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MEASUREMENT OF STATE CAPITAL FORMATION IN INDIAN AGRICULTURE: ISSUES AND FUTURE PERSPECTIVE

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ABSTRACT

Measurement of capital formation in Indian agriculture has always been a controversial affair. What to be included as agricultural capital formation remains a question which has failed to find any consensus among researchers. The problem remains much severe in case of measurement of state level capital formation. The paper presents the major issues/controversies in measurement of public and private capital formation in Indian agriculture at state level along with the differential approaches followed by the centre and states which hinder the comparative analysis of agricultural term investments. It also throws light on the various attempts by institutions or individual researchers with their respective modifications and conceptualization and overtime efforts to estimate state capital formation in agriculture. The paper contributes to the existing literature by highlighting the problems of the existing methods adopted by different states to estimate capital formation in Indian agriculture along with suggesting future pathways for building a sound data base of the same at the state level.

KEYWORDS

capital formation, private investment, public investment.

INTRODUCTION

Capital formation is of paramount importance for assessing the growth potential of any sector including agriculture. Large scale investments in agriculture can not only provide a structural break to the sector, but also lift it up from stagnation. Thus, investment in agriculture i. e. increasing the levels and the quality of investment in agriculture is central to achieving the goals of a smooth economic development, catalysing structural change and increasing food security (FAO, 2011). Though the major focus of researchers has been the declining capital formation in Indian agriculture, another common concern has emerged regarding the methodology to be followed for estimating capital formation in agriculture. The coverage of the existing estimation methods and series based exclusively on direct agricultural expenditure have been repeatedly questioned. The government of India has time and again appointed committees to review the status of capital expenditure estimates and provide suggestions for improvement in the same. In addition to comments about the coverage issue of capital formation in agriculture, the other estimation inadequacies such as lack of direct capital formation estimates at state level, non-availability of state wise series on annual basis with respect to private capital formation, lack of separate estimates of private corporate capital formation in agriculture, improving the quality of capital formation estimates in occasional surveys, enhanced efforts on the part of states to generate estimates and greater comprehensiveness has been suggested to facilitate the analysis of capital formation in agriculture.

OBJECTIVES

Major objectives of this study are -

1. To identify the major issues in measurement of capital formation in Indian agriculture at state level.
2. To provide an insight into the overtime evolution of methodologies regarding estimation of state level capital formation in agriculture.

STATE LEVEL CAPITAL FORMATION IN INDIA: STATUS OF ESTIMATION PROCEDURES AND ISSUES

Estimates of state capital formation acquire extreme importance for a country like India where regional inequalities are significant and lop-sided development of the states have been a cause of concern for the policy – makers. Capital formation reflects the growth performance of the states and its estimation can help a long way in formulation of policies for regional development. In spite of being of extreme importance, measurement of capital formation in agriculture, particularly at state level suffers from a number of limitations. Not only the overall capital formation estimates are unavailable for most of the states, decomposition with respect to share of public, private corporate and household sector is also not readily available on state wise basis. The public sector estimates of capital formation in agriculture are not available directly. Rather state wise capital outlay is available in the form of annual report of “Combined Finance and Revenue Accounts of Union and State Governments”, published by Comptroller General of India (CAG), which is used as a proxy variable for estimation of capital formation in agriculture. Private corporate sector is viewed to have a marginal contribution in agriculture and its estimates are not prepared on state wise basis. Moreover, household capital formation, which accounts for a major contribution in private agricultural investments, is also estimated and furnished on a decennial basis in the form of All India Debt and Investment Survey (AIDIS), which is conducted by NSSO. As such, the status of state estimation of agricultural capital formation remains far from satisfaction.

As for the institutional role in assessment/estimation of agricultural capital formation, even though annual estimates of capital formation have been provided by CSO since 1950s, the state of regional estimates in this regard remained unsatisfactory till 1980s. It was only in the subsequent decade that some of the states started estimation of capital formation broadly using the methods adopted and utilizing the training provided by CSO in this regard. At this stage, it would be of order to highlight the differences between the methodologies adopted at the central and state level and the inherent problems arising out of these differences. Though the state level estimates are prepared on the guidelines provided by CSO, there exist several differences exist between the approaches used at the state and national level.

