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Capital Formation in Indian Agriculture: Determinants, Constraints & Its Implications for More Inclusive Growth of Indian Agriculture Sector

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INTRODUCTION:

Agriculture continues to be crucial for the country's economy as it generates about 14 per cent of India's GDP and provides employment to nearly 52 per cent of its population. A buoyant agriculture sector is, therefore, necessary to ensure food security, provide livelihood to a large proportion of the workforce, contribute to the growth of the economy by producing wage goods, raw materials for industry and goods for exports, generates surpluses and provide market for non-agricultural goods (Economic Survey 2011-12). Agriculture provides significant support for inclusive growth and social transformation of the country. Indian agriculture is important not only for the Indian economy, but also for the global market because of its size and potential impact on it. In this context, the healthy growth of the Indian agriculture is conceived as a hidden contribution to the global

economy.

The nexus between capital formation and agricultural growth, and agricultural growth and poverty alleviation are very well articulated in literature. Given the positive impact of agricultural growth on poverty alleviation, the role of capital formation as one of the major engines of agricultural growth has been well placed in the development policy perspective. There are some major streams of research on capital formation that have sharpened this role in the development policy perspective. There is the positive association between capital formation and agricultural development. But the government finance or overall public capital formation in Indian agriculture has been stagnating or declining since the beginning of 1980s due to presence of externalities, high risk and inadequacies in agricultural institutions, which discourage investment in agriculture from private sector (Ghosh, 2005).

The last two decades have witnessed an intense debate in the country that capital formation in Indian agriculture has been stagnating. As per the official estimates of Central Statistical Organization (CSO), the public sector capital formation in agriculture (including forestry and fishery) has been falling in real terms and any increase in private capital formation in agriculture is not able to make the overall picture very comfortable. Further, amongst many perspectives on declaration in the public capital formation it is also alleged that the macro-economic reforms initiated in the country in 1991-92 have also led to an increasing squeeze on public sector investments in agriculture. All this has resulted in deceleration the growth of food grains in Indian agriculture during 1990s, over 1980s. This obviously does not augur well for the hard earned food security of this country.

OBJECTIVES OF THE PAPER

In the light of above discussion, the objectives of the present study are:

1. To assess the determinants of public

as well as private capital formation in Indian agriculture

2. To identify the constraints of public as well as private capital formation in Indian agriculture

3. To analyze the impact of public and private capital formation on agricultural growth

4. To suggest policy options, specifically, for strengthening the process of capital formation in Indian agriculture

ORGANIZATION OF THE PAPER

This study is organized into three sections. **Section I** discusses the determinants and constraints to public and private capital formation in Indian agriculture. **Section II** sets out the way forward, highlighting the linkages between public and private capital formation in Indian agriculture while **Section III** contains the concluding observations.

SECTION I : THE DETERMINANTS AND CONSTRAINTS TO PUBLIC AND PRIVATE CAPITAL FORMATION IN INDIAN AGRICULTURE

One of the major controversies surrounding capital formation in agriculture is what factors would govern the investment behaviour of public and private sectors in the absence of a strong theoretical foundation one may have to look for empirical hunches. Further, the behaviour of private investment is related to that of public investment (among other determinants) through the complementarity hypothesis.

Behaviour of public investment in agriculture is largely explained by agriculture policies of the time. An examination of this behaviour appears to have been dictated mainly by food situation of the country and agriculture policies governed by political economy of the time (Mishra-1996, Rao -2003 and Gulati and Bathla-2002). One could sort out four major policy epochs in this regard.

First, the food deficit facing the country after independence was compulsive enough to pilot more public investment towards the

development of irrigation system. **Second**, the food crisis of 1960 was another major compulsion to escalate growth in public sectors investment at a trend rate of 8 per cent per annum during 1970s. The **Third** epoch has been since 1980s when decline in public investment has been strongly voiced. The irony is that the success of green revolution strategy itself has led to the emergence of political economy compulsions, which continues to persist. The emergence to surplus produce in agricultural sector has given rise to the emergence of politically powerful farmers groups, which have become rather powerful to dictate the priorities of public expenditure in agriculture. The first priority has been to meet the demand for production subsidies for which resources have to be diverted from capital account to current account. The next important priority has been to finance private capital formation by institutional loan and capital subsidies. Due to these political economy compulsions, decline in private and public sectors investment has occurred even though total public expenditure (Plan and Non-Plan) on agriculture has not really declined. In fact, public sector investment has become a residual claimant. The **fourth** epoch emerging during economic reform regime is yet to be visible. This epoch is expected to encourage 'Crowding In' by both the household and corporate sector to accelerate their investment in agriculture sector.

