

Capital Investment and Institutional Credit to the Farmers¹

NCAER, New Delhi

Investments in agriculture and allied sectors

Investments in agriculture and allied sectors contribute to growth in production and income, mitigation of poverty and enhanced food security, at both the national and household levels. Capital, be it in physical or human form, greatly contributes towards increasing the efficacy of the productive effort. Physical farm capital broadly comprises land improvement, irrigation structures (wells and canals), machinery, storage warehouses, livestock and animal husbandry, and R&D in agriculture. Human capital, on the other hand, signifies the skills and knowledge that farmers acquire and develop further. While most of the physical investments are undertaken by the farmers or the corporate sector, mainly in tea and coffee plantations, investments in major and medium irrigation systems, R&D, extension services, storage warehouses, roads, power, irrigation and such other infrastructure squarely fall under the public domain.

Private investment in agriculture is made by farmer households with corporates accounting for a miniscule share. The public investment 'in' agriculture refers primarily to agricultural and allied activities, and in major, medium and minor irrigation systems. The supportive public investment includes infrastructure such as rural roads, transport and energy. Together, the 'in' agriculture investments and the supportive investments are referred to as public investment 'for' agriculture.

The composition of public and private investment in agriculture has undergone a major change since the 1960s. The share of public gross fixed capital formation in agriculture and allied activities (GCFA), which was high at 44 per cent in the total GCFA, during the 1960s, has now fallen to an extremely low level. In 2014-15, private GCFA accounted for 83 per cent share, as compared to public GCFA at 15 per cent, and private corporate share at 2 per cent. The growth in both the components was slow in the pre-2000 period with public sector capital formation growing at extremely low levels vis-à-vis private investment. During the two decades prior to 2000 the public GCFA had grown by 0.3 per cent per annum and the private GCFA at 2.5 per cent per annum.

The prevalence of lower public GCFA has been explained by the diversion of expenditure towards the revenue account owing to an increase in the input subsidies and day-to-day expenses, low preference by the government for spending on agriculture, and procurement of foodgrains. In contrast, a slower increase in private investment particularly in the pre-2000

¹Extracts from Chapter 3 of the DFI Report Volume II, "Status of farmers' Income: Strategies for Accelerated Growth.

period has been attributed to deceleration in the rate of growth in public investment, unfavourable terms of trade, and the inadequate flow of institutional credit. A big push in the public GCFA along with credit is visible during 2000 to 2013, which appears to have induced higher private GCFA. Growth rates in both the components have picked up since 2000, public GCFA growing at 5.9 per cent per annum and the private GCFA at 8.8 per cent per annum.

It has been observed that there is a strong complementarity between the public and the private capital formation. The increase in private GCFA has materialised in terms of the growing number of farm holdings, increase in the flow of institutional credit, and diversification towards high-value crops, coupled with an increase in the demand for processed food and favourable terms of trade. Increased levels of investment, complemented with other factors seem to have helped agriculture achieve a higher rate of growth in many states, national average being close to 4 per cent during the mid-2000s.

Notwithstanding an impressive rate of growth in the GCFA, its share in the GCF in the economy has been declining. During 1960-61, the share of GCFA in the total GCF was 16.6 per cent, which rose further to peak at 21.5 per cent in 1968-69, and then decelerated during the two subsequent decades. Although some improvement was observed in the share of GCFA in the GCF in 2001-02, at 11.9 per cent, it again fell to 7.7 per cent in 2012-13. This decline in the GCFA suggests that capital formation in the industry and services sector has been growing at a much faster rate as compared to that in agriculture.

Private investment in agriculture

The fixed capital expenditure in farm business (FCEFB - synonymous with private investment in agriculture and allied activities) by rural households at 2004-05 prices increased from Rs. 753 per household in 1981 to Rs. 815 per household in 1991, fell to Rs. 669 in 2002, and then shot up again to Rs. 1,631 in 2012.

Despite an impressive increase in the FCEFB, its share in the gross capital expenditure (GCE) went down from nearly 20 per cent in 1981 to 15 per cent in 1991, and went up slightly by three percentage points in 2012. Three states, viz., Haryana, Bihar and Tamil Nadu, experienced a significant decline in the share of investment in agriculture in gross investment. This points to increasing expenditure on residential land or other investments by the rural households, which is undertaken at the expense of farm investments.

A modest rate of growth in farm FCEFB (1980s and 1990s) for almost two decades was followed by a significant increase at 9.3 per cent per annum during the 2000s. With a few exceptions, most of the states had recorded negative rates of growth in FCEFB during the 1980s and 1990s. Most of the states experienced high rates of FCEFB during the 2000s (2002-2012) with exceptions of Haryana, Odisha, Tamil Nadu, and Uttar Pradesh. Massive

public investments in irrigation, provision of input subsidies, favourable terms of trade, and increased flow of credit seem to have pushed up private investment, especially in the less developed states.

As regards the composition of private investment in agriculture, the bulk of the investment of rural households in 1981-82 went into the purchase of machinery and transport (46.1 per cent), followed by expenditure on irrigation structures (25.4 per cent), and on land improvement (14.8 per cent). Irrigation investment was observed to have increased in 1991-92 as its share in the total FCEFB went up to 31.8 per cent. Later in 2012-13, it was observed that the largest expenditure share (more than 60 per cent) was in implements and transport, livestock and irrigation structures.

This clearly indicates the preference of farmers for certain assets over the years. The households devoted a substantial share of expenditure on livestock (23 per cent) during 2012-13. Among all the assets, transport, machinery and implements, livestock and irrigation together account for 80 per cent of the rural household's investments. Farmers in the hilly regions tend to spend less on irrigation structures and more on land improvement, livestock and farm buildings. In contrast, rural households in the less developed states incur a higher share of expenditure on irrigation. A positive rate of growth in each asset is visible in almost all the states.

Across various land holding sizes, the small and marginal farmers continue to have a much lower share in total investment. The combined share of marginal and small farmers in FCEFB is less than 10 per cent as compared to that of farmers in the semi-medium and medium categories, at 43.2 per cent. Small farmers have a reasonably higher share of investment in the states of Gujarat, Haryana, Kerala, Rajasthan, and West Bengal.

Contribution of institutional credit to private investment in agriculture

Credit acts as an enabling and critical input in the production process. Studies reveal that loans from institutional sources, viz. commercial banks, regional rural banks and cooperatives, provide access to and usage of fertilisers, seeds and other inputs, and are also highly correlated with capital formation. Nearly 86 per cent of the farm investment in India is undertaken through borrowed money from both institutional and non-institutional sources. The farmers' dependence on the borrowed amount for investment is more than 50 per cent across all the states, and is relatively higher in the developed states – standing at more than 90 per cent in Andhra Pradesh, Kerala, Tamil Nadu, Punjab, Karnataka, Maharashtra and Madhya Pradesh (Table 1).

Information was also evaluated to assess how much of the total borrowings for such long-term investments are through institutional sources. While the national average is estimated to

be 63.4 per cent, the sub-national picture shows the agriculturally developed states to be reaping the benefits emanating from financial institutions. This suggests, that nearly 54 per cent of the investment is undertaken by the farmers through institutional loans. The outreach of banks for farm loans needs to be increased in Andhra Pradesh, Bihar, Jammu & Kashmir, Rajasthan, Tamil Nadu, and Uttar Pradesh, as the share of investment from institutional sources is relatively low in these states, varying between 41 per cent and 55 per cent.

