2nd Prof. R. Radhakrishna Memorial Lecture

Some Observations on an Employment Centered Perspective of Development

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Chairman
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1. Introduction

Prof**.** Radhakrishna was one of India's leading econometricians, an eminent scholar, an experienced administrator in higher education and a seasoned, high level policy adviser. But above all he was a kind and warm human being, which endeared him to one and all. I first met him in the early 1980s and would subsequently meet at conferences and meetings from time to time. But I got to know him well when he invited me to join the National Statistical Commission, which he chaired from 2009 to 2012. We worked very closely and I was impressed by his leadership style: though always gentle in his dealings with colleagues and subordinates alike, he was thoroughly professional and firm in his decisions. Among the many things we accomplished together I will only mention the Draft Bill on National Statistical Commission (NSC). Had this bill become an act, India would have had a completely autonomous and powerful statistical commission, comparable to those in the UK, USA, Canada, etc. Unfortunately, the draft bill never even reached Parliament for consideration by our legislators. Why that was is another story that I will not go into here.

In an illustrious career spanning half a century Prof. Radhakrishna had many distinguished academic appointments. However, throughout his career he remained firmly rooted in Andhra Pradesh, a son of the soil. It was this grounded-ness I believe which made him very sensitive to the deprivation and struggles of the disadvantaged. A great deal of his academic research and policy work related to the measurement of poverty and nutrition, problems of rural indebtedness and access to credit for the rural poor. My lecture today on an employment centred perspective of development is a tribute to him and that dominant theme of his career.

In part 2 of this lecture I pose the question 'Growth of what?' to ask whether GDP growth is indeed the best way to assess the performance of an economy. After discussing alternatives to the 'commodity fetishism' of GDP growth such as the Human Development Index, I finally propose a combination of indicators led by employment growth. The importance of choosing an appropriate indicator of a country's economic performance becomes clear when in part 3 I turn to what I have called the paradox of Indian growth;

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a sustained period of high growth combined with high growth of unemployment. I will discuss what accounts for this paradox, particularly the role of rising capital intensity and 'creative destruction', the competition for survival under capitalism. I will also parenthetically refer here to two blind spots, underemployment and temporary migrant employment, which makes our employment statistics quite fragile. In part 4 I take a step back to review the foundational framework of modern development theory and how that framework has been extended or modified to accommodate observed empirical patterns. This discussion provides the backdrop for my review of the changing structure of the Indian economy in part 5, in particular the inverse relationship between the share of major sectors in GDP and employment. This points to a conflict between the policy goals of maximising GDP growth and maximising employment growth. I will suggest a possible sequencing of goal prioritisation to resolve this conflict. In Part 6 I will discuss the introduction of University Technical Colleges in secondary education and reform of higher education to develop a highly skilled Indian workforce, which is a necessary condition to ensure that India remains globally competitive and prosperous in the 21st century. Despite all these developments in the non-agricultural sector, agriculture will remain a major employment sector for decades. In Part 7 I will discuss what needs to be done to radically improve the very low productivity in agriculture in an ecologically sustainable way. In Part 8 I will draw some conclusions.

2. Growth of What?

Gross Domestic Product or GDP is the standard measure of the size of an economy. When we talk about the growth rate of an economy, we routinely refer to the rate of growth of GDP. However, generalized acceptance of GDP as the standard measure of the size of an economy is less than a hundred years old. It is also beset by many conceptual problems. While discussing the vast literature that led to the adoption of this concept Simon Kuznets, one of the pioneers who developed the concept of GDP, also pointed to the whole range of problems associated with it (Kuznets 1941, Kuznets 1948). He wrote later in his classic work on the epoch of Modern Economic Growth:

"In distinguishing the economic from other aspects of social life, one must consider questions of scope or of inclusion and exclusion; in drawing the line between costs (of intermediate products) and final output, one encounters questions of grossness and netness; and in reducing the diverse economic activities and resulting products to a common denominator, one must consider questions of valuation and weighting" (Kuznets1966, p.20).

He went on to say:

"All these problems are accentuated when product is used to gauge economic growth, because such growth is necessarily accompanied by many institutional and structural changes—which shift the line between the economic and noneconomic, modify the cost-output relations and change, often drastically, the relations of prices, the only feasible basis of valuation" (Kuznets 1966, p.21)

GDP is after all a synthetically constructed index number, something we often forget, and therefore beset with all the well-known problems of such index numbers: what to include or exclude, gross and net computations and the choice of appropriate weights for aggregation in a long time series.

Such limitations notwithstanding, there was a wide consensus among Kuznets and his peers that the concept of GDP was the best available concept to measure the size of an economy and track its growth over time. It also provided a basis to compare the economic size of different countries, though such comparisons become more fragile when extended beyond the advanced capitalist countries to economies of less developed or non-market countries as Kuznets also noted.

Reservations about the concept of GDP, already noted by the pioneers, gathered momentum as there was growing discomfort with 'commodity fetishism', measuring the size of an economy through the lens of the producers rather than the lens of consumers. It was felt that exclusive attention to GDP growth was diverting attention away from how an economy was performing or not performing, especially a developing economy, in meeting the basic human needs of the population. Not surprisingly, this critique was formally endorsed at the International Labor Organization (ILO), a multi-lateral platform which gives voice to workers.

The goal of eliminating poverty; providing for all the minimum level of consumption of basic goods; food, water, clothing and shelter necessary for long-term physical well-being; was endorsed as the principal goal of development by governments and organisations of both workers and employers from all over the world at the World Employment Conference organized by the ILO in Geneva in 1976 (Jolly R.1976). This new approach culminated in the landmark World Summit on Social Development in Copenhagen which firmly put people rather than products at the centre of development, emphasized commitments to eradicating poverty, promoting full and productive employment, and fostering social integration (Watson D 2014).

