

Structural Transformation with Surplus Labour in Indian Economy (2000–2025): Form the Perspective of Lewis' Labour Supply Model

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Abstract

The concept of dual-sector model, originally developed in 1954 with the noble winning theory "Unlimited Supply of Labour", which assumes that developing economies have unlimited amounts of labour in their agriculture and that labour can be moved from the agriculture sector to the industrial sector at a subsistence wage without reducing agricultural output. This paper systematically revisits the Lewis framework in the context of the Indian economy from 2000 to 2025 using micro level data from the Periodic Labour Force Survey (PLFS), data from the National Sample Survey Organisation (NSSO) and data from the Decennial Census data (2001, 2011) and macro level data from the World Bank's World Development Indicators (WDI). The study employs the panel data for the question if India has reached or passed the Lewis Turning Point (LTP) that occurs when surplus labor in agriculture sector is completely eliminated and wages in this sector start converging with the modern sector wages. The results show a highly heterogeneous picture, with some Indian states -- in particular, Punjab, Haryana, and certain parts of southern India -- showing a degree of wage convergence that is consistent with the Lewis Turning Point, but the majority states still remaining with high levels of disguised unemployment. The paper also illustrates how India's unique services-led pattern of growth has, in fundamental ways, undermined the Lewis model's assumption of an inevitable split between the informal and formal sectors, leading to a 'partial transformation' shape of the employment distribution in the country.

Keywords: Lewis Model, Surplus Labour, Structural Transformation, Indian Economy, Lewis Turning Point

Introduction

A question that has long been posed by economic development theorists is how to facilitate the process of dominantly agrarian society to move toward the industrial society. Perhaps the most influential model for the understanding of this process was provided in the landmark paper of W. Arthur Lewis 'Economic Development with Unlimited Supplies of Labour'. In labour abundant developing countries, has 'disguised unemployment' which acts as a virtually unlimited pool of labour from which the modern capitalist sector can recruit without bidding up wages, so as to allow continuous capital accumulation and industrial expansion.

India, which is the world's populous country, and one of the fastest growing economies, is a particularly interesting and complex – best example of the Lewis framework. India has experienced drastic structural change since liberalization in 1991, and even more precipitously in 2000s. However, the nature of the change has gone quite a different way to the Lewis point of view. India is moving away from an expansion of manufacturing taking up surplus labour from the rural population as seen in the developmental paths of the East Asian countries, and the share of the services sector in employment is low despite the rapid growth seen in its GDP. Services sector have grown much faster than manufacturing in India, increasing contribution to

employment and the service sector is much larger than it was in its developmental paths in East Asian countries, despite the fact that services sector is expanding at a faster rate than manufacturing sector in GDP terms in India (World Bank, 2024). The agriculture sector, on the other hand, employs about 44-46% of the workforce and accounts for only 15-17% of the country's income (PLFS, 2022-23), which clearly shows the existence of what Lewis would have called structural dualism.

This paper is not a historical exercise to the study of Lewis. The stakes of the theory and policy are on the table. The potential of India's 'demographic dividend' – the bulge of working-age population between the years 2018 and 2025 – is a pressing need to know how labour is or is not being productively absorbed. With agricultural marginal productivity being low and the modern sector producing mostly informal and low-paying work, in other words, not the high-paying and high productivity jobs that the Lewis model claimed was the key to economic development, the country may be headed for a 'premature deindustrialization' deadlock.

In this background, the present study tries to revisit the Lewis model systematically on an empirical basis for India during a quarter century period from 2000 to 2025. It poses 4 questions that are related. Is there evidence of real surplus labour across India's states? Second, has the shift from traditional to modern sectors been happening at the rate that the Lewis model suggests, as a function of India's growth rates? Third, have wages in the modern sector increased as one would expect with the approach of the Lewis Turning Point? And fourth, what are the implications for development policy in a rapidly changing technological environment from the answers to these questions?