Table 1: Percentage of farm investment from borrowings and share of institutional credit in total borrowings in 2012-13

State	FCEFB	% of FCE from Borrowing	% of Borrowing from Institutional Agencies
Andhra Pradesh	1287	98.9	44.6
Assam	303	49.9	61.4
Bihar	172	70.2	53.2
Gujarat	3163	84.4	78.8
Haryana	2593	65.7	61.1
Himachal Pradesh	3412	42.6	64.2
J &K	1475	36.9	43.8
Karnataka	2430	89.2	58.4
Kerala	2188	95.5	82.7
Madhya Pradesh	3019	90.5	79.8
Maharashtra	2674	91.7	71.3
Odisha	350	66.1	70.9
Punjab	4720	95.4	77.7
Rajasthan	3442	86.6	55.9
Tamil Nadu	626	95.5	46.6
Uttar Pradesh	2253	83.5	47.2
West Bengal	263	79.2	69.4
AP-Telangana	1150	98.8	41.8
Bihar-Jharkhand	300	65.3	47.1
Madhya Pradesh-Chhattisgarh	1685	76.9	58.3
Uttar Pradesh-Uttarakhand	1451	85.5	64.3
All India	1631	85.9	63.4

Source: AIDIS, 2012-13 (Schedule 18.2)

In most of the states the marginal and small farmers are more dependent on the informal sources for investment credit. Also, the share of FCEFB from borrowed money is higher in all classes of land size holders. However, farmers make 13.8 per cent of their investments through their own resources. The quantum of investment done through borrowing from formal sources is higher (more than 60 per cent) among the medium and large farmers.

The marginal and small farmers depend more on the informal sources for credit for asset creation as compared to the medium and large landholders. Taking into account FCEFB undertaken from borrowings, it may be observed that all landholders prefer to make investments using credit from formal institutions. However, among the various land classes, a higher percentage of investment is carried out through the informal sources of borrowings

such as moneylenders, traders and input dealers by the marginal and small farmers. While the small landholders have pending loans from informal financial sources, that too at exorbitant rates of interest, the medium and large farmers get subsidised loans in a proportion higher than marginal and small farmers. It is important to take these aspects into consideration while trying to ensure financial inclusion through the credit policy. It has been observed that institutional credit bears a positive relation with private investment (FCEFB) with the estimated elasticity being 0.3. It suggests that a 10 per cent increase in credit by institutional agencies would increase a household's investment by close to 3 per cent.

Public investment “in” and “for” agriculture: 1981-82 to 2013-14

The government spends on many social and economic services/heads in the respective states. The public expenditure in India is highly decentralised. The Central Government also spends directly on many activities in rural areas, such as on agricultural R&D and flagship programmes. The Central Government routes most of its funds through the state governments, which also contribute their own respective shares and spend the final amount.

Broad statistics for the 20 selected states reveal that during the period 1981-82 to 2013-14, the total real public expenditure (for all sectors) increased from Rs. 110,800 crore in triennium-ending (TE) 1983-84 to Rs. 825,700 crore in TE 2013-14, at a growth rate of 6.7 per cent per year. The expenditure on rural energy was significantly below that on road and transport, education, and health. It is important to mention that over the given period, the relative share of expenditure on economic services has decreased while that on social services has increased. Within the total, the share of agriculture, irrigation and flood control fell substantially during this period from 35.5 per cent to 20.1 per cent.

For convenience, the states have been categorised into three groups based on the average real per capita income during 2000-01 to 2013-14. Accordingly, seven states fall in the high-income category, and five each in the middle- and low-income categories. The low-income states (LIS) include Bihar, Uttar Pradesh, Assam, Jammu & Kashmir, and Madhya Pradesh; the medium-income states (MIS) include Odisha, Rajasthan, West Bengal, Andhra Pradesh, and Karnataka; and the high-income states (HIS) include Punjab, Himachal Pradesh, Tamil Nadu, Kerala, Gujarat, Haryana, and Maharashtra.

The state-wise scenario pertaining to spending on agriculture and irrigation since 2000 shows large variations. The spending on agriculture and irrigation has not received much priority in the less developed poorer states. Among various types of irrigation expenditures, the highest share is occupied by the medium and major irrigation systems across all the states. The LIS spend more on minor irrigation and that their share in the total expenditure on irrigation stood at 27.7 per cent during TE 2013-14 as compared to corresponding figures of 4.8 per cent and 16.6 per cent in the MIS and HIS, respectively. The MIS spend substantial amounts on flood

control, which is visible in their high share in the total irrigation expenditure, at 62.8 per cent. This may have led to a cut in the spending on irrigation. The annual rate of growth in minor irrigation is much higher at 12 per cent, as compared to that in the major and medium irrigation systems at 5.8 per cent.

An increase in investment in minor irrigation, mainly tanks and tubewells, can be explained by growing inefficiency and long gestation periods in the construction of canals. The marginal efficiency of capital is found to be much higher in minor irrigation than in major and medium irrigation in each state.

Many studies show that public investment in irrigation has a ‘crowding in’ effect on irrigation investment (in electric tube wells) by farmers. This also brings in another dimension, that is, the impact of public infrastructural investments which may have a direct and indirect bearing on private investment, productivity and rural poverty across many developing countries.

With regards to the quantum of public expenditure (revenue and capital) on rural roads and transport, rural energy, and rural development, and the share of capital expenditure (that is, investment) during TE 2013-14, there are large inter-state variations in the investment pattern across the states under each head. The developed states tend to spend more on infrastructure.

There are large inter-state differentials in spending on agricultural R&D, with the highest being Rs. 4,968 per hectare in J&K, and the lowest at Rs. 531 per hectare in Rajasthan. In the case of irrigation, Andhra Pradesh spends the maximum amount (Rs. 10,105 per hectare) while Rajasthan, spends the least at Rs. 714 per hectare. It has been observed that the developed states have spent more on roads, rural energy, education and health, which stems from their spending power due to higher economic growth in these states.

Investments for Increased Productivity and Agriculture Income

Given the magnitude and composition of private and public investments in agriculture across the states, it is important to examine the extent to which these have impacted agricultural growth and productivity. While private investments on irrigation, implements and machinery, and livestock directly contribute to growth, infrastructural investments and R&D, undertaken primarily by the government, impact agricultural growth indirectly through multiple pathways.

The average land productivity during TE 1981-82 was Rs. 17,329 per hectare, which rose to Rs. 39,807 during TE 2013-14 (constant 2004-05 prices). The HIS have achieved more than the national average at nearly Rs. 63,000 per hectare in TE 2013-14, and in some states like Himachal Pradesh, Jammu & Kashmir, and West Bengal, the corresponding figures are more than Rs. 1,00,000. Land productivity grew at the rate of 3-4 per cent per annum during the 2000s. The less developed states have experienced higher rates of growth in recent years,

which has been possible due to a marked improvement in irrigation investment and foodgrain production. An improvement in the rate of growth in GSDPA is also visible in the agriculturally less developed states such as Bihar, Jharkhand, and Chhattisgarh.

