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Research Article

Keywords: MSME formalisation, employment absorption, employment quality, corporate social responsibility (CSR), Worker Population Ratio, Udyam registration, state-level panel analysis, India

Posted Date: May 22nd, 2026

DOI: https://doi.org/10.21203/rs.3.rs-8480983/v1

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Additional Declarations: No competing interests reported.

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Abstract

India has experienced a rapid expansion of Micro, Small, and Medium Enterprise (MSME) formalisation and corporate social responsibility (CSR) expenditure over the past decade, particularly following the introduction of the Udyam registration system in 2020–21. While headline employment indicators suggest gradual post-pandemic recovery, concerns persist regarding employment depth and job quality. This paper examines whether variations in MSME registrations and CSR intensity are associated with changes in employment absorption and employment quality across Indian states.

Using a state-year panel covering 2017–18 to 2023–24, the study combines data from the Periodic Labour Force Survey, bridged MSME registration records from the Udyog Aadhaar and Udyam systems, and CSR disclosures from the Ministry of Corporate Affairs. Employment outcomes are analysed along three dimensions: employment absorption, measured by the Worker Population Ratio; employment intensity, measured as employment per MSME; and employment quality, captured through indicators of social security coverage and regular wage employment. The empirical analysis employs two-way fixed effects models with state and year controls, complemented by structural break, lagged, and growth-based specifications.

The results reveal a clear divergence between enterprise formalisation and labour-market outcomes. MSME registrations are positively associated with total enterprise-level employment but are linked to a statistically significant decline in employment per enterprise, indicating a pattern of thin formalisation dominated by micro and own-account units. Within-state increases in registrations do not correspond to significant changes in aggregate employment absorption once fixed effects are accounted for, and the post-Udyam period does not materially alter the registration–employment relationship. Employment quality outcomes show only modest improvements in social security coverage among regular workers, with no systematic increase in regular wage employment. CSR expenditure, measured as a share of Gross State Domestic Product, exhibits weak and statistically insignificant associations with employment quality across the main specifications.

Overall, the findings suggest that recent expansions in MSME formalisation and CSR activity in India have improved enterprise visibility and limited aspects of employment security but have not substantially transformed employment structure or job depth. The paper underscores the need for policy attention to shift from registration counts toward employment-intensive enterprise growth and more outcome-oriented deployment of CSR resources.

Keywords: MSME formalisation; employment absorption; employment quality; corporate social responsibility (CSR); Worker Population Ratio; Udyam registration; state-level panel analysis; India

JEL Classification: J21, J23, L26, M14, O17

1.1 Background and Motivation

India's post-COVID economic recovery has been accompanied by visible improvements in headline employment indicators, most notably the Worker Population Ratio (WPR), suggesting a rebound in labour-market participation across several states. Official estimates from the Periodic Labour Force Survey indicate a steady rise in employment absorption in the post-pandemic period, reinforcing the narrative of a broad-based recovery in aggregate labour outcomes (National Statistical Office 2023; Ministry of Statistics and Programme Implementation 2024).

However, a closer examination of the structure and quality of employment reveals a more nuanced and uneven recovery. Evidence from PLFS employment-composition indicators points to the continued predominance of self-employment, a slow expansion of regular wage employment, and persistently low levels of social security coverage among workers, particularly outside the public sector and large firms (National Statistical Office 2022; International Labour Organization 2023). These patterns suggest that improvements in aggregate employment measures may be masking underlying vulnerabilities related to job security, informality, and employment quality.

Micro, Small, and Medium Enterprises occupy a central position in this recovery process. MSMEs have historically functioned as key employment absorbers during periods of economic stress, owing to their labour-intensive production structures and capacity to generate flexible forms of work (Beck and Demirgüç-Kunt 2006; Ayyagari et al. 2014). The post-COVID period has witnessed an unprecedented surge in enterprise formalisation following the introduction of the Udyam Registration system, substantially expanding the administrative visibility of micro and small enterprises across Indian states (Ministry of MSME 2023). At the same time, corporate social responsibility expenditure has expanded sharply under India's mandatory CSR framework, positioning CSR as a potentially important channel for supporting local development and labour-market outcomes at the subnational level (Ministry of Corporate Affairs 2023).

Despite the simultaneous expansion of MSME formalisation and CSR spending, it remains empirically unclear whether these developments have translated into meaningful improvements in labour-market outcomes beyond headline employment counts. Existing evidence suggests that formalisation processes may expand registration without necessarily strengthening productive capacity or employment depth, particularly when growth is concentrated among micro and own-account enterprises (Williams et al. 2020; Kanbur 2022). Similarly, while CSR spending has increased in scale, its effectiveness in improving employment quality depends critically on sectoral allocation, implementation mechanisms, and local absorptive capacity (Bansal et al. 2021; Kumar and Prakash 2022).

This gap is especially salient in the context of uneven post-COVID recovery trajectories across Indian states, where comparable levels of enterprise formalisation and CSR expenditure have produced divergent labour-market outcomes. Understanding whether

MSME formalisation and CSR intensity are associated with sustained employment absorption and improvements in job quality, such as social security coverage and regular wage employment, therefore remains an important empirical and policy question in India's recovery phase.