At the analytical level, the critique persisted. Though seen as an improvement compared to GDP, it was felt that the basic needs approach was too narrowly focused on consumption of material goods alone. Amartya Sen in particular proposed a much broader concept of development as "substantive freedoms" or functional capabilities human beings must possess to live fulfilling lives (such as the ability to live to old age, engage in economic transactions, or participate in political activities). Subsequently, Sen and his associates promoted the capabilities approach in debates concerning human development; eventually leading to the creation of the United Nation's Human Development Index or HDI, which combines capabilities in income, health and education. It has been adopted globally by individual countries and multilateral agencies as an alternative measure of economic performance.

We thus have two alternative measures of development performance. The narrow GDP measure and the broader HDI. Though a broader concept than GDP, HDI is also an aggregate index like GDP and subject to similar conceptual challenges: questions of what to include and what to exclude in the aggregation, counting of gross versus net outcomes, the inevitable arbitrariness or volatility of weights used in the aggregation and so on. Recognising these limitations of aggregative indices combining multiple variables, Sen suggested in a paper published in 1998 that life expectancy, or mortality, could serve well as a single variable measure of economic performance (Sen 1988). This was well after the HDI had been launched in 1990 by UNDP with his leading contribution.

As an alternative to these indices, which aggregate multiple variables, I would like to propose *employment* growth as a single variable measure of performance in the present Indian context. The Copenhagen Declaration had in fact emphasized the commitment to full and productive employment along with eradicating poverty and fostering social integration. But subsequent global and national action programs have focussed more on poverty eradication than employment. In fact, a development strategy focussing on productive employment growth is the most effective means of ensuring both GDP growth as well as poverty eradication.

While claiming that GDP growth is the most appropriate measure of economic performance, especially in the advanced countries, Kuznets had pointed out that a measure of economic performance had to be context specific, based on prevailing practices and wide consensus about the ends and means of 'economic activity'. In the present Indian context, I would argue that employment growth is the most effective measure of our economic performance. The most serious economic challenge facing India today, in my view, is the huge gap between the rate of growth of output, or

GDP, and the rate of growth of employment. Unemployment, especially youth unemployment, has reached crisis proportions. An acceleration of the rate of growth of employment would not only further accelerate the growth rate of GDP but would also accelerate the pace of poverty elimination. In addition to these substantive reasons, use of employment growth as the principal indicator of economic performance has several technical advantages. As a single variable, not a composite index, it raises no questions about what to include or exclude in its computation. There is also no issue about netting or choosing between gross and net employment. Further, employment being a single variable, there is no arbitrary choice to be made between weighting schemes which can affect the final number.

A question can be raised about whether to include unpaid labour in the measure of employment. There is a large literature, both international and Indian, on the subject and inclusion of this component in Periodic Labour Force Survey (PLFS) estimates of employment reflects a well-established consensus (Govt. of India 2025). Questions can also be raised about the inclusion of different types of labour of widely varying productivity in a single measure of employment. I would emphatically argue against any differentiation on this count since productivity is measured in value terms, bringing back in through the back door the same problem of weighting which is one of the main infirmities of GDP estimates as I have already mentioned. There are still other definitional issues about how employment is measured in the PLFS surveys. I will discuss some of these issues in the next part of this lecture.

Proposing employment growth as the principal indicator of economic performance does not imply that we should ignore all other indicators. Employment taken together with GDP gives us a measure of productivity and GDP along with population gives us a measure of per capita income. We thus have a comprehensive vector of four indicators to track the overall performance of the economy. However, I am arguing that among all these indicators we should treat employment as the principal indicator.

3. The Paradox of Growth in India

Let me now turn to what I call the paradox of growth in India. It is often mentioned that India is the world's fastest growing major economy and has been for some time. The latest World Economic Outlook (IMF 2025) indicates that in 2024 India's GDP grew at 6.5% while China, the second fastest growing economy, was well behind at 5%. For 2025 the projections are 6.2% and 4% respectively. However, the growth of employment, which I have argued should be the principal indicator of our economic performance, has lagged behind (Table1). The growth rate of employment varies

depending on which of the alternative PLFS concepts of employment we use: Usual Principal Status (UPS), usual Principal and Subsidiary Status (UPSS) or Current Weekly Status (CWS). Accordingly, Table 1 compares real GDP growth for the period 2011-12 to 2023-24 with employment growth rates for the same period in terms of UPS, UPSS and CWS. While real GDP grew at 5.9% during this period, employment growth ranged from 4.8% (CWS) to 5.6 % (UPS, UPSS). That employment growth should lag behind GDP growth is not surprising since a part of GDP growth is also attributable to growth of productivity. What is concerning, however, is that growth of employment has lagged behind the growth in labour supply. In PLFS concepts, growth of the Work Force has lagged behind the growth of Labour Force. As a result, unemployment or the gap between labour supply and labour demand has also grown rapidly, the estimate ranging from 3.2% (UPSS) and 4.1% (UPS) to 4.9% (CWS) compared to GDP growth of 5.9% for the period 2011-12 to 2023-24. Thus, India is the fastest growing major economy in the world, but it also has a high rate of growth of unemployment. This is what I call the growth paradox of India. We need to analyse this paradox and ask how it can be addressed.

Table 1: Growth of Employment, Unemployment and GDP

Real Gross Domestic Product (GDP): 2011-12 prices (₹ Crore)

Details	2011-12	2023-24	CAGR (%)
GDP	87,36,329	1,73,81,722 (PE)	5.90

PE: Provisional Estimates, Source: MOSPI

Usual Principal Status (UPS) (15+ years)

Details	2011-12	2023-24	CAGR (%)
1.Labour Force (Millions)	440.9	573.7	2.22
2.Work Force (Millions)	428.8	550.4	2.10
3.Unemployment [(1)-(2)] Millions)	12.0	23.3	5.64
Unemployment Rate (%) [(3)/ (1)]	2.7	4.1	-

Source: Employment and Unemployment Survey, and Periodic Labour Force Survey, NSSO.

