

**TOWARDS INCLUSIVE AGRICULTURAL DEVELOPMENT: GROWTH
PERFORMANCE, WELFARE CHALLENGES AND POLICY
INNOVATIONS**

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Towards Inclusive Agricultural Development: Growth Performance, Welfare Challenges and Policy Innovations

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1. Macro Concerns: Agriculture and Development

Agriculture promotes economic change and development in India through its causal links with factor and product markets. It employs about half of the work force but contributes to only about 15 per cent of the Gross Domestic Product (GDP). In the economically weaker states, however, its contribution to state domestic product and to employment is much higher. Relatively low productivity in agriculture led to a concentration of the poor in this sector. Agricultural productivity improvement contributes to growth and provides, thereby, a route for poverty reduction. Theoretically, it is possible to reduce poverty as well as expand domestic market for industry by raising labour productivity in agriculture and spreading its gains among the low-income groups. Stabilizing farmers' income through risk management would reduce transient poverty as well.

In Asian countries, rapid growth in recent decades has led to a shift of resources and workers from agriculture to non-agricultural activities (Radhakrishna, 2017). The process is marked by a transfer of workers from low productivity sectors to high productivity sectors. There is also a change in the structure of demand with a faster rate of increase in the demand for services like financial and personal services. These changes in the structure of demand, production, and employment may be attributed to policy reforms and innovation in information and communication technologies (ICTs). The pattern of structural transformation is not uniform across all countries. The fast-growing East Asian countries, such as the Republic of Korea, Malaysia, Taiwan, and China, have experienced the transfer of labour from agriculture to manufacturing, whereas the structural changes in India did not conform to the above pattern. In India, the share of agriculture in GDP is falling sharply but the share of agricultural workers among the total workers remains high. The growth of labour-intensive manufacturing sector, which provides employment to unskilled and semi-skilled workers, lagged behind. Less labour-intensive service sector, which provides employment to highly skilled and educated labour, has

¹ Presidential Address, 79th Annual Conference of Indian Society of Agricultural Economics, November 21, 2019.

experienced high growth. This resulted in slow expansion of formal employment and high expansion of low paying informal employment spread over rural and urban spaces.

In some Asian countries, employment in agriculture has declined on account of mechanization, and agricultural diversification took place from traditional food crops to commercial crops, leading, thereby, to an expansion of rural non-farm sector. Inadequate infrastructure in rural habitations and small towns in some Asian countries led to large scale migration to metropolitan centers, putting pressure on the urban infrastructure. Migrants were compelled to reside in slums. This could have been prevented, had there been a significant improvement in agricultural productivity induced by technology as well as expansion of non-farm sector. In India, the decline in agricultural employment commenced only recently, but such a decline has been rather slow (Binswanger-Mkhize, 2013).

Large volume of literature exists to show that both the overall level and pattern of growth do matter (Ravallion and Dutta, 2002). Agricultural growth has a crucial role in the process of poverty reduction in terms of its direct effect on rural economy and indirect spillover effects on urban economy. Very few developing countries in the world achieved sustained GDP growth without agricultural growth in their early phase of development (Pasha and Palanivelu, 2003). The poverty reduction effect of agricultural growth is high, especially in countries with low inequality, significant employment opportunities, and decent wage rate. During the pre-reform period, modeling analysis of the linkages between agriculture and industry has shown that a 10 per cent increase in agricultural output would increase industrial output by 5 per cent. With that, urban workers would benefit both from industrial employment and price deflation (Rangarajan, 1982). Although the magnitude of industrial growth in response to agricultural growth may have declined, the direction of the change may still remain the same even during the post-reform period. Modeling of agricultural sector in the 1980s showed that an abnormal increase in agricultural production with flexible price regime, i.e., without intervention in the market, would adversely affect incomes of farmers in the short-run. But, on the other hand, an increase in the food prices due to a drop in food production would adversely affect the poor (Murty and Radhakrishna, 1982; Radhakrishna and Sarma; 1984). The fluctuation in the agricultural markets, particularly for cereals, would destabilize the economy. This is indeed the basis for the 'Razor Edge' problem (Alagh, 1995). What is more, an increase in cereal price would hurt the

poor the most and would aggravate income inequality (Radhakrishna and Ravi, 2004). Clearly, from a welfare point of view, stabilization of food prices by public intervention in the food markets is essential.

Cost-reducing and labour-absorbing technical progress is essential for developing country like India. If rural non-farm sector and urban industrial sector grow at sufficiently higher rates, they can absorb the surplus labour and surplus food. If they grow at lower rates, with limited possibilities for agricultural export, terms of trade may turn against agriculture. In practice, the fall in food prices is moderated by increasing buffer stocks and expanding wage employment programmes. This may cause fiscal strain. Commercial crops, not covered under market intervention such as perishable fruits and vegetables, tobacco, cotton, oilseeds, etc., often experience price collapse. Price collapse hurts their growers and often subjects them to transient poverty, debt traps, and suicides. If agricultural production lags behind demand, it leads to food inflation, causing, thereby, an increase in nominal wage rates of industrial workers. These effects clearly suggest the need for agricultural growth with stability achieved through strong farm-non-farm linkages. The virtuous cycle between agriculture and non-farm enterprises plays a strategic role in providing employment opportunities in rural areas (Mellor, 1978; Stern, 2001).

Unlike the case of industry, supply-side adjustments in agriculture involving reallocation of resources and net additional investment for capacity expansion take a much longer period (Storm, 1992). Changes in policy regime, not backed by appropriate institutional changes, will have an adverse effect on farmer's livelihood (Radhakrishna, 2009). There is a widely held view that some of the agrarian institutions decayed in the beginning of the post-reform period, as they could not adapt themselves to the ongoing changes in policy regime. The liberalization of agriculture had exposed commercial agriculture to the volatility of world commodity markets. When agricultural prices in world market were declining in the latter half of the 1990s and the early years of the 2000s, India dismantled its quantitative restrictions and slashed the tariff rates. Further, the withdrawal of government support severely hurt the farming community, particularly oilseed growers. The gains from the subsequent rise in the international rice price might have disproportionately accrued to the middlemen operating between the direct producers and consumers. The desirable goal of agricultural growth with stability has become more distant because the policy instruments are too blunt to mitigate the risks affecting farmers

(Radhakrishna, 2009). It is in this context, some public mediation between global prices and domestic food prices assumes critical importance.

2. Agricultural Growth Performance

Agricultural production in India was virtually stagnant for several decades prior to independence. Per capita agricultural output declined by 0.72 per cent per annum during 1911-1941 and food grain output, a major source of food security, declined by 1.14 per cent per annum (Blyn, 1966). India was also saddled with a large population living in abysmal conditions and depending on agriculture for livelihood. The national government formed after independence accorded priority to agriculture by undertaking several measures. The main policy thrust prior to the mid-1960s, i.e., pre-Green Revolution period, was on agrarian reforms as well as modernizing agriculture through large scale investment in irrigation and power and creation of other infrastructure, such as credit institutions, regulated markets, roads and extension as also research institutions. Community development and cooperatives were promoted. Intensive Agricultural District Programme (IADP) was also a major initiative undertaken. India did succeed in breaking the prolonged structural stagnation. During 1949-50 and 1964-65, food grain production increased at the rate of 2.98 per cent per annum and crop output increased at the rate of 3.19 per cent and productivity increased by 1.60 per cent each in the case of both groups (Dantwala, 1970).

The better performance of agriculture witnessed during the early phase of planning could not be sustained. During the mid-1960s, India experienced drought in successive years, in addition to two wars, which led to food crisis. There was severe imbalance between demand for and supply of food. Food grain prices were moderated by PL-480 imports from the US. Wheat was the major component of the PL-480 imports. However, markets of non-food grains experienced inflationary pressure. Though the ratio of food grains to non-food grain crops was in favor of the non-food crops, there was no breakthrough in their production, possibly due to lack of technological developments (*ibid*). This crisis prompted the government to give an overriding priority to the goal of achieving self-sufficiency in food grains by launching the Green Revolution. Public investment in irrigation and agricultural research was stepped up.

Over the Green Revolution period, i.e., from the mid-1960s to the close of the 1980s, India achieved near self-sufficiency in food grain production and experienced an improvement in food

security. In the first phase of the Green Revolution, *i.e.*, during the 1970s, there was a significant inter-regional and inter-crop imbalance in agricultural growth. In the second phase of Green Revolution, *i.e.*, during the 1980s, crops like rice, oilseeds and pulses registered high growth, especially in the Eastern and Central regions, where poverty was widespread, and the regional variations in agricultural growth were moderated to some extent. The 1980s were considered to be the best years of Indian agriculture when labour productivity and total factor productivity were at their peak (Binswanger-Mkhize, 2013).

The food grain (cereal) production recorded a growth rate close to 1.3(2. 0) per cent per annum in the 1970s and food grain as well as cereal growth rate accelerated to about 5.0 per cent per annum in the 1980s(Table 1). The relative price of food grains declined after the mid-1970s (Figure 1). Consequently, the dependency on imports declined in the Green Revolution period, *i.e.*, the 1970s and 1980s. In the 1980s, production of cotton, chilies and livestock products also recorded high growth rates .The acceleration in the growth of high value agricultural products came, however, more from area shift from coarse cereals rather than from productivity improvement. There has also been a significant reduction in poverty, especially during the 1980s.

Coming to the reform period, the early phase of the post-reform period (1990s) witnessed decline in the overall growth rate of agriculture and allied sector to 3.1 per cent from 4.5 per cent in the per cent per annum in the 1980s (Table 1)). The 1990s also witnessed a decline in the growth rates of food grains, tobacco, cotton, chilies, and livestock. The relative price of cereals, which registered a declining trend in the 1980s, witnessed a rising trend in the 1990s (Figure 1). There was also a substantial increase in cereal price during 1999-2000, which might have hurt the poor the most.

