference-in-difference estimate.

$$Y_{st} = \alpha_0 + \beta_0 Treat_s + \gamma_0 PreTreatmentYear_t + \delta_0 Treat_s * PreTreatmentYear_t + \varphi_0 Cont_{it} + e_{st} \quad \text{----------(1)}$$

$$Y_{st} = \alpha_1 + \beta_1 Treat_s + \gamma_1 PostT_t + \delta_1 Treat_s * PostT_t + \varphi_1 Cont_{it} + e_{st} \quad \text{----------(2)}$$

Where,

Y = Share of Formal Borrowings/Savings/Share of Informal Borrowings/Purchase of Implements

s = represents the state

t = represents the time period

$Treat_s$ = is a dummy variable which takes a value equal to 1 if the state is from the treatment group.

i.e. $Treat_s$ = 1, if s =Madhya Pradesh

= 0, Otherwise (s = Andhra Pradesh)

$PreTreatmentYear_t$ = is a dummy variable used for Checking the Parallel Trend assumption.

$PostT_t$ = is a dummy variable which takes a value equal to 1 for the years after and including the year of treatment.

$Treat_s * PreTreatmentYear_t$ = gives the co-efficient for parallel trend assumption.

δ_0 is the coefficient for the parallel trends assumption.

$Treat_s * PostT_t$ = is an interaction between the time and state dummy variables.

δ_1 = is the Difference-in-difference estimate.

$Cont_{it}$ = includes our various control variables, which include Household-level controls and others. These control variables are Caste group, Religion of the Household, Family Size, Age of the Head of the family, Years of Education of the Head, Operational Landholding, Rainfall, Total crop Area, Total Irrigated Area and Number of Bank Branches.

Additionally, we control for other explanatory variables which could affect our outcome variables. One of these factors is the difference in the caste group. Usually, the higher caste groups have a better endowment of land and capital, which could help them in getting credit compared to the lower caste group. So, the caste category of the household could influence our outcome variables. The religion of the household can also influence the outcome variables in the same manner. Family size could also have influence on our outcome variable. A larger family can either increase borrowings, reduce

savings and investment expenditure or have an opposite effect on these variables if the number of earning members are more. The age of the Head of the family can be a proxy for experience for a household. Years of education of the head can indicate the household's financial literacy, which can have big influence our outcome variables. The operational landholding directly indicates the land owned by a household which can serve as collateral for borrowings from financial institutions. So, households with more land are more likely to get a loan from financial institutions as compared to households with less or no land. The difference in the rainfall in different areas can affect the production of crops and influence the level of borrowing requirements, savings and investment capability. The total crop area can be directly related to an area's borrowing requirements. Total irrigated area indicates the agricultural infrastructure of an area. The amount of irrigated area directly affects the productivity in a region. The difference in irrigated areas can affect our outcome variables. The number of bank branches could affect the amount of credit disbursement in a region. An area with a high number of bank branches can disburse more credit than an area with fewer bank branches. We have controlled for all these variables in our estimated models.

4.6) Results

The difference in difference estimate for the share of formal borrowings and purchase of implements is insignificant. For Savings, the parallel trends assumption was not satisfied, although the coefficient was found to be positive.

We have found a significant negative effect on the share of informal borrowing in total after the introduction of the treatment.

Table 5: Results, difference-in-difference analysis

Outcome Variable	Independent Variable	Co-efficient	Std. Err.	P-Value
Informal Borrowings Share	Treat*Post	-34.876***	9.707	0.00
Formal Borrowings Share	Treat*Post	1.76	7.93	0.825
Savings	Treat*PreTreatment	66335.3**	27495.89	0.016
Purchase of Implements	Treat*Post	-18577.96	32534.35	0.568

Source: Based on author's computation using data from VDSA.

Table 5 above shows that the share of informal borrowing is significant. It shows that the share of informal borrowings has reduced by 34.8% more in our treated state i.e. Madhya Pradesh as compared to our controlled state i.e. Andhra Pradesh. The other variables which are significantly affecting our dependent variable are caste group, total irrigated area and the number of bank branches. The detailed information on our coefficients is given in table A1 in the Appendix at the end of the thesis.

4.7) Conclusion

Credit is an essential input for the growth of agriculture. Credit to agriculture can enhance the use of inputs such as fertilizers, pesticides, high yielding variety of seeds etc which can increase the production of crops. Many policies have been introduced over the years to increase the flow of credit to agriculture. One of these policies was introduced in the year 2006-07. This policy is known as the interest subvention scheme. This policy is aimed at increasing the flow of short-term credit to the farmers. This paper has aimed to analyse the effect of this policy on our four outcome variables which are, the share of formal sector borrowings, the share of informal sector borrowings, savings and the purchase of implements. We have used difference-in-difference analysis for estimation. Our treatment state is Madhya Pradesh, and our controlled state is Andhra Pradesh. Coefficients for the share of formal sector borrowings and purchase of implements have not been found significant. Savings has not satisfied the assumption of parallel trends. But the share of informal sector borrowings has shown a negative significant effect.