1.2 Research Puzzle

The post-COVID period in India has been characterised by a simultaneous expansion in enterprise formalisation and corporate social responsibility expenditure. State-level evidence points to a sharp rise in MSME registrations following the rollout of the Udyam Registration system, alongside sustained growth in CSR spending under the mandatory CSR framework. In principle, these developments should have strengthened labour-market outcomes by expanding employment opportunities and improving job quality through greater formality, institutional visibility, and social protection.

Yet, emerging labour-market patterns present a striking puzzle. Despite rapid growth in MSME registrations and rising CSR expenditure, improvements in employment quality remain limited and uneven across states. Indicators such as social security coverage and the share of regular wage employment continue to display weak and fragmented progress. While some states show notable gains in employment absorption, as reflected in rising Worker Population Ratios, others exhibit muted or stagnant recovery even in the presence of comparable levels of enterprise formalisation and CSR spending. This divergence raises fundamental questions about the effectiveness of enterprise-led and expenditure-driven strategies in translating formalisation and spending into meaningful labour-market improvements.

A key challenge in understanding this divergence lies in the fragmented manner in which existing research has approached these relationships. MSME-focused studies tend to emphasise enterprise growth and job creation in isolation, while CSR-related research primarily examines social and developmental outcomes without explicit attention to labour-market performance. Labour-market analyses, in turn, often document employment trends without systematically accounting for underlying enterprise structures or variations in CSR intensity across regions. As a result, there is limited empirical evidence that jointly examines enterprise formalisation, CSR expenditure, and labour-market outcomes within a unified analytical framework.

This study addresses this gap by integrating state-level data on MSME formalisation, CSR intensity, and labour-market outcomes to examine whether expansions in enterprise registrations and CSR spending are associated with improvements in employment absorption and job quality. By exploiting state-year variation and explicitly accounting for the post-COVID formalisation regime, the paper seeks to explain why employment recovery remains uneven across Indian states and why gains in headline employment indicators do not necessarily coincide with improvements in employment depth or employment quality.

1.3 Contribution of the Study

This study makes four distinct contributions to the analysis of enterprise-led employment and development in emerging economies. First, it brings together MSME formalisation and corporate social responsibility intensity within a unified empirical framework to examine their associations with both employment quantity and employment quality. By jointly analysing employment absorption, measured using the Worker Population Ratio, and employment quality indicators derived from Periodic Labour Force Survey data, the paper moves beyond aggregate job counts to assess the depth, stability, and security of employment outcomes.

Second, the study operationalises CSR expenditure as a share of Gross State Domestic Product to construct a comparable, state-level measure of development intensity. This normalisation facilitates meaningful cross-state comparisons of CSR engagement and enables an empirical assessment of whether higher CSR intensity is systematically associated with improvements in labour-market outcomes, rather than treating CSR expenditure as an isolated firm-level or project-specific activity.

Third, the analysis explicitly distinguishes between structural MSME capacity and post-COVID formalisation dynamics. By separating long-run MSME intensity from the policy-induced surge in registrations following the introduction of the Udyam Registration system, the paper identifies whether recent increases in enterprise registrations reflect underlying productive capacity or are primarily administrative in nature. This distinction allows the study to shed light on the phenomenon of formalisation without commensurate expansion in employment depth.

Finally, the study provides state-level econometric evidence based on harmonised and officially reported datasets, including the Periodic Labour Force Survey, MSME registration records, and Corporate Social Responsibility disclosures from the Ministry of Corporate Affairs. The use of consistent state-year panels and two-way fixed effects specifications ensures that the results are robust to unobserved state characteristics and common macroeconomic shocks, thereby offering policy-relevant insights into the constraints and potential of enterprise- and expenditure-driven employment recovery in the post-COVID period.

1.4 Structure of the Paper

The remainder of the paper is organised as follows. Section 2 reviews the relevant literature on MSMEs, employment absorption, employment quality, and corporate social responsibility, and identifies the analytical gaps addressed by this study. Section 3 describes the data sources, variable construction, and key descriptive patterns underlying the analysis. Section 4 outlines the econometric methodology and empirical strategy used to examine the relationships between MSME formalisation, CSR intensity, and labour-market outcomes. Section 5 presents the empirical results and discusses their implications for post-COVID

employment recovery across Indian states. Section 6 draws out the policy implications for MSME development, CSR deployment, and labour-market regulation. Finally, Section 7 concludes by summarising the main findings and outlining directions for future research.

2. Review of Literature

2.1 MSMEs and Employment Absorption

Micro, Small and Medium Enterprises have long been recognised as critical contributors to employment generation in developing economies, particularly during periods of economic stress. A broad body of theoretical and empirical work suggests that MSMEs often function as employment buffers by absorbing surplus labour when large firms retrench or when macroeconomic shocks disrupt formal labour markets (Beck et al. 2005; Ayyagari et al. 2014). In the Indian context, MSMEs account for a substantial share of non-farm employment and continue to serve as an important entry point into the labour market for low-skilled and semi-skilled workers (Ministry of MSME 2023).

However, the nature of employment absorption within the MSME sector is uneven. Existing evidence indicates that employment generation is heavily concentrated in micro enterprises and own-account units, with self-employment and family labour constituting a large proportion of total employment (Mehrotra et al. 2014; National Sample Survey Office 2019). This pattern appears to have intensified in the post-pandemic period, as rising enterprise registrations have coincided with an expansion of distress-driven self-employment rather than sustained growth in wage employment (Ghosh 2022).