The annual growth rate of agriculture declined to 1.8 per cent per cent in the 2000s and further to 1.5 between 2011-12 and 2016-17(Table 1 and Figure 2). The growth rates of fruits and vegetables also slowed down to about 3.8 per cent per annum in both the periods. What is worse, food grain production recorded a growth rate of 1.6 per cent per annum between 2011-12 and 2016-17.Agriculture and allied sector witnessed an annual growth rate of 2.7 per cent between 2011-12 and 2016-17. Relative price of cereals, which declined in the first half of 2000s, showed an uptrend in the later part of the 2000s (Figure 1).

Table 1: Growth rates of Outputs from Agriculture and Allied Sectors (2004-05 prices)

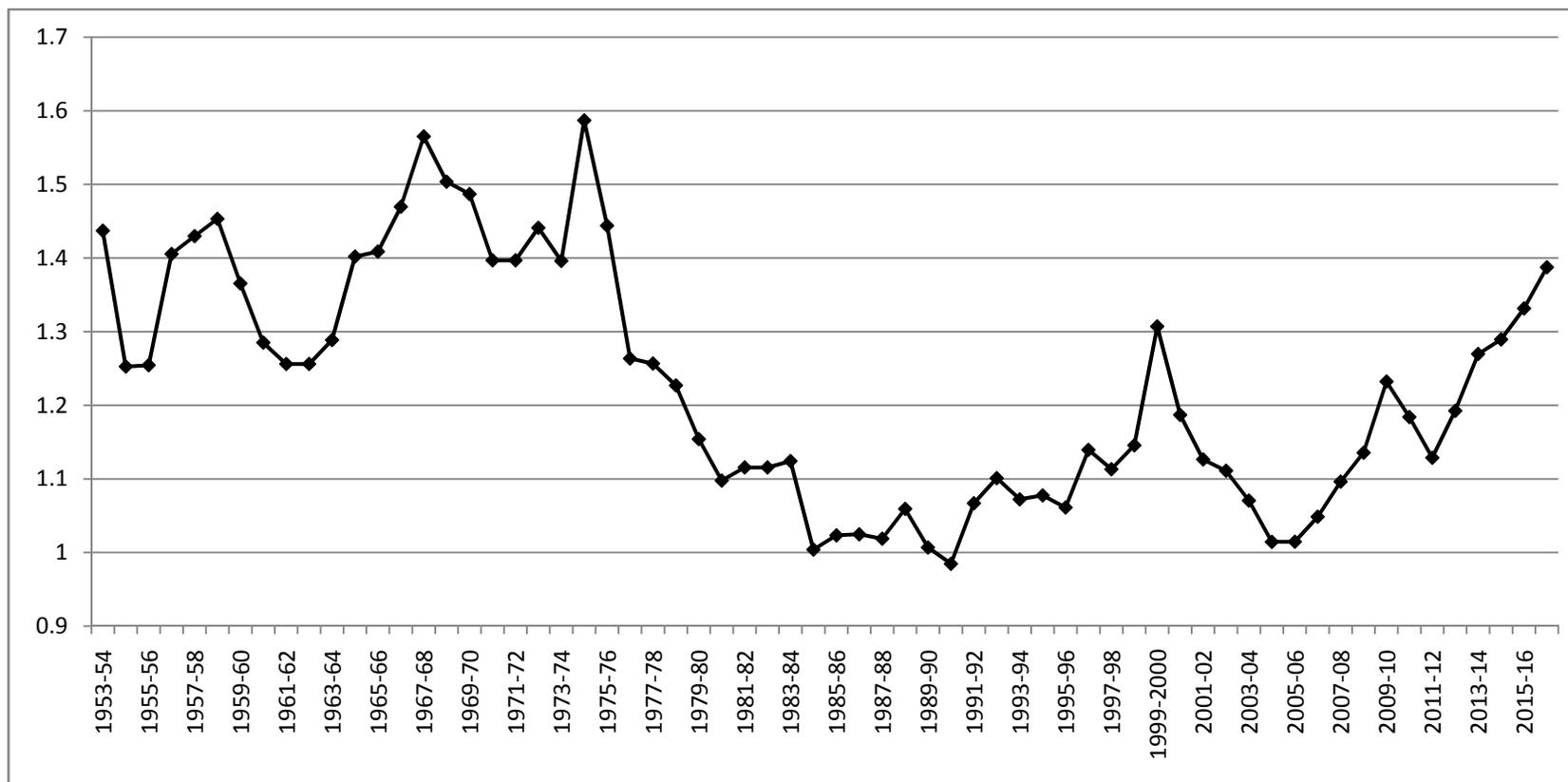
(Average annual growth rates)

| | 1970-71 to 1979-80 | 1980-81 to 1989-90 | 1990-91 to 1999-2000 | 2000-01 to 2009-10 | 2011-12 to 2016-17# |
|--|-----------------------|-----------------------|-------------------------|-----------------------|------------------------|
| Cereals | 1.98 | 5.02 | 2.34 | 0.63 | 0.79 |
| Food grains | 1.27 | 4.99 | 2.14 | 0.74 | 1.64 |
| Fruits and vegetables | 3.72 | 3.25 | 5.53 | 3.73 | 3.84 |
| Chilies | 4.02 | 5.77 | 3.86 | 4.75 | 8.82 |
| Onion | | | 6.02 | 6.07 | 6.58 |
| Tobacco | 5.05 | 3.67 | 1.10 | 3.16 | -0.53 |
| Cotton | 4.80 | 6.24 | 1.22 | 8.64 | -1.60 |
| Livestock | 3.78 | 4.71 | 3.85 | 4.07 | 5.21 |
| Milk and milk product | 4.60 | 5.60 | 4.33 | 3.73 | 4.92 |
| Fisheries | 2.92 | 5.51 | 5.11 | 3.69 | 7.19 |
| High value agriculture | 3.62 | 4.19 | 4.53 | 3.89 | 4.95 |
| Value of output from Agriculture | 1.30 | 4.52 | 3.03 | 1.85 | 1.48 |
| Value of output from Agriculture and allied activities | 1.72 | 4.54 | 3.12 | 2.52 | 2.74 |

Note: # in 2011-12 prices.

Source: Author's computation from CSO data

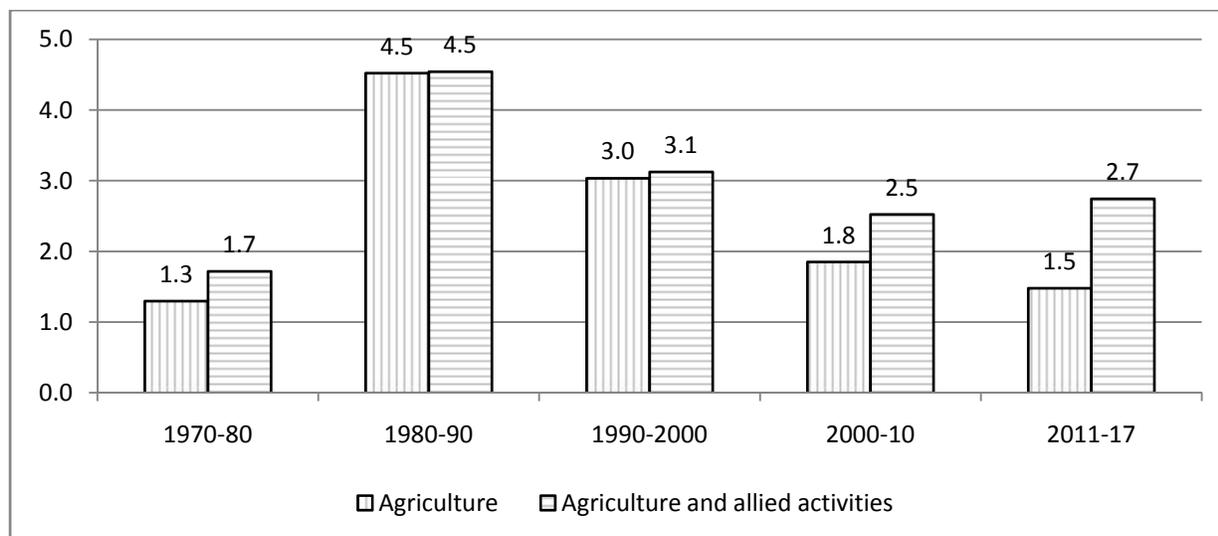
Figure 1: Relative Price Trend for Cereals during 1953-2016.



Note: Relative price refers to wholesale price index of cereals deflated by wholesale price index of all commodities with 2004-05 as base.

Source: Economic Advisor, Government of India

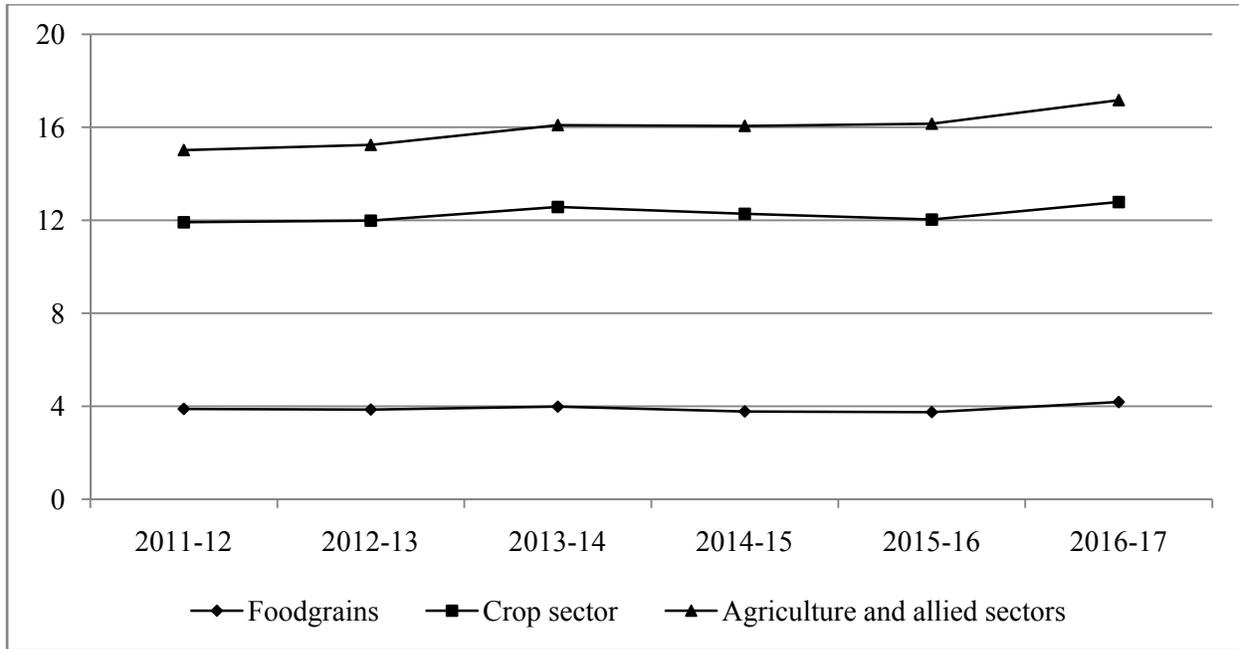
Figure 2: Decadal Growth Rate of Value of Output of Agriculture and Allied Activities in India (%)