There has been a continuous increase in the irrigation intensity over the years, albeit slowly. Haryana and Punjab were nearly 100 per cent irrigated states in 2013 whereas Assam, Kerala, and Maharashtra are rainfed states, characterised by low irrigation intensity. While increase in area under irrigation in each state is visible, the percentage area irrigated by canals (owing to public investment) has remained unchanged and is less than 40 per cent. This is despite an enormous increase in resources towards development of canal irrigation during the 2000s. The irrigation intensity of public canals is found to be much lower than that of tubewells owned by farmers. Clearly, farmers depend more on micro irrigation (bore wells, tanks) as compared to public canals.

The empirical analysis signifies a positive impact of private and public capital formation on agriculture productivity and income, though in varying proportions. It is difficult to say which public investment would yield higher returns to agriculture, as many investments would have an indirect impact through an increase in production and marketable surplus, and a reduction in prices. One may argue that while investment 'in' agriculture directly influences agriculture through increase in land productivity, investment 'for' agriculture may have an indirect impact through improvement in supportive infrastructure.

Marginal Returns in Terms of Agricultural Income from Key Investments

Private investment and the selected heads of public spending positively impact agricultural income. However, not all public expenditures have a similar marginal impact. The impact has been seen to differ quite significantly among the social and economic heads of expenditure, and also across the states.

One of the studies has estimated the marginal effects of various expenditures by using estimated elasticities. These marginal effects have been expressed as: (a) increase in agricultural GDP (rupees per unit of spending averaged during the period 2011-12 to 2013-14), and (b) reduction in poverty headcount (number of rural poor brought out of poverty per unit of spending). It enables one to compare the relative benefits of an additional unit of expenditure across different types of investment items in each state and to prioritise the spending heads.

The all-India picture shows the highest returns accruing from private investment in irrigation and public investment in agricultural R&D, followed by education, health and energy. Returns on the first four heads of spending, namely, private investment, public education, R&D and health, were as high as 9.7 per cent, 2.5 per cent, 2.4 per cent, and 1.8 per cent,

respectively. However, the cross-states analysis shows a better ranking of R&D, education, and health, more so in the agriculturally less developed states. Irrigation investment ranks the lowest in the middle income states (MIS).

Rural development is important in poverty alleviation. Further, the ranking of the marginal impacts of various types of spending on rural poverty alleviation is different from that on agricultural GDP. Spending on rural development ranks first, which could be due to the big push in employment programmes during the 2000s. This is followed by private irrigation investment, health, energy and education, in that order.

The common themes in the rankings of farm income growth and poverty reduction include spending on private investment, and public spending on agricultural R&D, which is ranked high for both poverty and income. One possible explanation is that spending on R&D helps facilitate growth while at the same time cutting down poverty through private investment, income, productivity and other pathways. The returns differ across states, suggesting a location-specific policy for agri sector.

Futuristic Investment Requirements for Doubling Farm Income

An important question to be answered is: What are the projected investment requirements in agriculture on private and public accounts, which can contribute towards doubling of income in this sector in the next seven years? The quantification is based on a standard methodology that is used in the literature, viz., Incremental Capital Output Ratio (ICOR). The ICOR estimates the additional unit of capital or investment needed to produce an additional unit of output for a particular period, estimated as: i/g where i = investment (GFCF) rate and g is incremental GSDPA. It is also taken as a measure of efficiency of capital use. The marginal efficiency of capital is estimated as the inverse of ICOR.

In order to double farmers' income during 2015-16 to 2022-23, the private investment is required to grow by 12.5 per cent per annum. The projected capital requirements on public accounts are higher than on private accounts, which in a way, highlights the key role of the government in the agricultural sector, especially in the less developed states. The desired rate of growth in public investment is 16.8 per cent (2015-16 to 2022-23). While it is imperative that the desired growth rate in public investment is maintained, it would be useful to realise that the quantum of public investment can be further rationalised:

- by improving the efficiency of use of funds in various projects; and
- by promoting private corporate investments (other than that through farmers).

An increased output expected due to higher investments should be encouraged for value addition and exports as India has a growing demand as well as a comparative advantage in agricultural commodities.

Conclusions and Policy Implications

The government's aim to double farmers' income by 2022-23 necessitates an estimation of the magnitude and size of private as well as public investments "in" and "for" agriculture undertaken in the past to enable calculations of futuristic capital requirements.

The DFI Report study on capital formation in agriculture analyses the temporal and spatial trends in public and private capital formation, and their composition and size across major states from 1981-82 to 2013-14, on the basis of the capital expenditure series. It also evaluates the investments as per the size of landholdings, contribution of institutional credit in increasing private investment, and its impact along with that of key public investments on agricultural income. This is followed by an estimation of the state-wise incremental capital output ratios, separately for private and public investment heads for assessing the quantum of capital required by 2022-23 that would help double farmers' income.

The state-wise cumulative capital requirements and annual rate of growth required for DFI on private account and on key public services have been estimated from 2015-16 to 2022-23 based on ICORs, and the targeted annual real rate of growth in farm income estimated in this report. Following are the broad findings for drawing policy prescriptions:

- i. Private investment in agriculture by rural households has increased manifold from 1981-82 to 2012-13. The highest growth ranging between 8 and 15 per cent was experienced by almost all the states with the exception of only a few states, including Haryana, Odisha, Tamil Nadu and Uttar Pradesh. Farmers belonging to the states falling in the eastern regions have made much lower investments relative to their counterparts in the northern region.
- ii. A growing preference of households to invest in land improvements (residential land and buildings) has been identified, especially in the relatively developed states. Such investments, which have been undertaken at the expense of investment in agriculture, may be due to lower returns from farming, demographic factors, and growing urbanisation.
- iii. Farmers continue to prefer investments in farm implements including machinery, transport, livestock, and irrigation, which together account for 80 per cent of the household's investment. However, the investment preference of farmers towards non-farm business remains unchanged. Households in Punjab and Haryana have shown negative rates of growth in irrigation structures and positive growth in expenditure on transport and machinery.

- iv. The share of marginal and small farmers in the total investment is less than 10 per cent as compared to the corresponding share of 43.2 per cent in case of farmers falling in the semi-medium and medium categories. Investments in agriculture by small farmers account for a reasonably higher share of the total investment only in the states of Gujarat, Haryana, Kerala, Rajasthan and West Bengal.
- v. During the period of 2000s, large inter-state disparities in both private and public investments in agriculture are apparent with a sizeable increase witnessed in both during the 2000s. Although public and private investments are not strictly comparable, the former have increased four times from Rs. 653/ha in TE 1983-84 to Rs. 2,328/ha in TE 2013-14 at 2004-05 prices. Private investments also increased from Rs. 471/ha in 1981-82 to Rs. 687/ha in 2002-03, and further to Rs. 1,645/ha in 2012-13.
- vi. The states wherein the per hectare public investment is below the national average include Assam, Kerala, Uttar Pradesh, Madhya Pradesh, Bihar, West Bengal, Tamil Nadu, Rajasthan, Punjab, and Odisha. In the case of private investment, the developed states, viz. Gujarat, Haryana, Himachal Pradesh, Jammu & Kashmir, Karnataka, Kerala, Maharashtra, and Punjab, have made significant strides, perhaps due to the availability of better banking infrastructure and growth opportunities in these states. The less developed states continue to lag behind, which points to the urgent need for intervention.
- vii. The national average shows that 63.4 per cent of private investment in agriculture has been met through institutional credit. However, a relatively higher dependence of marginal and small farmers on informal sources of credit in almost all the states raises questions about the outreach of banks and financial inclusion in the credit policy. The percentage of investment credit that is met from informal sources is 40.6 per cent, 52.1 per cent, and 30.8 per cent, for the landless, marginal farmers, and small farmers, respectively.
- viii. While the small-sized landholders have pending loans from informal financial sources, and that too at exorbitant rates of interest, the medium and large farmers are able to get subsidised loans. This indicates the need for a change in the credit policy, keeping in view the regional, land and socio-economic status of the households. The Committee is empathic that the less developed states and marginal and small farmers should have higher access to institutional credit for making long-run investments.
- ix. Public expenditures on both revenue and capital accounts have increased phenomenally, but expenditure on economic services has declined in relative terms. The brunt of the reduction in this expenditure has been borne by agriculture, irrigation and rural development services/heads. A relative decline in expenditure may suggest that less priority has been accorded to the rural areas by the respective state governments.