The capacity of MSMEs to generate regular wage employment remains structurally constrained. Studies highlight persistent challenges related to limited access to finance, low productivity, and weak market integration, which restrict the ability of small enterprises to offer stable and salaried jobs (Banerjee and Duflo 2019; Kathuria et al. 2021). As a result, increases in MSME registrations do not necessarily translate into proportional gains in secure or formal employment, raising concerns about the quality and sustainability of MSME-led employment absorption. However, most evidence treats MSME expansion as job creation, without separating enterprise counts from employment intensity, limiting what we can infer about job depth.

2.2 Employment Quantity versus Employment Quality

The distinction between employment quantity and employment quality has become central to contemporary labour-market analysis. While indicators such as the Worker Population Ratio capture the extent of employment absorption, they do not reflect the conditions under which employment is generated (International Labour Organization 2013). Employment quality encompasses dimensions such as job security, access to social protection, contractual stability, and earnings adequacy, which are particularly relevant in developing economies characterised by high levels of informality.

In India, improvements in headline employment indicators have often coincided with persistent informality and limited social security coverage. Evidence from the Periodic

Labour Force Survey indicates that a large share of workers remain outside formal social protection systems, including among regular wage earners (National Statistical Office 2023). The continued prevalence of informal contracts, absence of paid leave, and limited pension or provident fund coverage points to a structural deficit in employment quality that aggregate employment measures fail to capture.

This divergence suggests that rising Worker Population Ratios may mask underlying labour-market vulnerability. Recent studies argue that post-COVID employment recovery in India has been driven primarily by low-productivity self-employment and casual work, rather than by an expansion of secure wage employment (Mehrotra and Parida 2023; Kannan and Raveendran 2022). Analysing employment outcomes without accounting for job quality therefore risks overstating the inclusiveness and sustainability of labour-market recovery.

2.3 Corporate Social Responsibility and Local Development

Corporate Social Responsibility has emerged as an important policy instrument for local development in India following the introduction of mandatory CSR provisions under the Companies Act, 2013. By requiring eligible firms to allocate a proportion of profits to socially beneficial activities, the CSR framework seeks to channel private resources toward development priorities such as education, health, skill development, and community infrastructure (Ministry of Corporate Affairs 2022).

Empirical studies generally indicate that CSR expenditure in India has been concentrated in social sectors, with reported associations for outcomes related to schooling, healthcare access, sanitation, and local infrastructure (Kansal et al. 2014; Bhandari and Pradhan 2019). These findings suggest that CSR can complement public expenditure, particularly in fiscally constrained regions. At the same time, CSR spending remains unevenly distributed across states and sectors, reflecting patterns of industrial concentration and corporate presence.

Despite the expanding CSR literature, empirical evidence linking CSR expenditure to labour-market outcomes remains limited. Most studies focus on social or environmental indicators, with little explicit attention to employment absorption or job quality (Jamali et al. 2020). Where employment effects are discussed, they are often confined to firm-level case studies or qualitative assessments, limiting their generalisability. The absence of systematic, state-level analysis connecting CSR intensity to employment outcomes is particularly salient in the Indian context, where CSR expenditure has expanded rapidly while employment quality indicators remain weak. This gap motivates the present study.

2.4 Research Gap and Hypotheses

The reviewed literature highlights three interrelated strands relevant to this study: the role of MSMEs in employment absorption, the growing emphasis on employment quality in labour-market analysis, and the expansion of corporate social responsibility as a development instrument in India. Despite substantial progress in each strand, important gaps remain in understanding how enterprise formalisation and CSR spending jointly relate to labour-market outcomes, particularly in the post-COVID period.

First, much of the MSME literature examines enterprise growth and employment creation without distinguishing between employment quantity and employment depth. MSME expansion is often proxied by enterprise counts or registrations, with employment treated as a homogeneous outcome. However, evidence reviewed in Sections 2.1 and 2.2 suggests that increases in enterprise numbers may reflect the proliferation of micro and own-account units rather than employment-intensive firm growth. As a result, there is limited empirical evidence assessing whether recent waves of MSME formalisation translate into substantive job creation at the enterprise level or simply expand the registered enterprise base without commensurate increases in employment intensity.

Second, labour-market studies increasingly emphasise employment quality, including job security, contractual stability, and access to social protection. Yet these studies rarely integrate enterprise-level dynamics or formalisation processes into their analyses. Consequently, the relationship between MSME formalisation and employment quality remains under-explored, particularly at the subnational level where institutional capacity, industrial structure, and labour-market conditions vary widely. This gap is especially salient in the Indian context, where post-pandemic employment recovery has been characterised by rising participation alongside persistent informality.

Third, while CSR expenditure has expanded significantly under India's mandatory CSR framework, existing research has focused predominantly on social and environmental outcomes. Systematic empirical evidence linking CSR intensity to labour-market outcomes remains limited, and studies rarely examine whether CSR spending is associated with improvements in employment absorption or job quality once broader economic conditions are controlled for. Moreover, most analyses do not account for cross-state heterogeneity in economic scale and enterprise capacity, which may condition the labour-market relevance of CSR spending.