Source: Author's Computation from CSO data

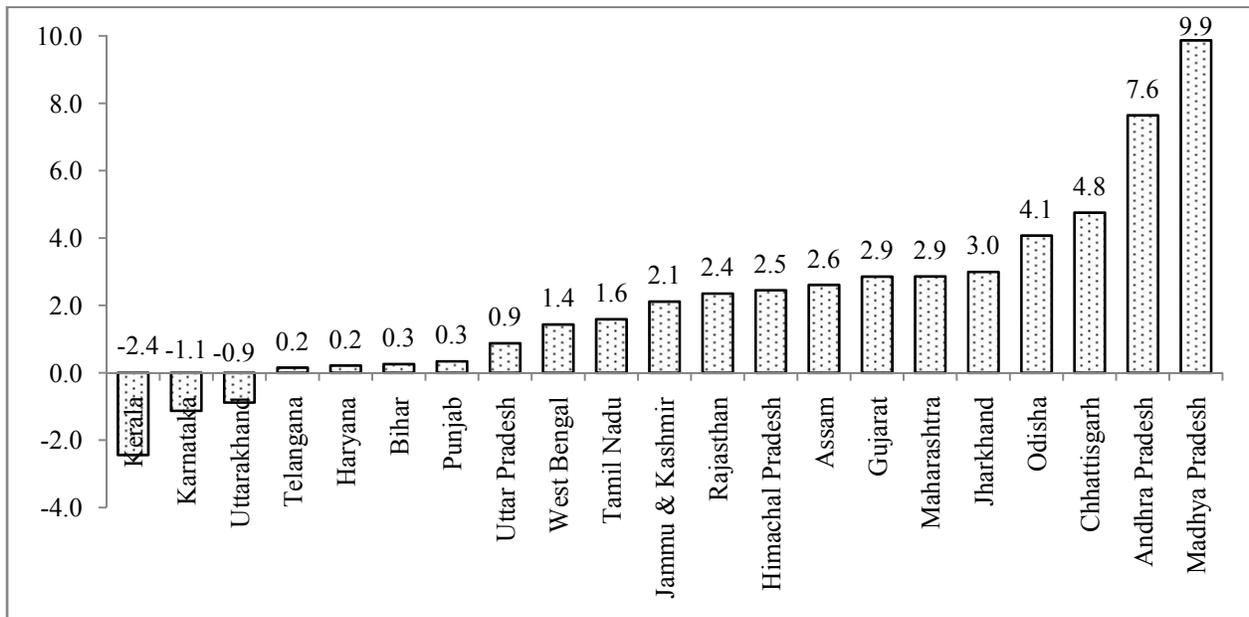
The sluggish growth of agriculture during 2011-2017 is depicted in Figure 3. The poor performance of agricultural growth was widespread across states. A large number of states witnessed either less than one per cent or negative growth rate of gross value added (GVA) at 2011-12 prices during 2011-2017 (Radhakrishna and Mishra, 2019, Figure 4). If these trends persist, it aggravates rural-urban disparities and acts as a constraint on long term growth by affecting effective demand. Relative price of cereals also registered a rising trend (Figure 1). Deceleration in the growth of crop output and rising trend of relative price of cereals should be a cause of concern as it hurts the poor the most. These trends need to be reversed.

Figure 3: Gross Value of Output from Food Grains, Crop Sector and Agriculture and Allied Sectors in India at 2011-12 prices (in Trillion)



Source: Author's estimation from CSO data

Figure 4: Growth Rate of Gross Value Added (GVA) in Agriculture and Allied Activities among Major States during 2011-12-2016-17 at 2011-12 prices (%)



Source: Author's estimation from CSO data

3. Agricultural Investment

Investment in agriculture and allied activities by both public and private agencies does contribute to the growth of agriculture which creates forward and backward linkages to the growth of other sectors. The share of gross capital formation (GCF) in agriculture and allied activities to total gross capital formation fluctuated around 12 to 20 per cent during the 1950s, 1960s and 1970s, and steadily declined thereafter (Shetty, 2019). The share of GCF in agricultural and allied activities in the aggregate GCF of the economy declined from 18.4 per cent in 1980-81 to 7.1 per cent in 2010-11 (Figure 5a). In the period 1980-81 to 2010-11, the ratio of GCF in agricultural and allied activities to GDP has hovered below 4 percent. Clearly it indicates agriculture, as compared to other sectors, received less priority in GCF.

The relative shares of public and private sectors in GCF in agricultural and allied activities (AGCF) have changed over time. Between 1980-81 and 1983-84, the public and private AGCF as a ratio of GDP in agricultural and allied activities remained the same at about 5 per cent; and thereafter, the share of public sector in GDP in agricultural and allied activities declined to about 2 per cent in 2003-04 and moderately increased to nearly 3 per cent in 2011-12 (Figure 5b). Studies show that public investment in agriculture in the early phase of planning crowded in private investment in agriculture, but the relationship got weakened now. In the early phase of planning the crowding in could be due to the fact that irrigation, infrastructure etc, received higher weightage in the public investment but their weight-age declined subsequently.

The private sector AGCF as a ratio of GDP in agricultural and allied activities hovered around 5 per cent during 1980-81 to 1986-87; increased to 10 per cent in 1990-91; declined to about 6-7 per cent in the early phase of the reform period (up to 1998-99); and then, steadily rose to about 18 per cent in 2010-11 (Table 5b). It dominated the change in AGCF. The AGCF (public and private) as a percentage of agricultural GDP increased steadily from about 7 in 1997-98 to 21 in 2010-11.

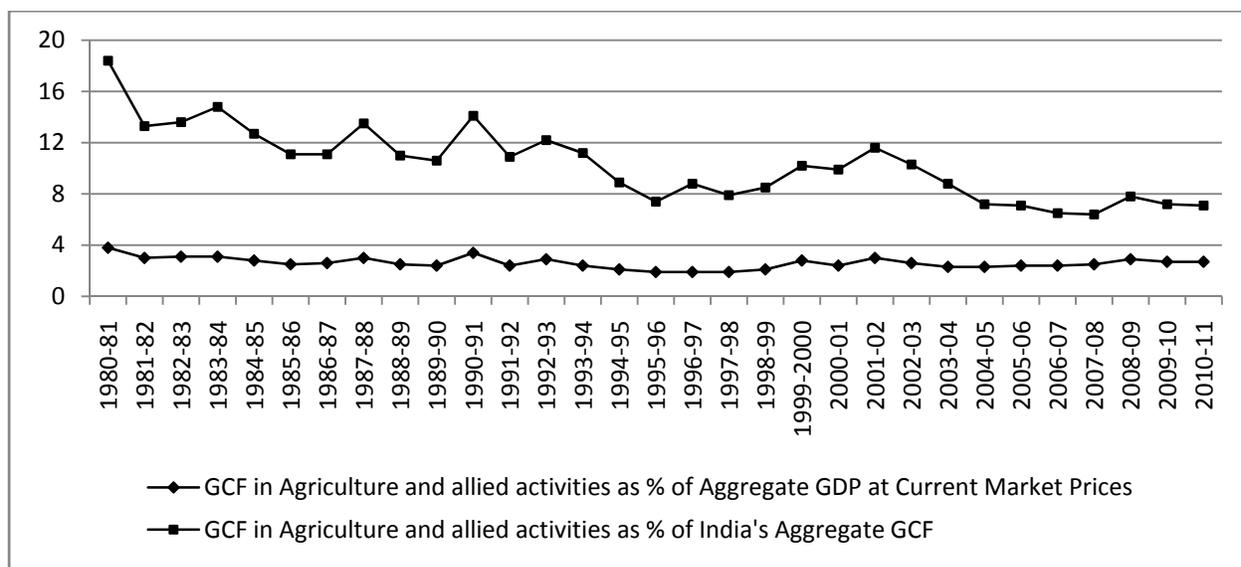
What explains the increase in private capital formation?

Since 1998-99, multiple factors have promoted private investment in agriculture (Shetty, 2019): (i) rising wages as well as labour scarcity has motivated the farmers to invest in labour saving mechanization; (ii) relative price shift in favour of agriculture has induced private investment in

agriculture; and (iii) the policy of doubling agricultural credit in every three years announced in 2004 and subsequent expansion of term lending by banks have a positive effect on private investment. It is a paradox that the substantial increase in private investment as well as total investment in agriculture has not resulted in accelerating aggregate growth. It could be due to the fact that a considerable private investment has gone for substitution of labour and hence incremental capital-output ratio has risen.