- x. The momentum of accelerated pace of public investment in irrigation achieved over the period 2001-13 at nearly 10 per cent should be maintained during the current period till 2022-23. In order to optimise the efficiency of this investment and generate accelerated growth, closer monitoring and supervision of the investment at the field level needs to be ensured with respect to the outcomes. Enhanced capital use efficiency will help achieve lower rates of investment.
- xi. Income returns from additional public spending tend to be higher in the less developed states as compared to the high-income states for most of the economic services. The developed states tend to show diminishing marginal returns from additional public investments, thereby suggesting the need to step up investments in the less developed and rainfed regions for meeting the future growth challenges in agriculture. In this context, the Committee recommends a relatively higher increase in the capital intensity of investments in irrigation and infrastructure in the less developed and rainfed states to meet the future growth challenges.
- xii. The marginal efficiency of capital is much higher in minor irrigation than in the major and medium irrigation systems, implying the importance of allocating more resources towards minor irrigation by the respective state governments.
- xiii. Based on the average ICORs from 2007-08 to 2011-12, and from 2012-13 to 2013-14, and the targeted 10.36 per cent annual increase in real farm income, the required annual rate of growth in investment on private account is 12.5 per cent. The corresponding average figure in the case of public investment ('for' agriculture) is assessed at 16.8 per cent per year.
- xiv. Since the rates of growth in investment that have already been achieved in both private and public accounts are close to 10 per cent per annum, the targeted investments are easy to achieve. Such positive signals come from additional mobilisation undertaken by the government through non-budgetary sources, like the creation of a corpus fund of Rs. 40,000 crore to complete long pending AIBP projects, Rs. 5,000 crore for accelerating micro-irrigation coverage, and Rs. 8,000 crore for DIDF during the years 2016-17 to 2017-18.
- xv. In absolute terms, the additional private investment that will be required to enable the doubling of farmers' real income in India by 2022-23 is Rs. 78,424 crore at 2015-16 prices (Rs. 46,298 crore at 2004-05 prices). The cumulative public investment 'for' agriculture is estimated at Rs. 229,904 crore at 2015-16 prices (Rs. 102,269 crore at 2004-05 prices).
- xvi. The total quantum of private investment should increase (with added investment of Rs. 78,424 crore) from Rs. 61,000 crore in 2015-16 to Rs. 139,424 crore by 2022-23, at 2015-16 prices growing at an annual rate of 12.5 per cent. As regards public accounts, investment 'for' agriculture will need to increase from Rs. 117,100 crore to Rs. 347,004 crore (with added investment of Rs. 229,904 crore) at annual rate of 16.8 per cent.

- xvii. The projected added capital investment on public accounts (Rs. 229,904 crore), with no change in efficiency use, in the 20 states selected for the study, is broken into Rs. 23,900 crore in agriculture and allied activities, Rs. 117,500 crore in minor, medium and major irrigation systems, Rs. 11,900 crore in rural energy, and Rs. 76.100 crore in rural roads including transport and infrastructure on a cumulative basis.
- xviii. The results would be better if the investments are guided into converging areas of development to optimise for higher efficiency. Such convergence in public investments will be achievable through appropriate reforms and policy changes.
- xix. Private investments refer to investments made by farmers themselves, inclusive of own savings and borrowings from institutional and non-institutional sources. It is recommended, that institutional credit be stepped up substantively so as to cover as many farmers as possible. The institutional credit made available by the government has witnessed a robust increase from Rs. 8 lakh crore in 2014-15 to Rs. 10 lakh crore in 2017-18. Of the amount of Rs. 10 lakh crore, a sum of Rs. 3.15 lakh crore is intended for capital investment, while the balance goes towards crop loans.

It may thus be concluded, that the analysis points to the need for a substantial increase in resource allocation to the agricultural sector along with institutional credit to cover as many farmers as possible. The projected capital requirements on public accounts are higher than those on private account, which in a way, highlights the key role of the government in this sector, especially in the poorer states characterised by the domination of agriculture in their economies.

A lower ICOR in the eastern and rainfed states indicates larger productivity impacts of additional investments in these states. It would, therefore, be imperative for the government to maintain the desired growth rate in investment.

The future capital requirements can be further reduced by augmenting efficiency in their use in various projects from the currently low levels, and by promoting private corporate investments.

An increased output resulting from higher investments should be encouraged for value addition and exports, as India has both a growing demand for as well as a comparative advantage in agricultural commodities relative to other countries.

Farmers' income can also be enhanced through re-allocation of the existing resources for optimal productive use. Evidence shows that crop diversification from cereals to high-value crops, such as in horticulture, generates greater income for farmers.

Further, reduction of post-harvest losses and value addition help farmers augment their incomes. Chapter 4 discusses the issues related to crop diversification, post-harvest management and processing.

Key Extracts

- Investments ‘in and ‘for’ agriculture are vital for achieving the desired growth rate of 10.36 per cent per annum in farm income. This will also help in increasing the share of farm income as a ratio of the total farmer income, thereby improving the viability of agriculture.
- It has been noted that in respect of both private and public capital, the rates of growth by 2015-16 are already close to the desired growth rates of 12.5 and 16.8 per cent per annum, respectively. This indicates it is not difficult to match the estimated investment requirements over the seven-year period of 2016-17 to 2022-23.
- It will be important that the credit needs of the farmers is met with efforts to improve the capital use efficiency in public projects by investing in area-specific and domain-specific needs in order to maximise dividends.
- There is also scope for further accelerating capital formation by implementing policies that would attract stakeholders from the private corporate sector as well as the formal and organised sector apart from farmers.
- The DFI Committee has observed that a disaggregated state and district level estimation of capital formation in agriculture on public and private accounts is the need of the hour to ensure location-specific investment decisions and effective future planning.

Some relevant details on insurance coverage, agro-forestry and marketing credit are given in **Annex-1**(pages 14-17). NABARD inputs on short and long-term agricultural credit are outlined in **Annex-2** (pages 18-25). Agency-wise data on agricultural credit is provided in excel file *Agency-wise Disbursements.xlsx* for the time period 2012-13 to 2016-17 and provisional for the year 2017-18 9as on November 30, 2017.

Annex-1 – Specific Topics

Insurance coverage – non-loanee farmers, Agro-forestry and Marketing Credit

Increasing the coverage of non-loanee farmers under PMFSY

Parliament Question: *Insurance for non-loanee farmers: Starred Lok Sabha Question Number 58, December 19, 2017*

There are concerns about low numbers of non-loanee farmers who are not able to get their crops insured.

