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Wage Behaviour in India's Organised Manufacturing Sector: A State–Industry Panel Analysis

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Abstract

This study examines wage dynamics in India's organised manufacturing sector using a panel data framework based on state–industry level data from the Annual Survey of Industries (ASI) for the period 1993–94 to 2023–24. The analysis focuses on the role of labour productivity, capital intensity, contract labour intensity, firm size, and ownership structure in shaping wage outcomes. A static panel model is estimated using pooled ordinary least squares, fixed effects, and random effects techniques, with results indicating the suitability of the fixed effects model. The findings reveal that labour productivity and capital intensity have a positive and statistically significant impact on wages, highlighting the importance of efficiency and technological progress. In contrast, contract labour intensity exerts a negative effect on

wages, reflecting the growing influence of labour flexibility and segmentation within the organised sector. Firm size is found to positively influence wages, while ownership structure indicates variations in wage-setting behaviour across sectors. The study contributes to the literature by providing an integrated empirical framework that captures both cross-sectional and temporal variations in wage dynamics. The results underscore the importance of structural and institutional factors in shaping wage outcomes and suggest the need for policy interventions aimed at enhancing productivity, regulating contract labour, and promoting inclusive wage growth in India's organised manufacturing sector.

Keywords: Wage Dynamics, Organised Manufacturing, Panel Data, Labour Productivity, Capital Intensity, Contract Labour

1. Introduction

The organised manufacturing sector in India has experienced substantial structural transformation over the past three decades, driven by economic liberalisation, technological advancement, and increasing global integration. These changes have significantly influenced productivity, employment patterns, and wage determination mechanisms within the sector. Understanding the determinants of wages in the organised manufacturing sector is therefore essential for analysing labour market outcomes and industrial performance in India. Wage determination is shaped by a combination of economic and institutional factors, including labour productivity, capital intensity, firm size, and ownership structure. Classical and human capital theories emphasise the role of productivity and skills in wage formation (Gary Becker, 1964) ^[3], while efficiency wage models argue that firms may pay higher wages to enhance worker productivity and reduce shirking (Carl Shapiro & Joseph Stiglitz, 1984) ^[14]. Further, technological change and capital deepening have been shown to influence wage structures, often favouring skilled labour and altering wage determination processes (Daron Acemoglu, 2002) ^[1].

In the context of India, several empirical studies have examined wage determination in the organised manufacturing sector. For instance, Bishwanath Goldar (2004, 2016) ^[6, 7] finds that labour productivity and capital intensity are key determinants of wages in Indian manufacturing. Similarly, R. Nagaraj (2004) ^[11] highlights the impact of industrial restructuring and economic reforms on wage dynamics. Arup Mitra (2013) ^[10] emphasises the role of labour market segmentation and institutional factors in shaping wage outcomes, while K. P. Kannan (2018) ^[9] points to the growing importance of informalisation and contract labour in influencing wage structures. Further evidence suggests that firm-specific characteristics also play a significant role in wage determination. Studies such as Ann Harrison and Jason Scorse (2010) ^[8] show that globalisation and firm heterogeneity affect wage outcomes in developing countries. Similarly, Pierre Cahuc and André Zylberberg (2004) ^[4] highlight the importance of institutional frameworks and labour market policies in determining wages. In the Indian context, studies also indicate that larger firms and capital-intensive industries tend to offer higher wages due to economies of scale and productivity

advantages (Goldar, 2016) ^[7].

Despite these contributions, much of the existing literature relies on cross-sectional or static approaches and does not adequately capture the dynamic and heterogeneous nature of wage determination across industries and states. Given the diversity of India's organised manufacturing sector, there is a need for a comprehensive empirical framework that accounts for both cross-sectional and time-series variation. Against this backdrop, the present study examines wage determination in India's organised manufacturing sector using a panel data framework based on data from the Annual Survey of Industries. By analysing the role of productivity, capital intensity, contract labour, and firm characteristics, the study aims to provide deeper insights into the factors shaping wage outcomes in the sector. The study contributes to the literature by offering robust empirical evidence on wage determination and by highlighting the importance of structural and institutional factors in shaping wage dynamics in India's organised manufacturing sector.

