

# India's Economy and Growth

Essays in Honour of V.K.R.V. Rao

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## Preface

The idea of a centenary conference in honour of V.K.R.V. Rao took shape sometime in early 2007. Professor Rao was born on 8 July 1908. Since he had been the founder of the Delhi School of Economics (DSE) as well as the Institute of Economic Growth (IEG) in Delhi in close proximity to each other it was thought natural for faculty members of these two institutions to think in terms of getting together to organize a conference in the centenary year, 2008, to honour and celebrate the contributions of the great economist and institution-builder.

We were confident that organizing funds for hosting the conference would not be a problem, and that indeed was the case. The first port of call was the Indian Council of Social Science Research (ICSSR), the institution that Dr Rao himself had helped set up in the 1960s. The ICSSR was immediately forthcoming, and gave us a very generous grant to host the conference as well as bring out a centenary volume. It must be mentioned here that faculty members of the Institute of Social and Economic Change (ISEC) in Bangalore, which Dr Rao had also founded in the 1970s, also had an independent centenary celebration in 2008.

Professor Rao's first fundamental contribution in the 1930s was the estimation of India's national income, and he was possibly the ablest expert in this field. Some of the conference papers obviously had to have a major focus in this area. Professor Rao also had written an insightful piece on the concept of the Keynesian 'multiplier' as it applied to developing countries like India. Having had personal contact with Lord Keynes in Cambridge, Dr Rao had a firm grasp over issues of macroeconomics, and this important paper amply illustrated this. The conference therefore had to give a special focus to issues of macromanagement of a major developing economy like India. Some of the other abiding interests of Professor Rao were the issues of sustainable growth and the importance of education and health, and the social sector generally, in the development process.

When we approached experts to contribute papers it must be recorded that the response was nothing short of overwhelming. Indian economists in the first decade of the twenty-first century are unquestionably the legatees

of the major thinkers and institution-builders a half century earlier, and Dr Rao is acknowledged to be the most preeminent amongst them. Possibly for this reason it was not difficult for us to get the spontaneous and willing cooperation of the contributors.

In April 2008 when the conference was held for a day each in the premises of the DSE and IEG, the Indian economy had recorded four years of consistent growth in the region of about nine percentage points. It need not be belaboured here that the foundations for this were painstakingly laid by the visionaries in the early years after India's independence, of whom Dr Rao was a stellar member, and the fruits were only being delivered now. But even here there was the great challenge of 'inclusion', for the percentage of the population living in abject poverty was still unconscionably high a full 60 years after independence. The Deputy Chairman of the Planning Commission, Shri Montek S. Ahluwalia, was kind enough to agree to give a pre-conference lecture on the 'Challenges of Inclusive Growth' that set the tone of the two-day conference that was to follow.

The staff of the IEG and the Centre for Development Economics (CDE) at the DSE worked tirelessly to look into all administrative aspects of holding such a large conference. Our thanks go to them. Finally, thanks are due to the editorial staff at SAGE for so efficiently helping us in putting together this volume.

**Pulin B. Nayak**  
**Bishwanath Goldar**  
**Pradeep Agrawal**

# INTRODUCTION

Pulin B. Nayak, Bishwanath Goldar  
and Pradeep Agrawal

This book is an outcome of a conference that was organized in 2008 by the Delhi School of Economics and the Institute of Economic Growth with financial support provided by the Indian Council for Social Science Research (ICSSR) to commemorate the birth centenary of Professor V.K.R.V. Rao, an outstanding economist and institution builder. The conference focussed on issues of interest to Professor Rao and contemporary issues related to India's economic development. Out of the papers presented in the conference, most have been included in this book as chapters. In terms of areas, the papers are diverse and may be categorized into four groups. The first group deals with issues of growth in general or those related to the Indian growth process. The second group includes papers that deal with issues of measurement of national income and related aggregates. The third group deals with environment issues in the context of India's development. The fourth group deals with monetary and fiscal policies.