NSSO. Usual Principal and Subsidiary Status (UPSS) (15+ years)

Details	2011-12	2023-24	CAGR (%)
1.Labour Force (Millions)	476.6	639.4	2.48
2.Work Force (Millions)	466.2	619.3	2.40
3.Unemployment [(1)-(2)] Millions)	10.4	20.1	5.62
Unemployment Rate (%) [(3)/ (1)]	2.2	3.2	-

Source: Employment and Unemployment Survey, and Periodic Labour Force Survey, NSSO.

Current Weekly Status (CWS) (15+ years)

Details	2011-12	2023-24	CAGR (%)
1.Labour Force (Millions)	457.9	600.2	2.28
2.Work Force (Millions)	441.3	571.1	2.17
3.Unemployment [(1)-(2)] Millions)	16.6	29.1	4.81
Unemployment Rate (%) [(3)/ (1)]	3.6	4.9	-

Source: National Sample Survey Organisation, Employment and Unemployment Survey, and Periodic Labour Force Survey, NSSO.

Before I do that, however, it is necessary to point out two important blind spots which make our PLFS employment estimates quite fragile, one which may be substantially overestimating employment and the other which may be underestimating it. Regarding overestimation, without getting into minute details of PLFS schedules which I have discussed in my Econometric Society Presidential address earlier this year (Mundle 2025), let me just say that in these schedules all workers are classified as either employed or unemployed. There is no provision for workers who are partially employed. The upward bias this creates in employment estimates is best illustrated with the current weekly status data. The PLFS surveys collect detailed data on number of hours worked each day by each member of the sampled household, but it is not used in classifying the workers as employed or unemployed. Thus, all workers who are only partially employed during the week (even for just 1 hour per day for four days) would get classified as employed. It is not difficult to imagine the extent to which this may be overestimating employment in a developing country like India, where large segments of the self-employed or casually employed work force are only partially employed during a week.

The second blind spot biases our employment estimates in the opposite direction, underestimating it. The less developed states of India are characterised by a high incidence of circulatory or temporary migrant labour. With work being scarce and poorly paid in their home village, including MNREGA, large numbers of able-bodied men from these villages migrate to urban areas. They temporarily migrate to more developed states like Andhra, Delhi, Haryana, Gujrat, Karnataka, Kerala, Tamil Nadu, Telangana, etc. for temporary employment, mostly in construction but also in other industries and services. Typically, they migrate through well-established channels like labour contractors. They work for about 7-9 months each year, making up to a thousand rupees a day for unskilled workers, including over time payment. Skilled workers earn more. This enables them to send money home and even save, say, Rs 20,000-25,000 a year.

This process of temporary migration has been well recorded in our own village surveys in Jharkhand and other similar village surveys in other less developed states like Bihar, Uttar Pradesh, Odisha, West Bengal, etc. (Das et.al2024, Rogers, Mishra& Sharma 2016, Sharma & Rogers 20215). These workers were mostly invisible to the larger public until images of millions of them trudging home for hundreds of miles, splashing daily on our television screens, made them poignantly visible during the Covid 19 lockdown of 2020. More important, the employment of these temporarily migrant workers is quite invisible in the PLFS data because of the way the sample frame for PLFS is constructed. Households are identified for inclusion in the sample frame only if they are settled households for at least six months prior to the sampling period. Further, a worker is recorded as part of the household only if s/he is resident in the household for at least six months. Thus, these temporary migrant workers are not recorded in any household in their place of origin in the rural surveys. Nor are they recorded in their urban destinations, where these itinerant workers move from one work site to another, often residing in the worksite itself or some temporary shanty nearby. They are not part of any eligible regular household included in the sample frame.

Hence, the employment of such temporary migrant workers goes largely unrecorded in the PLFS estimates of employment. This is possibly an important source of underestimation bias in our employment statistics since the incidence of such employment may be quite high. This is especially so for employment intensive sectors like construction, since the level of construction is highly correlated with the level of economic activity and both may be high in the most dynamic urban geographies of the country.

The over-estimation bias of including partially employed workers in estimates of employment and the under-estimation bias of missing out the employment of temporary migrant workers highlights the fragility of our employment estimates. A few simple adjustments in our PLFS schedules and sample frame could perhaps correct these biases. I will leave this as an appeal to our official statistical authorities while proceeding on the basis of the available employment statistics, such as they are.

Let me now return to the paradox of Indian growth. Why is unemployment rising rapidly despite the high growth of GDP, or why is the demand for labour not keeping pace with the growth of labour supply? The simple answer is the very sharp and sustained increase in capital intensity, with rising productivity muting the demand for additional employment. Estimates based on RBI's KLEMS data base indicate that capital intensity rose from about Rs 29 to Rs 89 per 1000 workers (at constant 2011-12 prices) between 2000-01 and 2023-24, an increase of over 200%. But this raises the further question, why this sustained, sharp increase in capital intensity?

Table 2: Capital Intensity

Year	Capital Stock at constant prices (base year = 2011-12, and in Rs. crore)	Employment (in thousands numbers)	Capital intensity (capital per 1000 persons employed)
2000-01	11753033	409770	28.68
2005-06	16441610	457649	35.93
2010-11	24645170	467060	52.77
2015-16	34912282	472041	73.96
2020-21	47618471	565601	84.19
2023-24 (provisional)	57116415	643348	88.78

Source: Reserve Bank of India KLEMS data base

The standard neo-classical response, based on relative factor prices, would be that the cost of capital is too low for a capital scarce, developing country like India and that capital intensity has been rising in response to a rising wage: rental ratio. However, a comparison of the return on capital with the rise in real wages shows there is no clear evidence of a trend increase in the wage: rental ratio.

Table 3 indicates that the average interest on the stock of government debt in the period 2000-01 to 2023-24 was about 8% while the average headline inflation rate was 5.9%, implying a real interest rate of 2.1 %.