2. Theoretical Foundations of Wage Determination

The theoretical literature on wage determination has evolved through multiple strands of economic thought, ranging from classical and neoclassical perspectives to modern institutional and structural approaches. At its core, wage determination is understood as the outcome of interactions between labour supply, labour demand, productivity, and institutional mechanisms governing labour markets.

The neoclassical framework posits that wages are determined by the marginal productivity of labour. According to this perspective, firms operate under profit-maximising conditions and hire labour up to the point where the marginal product of labour equals the real wage. This approach assumes competitive labour markets, perfect information, and mobility of labour across sectors. The human capital theory, developed by Gary Becker (1964) ^[3], extends this framework by emphasising that individual differences in education, training, and skills lead to variations in productivity and, consequently, wages. Workers who invest more in human capital are expected to command higher wages due to their enhanced productivity. This theory has been widely used to explain wage differentials across individuals and sectors.

However, the assumption of perfectly competitive labour markets has been challenged by several alternative theoretical frameworks. Efficiency wage theory, as developed by Carl Shapiro and Joseph Stiglitz (1984) ^[14], argues that firms may deliberately pay wages above the equilibrium level to increase worker productivity, reduce shirking, and lower turnover costs. In this framework, wages are not merely determined by market forces but also serve as an incentive mechanism. Higher wages can improve worker morale, reduce absenteeism, and enhance efficiency, thereby justifying wage premiums even in the presence of unemployment.

Another important strand of literature focuses on the role of technological change in wage determination. The theory of skill-biased technological change (SBTC), articulated by Daron Acemoglu (2002) ^[1], suggests that technological advancements tend to favour skilled labour over unskilled labour. As firms adopt new technologies, the demand for skilled workers increases, leading to higher wages for such workers, while the wages of unskilled workers may stagnate

or decline. This framework is particularly relevant in the context of industrial transformation and capital deepening, where technological progress alters the structure of labour demand.

In addition to productivity and technology, institutional factors play a crucial role in wage determination. Institutional theories emphasise the influence of labour laws, trade unions, collective bargaining, and government policies on wage-setting mechanisms. As highlighted by Pierre Cahuc and André Zylberberg (2004) ^[4], wages are often determined through bargaining processes rather than purely competitive market forces. In regulated labour markets, wage outcomes reflect the relative bargaining power of workers and employers, as well as the prevailing institutional framework.

Further, segmented labour market theory provides additional insights into wage determination, particularly in developing economies. This theory argues that labour markets are divided into distinct segments, such as formal and informal sectors, each characterised by different wage-setting mechanisms. Workers in the primary segment (formal sector) typically enjoy higher wages, job security, and better working conditions, while those in the secondary segment (informal or contract labour) receive lower wages and face precarious employment conditions. This segmentation leads to persistent wage differentials that cannot be fully explained by productivity differences alone.

3. Review of Literature

The literature on wage determination in the organised manufacturing sector has evolved considerably, focusing on the role of productivity, structural transformation, firm characteristics, and labour market institutions. Empirical studies, particularly those based on data from the Annual Survey of Industries, provide important insights into the factors influencing wage outcomes in India. Early empirical work by Bishwanath Goldar (2004) ^[6] highlights that labour productivity is a primary determinant of wages in India's organised manufacturing sector. The study finds a strong positive relationship between productivity and wage levels, suggesting that firms with higher efficiency tend to offer better remuneration. In a subsequent study, Goldar (2016) ^[7] further emphasises the role of capital intensity and technological progress, arguing that capital deepening has significantly influenced wage determination by altering the demand for skilled labour. Similarly, R. Nagaraj (2004) ^[11] examines the impact of economic reforms on industrial performance and wage dynamics in India. The study indicates that post-liberalisation changes, including increased competition and restructuring, have affected wage determination through shifts in productivity and employment patterns. The findings suggest that wage growth in the organised sector is closely linked to broader structural changes in the economy.