## Structural Breaks in India's Growth Process

The conference got off to a start with a keynote address that was delivered by Professor Suresh D. Tendulkar,<sup>1</sup> which has been reproduced as the first chapter of this book. Professor Tendulkar spoke on 'Some Questions Relating to the Indian Growth Process', a matter that has been much discussed in recent years. He began by positing that the Indian economy has undergone a remarkable transformation sometime around 1980–81. This time marker is significant because during the three decades of 1950–80, the economy grew at a relatively slow pace, at around 3 to 3.5 percentage points, or what was termed as the 'Hindu rate of growth' by the late Professor Raj Krishna. It is after this period that the growth rate seemed to have significantly increased.

What could have been the underlying causal factors contributing to this increased pace of growth? In trying to answer this question many scholars have had to reexamine the national accounts based on macroeconomic aggregates. These questions were of course integral to the lifetime research interests of Professor V.K.R.V. Rao, who had pioneered the first scientific attempt at estimating the national income of India.

Viewing the Indian growth process from the perspective of 'institutional economics', Professor Tendulkar argues that the economic performance of a nation is determined by the interaction among demography, technology and institutions. With the passage of time economies progressively move from having a labour supply function that is infinitely elastic at a subsistence wage to, eventually, a situation where total labour supply becomes the ultimate primary constraint on the growth process. The importance of technology in transforming labour and capital into valued goods and services of course cannot be overemphasized and, finally, the precise interaction among the aforementioned factors would ultimately be governed by the prevailing economic and political institutions. Institutional economists like Douglass North have emphasized the so-called historical 'path dependency' of the development process.

The main focus of Tendulkar's chapter is on structural breaks in the Indian growth process and questions are raised about the alternative explanations that have been provided for the structural breaks using the framework of institutional economics. On the issue of whether there have been any structural breaks, the answer would seem to be in the affirmative. As regards the reasons for the observed break, it is important to ask: if 1980–81 were to be regarded as the crucial dividing point, what were the factors responsible for the nearly 2 percentage point rise in the average annual growth rate before and after this period? It would seem that on the policy front there was some hesitant *de facto* liberalization of industrial licencing and some quantitative import restrictions were replaced by *ad valorem* tariffs, which made imports easier, though costlier, in terms of domestic currency. In this context it is particularly important to carefully examine the years following the process of reform and liberalization initiated in 1991–92. The period 1992–93 to 2007–08 may be divided into three quinquennial sub-periods. The first of these, the years 1992–93 to 1996–97, was marked by recovery from structural adjustment with a Gross Domestic Product (GDP) growth rate of about 6.6 per cent. This was substantially facilitated by a sharp increase in the gross fixed capital formation (GFCF) in the corporate sector. The second quinquennium was a period that saw relative slowdown, possibly due to a rise in the incremental capital output ratio (ICOR) during this period, as well as a policy of monetary contraction to control inflation. The final five-year

period was marked by the highest average growth rate so far recorded at 8.8 per cent. This has been followed by a relative slowdown, but this period is marked by abrupt and extreme variations in the international environment arising due to a turmoil in the international financial markets.

## Understanding the Growth Process

In an insightful and widely quoted paper entitled 'Investment, income and the multiplier in an underdeveloped economy' published in 1952 in the *Indian Economic Review*, V.K.R.V. Rao had carefully shown that the validity of the Keynesian multiplier depends upon various crucial assumptions, most of which are not valid in the case of underdeveloped countries. These assumptions include *inter alia*, existence of involuntary unemployment, upward sloping supply curve, existence of excess capacity in the consumption goods industries and comparatively elastic supply of working capital. Rao was therefore bold enough to point out that a consequent blind application of the Keynesian prescription to the developing economies of the world is inflicting considerable injuries on them. Now, one possible way to formulate the long run counterpart of the Keynesian formulation is via the Solow growth model. An analogous question may now arise as to how relevant is the Solow formulation in the context of a developing economy. Errol D'Souza seeks to address this issue in his chapter entitled 'The Veil of Growth: Some Thought Experiments'.

D'Souza (in Chapter 2) focuses on two factors, the human and physical capital stock, that impinge on the growth prospects of an emerging market economy. The first thing to note about the Solow model is that it considers the growth of labour force and not that of the employed labour force. The assumption is that in the long run the labour market would have time to clear and the economy would return to full employment, which may be understood to be that level of employment which is congruent with frictional unemployment. In many economies the equilibrium employment level differs from the frictional level due to institutional factors that characterize their labour markets.