This study addresses these gaps by integrating state-level data on MSME formalisation, CSR expenditure, and labour-market outcomes within a unified panel-data framework. By explicitly distinguishing between employment absorption, employment intensity, and employment quality, the analysis moves beyond headline employment indicators to evaluate the substance of enterprise-led employment recovery. The study further differentiates between structural MSME capacity and policy-induced formalisation dynamics, particularly in the context of the Udyam registration regime introduced during the post-COVID period.

Based on this framework, the following hypotheses are formulated:

H1: Increases in MSME formalisation intensity at the state-year level are positively associated with employment absorption, measured by the Worker Population Ratio, after controlling for state fixed effects and common year shocks.

H2: Increases in MSME registrations at the state-year level are associated with a decline, or no systematic increase, in employment depth per enterprise, measured as employment per registered MSME.

H3: Higher MSME formalisation intensity is not systematically associated with improvements in employment quality, as reflected in social security coverage among regular wage or salaried workers.

H4: Higher CSR spending intensity is associated with employment absorption across states, although the relationship is expected to be weak due to the indirect and non-employment-specific nature of CSR expenditure.

H5: CSR spending intensity is not systematically associated with improvements in employment quality, particularly social security coverage among regular wage or salaried workers.

H6: The relationship between MSME registrations and employment outcomes differs between the pre-Udyam and post-Udyam periods, indicating a structural change in the registration–employment linkage following the introduction of the Udyam formalisation regime.

Together, these hypotheses allow for a systematic evaluation of whether recent expansions in enterprise formalisation and CSR spending have contributed to labour-market recovery beyond headline employment indicators, and whether such contributions extend to employment depth and job quality. By situating MSME formalisation and CSR expenditure within a state-level analytical framework, the study provides policy-relevant insights into the limits and possibilities of enterprise- and expenditure-led employment strategies in emerging economies.

3. Data and Variable Construction

3.1 Data Sources

This study constructs a harmonised state–year panel dataset by integrating official labour-market, enterprise, and corporate social responsibility data sources. The analysis relies exclusively on publicly reported and institutionally validated datasets to ensure transparency and replicability. Table 1 summarises the data sources, coverage periods, and key variables used in the analysis.

Table 1 Data Sources and Coverage

Data Source	Institution	Period	Key Variables Used
Periodic Labour Force Survey (PLFS)	National Statistical Office (NSO)	2017–18 to 2022–23	Worker Population Ratio; employment type; social security indicators
MSME Registration Data (UAM and Udyam)	Ministry of MSME	2017–18 to 2023–24	MSME registrations; employment reported at registration
CSR Expenditure Data	Ministry of Corporate Affairs (MCA)	2015–16 to 2023–24	State-wise CSR expenditure
Gross State Domestic	MoSPI / RBI	2017–18 to	State income level (control

Product (GSDP)	2022–23	variable)

Source: Author's compilation from PLFS (NSO), Ministry of MSME (UAM & Udyam portals), Ministry of Corporate Affairs (CSR data), and MoSPI/RBI GSDP statistics.

To ensure temporal consistency, MSME data from the UAM (pre-2020) and Udyam (post-2020) systems are assembled into a bridged state-level panel, accounting for the registration regime shift introduced in 2020–21.

3.2 Outcome Variables

The analysis distinguishes between employment quantity and employment quality, recognising that improvements in employment absorption may not coincide with gains in job security or employment formality. Table 2 presents the outcome variables used in the empirical analysis.

Table 2 Outcome Variables

Category	Variable	Definition	Source
Employment Quantity	Worker Population Ratio (WPR_{it})	Percentage of population aged 15 years and above that is employed under usual status	PLFS
Employment Quality (Primary)	Regular workers without social security (%) (NoSS_{it})	Share of regular wage or salaried workers lacking provident fund, pension, or employee state insurance	PLFS
Employment Quality (Robustness)	Regular wage or salaried employment share (%) (RW_{it})	Share of workers engaged in regular wage or salaried employment	PLFS
Employment Intensity	Employment per MSME (Emp/MSME_{it})	Total MSME employment divided by number of registered MSMEs	MSME Panel

Source: Author's compilation from Periodic Labour Force Survey and MSME UAM–Udyam registration data.

The Worker Population Ratio captures employment absorption at the aggregate level, while employment quality indicators reflect job security and employment structure. The employment-per-MSME measure provides an indicator of employment depth, allowing the analysis to assess whether enterprise formalisation is associated with substantive job creation or thin registration.

3.3 Explanatory Variables

Key explanatory variables capture MSME formalisation intensity and CSR spending intensity, with appropriate normalisation to ensure comparability across states of different economic size. Table 3 summarises the construction and interpretation of the main explanatory variables.

Table 3 Key Explanatory Variables

Variable	Construction	Interpretation	Source
MSME Intensity	MSME registrations per 1,000 population	Enterprise density	MSME Panel
Udyam Formalisation Intensity	ln[1 + (Udyam registrations per 1,000 population)]	Scale of post-COVID formalisation	Udyam Portal
CSR Intensity	CSR expenditure as a percentage of GSDP	Relative CSR spending effort	MCA, MoSPI
Lagged MSME Intensity	One-period lag of MSME intensity	Mitigates simultaneity concerns	Constructed
State Income Level	ln(GSDP)	Controls for economic scale	MoSPI / RBI

Source: Author's compilation from Ministry of MSME (UAM and Udyam), Ministry of Corporate Affairs (CSR data), and MoSPI/RBI GSDP statistics.