We have found that the difference between the average interest rate of Andhra Pradesh and Madhya Pradesh is significant for both pre-treatment and post-treatment periods, and this gap has increased after the intervention period.

Our result suggests that the share of Informal borrowing has reduced by around 35% in Madhya Pradesh as compared to Andhra Pradesh in the post-treatment period. Hence, there is a decline in the Informal borrowings in the treatment group post-treatment. The other variables which are significantly affecting are Caste group of the Household, Total Irrigated area and the number of bank branches.

Chapter 5

Conclusion

Policymakers and governments have long been bothered by informal credit in rural areas. The exorbitant rate of interest charged by the informal moneylenders puts the farmers under a huge financial burden. To avoid this problem, several attempts have been made so far as to increase the flow of agricultural credit from the formal sources. The formal sources provide credit at reasonable rates of interest to the farmers. These formal sources include co-operative banks, commercial banks and regional rural banks. One of the policies which aims at reducing the financial burden on the farmers by reducing the level of interest rate to be paid by them is the Interest Subvention Scheme. This scheme aims at increasing the level of short-term credit disbursement to the farmers. The scheme provides loans to farmers at subsidized rates of interest. Studies like Dehejia et al. (2012) have shown that movements in the rates of interest causes expected changes in the demand for loans. So, the study of the effect of this policy becomes essential. This thesis also attempted to analyse the effect of this policy on the farmers. We had four major objectives, which were:

1) To find out the impact of Interest Subvention Scheme on Formal sector borrowings.
2) To find the impact of Interest Subvention Scheme on Informal sector borrowings.
3) To find the impact of Interest Subvention Scheme on Savings of the households.
4) To find the impact of Interest Subvention Scheme on the purchase of Implements.

We have used Village Dynamics in South Asia (VDSA) data for our analysis. Also, for the method of estimation, we have used difference-in-difference analysis. We have used data for two states and divided them into a control group and a treatment group. The two states which we have analysed are Madhya Pradesh and Andhra Pradesh. We have taken Madhya Pradesh as the treated group and Andhra Pradesh as the control group.

The second chapter, ' Major Policies undertaken in the banking sector and the Performance of Agricultural Credit in India', discusses the major policies and their impacts on agriculture credit in five distinct phases. Each phase discusses a major policy of that period and its impact on agricultural credit. Prior to Indian independence, to tackle the problem of informal credit cooperative credit societies were set up. This came after the cooperative credit society act of 1904 and 1912 were introduced. In this phase, the focus began to make cooperative the providers of rural credit. After independence, the share of cooperatives in the total institutional credit increased. But the setup of cooperative banks could not solve the problem of informal credit on a large scale. So, in the year

1969, 14 major commercial banks were nationalised as to increase the flow of institutional credit. This led to positive results for agricultural credit disbursement. The share of institutional credit doubled, increasing from 32% in 1971 to 66.3% in 1991 and the share of non-institutional credit declined to half, reducing from 68% in 1971 to 33.7% in 1991. Commercial banks dominated the flow of credit during this period, and their share also increased in total institutional credit. The share of institutional credit to agriculture between 1971 and 1981 increased by 24.2%, whereas it increased by 10.1% between 1981 and 1991. The low rise in the share between 1981 and 1991 was due to the decline in the expansion of bank branches and growth of priority sector lending during this period. After the reforms, the bank branch licensing policy was abolished. This led to a drastic decline in the growth of rural and semi-urban bank branches of commercial banks. The number of rural and semi-urban bank offices, which increased at 100.41% between 1980 to 1991, increased at only 2.45% between 1991 and 2000 and even showed a decline between 2000 and 2005. Also, according to Hoda and Terway (2015) the expansion of rural bank branches which showed a rise of 102.64% from 1975 to 1991, increased at only 28.67% from 1991 to 2001. Due to this reason, the share of institutional credit declined from 66.3% in 1991 to 61.1% in the year 2002. In the year 2004, the government announced a policy to increase the flow of agricultural credit by twice as much over a period of three years. In the year 2006-07, Interest subvention scheme was launched which provided crop loans to the farmers at lower rates of interest. These policies led to a rise in the disbursement of agricultural credit and the share of institutional credit increased from 61.1% in 2002 to 64% in 2013. This rise was also due to the increase in the share of priority sector lending and the increase in the number of rural and semi-urban bank branches.