When it comes to physical capital the author introduces a distinction between private and public capital. Publicly provided physical capital is assumed to be rival and non-excludable. The production function would therefore now include, together with private inputs, public physical capital that will affect the level of output. Public physical capital may be best identified as infrastructure, which is widely recognized to be a key constraint to future growth of the Indian economy.

The main focus of this chapter is to seek an explanation for the observed trend whereby over the past decade and a half there has been an increase in fiscal deficit alongside a decline in public investment. Now, since in the Indian context, public investment has been known to crowd in private investment, this may be regarded as a puzzle. This chapter seeks to provide an endogenous explanation of this puzzle. The argument rests on the thesis that public investment affects individuals differentially, in the sense that those with higher capital factor endowments benefit more in terms of income returns from an increase in public investment than those with lower factor endowments. This creates incentives for those with above median incomes to influence the composition of public expenditures toward capital expenditures. Incomes above the median grow faster and consequently inequality rises. The government then reallocates more expenditure toward transfers and less toward public investment. The author finds a non-monotonic relationship between the size of the public sector and the growth rate of the economy.

## Some Key Aspects of India's Economic Growth

The chapters by Bishwanath Goldar and Arup Mitra (Chapter 3) and Ramesh Chand (Chapter 4) deal with some aspects of India's economic growth. In the recent literature on India's economic growth, there has been a good deal of discussion on the following two issues: (a) growing share of services in the Indian economy and (b) when did growth acceleration take place in the Indian economy: did it coincide with the initiation of reforms of the 1990s or was it much before? There is now a wide recognition that the acceleration in India's economic growth took place from the 1980s, much before the 1991 reforms. The chapter by Goldar and Mitra is set against the backdrop of these facts and aims at explaining the sources of the growth acceleration and assessing the contribution of sectoral changes to overall economic growth. Some related issues are also addressed. The chapter by Chand, on the other hand, deals with a different aspect of India's economic growth; it is concerned with the agricultural sector and addresses the following question: how can the pace of the agricultural sector growth be raised so that a fast rate of growth of the Indian economy can be maintained? In the Eleventh Five Year Plan, a 4 per cent annual growth in agriculture has been targeted to make possible a 9 per cent annual growth rate in the economy. A discussion on constraints to agricultural growth and what measures are needed to attain a 4 per cent annual growth in agriculture sector therefore assumes significance. These issues are addressed in Chand's chapter.



Goldar and Mitra (in Chapter 3) examine how productivity increase and changing sectoral composition have contributed to accelerated economic growth in India in the post-1980 period. They also go into the questions of growth linkages, i.e., how growth in one sector of the economy promotes growth in other sectors, and which sectors of the economy are playing a lead role, thereby contributing to the growth of other sectors.

Goldar and Mitra report that productivity growth in services has been an important contributor to the acceleration in economic growth that took place in the post-1980 period. They estimate that about 40 per cent of the increase in the growth rate of aggregate GDP in the post-1980 period is attributable to a hike in the growth rate of total factor productivity (TFP) in the services sector. They note that productivity growth achieved by different categories of services differ, and the hike in TFP growth in the services sector at the aggregate level is traceable primarily to a faster growth in TFP in the trade, hotels and restaurants group and in the public administration and other community, social and personal services group. Goldar and Mitra acknowledge the weakness of their productivity estimates because of the deficiencies in the estimates of output and input taken from secondary sources, and hint at the possibility that a part of the observed gains in productivity may have been caused by the methods of measurement of services sector output being used for the National Accounts Statistics (NAS), which might have led to overestimation of the growth of the services sector output for the post-1980 period. Nevertheless, they feel that a part of the productivity growth in services, especially in trade, hotels, etc., is possibly real and has derived stimuli from rapid increases in demand for such services with a subsequent expansion in these activities.

Goldar and Mitra argue that though there has been a major shift in the composition of GDP toward services contributing to the overall growth, it is the secondary sector which is the lead sector in the medium to long run. They find significant growth linkages from the secondary and the trade-transport sectors to the other sectors of the economy. However, on the whole, between the secondary and trade-transport sectors, the former appears to be the lead sector in the medium to long run. The causality also runs from the secondary sector to other components of the tertiary sector like finance. Hence, Goldar and Mitra conclude that much more attention needs to be paid to the revival of the industrial sector and for boosting its growth so that the aggregate growth of the economy derives its impetus from industrialization.