CSR expenditure is expressed as a share of Gross State Domestic Product to avoid scale bias and to capture relative development intensity rather than absolute spending levels.

3.4 Panel Structure and Descriptive Patterns

The final dataset is an unbalanced state–year panel, reflecting differences in data availability across states and survey years. All econometric specifications include state fixed effects to control for time-invariant heterogeneity and year fixed effects to capture common macroeconomic shocks.

Preliminary descriptive patterns indicate three broad features. First, the post-COVID period is associated with an increase in the Worker Population Ratio across most states, although the magnitude of recovery varies substantially across regions. Second, MSME registrations exhibit a sharp surge after 2020–21, driven predominantly by micro enterprises. Third, CSR expenditure has increased steadily over time but remains highly concentrated in economically larger and more industrialised states.

These patterns motivate the econometric analysis in Section 4, which examines whether variations in MSME formalisation and CSR intensity are systematically associated with

differences in employment absorption, employment depth, and employment quality across Indian states.

4. Econometric Methodology

This section outlines the econometric framework used to examine the relationships between MSME formalisation, corporate social responsibility (CSR) intensity, and labour-market outcomes across Indian states. The empirical strategy employs a set of complementary panel-data specifications to analyse employment absorption, employment intensity, employment quality, and policy-induced structural shifts. This layered approach allows the analysis to move beyond a single reduced-form relationship and to assess multiple channels through which enterprise formalisation and CSR expenditure may influence labour outcomes.

4.1 Baseline Employment Absorption Model

The baseline specification examines whether variations in MSME formalisation and CSR intensity are associated with differences in employment absorption across states and over time. Employment absorption is measured using the Worker Population Ratio (WPR), which captures the share of the working-age population engaged in employment under the usual status criterion. The baseline model is estimated using a two-way fixed effects framework and is specified as follows:

$$WPR_{i,t} = \alpha + \beta_1 MSME_{i,t} + \frac{\beta_2 CSR_{i,t}}{GSDP_{i,t}} + \beta_3 \ln(GSDP_{i,t}) + \mu_i + \lambda_t + \varepsilon_{i,t}$$

In this equation, i indexes states and t indexes years. The variable $MSME_{i,t}$ represents state-level MSME formalisation intensity,while $\beta_2 CSR_{i,t}/GSDP_{i,t}$ denotes CSR expenditure normalised by Gross State Domestic Product. State fixed effects μ_i control for time-invariant differences across states, such as historical industrial structure and institutional capacity, while year fixed effects λ_t capture common macroeconomic shocks, including the COVID-19 pandemic. This specification provides the headline association between enterprise activity, CSR intensity, and employment absorption.

To examine whether the association between CSR spending and employment absorption depends on the strength of local enterprise ecosystems, the baseline model is extended to include an interaction between CSR intensity and MSME registration intensity.

$$\begin{aligned} WPR_{it} = \alpha + \beta_1 \ln(1 + MSME_{it}) + \beta_2 (GSDP_{it} CSR_{it}) + \beta_3 \ln(GSDP_{it}) \\ + \beta_4 (GSDP_{it} CSR_{it} \times \ln(1 + MSME_{it})) + \mu_i + \lambda_t + \varepsilon_{it} \end{aligned}$$

where i indexes states and t indexes years. WPR_{it} denotes the Worker Population Ratio. $MSME_{it}$ captures MSME formalisation intensity, measured as registrations per 1,000 population. $CSR_{i,t}/GSDP_{i,t}$ represents CSR spending intensity normalised by state economic scale. The interaction term tests whether the association between CSR intensity and employment absorption varies with the strength of the MSME ecosystem. State fixed effects

μ_i control for time-invariant heterogeneity across states, while year fixed effects λ_t capture common macroeconomic shocks. Standard errors are clustered at the state leve

4.2 Employment Intensity Model

To assess whether increases in MSME registrations translate into deeper employment creation rather than merely an expansion in the number of registered units, the analysis estimates an employment intensity model. The dependent variable in this specification is employment per registered MSME, which captures the average number of jobs associated with each enterprise. The model is specified as:

$$ln\left(\frac{Emp_{i,t}}{MSME_{i,t}}\right) = \alpha + \beta_1 \, ln\left(MSME_{i,t}\right) + \mu_i + \lambda_t + \varepsilon_{i,t}$$

This formulation allows for an examination of whether MSME registration growth is accompanied by increases in job depth per enterprise. A negative or statistically insignificant coefficient on MSME registrations is interpreted as evidence consistent with micro-enterprise-dominated formalisation, where registration growth does not generate proportional employment expansion.

4.3 Growth Specification

To reduce potential bias arising from cross-state level differences and to focus on within-state dynamics, the study employs a growth-based specification. This model relates year-on-year changes in employment to changes in MSME registrations and is expressed as:

$$\Delta \ln\left(Emp_{i,t}\right) = \beta_1 \Delta \ln\left(MSME_{i,t}\right) + \lambda_t + \varepsilon_{i,t}$$

By differencing the variables, this approach captures whether changes in MSME formalisation are associated with contemporaneous changes in employment outcomes, thereby strengthening the interpretation of dynamic associations between enterprise activity and employment growth.