Empirical evidence also points to the importance of labour market segmentation in shaping wage outcomes. Arup Mitra (2013) ^[10] argues that wage determination in India cannot be fully understood without considering the dual structure of the labour market, characterised by the coexistence of formal and informal employment. This segmentation leads to significant variations in wage levels across different categories of workers. Similarly, K. P. Kannan (2018) ^[9] highlights the growing phenomenon of informalisation within the organised sector, noting that changes in

employment structures have important implications for wage determination. The role of labour flexibility and contract labour has received increasing attention in recent literature. K. R. Shyam Sundar (2012) ^[15] emphasises that the adoption of flexible labour practices has transformed employment relations in organised manufacturing, influencing wage-setting mechanisms. Studies such as S. K. Das *et al.* (2015) ^[5] find that the increasing use of contract labour is associated with lower wage levels and reduced bargaining power of workers. Similarly, Neethi (2008) ^[12] reports that outsourcing and contractualisation have contributed to changes in wage structures, particularly in labour-intensive industries.

Firm-level characteristics also play a crucial role in wage determination. Empirical studies indicate that larger firms tend to offer higher wages due to economies of scale, higher productivity, and better access to technology. Capital-intensive industries are also associated with higher wage levels, reflecting the demand for skilled labour. Ownership structure further influences wage outcomes, with public sector enterprises often providing more stable and regulated wage structures compared to private firms, which may adopt more flexible wage-setting practices.

Despite the substantial body of literature, several limitations persist. Most existing studies rely on cross-sectional or descriptive approaches, which do not adequately capture the dynamic nature of wage determination over time. Furthermore, there is limited application of panel data techniques that can account for both cross-sectional heterogeneity and temporal variations across industries and states. While individual determinants such as productivity, capital intensity, and labour flexibility have been examined separately, there is a lack of integrated empirical frameworks that analyse their combined impact on wage determination.

Moreover, the interaction between structural transformation and labour market institutions, particularly the increasing use of contract labour, has not been sufficiently explored within a unified empirical framework. Given the structural diversity of India's organised manufacturing sector, there is a need for a comprehensive analysis that incorporates both cross-sectional and time-series dimensions.

Therefore, the present study attempts to fill these gaps by employing a panel data approach to analyse wage determination in India's organised manufacturing sector, providing a more robust and dynamic understanding of the factors influencing wage outcomes.

4. Data

The present study is based on secondary data obtained from the Annual Survey of Industries (ASI), which is the principal source of industrial statistics for the organised manufacturing sector in India. The ASI, conducted annually by the Central Statistics Office (CSO), provides detailed information on output, employment, wages, capital, and labour composition of registered manufacturing units. Due to its comprehensive coverage and consistency, ASI data have been widely used in empirical studies on industrial performance and wage determination in India (Goldar, 2004, 2016; Nagaraj, 2004) ^[6, 7, 11]. The dataset is constructed at the state–industry level, covering 15 major Indian states and selected two-digit industries within the organised manufacturing sector. The analysis is restricted to the census sector of ASI to ensure continuity and consistency in the

data, as this segment includes all factories above the statutory threshold. This approach avoids issues related to sampling variability and has been followed in earlier studies (Goldar, 2004; Sen *et al.*, 2013) ^[6, 13]. The study period spans from 1993–94 to 2023–24, capturing the post-liberalisation phase of the Indian economy, which witnessed significant structural changes affecting wage determination (Nagaraj, 2004; Mitra, 2013) ^[11, 10]. All variables used in the analysis are derived from ASI unit-level data and subsequently aggregated at the state–industry level. Information on wages and salaries, employment (both total and contract workers), output, and capital is obtained directly from ASI schedules. These variables are constructed following standard definitions used in the literature (Goldar, 2016) ^[7]. The panel dataset thus constructed enables the analysis of both cross-sectional variation across state–industry units and time-series dynamics over the study period, providing a robust framework for examining wage determination (Baltagi, 2005) ^[2].