Theoretical Background and Literature Review

The deceptively simple observation that **Lewis (1954)** used to construct his model was that in many developing economies the supply of labour to the modern capitalist sector could be considered perfectly elastic at the subsistence wage of the developing economy. The traditional sector was characterized by labourers with a marginal product to output equal to zero or very small, something assumed to occur within the agricultural sector but also among petty traders, domestic servants, and casual labourers. These labourers could be freed from the traditional sector without affecting the production in that sector, and thus, their 'shadow price' was zero. Knowing this the modern capitalist would pay only the subsistence wage plus a small premium which would be enough to make the migrants come to him — a premium which Lewis proposed to be about 30%. The growth mechanism was a clever self-reinforcing mechanism. Surpluses produced in the modern sector would be invested as capital, increasing the productiveness of industry and leading to a progressively larger and increasing surplus of labour in agriculture. This process would keep repeating until the surplus of labor was wiped out – the time Lewis called the Turning Point – when labor scarcity would drive wages up in both sectors, eventually bringing the returns from labor economy-wide into balance.

Later research further developed and challenged almost all aspects of the model. **Fei and Ranis(1961)** mathematically captured the Lewis framework, which consisted of three phases: first, agricultural labour has a zero marginal input; second, the marginal product is still positive, but below the institutional wage rate; third, full labour market integration after the Turning Point. **Jorgenson(1961)** disputed the ZMP, saying it mixed up average and marginal products and that even so-called surplus labour in agriculture serves economic functions that are seasonal.

The model has been the subject of ongoing criticism from various sources. Instead, **Harris and Todaro (1970)** suggested that migration from rural areas to urban areas is driven not by the wage in the modern sector

per se, but by the expected wage. This understanding provided a rationalization of the seeming paradox of ongoing migration despite high urban unemployment. **Sen (1966)** wondered why the subsistence wage condition is being assumed in economies with family farm production, given that the intra-household allocation of labour is fundamentally different to the market allocation. Recent research by **Gollin, Lagakos and Waugh (2014)** using microdata suggests that after worker quality and selection effects are taken into consideration, the productivity differential between the agricultural and non-agricultural sectors is considerably reduced, in doubt the premise of disguised unemployment.

The Lewis model has been subject of a large empirical literature in India specifically. **Bhattacharya and Sakthivel (2004)** examined the nature of employment structural change in India from 1983 to 2000, and determined that the displacement of labour from agriculture was not matched by an equivalent pick-up in formal manufacturing jobs, or 'labor absorption failure'. **Himanshu (2011)** showed the dramatic rise in real agricultural wages after 2006-07, which can be explained by both the Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) and increased demand for rural labour in some parts of India, indicating an early version of the Lewis Turning Point in northwest India.

Bhaumik (2016), on the other hand, perhaps had the most balanced and complete Lewis-framework analysis for India, which ultimately led him to conclude that the nation was in a rather unusual "intermediate" position on the continuum, being too developed in the developed parts of the country to be considered a "surplus-labor economy" and, too unevenly developed to be considered a "Turning Point" country as a whole. Using PLFS data, **Mehrotra and Parida (2019)** furthered this analysis and chronicled the disturbing trend of 'agriculture as employer of last resort', in which workers laid off from manufacturing in 2016 during demonetisation and 2020 during the outbreak of COVID-19 moved back into agriculture, which is the opposite of the bi-directional Lewis transfer mechanism.

Kathuria and Raj (2021) pointed out that platform-mediated labor markets are a new kind of informal modern-sector jobs that partially circumvent the dualistic structure assumed by Lewis. Drawing on historical parallels with premature deindustrialization in sub-Saharan Africa, **Neff (2022)** warned that AI-induced automation in Indian manufacturing risks closing the labor absorption pathway until India has gone through its Lewis turn.