(a) The details of the amount insured under the Pradhan Mantri Fasal Bima Yojana (PMFBY) so far, State/UT and year-wise;

(b) Whether some States have capped the insurance benefit of land at seven hectares and if so, the details thereof along with the reasons therefor;

(c) The details of the loanee and non-loanee farmers who have availed benefit under PMFBY scheme, State/UT and year-wise; and

(d) The total number of States which have opted for PMFBY scheme?

Answer

(a): Pradhan Mantri Fasal Bima Yojana (PMFBY) has been under implementation in the country since Kharif 2016 season. State-wise details of the amount insured during 2016-17 (both Kharif 2016 and Rabi 2016-17) under PMFBY are given in this Annexure.

(b): As per the scheme provisions, crop insurance is available to both loanee and non-loanee farmers from all categories including sharecroppers, tenants etc. irrespective of their land holding status. In Rajasthan during 2016-17, to benefit maximum number of farmers and to ensure judicious use of the subsidy, the State Government capped the premium subsidy towards all eligible farmers upto a maximum insured area of 7 hectares only for the notified crops in notified areas under the scheme. Farmers could however, insure their crops above 7 hectares also by paying full premium. From Kharif 2017 season, the said limit has been removed.

(c) & (d): 26 States and Union Territories implemented the scheme during 2016-17. State-wise details of loanee and non-loanee farmer applicants who availed benefit of PMFBY during 2016-17 (both Kharif 2016 and Rabi 2016-17) are annexed.

While the national average share of the non-loanee farmers in all the insured farmers is about 24 per cent it bears wide variations across states and UTs. The share is less than 10 per cent in Andhra Pradesh, Andaman & Nicobar, Assam, Bihar, Goa, Gujarat, Haryana, MP, Meghalaya, Orissa, Rajasthan and Telangana. On the other hand, it is as high as 75 per cent in Tripura, 77 per cent in Jharkhand and Tamil Nadu and close to 100 per cent in Puducherry and Sikkim.

The coverage of non-loanee farmers needs to be increased in most of the states. There is lack of awareness about crop insurance. Non-loanee farmers can be brought under insurance schemes if their premiums are shared by the states. There is huge potential of covering farmers under PMFSY and hence introducing efficiencies through bringing more non-loanee farmers under the banking system.

Annexure

State-wise details of Loanee and Non-loanee farmers insured and sum insured during 2016-17 (both Kharif and Rabi seasons) under Pradhan Mantri Fasal Bima Yojana (PMFBY) and Restructured Weather Based Crop Insurance Scheme (RWBCIS)

Sl. No.	State / UT	No. of Farmers Insured			Sum Insured	Share of loanee farmers in total (per cent)
		Loanee	Non-Loanee	TOTAL	Rs. Lakh	
1	Andhra Pradesh	1637962	133660	1771622	1019807.78	7.5
2	Andaman & Nicobar Islands	324	0	324	46.84	0.0
3	Assam	60229	36	60265	23559.43	0.1
4	Bihar	2672627	40551	2713178	1172428.36	1.5
5	Chhattisgarh	1352433	196731	1549164	726900.19	12.7
6	Goa	757	0	757	579.82	0.0
7	Gujarat	1970405	4685	1975090	1232288.84	0.2
8	Haryana	1332922	3062	1335984	1178293.97	0.2
9	Himachal Pradesh	318355	60713	379068	89807.84	16.0
10	Jharkhand	200855	677204	878059	201049.49	77.1
11	Karnataka	1561715	1359743	2921458	1128805.12	46.5
12	Kerala	53212	24193	77405	33247.68	31.3
13	Madhya Pradesh	6394845	502879	6897724	3522827.23	7.3
14	Maharashtra	4093599	7917094	12010693	2462359.08	65.9
15	Manipur	5928	2438	8366	3693.96	29.1
16	Meghalaya	89	0	89	47.13	0.0
17	Orissa	1787506	32616	1820122	726170.12	1.8
18	Puducherry	44	8493	8537	3398.78	99.5
19	Rajasthan	9283835	771	9284606	1718158.23	0.0
20	Sikkim	0	574	574	45.93	100.0
21	Tamil Nadu	328505	1117575	1446080	626800.30	77.3
22	Telangana	905191	72239	977430	550484.89	7.4
23	Tripura	3179	9349	12528	2957.70	74.6
24	Uttar Pradesh	6553280	17109	6570389	2464105.95	0.3
25	Uttarakhand	228916	32657	261573	92139.49	12.5
26	West Bengal	2789072	1346120	4135192	1234547.59	32.6
	TOTAL	43535785	13560492	57096277	20214551.74	23.8

Agro-forestry: Bamboo industry

Bamboo: A story of incense and innovation in the Northeast of India

The world bamboo market is \$8 billion a year, dominated by China, which supplies two-thirds of it. Traditional handicrafts, blinds, bamboo shoots, chopsticks and bamboo furniture make up 95% of the market. New market products including modern/laminated furniture, flooring and panels cover the remainder 5% of the bamboo sector. In China, bamboo dust is used to make bamboo bricks. At the moment, bamboo dust thrown away in India.

Tripura State, in northeast India, has more than 3,000 square kilometres of bamboo. The Tripura Bamboo Mission is involved in all stages of bamboo production and value addition, from growing bamboo in plantations to mobilisation, technological interventions, building institutions, marketing and financial interventions, developing infrastructure, production clusters and building skills and capacity. There are 16 clusters for incense sticks, 24 for handicrafts and furniture and 7 for bamboo plantations.

India is the world's largest producer, consumer and exporter of finished incense sticks. The sector is growing at 14–17% every year, but there has been a fast transition from handmade to semi-mechanized products in the past three years. Tripura used to be the leading supplier of the basic raw material for incense sticks in India, but due to the shift from handmade to semi-mechanized round sticks, Tripura has lost its lead position, with the demand for handmade bamboo sticks down drastically. Due to a shift to round bamboo sticks and a reduction in import duty from 30% to 10%, India is now importing incense sticks from China and Vietnam, and the demand for Tripura's sticks has fallen to one-fifth of its capacity.

In 2016–17, the Tripura Bamboo Mission organized 24 skill development training programmes, training 710 artisans; 2 programmes on capacity building training on bamboo furniture, training 40 artisans; five programmes for training 25 trainers; two programmes on soft skill training; and four skill exchange programmes for 82 artisans.

But the training in the local Industrial Training Institute is not up to the mark as assessed by an innovative enterprise working in bamboo. Mutha Industries located in a bamboo park in Agartala opened a bamboo wood manufacturing unit and started commercial production in 2014. Its semi-automated facility, employing 100 people, is manufacturing bamboo wood products including furniture, flooring, panels and outdoor decking. These products are new to India.

The company hires workers after Class VIII, X and XII (95% of its employees are Class VII graduates) and then trains them both in hard and soft skills for seven to eight months. Multi-skilling is required along with specialisation. To retain fresh hires, the firm retains a portion of their salary for the first three months and thereafter releases this if workers remain with the company.

Mutha staff believe that the ITIs need to evolve further to foster academia-industry collaboration. They also feel that there is a vast gap in the skill levels of Tripura and the rest of India. The lure of permanent government jobs acts as a disincentive in Tripura for the educated to work in private industry.

Bamboo has a lot of potential and can be a game changer for the state if the industry is encouraged to make innovative products that have international demand. Since bamboo is a renewable source, it is green in nature. Improved skills can help make the needed shift from traditional production to more modern goods.