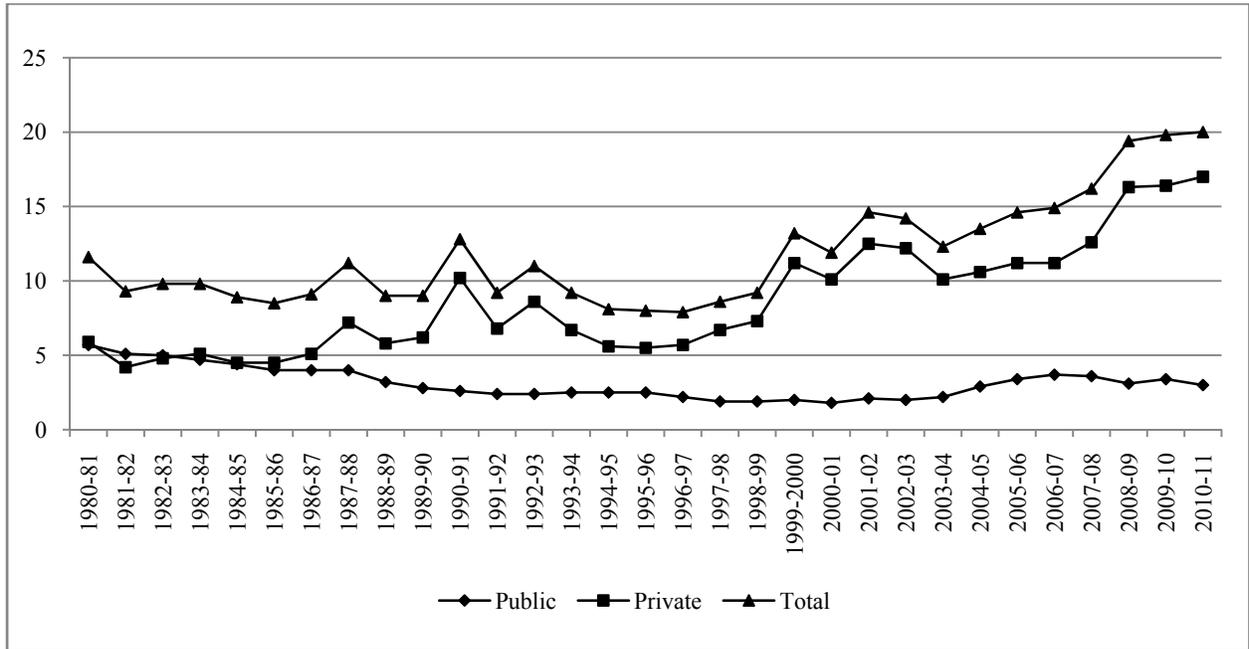
Coming to the recent period, as per the revised National Income Series (2011-12), public sector GCF in agriculture and allied activities as a percentage of Gross Value Added (GVA) in agriculture and allied activities at constant prices fluctuated between 2.4 to 2.7 per cent during 2011-12 to 2016-17 (Figure 5c) (Shetty, 2019). Private sector GCF in agriculture and allied activities as a percentage of GVA in agriculture and allied activities declined from 15.9 per cent to 12.8. Consequently total GCF (public + private sectors) in agriculture and allied activities as a percentage of GVA in agriculture and allied activities declined from 18.2 in 2011-12 to 15.5 per cent in 2016-17 (*ibid*). The slowdown of agricultural growth as well as declining share of agricultural GCF in GVA has adverse effect on agricultural investment in the recent period. This needs to be addressed.

Figure 5a: Gross Capital Formation (GCF) in Agriculture and Allied Activities as a Percentage of Aggregate GDP at Current Market price and as a Percentage of India’s Aggregate GCF (at 2004-05 prices)



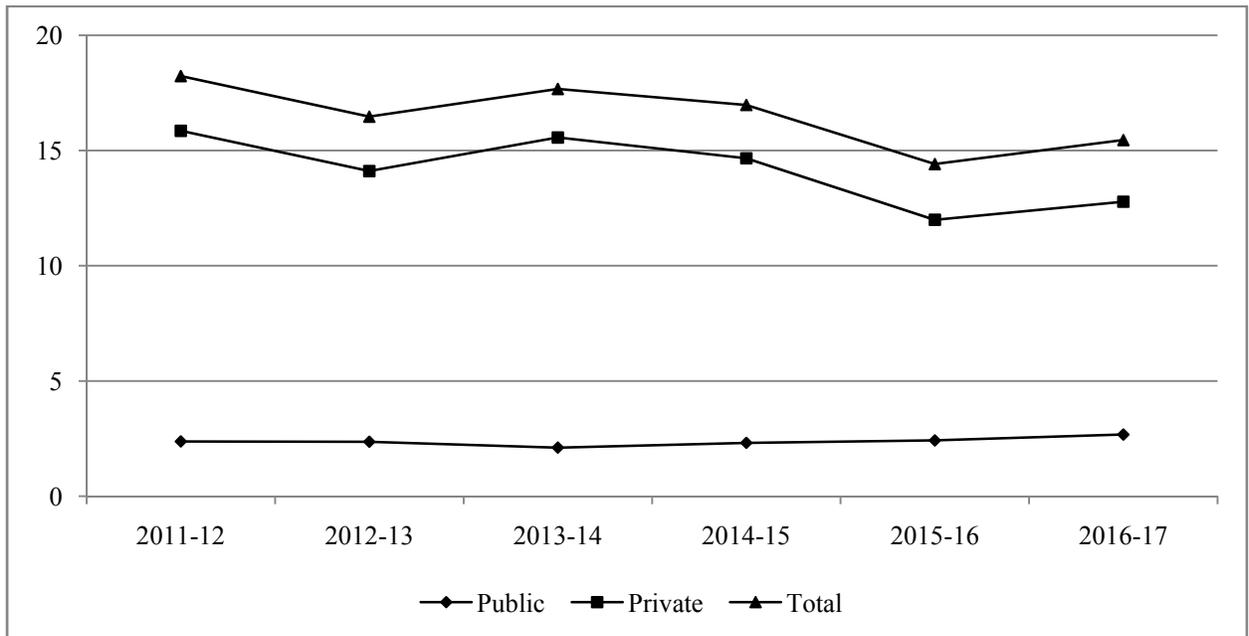
Source: EPWRF, 2019

Figure 5b: GCF in Agriculture and Allied Activities as a Percentage of GDP from Agricultural and Allied Activities (at 2004-05 prices)



Source: EPWRF, 2019

Figure 5c: GCF in Agriculture and Allied Activities as a Percentage of Gross Value Added Agricultural and Allied Activities (at 2011-12 prices)

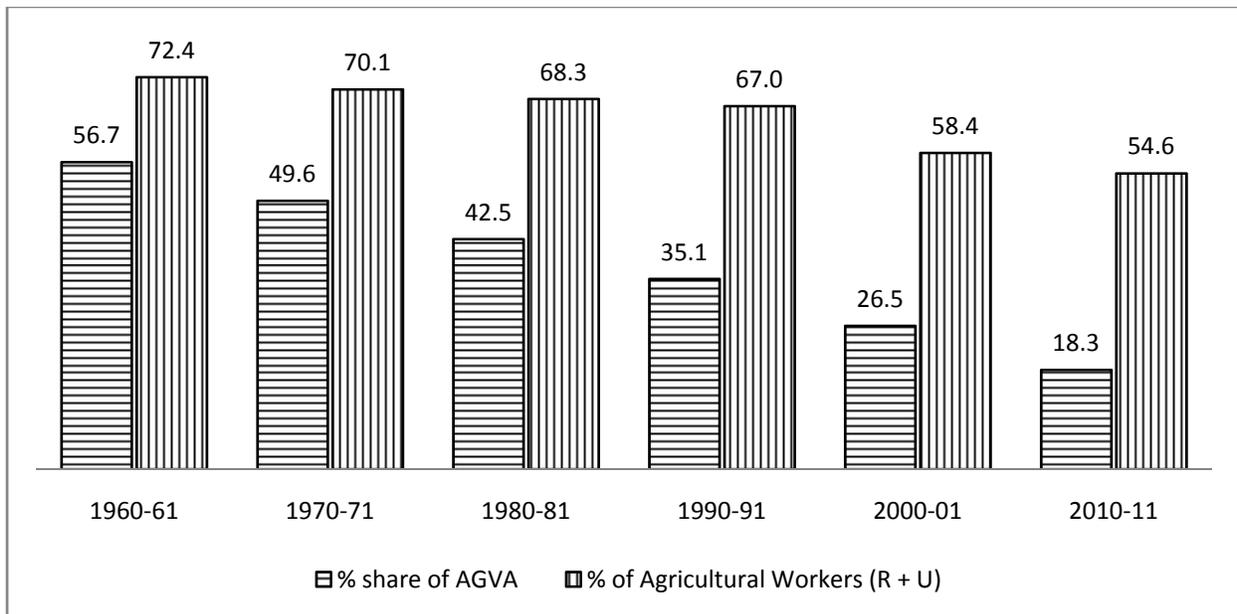


Source: Shetty, 2019

4. Agricultural Employment

In 2011-12, though agriculture accounted for 14.1 per cent of GDP, its share in workforce was high at 47.5 per cent (Thomas, 2015). On the other hand, though the service sector accounted for 58.5 per cent of GDP, its share in employment was low at 27.9 per cent. However, the secondary sector had the share of 27.5 per cent of GDP as against the share of 24.6 per cent of workers, almost maintaining some balance. Similarly, in the case of the manufacturing sector, there was a little difference between its share in employment (13.3 per cent) and in GDP (15.7 per cent) (*ibid*). The declining share of agriculture in GDP is on the expected line, but the sluggish decline of employment is a cause for concern (Figure 6). Even in Rural India, the share of agriculture in Net Domestic Product (NDP) was 36 per cent in the 2000s (Papola, 2014), whereas its share in total rural workers (principal and subsidiary status) was 64 per cent (NSS Report No. 554). It shows the disparity in income between agriculture and non-agriculture workers.