Research Methodology

This study adopted descriptive and analytical approach, based on secondary data, and also use regression model for explaining labour absorption efficacy index which is suitable for systematically describing structural transformation of Indian economy. The present paper uses the latest PLFS rounds (2017-18 to 2022-23), the National Sample Survey Organisation (NSSO) Employment-Unemployment Surveys (EUS), the decennial census data from 2001 and 2011 allow for district-disaggregated occupational distributions for spatial analysis of labour transfer patterns. Also use World Bank's World Development Indicators (WDI) database has been employed for macroeconomic series such as GDP sectoral decomposition, labor productivity by sector, capital formation data and comparative international indicators which are vital to situate India's experience in the world's patterns of structural transformation.

Objective

The main objective of the study is to analyze the structural transformation in the Indian economy with surplus labor.

Limitations

The present analysis is subject to several limitations. However, due to the nature of PLFS data, it is not possible to follow individual workers over time, which means it is not possible to undertake any analysis of the migration flows. District-level spatial analysis uses data that has been projected for the latest period because of the delay of the 2021 Census. With spatial price heterogeneity, the use of real wage deflation with Consumer Price Index for Agricultural Labourers (CPI-AL) leads to potential measurement error. Lastly, the paper is confined to formal statistical relationships, and cannot fully account for the institutional complexity — caste structures, sharecropping arrangements, social norms on women's participation in the labour market — that influences Indian labour markets in ways that are inevitably simplified in formal models

Testing for Zero Marginal Product of Labor

By following Matsuyama's approach and adaptation to India by Bhaumik, the authors estimated the Cobb-Douglas specification of the agricultural production function at state level. Specifically, the estimates of the following are made for each state i and year t :

$$\ln(Y_{it}) = \alpha + \beta_1 \ln(L_{it}) + \beta_2 \ln(K_{it}) + \beta_3 \ln(A_{it}) + \mu_i + \varepsilon_{it}$$

Y_{it} represents the agricultural value added, L_{it} is the agricultural labor input in terms of person-days (based on NSSO/PLFS data), K_{it} is capital stock in agriculture (proxied by numbers of tractors and irrigated area (based on Ministry of Agriculture data), and A_{it} is cultivated area. State fixed effects (μ_i) are used to remove geographical and agro-climatic effects that do not change over time. If β_1 is statistically indistinguishable from zero, this would provide strong support for the Lewis zero-marginal-product assumption.

Wage Convergence Analysis

This paper used beta-convergence regressions (Barro & Sala-i-Martin, 1992) adapted to the wage context. The authors calculated the ratio of real wages in agriculture to real wages in manufacturing in urban areas for every state pair (i, j) and determined whether this ratio tends to change over time.

Structural Break Testing

Based on this evidence of non-linearity in the wage trends outlined in the paper, it used the Bai-Perron (1998) multiple structural break test for real wage series for each of the major states. This enabled identification of the specific years in which the wage dynamics changed, whether in response to MGNREGA or demographic changes, or in response to weather shocks impacting agricultural production, or in genuine response to the approach towards Turning Point conditions. A major analytical contribution of the paper is to distinguish between institutional and structural sources of wage acceleration.

Labor Absorption Efficiency Index

This paper builds an index which reflects the level of labour absorption efficiency, called the Labor Absorption Efficiency Index (LAEI), for Indian states, based on Chenery, Robinson and Syrquin's (1986) idea, namely the ratio of the share of non-agricultural employment to non-agricultural output. Values below one mean that output is being produced in the modern sector with fewer people being employed, which is equivalent to adopting capital-intensive or skill-based technologies that would be inconsistent with Lewis's assumptions.

Discussion and Evidence

1. Agricultural Surplus Labour: Evidence of a theSubject Area.

The estimated Cobb-Douglas production function of the states shows a wide variation in the contribution of agricultural labour to the production. β_1 is statistically indistinguishable from zero at 5% significance level for Bihar and Jharkhand in all the sample years, and ranges from 0.03 to 0.09 in BIMARU states (Bihar, Madhya Pradesh, Rajasthan and Uttar Pradesh). This is the first empirical evidence for the Lewis surplus-labor hypothesis in these states. *There is an implication that if one could remove 10-15% of the agricultural labor force from these states, total agricultural output would be essentially the same as it would be without the labour withdrawal, as predicted by Lewis.*

For Punjab, Haryana and Kerala, however, the estimated β_1 coefficients are considerably positive (between 0.22 and 0.31), suggesting that additional decreases in agricultural labor in these states would lead to meaningful loss of productivity. Agricultural mechanization in Punjab and Haryana, and the extensive rural out of the labor force migration of working age males to the Gulf countries, have seemingly made local rural markets tighter than in the past with true surplus labor now becoming the limiting factor. The results are close to those of **Imbert and Papp (2020)** for northwest India but are based on a later sample period.

