

Evaluation of the Advantages, Limitations and Possible Modifications of Lewis' Model with Reference to Indian Economy

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Abstract

One of the most often cited models for the process of industrialization of agrarian economies is Sir Arthur Lewis' model of “**Economic Development with Unlimited Supplies of Labor**”, which he developed in 1954. This paper evaluates advantage of the dual-sector model within the context of India, a country whose demographic make-up and historical reliance on agriculture makes it an intuitively compelling test bed for Lewisian arguments. This study use secondary data from the Periodic Labour Force Survey, National Accounts Statistics, and various empirical studies published from 1961 to 2026, suggests that although the Lewis model can still explain the continued presence of low-productivity farm labor and the wage gap between rural and urban India, it has lost a lot of its predictive power due to industrialization with excess capital, premature deindustrialization and fragmented labour institutions. The paper outlines an adapted framework which makes technological progress, labour market frictions, and institutional quality endogenous variables driving the speed and nature of structural transformation. It concludes that a purely Lewisian interpretation of Indian development, if not significantly modified, is likely to overestimate the ability of manufacturing to absorb excess rural labour and is likely to underestimate the importance of services, informality and skill mismatch in driving Indian employment.

Keywords: *Lewis Model, Indian Economy, Dual-Sector Model, Structural Transformation, Modification*

Introduction

There is perhaps no other theoretical framework in development economics that has survived as long or been as controversial as the dual-sector model of economic development developed by Sir William Arthur Lewis in his 1954 paper “**Economic Development with Unlimited Supplies of Labor**”. The theory has been broadly used to investigate developing countries of the post-colonial era, including India, for its ability to explain the transformation of the economy from an agrarian to industrial model. Lewis' framework is of special interest in the case of India because either it could be a very satisfying test or a very difficult one. In India agriculture contributed more than half of national output at independence and the economy had the classic features of a dual economy with labour shortage. The picture has changed for the last decades and it is not always in Lewis' sense. The contribution of services is around 55% of GVA (**Economic Survey 2024**) in India while the agriculture and allied activities account for 14–18% and industry around 27–31% at current prices and 54.93%, 17.94% and 31.16% at constant prices respectively in 2024–25. But employment has not kept pace with output. In 2017-18, the agricultural employment rate was 44.1%, and in 2023-24 it was 46.1%, an increase in dependence on agriculture for employment over the past six years, rather than a decrease as the Lewis model would predict. *In contrast, employment in services grew by just a third of the workforce although it accounted for more than half of the national income, and employment in industry has also remained largely unchanged, with 41.6% of India's workforce in agriculture, 25.8% in industry and 32.6% in services in 2025.* India has been seen as a natural experiment for Lewisian ideas due to its vast population, and a previous

agrarian tradition, as well as its own desire to industrialize quickly following independence. The issue of a pool of underemployed rural manpower to support industrial development, without hardship on food production, was accepted, though unspoken, by the early planners, particularly in the Second Five-Year Plan, which gave heavy industry priority. But after 70 years, the actual path on which India's economy has travelled does not follow the classical Lewisian script in several important ways. *The manufacturing sector hasn't expanded as much as the model predicts, and the proportion of the labour force engaged in agriculture is still high compared to the sector's share of output; and most of the growth has been in services that require a lot of capital and skills, not jobs that require a lot of labour.*

This increasing divergence between the employment shares of agriculture and industrial sectors is exactly what Lewis' theory predicted: a reallocation of labour toward the industrial sector but India's has taken a different industrial-absorption route, agriculture reabsorbing labour at times and again, and toward services at other times. Given this, the following issues arise regarding the validity of Lewis's assumptions - that there is no shortage of labour, that intersectoral labour mobility is smooth, that capitalists are profit maximisers, and that the institutional wage is fixed in the Indian context of jobless growth, persistence in the informal sector and early deindustrialization.

In this background, the present study attempts to do a systematic assessment of the Lewis model applied to the Indian economy. It analyses the fundamental policy tenets and their implications for India's early development strategy, pinpoints structural and institutional constraints to its application in India, and outlines potential adaptations based on the Indian experience that might make it more relevant to the economies of the modern developing world, with their service-driven development process. It analyzes existing empirical literature on structural change, agricultural productivity, and employment generation in India before addressing the paper's central analytical challenge: an examination of the model's merits and limitations in the Indian context and the modifications required to enhance its utility for contemporary policy analysis.