Figure 6: Share of Agriculture in Agricultural Gross Value Added and Share of Agricultural Workers in Total workers in India (%)



Source: Computed by A. Venkatswrlu

Employment in agriculture and allied activities has declined not only in relative terms but also in absolute terms. Out of the 472.5 million workers (rural plus urban) in 2011-12, 224.4 million

(47.5 per cent) were employed in agriculture and allied sectors .Whereas in 2004-05, 257.7 million workers were employed in agriculture and allied activities and their proportion in total workers was 56.3 per cent. Of the net fall of 33.3 million workers between 2004-05 and 2011-12, about 19.2 million net fall of workers was from self-employed workers in agriculture and allied activities, and about 13.5 million net falls from casual agricultural workers. This has contributed to a moderate increase in the share of self-employed workers in the total agricultural work force.

Rural female workforce in agriculture has also declined by about 27.2 million (17.5 million self-employed and 9.7 million casual workers) between 2004-05 and 2011-12. It is claimed that women withdrew from agriculture and were attending to domestic duties in their own households due to an improvement in the availability of income-earning opportunities for male members of the family and perhaps to avoid heavy manual work in agriculture. There is a degree of segmentation of agricultural labour market with female workers mostly engaged in repetitive and strenuous agricultural operations. Even with the progressive withdrawal of female workers, there has been feminization of agriculture due to the shift of male labour from farm work to non-farm work.

Non-agricultural sector has been emerging as a source of employment in rural areas. In 1983, only 19 per cent of rural workers were engaged in non-agricultural activities, as against 36 per cent in 2011-12. This shift has taken place among the economically weaker sections (Saha and Verick, 2016). Construction, trade and services were the major drivers of non-farm employment. There has been an increase in the demand for specific skills in non-farm activities, in commercial agriculture and in allied agricultural activities. These are some positive trends. It should be noted that the non-farm sector has better scope for regional spread than agriculture.

These developments have brought about perceptible changes in the employment patterns in rural areas. The percentage of self-employed in agriculture has risen but, in contrast, increasing casualization of the workforce has taken place in the non-farm sector. On the whole, self-employed workers (usual and subsidiary status) in all sectors together accounted for 56 per cent of the rural work force and casual rural labour for 35 per cent. The proportion of households among the agricultural households having non-agriculture wage income as a principal source of income has increased considerably between 2002-03 and 2012-13 (NSSO's *Situation Assessment*

of Agricultural Households Surveys). This has been more prominent among poorer agricultural households (Saha and Verick, 2016). Some of the farm households have not only diversified into high value crops but also engaged in non-farm sector as self-employed. For some of them, farming has become part time.

The average rate of daily wage earning of rural casual workers accelerated to 3.9 per cent per annum between 1993-94 and 2011-12 as compared to 2.5 per cent between 1983 and 1993-94 (Papola, 2014). The rate of increase in daily wage earnings was much higher between 2004-05 and 2011-12 as compared to the period between 1999-2000 and 2004-05. The daily wage earnings of rural casual workers have risen faster than daily wage earnings of urban casual workers and agricultural wages have grown at a higher rate than non-agricultural wages in the post-reform period (*ibid*). In rural areas, average daily wage earnings of casual labour in non-agricultural activities have been consistently higher than in agricultural activities throughout the period. However, the gap has narrowed down. Despite the higher growth rate of rural wages, urban wages were higher in 2011-12.

The ongoing trends in agricultural and allied sector employment signify that structural changes have been occurring in the rural labour market. Supply and demand factors are both responsible for these changes. On the supply side, the following three factors appear to be responsible: (i) decline in the rate of population growth, (ii) decline in the rate of labour force participation due to increasing enrolment of youth in educational institutions, and (iii) rural to urban migration. On the demand side, there has been an overall decline in demand for labour due to (i) mechanization on account of increased wages and labour scarcity in peak season due to the implementation of Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA), (ii) crop diversification from traditional labour intensive food crops to less labour intensive tree crops and horticultural crops, and (iii) significant and rapid expansion of the rural non-farm sector.

5. Is there convergence in the productivities of agricultural and non-agricultural workers?

Empirical evidence on structural transformation of eighty-six countries from 1965 to 2000 shows that the gap in labour productivity between agricultural and non-agricultural workers approaches zero when incomes are high enough and the two sectors have been integrated (Timmer, 2009). A dynamic agriculture raises labour productivity, increases wages and reduces poverty. The

process also reduces the relative importance of agriculture to the overall growth of the economy as the industry and service sectors grow faster.

On the contrary to the experience of the eighty six countries, there was no convergence in the productivities of agricultural and non-agricultural workers from 1971 to 2011 (Figure 7). In fact, the difference in productivities widened over time both in absolute and relative terms. While in 1971, the gap in the labour productivity between non-agriculture and agriculture at 2004-05 prices was Rs. 42,433, which has increased to Rs 1,64,757 in 2011. In relative terms, the labour productivity of non-agriculture was nearly double than that of agriculture in 1971 and by 2011, it was almost six-fold higher. The gap widened substantially between 2001 and 2011.

Figure 7: Agricultural and Non-agricultural Labour Productivity in India (at 2004-05 prices), (Rs.000)



Source: Computed by author from CSO and Census data

How to promote the structural transformation?

The long-term convergence of productivity between agriculture and non-agricultural workers depends on improving land productivity and promoting mobility of labour from agriculture to non-agriculture for decent employment. Such a transition can be facilitated by labour intensive economic growth including promotion of producer companies and equipping the farm youth with

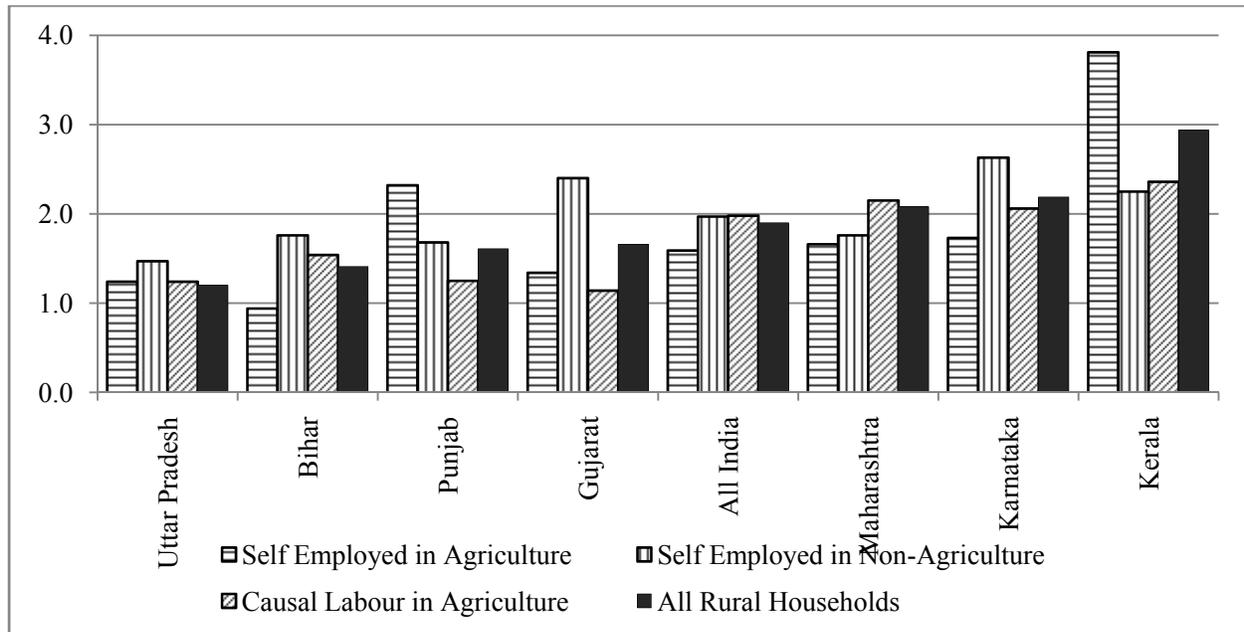
skills in demand. Such a transition would be the right path to eliminate rural poverty and address the widening inequalities.

6. Well-being of Farming Community: Levels of Living

The proportion of agricultural households in total rural households declined from 68 per cent in 1993-94 to 55 per cent in 2011-12. As a percentage of rural households, self-employed in agriculture declined from 38 per cent to 34 per cent and casual agricultural labour households declined from 30 to 21 per cent during that period (NSSO 50th and 68th Rounds). How do the improvement in levels of living and decline in the incidence of poverty among the self employed household in agriculture compare with other rural occupational groups?

