Role of Statistics for Transforming the Economy

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Abstract

The consensus paradigm on macroeconomics determining national policy on growth and stabilization of the economy does not address the problem of inclusive growth. The role of institutions and governance in development effort is also sacrificed. We need a framework linking micro with macro probabilistically for a new generation economic model. This will address issues on inclusive growth.

1   Introduction

Economic transformation for accelerating the pace of growth, and structural changes through industrialization, services sectors expansion, urbanization and a bold move for knowledge economy paves the way for socio-economic development. For a well-balanced economic development, it is necessary that the growth is inclusive. In a capitalist market economy, it is not easy to pursue inclusive growth. Though the interventionist government policy tries to support vulnerable sections of the people, it does not yield desired result for various reasons. The institutions and governance need to function as well-oiled machinery for the success of welfare measures aimed at improving the lot of the poor. We need policy targets at appropriate level of a district, at least, and the data to evaluate progress and prompt corrective action to achieve what is intended. The reality is different, there are leakages at many levels and hence the progress is slow. It is partly due to our obsession with policy based on macroeconomics, a paradigm full of unrealistic assumptions and partly due to system for dissemination of data, not sufficiently intelligent to avoid information asymmetry. We need to work on both the fronts to get where we want to go on inclusive growth.

The area of economics which has gained prominence in policy formulation is macroeconomics. It focuses on explaining key drivers of overall growth and stability of an economy. With GDP displaying uneven cycles over time, the issue is how aggregate demand and supply fluctuates, markets adjust causing variation in prices of goods and services, consumption and investment, government revenue and expenditure and how they spill over to influence external trade and capital flows. As the interacting effects of these factors in the market context influence employment, wages and lifestyle of people, the question uppermost is what it needs to maintain growth in output and employment while keeping the prices stable. This theory, under different schools of thought, looks forward to whether market should find a self-correcting mechanism to dampen cyclical turns or needs intervention: if so how. However, growth and stability does not assure whether India's advantage on large young workforce is gainfully employed and fruits of growth lead to shared prosperity. It is because market rewards those who hold assets and deploy them for gainful activities, which is a different game. We need to have a paradigm for inclusive growth. The conventional growth theory does not accommodate this explicitly. This is briefly explained in the sequel.

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2   Economic growth and stability

In so far as economic growth is concerned, the mainstream economics focuses on three factors *viz.*, (a) the saving rate, (b) capital/output ratio, and (c) depreciation rate explaining GDP growth. Whether growth adjusts to exogenously given capital/output ratio or determined endogenously is intensely debated in economics. Exogenous variable is the one which is not determined by any model within the system. The interventionist government expenditure and external demand are considered exogenous for determination of income in Solow model (see Solow 1970). However, endogenous variables are determined within the model. Endogenous growth model assigns important role for investment in physical capital for explaining growth. These investments influence human resource and productivity. This concept is approximated by aggregate production function, explaining aggregate output by capital and labour as main inputs. The part of the growth not explained by inputs is known as total factor productivity, mainly arising out of technological progress.

The main problem with such analysis is that it does not help in raising productivity at firm level where inputs and output are most relevant. Also, productivity depends on many factors in addition to these main inputs. The contribution of enterprise, innovation, competitiveness, market power and conditions, quality of management and strategy are critically important for growth of a firm. These factors, though crucial, get subsumed in models based on aggregates.

The macro econometric models have many other building blocks. The consumption function, investment function, price determination based on money demand and supply, fiscal policy, trade and balance of payments etc. are also modelled as aggregative functions. Whether such models based on aggregates provide enough information on complexities encountered in practice? Even if investments spur growth, how such growth sustains balanced development affecting various sections of the people is not explained. When there is a high skewness in the distribution of income and assets, it is equally important to understand the growth dynamics by size classes. The distribution of income, expenditure, asset holdings, wealth are highly skewed. The framework of macroeconomics, being based on aggregates, cannot accommodate this reality. It assumes a symmetric distribution and a representative agent to relate macro with micro. It is ludicrous but has been going on for centuries. All sorts of unrealistic assumptions are made to make this paradigm theoretically sound - rational expectations, general equilibrium and so on. In spite of mounting criticisms in strongest of words, the consensus macroeconomics still holds on in absence of a very sound alternative (see Nachane, 2018). By way of illustration, let me quote the following:

As Hamalianen (2003) observed,

"*The rapid technological change, increasing mobility of productive resources and growing structural problems of industrialized economies have called into question the validity of traditional neoclassical economic theories. These theories are based on the assumptions of efficient markets, no unemployment of productive resources, international immobility of resources and global specialization of production based on competitive advantage. The diminishing policy relevance of macroeconomic theories is gradually shifting the economic policy debate to the microeconomic determinants of economic efficiency, competitiveness and growth.*"