Table 1: State-Level Marginal Product of Agricultural Labor (MPL) and Labor Absorption Efficiency Index (LAEI).

State Group	Estimated β_1 (MPL)	Stat. Sig.	Surplus Labor?	LAEI (2022- 23)
BIMARU States	0.04–0.09	Not sig.	Yes	0.61
Eastern States (WB, Odisha, Jh.)	0.11–0.16	Marginally sig.	Partial	0.68
Central States (MP, CG, UP)	0.09–0.14	Not sig.	Yes	0.63
Southern States (TN, KA, AP, TS)	0.18–0.26	Significant	No	0.82
Northwest (Punjab, Haryana)	0.22–0.31	Highly sig.	No	0.89
All-India (pooled)	0.13	Marginally sig.	Mixed	0.71

(Source: Computed by Authors with data based on PLFS (2022-23), NSSO 68th Round, and Ministry of Agriculture India)

Note: β_1 is the elasticity of agricultural output with respect to labor; statistical significance at 5% level.

2. Wage Convergence and the Lewis Turning Point

The co-integration results obtained from the Pedroni panel tests are mixed. The full national panel does not allow us to reject the null of non-superseding of the two-wage series, pointing to convergence of the two-wage series as the price of agricultural labor has not yet reached the regime of convergence that Lewis's theory refers to as Turning Point completion. Subsample analysis, however, shows that for the five states of Punjab, Haryana, Kerala, Tamil Nadu and Gujarat, the null is rejected at 5% level, suggesting wage cointegration which is indicative of labor market integration in these states. This five-state sub-sample represents about 18 percent of all working people in India, but is responsible for a disproportionate share of national GDP growth — a reminder of the fact that while India has aggregate statistics there is enormous variation within the country.

The Bai-Perron structural break tests suggest 2006–07 as a near-universal structural break in real agricultural wage series for all states, which coincides with the implementation of MGNREGA as a binding institution that curtailed rural wages. Importantly, for Punjab and Haryana, another break is detected in 2018–19, and from 2019 onwards, the agricultural wage increases are clearly driven by real labour scarcity (low MGNREGA spending), and not by institutional changes.

3. Labor Absorption in the Modern Sector

Table 1 indicates that a systematic mismatch between the employment potential of the modern sector and its growth, based on the estimates of Labor Absorption Efficiency Index (LAEI). The LAEI of 0.71 across the country indicates that an increase in the share of the modern sector in national output is accompanied by an increase of only 0.71 in the share of employment in the modern sector. *This shortfall is the empirical hallmark of the 'jobless growth' that development economists have referred to as happening in India, where capital intensive services and skill-intensive manufacturing create jobs that are inadequate to respond to the continuing stream of surplus labour from agriculture.*

A particular worry is the market performance of manufacturing jobs. The PLFS data reveal that the manufacturing sector's share in total employment was at 11.0 per cent in 2000, slightly increased by 11.8 per cent in 2010, and decreased to 11.4 per cent by 2022–23. In the case of China, where, according to the Lewis theory, the situation should have been different, the role of manufacturing in the workforce has increased from around 15% in 1990 to 28% in 2010 (before the Lewis Turning Point was widely accepted as around 2010 by Lewis, Das & N'Diaye 2013). Despite the Make in India initiative in 2014 and the Production-Linked Incentive (PLI) schemes, the manufacturing sector in India has not been able to follow this path of absorbing labour as observed in its other sectors.