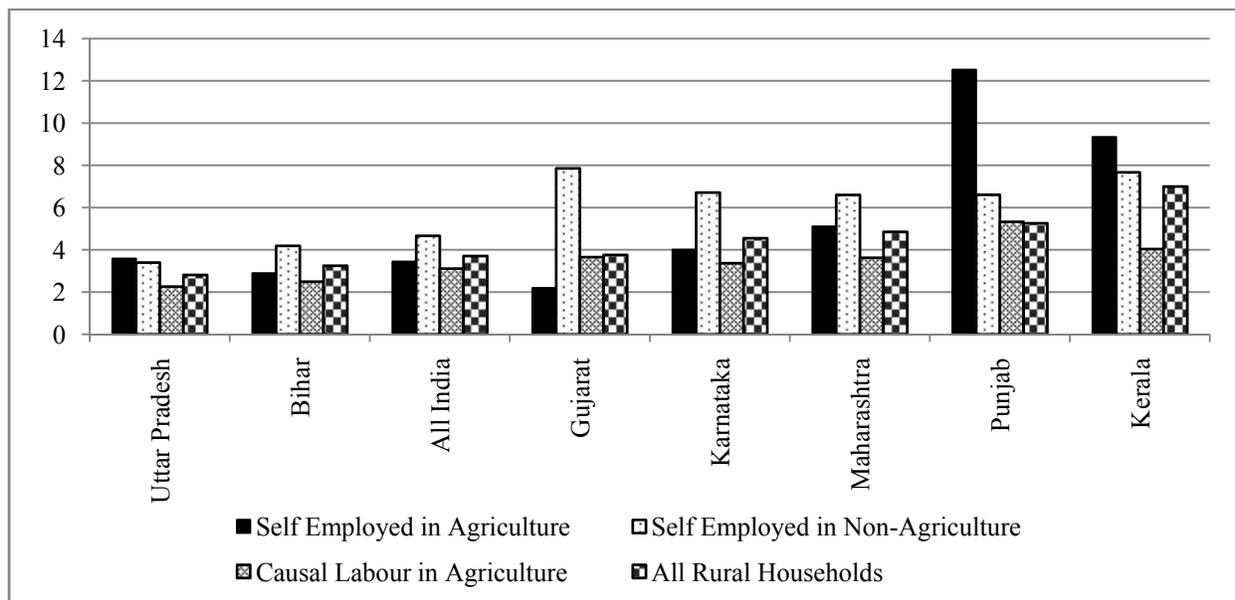
In the post-reform period (1991-2012) self-employed households in agriculture in rural areas experienced moderate improvement in their well-being as reflected in their monthly per person expenditure and poverty reduction (see figures 8 and 9). But, these households lagged behind the average rural households in respect of growth of monthly per capita consumption expenditure (MPCE). Households self-employed in non-agricultural activities in rural areas gained more than the households self-employed in agriculture. Evidently, the relative position of the households self-employed in agriculture worsened after 1991 reform. However, the MPCE of households self-employed in agriculture was more or less the same as that of all classes' average in all states in 2012, except for Punjab and Kerala where the MPCE of such self-employed households was markedly higher and the incidence of poverty was the lowest (Radhakrishna and Raju, 2015).

Figure 8: Annual Growth Rate of MPCE at Constant Prices between 1993-94 and 2011-12 by Occupational Types and all Rural Households



Source: Radhakrishna and Raju(2015)

Figure 9: Compound Rates of Decline in the Incidence of Poverty (%) between 1993-94 and 2011-12 by Occupational Groups



Source: Radhakrishna and Raju(2015)

The MPCE growth among agricultural labour households kept pace with that of All India rural households between 1993-94 and 2011-12 and witnessed higher growth than that of self-employed households in agriculture. Even with better growth, the absolute MPCE of agricultural labour households in 2011-12 was far below that of households self-employed in agriculture (Radhakrishna and Raju, 2015).

Between 1993-94 and 2011-12, the incidence of poverty in rural areas declined at 3.44 per cent per annum among households self-employed in agriculture and at 3.11 per cent per annum among agricultural labour households. These rates of decline were lower than the average rate of decline of all rural households (3.71 per cent per annum). Other rural labour households engaged in non-agricultural activities experienced the lowest decline (2.41 per cent per annum), while self-employed households engaged in non-agricultural activities experienced the highest rate of poverty reduction (4.66 per cent per annum).

What is worth noting is that the higher agricultural productivity in Punjab and diversification of sources of income in Kerala contributed to a higher income among the agricultural households in rural areas (Situation Assessment Survey of Agricultural Household of NSS 70th Round (2012-13)). The incidence of poverty was negligible among landholding classes above 0.40-1.00 hectares in Punjab and above 1.00-2.00 hectares in Kerala. Rural economy of Kerala already experienced diversification. In 2011-12, 31 per cent of rural workers (principal and subsidiary status) of Kerala were engaged in agriculture (NSS 68th Round, 2011-12). Rural economy of Punjab was less diversified. Agricultural labour constituted 52 per cent of total rural workers (*ibid*).

Gujarat and Maharashtra experienced slower growth of MPCE in rural areas and also slower reduction of poverty (Figures 8 and 9). In Gujarat, though agricultural Gross State Domestic Product (GSDP) was the highest among the major states and its growth was twice to that of All India annual growth rate, between 1993-94 and 2011-12, its MPCE increased at 1.34 per cent per annum for self-employed households and 1.14 per cent for agricultural labour households. The corresponding figures for All India were 1.59 per cent and 1.98 per cent respectively (Radhakrishna and Raju, 2015). The performance of poverty reduction during the post-reform period was better in the Southern states.

Cross-section regression analysis has shown that agricultural productivity (agricultural GSDP per net sown area), extent of irrigation (gross irrigated crop area/gross cropped area), road density and urbanization have significantly and positively affected MPCE in rural areas and reduced the incidence of poverty among the self-employed households. The proportion of agricultural workers in rural workforce and, to some extent, agricultural land productivity would explain the inter-state variations in wage earnings per worker, MPCE and poverty (Radhakrishna and Raju, 2015).

For sustainable improvement in the well-being of farming community, India has to accord priority to agricultural productivity driven by total factor productivity, agricultural diversification, and income diversification by expansion of rural non-farm sector as well as promotion of pro-poor collective institutions to integrate small farmers into the development process. However, low level of education and skills among the farming community, particularly among the small farmers may act as a barrier to their mobility to rural non-farm sector. Evidently, the present situation marked by prevalence of unsustainable debt burden among the farming community is a challenge to overcome the widespread distress. It is essential to put a downward pressure on the prevailing high interest rates in the informal credit market by expanding formal credit to agriculture. Reducing the transaction cost of institutional credit by adopting technological innovation is imperative.

7. Agricultural Incomes and Institutions: Need for Reforms

There is a disconnect between agricultural growth and improvement in farmers' incomes. The value of agricultural produce at retail prices is substantially higher than the prices received by the farmers. The margins that accrue to middlemen between direct producer and consumer are very high. Moreover, the increasing capital and credit intensity of agricultural marketing technology restricts market access to small and marginal farmers.

7.1. Agricultural Produce Markets:

Lack of remunerative prices to agricultural produce is one of the main causes of farmers' distress. Capital and credit intensive agricultural marketing, restricts active participation of small and marginal farmers in commodity markets. Agricultural Produce Markets managed by the state governments through Agricultural Produce Market Committees (APMCs), have not been

effective in providing remunerative prices to small and marginal farmers. The Union Government has proposed a model Agricultural Produce and Livestock Marketing (Promotion and Facilitation) Act, 2017 for bringing functional and administrative uniformity among the agricultural produce markets in the country. The provisions of the Act aim to promote efficient functioning and transparency in the marketing. The Government of India has advised the states to introduce legislations for the establishment of private markets and yards for direct exchange of produce between the buyers and sellers without government interference. It also recommended promotion of Public Private Partnership (PPP) in the management and development of agricultural markets in the country. These initiatives, if implemented properly, will not only contribute to agricultural diversification but also lead to distributive efficiency. Many states have adopted the Act partially or fully. One of the significant provisions of the Act is to develop a pan India market (electronic National Agricultural Market (e-NAM)) in which both sellers and buyers use the Information and Communication Technology (ICT) for trading agricultural produce. There are 585 markets registered so far under the e-NAM scheme, of which 371 are functional.

Mobile Apps were designed for the use of farmer sellers, traders and other stakeholders to participate in the e-NAM. One of the provisions in the model Act is to provide unified license for traders to operate across the markets. In order to reduce the marketing costs and consumer prices, 12 states have abolished market fee on fruits and vegetables and also deleted them from the list of notified commodities. Direct marketing of farm produce is also advocated by the model Act. Direct marketing licenses were granted to private entrepreneurs. Establishment of private markets, to bring competition between them and the markets controlled by APMCs, is also envisaged by the Act for facilitating storage and pledge finance for the agricultural produce. Further, all the storage structures, i.e., cold storages, silos and other private godowns, were notified as sub-markets. The storage documents issued by them are made negotiable. If the provisions of the model Act are implemented in the letter and spirit, they would promote managerial and functional efficiency of agricultural markets. Otherwise they remain only on paper.

What is to be done for enhancing the bargaining position of farmers in the market?

Capacity building among farmers to form collectives should be the core element of any strategy, particularly for strengthening the bargaining position of farmers (small and marginal farmers) in the market. The farmers' awareness should be built through consolidation of their collective strength. Equally important is the state government's market interventions in critical areas such as price stabilization, technology support, provision of infrastructure, imparting marketing skills, etc. Some of the following successful farmer collectives and market intervention by the state governments can be replicated in other parts of the country.

ITC e-choupals: International Business Division of Indian Tobacco Company (ITC) started about 6500 e-choupals in 40,000 villages of 10 states to network villages and procures agricultural products for domestic and export purposes (ITC, *e-choupal* portal). ITC has set up small internet kiosks at the village level to provide real-time market information related to prices, availability of inputs, weather data and other aspects relevant to farmers. Locally identified farmers, called *sanchalaks*, manage these kiosks. Farmers can sell their produce directly to ITC and get cash in ITC collection centers. It benefits farmers in getting higher farm gate prices, as ITC could directly procure from the farmers by removing the intermediaries. It also benefits the company by reducing its sourcing cost and gaining wider reach and networks. ITC's intervention in supply chain benefits the farmers by increasing their sales. According to ITC, farmers increased their sales realization by 10 to 15 per cent and it succeeded in saving procurement cost to the tune of 3 to 4 per cent. It needs to be assessed whether small and marginal farmers benefit from the ITC initiative and whether it can be replicated.

e-NAM: In Chhattisgarh and Andhra Pradesh, for traders participating in e-NAM, Rs. 0.25 rebate is given in the market fee to be paid on every purchase of notified agricultural commodities. In Sandspur Market of Gujarat, 30 per cent exemption in the total market fee is given to the traders operating through e-NAM. In Madhya Pradesh and Uttarakhand, 0.5 per cent to 10 per cent market fee is waived on e-NAM proceedings respectively. These incentives will have their impact on the ultimate consumer prices in a big way. That the farmers get benefitted from e-auction is evident from the fact that the arrivals in the market after introduction of e-NAM have been increasing steadily. The value of commodities traded through the unified platform (e-NAM) has almost doubled from Rs. 6,509 crore in 2014-15 to Rs. 12,597 crore in 2015-16.