Source: FSI (2012), Sharma and Nirmala (2015), TBM website, TBM (2017), Author's interview with Mutha Industries and TBM Mission.

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Marketing Credit

The following paragraphs are extracted from: "Agricultural Marketing: An Overview and Way Forward (FICCI 2017)" – Section 4.4.1 – Primary processing

Value addition in agricultural commodities helps to raise the price the commodity earns. Even basic value addition such as cleaning and grading of grains, sorting of fruits and vegetables and primary processing activities such as cutting, dicing and packing fruits and vegetables can also help in raising farmers returns. Value addition is an important step that cannot be looked away if the vision of doubling farmers' incomes has to be realized. In the subsequent paragraphs we look at different ways of adding value to farm produce.

Primary processing is defined variously, but broadly refers to those post-harvest processing activities wherein the produce does not undergo any change in its composition. It is made suitable for subsequent second stage processing to be used for manufacturing various kinds of food stuffs. Cleaning, washing, slicing, dicing, canning are some of the methods of primary processing. In commodities such as wheat, pulses, oilseeds, the removal of husk, foreign material, polishing, and grading are also considered primary processing. In case of fruits and vegetables, primary processing includes washing, slicing, packaging etc. (Fellows, 2004).

In several supermarkets and retail stores, sliced and packed fruits, washed and packed fruits, diced vegetables, mixed diced vegetables and several such variants can be found. For the consumer, this is an attractive proposition as cleaned and selected vegetables and fruits are available in a ready-to-cook format, and the consumer is willing to pay a higher price than regular vegetables. Organized retailers and online retailers can actually intervene in the supply chains, train farmers and provide them with packing material to get "ready-for-shelf" products right at the farm. Similarly, once farmers organize themselves into groups such as FPOs, they can make use of cleaning and hulling machines, polishing machines etc. and sell such produce at a much higher price.

Highly progressive farmers and those involved with export-oriented value chains are used to primary processing and packing. The returns they make in such value chains are much higher. Primary processing is often labour intensive and hence a good opportunity to generate employment for unskilled labour in rural areas.

This may be noted that while the medium and large farmers can afford to undertake the post-harvest on-farm primary value-addition activities including cleaning, grading and packing the marginal and small farmers may not have resources to do so due to their urgent need for cash and leading to distress sales. Consequently they miss out on earning better returns. It is thus desirable that they may be provided marketing credit with interest subvention like it is done in the case of production credit.

Annex-2: NABARD Inputs

Institutional Credit - Short Term and Long Term

1.1 Introduction

Agriculture provides employment to about 48.9 per cent of the total workforce in the country and it contributes only 15.2 per cent to the country's Gross Value Added (GVA). About 85 per cent of operational holdings in the country are in the small and marginal categories, and the average size of an operational holding is a meagre 1.15 ha. Due to fragmentation and disorganization, farmers face constraints in procuring inputs at reasonable prices, lack bargaining power in the market for realizing better value for their produce, and have inadequate access to credit, technology and extension services.

1.2 Issues related to Institutional Credit

During 2010-11 to 2016-17, compound annual growth rate (CAGR) of agriculture credit was 15.21 per cent (Table 1). The outreach to households, measured as number of loan accounts, grew by 9.95 per cent per annum between 2011-12 to 2016-17 reaching to around 10.70 crore agricultural accounts by 2016-17 (Table 2). This augurs well with 14 crore operational agricultural holdings in the country, though one has to duly reckon with multiple accounts per household. The important trend here is that the number of loan accounts of cooperatives grew only at 6 per cent, compared to 14 per cent in commercial bank loan accounts.

Table 1 : Ground Level Credit Flow to Agriculture - ST / LT disbursement

Year	Short Term			LT/MT			Total GLC	
	Amount (crore)	Annual growth (%)	% to total	Amount (crore)	Annual growth (%)	% to total	Amount (crore)	Annual growth (%)
2010-11	335550	17.55	71.65	132741	18.75	28.35	468291	
2011-12	396158	15.30	77.52	114871	-15.56	22.48	511029	9.1
2012-13	473500	16.33	77.96	133875	14.20	22.04	607375	18.9
2013-14	548435	13.66	75.12	181687	26.32	24.88	730122	20.2
2014-15	635412	13.69	75.17	209916	13.45	24.83	845328	15.8
2015-16	665313	4.49	72.67	250197	16.10	27.33	915510	8.3
2016-17	689457	3.50	64.69	376298	33.51	35.31	1065756	16.4

CAGR (2010-11 to 2016-17)	13.28			20.12			15.21	
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Note: (i) CAGR- Compounded annual growth rate, P - Provisional figures

Sources:IBA, SLBC, NABARD & NABARD Ensure Portal (2016-17 onwards).

Table 2: Agency-wise no. of Agri. - GLC a/cs. - 2007-08 to 2016-17 (No. in lakh)

Agency	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17 (P)	CAGR (%)
Comm.Banks	255	307	385	426	442	664	18.63
Coop	309	311	321	306	324	269	-1.75
RRBs	82	85	99	121	133	137	12.46
Total	646	703	805	853	899	1070	9.95

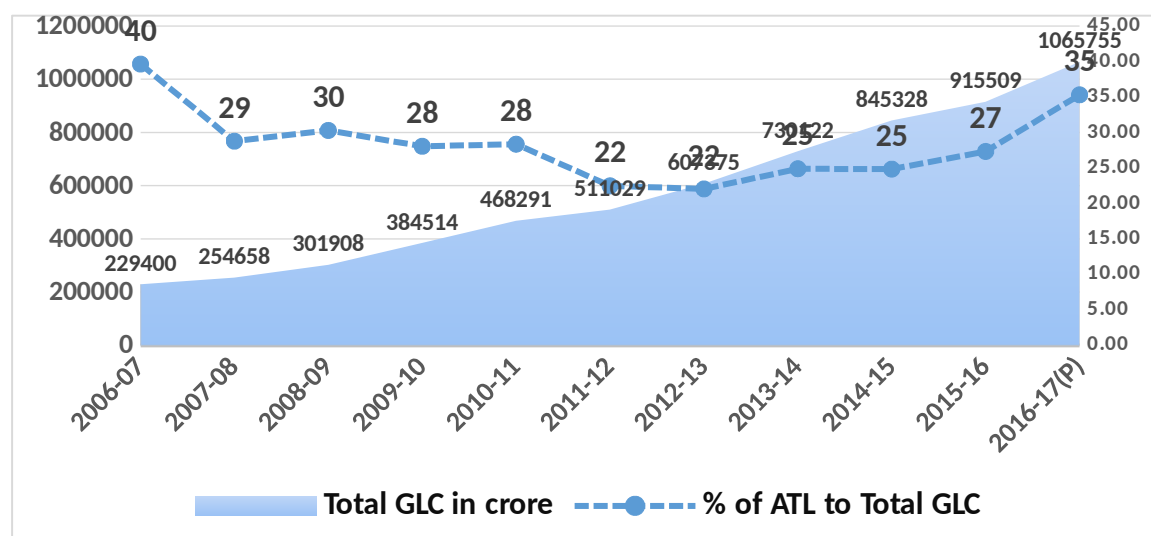
Source:IBA, SLBC, NABARD & NABARD Ensure Portal (2016-17 onwards).