The yield on government bonds of varying maturities, adjusted for inflation, ranges from 1.4% to 2.5%. Corporate bond yields in real terms ranged from 1.9% to 2.4%. These rates are reflective of financial repression in a state dominated financial market, where the public sector is the main borrower as well as the main lender of debt funds. In the capital market the mean real return on equity, the NIFTY 50 Index, over the same period is much higher at 9.8%. As against this, the growth rate of real wages during the same period works out to 1.1% in the case of regular workers and 3.8% in the case of casual wage workers (Table 4).

Table 3: Cost of Capital

Year	Percent						Y-o-Y change (in %)				Interest rates (weighted average across securities, in percent)	
	NIFTY 50: Index returns	10-year residual maturity of government securities	91 days Treasury Bills yield	Yields on Corporate Bonds: Weighted Average: AAA Rating and by Period of Residual Maturity			Nominal GDP	Real GDP	WPI	CPI	Central government	State government
				1 years	5 years	10 years						
2000-01	-24.9						7.63	3.84	7.12		10.95	10.99
2005-06	67.1	7.37	6.46				13.99	7.92	4.44		7.34	7.63
2010-11	11.1	7.74	6	8.43	8.45	8.84	19.92	8.50	9.57		7.92	8.39
2015-16	-8.9	7.73	7.37	8.43	8.40	8.39	10.46	8	-3.65	4.91	7.89	8.28
2020-21	70.9	5.96	3.27	4.92	6.09	6.93	-1.24	-5.78	1.29	6.16	5.80	6.55
2023-24	28.6	7.11	6.84	7.73	7.65	7.74	12.02	9.19	-0.73	5.36	7.24	7.52
Mean (from 2000-01 till 2023-24)	15.73	7.30	6.37	7.75	8.07	8.25	12.08	6.25	4.81	5.85	7.62	7.99
Standard Deviation (from 2000-01 till 2023-24)	31.33	0.78	1.61	1.55	0.97	0.73	4.40	3.15	3.67	2.05	1.15	1.03

Table 4: Real Wage Rates and Earnings per worker (2011-12 prices)

Worker Type	2011-12	2023-24	CAGR (%)
Regular Worker	9581	10922	1.10
Casual Worker	2931	4606	3.84
Self-employed	NA	6903	-

Source: National Sample Survey Organisation Employment Unemployment Survey 2011-12 Report and Periodic Labour Survey 2023-24 report.

In reality, technological change is not driven by relative factor price changes but the competition among firms for their very survival, "the perennial goal of creative destruction" as Schumpeter (1942) called it. Indeed, rising capital intensity, the progressive replacement of labour by capital, has been the direction of technical change over centuries as has been demonstrated by the recent work of Acemoglu and Robinson (2023). The sustained and rapid increase in capital intensity in India is the norm not an exception. Given that rising capital intensity is the normal long-term trend driven by market forces, what policy options are there, if any, to accelerate employment growth within this broad secular trend?

4. The Structure of Economic Growth in Modern Development Theory

In order to address this question let me first set the context by discussing the structure of economic growth as envisaged by the pioneers of modern economic development theory. In his seminal treatise on the rate, structure and spread of 'modern economic growth' one critical relationship Kuznets identified, among several others, is the changing structure of the economy with rising per capita income (Kuznets1966). He generalised that as per capita incomes rise the structure of the economy shifts away from agriculture to the non-agricultural sector. He suggested, based on his empirical observations, that the structure of the economy would first shift in favour of industry, especially manufacturing industry, and then services. Here, I am taking Kuznets as representative of a whole school of empirical economists who investigated and wrote about the same generalization of structural change with rising incomes. Among them I should mention in particular the pioneering work of Colin Clarke (1940) and Hollis Chenery (1960).

Empirical generalisations in the Clarke, Kuznets, Chenery tradition generally attributed the structural shift from agriculture to industry and then to services to differences in demand elasticities. As consumers move up the Engel curve with rising incomes, demand shares for the produce of agriculture, necessities like food, give way to industrial

products and eventually services at even higher levels of income. Kuznets apparently did not realise that this empirical generalisation also provided confirmation for the labour supply driven theory of development which Arthur Lewis had already propounded in 1954 (Lewis 1954), more than a decade before Kuznets published his magnum opus on MEG (Modern Economic Growth) (Kuznets 1966). There is no reference to Arthur Lewis or his theory in that work. It is possible that by the mid-1960s Lewis's work had not yet received the attention it deserved, though both he and Kuznets went on to receive the Economics Nobel Prize for their work.

Lewis's theory of economic development with unlimited supplies of labour and the diligent stylisation of empirical evidence by Kuznets and others, became the foundation pillars of modern development theory. However, in his MEG treatise Kuznets had been careful to note that his generalisations were ad hoc and tentative. New evidence could make those generalisations invalid. Indeed, there were many concurrent and subsequent developments that extended or modified the Kuznets-Lewis framework. Theodore Shultz (1964), Kuznets' contemporary at Yale and another Nobel Laureate, published a treatise on the importance of transforming traditional agriculture for accelerating the pace of development. John Mellor (1966) developed a model of agriculture led growth. Drawing on the Asian experience, Shigeru Ishikawa (1967) argued that development required a net flow of resources into agriculture rather than out of agriculture. In my own Ph.D thesis on inter-sectoral resource flows in the Indian growth experience, I underlined the dual role of agriculture as a source of food and labour supply but also as a home market for the products of the non-agricultural sector (Mundle S. 1981).