Rural Distribution (RUDI for short): RUDI, an organ of the NGO of Self-employed Women Association (SEWA), is a Farmer Producer Company with 600 members. It has 42 processing units in the state and most of the members are women. It tried to establish supply contacts with some companies and procure products from the members for supplying to the companies. As soon as they get the order, they inform the members about the price at which they will buy. If the members agree to the price, the commodities are transported from them to the companies at the cost of the company. RUDI charges 2 per cent commission from the members for getting their produce sold through it. It has obtained license from the APMC to act as the licensed buyer and to pay the market fee. Since storage facilities are not available with the farmer members, the produce is generally sold without much profit.

Maha Mango/Maha Grapes/Maha Anar of Maharashtra: The State Marketing Board of Maharashtra provides handholding to the entrepreneurial farmers to market the fruits largely grown in the state under its brand name, prefixing “Maha”(short for Maharashtra) to variety of fruits. The farmers are organized into cooperatives and the Board provides necessary technical support to them to grow and market their produce both in India and abroad. Cargo hub is established at Pune, where the farmers bring their produce for upcountry sale/export. At the cargo hub, the produce is graded, packed and air lifted to different destinations. The Board has established post-harvest training centre in Talegaon near Pune to train the farmers of different fruit cooperatives.

Marginal Farmers Markets of Kerala: It is a network of 265 primary agricultural markets, self-governed by about 125,000 marginal farmers across Kerala. A decade long social mobilization through self-help group (SHG) route has enabled marginal farmers to acquire required skills to manage group marketing. Every farmer-member is made aware of his/her democratic right to participate in the decision-making and his/her responsibility towards ensuring transparency in the administration of markets, including price discovery. Towards this, they are being supported by a professional body: Vegetable and Fruit Promotion Council (Keralam), promoted by the state government. Through this collective marketing, the farmers benefit from scale economies and realize best possible price for their produce.

SAFAL, Bangalore: The SAFAL market is designed exclusively for marketing of fruits, vegetables and flowers but, presently, only fruits and vegetables are sold in the market. Farmer

who intends to sell in the market has to bring their fruits or vegetables after grading them into not more than three grades. Procured produce is classified and stored in cold storage. Auction, on the basis of sample, is conducted by electronic display system in the auction hall. The auctioneer starts the auction displaying the name of the fruit or vegetable, grade and the quantity. Auction commences with presumptive price at higher level than the ruling price on the electronic display board. With the commencement of the auction this price starts to descend. Descending of the price stops at that level and the table number from which the button was pressed is displayed. The name of the buyer and rate at which he is willing to purchase is determined. Since sale is not as per the lots of individual farmers, total value of the produce for particular grade is averaged and disbursed to the farmers on pro-rata basis. Board deducts a service charge at 3.5 per cent of the value of the produce from the farmer. There are no other marketing costs in the name of carting, storing, handling, weighing, etc. and hence the farmer realizes better price.

Floor Price Scheme: The Karnataka Marketing Board has implemented “Floor Price Scheme” to procure commodities that are not covered under the minimum support price (MSP) scheme of Government of India, viz., onion, potato, green chili and tomato. Whenever market price falls below the minimum support price fixed by the state government, the state provides money to government agencies to procure the produce at the MSP. For this purpose, the Board has constituted a revolving fund with contributions from the market committees and grant from the Government of Karnataka.

Building Storage Space at Village Level in Tamil Nadu: Under the guidance of Mysore Resettlement and Development Agency (MYRADA) an NGO of small farmers in the Germalam village in Erode district pooled a tiny share of their own resources, took institutional credit through the SHGs located in the village and constructed two warehouses. The village SHG manages these warehouses at the lowest possible cost. The charge of storing one bag of produce by the members contributed to the construction of warehouses is Rs. 1 per month, whereas it is Rs. 1.5 per month for other individuals. Thus, the community involvement has facilitated in minimizing the storage losses and contributing to the efficient supply chain.

Complementary efforts in building institutions such as Farmers’ SHG Federations and Producer collectives, including producer companies, and imparting skills for integrating small farmers with agri-business are equally important. These measures would promote earning opportunities

to farmers' households from farm and non-farm sources. Also, effective public intervention is essential to manage risks originating in both production spheres as well as in the markets.

It is essential to recognize that consumption patterns are changing due to higher growth as well as globalization. As a consequence, the food basket is getting diversified and demand for quality food is on the increase. This is reflected in the high share of high value commodities in the consumption basket of the households. Changing lifestyles, market integration and trade liberalization at the global level have led to increasing demand for processed food. In future, both diversification and quality will influence agricultural growth and both will open opportunities for investment in agri-business. The moot question is how far this growth would strengthen the livelihood base of the farming community in traditional agriculture, particularly in rain fed areas.

7.2 Agricultural Land Markets

Under the Constitution of India (Seventh Schedule), land is predominantly a state subject. Indian land markets, therefore, are heterogeneous. A variety of land markets exist with different levels of rights over land ownership, usage and revenue. Since each state is entitled to frame policies to manage its own land markets, the rules and regulations that govern agricultural and urban land differ across states.

There are several constraints for the emergence of a well-functioning land market in India due to some inherent problems with land (Mearns, 1993). The legal and effective regulatory framework can, to some extent, overcome these problems. Despite land reforms, the land market continues to be highly distorted due to several factors. Land records are inaccurate and outdated. There are widespread disputes relating to land titles. High transaction costs have discouraged formal land transactions. Initiatives, which could have made the market function better, have not been taken; while some regulations, particularly relating to tenancy, are counterproductive. Land market in India is distorted by vested interest of richer farmers who block reforms, industrialists who take advantage of land scarcities, and corrupt bureaucrats who are involved in tampering with land titles and records. All of them have a strong hold on land markets.

There is a significant transfer of land from farmers to the promoters of various projects, which has been the source of widespread social discontent. Estimates show that during 1991 and 2003,

2.1 million hectares of land was acquired for non-agricultural purposes. Large area of land has been acquired for Special Economic Zones (SEZ) of which a major part remained vacant and unused. Lands given at subsidized rates to establish industries in SEZ, after land prices shot up lands were mortgaged banks for loans to be used for purpose other than establishing industries in SEZ. Undivided Andhra Pradesh, Gujarat, Maharashtra and Tamil Nadu accounted for 70 per cent of land acquisition for SEZ. Amit Bhaduri (2015) has shown how political corruption and patronage of the corporate sector by the governments resulted in the allotment of land and other natural resources at subsidized rates to the corporate entities, leading to forceful eviction of the poor from their dwellings and deprivation of their livelihoods.

Successive rounds of NSS have shown that with a downward shifting of large holdings (> 10 ha) occurring into the upper end of the farm size ladder, semi-medium (2 to 4 ha) and medium (4 to 10 ha) holdings have not only survived but also recorded a comparatively better performance than large holdings (Vyas, 2014). Late Professor V.S. Vyas argued that expansion of semi-medium and medium holdings is desirable from both growth and equity points of view and made the following suggestions: “Small farmers should be encouraged, and enabled, to expand their holdings through purchase or leasing land from bigger farmers; Supportive institutions of research, extension, credit and marketing should be geared to assist small farmers; Marginal farmers and absentee large farmers should be encouraged to sell or lease out land.” Commission on Inclusive and Sustainable Agricultural Development of Andhra Pradesh (APCAP) in its Report (2016) recommended that the state should create a land bank for small, marginal and tenant farmers. It should acquire the land through market process and sell the same to small and marginal farmers and tenants on easy terms. Credit agencies should be persuaded to extend long term loans to such tenant and small farmers who aspire to purchase land. The land banks promoted by the state should encourage the large farmers and absentee landowners to lease out land to land bank with an assurance to the owners to restore the land to the owners after the lease period. The land bank, in turn, can lease out the land for the potential tenants.

7.3 Agricultural Credit Markets

Tenant farmers require both short term production credit as well as long term investment credit. The short-term oral leases and uncertainty of its renewal are the main reasons why farmers are

unable to access institutional credit or make long term investments in agriculture. Banks are not enthusiastic about extending credit due to oral tenancy and lack of collateral.

A way out would be to remove all restrictions on leasing land; lease agreements should be registered; and there should be efficient machinery for adjudication. APCAP suggested that (i) tenants should be organized into self-help groups and federated at various levels to improve their negotiating power with banks for production credit, (ii) state should permit registration of tenancy by *panchayat* or revenue official and financial agencies should recognize the certificates issued by them for providing production as well as investment loans, and (iii) tenants should be identified at the *Gram Sabha* in the presence of representatives of Gram Panchayat, and financial agencies.

The *Vikas Jana Shakti-type* of model launched by Karnataka *Grameen Vikas Bank* to meet the credit needs of the vulnerable groups can be adopted for reaching out to tenant farmers even without recorded tenancy.

Tenant farmers should be incentivized through skill development, institutional credit and entrepreneurial guidance to explore and take up micro enterprises such as agro-processing in the supply chain, either on individual or on group approach. The banks should be directed to provide credit under the interest subvention scheme to enable them to take up these allied and non-farm activities. This strategy may lead to diversification of the household income of tenants, which can provide some income security and enhance their bargaining power in the tenancy market. In the long run, the bargaining position of the tenants depends on the supply and demand forces in the lease market. If demand lags behind supply, bargaining strength of tenants will be strengthened.

8. Land Degradation, Water Use efficiency and Natural Farming: A Paradigm Shift

India's share in world population is about 17 per cent, whereas its share in freshwater resources is only about 4 per cent. About 25 per cent of global ground water usage is from India. Water use efficiency in crop cultivation in India is the lowest in the world. Indian farmers use 3 to 5 times more water than Chinese, Israeli and American farmers (Kant, 2019). Over 20 million wells pumped water in India with free power supply by state governments. It is claimed that Punjab uses three times more water than Bihar for the production of a Kg of rice. India is

exporting more than 10 trillion tons of water through export of Basmati rice (Kant, 2019). To meet the water requirement of irrigation and drinking water, it is essential to conserve and augment all water bodies. It is suggested that lessons can be drawn from Telangana's Mission Kakathiya which restores about 21,275 irrigation tanks, and Andhra Pradesh's experience, where the water recharge technology has been used to raise ground water levels (Kant, 2019).