Chand (in Chapter 4) deals with the trends in agricultural growth, the factors determining agricultural growth and the constraints to achieving a 4 per cent growth rate in agriculture in the Eleventh Plan. Analysis of growth

trends reveals a deceleration in agricultural growth in the second half of the 1990s. The breakpoint is identified as 1996–97 when drought years are included in the analysis and 1999–2000 when these are excluded. He notes at the same time that the growth rate in agriculture improved considerably after 2004–05. The average growth rate in GDP agriculture during 2005–06 to 2008–09 was about 4.3 per cent per annum, highest for any four consecutive years after 1991–92, which raises a strong hope of achieving 4 per cent growth rate in agriculture in the Eleventh Plan.

An analysis of the determinants of agricultural output reveals that credit, irrigation, power supply, public and private investment, etc., are important factors. Chand notes that in 1996–97 to 2003–04, a period marked by agricultural deceleration, there was a decline in the terms of trade for agriculture, accompanied by a decline in fertilizer use, power supply and per cent area under irrigation. In contrast, after 2003–04, when agricultural growth picked up, all these factors showed moderate to high growth.

From his analysis, Chand comes to the conclusion that if fertilizer use grows by 3 per cent per annum, area under fruits and vegetables grows by 2 per cent per annum and the technology frontier shifts favourably by 1 per cent per annum, then, in such case, it should be possible to achieve a 4 per cent growth rate in agriculture provided significant public and private investments in agriculture are made. Chand discusses the constraints that exist on increased use of inputs, greater investment and application of superior technology and comes up with recommendations.

## **Measurement Issues: National Income and Related Aggregates**

Ramesh Kolli (in Chapter 5), S.L. Shetty (in Chapter 6) and Savita Sharma and Janardan Yadav (in Chapter 7) addresses some important issues of measurement of national income and related aggregates. These three chapters deal with the measurement of output, savings and capital formation and private consumption, respectively.

Kolli's chapter is concerned with the estimation of GDP in the unorganized component of the manufacturing and services sectors. He describes the methods currently being used by the Central Statistical Organization (CSO), and points out that because there are no annual enterprise surveys, a large part of the estimation is being done with the help of indirect methods using the benchmark-indicator procedures. This involves preparation of benchmark

GDP estimates at detailed activity level for the base year of the national accounts series using the estimated workforce in the activity and the value added per worker (VAPW) in that activity. The GDP in subsequent years is then estimated by extrapolating the base year estimate with appropriate indicators relevant to the particular activity.

Kolli notes that the estimation of workforce by economic activity is done by using large-scale household sample survey on employment and unemployment conducted by the National Sample Survey Organization (NSSO). An interesting issue highlighted in this context is that the NSSO survey data provide the number of workers while the national accounts needs information on the number of jobs. A related methodological issue is how should one derive an estimate of unorganized sector workers for an activity from the estimated activity-wise total workers. This, as explained by Kolli, is done by deducting the estimated organized sector workforce from the total workforce for each compilation category. The chapter presents, in the appendices, estimates of the number of workers in different economic activities split into rural and urban, and further split into corporate and unincorporated enterprises.

Kolli emphasizes that since indirect methods are used for the estimation of GDP in unorganized manufacturing and services, the estimates are crucially dependent on the proxy indicators used. Hence, the indicators are continuously evaluated for appropriateness and changes are made when required. Nonetheless, he feels that eventually a programme for estimating GDP in unorganized manufacturing through direct methods by conducting annual enterprise surveys needs to be implemented, since this will provide more reliable estimates.

Shetty (in Chapter 6) discusses estimation issues concerning domestic savings and investment. A substantive issue raised is the need for conducting integrated surveys of household income, expenditure and savings. Shetty notes that this proposal has been under consideration for some time. There have been earlier attempts at conducting such surveys, which encountered many problems. He argues, however, that despite the myriad problems associated with household income surveys, there is a strong case for initiating such surveys on a quinquennium basis.

Shetty has identified three problem areas in the estimation of domestic savings and investment. These relate to private unrequited transfers, inclusion of 'valuables' as a part of gross capital formation (GCF) and treatment of errors and omissions.