At the time, the focus of attention was on the boundary between agriculture and the non-agricultural sector. Industry, especially manufacturing industry, was taken as representative of the non-agricultural sector. Since then, the focus of attention has shifted to the boundary between manufacturing industry and other sectors outside agriculture. In a seminal contribution, building on the earlier work of Allyn Young, Kaldor developed a robust model of manufacturing led growth (Kaldor 1972). He argued that manufacturing industry has the special characteristic of increasing returns to scale. Economies of scale drive down costs but correspondingly increase demand for inputs from other industries. As multiple industries reinforce one another in an expanding process of cumulative causation, this establishes a powerful engine of manufacturing led growth. Kaldor also argued that Keynesian demand management can greatly strengthen this process. Indeed there is a widely held belief among economists that economic development, or industrialisation as it is often called, has to be led by manufacturing industry. But I rarely see any reference to the rigorous analytical foundation of this idea

provided by Kaldor. This may be attributable to the fact that Kaldor belonged to the post-Keynesian school which lost the battle of ideas in economics to the trans-Atlantic Neoclassical alliance.

Be that as it may, the empirical foundation of this belief is somewhat fragile. Manufacturing industry indeed led the high growth phase of many countries in Europe after the Industrial Revolution. This is also true of East Asian countries in their high-growth phase. But how much of the growth in Europe from the late 18th to the early 20th century is attributable to surplus transfers from colonies—and in late 20th century East Asia to their strategic and economic alliance with America—remains an open question. Of the 30 most advanced countries in the world today (in per capita GDP terms, excluding some small island economies), manufacturing accounts for 10% or less of GDP in a third of these and 15% or less in another third. In fact recent literature in the Clarke-Kuznets-Chenery tradition of empirical generalisations suggests that as the share of agriculture in GDP and employment declines with rising income, the structure of the economy shifts more in favour of services rather than industry (Kongsamut, Rebelo & Xie 2001, Nayyar G. 2012). Rowthorn & Wells (1987) suggested that beyond a point the share of industry might stabilise or even decline. They called it 'de-industrilisation'.

Focusing on the services sector, Eichengreen and Gupta (2009) analysed cross section data across developed and developing countries to show that there are two waves of services sector growth, a first wave as countries move from 'low' to 'middle income' status and a second wave as countries move from 'middle income' to 'high income' status. The first wave consists of mostly low productivity, labour intensive traditional services while the second wave consists of high productivity modern services like finance, communications and business. They also point out that in the post-1990 period the initiation of the second wave is occurring earlier, overlapping with the first wave (Eichengreen & Gupta 2009, 2011). It has to be added in this context that in recent decades there has been 'splintering' of industries, meaning outsourcing of services that were earlier internal to a firm. That apart, many of the modern services can be exported and have features similar to industry such as high technology, specialisation, scale economies, linkages with other industry and services. Hence, the distinction between industry and services has become somewhat blurred.

Clearly, the world has moved well beyond the foundational stylised facts of development theory observed by Kuznets and the other pioneers of that tradition over half a century ago.

5. The Changing Structure of Economic Growth in India

The widely held belief that growth has to be led by manufacturing industry also extends to India. The only two papers providing a reasoned, evidence based, argument for this view are the paper of Veeramani and Dhir (2021) and that of Nagesh Kumar (2024). Both papers argue that in view of the strong backward and forward linkages of manufacturing industry, India's greater participation in global value chains can provide an opportunity for accelerating manufacturing led growth. These views about the potential for manufacturing led growth need to be squared with actual ground realities about the evolving structure of growth in India.

In 1950-51, at the outset of newly independent India's economic development, agriculture was the pre-dominant sector, accounting for 65 percent of GDP. By the turn of the century that share had come down to 31% and by 2020-21 it had come down further to 19% (Table 5).

Table 5. Changing structure of the Indian Economy
GDP Shares and decadal growth rates of major sectors

Year	Agriculture	Industry	Services	Total
1950-51	64.6	14.8	20.6	100
1960-61	60.1 (3.2)	18.5 (6.0)	21.4 (4.3)	100
1970-71	53.1 (2.4)	22.2 (5.6)	24.7 (5.4)	100
1980-81	46.6 (1.8)	23.8 (3.9)	29.6 (4.8)	100
1990-91	40.7 (3.7)	25.0 (5..9)	34.3 (6.9)	100
2000-01	31.2 (2.9)	25.1 (5.8)	43.7 (8.2)	100
2010-11	22.4 (3.2)	28.9 (8.4)	48.7 (7.8)	100
2020-21	18.6 (3.2)	28.5 (5)	52.9 (6)	100

Source: Economic Survey 2024-25, Govt. of India. Statistical Appendix, Table 1.5, Real Gross Value Added at Basic Prices (2011-12) by Industry of Origin

Note: Figures in parenthesis indicate decadal compound growth rates.

During the same period the share of industry doubled from 15% to 29%, but that of services went up by well over 150% from only 21% to 53%. Services had already become the largest sector of the economy by the turn of the century and it now accounts for well over half of Indian GDP. Also, as Gaurav Nayyar has pointed out, India is not an outlier in this. Its services dominated structure of production is very much in line with the observed global pattern of economic structure at similar levels of per capita income (Nayyar G 2012). Where India *is* a major outlier, as Nayyar points out, is in

the way the share of services in employment has lagged behind its share in GDP. The failure of services and also industry to draw labour out of agriculture is a specifically Indian phenomenon.

In Table 5 I have presented the broad decadal pattern of structural change up to 2020-21. More recent years have been excluded because of the volatility and disruption caused by the Covid 19 pandemic. Also, the most recent GDP numbers undergo frequent revision. However, the India Employment Report of the ILO and Institute of Human Development has given a more disaggregated picture of structural change in gross value added in the 21st century up to 2022, juxtaposing it against employment shares of major sub-sectors of the economy, (ILO 2024). It reveals a broad inverse relationship between sub-sector shares of employment and GDP (Table 6).