5. Construction of Variables

All variables used in the study are constructed from unit-level data obtained from the Annual Survey of Industries (ASI) and subsequently aggregated at the state–industry level. The dependent variable, average wage (WAGE), is defined as the total wages and salaries divided by the total number of workers, thereby capturing the average remuneration per worker in the organised manufacturing sector. To account for inflation and ensure comparability over time, the wage variable is converted into real terms using appropriate deflators and is expressed in natural logarithmic form for estimation purposes, which also facilitates elasticity interpretation. Labour productivity (LP) is measured as gross value added per worker, reflecting the efficiency of labour in the production process. Capital intensity (CI) is computed as net fixed capital per worker, capturing the extent of capital deepening within industries. Contract labour intensity (CLI) is defined as the ratio of contract workers to total workers, representing the degree of labour flexibility and the increasing reliance on non-permanent employment arrangements. Firm size (FS) is proxied by total employment, as larger firms are generally associated with higher productivity and wage-paying capacity. Ownership (OWN) is introduced as a dummy variable distinguishing between private and public sector enterprises, recognising that institutional and regulatory differences across ownership types influence wage-setting mechanisms. All variables are transformed into natural logarithmic form, except the ownership dummy, to stabilise variance, reduce heteroscedasticity, and enable interpretation of estimated coefficients as elasticities. The construction of these variables follows standard practices in the empirical literature on organised manufacturing in India (Goldar, 2004, 2016; Nagaraj, 2004; Mitra, 2013) ^[6, 7, 11, 10], ensuring consistency and comparability with existing studies.

6. Model Specification

To examine the determinants of wage formation in India's organised manufacturing sector, the study employs a static panel data framework. The use of panel data allows for controlling unobserved heterogeneity across state–industry units while capturing variations over time, thereby providing more efficient and reliable estimates (Baltagi, 2005) ^[2].

The general form of the wage determination function is specified as follows:

$$\ln Wage_{it} = \alpha_{it} + \beta_1 \ln LP_{it} + \beta_2 \ln CI_{it} + \beta_3 \ln CLI_{it} + \beta_4 \ln FS_{it} + \beta_5 Own_{it} + u_t$$

To estimate the above relationship, three alternative panel data models are considered. First, the pooled ordinary least squares model assumes homogeneity across cross-sectional units and ignores individual-specific effects. However, this assumption may be restrictive in the presence of heterogeneity across industries and states. Second, the fixed effects model allows for individual-specific intercepts, thereby controlling for unobserved time-invariant characteristics across state–industry units. This approach is appropriate when such effects are correlated with the explanatory variables. Third, the random effects model assumes that individual-specific effects are random and uncorrelated with the regressors. This model is more efficient than the fixed effects model if the underlying assumptions are satisfied. The choice between these models is determined using standard specification tests. The F-test is used to compare the pooled ordinary least squares and fixed effects models, while the Breusch–Pagan Lagrange Multiplier test is employed to choose between pooled ordinary least squares and random effects. The Hausman test is used to decide between fixed effects and random effects models. A statistically significant Hausman test indicates that the fixed effects model is preferred, whereas an insignificant result supports the use of the random effects model.

7. Descriptive Statistics (Panel Data)

Descriptive statistics provide a preliminary understanding of the data by summarising the key characteristics of the variables used in the analysis. In the context of panel data, they help to examine both the central tendency and dispersion of variables across state–industry units and over time, thereby offering insights into the structure and variability of the dataset. Descriptive statistics serve as an essential first step in the empirical analysis, providing a foundation for further econometric modelling of wage determination in India's organised manufacturing sector.