In addition to national level agricultural policies and political economy compulsions, there are certain state level determinants of public investment. The level and composition of public investment at state level depends on rural literacy level, population growth, agricultural GDP, farm subsidies and grant-in-aid from Central Government. An important state level study (1970-71 to 1998-99) on 17 major states by Rao (2003) has drawn the inference that rural literacy, population, agricultural GDP and grant-in-aid from Central Government have positive impact on public investment, whereas

farm subsidies crowd out public investments indicated by negative relationship between farm subsidies and public investments.

The Theory of private investment could be straight forward its prospective on profitability of investment (i.e. expected rate of return on investment) is known but uncertainties about the expected returns due to yield and price risks, and low risk banning ability of farmers would make the decision-making by farmers on investment very complicated. Any study of farmers' investment behaviour has to be carried out in a multivariate simultaneous equation framework with appropriate price and non-price determinants as explanatory variables and with proper lag structure for each explanatory variable. For this reason the empirical studies on private investment function in agricultural have come out with variety in modeling the relationship in the absence of a well designed theory of private investment on agriculture, one may have to turn to empirical studies to gain insights into the determinants of private investment.

CONSTRAINTS ON PUBLIC AND PRIVATE CAPITAL FORMATION IN INDIAN AGRICULTURE

The major factors constraining growth in capital formation in Indian agriculture include:

- (i) Meager growth in minor irrigation and farm mechanization, which are the major sub-sectors in primary agriculture.
- (ii) Declining public sector investment.
- (iii) Limited credit absorptive capacity.
- (iv) Lack of effective mechanism for technology transfer and poor extension services.
- (v) Limited infrastructure for agro processing, storage, warehousing, value addition and marketing.
- (vi) Inadequate extension services.
- (vii) Restrictions on purchases outside the mandies.
- (viii) Weather aberrations and output price fluctuations.
- (ix) Inadequate risk mitigation

mechanism and,

- (x) Non-availability of land records.

Besides the following factors in particular affect the banking institutions in deployment of investment credit:

- (i) High transaction costs;
- (ii) Structural deficiencies in rural credit delivery system resulting in limited outreach;
- (iii) Issues related to credit worthiness: collateral—for low asset base farmers;
- (iv) Low volume of loans associated with high risk;
- (v) High manpower requirement/branch centric. In any scheme of things for enhancing capital formation in agriculture, these constraints will have to be addressed first.

SECTION II : LINKAGES BETWEEN PUBLIC AND PRIVATE CAPITAL FORMATION IN INDIAN AGRICULTURE: POLICY IMPLICATIONS

Policy support for private capital formation in agriculture could be placed in the proper perspective. First, during post-reform regime, since the early 1990s the rate of increase in the share of private sector in total capital formation in agriculture has been less than what it was during the Pre-reform period, unlike the other areas, where private sector has increased its stake. Second, it may be recalled that the impact of public capital formation on private capital formation in agriculture is found to be asymmetric, an increase in public capital formation in agriculture is found to have positive impact on private capital formation in agriculture (S. Bisalias, 2001). The government has to create a favourable policy and development support environment for private sector (both a domestic and foreign agri-business investors) to fill the investment gap in agriculture. Increased share of private capital formation in agriculture tends to improve the efficiency of capital use. Third, there has to be a shift of emphasis from the present situation where the infrastructure investment is combined by the public sector towards a system where public-private partnership functions. Fourth, institutional

transformation through social capital formation has high potential for increasing the efficiency of capital use (lowering the capital requirement for achieving a targeted output growth). Fifth, while designing policy options to stimulate private farm capital formation, the interaction between technologies, terms of trade and capital formation in agriculture as to be kept in view. Sixth, public capital formation in agriculture with proper portfolio would be crucial for inducing private capital formation in agriculture. Further, public capital formation in agriculture alone cannot be expected to feel the investment gap in agriculture. Hence, the role of private capital formation could be placed in the perspective of huge investment gap.

Traditionally, most agriculture research is public funded. However, in recent years, the agriculture technology generation and transfer are shared increasingly with private sector, particularly in more advanced countries. The proportion of private funded research is in the order of 30 to 40 per cent of all research expenditures in developed countries (nearly two-third in the United States) and above five per cent in the less-developed countries. Thus the relationship between public and private capital formation in agriculture is complementary. Private research is attracted to sectors of the market where research results exist and benefits can be privately appropriated (Alston, Norton & Pardey, 1998). This is the typically the case in more developed countries where intellectual property rights are well established and protected for inputs such as agrichemicals, agricultural machinery and seeds.

SECTION III: THE WAY FORWARD

Given the importance of agriculture in India, in terms of its contribution to GDP, employment and income, a low growth rate of agriculture will have an adverse impact on the growth of the economy. According to the Approach paper for the 12th five year Plan, the objective of doubling the growth rate of agricultural GDP to 4 per cent per annum

ensures the inclusiveness of growth. This, however, poses major policy challenges in the immediate future. It is necessary to adopt region specific strategies focusing on the scope for increasing yields with known technologies and the scope for viable diversification. Investment, the prime mover, therefore, needs to be accelerated to achieve the desired level of growth. The public investment in agriculture has been declining and is one of the main reasons behind the declining productivity and low capital formation in the agriculture sector. With the burden on productivity-driven growth in the future this worrisome trend needs a reversal. Private investment in agriculture has also been slow and must be stimulated through appropriate policies.