Although use of nitrous, potassium and phosphate fertilizers (NPK) has contributed to agricultural growth, its indiscriminate use led to salinity in the land and erosion of the soil fertility. Our field visits and interaction with officials in Andhra Pradesh revealed the spirit of competition in the use of chemicals is observed among farmers without realizing the negative impact. There are instances of fertile lands becoming alkaline due to continuous and excessive use of chemical fertilizers. Mono-cropping is another aspect that leads to land degradation. Use of chemical pesticides will have adverse effect on health of the consumers of agricultural products. Farmers practicing conventional chemical agriculture have to depend on market for seeds, fertilizers and pesticides. As these markets are mostly monopolized, the prices go up and the cost of production per hectare goes on rising compared to the value of output per hectare, as is being reported by the farming community.

It is in this context, Zero Budget Natural Farming (ZBNF) is emerging as an alternative to chemical agriculture paradigm. It replaces the use of chemical fertilizers and pesticides with organic inputs, prepared from cow dung, cow urine, *jaggery*, pulse flour, *neem* leaves, crop residues, and so on. "*Acchadana*" or mulching in natural farming is the process of covering the topsoil with cover crops and crop residues. This produces "humus", which conserves topsoil, increases water retention, improves soil fauna, and essential nutrients, and controls weeds. Proponents of natural farming are of the view that it is eco-friendly, enhances soil fertility, improves crop yields, and reduces cost of production. These pronouncements have yet to be validated by field surveys.

Crop rotation, practice of multiple cropping, and growing *azoles* which suppresses the weeds are all in the basic principles of natural farming. It is believed that natural farming enhances porosity of soil, humus formation (that promotes microbial activity and soil fauna), improves soil structure and fertility, decreases carbon percentage and salinity in the soil. There is sufficient evidence to show that the practice of natural farming has transformed the alkaline lands to fertile

lands. It is believed that natural farming increases soil health in general. However, spread of natural farming in waterlogged delta areas may pose problems because of scarcity of required inputs for natural farming.

ZBNF has taken roots in some states such as Andhra Pradesh, Karnataka, Kerala, Gujarat, Himachal Pradesh, Uttarakhand, and Chhattisgarh. According to Economic Survey (2018-19), 1.6 lakh farmers were already practicing ZBNF. It has been officially promoted in Andhra Pradesh since 2016-17. Centre for Economic and Social Studies (CESS), Hyderabad carried out a comparative study of costs and returns of natural farming and chemical farming in the agricultural year 2018-19 covering both Kharif and Rabi seasons in Andhra Pradesh. The preliminary results show a marginal improvement in yield rate of majority ZBNF crops. But there is a significant reduction in the cost of production of all ZBNF crops leading to higher net returns per hectare. It was claimed that there is an initial lag in yield improvement, and it may take three years to reverse land degradation. One has to wait and see the efficacy of natural farming by conducting in-depth field surveys across agro-climatic regions. Surveys should cover not only the cost of cultivation and changes in crop yields, but also record soil health, environment, marketing, food security and so on. Its long-term consequences will have to be observed.

9. Towards Inclusive Agricultural Development

The main reasons as to why some of the developing countries in Asia are able to achieve speedy reduction in income poverty and multiple deprivations in a short span of time are now clear. Rao (1996) argues that the initial conditions for growth and poverty reduction in East Asian countries, such as China and South Korea, were more favorable for rapid growth and speedy poverty reduction than in India. For instance, implementation of radical land reforms, mobilization of adequate resources by the state for investment in physical infrastructure as well as human resource development were instrumental in reducing poverty, despite their ideologies and socio-political differences (Rao, 1996 and 1998). In China, the commitment of the ruling elite, strength of public institutions, radical structural reforms, and enhancement of people's capabilities through health and education facilities contributed to rapid poverty reduction (Malik, 2012). Similarly, focus on small and medium enterprises in its development policy has also played an important role in promoting growth as well as employment (Pasha *et. al.* 2003).

In India, had radical land reforms been implemented soon after Independence and required investments made in human development and infrastructure thereafter, poverty reduction could have been much sharper and more sustainable. Though many radical reforms are not politically feasible in India, electoral democracy helped the enactment and implementation of nation-wide rights-based programmes such as MGNREGA, National Food Security Act 2013, Right to Education Act (RTE), 2009 and National Rural Livelihoods Mission (NRLM) 2011, etc. If these are properly implemented, marginalized groups could emerge as pressure groups and this may lead to a socially just economy. What seems to be feasible in India is only an incremental approach to improve the living conditions of the vulnerable groups. This should be complemented by a labour-intensive process of development and needed institution building.

Since a large number of the poor depend on agriculture for their livelihood, achieving the goal of poverty reduction as well as inclusive growth depends on the improvement of agricultural productivity and processes that facilitate the migration of agricultural workers to the rural non-farm sector by diversifying the sector. These will contribute to the diversification of employment opportunities as well as household income. This had been the process of transition towards an industrial economy in many East and Southeast Asian countries, which experienced a sharp reduction in poverty (Barker and Dawe, 2001).

Raising minimum support price and cash transfers may serve as a palliative in the short-term but cannot address the root cause of widening labour productivity between agriculture and non-agriculture. The long-term convergence of the two depends on improving land productivity and promoting labour mobility from agriculture to non-agriculture for decent employment. Youth belong to farm households is opting out of agriculture and seeking jobs in non-agriculture. Such a transition can be facilitated by labour intensive economic growth, including promotion of producer companies and equipping the farm youth with skills on demand. Such a transition would be the right path to eliminate rural multidimensional poverty and reverse the widening inequalities.

Thus, to achieve inclusive growth, there is a need to develop collective institutions such as self-help group (SHG) federations to bring together small and marginal farmers, particularly tenant farmers. It has to be started from the grassroots level. For these, collective efforts, capacity building of farmers, institution building and technological innovations are necessary. It is in this

context, experience Kerala's Vegetable and Fruit Promotion Council *Keralam* (VFPCCK) is noteworthy. Under this initiative, about two lakh marginal and tenant farmers have been organized into ten thousand SHGs, and their collective strength has been built through the formation of federations as well as business networks consisting of about three hundred farmers' markets. These organizations could deal with the markets, banks, and technology providers successfully. This has improved the small farmers' access to development agencies as well as and strengthened their bargaining power in local transactions. Through this collective platform, these farmers could earn significantly higher prices. Its "Master Farmers" approach has resulted in capacity building of farmers which is crucial for an endogenous development process. This has remarkably boosted the social and entrepreneurial capital of small farmers. The successful case of SHG farmers of *Sri Dharmasthala Rural Development Trust* is worth nation-wide replication.

Another option could be to organize the small and marginal farmers into producer cooperatives to tap the advantages of scale. In the Indian context, though there have been institutions like farmers' producer companies and joint liability groups of small farmers and tenants, the progress in their expansion has been very tardy. Special efforts need to be made to accelerate the growth of these institutions. Institutional arrangements have to be evolved to involve professionals in the preparation of project proposals for the establishment of Farmer Producer Companies, besides providing hand-holding support during the gestation period.

Another category of institutions relating to governance are *Panchayati Raj* Institutions, which can be entrusted with the task of local level planning and implementation of programmes for infrastructure, as is being done in Kerala. Collective institutions and PRIs could motivate the poor farmers to shed their passivity and to play an active role in the local level institutions of governance so that they can participate in policy decisions.

State level apex bodies need to be created to promote and nurture Farmers' SHG Federations, Farmers' Markets and Producer Companies. There is also a need for building institutions for managing the risks and also to extend technical knowledge and influence public policy for the wellbeing of the farming community. The most important issues related to the farming communities are reducing regional inequalities, maintaining livelihood security, and improving the wellbeing of women and children. In addition to these, issues such as the educational and

health status of farmers should also be addressed. Development administration has to be accountable to the public. Above all, political commitment to the cause of inclusive growth assumes overwhelming importance.

10. Concluding Remarks

Agricultural growth decelerated in the current decade. Yields of food grains are almost stagnant and that of commercial crops such as cotton and tobacco have declined. Gross capital formation in agriculture as a percentage of GDP at current market prices was less than 3 per cent for a number of years since mid-1980s and about 6 to 8 per cent of India's gross capital formation during the period 2004-05 to 2010-11. Even the expenditure on agriculture and allied sectors, of both Centre and states together, was low at less than 3 to 5 per cent of GDP, during the period 2004-05 to 2010-11 (EPW Research Foundation, 2014). At the All India level, the incidence of indebtedness of cultivator households increased from 26 per cent in 1991 to 35 per cent in 2012. Notably, a half of the indebted households in 2012 borrowed from non-institutional agencies (Rajakumar, et al., 2018). These negative trends cause the widespread distress of farming community being witnessed now.

What has to be done? To reverse the worsening situation of agriculture, it is necessary to transfer a sizeable proportion of small and marginal farmers with unviable small holdings from agriculture to non-agriculture. The precondition for such a transformation is the growth of productive rural and semi urban non-farm sector, having input-output linkages with agriculture. There is a need for substantial breakthrough in agricultural productivity driven by institutional reforms, and technological innovations. For this to be sustainable, the terms of trade should also remain favorable to rural sector.

There is considerable inter and intra-regional variations in agro-climatic conditions, endowments, risks affecting the livelihoods of farming community, governance of public delivery systems and local institutions. What is needed to bring about a change is a bottom up approach as adopted in Kerala's people campaign model, and promoting collectives such as self-help groups to improve the bargain power of farmers in the market and to enhance the efficacy of delivery systems by empowering them. It is utmost important to improve land productivity by total factor productivity driven by technology as in the 1980s attributed to Green Revolution

without degradation of natural resources. Diversification of sources of farmer's household income by undertaking nonfarm activities may provide income security.

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