Chapter 3 of the thesis analyses the trends of some of the variables using the VDSA data. We find that the mean interest rate for agricultural loans, consumption loans and loans for other productive purposes shows a declining trend from 2009 to 2014. When we compare the figures for 2009 and 2014, we find that the mean interest rate has not declined in the formal sector for agriculture. According to land size, we find that the mean interest rate for farmers owning less land is high and the mean interest rate for farmers owning more land is low. Large farmers face the lowest mean interest rate, and landless farmers face the highest. The mean interest rate for the formal sector is rising for landless labours. For marginal, small and medium farmers, it has not shown a decline. But it is declining for the large farmers at some level. This clearly signals that the banking system may be still hesitant in providing loans to the lower class of farmers as found by studies before as well like Golait (2007). The number of loans, the number of households having a loan for agricultural purposes and the percentage share of loans taken under subsidized rates from the formal sector are all increasing over the years. In 2014, Madhya Pradesh had the highest percentage share of subsidized loans under its total loans for agriculture, and Andhra Pradesh had the lowest. Also, Madhya Pradesh has shown the most increase in its share. The purchase of implements is increasing over the years, and the

increase is steeper from the year 2011. This was the year when the incentive for prompt repayment was introduced under the Interest Subvention Scheme. Savings shows a rise from the year 2009 and then declined from the year 2012. Andhra Pradesh has the highest amount of savings followed by Maharashtra, Karnataka and Gujarat.

Chapter 4 of the thesis is titled 'Impact of Interest Subvention Scheme (ISS) on Farm Households: A Case of Andhra Pradesh and Madhya Pradesh'. This chapter attempts to analyse the effect of Interest Subvention Scheme on four variables, which are, the share of formal sector borrowings, the share of informal sector borrowings, savings and purchase of implements. The interest subvention scheme was launched in the year 2006-07 with the aim to increase the flow of short-term credit flow to the farmers. We used a difference-in-difference analysis for estimation. Our treatment state was Madhya Pradesh, and the controlled state was Andhra Pradesh. We have found that the difference between the average interest rate of Andhra Pradesh and Madhya Pradesh is significant for both pre-treatment and post-treatment periods, and this gap has increased after the intervention period. We found that the coefficient for the share of formal sector borrowings and purchase of implements was insignificant. Our variable savings did not satisfy the parallel trends assumption. But our variable, the share of informal sector borrowings, has shown a negative significant effect. That is, our results suggests that the share of informal borrowings has reduced by around 35% in our treatment group (Madhya Pradesh) as compared to the control group (Andhra Pradesh) in the post treatment period. The other variables which are significantly affecting are Caste group of the Household, Total Irrigated area and the number of bank branches.

Appendix:

Table A1: Regression results: All variables

Variable	Coefficient	Std. Err.	P-Value
Treat*Post	-34.876***	9.707	0.000
Family Size	0.405	0.987	0.68
Age of the Head of the Family	-0.081	0.136	0.554
Years of Education of the Head	-0.165	0.433	0.703
Caste Group	8.012***	2.05	0.000
Operational Landholding	0.265	0.561	0.637
Rainfall	0.0061	0.004	0.340
Total Crop Area	-0.415	0.435	0.340
Total Irrigated Area	3.440**	1.439	0.018
Number of Bank Branches	-0.100***	0.025	0.000
Treat	30.237***	7.819	0.000
Post	5.921	3.63	0.104

Source: Based on author's computation using data from VDSA.

Table A2: Additional Subvention: All States

State	Loan available at rate of interest	Year	For specified amount	Time restriction	Any specific bank mentioned
Gujarat	-	-	-	-	
Andhra Pradesh	0	Rabi - 2011	Up to 1 Lakh	-	
Karnataka	6%	2004-05 and 2005-06			Cooperatives
	(5.5% - to be given by the state government)				
	4%	2006-07			Cooperatives
	(I.e., from ISS at 7% minus 3% from state = 4%)				
Karnataka	3%	2008			Cooperatives
	1%	2011-12	Up to 3 Lakh		Cooperatives
	0%	2012	Up to 1 Lakh		Cooperatives
	1%	2012	Above 1 Lakh to 3 Lakh		Cooperatives
	0%	2013-14	Up to 2		Cooperatives

			Lakh		
	1%	2013-14	Above 2 Lakh up to 3 Lakh		Cooperatives
	0%	2014	Up to 3 Lakh		Cooperatives
Maharashtra	0%	2011	Up to Rs 50000	If paid on time	
Madhya Pradesh	0%	2012-13	Up to 3 Lakh	If paid on time	Cooperative

Source: Online newspaper articles and information from Bank's online portals.

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