The macroeconomic analysis, however, is helpful for maintaining overall growth and stability of an economy. With GDP displaying uneven cycles over time, the issue is how aggregate demand and supply fluctuates, markets adjust causing variation in prices of goods and services, consumption and investment, government revenue and expenditure and how they spill over to influence external trade

and capital flows. As the interacting effects of these factors in the market context influence employment, wages and lifestyle of people, the question uppermost is what it needs to maintain growth in output and employment while keeping the prices stable. This theory, under different schools of thought, looks forward to whether market should find a self-correcting mechanism to dampen cyclical turns or needs intervention: if so how. This is a very important issue on stabilization policy options. While the role of stabilization of an economy is not in question, except for those who believe in self-correcting power of market, a developing country has to look much beyond, recognizing a critical role of interventionist government policy for overcoming market infirmities and empowering the people to reap the benefits of growth.

Economic development is much broader than growth and stabilization policy options. As defined by Meir (1995), it is "the *process* whereby the *real per capita income* of a country increases over a *long period* of time - subject to the *stipulations* that the number of people below an "absolute poverty line" does not increase and that the distribution of income does not become more unequal." (italics in original). When we talk of distribution of income, it is inclusive growth which matters.

3   Inclusive growth is a different strategy

Economic development aims at elimination of poverty, deprivation, despondence as parts of inclusive growth. This also requires strengthening of institutions, governance, ease of doing business; improvement of health and quality education and a host of other factors including environment. We need to pursue growth to expand the cake and equity to share the fruits of such growth for greater happiness and better quality of life. The main issue is what we set as priority, how we phase and how we transition in a way that it becomes sustainable and takes the society from one stage of development to other.

Productivity and competitiveness are major determinants of growth. To be productive one needs to acquire skills and absorb modern technology. If a wage earner does not have the means to acquire any of these, his fate is sealed. With this his aspirations also vanish, leaving him to grope in darkness. As Yunus (Bankers to the Poor) said,

"*What I did not know about hunger, but would find out over the next twenty-one years, was that brilliant theorists of economics did not find it worthwhile to spend time discussing issues of poverty and hunger. They believe that these issues will be resolved when general economic prosperity increases. These economists spend all their talents detailing the process of development and prosperity, but rarely reflect on the origin and development of poverty and hunger. As a result, poverty continues.*"

The main problem is that economics treats macro and micro separately. To link macro with micro, macroeconomic theory assumes a representative agent in modelling exercise, implying symmetrical distribution as aggregation subsumes distributional characteristics. In the process the plight of the poor is lost sight off. For pursuing inclusive growth, microeconomics is crucially important for productivity, competitiveness, quality of products, allocative efficiency and so on. To address the issue of inequality, the theory believes in trickle-down effect of growth. The strength of this proposition is not borne out by facts. There is no doubt that poverty has reduced but India's income distribution also worsened, with Gini coefficient around 0.5. This has adverse consequence on the society. It is well known that return of capital far outweighs return on labour. As the poor does not have command over capital, they find it difficult to improve their lot. It is not easy to come out of this poverty trap. However, if the poor are supported to become more productive through investment in technology, cemented by knowledge through appropriate development of skills, they have the prospect of earning more. But their supply should have ready market. This is possible if there is a demand for their produce so that the producers get remunerative price for raising income.

Thus, it is the demand creating technology that matters. This increased income in the hands of labour engaged in agriculture and MSME is expected to help create demand for manufactured products, education and health for structural transformation. Unless our analytical model is built using micro data covering the distributional characteristics in a layered dimensional framework we will not be able to get the insight necessary for pursuing development, which is also inclusive.

The market forces are fundamental to competitiveness. However, for market to work efficiently there should be free play of such forces, which is not the reality. It is the mighty who wields market power to rule the roost. Those who live in the periphery of market because of their meagre economic status, cannot take advantages of market without government support. Thus, institutions and governance matter a lot. As North (1990) said,

"Neoclassical theory is simply an inappropriate tool to analyze and prescribe policies that will induce development. It is concerned with the operation of markets, not with how markets develop. How can one prescribe policies when one doesn't understand how economies develop? The very methods employed by neoclassical economists have dictated the subject matter and militated against such a development. That theory in the pristine form that gave it mathematical precision and elegance modelled a frictionless and static world. When applied to economic history and development it focused on technological development and more recently human-capital investment but ignored the incentive structure embodied in institutions that determined the extent of societal investment in those factors. In the analysis of economic performance through time it contained two erroneous assumptions: (i) that institutions do not matter and (ii) that time does not matter"