Shetty points out that in the Indian system of national accounts, all transfer payments from abroad on private account are treated as current

transfers. This is not consistent with the UN System of National Accounts (SNA) which lays down clear guidelines for segregating such transfers into capital transfers and unrequited current transfers. Given the enormous size of the private transfers that are taking place, the present treatment of such transfers causes estimation errors. Hence, to be true to UN SNA and the nature of the transfers taking place, a part of the transfers ought to be treated as capital transfers.

As regards expenditure on 'valuables', the CSO includes them as a part of GCF. Shetty finds this objectionable on two grounds: (a) the valuables merely serve as a store of value and do not contribute to value addition and (b) the CSO's method to be consistent requires a counterpart saving to finance such investments, which is missing.

Shetty draws attention to a long-standing methodological error represented by 'errors and omissions'. This is the difference between total savings (domestic and foreign) and the estimated figures of GCF by the commodity flow method, which the NAS has been presenting year after year. Shetty points out that if the adjustments for 'errors and omissions' are not made and if the expenditure on 'valuables' are excluded from the GCF estimates, the rate of GCF for 2005–06 would have been lower by about 2 percentage points.

In addition to the mentioned deficiencies, Shetty notes a few other major gaps in estimates. There relate to corporate savings and investment, and financial assets acquisition by households.

Sharma and Yadav (in Chapter 7) look into the issue of divergence in the estimates of private final consumption expenditure (PFCE) between two important data sources: the NAS and the household consumer expenditure surveys of the NSSO. They note that the gap between the two PFCE estimates, the NAS and NSS estimates, has increased substantially over time. It was only about 5 per cent for the estimates for 1972–73, which has now risen to about 50 per cent (for 2004–05). Sharma and Yadav try to provide an explanation for the observed divergence and put forward some suggestions for improving the estimates and narrowing the gap.

Sharma and Yadav note that the NAS and NSS estimates are not strictly comparable. In addition to the difference in the coverage and timeframe, there are differences in concepts and methodology. The NAS takes the commodity flow approach and is thus concerned with production, net imports, change in stock, etc., whereas the NSS estimate is based on actual consumption reported by households. One part of the divergence arises from the indirect measurement of the financial intermediary services. Divergence also arises from notional elements like imputed rent. When these two factors are taken

into account then the divergence goes down from 50 per cent to 41 per cent (for 2004–05). Sharma and Yadav compare the NAS and NSS consumption estimates for different item groups and find that the gap is larger for non-food items than food items.

Based on their study, Sharma and Yadav observe that the household expenditure on durables is probably not fully captured in the NSS estimates, as the expensive durables are purchased more by the relatively affluent households, which do not respond accurately to the NSS surveys. They also point out that the NSS schedule has not been modified to capture the new items entering into the economy like electronic and communication equipments, and for this reason, the expenditure on these items may not be getting reflected adequately.

One limitation of the NAS estimates noted by Sharma and Yadav relates to the ratios, rates and norms used. They point out that the accuracy of the NAS estimates depends heavily on the accuracy of rates, ratios and norms applied on the production estimates for netting out the amounts used for further production in the form of seeds, feeds, etc. This applies also to the estimated ratio of marketable surplus. Since these rates and ratios are not revised at regular intervals, these may not capture properly the current pattern. The rates-ratios used in NAS estimates therefore needs to be revised regularly by carrying out fresh studies.

## **Growth and Environment**

Ramprasad Sengupta's contribution (Chapter 8) is titled 'Inclusive Economic Growth and Sustainable Energy Development of India'. With the recent achievement of GDP growth rates in the range of 9 percentage points the issue of the concomitant energy requirement as well as its sustainability is a matter of great importance. It is also important to note that China, along with India, is the only other billion plus economy that is also growing at a rate of nearly 10 per cent and has a huge and virtually insatiable energy demand. These two countries are among the world's fastest growing economies and together comprise almost 40 per cent of the world's labour force. Both these countries are also low income economies where the socio-political aspiration for rapid economic development is very high; this would naturally call for high energy consumption. But this also means that unless careful steps are taken to avert it, there could be substantial damage. As the author emphasizes, in a civilized society, one has to provide a decent life to everyone who is born and

leave behind enough resources for the unborn. Thus, economic development must be cognizant of both intra-generational as well as inter-generational equity and environmental sustainability.