Despite the impressive performance in GLC flow during the last several years, there are issues in credit dispensation to the agriculture sector. The important issues are discussed below:

1.2.1 Proportion of Investment(LT) Credit

Of the two types of credit based on the loan tenure, term credit as a proportion to total GLC declined from 40 per cent in 2006-07 till it reached 22 per cent in 2012-13 (Chart 1).

Chart 1 : Trend in GLC and Term loan - All



Source:IBA, SLBC, NABARD & NABARD Ensure Portal (2016-17 onwards)

This trend rather disturbed the policy makers as term credit is purveyed to finance long term investments which led to private capital formation in farm mechanization, minor irrigation structures including pump-sets, land development, orchards, farm ponds, micro-irrigation, etc., in the country.

Driven by the understanding of this relationship and the fact that investment on the farm is indispensable for enhancing production as also building productive capacity on the farm, NABARD and other stakeholders, made concerted efforts due to which the trend started reversing reaching 35 per cent by 2016-17 (Chart 1). Banks helped in this effort significantly by achieving term agriculture credit targets by 91 per cent in 2013-14 to even 132 per cent in 2016-17. The target vis-à-vis achievement is indicated below in Table 3:

Year	Target	Achievement	Achievement as % of Target
2007-08	85000	73264	86
2008-09	120000	91447	76
2009-10	125000	107858	86
2010-11	155000	132741	86
2011-12	195000	114871	59
2012-13	230000	133875	58
2013-14	200000	181687	91
2014-15	225000	209916	93
2015-16	255000	250197	98
2016-17	285000	376298	132

Source: IBA, SLBC, NABARD & NABARD Ensure Portal (from 2016-17 onwards) and concerned banks

1.2.2 Market Shares of Rural Financial Agencies in GLC

Cooperative banks lost their share in GLC over time from 40 per cent in 1999-2000 to 13.5 percent in 2016-17 (Table 4). Commercial Banks picked up this share accounting for 75 per cent in 2016-17 compared to 53.7 percent in 1999-2000, RRBs accounted for the remaining share of 11.5 per cent in 20016-17, which is an improvement from their share of

6.9 per cent in 1999-2000.

Table 4 : Share of various Agencies in Total Agri. GLC (Amount in Rs. crore)							
Year	Commercial Banks		RRBs		Cooperative Banks		Total GLC
	Amt.	% to total	Amt.	% to total	Amt.	% to total	
1999-2000	24836	53.7	3172	6.9	18260	39.5	46268
2004-2005	81674	65.2	12404	9.9	31231	24.9	125309
2009-2010	285800	74.3	35217	9.2	63497	16.5	384514
2013-2014	527506	72.0	82653	11.0	119963	16.0	730122
2014-2015	604376	71.5	10248 3	12.1	138469	16.4	845328
2015-2016	642954	70.2	11926 1	13.0	153295	16.8	915510
2016-2017	799781	75.0	12321 6	11.5	142758	13.5	1065755

Source:IBA, SLBC, NABARD & NABARD Ensure Portal (from 2016-17 onwards)

1.2.3 Regional Imbalance in Credit dispensation

Regional imbalance in the distribution of agriculture credit has persisted over the years. Compared to inter-regional distribution of GLC during 2010-11 and 2016-17, the regional imbalance accentuated. For example, the share of the southern region which was 39.31 per cent and the highest for any region in 2010-11, increased to 41.67 per cent in 2016-17. Noteworthy positive sign is the gains in shares in GLC in 2016-17, compared to 2010-11, for central (1.27 percent points). While southern region, may be because of better infrastructure facilities, improved its share, all other regions showed decline in their shares with eastern region showing status quo. Low density of credit delivery outlets and poor health of rural financial institutions are among the reasons for low credit penetration.

Data further shows that there is a growing disconnect between the real sector parameters and regional distribution of agriculture credit. For example, the eastern region has the highest cropping intensity (151 per cent), 14.65 per cent share in GCA and 15.25 per cent in GIA, but hardly

accounted for 8.15 per cent of agriculture credit disbursed during the 2016-17. In contrast, the southern region accounted for 18.68 per cent GCA and 16.35 per cent GIA, respectively, but accounted for the highest share (41.67 %) of GLC disbursed during 2016-17.

Based on credit growth trend between 2010-11 to 2016-17 relative to national level growth (128%), there can be likely improvement in shares of central and southern regions and status quo in eastern region's share. North and north-east are likely to lose their relative shares. There are intra-regional disparities too in credit dispensation, which need be addressed. The region wise agriculture disbursement during 2015-16 and 2016-17, along with the targets allocated for 2017-18 is given below in Table 5:

Table 5: Region-wise share in agri credit

(Rs. crore)

Region	2015-16		2016-17		2017-18	
	Disb.	% to Total	Disb.	% to Total	Target	% to Total
North	216919.14	23.69	232846.88	21.85	229212	22.92
North East	5832.70	0.64	8772.66	0.82	11513	1.15
Eastern	103673.28	11.32	86860.25	8.15	130140	13.01
Central	153289.31	16.74	156475.93	14.68	196330	19.63
Western	107933.83	11.79	136786.56	12.83	129195	12.92
South	327861.66	35.81	444013.39	41.66	303610	30.36
Total	915509.92	100	1065755.67	100	1000000	100

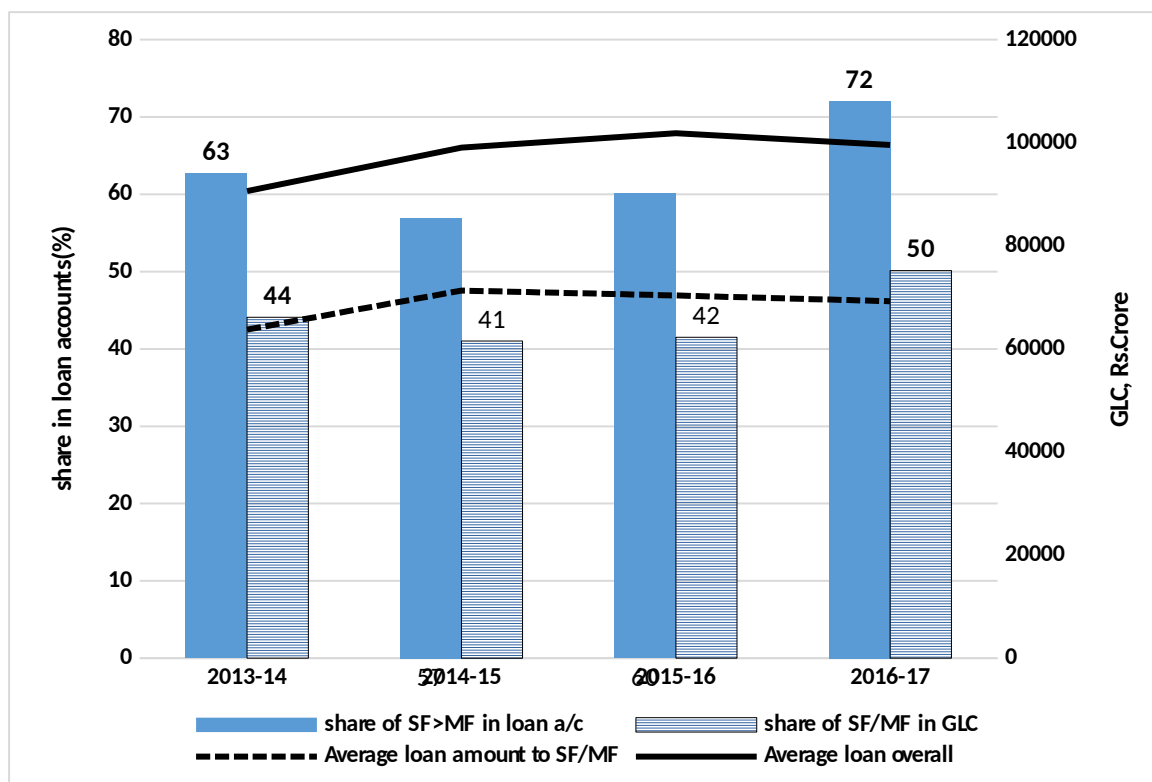
Region wise Share (%)						
Region	Agri Credit Disb. (2016-17)	Agri. accounts (2016-17)	GCA	Cropping Intensity	GIA	Food grain prod.
North	21.85	12.71	20.11	148	26.32	26.58
N E R	0.82	1.37	2.83	128	0.68	2.02
East	8.15	14.29	14.65	151	15.25	16.37
Central	14.68	17.63	27.26	139	31.66	30.55
West	12.83	10.96	16.47	114	9.74	8.31