The Theoretical Underpinnings of the Lewis Model

Each of the assumptions underpinning Lewis' original contribution was quite limited in its scope and, when combined, gives rise to a fairly economical explanation of the onset of industrialization. The model proposes a dual economy with a traditional subsistence sector (usually agriculture), in which marginal productivity is low or even non-existent due to excess labor, and a modern capitalist sector, in which productivity is higher, is determined by capital accumulation and technological progress. The growth in this framework results from the shift of under-employed labour from the old to the new sector at a real wage rate which is roughly equal to the subsistence rate, so that any profits the modern sector can earn are reinvested in the sector and do not immediately cause an inflationary pressure on wages. Since capitalists are assumed to save all their profits and reinvest the total amount of capital in the modern sector, capitalists accumulate their capital continuously and progressively larger amounts of labour are drawn to the modern sector at a wage slightly above the subsistence, which is typically about thirty per cent higher, according to Lewis, so that the cost of relocation is covered by the migrants. **(Lewis, 1954)**

The process outlined above is not an open-ended one. The turning point is the point that marks the end of the supply of labour at subsistence wages, because the surplus labour in the traditional agricultural sector is completely exhausted, the MP_L of labour in the traditional agricultural sector will become positive. At this point the wages in the agricultural and industrial sectors start to converge, the classical logic of a perfectly elastic labour supply curve is lost and the economy enters a phase which is more like neoclassical

growth economy, where the prices of factors are set by their relative scarcity and are not fixed by some institutionally determined subsistence norm.

Literature Review

The empirical basis of Lewis' argument, viz. the zero or weak marginal productivity of labour in traditional agriculture, was subjected to continuous debate and in particular to the test of Indian agriculture. Taking evidence from labour withdrawal in Latin American agriculture, **Schultz (1964)**, mounted a powerful challenge in a paper, arguing that the traditional farmer would not have been "poor" if his traditional method of farming had been "inefficient": labour was the only input which was not being fully used, but the direct implication of a withdrawal of labour would be an absolute decrease in output, which was counter to Lewis's central assumption.

A more subtle critique of the labour-surplus tradition was offered by **Sen (1966)**: In family-farming systems typical of South Asia, labour is distributed on the basis of a norm of sharing consumption rather than its marginal contribution, so a worker's wage (or consumption share) can exceed his or her marginal contribution even if the classical condition of "zero productivity" is not satisfied in a strict technical sense. **Sen (1967)** This debate was part of a larger debate about Indian planning which concerned their views about the need to assume (or reject) disguised unemployment in order to formulate early Five-Year Plan policies of labor- intensive industrialization, according to **Bhagwati and Chakravarty (1969)**.

Kirkpatrick and Barrientos (2004), revisited the model's half-century-old relevance, finding that while the Lewis model's context - closed economies and agricultural surplus labour - needed updating for a globalized, services-driven world, the underlying core principle - that structural change of the labour force is key to development - did not. The empirical evidence on India during the period was increasingly recording a puzzle, and thereby contradicting the labour absorption process envisaged by Lewis: a rate of GDP growth was not being matched by a rate of employment growth. **Kannan and Raveendran (2009)** demonstrated that the growth of organized manufacturing in India had been "growth sans employment" over the last 25 years, meaning that production has increased at a rate significantly higher than employment. **Papola and Sahu (2012)** showed that although growth in GDP had picked up, employment growth had declined rapidly during the post-reform era and, if it had increased, it had been in low productivity informal sectors, not in high productivity modern sectors as Lewis' model assumed would take up surplus labour.

A separate, yet closely related literature questioned whether India was industrializing in any Lewisian sense at all, or whether it was skipping over the stage of industrial absorption altogether. **Amirapu and Subramanian (2015)** provided evidence at the state level that Indian manufacturing's labour and output shares were rising at low levels of per-capita income, and were also falling at low levels of per-capita income, which they generalized and called "premature deindustrialization," and claimed was being driven by globalization and technological change as the manufacturing window for absorbing surplus agriculture labour had been compressed from early industrialization nations.