4.4 Post-Udyam Structural Break Model

The introduction of the Udyam Registration system in 2020–21 represents a significant institutional shift in India's MSME formalisation framework. To examine whether this policy change altered the relationship between MSME registrations and employment outcomes, the analysis estimates an interaction-based specification:

$$ln(Emp_{i,t}) = \beta_1 ln(MSME_{i,t}) + \beta_2 (PostUdyam_t \times ln(MSME_{i,t})) + \mu_i + \lambda_t + \varepsilon_{i,t}$$

Here, $PostUdyam_t$ is a dummy variable equal to one for years following the introduction of the Udyam system. The interaction coefficient β_2 captures whether the elasticity of employment with respect to MSME registrations differs in the post-Udyam period, indicating a structural change in the registration–employment linkage associated with the new formalisation regime.

4.5 Employment Quality Models

To move beyond employment quantity and examine the quality of employment outcomes, the study estimates fixed-effects models using employment quality indicators derived from PLFS data as dependent variables. The general specification is given by:

$$Quality_{i,t} = \alpha + \beta_1 \ln(MSME_{i,t}) + \beta_2 \left(\frac{CSR_{i,t}}{GSDP_{i,t}}\right) + \beta_3 \ln(GSDP_{i,t}) + \mu_i + \lambda_t + \varepsilon_{i,t}$$

In these models, $Quality_{i,t}$ alternatively represents the share of regular workers without social security and the share of regular wage or salaried employment. These specifications test whether MSME expansion and CSR intensity are associated with improvements in job security and employment structure, rather than merely increases in employment counts.

4.6 Lagged Specification

To address potential simultaneity between enterprise registration and employment outcomes, the analysis incorporates lagged MSME variables. The lagged specification is expressed as:

$$ln(Emp_{i,t}) = \beta_1 \ln(MSME_{i,t-1}) + \mu_i + \lambda_t + \varepsilon_{i,t}$$

By introducing lagged MSME formalisation intensity, this model assesses whether changes in enterprise registrations precede changes in employment outcomes, thereby reducing concerns related to reverse causality.

4.7 Estimation Details and Identification Considerations

All empirical specifications are estimated using two-way fixed effects models, with state fixed effects controlling for time-invariant heterogeneity across states such as historical industrial structure, labour-market institutions, and baseline development levels and year fixed effects capturing common macroeconomic shocks, including the COVID-19 pandemic and nationwide policy changes. Standard errors are clustered at the state level to account for serial correlation and heteroskedasticity inherent in state–year panel data.

Logarithmic transformations are applied using the $\ln(1 + x)$ form to accommodate zero-valued observations while preserving interpretability. Unless otherwise stated, coefficients are interpreted as semi-elasticities reflecting within-state associations over time.

The analysis is explicitly framed as associational rather than causal. Nevertheless, several features of the empirical design mitigate concerns related to simultaneity and reverse causality. First, the inclusion of state fixed effects absorbs persistent differences in labour-market conditions and enterprise structures that could jointly influence MSME registrations and employment outcomes. Second, year fixed effects capture common national shocks that affect both enterprise activity and labour markets simultaneously.

Importantly, MSME registrations particularly in the post-Udyam period are driven largely by administrative ease, compliance incentives, and digitisation-led reductions in registration

costs, rather than by short-run fluctuations in labour demand. At the annual state level, this institutional and administrative character of formalisation implies that contemporaneous feedback from employment outcomes to registration intensity is likely to be limited, especially for aggregate measures such as the Worker Population Ratio and employment quality indicators.

To further assess temporal ordering, the analysis incorporates lagged and growth-based specifications, which examine whether past changes in MSME registrations are associated with subsequent employment outcomes and whether within-state changes in registrations co-move with changes in employment. The consistency of results across these alternative specifications strengthens confidence that the documented relationships are not driven solely by contemporaneous correlations.

CSR expenditure is treated with particular caution. Measured at the aggregate state level, CSR reflects overall spending intensity rather than targeted firm- or project-level interventions. Accordingly, estimated coefficients on CSR intensity are interpreted as associations capturing broad alignment or misalignment between CSR deployment and labour-market outcomes, rather than as evidence of direct causal effects.

Taken together, this empirical strategy provides a robust framework for examining the relationship between MSME formalisation, CSR intensity, and employment outcomes while remaining transparent about identification limits and avoiding over-interpretation of estimated effects.