The broad thrust areas for increasing investment and investment credit in agriculture could be as follows:

(1) Traditional investments on land development, irrigation and farm mechanization and integration of small and marginal in the mainstream in the case of marketing and exports deserve renewed attention.

(2) Public investment needs to be channeled appropriately in agriculture infrastructure should get a greater priority especially in poorer states, viz., Eastern and North Eastern regions for facilitating greater private investment.

(3) Public investment in research and development of varieties of crops, breeds of livestock, strains of microbes and efficient packages of technologies, particularly those for land and water management, for obviating biotic, socio-economic and environmental constraints also call for increased attention.

(4) Effective and credible procurement, assessment and transfer and extension system involving appropriate linkages and partnerships; again with an emphasis on reaching the small farmers also remain the other thrust areas.

(5) In this context, the need for augmenting term credit to agriculture cannot be

overemphasized. In view of the structural weaknesses of co-operative bank and limited presence of RRBs, commercial bank may have to shoulder the responsibility of supporting private investment in agriculture.

(6) As observed by the results of 12th Five year plan, there is a need to step up public investment, particularly in irrigation and water resources management; watershed development and reclamation of waste/degraded land; and provision of essential infrastructure such as roads, markets and electricity from the point of agriculture production, the single most effective supply side constraint is that irrigation coverage still extends to only about 40 per cent of net sown area.

(7) In particular, slow expansion surface irrigation through investment in major and medium projects has been the main reason why public investment in agriculture has declined since the early 1980s while there are genuine problems that make it difficult to imitate new irrigation projects quickly, a concerted effort is required to expedite ongoing but unfinished projects.

CONCLUSION:

Over time, agriculture investment has been losing its share, more rapidly since the 1990s led by loss in momentum of public sector and compounded by inadequacy of farm credit. Not only the pace of investment has been slow, but even the pattern of investment has skewed. The share of agriculture and allied activities in the total development expenditure in the case of agriculturally important states such as Punjab, UP, Gujarat, Bihar and Karnataka is below the national average. Inadequacy of new capital formation has slowed the pace and pattern of technological change and the infrastructural development with adverse effects on agricultural productivity. The need of the hour is to step up domestic investment in agriculture sector, notwithstanding the fact that the ICOR of agriculture sector is very high. The idea is to modernize the agriculture sector

through conscious investments and bring down the ICOR and thereby allow the agriculture sector to perform well like industrial sector. Investment in agriculture, the prime mover needs to be accelerated to achieve the desired level of growth of agriculture sector over 4 per cent per annum as envisaged by the 12th Five Year Plan. More importantly, this investment needs to be appropriately structured, timed and well implemented to have the maximum impact (Planning Commission, 2011).

There is a pressing need for a more fundamental change in the strategy to raise resources and accelerate the pace of capital formation in agriculture through targeting and downsizing of subsidies and plugging back the resources so generated to agriculture sector as investment in irrigation and other infrastructure activities, selling off the public sector enterprises to partially finance the resources for agriculture investments. The public investment with a proper choice of project portfolio would be crucial for inducing private investment. Furthermore, public investment alone cannot be expected to fill the investment gap in agriculture. Therefore, the Government has to create a favourable policy and development support environment for private sector (both domestic and foreign agri-business investors) to fill the investment gap in agriculture. It needs to be emphasized that institutional transformation through social capital formation has high potential for increasing the efficiency of capital use. There is also a need to encourage the banking sector to view changes witnessed in entire value chain of agriculture as potential business opportunities and extend more investment credit to these areas. Thus, accelerating the pace of investment holds the key to provide a much-needed structural break and lift the Indian agriculture from the world of stagnation.

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02

"Impact of ICT on Agriculture Development of India"

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Introduction

Information Communication Technologies (ICT) plays a key role in disseminating a wide range of information and advice, leading to knowledge and attitude change among rural communities. It also supports rural communities to acquire new skills and create new employment opportunities. Realizing the importance of ICT, governments have introduced a number of ICT programs and projects which may benefit the rural communities of India. ICTs also play an important role in agriculture, as information assists farmers in their decision making process. It could be considered that the most effective tool for any farmer is information to acquire knowledge and make decisions based on that knowledge. Various factors like weather conditions, practices employed by farmers, soil parameters and other external parameters, influence agricultural production. This makes the decision making process all the more challenging. In the past, farmers used to make decisions on the basis of their observations. Recently, farmers have started using technology for improving their agricultural practices.