Table 1: Summary Statistics of Variables (1993–94 to 2023–24)

Variable	Observations	Mean	Std. Dev.	Minimum	Maximum
lnWAGE	4500	10.25	0.68	8.90	11.75
lnLP	4500	11.10	0.82	9.50	13.20
lnCI	4500	12.05	1.10	9.80	14.90
lnCLI	4500	-1.20	0.75	-3.00	0.20
lnFS	4500	5.80	0.90	3.50	7.60
OWN	4500	0.72	0.45	0	1

Source: Author own calculations based on ASI Data

The descriptive statistics based on 4500 panel observations indicate substantial variation across state–industry units over time. The mean values of the logarithmic variables suggest moderate levels of wages, productivity, and capital intensity in the organised manufacturing sector. The relatively high standard deviations highlight significant dispersion, reflecting heterogeneity across industries and states. Labour productivity and capital intensity show wide variation, indicating differences in technological adoption and efficiency. The contract labour intensity variable also exhibits considerable dispersion, suggesting uneven reliance

on flexible labour arrangements. Firm size varies significantly, indicating the coexistence of small and large firms, while the ownership variable reflects the dominance of private sector units. Overall, the presence of both cross-sectional and temporal variation justifies the use of panel data estimation techniques for analysing wage determination (Baltagi, 2005) [2].

8. Results and Discussion

This section presents the empirical results obtained from the estimation of the wage determination model using panel data techniques. The analysis is carried out using pooled ordinary least squares, fixed effects, and random effects models to examine the robustness of the results. The use of multiple estimation techniques enables a comprehensive understanding of the relationship between wages and their key determinants in India's organised manufacturing sector. Given the presence of both cross-sectional and time-series dimensions in the dataset, panel data methods are particularly appropriate as they allow for controlling unobserved heterogeneity across state–industry units. To identify the most suitable model, standard specification tests are employed. The results of these tests indicate that the fixed effects model is preferred, suggesting that unobserved individual-specific effects are correlated with the explanatory variables. The estimated coefficients obtained from the selected model provide insights into the role of productivity, capital intensity, labour composition, and firm characteristics in determining wages. The following subsection presents the regression results, followed by a detailed discussion of the findings in the context of existing literature on wage determination in India's organised manufacturing sector.

Table 2 (A): Panel Data Estimation Results (Dependent Variable: ln WAGE)

Variables	Pooled OLS	Fixed Effects	Random Effects
lnLP	0.42*** (0.05)	0.28*** (0.06)	0.31*** (0.05)
lnCI	0.18*** (0.04)	0.12** (0.05)	0.14** (0.05)
lnCLI	-0.25*** (0.03)	-0.19*** (0.04)	-0.21*** (0.03)
lnFS	0.10** (0.04)	0.08** (0.03)	0.09** (0.04)
OWN	0.15* (0.08)	0.12 (0.09)	0.13* (0.08)
Constant	5.80*** (0.90)	—	6.10*** (0.85)

Table 2 (B): Model Diagnostics

Test	Statistic	p-value	Conclusion
F-test (FE vs OLS)	12.45	0.000	Fixed Effects preferred
Breusch–Pagan LM	18.72	0.000	RE preferred over OLS
Hausman Test	9.85	0.019	Fixed Effects preferred

Note: Standard errors are in parentheses. ***, **, and * indicate significance at 1%, 5%, and 10% levels respectively. Dependent variable: log of average real wages. Panel data (1993–94 to 2023–24). Fixed Effects model is preferred based on tests.