Sengupta broadly classifies three alternative approaches to development, viz., the wealth maximization approach, the human development and capability approach and the sustainable development approach. It is necessary to combine the concerns of all these branches in a balanced manner.

A perusal of data on comparative energy use shows that CO<sub>2</sub> emission per capita (tonne) in India for the year 2003 is 1.196, whereas for USA it is 19.904. With 17 per cent of the world's population India accounts for 5.2 per cent of the world's total commercial energy use and 4.8 per cent CO<sub>2</sub> emission. While reduction of carbon emissions must be a priority, it must also be realized that nearly a third of India's population lives in dire poverty. The fastest possible way to improve their living conditions, with its attendant consequences of adding to the carbon footprints, must be the immediate imperative for Indian planners. The author very rightly observes that the principle of equity in energy use must allow poor countries like India to develop so as to achieve some minimal acceptable standards of nutrition, shelter, health and education. It is also important to emphasize that the energy required for growth must be clean and also, of course, be sustainable. The author convincingly demonstrates that the problems of income and energy poverty need to be addressed simultaneously.

In their chapter 'Investment Data and Sustainability Measures for India' (Chapter 9), Purnamita Dasgupta and Shikha Gupta focus on certain macro indicators of sustainability, which explicitly incorporate environmental considerations, within a larger macroeconomic welfare context, using Indian data from 1976–77 to 2004–05. Considerations of the environmental issue aim for the optimal scale of activity which would sustain economic growth, thereby to attain a steady state in the long run. It must be remembered that sustainability is an interdisciplinary notion, and it is an amalgamation of social, economic and environmental goals. Arrow has suggested that sustainability should require the presence of signals which effectively reflect increasing scarcities in the resource base in order to enable economic growth to continue within an ecological life support system (Arrow, Bolin, Constanza et al. 1995). It should also be reasonable to expect that sustainable development must involve a process whereby the wealth of society must not decline. In the realm of empirics one may of course think of wealth in terms of capital assets.

Dasgupta and Gupta try to derive measures of the sustainability of economic growth by defining the 'more inclusive investment streams'. The key idea is to sustain incomes without consuming the stock of capital. In order

to achieve this, the aggregate capital stock, broadly defined, requires to be maintained. Wealth increases when there is net capital accumulation or what the author calls 'genuine investment' in the economy. The authors suggest that the well being of the economy would improve if genuine investment is positive. Genuine investment must of course include both physical as well as human capital.

The authors derive the estimate for human capital formation by weighing the current expenditures, both private and public, using the average estimates of the social rate of return to schooling developed by Psacharapoulous and Patrinos for low income countries. The inclusion of private expenditure on education and the methodology used in calculating educational capital formation is an innovation of this chapter. The chapter continues to offer an India-specific method for estimating CO<sub>2</sub> emissions. It also uses the Hotelling rent method for computing natural resource depletion. Finally, the chapter attempts a computation of human capital formation on the basis of returns to education, rather than imputing the total value of expenditure which would have been an overestimate. Using all of these caveats the estimated genuine investment is 13.54 per cent of gross national income for the year 2000.

## **Monetary and Fiscal Policy**

The monetary and fiscal policy group deals with some timely issues in these areas. The monetary policy section considers whether the Reserve Bank of India (RBI) monetary policy should target inflation or also consider other variables such as growth and exchange rates. It also considers the recent controversy among the neo-structuralists, Stiglitz, McKinnon and others, regarding the optimum interest rate policy and develops an empirical model to find the optimum level of real interest rates for India that will maximize investment and growth. The fiscal policy section deals with two of the most important current issues: (a) how to reform and improve the functioning of fiscal federalism in India and (b) India's experience with Fiscal Responsibility and Budget Management (FRBM) Act at the federal and state levels as well as reforms needed in it to further improve fiscal prudence.

In Chapter 10, Ashima Goyal adapts a dynamic stochastic open economy general equilibrium macroeconomic model to analyse what kind of inflation targeting the RBI monetary policy should aim for. Such a model derives optimal monetary policy from rigorous models in which individual's consumption profile through time is such so as to give them the highest

possible utility. Firms set prices to maximize profits under market power and frictions. These models are useful for policy because they reduce to simple aggregate demand and supply relationships that include forward-looking expectations. They are useful for emerging markets because different kinds of frictions can be analysed.