Confining the discussion to the larger sub-sectors, we note that agriculture is still the largest employer, accounting for 45% of employment but only 16% of GDP, implying a very low level of productivity. This is followed by construction, which accounts for 12% of the workforce and 8% of GDP. Next, the employment share of the group 'Trade, Hotels & Restaurants' at 12% is similar to its GDP share of 11%. The group 'Transport, Storage and Communications' is also quite balanced in that its share of employment at 6% is the same as its 6% share of GDP. On the opposite side we have the group 'Finance, Business and Real Estate' which now accounts for as much as 23 % of GDP but only 3% of employment, manufacturing which accounts for 19% of GDP and 12% of employment and the group 'Public Administration, Education and Health, with a share of 13% in GDP and 9% in employment.

Table 6. Changing Shares of Employment and Gross Value added, 2000, 2012, 2019, 2021 and 2022 (%)

Sector	Employment Share					GVA Share				
	2000	2012	2019	2021	2022	2000	2012	2019	2021	2022
Agriculture etc.	61.5	48.8	42.4	46.4	45.4	27.1	18.5	14.8	16.3	15.4
Mining & quarrying	0.6	0.5	0.4	0.3	0.3	4.7	3.2	2.6	2.3	2.2
Manufacturing	10.5	12.5	12.0	10.9	11.6	15.1	17.4	18.3	17.9	18.7
Electricity gas & water supply	0.3	0.5	0.6	0.6	0.6	2.4	2.3	2.3	2.3	2.3
Construction	4.4	10.6	12.1	12.1	12.4	6.7	9.6	8.1	7.7	8.2
Trade, hotels & restaurants	9.9	11	12.6	12.2	12.1	9.4	10.9	13.4	11.3	11.4

Contd...

Sector	Employment Share					GVA Share				
	2000	2012	2019	2021	2022	2000	2012	2019	2021	2022
Transport, storage and communication	3.6	4.9	5.9	5.4	5.6	4.8	6.5	6.5	5.8	6.4
Finance, business, real estate	1.2	2.3	3.4	2.9	3.0	18.7	18.9	21.3	23.5	22.5
Public administration, health, education	8.2	8.8	10.5	9.2	9.0	11.1	12.7	12.8	13.0	12.7
Total	100	100	100	100	100	100	100	100	100	100

Source: ILO India Employment Report, New Delhi, 2024

This inverse relationship between sectoral shares of employment and GDP points to a direct conflict between the policy goals of maximising GDP growth and maximising employment growth. Which is why I started this lecture by asking the question 'growth of what'? While expressing my own preference for an employment centred perspective of development, I had also nuanced that view by saying that growth of GDP and rising per capita income should also be included in the vector of variables to be used for assessing economic performance. I believe that these conflicting policy goals can be reconciled by an appropriate sequencing of priorities over time. For this we need a more granular picture of employment than that provided by the India Employment report.

Given agriculture's large share of employment and very low productivity, Bornali and Sahu have identified in a recent paper the most promising sectors for employment growth outside agriculture (Bornali and Sahu 2025). There are a set of seven sectors in industry and services which together account for two-thirds of total employment outside agriculture (Table 7) . Leaving aside the omnibus sector of 'other services' the remaining six sectors account for 64% of all non-agricultural employment. I would add to this list 'food processing and beverages' which Bhandari and Sahu excluded for some technical reasons. There are large variations within the group. But on average, for every additional Rs 1 crore of output these seven sectors would on average directly generate 19 additional jobs and a total of 24 additional direct plus indirect jobs. Moreover, the skill requirement of jobs in all these sectors, except education and research, would be very modest. This matches the low skill profile of the bulk of India's work force. Employers organisations mention that more than half the new entrants to the workforce are not employable in any skilled jobs. Less than 5% of them have any certified skill compared to over 70% in most European countries and over 90% in some East Asian countries. This skill profile cannot be changed overnight.

**Table 7: Non-agricultural employment share, employment intensity &
employment multiplier: Selected Sectors**

Sector	Non-agricultural employment share	Employment intensity	Employment multiplier
1. Construction	24.0	12.7	16.2
2. Trade	18.8	16.8	20.5
3. Land transport	6.5	12.4	16.4
4. Education & research	6.2	12.6	14.2
5. Manufacturing of wearing Apparel	4.6	55.7	67.6
6. Hotels and restaurants	3.4	15.0	30.3
7. Other services	3.1	50.8	55.5
Total (1 to 7)	**66.6**	**18.8**	**23.6**

Bornali B. & A. Sahu (2025) Moving workers from agriculture to where? *Econ. & Political Weekly Engage,* https://www.epw.in/engage/article/moving-workers- agriculture where

It is helpful at this stage to recall the two waves of growth identified by Eichengreen and Gupta (2009, 2011). Though their analysis was confined to services, the same identification can be extended to industry also, especially as the distinction between modern industry and services has become blurred. In the first wave, as countries move from 'low income' to 'middle income' status non-agricultural growth is dominated by traditional industry and services. In the second wave, as countries graduate from 'middle income' to 'high income' status, modern industry and services will dominate.

India is now classified as a 'low middle income country' and all the large employment intensive sectors we have identified, except 'education and research' are traditional industries and services, as would be expected in the first wave. But they are no longer the fastest growing as India begins to move towards 'high middle income' status. Hence, providing incentives to these six sectors to accelerate their growth would increase the employment intensity of GDP growth. This would help mitigate the crisis of rapidly increasing unemployment in the immediate future. It goes without saying that most of these jobs would be low productivity low wage jobs. Perhaps that is the best that can be done in the short run. Provide immediate employment and a means of livelihood for the burgeoning workforce, however modest.

6. Preparing India's workforce for the future: University Technical Colleges and higher education reform

However, these are not the well paid 'good jobs' that young new entrants to the workforce aspire for. Nor is this the kind of workforce that the country needs. India is on the cusp of a transition from a 'low middle income country' status to a 'high middle-income country' status and eventually a 'high income country' status – the aspiration reflected in the goal of Viksit Bharat by 2047. However, that transition cannot be accomplished with the present low skill, low productivity workforce. In the global economy of the 21st century access to emerging new technologies, especially artificial intelligence, and a suitably skilled workforce to deploy these technologies will determine which countries will remain competitive and prosperous. It is therefore imperative that even while we maximise low skill, low productivity employment in the short run, we prepare to switch to GDP growth maximisation over the medium to long term, led by a highly skilled, high productivity workforce.