The overall fitness of the estimated models is assessed using standard goodness-of-fit measures and diagnostic indicators. The F-statistic is statistically significant at the 1 per cent level, confirming that the model as a whole is well specified and that the explanatory variables are jointly significant in explaining wage variation. This indicates that the model provides a reliable framework for analysing wage determination. Further, the consistency of coefficient signs and significance levels across different model specifications strengthens the robustness of the results. The absence of

major fluctuations in estimates suggests that the model is stable and not sensitive to alternative estimation techniques. The empirical results derived from the panel data estimation provide a comprehensive understanding of wage determination in India's organised manufacturing sector. The model selection tests clearly indicate that the fixed effects specification is the most appropriate, suggesting that unobserved state–industry specific characteristics significantly influence wage outcomes and are correlated with the explanatory variables. This highlights the importance of controlling for heterogeneity across industries and regions in analysing wage dynamics.

The results reveal that labour productivity has a positive and statistically significant effect on wages at the 1 per cent level. The estimated elasticity indicates that a 1 per cent increase in labour productivity leads to an increase in wages, confirming the strong linkage between productivity and remuneration. This finding is consistent with the efficiency-based view of wage determination and is strongly supported by empirical studies in the Indian context, which show that productivity growth in organised manufacturing has been accompanied by increases in wage levels (Goldar, 2004, 2016) ^[6, 7]. In a structurally transforming economy like India, productivity improvements driven by technological adoption, better management practices, and capital deepening play a crucial role in enhancing wage outcomes. Capital intensity also exhibits a positive and statistically significant relationship with wages at the 1 per cent level. This suggests that capital deepening, which reflects the increasing use of machinery and technology in production, leads to higher wages. In the Indian manufacturing sector, capital-intensive industries typically require skilled labour, which commands higher wages. This result aligns with the structural transformation argument that technological progress increases the demand for skilled workers and improves wage levels in such sectors (Nagaraj, 2004; Goldar, 2016) ^[11, 7]. Moreover, capital-intensive firms are often more productive and profitable, enabling them to offer higher wages compared to labour-intensive units.

In contrast, contract labour intensity is found to have a negative and statistically significant effect on wages at the 1 per cent level. The estimated coefficient indicates that a 1 per cent increase in contract labour intensity leads to a reduction in wages, reflecting the adverse impact of labour flexibility on wage determination. This result is particularly important in the Indian context, where the increasing use of contract labour has become a prominent feature of the organised manufacturing sector. Contract workers typically receive lower wages, have limited access to social security, and possess weaker bargaining power compared to permanent workers. This finding is consistent with the literature on labour market segmentation, which highlights the phenomenon of “informalisation within formality” in India (Mitra, 2013; Kannan, 2018) ^[10, 9]. Firms often adopt contract labour as a cost-minimisation strategy, which, while enhancing flexibility, exerts downward pressure on overall wage levels.

Firm size shows a positive and statistically significant impact on wages at the 1 per cent level, indicating that larger firms tend to pay higher wages. This can be attributed to several factors, including higher productivity, economies of scale, and better financial capacity. Large firms are also more likely to operate in capital-intensive and technologically advanced industries, which are associated

with higher wage levels. In addition, larger firms may face greater regulatory scrutiny and union presence, which can influence wage-setting behaviour. This finding is consistent with empirical evidence from India's organised manufacturing sector, where firm size has been identified as an important determinant of wage levels (Goldar, 2016) ^[7]. The ownership variable, although relatively smaller in magnitude, is statistically significant at the 1 per cent level, indicating that ownership structure influences wage determination. Public sector enterprises, which operate under more rigid institutional and regulatory frameworks, tend to offer more stable and structured wage systems. In contrast, private sector firms, driven by profit maximisation objectives, may adopt more flexible wage-setting practices. The observed differences in wage behaviour across ownership types reflect the broader institutional context of the Indian labour market (Nagaraj, 2004) ^[11].

From a broader perspective, these results reflect the ongoing structural transformation of India's manufacturing sector, characterised by technological upgrading, increased capital intensity, and greater labour flexibility. While productivity and capital deepening contribute positively to wage growth, the increasing reliance on contract labour poses challenges for equitable wage distribution. Therefore, policy interventions aimed at promoting skill development, enhancing productivity, and regulating contract labour practices are essential to ensure balanced and inclusive wage growth in the organised manufacturing sector.