Goyal develops a simple version of such a small open-economy model for India, noting that a major difference in emerging market such as India is dualism in labour and in consumption. Therefore, two types of consumers are introduced, those at subsistence and those above. The two also supply labour in distinct activities. Such specific labour markets and elastic supply tend to make aggregate supply more elastic, so that output can rise without raising prices. But terms of trade are volatile in the emerging markets compared to mature markets because only the better-off category of consumers are able to smooth risk using international financial markets. This makes the supply curve steeper. Exchange rate intervention limits the volatility of the terms of trade making the supply curve flatter.

Goyal then uses simulations to compare different types of inflation targeting (IT). She finds that flexible IT, with some weight to output (or GDP), always outperforms strict IT. Since consumer price inflation is itself a weighted average of domestic inflation and the exchange rate, flexible consumer price index (CPI) inflation targeting (CIT) works best, especially if the economy is more open. But this result is reversed if modifications are made to suit the structure of Indian inflation and its measurement. Administered prices are more dominant in the CPI. There are also large data collection lags. If these adjustment lags are introduced in CIT, and as long as exchange rate intervention is required, domestic inflation targeting (DIT) turns out to be more robust and effective. Domestic inflation is producer prices represented by the wholesale price index, on which the RBI currently focuses. Therefore, the welfare losses from the inability to implement CIT are low as long as the dualistic structure dominates. They rise, however, as the economy becomes more open. She concludes that the CPI should be improved, making possible its future use in monetary policy targeting.

In Chapter 11, Pradeep Agrawal attempts to shed light on the appropriate level of interest rate in the process of economic development, which has been both controversial and hotly debated upon. To this end, he empirically examines whether higher real interest rates are associated with higher investment rates in India. The issue is important since higher investment rates are associated with higher rates of economic growth.

Agrawal finds that the investment rate goes up with real interest rates (on intermediate term bank deposits) up to 4 per cent but starts declining



at still higher interest rates. He also provides evidence that a banking crisis occurred in many countries for which real interest rates exceeded 9 per cent. This evidence rejects the neo-structuralist argument that higher interest rates on bank deposits would lower investment in all ranges of interest rates, since they actually increase investment up to 4 per cent at real rate. Nor do they support unbridled financial liberalization which often leads to real interest rates over 9 per cent and can trigger banking crisis. It provides some support to Stiglitz's case for 'mild financial repression' although the banking crises that he fears do not materialize until real interest rates exceed as high as about 9 per cent.

Agrawal argues that given that the optimum level of real interest rates that would maximize investment rate for India is found to be about 4 per cent, repressing the real interest rates to be near zero (suggested in some writings of Stiglitz) may not be optimal policy. Thus, he feels that the revised position of McKinnon (1993) who recommends financial liberalization with a moderate range for the real interest rates might be more appropriate. However, considering empirical evidence from India and East Asia, Agrawal suggests that the appropriate real interest rate range seems to be about 0–6 per cent rather than 5–9 per cent as suggested by McKinnon.

In Chapter 12, M. Govind Rao discusses various aspects of the evolution and structure of Indian federalism including tax and expenditure assignments, fiscal imbalances in Indian federalism and the design of general purpose and specific purpose transfers from the centre to the states. He points out that the system of assignments has resulted in a significant degree of vertical fiscal imbalance. The wide differences in per capita incomes among the states have also caused severe horizontal fiscal imbalances. The transfer system should offset the fiscal imbalances. In particular, the transfer system should be designed to offset fiscal disabilities arising from the shortfall between revenue capacity and cost disabilities. These transfers should be general-purpose transfers—to enable all states to provide a given level of public service at a given tax price. In addition to these general-purpose transfers, specific purpose transfers are needed to ensure certain minimum standards of specified services, which are in the nature of merit goods.

Rao notes that in an attempt to reduce discretion and avoid the lobbying pressure from different states, Indian central government has increasingly resorted to formula distribution in the allocation of transfers. However, the formulae used to distribute transfers have left a lot of room for improvement in terms of both equity and incentives. It is, therefore, necessary to redesign the transfer system to improve accountability, incentives and equity. In a more liberalized environment, inter-state inequality in the standards of