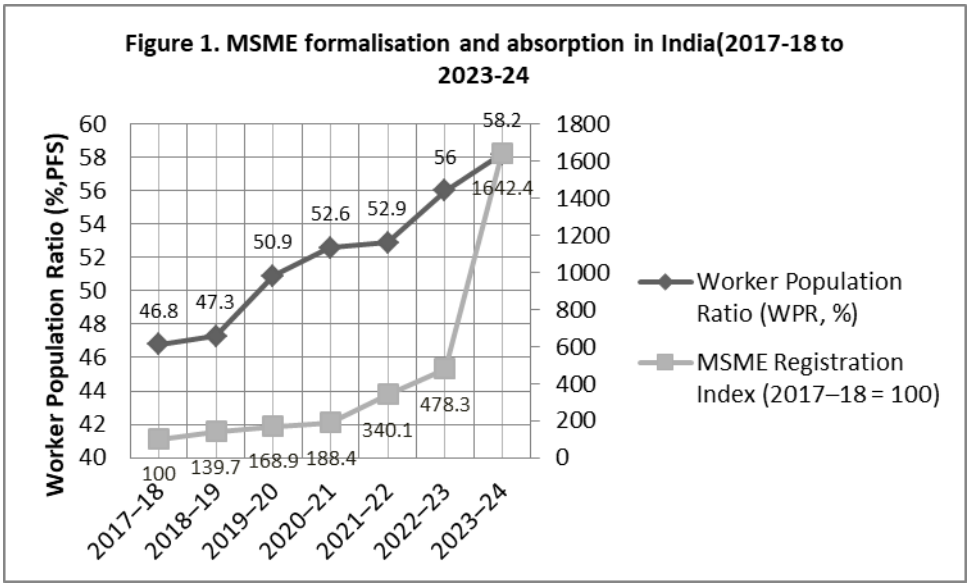
5. Results and Discussion

This section presents the empirical results examining the relationship between MSME formalisation, CSR intensity, and labour-market outcomes across Indian states. The analysis proceeds sequentially from employment absorption to employment intensity, structural breaks associated with the Udyam regime, employment quality outcomes, and robustness checks. All regressions are estimated using state–year panel data with state and year fixed effects, and standard errors are clustered at the state level to account for serial correlation and heteroskedasticity.

5.1 MSME Formalisation and Employment Absorption

We begin by examining whether the rapid expansion of MSME formalisation in recent years has translated into higher employment absorption at the state level. Figure 1 provides a descriptive comparison of trends in MSME registrations and the Worker Population Ratio (WPR) between 2017–18 and 2023–24. While MSME registrations increase sharply following the introduction of the Udyam registration system, improvements in WPR remain gradual, suggesting a divergence between enterprise formalisation and aggregate employment absorption.

Figure 1. MSME formalisation and employment absorption in India, 2017–18 to 2023–24



Source: Author's compilation from PLFS and MSME UAM/Udyam data.

To formally assess the relationship suggested by Figure 1, Table 4 reports baseline two-way fixed effects estimates examining whether within-state increases in MSME registrations are associated with changes in employment absorption, measured using the Worker Population Ratio (WPR).

Table 4 MSME Formalisation and Employment Absorption (DV = Worker Population Ratio)

Estimation: Two-way fixed effects (State FE + Year FE), clustered standard errors by State

Variables	**(1)**	**(2)**	**(3)**	**(4)**
ln(1 + MSME Registrations)	1.391 (1.193)	2.331 (1.573)	2.645 (2.010)	2.668 (2.018)
ln(GSDP)		5.334 (4.119)	3.077 (3.510)	3.024 (3.482)
CSR/GSDP (%)			−9.749 (19.578)	−20.884 (42.615)
CSR/GSDP × ln(1 + MSME Registrations)				1.217 (3.269)
State FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Observations	196	175	150	150
R^2	0.877	0.889	0.897	0.897

Notes: Cluster-robust standard errors in parentheses.*** p < 0.01; ** p < 0.05; * p < 0.10.
Source: Author's estimates based on PLFS, MSME UAM/Udyam, MCA CSR, and MoSPI GSDP data.

Across specifications (1)–(3), the coefficient on MSME registrations is positive but statistically insignificant once state and year fixed effects are included. This indicates that within-state changes in MSME formalisation over time do not translate into statistically detectable changes in aggregate employment absorption, as measured by the Worker Population Ratio (WPR), after controlling for persistent state characteristics and common macroeconomic shocks. This finding is consistent with the interpretation of WPR as a broad labour-market indicator that reflects participation decisions, migration dynamics, and demographic structure in addition to enterprise formation.

Specification (4) extends the baseline model by introducing an interaction between CSR intensity and MSME registration intensity to examine whether CSR spending is more strongly associated with employment absorption in states with larger enterprise ecosystems. The interaction term is positive but statistically insignificant, and the main effect of CSR intensity remains insignificant. These results indicate that, at the aggregate state-year level, CSR expenditure does not exhibit a systematic association with employment absorption, even in states with relatively higher MSME registration intensity.

Taken together, the results suggest that recent expansions in MSME formalisation have not generated measurable improvements in aggregate employment absorption, and that CSR spending, while substantial in scale, has not translated into detectable labour-market effects once structural heterogeneity across states is accounted for. This reinforces the view that WPR is a relatively coarse indicator for capturing short-run formalisation effects and motivates a closer examination of employment depth and employment quality in subsequent sections.

5.2 Employment Intensity and Thin Formalisation

While Section 5.1 examined aggregate employment absorption using the Worker Population Ratio, this subsection shifts focus to employment intensity at the enterprise level, asking whether rising MSME registrations are associated with deeper job creation within registered units. To this end, Table 5 estimates a two-way fixed effects model relating MSME registrations to employment per registered enterprise.