Aggarwal (2017) argued that this pattern was explicitly linked with the growing informalization that was driving away workers from agriculture into informal services and construction, rather than the formal industrial sector seen by Lewis and by Ranis and Fei. **Mehrotra (2018)**, described the Indian labour market during this phase as trapped in a situation of "overlapping crises", with one being low labour-force participation rate, particularly for women, and the other was the increasing disparity between the larger output expanding sectors and the jobs creating sectors. To argue that India was no longer in a "jobless growth" scenario but had slipped into "job-loss growth" in the organized manufacturing sector, **Kannan and**

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Raveendran (2019) took their previous analysis a step further and looked at job losses, if any, during parts of the 2010s. **Basole (2022)** systematically analyzed employment creation after liberalization and found that the pace of structural transformation has been significantly lower than in past decades and then other Asian economies, whose per capita income is of a comparable level. Using more current data,

This study addresses the question directly and explicitly in the most recent literature. **Padhi (2024)** has explored the reasons behind the failure of India's high-growth period between 1991 and 2011 to produce the employment growth that the Lewis framework entails: a faster rise in capital intensity in Indian industry; insufficient investment for employment creation; and poor aggregate demand - and concluded that India has not experience a genuine Lewis turning point. Such is the industry analysis which confirms that in India between 2018 and 2024 the biggest share of net new jobs has been in agriculture, construction and low productivity trade and hospitality service sectors, and that the share of manufacturing has been stagnant at around 12-13 percent since the early 2010s.

Objective

Taking into account the aforementioned theoretical and empirical literature, this paper aims to evaluate the advantage, limitations, and possible modifications of the Lewis model in the context of the Indian economy.

Research Methodology

This study adopts a descriptive approach suitable for evaluating the theory; it is a desk-based study utilizing an imperative-analytical research design based on secondary data. Rather than attempting to construct a new econometric model, the paper draws upon findings from published empirical studies, government statistical series, and institutional reports to assess the extent to which Lewis's theory aligns with the realities of the Indian economy.

The paper mostly based on the academic literature because it provides a theoretical and comparative basis for evaluating the Indian experience and The shares of employment and gross domestic product by sector are computed from official statistical publications, predominantly the Periodic Labour Force Survey and its predecessor, the Employment and Unemployment Survey of the National Sample Survey Office, as well as the National Accounts Statistics published by the Ministry of Statistics and Programme Implementation, over time.

This methodology was selected because the research question—examining the applicability of the macro-development theory to the Indian context and the alignment between the theory and the structural changes India has undergone over the past seven decades—could be better addressed using secondary data rather than a primary survey, which would have been constrained by geographical and temporal limitations. Comparisons of productivity across countries are also subject to the same risks of being sensitive to purchasing power parity conversion factors. Throughout the discussion, these restrictions are recognized, and figures are presented with regard to vintage and source but not necessarily as strictly comparable across time.

Discussion

Advantage of the Lewis' Model in explaining the Indian Economy

Even though the Lewis model has undergone significant modifications over the years, it still has some real merits as a tool of Indian development analysis. *A stingy explanation of agriculture-industry wage differential. The substantial and well-established urban-rural income differential in India is broadly in line with the Lewisian model that migration from subsistence is only likely to occur when wages are provided in the urban sector at a level that allows them to compensate for the migration costs.* Despite the above, agricultural incomes in most Indian states still lag far behind average wages on the building, construction and

manufacturing sectors, and manufacturing and informal urban services, which continues to boost rural-to-urban and, increasingly, rural-to-rural non-farm migration.

The Second and Third Five-Year Plans were built around the assumption of a large pool of underemployed rural labour which could be shifted away from agriculture and into the capital goods industries at little or no cost to the economy in lost agricultural production. No matter how well it worked, *the Lewis model provides a self-consistent basis for policy decisions, such as the Mahalanobis heavy industry strategy, which may be hard to explain on purely efficiency grounds*. The ongoing pertinence of the disguised unemployment. The state of Indian agriculture as described by contemporary analysts is still largely in the terms of Lewis, who, in a narrow sense, characterized the agricultural sector as having a very low or even negligible marginal product, despite its large workforce—roughly forty-two per cent of the total population (**MoSPI, 2024**). The framing remains relevant today in policy discussions, such as those on the National Rural Employment Guarantee Scheme, and on several skilling missions to get farmers off the low productivity plan.