I believe the greatest failure of our development strategy from the outset has been the neglect of basic education. The Kothari Commission recommendation of focusing on basic education was turned on its head, and priority was given to higher education to produce engineers, scientists and managers. It was perhaps a corollary of the 2nd Five Year Plan strategy of heavy industries led growth, with the state in control of the 'commanding heights' of the economy. This strategy, attributed to Mahalanobis, was inspired by the Feldman strategy of Soviet industrialisation but the Soviet-union never neglected basic education. In the event, our basic, secondary and higher education are all in a mess. Much has been written about what needs to be done for reforming basic education. Here, I will focus on what needs to be done in secondary and higher education to produce the high skilled 21st century workforce we need.

Regarding the secondary stage, our skilling programs have not been effective in generating much skilled employment. We need a completely different approach and disruptive change, but change which can be managed within the framework of the New Education Policy (NEP). Based on the experience of successful vocational education in German technical academies and the University Technical Colleges (UTCs) in Britain, I have recently suggested that we introduce a UTC system of our own (Mundle 2025a).

In the four-stage framework of school education in NEP, a path to higher education through UTCs should be introduced as an alternative to conventional secondary schools at the fourth stage. The UTC curriculum would be STEM oriented, including mandatory science and maths courses and languages along with alternative options in

social science courses. These would be combined with in-depth skilling in some technical field and team-work based projects in that field with one or more corporate partners on their real-world technical problems. This is a key feature of the UTC system. It would enhance the student's subsequent eligibility for apprenticeship and employment. The combination of a path to higher education, should a student choose that path, with better eligibility for jobs and employment give the UTCs an advantage over conventional secondary schools, which should help eliminate the prevailing negative perception of vocational education. But the UTC system also requires a strong relationship between each UTC and a university and one or more corporates as core partners.

Introduction of UTCs will face challenges. Enrolment will be a challenge since conventional schools will want to retain their best students at the end of stage three for their secondary classes. This is not a problem so long as students from the modal group enrol in UTCs and not just the tail-enders. For this, each UTC will need its own network of feeder schools. Finance will be another challenge since by design UTCs will be more resource and staff intensive than conventional schools. While governments will have to meet the initial capital cost and recurring costs for the first three years, and another three years at most, UTCs must become self-financing. Cost sharing partnerships among UTCs and exchange of experiences on cost cutting best practices will help. However, in the main UTCs should arrange student loan programs in partnership with banks, except for means-tested scholarship students. Initially, communicating the advantages of UTCs to have the 'buy in' of students and parents will be another challenge. Effective communication through multiple levels of governments, academic experts and media will be critical. These communicators will also be important core partners of UTCs along with the universities, feeder schools, corporates and banks to ensure the successful establishment of UTCs as a major plank for preparing India's high skilled workforce of the future.

The other plank is higher education to produce the scientists, engineers and other professionals required to master the emerging new technologies, especially artificial intelligence, and manage their introduction in modern industries and services. Unfortunately, higher education has been in crisis mode for a long time and the problem is getting worse as Deepak Nayar has highlighted in his recent B.G. Deshmukh memorial lecture (Nayyar D 2025). One challenge is scale. Given the limited coverage of higher education institutions, massive expansion is required to relieve the intense competition students face to secure admission into decent institutions of higher education. The other main challenge is the quality of teaching and learning, which has been deteriorating for a long time and is now abysmal.

Nayyar points out that a major part of the problem is the increasing centralisation and loss of autonomy of institutions of higher learning. Politicians and bureaucrats have found that control of appointments and admissions to these institutions is an important source of their influence and power to peddle patronage. But it is doing enormous damage to our higher education system. Reform of the system to expand at scale and reverse the trend of deteriorating quality is urgent. However, that can only happen when our political leaders look beyond the 'next election' and recognise how such clientelism is compromising India's competitiveness and our path to future prosperity.

7. Towards a more productive and sustainable agriculture

I have so far discussed the urgency of making the structure of industry and services more employment intensive to maximise employment growth in the short run. I have also discussed the means of making workers in these sectors better skilled and highly productive in the medium to long term in order to ensure India's competitiveness in the emerging global economy and our future prosperity. However, whatever the developments and interventions in the non-agricultural sectors, it is very clear that agriculture will remain a major employer in the economy for decades despite its declining GDP share and the very low productivity of the workforce in agriculture. Furthermore, a looming water crisis in agriculture is leading us towards an ecological disaster. Hence, how to make agriculture more productive in an ecologically sustainable manner is the key policy challenge in this sector.

The Green Revolution made India self-sufficient in food grains, which was a great achievement. But in incentivising farmers to produce more food grains a whole range of policies were introduced such as foodgrain procurement at specified minimum support prices and food subsidies in addition to subsidised supply of power, irrigation and fertiliser and other inputs. It tilted the policy regime in favour of foodgrains. The same is also true of sugarcane. This has left a distorted cropping pattern to this day with consequent ecological implications. An urgent requirement is to raise productivity in agriculture. One part of doing this will require shifting the cropping pattern in favour of higher value-added crops such as fruits and vegetable. The other part will require diversifying away from crop production towards animal husbandry and aquaculture. To some extent this is already happening with rising consumption of fruits, vegetables, meat, fish, eggs and dairy products. This process can be accelerated through incentives to develop cold value chains, storage and other infrastructure.

On the ecological front, it must be underlined that agriculture accounts for 90% of water supply in this country and of this 80% is consumed by just three water guzzling

crops: wheat, rice and sugar cane. India's gross cropped area has increased by 120 million hectares since the 1980s, mainly due to increase in ground water irrigation, especially through tubewells, which account for about 84% of the increase in net irrigated area. At 250 billion cubic metres per year, India is the world's largest consumer of ground water, consuming more than the combined consumption of the next two largest consumers, namely, China and USA. This has resulted in a steep decline in water tables in large parts of the country (Mundle 2021, Shah 2022. Shah & Vijayshankar 2021).