TABLE 1: CAPITAL FORMATION IN AGRICULTURE: A COMPARISON OF CENTRAL AND STATE LEVEL APPROACH

Approach	Central level (CSO)	State level (State Directorates)
Estimation	At the central level, the Gross Capital Formation (GCF) estimates are provided. The estimation of change in stock and net fixed capital formation is also provided.	The estimates of Gross Fixed Capital Formation (GFCF), rather than GCF are provided due to open boundaries of the states.
Components of public sector	The estimation by CSO includes irrigation projects and plantations in the forestry sector. It does not include the components such as soil and water conservation, animal husbandry, etc. These are included separately under the statement of “Economic and purpose classification of government expenditure”.	The state estimation includes administrative expenditure of state governments into consideration while calculating capital formation in agriculture.
Private sector	At the national level, the estimates of private sector are available, although the break-up for private corporate sector and household sector are not available.	Very few states provide estimate of private sector due to scarcity of data. The estimation of private corporate sector poses more difficulty due to data constraints.
Household sector estimation	The household sector estimates are provided for two categories - construction and machinery and equipment.	The states use benchmark estimates and move them according to different indicators for extrapolation. There is no uniformity of indicators among the states also.

PROBLEMS RELATED TO USAGE OF AVAILABLE STATE LEVEL DATA FOR ANALYSIS

As mentioned earlier, states have been preparing estimates of capital formation in agriculture since 1990s. However, some problems which restrict the use of state level estimates for analysis of capital formation for agricultural sector can be listed as:

1. The state level data on GFCF for agriculture and all other sectors is available in a discontinuous manner. Most of the states provide GFCF data since 1990s whereas others provide it since the last 10 years. Moreover, trial estimates are not released by the states.
2. The state level estimates do not have a scope of comparability since the very definition of agriculture is different for different states. Some states include crop sector and livestock sector in agriculture whereas others also include forestry and fishing. Animal husbandry is also included by some states into the agricultural sector.
3. The coverage regarding public sector is also differs across states. Some of the states are including local bodies and other autonomous bodies while others are just including DCUs and NDCUs in the public sector.
4. As for the private sector, separate estimates are not prepared by the states for private corporate and household sector.
5. The indicators which are used for moving the benchmark estimates are also different for different states, thus leaving little scope for comparison.

RECENT GOVERNMENT EFFORTS FOR UPDATING CAPITAL FORMATION ESTIMATION AT STATE LEVEL

- ✓ **National Statistical Commission (2001)** also made recommendations regarding capital formation which may be summed up as –
 - The Perpetual Inventory Method of preparing the estimates of Consumption of Fixed Capital may be reviewed periodically for assumptions made regarding the average life of various assets.
 - All States should compile estimates of total capital formation.
 - Public sector information in respect of local bodies should be improved. States need to make arrangements for consolidation of statistics from the annual statements of receipt and expenditure in respect of their local bodies.
 - The State Directorate of Economics and Statistics should start compiling the estimates of Gross Fixed Capital Formation (GFCF), on the basis of the guidelines provided by the Central Statistical Organisation (CSO) from time to time. Once the States start compiling the GFCF estimates, a database on this could be developed, which in the long run, would be used for compiling the estimates of capital stock and CFC. State DESs should examine the guidelines in consultation with CSO for the compilation of capital formation, capital stock and CFC.
- ✓ **The high level committee on savings and investment** constituted by government of India in 2009 also explored the existing issues and estimation procedures for capital formation and savings at the state level. While proposing estimation methods for state level capital formation in all sectors, the committee contended that a number of issues and problems exist with respect to state level estimation of capital formation in various sectors. The main problems highlighted in the committees report were –
 1. Most of the States compile GFCF for only public sector and the compilation is done by industry of use. The State wise data on public sector as available from the Gross Block of public enterprises survey is used for the same. The main problem is getting the data on private investments made in the States. Since a large fraction of investment is by private sector also, it becomes paramount necessity to estimate private capital formation in all sectors in states.
 2. The private sector estimation is hindered by scarcity of data. As such, more frequent surveys related to enterprises / households could be a solution to this problem.
 3. Even for the public sector, the estimates of various states do not seem to be comparable as some states are including local bodies and autonomous bodies whereas others are excluding local bodies while defining the public sector in their estimation procedure.
- ✓ The latest analysis of state level estimates came in the form of 19th Conference of Central and State Statistical Organisation (COCSSO) in 2012, which throws light on the present status and issues relating to capital formation estimates at all-India and state level. The main points highlighted in the conference were –
 1. Although capital formation can be estimated by commodity flow approach, flow of funds approach and expenditure approach, the same at the state level can be calculated by the expenditure approach only as the other two methods require data on imports and exports of capital goods across the state boundaries and net inflow of resources from outside the state, which are not available at state level.
 2. Estimates of GFCF can be prepared by the states, since calculation of GFCF estimates require estimation of change in stock, which is not possible due to open boundaries of states.
 3. Most of the states are calculating GFCF of the public sector, whereas estimates of fixed capital formation of private corporate sector and household sector are not available due to paucity of data.
 4. All-India debt and investment survey data is used by some states for calculating household sector capital formation. This practise is also not problem free as the investment estimates reported in AIDIS are underestimates. It is just a fraction of what is reported in the national accounts statistics.