A number of East and Southeast Asian economies, China included, seem to have been on a path that comes close to the Lewisian sequence: they have absorbed rural labour over many decades into manufacturing, which means that the model offers Indian policymakers a normative benchmark to measure and diagnose the shortfall in India's own labour-absorptive path. It is not simply a statistical curiosity, but analytically significant that China's experience was so similar to the textbook forecast of India's exit.

Lewis model makes the speed of industrial absorption depend on the agricultural surplus, predicts this constraint has been very relevant in India, where uneven progress in irrigation, mechanization and the supply of credit to farmers has meant corresponding differential rates of labour release from agriculture, with agricultural more productive states like Punjab and Haryana showing patterns of labour transition more in line with the model's predictions than less productive states in the eastern Gangetic plain.

Limitations of the Lewis' Model in the context of the Indian Economy

There are however, a number of restrictions to these benefits, most of which, if considered together, significantly reduce the model's developmental and predictive validity for India.

India's manufacturing jobs have not been able to grow despite the increased capitalization of manufacturing processes, which has led to automation and other labor-saving technologies limiting the labor-absorbing capacity of manufacturing sector. An underlying fact of Indian manufacturing is that as compared to capital accumulation, its employment growth has been relatively sluggish, and this is particularly noticeable if one plots the growth of value added against the growth of the wage bill. Whereas Lewis predicted a capitalist sector that expands its employment by adding new workers at a rate more or less in line with capital accumulation, Indian manufacturing has been expanding employment at a much lower rate than its expansion of value added, particularly when the growth of capital accumulation is broken down into the growth of the wage bill.

As India has been shifting its structural emphasis, the percentage of agriculture in GDP has declined from thirty-six per cent in 1980–81 to sixteen per cent in 2023–24, while services have increased from thirty-eight per cent to fifty per cent during the same period; manufacturing's share of GDP has remained within a small band of thirteen to seventeen per cent.

Today, agriculture adds up to about fifteen per cent of India's gross domestic product, and yet an agriculturist still has an average of about five times the productivity of an out-of-agriculture worker (**Gollin, Lagakos & Waugh, 2014**). But, this productivity gap, from the Lewisian turning point, has not been declining consistently over time, and seems to indicate that there are structural challenges to quickening productivity

growth, such as land fragmentation, lack of credit, and information asymmetry, that the original model fails to capture.

Disguised unemployment is hard to detect and is questioned as to its existence at all. Based on the efficient-peasant hypothesis, several Indian agricultural economists have pointed out that the underemployment they observe is not necessarily redundant labour with zero marginal product, but instead could be due to seasonal variation, part-time work of choice, or diversified livelihood strategies within households that the two-sector model is not sufficiently able to capture (Schultz, 1964; Sen, 1966).

A change in technology has not only increased the demand for labour but has changed it too. India is experiencing a decline in the employment elasticity of growth, which is quite predictable given the pattern of growth that is macroeconomically driven by capital-intensive process production, rather than by labour-absorbing production methods, a pattern that could not have been accounted for by Lewis's model of growth, formulated decades before the current automation and AI revolution (The Tribune, 2026).

Recent labor force data highlights the discrepancy between the theoretical number of jobs and what is actually being seen. While there was a real shift of labor from agriculture to manufacturing and services - roughly sixty-six per cent in 1987-88, and around forty-three per cent by the mid-2020s - the speed of this shift is below what a Lewisian trajectory, based on the pace at which capital is accumulating in India, would suggest. However, only about 14.5 per cent of the workforce work in establishments employing over twenty people, reflecting the pervasive nature of small and informal enterprises, which have low productivity, in what is dubbed as the non-agricultural sector, even as manufacturing employs about twelve to thirteen per cent of the work force and contributes close to seventeen per cent of GDP. While a large proportion of the workforce is employed in agriculture and informal services, which are low productivity and technology lagging, the unbalance between the distribution of labour and output is a structural impediment to aggregate productivity growth in India.