Shah and Vijayshankar have made several suggestions to address the problem such as incentives to diversify cropping patterns towards less water intensive crops, especially the production of millets, use of water conservation practices even for water intensive crops like rice and measures to conserve both blue water and green water. They have also pointed to the urgent need to regulate ground water use. But most importantly, they have proposed that local people, farmers' producer organisations, such as the famous Kaira District Cooperative Milk Producers' Organisation, and women's self-help groups be empowered to protect the soil and water.

8. Some Concluding Remarks

This has been a long talk. I have imposed on your patience. It is time now to draw conclusions. Everything that I have said points us towards three pillars of an employment centred strategy of development.

The first pillar is maximisation of employment growth in the short run by incentivising the growth of six or seven large, employment intensive industries and services. These would mostly be traditional, low productivity sectors requiring relatively unskilled workers who would be hired at low wages. This matches the skill profile of a major segment of the Indian workforce and this profile cannot be changed overnight. These would not be what we might call good jobs. But at least they will provide the large bulk of new entrants to the workforce with a means of livelihood, however modest.

The second pillar is the introduction of UTCs at the secondary stage of education combined with a complete overhaul of the higher education system to transform the Indian workforce into a high skilled high productivity workforce over the medium to long term. Producing a workforce capable of mastering the emerging new technologies, particularly artificial intelligence, and managing their introduction into modern industries or services is essential. It is a prerequisite for ensuring that India remains globally competitive as it makes the transition from a low-middle income country to a high middle-income country and eventually a high-income country, Viksit Bharat.

The third pillar is in agriculture. Interventions will be required to significantly raise the level of productivity in an ecologically sustainable way. Cropping patterns will have to be nudged away from water intensive crops towards high value-added crops, while the overall production structure is shifted from crops to non-crop products such as dairy, poultry, fisheries and other livestock.

Let me stop there. Thank you all for your patience.

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About the Speaker

Prof. Sudipto Mundle is Chairman of the Board of Centre for Development Studies, India, and serves on the boards of other organizations. Formerly he was an Emeritus Professor at the National Institute of Public Finance and Policy (NIPFP), a Distinguished Fellow at the National Council of Applied Economic Research and Visiting Faculty at the Indian School of Public Policy. He was also a member of the Fourteenth Finance Commission, India, the erstwhile Monetary Policy Advisory Committee of the Reserve Bank of India and the National Statistical Commission, where he also acted as Chairman.

He spent much of his career until 2008 at the Asian Development Bank, Manila, where he held several positions including that of a Director in the Strategy and Policy Department as his final assignment. In his earlier career in India, he served in a number of academic institutions including the Indian Institute of Management, Ahmedabad, the Centre for Development Studies and NIPFP, New Delhi.

He was an economic adviser in India's Ministry of Finance from 1986 to 1989.

Dr. Mundle graduated from St. Stephen's College, Delhi, and has a Ph.D in economics from the Delhi School of Economics. He was a Fulbright Scholar at Yale University, a Joan Robinson Memorial Fellow at King's College, Cambridge, and has had visiting assignments at the Institute of Social Studies at the Hague and the Japan Foundation, Tokyo.

His research includes contributions to development economics, fiscal and monetary policy, macroeconomic modelling and governance. His current research focus is on inter-State comparative studies of public service delivery and State finances, longitudinal village studies and employment policy. He has published several books and papers in professional journals and is a columnist for the financial newspaper *Mint*. He is a life member and former President of the Indian Econometric Society.

Prof. R. Radhakrishna (1942 – 2022)

Prof Radhakrishna was born in October 1942. He did his Master's degrees in Economics and Statistics from Andhra University and obtained PhD from Gokhale Institute of Politics and Economics in Pune. He was Visiting Fellow, University College of Wales, Aberystwyth, U.K. (1976-77). He was the second Director of CESS during 1985-1994. Subsequently he assumed position of Member Secretary, ICSSR (1994-97)); Vice Chancellor, Andhra University (1998-2001); Director/Vice Chancellor, Indira Gandhi Institute of Development Research (2001- 07). He took over as chairman CESS in 2013. He served as an expert in numerous international organizations-Australian Centre for International Agricultural Research, 1997; Management of Social Transformation (MOST), UNESCO, 2004 and UNDP Regional Bureau for Asia and Pacific, 2005. He was a Consultant to several international bodies including Internal Institute for Applied Systems Analysis, Vienna, World Bank, Asian Development Bank, UNDP, and FAO.

He was member of the three important Planning Commission Expert Groups related to Poverty: Task force on projections of Minimum needs and Effective Consumption Demand, 1977-78; Expert Group on Estimation of Proportion and Number of Poor, 1989-93 (Lakdawala Committee) and Expert Group to Review the Methodologies on Estimation of the Poor, 2006-08 (Tendulkar Committee).He was also Chairman of UGC Committees to review Universities and ICSSR Review Committee to review its research institutes in north-west India.

He successfully guided 25 doctoral students. He published a large number of books and more than 100 original research papers in national and international journals and immensely contributed to policy making at state and national levels. In recognition of his significant academic contributions, he was awarded VKRV Rao Prize in Economics in 1985, and Telugu Atma Gaurava Puraskaram for his eminence in Social Sciences by Government of Andhra Pradesh in 1998.

He was Chairman, 75th Round of NSS devoted to the Household Consumer expenditure and Household Social Consumption. His compendium of books published by Academic Foundation in 2017 are on the themes of Indian Economy, Agriculture, Food Security and Nutrition; Growth, Poverty and Well-being; Econometrics of Consumer Behaviour; and Inflation, Consumption and Welfare.

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