With these illustrations, we are now in a position to leave the discussions on the shortcomings of existing paradigm on economics for practical issues of economic development. Our starting point for this are the following issues, which I have raised elsewhere also (see Barman 2019). Illustratively, we raise the following issues:

1.   A farmer in a village should know what is the best possible yield per acre in his area, how different it is from the district best, India best and global best and why. This gap analysis informs him as to how to improve productivity, He should also know about price dynamics and the opportunities available to raise his income.
2.   A manufacturer should know what is the best combination of inputs and output for the item he is producing and what can be done to reduce the gap with the best under similar situation.
3.   A financier should know what is the risk of lending and how to price the risk, compete in the market with products to exhaust market demand.
4.   An entrepreneur should know how the market behaves under different situations in an area and how predictable is the risk and return under a given situation.
5.   A government functionary should know what are the government priorities and how to promote them. The interventionist government policy for equity, allocative efficiency, infrastructure development and environment protection are priorities for any welfare state.

There are other issues on pursuing economic policy. How do we spot and groom local enterprise? An enterprise involves knowledge on advanced technology for producing high quality products that can compete in local and outside market, ability to organize, high managerial and accounting skills, drive and push for marketing and effective liaison with government machinery. We need to address these vital issues to succeed.

Urbanization is an important part of development. Urban agglomeration helps in supporting good education and health services. And a good urban environment with roads, drainage system, good parks, community centres, entertainment facilities, in addition to schools, institutions of

higher learning and hospitals produce good habitat, attract talented people to support development. However, the way the mega cities have growth created huge problems, chocking the infrastructure. We need to develop small townships with facilities, to arrest huge migration of people to these mega cities and develop healthy habitats.

To have a satisfactory understanding on these issues we need to have a fair idea about the problems on hand. In India about half the population depend on agriculture for a living. Agriculture is also crucial for supply of essential raw material for manufacturing. Any adverse shock of agriculture sets the prices spiraling causing severe pains. However, the toiling masses behind agriculture do not get remunerative price to improve income and saving, which adversely affects growth potential. It's lack of investment which militates against productivity. The micro, small and medium enterprises (MSME) sector contributes 32 per cent of GDP. These two sectors, together contribution about half of GDP, account for over eighty percent of work force. If we have to improve their lot, we must have relevant data about their skills, sources of income and lifestyle. We also need to have detailed data on large sector of the economy as they are the prime movers for commanding height of the economy and competitiveness in global context.

Agrarian distress in India is an example of inadequacy of policy response in tackling chronic poverty and deprivation. The palliatives in the form of loan weavers and subsidies are not sustainable in the long run, nor they work for the greater good on social welfare. If the problem is to be examined holistically, one has to find out how productivity is raised and farmers get remunerative price to raise their income. It is easy said than done. We need to understand market micro structure, various infirmities and the ways to influence forces of both demand and supply, overcoming rigidities, for desired outcome. Can artificial-intelligence based applications work?

MSME Sector provides opportunity for local enterprise to produce goods and services with low investment and open up job opportunities. If it is possible to promote a learning society for supporting them with knowledge on skills required for marketing, managing financial resources, risks etc. it may help in unleashing and nurturing forces for much needed structural transformation, absorbing local labour and raising income. Is it possible to equip our district centres with these intelligence for being more effective in their developmental role?

4   Modernization of Information System for Official Statistics

India has an elaborate arrangement for collection of data on various aspects of the economy. Some of the most discussed statistics in the media relate to performance of the economy and its distribution by sectors, consumption, investment, price, employment, living condition etc. These data are the raw materials for economic analysis.

The data we collect for national accounts are well structured conforming to standard concepts and definitions, classifications, coverage etc. as required for generation of output as parts of sequence of accounts. These outputs are the basic raw material for analysis of the economy. These aggregates are used along with others like money, government revenue and expenditure and labour, to explain the forces of demand and supply and their interacting effects in market context. These variables are modelled as an integrated system using rate variables *e.g.*, interest rate, exchange rate, tax rate, wage rate. The system estimates multipliers and accelerators to measure the impact of changes occurring in the economy and their causal factors. This serves the most crucial purpose of growth and stabilization of an economy. However, it is not good enough for inclusive growth.