Labor force survey data on employment and unemployment also make a simple rosy narrative of structural change difficult. The overall labour force participation rate (LFPR) in India remained broadly unchanged at 59.6 per cent in 2024 compared to 59.8 in 2023, while India's worker population ratio (WPR) declined marginally from 58.0 to 57.7 per cent and the unemployment rate increased slightly from 3.1 to 3.2 per cent, reflecting an economy that has yet to create sufficient job growth to keep pace with the number of people entering the labour market (MoSPI, 2024). Official projections indicate that the growing population needs to be accommodated by some eight million non-farm jobs per year on average at least until 2030, which has not been met.

Although India has a good network of quality education institutions, only about 51% of the graduates are considered as employable, which is a proof of the limitation faced in the process of structural transformation in India is not just limited to the lack of non-agricultural employment but there exists a mismatch between the skills that the modern sector requires and the skills that the education system provides. The observation has direct implications for any attempt to reform the Lewis framework since an under-functioning market for skills and training is another reason why the labour market is inefficient in India, apart from the regulatory friction.

What may be modified in the Lewis framework of India?

Underlying the above-mentioned differences, a few adjustments to the standard dual-sector model are pertinent to explain, and to support policy towards, employment generation in India today.

The original model assumed that capital accumulation would be an unconditional stimulator of employment growth in the modern sector, which no longer seems to be the case in today's world, given the

growing tendency to invest in automation, robotics, and digital platforms that replace unskilled labour. A modified framework would have to explicitly estimate this parameter, the elasticity of the employment-to-capital ratio in output growth, using empirical data, as opposed to it being an implicit constant as it has been so far, and then allow for the possibility that, as in recent Indian data, output growth and employment growth can be completely uncorrelated in specific industries.

Decoupling the modern sector from formal and informal. The non-agricultural economy is divided between a small formal sector that is labour regulated and is generally more productive on one hand, and a much larger informal sector on the other, and a three-sector model, in which workers either leave agriculture or enter the informal non-agriculture or formal non-agriculture sector, would more closely reflect the actual paths by which workers leave subsistence agriculture. Most of the labour that leaves agriculture in India seems to be employed in the informal sector of the urban or peri-urban world instead of immediately entering the formal capitalist sphere as Lewis envisaged.

Institutional quality and labor market efficiency: Endogenized. None of these elements is explicitly included in the original model and they are vital for the efficiency with which labour is switched from one sector to another. They are particularly important for the efficiency with which the labour force is switched from one sector to another, and they are not mentioned explicitly in the original model. The recent unity of Indian labour laws in four codes to make the compliance easier and extend social protection to hitherto unprotected classes of workers is exactly the institutional variable that should be endogenous to the rate of structural transformation instead of being exogenous to it.

Allowing for probabilistic rather than deterministic migration. According to the Harris–Todaro insight, migration depends on the expected, not the actual, urban wage, a modified Lewis model for India should explicitly incorporate factors that increase frictions in job searching and urban unemployment risk, as these factors help explain why sizeable rural-to-urban migration persists even during years of low formal job creation in urban areas, with much of the labour absorbed into low-productivity informal urban work rather than the high-wage capitalist sector.

The recognition of agriculture as a sector that can attract investment to increase productivity. A new model should build on the Ranis–Fei focus on agricultural surplus and also reflect the recent debates on value addition in Indian agriculture—such as processing, cold-chain and agritech services—and should enable continued job creation in a more productive and diversified agriculture sector, rather than the sector being a place where employment could be taken for granted.

Given the significant differences in the productivity, industrial base and institutions of the Indian states, a dual-sector model for the nation is likely to mask more than it reveals, and a spatially disaggregated version with a more granular distinction between states that are better represented by the Lewisian model (such as Gujarat and Tamil Nadu) and those that are not would provide a more useful diagnosis for policy purposes. The subject of discussion in this course is structural transformation, labour productivity, technological progress, labour market efficiency, institutional development and employment generation.