The manner in which PRIVATE capital expenditure in various sectors can be calculated at the state level was also discussed. As for the agricultural sector, it was suggested that -

1. State wise private /household sector estimates for fixed capital formation in farm-business can be obtained from the decennial survey of NSSO called all-India Debt and Investment Survey. The estimated for the subsequent years could be extrapolated using suitable indicators such as area irrigated under wells, sale of tractors etc. In case of use of quantum indices, suitable indexes can be applied to convert the estimates into current prices.
2. The decennial surveys and the enterprise surveys should be conducted more often so as to reduce the data non-availability of private sector at the state level.
3. Use of all-India capital output ratio in the private sector can be made to estimate private sector capital formation at the state level.
4. Improvement in the quality of capital formation estimates in the enterprise surveys and enlargement of sample size were also recommended.

INDIVIDUAL RESEARCH ATTEMPTS TO ESTIMATE STATE LEVEL SERIES FOR CAPITAL FORMATION IN AGRICULTURE

Recognizing the numerous problems related to accounting of agricultural capital formation at state level, several attempts have been made by various researchers to address the issues relating to estimation of capital formation in various sectors of the economy.

Rajeswari et. Al. (2009) focus on the state wise estimation of private capital formation over the period of 1999-00 to 2005-06 in different industrial sectors as defined in NAS. The study uses all-India estimates of private corporate sector as well as the data available in various surveys conducted by NSSO. As for the private capital formation in agricultural sector, benchmark estimates of 2002-03 have been obtained from the AIDIS report (NSSO 59th round) for estimation of state wise capital formation in agriculture. The estimates of private corporate sector at all-India level have been distributed among states using the indicator "Gross value added in agricultural industry". The addition of capital formation in private corporate sector and household sector have been added and moved according to state wise gross value added in agricultural industry.

Mallick (2008) proposes a methodology of compiling state level estimates by moving away from the state level accounts and allocating national level GCF among states. Two methods have been suggested to allocate the national level estimates among state: first method involves the use of state wise total government capital expenditure and the second method includes making use of state wise GSDP estimates. The second method implies an assumption that rate of capital formation depends on the rate of development and as such, GSDP can be an indicator of development level of states and individual sectors. It was found that the second method of estimation was more accurate and showed high correlation with the estimates given by state level directorates.

Estimation of capital formation in agriculture: Future pathways – in paucity of the direct estimation of capital formation in agriculture at state level with a uniform methodology across states, some other methods, which involve the existing available indicators such as GDP, etc. can be used to estimate agricultural capital formation. The estimates can broadly be arrived at depending on the availability of data.

- The whole state economy may be grouped into specified user industries on the same lines as done for the gross domestic product (GDP). Thereafter the GFCF estimates for each agricultural sector may be attempted depending upon the GDP contribution of agriculture. This method may appear to be an easy task but it involves its own intricacies and limitations.
- The benchmark estimates for capital formation in agriculture can be worked out reasonably/satisfactorily every few years and the estimates for intervening years can be worked out by moving the benchmark estimates by means of appropriate indicators of physical output and prices (e.g. livestock products, unregistered manufacturing construction, trade etc.)
- The national totals of capital formation in agriculture can be allocated among the states by use of some meaningful indicators such as value added in agriculture, share of agriculture in total state domestic product, etc.

CONCLUSION

Even though the importance of capital formation in Indian agriculture remains of utmost importance, its estimation processes and data availability suffer from a number of problems. Whereas the public sector estimates are available in the form of "Capital outlay" rather than "Capital formation" in agriculture at state level, the problem becomes severe for private sector. In the absence of any comparable methodology for private sector at the state level, it becomes an onerous task to compare the long term investments trends across states. Moreover, estimation for private corporate sector, whose contribution precisely relates to agriculture by making term investments in plantation sector, is also not satisfactory. The projection of household capital formation estimates, which are based on benchmark estimates are also found to be either under or overestimations. As such, there is a pressing need for a much stronger database for capital formation in Indian agriculture. Not only a uniform methodology be adopted across states but bifurcated estimates should also be prepared for capital formation in agriculture with respect to public, private corporate and household sector.

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