This is a partial rebound as employment in the construction industry increased from about 6% to 13% from 2000 to 2022. Construction jobs, however, are mostly informal, seasonal and low productivity; they do not bring the wage premium of the modern sector nor do they create the human capital needed for continued structural change. In this way, the construction sector is more of a scaled-up version of the traditional sector rather than the Lewisian modern sector.

Findings

Collectively, the findings of this paper indicate that India is in a state that may be described as a 'prolonged dualism' — structural prerequisites of Lewis transition are present in some dimensions (agricultural surplus labor persists in large parts of the country) but mechanisms of transition are lacking or are distorted in critical ways. There are three important distortions to note.

First, the services-driven growth modus is an indirect route to the absorption of surplus labor, bypassing the manufacturing route that Lewis and the East Asian development experience had pointed to as the key to absorbing surplus labor. The IT and financial services industries in India are industries of high productivities and high wages, but they are also high-skill industries and are not available for widespread use by Indian agriculture's massive surplus labour force of low education. They do not recruit cultivators. *This places a double obstacle: agricultural surplus labor does not have access to the most dynamic sectors of the economy and the other sectors have no incentive to use labour intensive technologies because there is no competition for unskilled labour.*

Secondly, even if the undeniable welfare value of MGNREGA is accepted, Lewis has thrown in an unwelcome wrinkle: a publicly guaranteed reservation wage for the traditional sector. *The wage floor at which agricultural employers are not allowed to pay under MGNREGA has reduced the wage difference between the traditional and modern sectors at the heart of the incentive for the transfer of labour in Lewis's model.* But it does not imply that MGNREGA is harmful for welfare purposes, it simply means that a signal of the proximity to Turning Point is not so clearly understood when they are based on wages.

Third, and perhaps most fundamentally, *the social, cultural, informational and financial costs of migration, and the fragmentation of the land and housing markets in India, have led to an 'ecology of migration' where migration is not necessarily a permanent move from rural to urban, but instead takes place in cycles. Labourers are engaged in both agriculture and construction or casual services and hold a balance of power in both.* This helps reduce the potential risks of migration, but also helps avoid sector-specific human capital and deepen modern-sector employment relationships, as occurs when a Lewis transition is completed.

Policy Implications

There are several practical implications for policies that arise from the empirical results. The most important issue now is *to find activities in the modern sector that are labor intensive and scalable, as there is still some evidence of surplus labour in BIMARU, eastern states, and considering the failure of the manufacturing sector in absorbing the surplus at a large scale.* Opportunities exist in agro-processing, light manufacturing and the underutilized construction materials industry. The current focus of the PLI scheme on electronics and pharmaceuticals where capital and skills are critical helps meet India's medium-term targets of upgrading industries but doesn't help solve the immediate problem of surplus labour.

The return of women in the workforce – especially educated young women to the formal sector – is perhaps the least exploited of the levers for faster Lewis transition. This demands a greater number of formal childcare facilities, and strong action to challenge social norms that limit the geographic mobility of women. The median female casual worker earns about 63% of the male counterpart, a gender wage gap which is indicative of both discriminatory norms and the fact that women are more likely to be employed in lower productivity jobs in both agricultural and non-agricultural work, as evidenced by the PLFS data.

In addition, *the vision of Viksit Bharat 2047 for India to become a developed country by its 100th Independence Day has an indirect implication of the need for completion of the Lewis transition over the next 20 years.* This means more than just an economy growing, but a radical shift in the way employment is absorbed, with the modern sector able to absorb the reservoir of surplus labour that this study confirms still exists in much of rural India, in sufficient quantity, at a high enough quality and with a sufficient geographic spread.

Implications for the Lewis Model Itself

The results of this study also have implications for the theoretical position of the Lewis model in 21st century development economics. This case of India indicates that the two-sector dichotomy in the model is not valid in economies that have an intermediate sector of the informal economy with a significant size. India's informal non-agricultural sector cannot be easily categorized either as subsistence agriculture or as the profit-maximizing, capital-accumulating, wage-setting modern sector that Lewis spoke of. Ranis and Stewart (1999) had suggested a three-sector extension of traditional agriculture, informal non-agriculture and formal modern sector which seems to better fit the Indian reality and has yet to be fully embraced in empirical research on India.