South	41.67	43.04	18.68	124	16.35	16.17
TOTAL	100	100	100	--	100	100
<i>GCA(Gross Cropped Area) and GIA (Gross Irrigated Area) are averages for the period 2007-08 to 2011-12)</i>						
<i>Source: Calculated from data of MOA, RBI, IBA and NABARD</i>						

1.2.4 Coverage of Small and Marginal Farmers (SF/MF)

Land holding pattern in the country is dominated by small and marginal farmers (SF/MF) category. Moreover, the number of SF/MF holdings and area under these categories have increased from 70 per cent and 21 per cent in 1970-71 to 85 per cent and 43 per cent in 2011-12, respectively. Providing timely and affordable credit to this resourceconstrained group is the key to attaining inclusive growth. But, studies indicate that their access to credit is limited. Good news is that share of small and marginal farmers in loan accounts as well as credit flow improved of late. Summary data is given in Chart 2.

Chart 2: Share of Small and Marginal Farmers in Loan Accounts and GLC



Small and marginal farmers accounted for about 72 per cent of the accounts and 50 per cent of the GLC in 2016-17 compared to about 63 per cent in number of accounts and 44 per cent in amount, a clear improvement in shares. Interestingly, loan amount per account for small and marginal farmers too improved over the 4 year period, and it increased in tandem with that for all farmers put together. That is, both deepening and widening in the institutional credit flow to SF/MF happened in recent years. While the data on flow to small and marginal farmers are reassuring still they report constraints in accessing credit. Much of the literature on rural credit discussed these issues. Here we highlight a couple of them only.

Constraints in Financing Small and Marginal Farmers

i. Lack of proper Record of Right

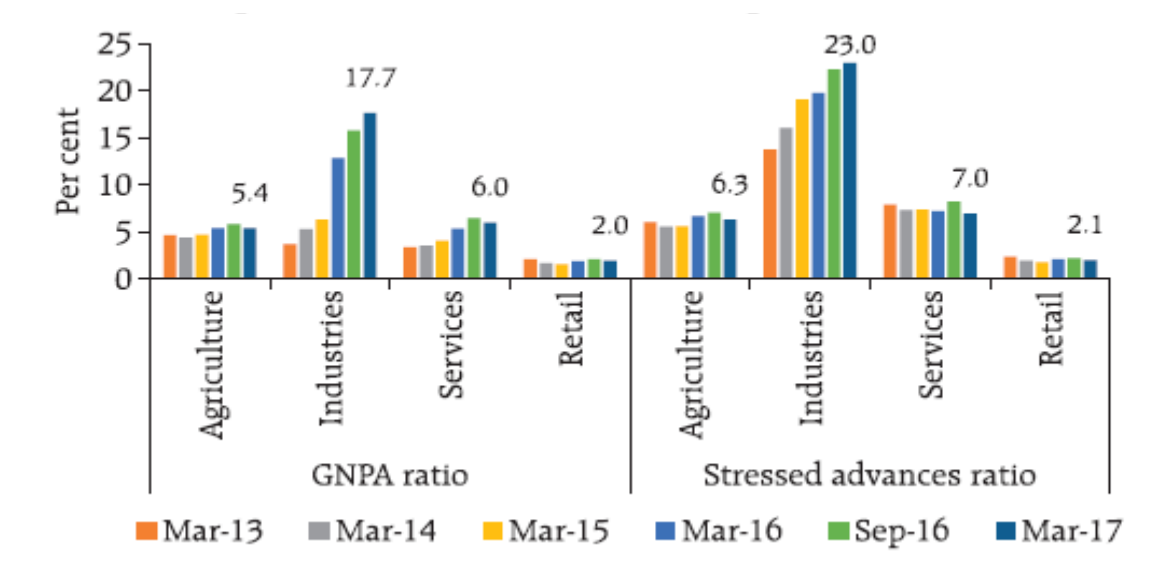
Farmers such as tenants and cultivators with only usufructuary rights on their land without clear titles face difficulties in accessing institutional credit and other facilities as they cannot offer collateral. As experience elsewhere in Asia showed, proper land records can positively spur agricultural entrepreneurship, productivity, production, rural diversification, income growth and rural poverty reduction. Even when land records are available, creating charge on it for using it as collateral is cumbersome and time taking. It also involves cost. Thus, land record digitisation is expected to ease this situation. In India, Digital India Land Records Modernization Programme (DILRMP) was initiated to usher in a system of updated land records, automated and automatic mutation, integration between textual and spatial records, inter-connectivity between revenue and registration, to replace the present deeds registration and presumptive title system with that of conclusive titling with title guarantee. It was hoped that all districts in the country would be covered by the end of the 12th Plan period except where cadastral surveys are being done for the first time. The progress of different activities under this programme are given in Table 8. While computerisation of land records and property registrations are completed in all states except a few Union Territories, these two could be integrated only in 11 states so far. Records are linked with *Aadhaar* in 5 states and manual issue of Records of Rights is stopped in 18 states.

ii. Perceived high NPAs

Besides higher transaction costs, another reason often cited for the tepid response to agriculture loans, especially to small farms, is the high prevalence of non-performing assets (NPAs) in the sector. However, such an argument is not supported by any data as NPAs in agriculture are almost comparable with other sectors under priority sector lending

(PSL). As per RBI's Financial Stability Report 2017, GNPA ratio as well as Stressed Assets Ratio are relative lower compared to other sectors except retail (Chart 3).

Chart 3: Asset Quality of Broad Sectors(per cent to total advances of the respective sector)



Source: Reserve Bank of India, 2017. Financial Stability Report 2017, June.

1.2.5. Structural Issues in irrigation, cropping pattern and infrastructure

- Fragmental land holdings and overdependence on monsoon.
- Out of about 141 million ha of net area sown in the country, only 65 million ha (45 percent) is presently covered under irrigation. Substantial dependency on rainfall makes cultivation in unirrigated areas a high-risk and lessproductive profession.
- Difficult geographical terrain in North Eastern regions of country.
- Non-adoption of modern & scientific methods of crop cultivation.
- Limited extent of farm mechanization on account of small holdings and large number of small and marginal farmers in the Country.