The present system of organization of data follows a set pattern for dissemination of such data and are mostly available at state or aggregate levels. This system catering to the needs of

macroeconomic framework dominating our effort for dissemination of data has to change at the earliest. There are several reasons for this as the present framework leaves many questions unanswered. The data are not structured to provide multidimensional view of the state of the economy at the lower levels of district. As a result, we miss out something fundamentally important for shedding enough light about the capability of people, their motivation, aspirations, and choices at such levels. It also does not tell about the opportunities available to them to hone their skills to find a ready market for their employment. If a large army of workers are either unemployed or underemployed despite the availability of material and technological resources and well-functioning markets, it is a clear sign that demand and supply does not equilibrate making best use of available resources. The government has also not succeeded in effectively intervening in the market to overcome the pangs of unemployment and poverty.

5   How the Data Collection Process Should be Revamped

The current state of information technology, with fusing of big data and data warehouse, should be used to modernize our official statistical system to provide data on asset holding, output and input used, price realized, labour and employment, market microstructure etc. There will be a need to have a system to collect these data right from the level of gram panchayat or district to flow into a cloud-based system. These data can be used to provide contextual insight on how markets operate and reward various sections of people and what needs to be done at different levels of administration to support inclusive growth.

The data should be structured in such a way that their access become seamless providing information on distribution by size class, industry, occupation, income, consumption, saving, investment, social groups and other socio-economic characteristics over space and time seamlessly. The output should be generated to reach every desk involved in formulation of policy and its monitoring right from district upwards. This will help in promoting a well-oiled machinery for pursuing development.

As official statistics is a public good, the data should be made available to all stake holders for informed decisions supporting knowledge economy. This will not only strengthen the fundamentals of the economy but also promote democratic fervour.

6   An Indicative Approach to Data Analysis

We have stressed on Multilevel Analysis of the data. India is a vast country, regional variations arising out of topography, soil condition, climatic condition, life style, natural endowment, skills, industrialization, market access etc. are some of the determining factors for socio-economic development. These factors, if ignored, may result in spurious 'significance' tests. The aggregates used in macroeconomics models smoothens such variations resulting is small standard errors. For example, labour and capital as explanatory variables for aggregate output subsumes variations within districts, between districts, between states and so on. If we use these estimates for productivity for even a homogeneous product to determine policy it will not be appropriate. In the past we had great difficulty in organizing data at lower levels of aggregation. As a result of digital transformation, it is now possible to access data even at district level, if not village panchayat. We can use these data for multilevel regression or multilevel structural equations model. We can consider individuals and groups as hierarchically organized, with variables characterizing individuals and groups. Such multilevel problems can be explained by multilevel theories (Hox, 2010).

As Nachane (2018) noted, "models to be of relevance to the real world must essentially rest on two pillars: (i) the micro-behaviour of individuals, and (ii) the structure of their mutual

interactions (Colander et al, 2008)". The statistical science has repository of tools to move from micro to macro probabilistically in multivariate space to explain determinants of growth over time and space. This is expected to lead to new paradigm in empirically based macroeconomics which is expected to offer a framework for inclusive growth. This is the kind of research which is gaining support in a multidisciplinary approach in which statisticians have important space.

7   Concluding remarks

We have tried to cover certain major concerns on policy and the analytical framework occupying the central space in economic analysis as of now. It's about growth, sectoral distribution of such growth; the role of financial and fiscal policy influencing aggregate supply and demand. We also hinted how growth models and aggregate production functions are important components of investments influencing such changes. The forces of growth also include structural and institutional changes and changes in the organization of society. These factors need to be adequately represented in modelling the economy.

We also intend to know how the benefits of growth accrue to various section of the society over time, space, size class etc. The structural changes as can be observed from the data suggests that non-agriculture sectors grow at a faster pace than agriculture; however, the share of population engaged in agriculture changes at a relatively slow pace. This has major impact on living condition of different groups of people. While we get to know about the pattern of changes in consumption, saving and investment; distribution of income by factor shares, impact of fiscal and monetary policy, we have many questions unanswered.

As a result of digital transformation huge data on individual transactions are getting captured in the system. The government also captures huge volume of data through various regulatory requirements: Goods and Services Tax, Income Tax, Sales Tax, Customs Duties, registrations etc. Surveys are conducted to collect data on land holdings, land use, levels of living, health, education and so on. These data need to be structured using big data and data warehousing technology for their access at district level upwards and analysis for determining causal factors of economic change in dynamic contexts.

The road to economic development needs to be paved with technology, cemented by knowledge, engine lubricated by supportive institutions, and nourished by inculcation of synergistic research for it to make a difference in this competitive market economy. In this effort statistics and statisticians have a very important space in a multidisciplinary effort for inclusive growth and sustained development.

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