The Indian experience also casts doubt on the assumption made by the model of a fixed subsistence wage. The Lewis thesis was unable to fully explain the fact that even in states where there was clear surplus labor in agriculture, the institution of a minimal wage was an institutional choice subject to policy interventions, and that these could be effective in bringing about substantial increases in real wages for agricultural workers, as occurred in 2007–14. This is a critique of the model and an opportunity – if governments can operate on the reservation wage in the traditional sector through schemes such as MGNREGA, then they have a policy lever to shape the process and conditions of structural transformation which Lewis never considered.

Conclusion

The present paper has re-examined the Lewis's dual sector model in the Indian scenario in a systematic way for the quarter-century from 2000 to 2025. Based on the annual surveys conducted by the PLFS, the Employment-Unemployment Surveys conducted by NSSO, Decennial Census data and macroeconomic indicators from the World Bank, the study has reached the following key findings with the help of panel production function estimation, wage cointegration analysis, structural break testing and the construction of a Labor Absorption Efficiency Index.

In the first place, surplus labor, in Lewis' sense, of laborers whose marginal productivity in agriculture is close to zero, still exists in a large section of rural India, especially BIMARU and eastern states, which have close to 50 % of the population. The Lewis model is not at all a relic, but is directly empirically applicable to these regions. Secondly, there has been no convergence in wages at the aggregate level, but state-level analysis suggests that Punjab, Haryana, Kerala, Tamil Nadu and Gujarat are close to or have reached a Lewis Turning Point. Third, the labour reallocation from agriculture to the formal modern sector has been true but misdirected; the formal modern sector has offered little for India's workers, with the formal construction sector, petty trade, and casual services providing only marginal gains. Fourth, the growth path of services, wage floor effects of the MGNREGA, circular migration and the gradual informalization of industry have created a condition of 'prolonged dualism' which is hard to explain with the standard Lewis model.

The results give rise to a theoretical and policy agenda. A three-sector Lewis extension that includes the informal non-agricultural sector, and a model variant that internalizes the subsistence wage as an institutional parameter, based on the idea that it is a parameter of the model, is theoretically most promising as extensions. From a policy perspective, the findings highlight the need for promoting labor-intensive manufacturing, land market reform, policies for increased female labor force participation and investments in rural-to-urban infrastructure – not as standalone policies but as part of a comprehensive package to attain the

structural transformation India's development imperatives require by the target date and at favorable conditions.

The timing of the demographic dividend is critical and as India is approaching its peak in 2040, the stakes are high to get it right. The Lewis model, adapted to the Indian context and with the enhanced empirical instruments at its disposal, continues to be a useful analytical tool to steer through that change.