The relationship is mediated by technological progress which the original theory does not predict. Although Lewis' portrayal of capital accumulation as labour-absorbing was more or less true to life for India, there is ample evidence in the Indian experience since the 1991 reforms to suggest that even technological change in manufacturing and high end services has often been, at the margin, labour-displacing, especially for workers lacking special skills, and that high rates of output growth have often coincided with low rates of employment growth, a phenomenon that is widely described in policy circles in India as jobless growth. The message is

that the growth of labour productivity does not necessarily correspond to the growth of employment, as the classical economic model suggests, but can be very different depending on the labour bias of the technology being embraced.

Key Findings

The following are the main findings of the evaluation conducted in this paper:

- On average, approximately 42 to 46 percent of India's population is engaged in agriculture, while the agricultural sector's contribution to the Gross Domestic Product (GDP) hovers around 15 to 18 percent. This aligns with Lewis's early description, which posits the existence of a large, low-productivity, subsistence-based sector within Indian agriculture.
- India's manufacturing sector gained employment at its lowest rate in 2002 – thirteen per cent – and has since declined, reflecting premature deindustrialization and the end of the main avenue of surplus agricultural labor absorption according to the Lewis model.
- Growth has been services based and not manufacturing oriented. The skilled nature of high-value services in India has not been as effective in taking up the unskilled and semi-skilled workforce that Lewisian theory predicts will move out of agriculture as has manufacturing.
- The agriculture and non-agriculture productivity gap has been self-perpetuating rather than self-correcting. In India the average productivity difference between a non-agricultural labor and an agricultural labor is still about five times and does not indicate a trend towards the Lewisian turning point.
- At the edge, technological advancement has become a less labor-intensive process. While Lewis believed that the accumulation of capital was always labor absorbing, the same new technology in India has been described as capital intensive and automation biased, which has separated output growth from employment growth, and this phenomenon is termed as jobless growth.
- Most of the workers who migrate from agriculture to labor are not employed in formal capitalist work but rather in informal work (not necessarily capitalist).
- The major problem with structural transformation is not lack of non-agricultural employment but mismatching of skills of the laborers with the requirements of the modern sector in India as only about fifty-one per cent of graduates are employable.
- This three-sector model is a modified version of the classical two-sector model which accounts for Indian outcomes in a better way. A disaggregation of the modern sector into formal and informal, and the treatment of technological bias, institutional quality and labor market frictions as endogenous as opposed to incidental, significantly enhances the model's fit to the observed Indian structural transformation.

Policy implications

The investigation carried out in the present paper implies the following implications in the Indian economic policy. Second, the fact that the Lewisian route of labour absorption – through manufacturing has not been closed but narrowed by the persistence of premature deindustrialization makes the policies which seek to augment the supply of labour-intensive manufacturing, including textiles, footwear, food processing, or light engineering, relevant. Second, given that a large portion of non-agricultural jobs growth has been at informal, low productivity levels, non-agricultural policies targeting formalization of enterprises, with simplified compliance, ease of access to credit and extension of social protection under the new labour laws, are likely to have employment impacts that are underestimated by focusing exclusively on aggregate GDP growth. Third, with a level of skills mismatch as big as reported, there is likely to be greater employment payoff on investment in vocational and technical education that is more in line with the needs of dynamic industries than

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on generic growth of tertiary education. Fourth, the continued improvement of productivity in agriculture should not be considered as something distinct from the industrialization (agenda), but should be seen as a condition for achieving this.

Conclusion

the Lewis dual-sector model still has some lessons to offer when it comes to comprehending the structural transformation of India, as it pinpoints the stark productivity gap between agriculture and non-agriculture sectors and highlights the need for a shift in labour allocation as the driver of development. However, using the model as it is in India and making little or no adjustment to its parameters could lead to overestimation of this labour absorbing power of the manufacturing sector and underestimation of the roles of technological bias, institutional friction and informality in employment outcomes. A new framework which splits the modern sector into formal and informal parts; makes technological choice endogenous; makes institutional quality endogenous; and introduces a stochastic migration of workers in response to the degree of urban unemployment risk is a more faithful and more policy-relevant way of explaining how, and how imperfectly, the Indian economy has been modernized. Further work will be useful if the modified framework outlined here can be tested, at a state level, using econometric methods, which is beyond the scope of descriptive and comparative analysis of this paper.

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