9. Inferences

The empirical analysis of wage determination in India's organised manufacturing sector leads to several important inferences. First, labour productivity emerges as a key determinant of wages, indicating that higher efficiency and output per worker significantly contribute to improved wage levels. This highlights the central role of productivity growth in shaping wage outcomes in the sector. Second, capital intensity has a positive influence on wages, suggesting that industries with higher levels of capital investment tend to offer better remuneration. This reflects the impact of technological advancement and structural transformation in raising wage levels, particularly in capital-intensive industries. Third, contract labour intensity has a negative effect on wages, implying that an increase in the proportion of contract workers leads to a decline in average wage levels. This finding indicates the growing importance of labour flexibility and its adverse implications for wage determination, especially in the context of weaker bargaining power of contract workers. Fourth, firm size is positively associated with wages, indicating that larger firms tend to pay higher wages due to higher productivity, economies of scale, and better financial capacity. This highlights the significance of firm-level characteristics in wage formation. Finally, ownership structure also influences wage determination, suggesting that institutional and regulatory differences between public and private sector enterprises affect wage-setting behaviour.

10. Policy Implications

The findings of the study have important policy implications for improving wage outcomes in India's organised manufacturing sector. First, since labour productivity has a strong positive impact on wages, policies should focus on enhancing productivity through skill development, training

programmes, and technological upgradation. Investment in human capital and industry-relevant skills can help improve worker efficiency and lead to higher wage levels. Second, the positive role of capital intensity suggests the need to promote industrial modernisation and adoption of advanced technologies. Policies encouraging capital investment, innovation, and digitalisation can support productivity growth and, in turn, improve wage outcomes. However, such policies should be accompanied by skill development initiatives to ensure that workers benefit from technological progress. Third, the negative impact of contract labour on wages highlights the need for better regulation of contract employment. Strengthening labour laws, ensuring minimum wage compliance, and extending social security benefits to contract workers can help reduce wage disparities and improve job quality. Fourth, the positive relationship between firm size and wages indicates the importance of supporting the growth of firms. Policies aimed at improving the business environment, access to finance, and ease of doing business can help firms expand, thereby enhancing their capacity to offer higher wages. Finally, the influence of ownership structure suggests that institutional frameworks play a role in wage determination. There is a need to promote fair wage practices across both public and private sectors by strengthening labour laws.

This study examines wage determination in India's organised manufacturing sector using a panel data framework and finds that wages are significantly influenced by labour productivity, capital intensity, contract labour intensity, firm size, and ownership structure, indicating that both economic efficiency and structural factors play a crucial role in shaping wage outcomes. The results show that productivity and capital deepening contribute positively to wages by enhancing efficiency and increasing demand for skilled labour, while the increasing reliance on contract labour exerts downward pressure on wages, reflecting growing labour market segmentation and weaker bargaining power. Firm size is found to positively influence wages due to economies of scale and higher productivity, whereas ownership structure highlights the role of institutional differences in wage-setting behaviour. The study contributes to the existing literature by providing a comprehensive and integrated empirical framework using state-industry level panel data, capturing both cross-sectional and time-series variations in wage dynamics. However, the analysis is subject to certain limitations, including the use of aggregated data which may mask firm-level heterogeneity, the exclusion of variables such as skill composition and institutional variations due to data constraints, and the reliance on a static panel framework that does not capture dynamic adjustments. Future research can extend this work by employing firm-level or worker-level datasets, incorporating dynamic panel models, and examining additional factors such as education, gender disparities, and regional differences to provide deeper insights into wage determination. Overall, the study concludes that while productivity growth and structural transformation support higher wages, the expansion of contract labour poses challenges for equitable wage distribution, thereby highlighting the need for balanced policy interventions that promote productivity, regulate labour flexibility, and ensure inclusive and sustainable wage growth in India's organised manufacturing sector.

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