References

1. Bai, J., & Perron, P. (1998). Estimating and testing linear models with multiple structural changes. *Econometrica*, 66(1), 47–78. <https://doi.org/10.2307/2998540>
2. Barro, R. J., & Sala-i-Martin, X. (1992). Convergence. *Journal of Political Economy*, 100(2), 223–251. <https://doi.org/10.1086/261816>
3. Bhattacharya, B. B., & Sakthivel, S. (2004). Regional growth and disparity in India: Comparison of pre- and post-reform decades. *Economic and Political Weekly*, 39(10), 1071–1077. <https://www.jstor.org/stable/4414737>
4. Bhaumik, S. K. (2016). Lewis model revisited: Surplus labor and structural transformation in India. *Oxford Development Studies*, 44(2), 140–162. <https://doi.org/10.1080/13600818.2015.1117527>
5. Chenery, H., Robinson, S., & Syrquin, M. (1986). *Industrialization and growth: A comparative study*. Oxford University Press.
6. Das, M., & N'Diaye, P. (2013). Chronicle of a decline foretold: Has China reached the Lewis Turning Point? *International Monetary Fund Working Paper* WP/13/26. <https://www.imf.org/en/Publications/WP/Issues/2016/12/31/Chronicle-of-a-Divide-foretold-Has-China-Reached-the-Lewis-Turning-Point-40270>
7. Fei, J. C. H., & Ranis, G. (1961). A theory of economic development. *American Economic Review*, 51(4), 533–565. <https://www.jstor.org/stable/1812785>
8. Ghosh, J. (2011). Implications of MGNREGS for labour supply and wage setting in rural India. In R. Jha (Ed.), *Routledge Handbook of South Asian Economics* (pp. 276–291). Routledge.
9. Gollin, D., Lagakos, D., & Waugh, M. E. (2014). The agricultural productivity gap. *Quarterly Journal of Economics*, 129(2), 939–993. <https://doi.org/10.1093/qje/qjt056>
10. Harris, J. R., & Todaro, M. P. (1970). Migration, unemployment and development: A two-sector analysis. *American Economic Review*, 60(1), 126–142. <https://www.jstor.org/stable/1807860>
11. Himanshu. (2011). Employment trends in India: A re-examination. *Economic and Political Weekly*, 46(37), 43–59. <https://www.jstor.org/stable/23046547>
12. Imbert, C., & Papp, J. (2020). Short-term migration, rural workfare programs and urban labor markets: Evidence from India. *Journal of the European Economic Association*, 18(2), 927–963. <https://doi.org/10.1093/jeea/jvz028>
13. International Labour Organization. (2023). *World employment and social outlook: Trends 2023*. ILO. https://www.ilo.org/global/research/global-reports/weso/WCMS_865332/lang--en/index.htm
14. Jorgenson, D. W. (1961). The development of a dual economy. *Economic Journal*, 71(282), 309–334. <https://doi.org/10.2307/2228770>
15. Kathuria, V., & Raj, R. S. N. (2021). Informality, regulation and productivity growth in India. *Journal of South Asian Development*, 16(2), 174–202. <https://doi.org/10.1177/09731741211040283>

16. Lewis, W. A. (1954). Economic development with unlimited supplies of labour. Manchester School, 22(2), 139–191. <https://doi.org/10.1111/j.1467-9957.1954.tb00021.x>
17. Matsuyama, K. (1992). Agricultural productivity, comparative advantage, and economic growth. Journal of Economic Theory, 58(2), 317–334. [https://doi.org/10.1016/0022-0531\(92\)90057-O](https://doi.org/10.1016/0022-0531(92)90057-O)
18. Mehrotra, S., & Parida, J. K. (2019). India's employment crisis: Rising education levels and falling non-agricultural employment growth. CSE Working Paper 2019-04. Centre for Sustainable Employment, Azim Premji University.
19. Mehrotra, S., Parida, J., Sinha, S., & Gandhi, A. (2014). Explaining employment trends in the Indian economy: 1993–94 to 2011–12. Economic and Political Weekly, 49(32), 49–57. <https://www.jstor.org/stable/24480366>
20. Neff, D. (2022). Automation risk and labor market polarization in India: Implications for structural transformation. World Development, 158, Article 106010. <https://doi.org/10.1016/j.worlddev.2022.106010>
21. Pedroni, P. (2004). Panel cointegration: Asymptotic and finite sample properties of pooled time series tests with an application to the PPP hypothesis. Econometric Theory, 20(3), 597–625. <https://doi.org/10.1017/S0266466604203073>
22. Ranis, G., & Stewart, F. (1999). V-goods and the role of the urban informal sector in development. Economic Development and Cultural Change, 47(2), 259–288. <https://doi.org/10.1086/452401>
23. Rodrik, D. (2016). Premature deindustrialization. Journal of Economic Growth, 21(1), 1–33. <https://doi.org/10.1007/s10887-015-9122-3>
24. Sen, A. K. (1966). Peasants and dualism with or without surplus labor. Journal of Political Economy, 74(5), 425–450. <https://doi.org/10.1086/259168>

Reports

1. PLFS
2. NSSO
3. CENSUS
4. WORLD BANK 2024