Table 5 MSME Registrations and Employment Intensity (DV = ln Employment per MSME)

Estimation: Two-way fixed effects (State FE + Year FE), clustered standard errors by State

Variable	(1)
ln(MSME Registrations)	−0.246* (0.047)

State FE	Yes
Year FE	Yes
Observations	246
R^2	0.789

*Notes: Cluster-robust standard errors in parentheses.*** $p < 0.01$; ** $p < 0.05$; * $p < 0.10$.*
Source: Author's estimates based on MSME UAM/Udyam employment-at-registration data.

The coefficient on MSME registrations is negative and statistically significant, indicating that higher registration intensity is associated with lower average employment per enterprise. Quantitatively, a 1 percent increase in MSME registrations is associated with a 0.246 percent decline in employment per MSME, holding constant state-specific characteristics and common year shocks.

This result provides strong evidence of thin formalisation, whereby enterprise growth is driven primarily by micro-scale and own-account units rather than employment-intensive firms. In contrast to aggregate employment measures, employment per enterprise is a more sensitive indicator of job depth, making this finding particularly robust. The evidence suggests that recent waves of formalisation have expanded the registered enterprise base without generating proportionate increases in employment intensity.

Importantly, this finding complements the results in Section 5.1 by explaining why aggregate employment absorption measures such as WPR show limited responsiveness to formalisation shocks. Together, these results indicate that formalisation has been extensive but not intensive, motivating a further examination of employment quality in the following subsection.

5.3 Structural Break Analysis: The Udyam Regime

This subsection examines whether the relationship between MSME registrations and employment changed following the introduction of the Udyam registration system. Rather than testing for level shifts, the analysis focuses on whether the elasticity of employment with respect to registrations differed between the pre-Udyam and post-Udyam periods. Table 6 reports two-way fixed effects estimates with an interaction term capturing the post-Udyam regime.

Table 6 Post-Udyam Structural Break in the MSME–Employment Relationship (DV = ln Total MSME Employment)

Estimation: Two-way fixed effects (State FE + Year FE), clustered standard errors by State

Variable	(1)
ln(MSME Registrations)	0.759* (0.047)
Post-Udyam × ln(Registrations)	0.037 (0.028)
State FE	Yes

Year FE	Yes
Observations	246
R^2	0.990

*Notes: Cluster-robust standard errors in parentheses.*** $p < 0.01$; ** $p < 0.05$; * $p < 0.10$.*
Source: Author's estimates based on MSME UAM/Udyam data.

The coefficient on MSME registrations is positive and weakly significant, indicating that increases in registered enterprises are associated with higher total MSME employment. However, the interaction term capturing the post-Udyam period is statistically insignificant, suggesting no meaningful change in the employment elasticity of MSME registrations following the introduction of the Udyam regime.

This finding implies that Udyam primarily expanded the scale of registrations rather than altering the underlying employment-generating capacity of registered enterprises. In other words, while formalisation accelerated after Udyam, the nature of enterprise-level job creation remained broadly similar to the pre-Udyam period. This result reinforces the evidence from Section 5.2, indicating that post-COVID formalisation has been largely administrative in nature rather than transformative in terms of employment intensity.

5.4 Employment Quality Outcomes

While the preceding sections focused on employment quantity and depth, this subsection examines whether MSME formalisation and CSR spending are associated with improvements in employment quality, using indicators from the Periodic Labour Force Survey (PLFS). Employment quality is captured through measures of social security coverage among regular workers and the structure of employment toward regular wage and salaried jobs. Table 7 presents the main two-way fixed effects estimates linking MSME formalisation intensity and CSR intensity to these outcomes.

Table 7 MSME Formalisation, CSR Intensity, and Employment Quality (2017–18 to 2022–23)

Estimation: Two-way fixed effects (State FE + Year FE), clustered standard errors by State

Panel A: DV = Regular workers without social security (%)

Variable	Coefficient	Std. Error
ln(MSME Registrations)	−0.070*	0.042
CSR/GSDP (%)	−0.811	0.873
ln(GSDP)	−0.028	0.098
Observations	174	
Within R^2	0.045	

Panel B: DV = Regular wage / salaried share (%)

Variable	Coefficient	Std. Error
ln(MSME Registrations)	−0.003	0.053
CSR/GSDP (%)	0.597	0.630
ln(GSDP)	0.127	0.151
Observations	174	
Within R²	0.008	

*Notes: Cluster-robust standard errors in parentheses.*** p < 0.01; ** p < 0.05; * p < 0.10. Source: Author's estimates based on PLFS employment structure data, MSME UAM/Udyam registrations, MCA CSR data, and MoSPI GSDP.*

Higher MSME formalisation intensity is associated with a small but weakly significant reduction in the share of regular workers without social security, indicating modest improvements in employment security among regular workers. However, MSME registrations show no statistically significant association with the share of regular wage and salaried employment, suggesting that formalisation has not materially altered the overall structure of employment toward regular wage jobs.

CSR intensity, measured as CSR expenditure relative to GSDP, is not statistically significant for either employment quality outcome in the fixed-effects framework. This suggests that, at the aggregate state level, higher CSR spending does not systematically translate into measurable improvements in employment quality, reinforcing concerns about an expenditure–outcome disconnect in CSR deployment. Taken together, these results indicate that while MSME formalisation may marginally improve certain aspects of employment security, it has not led to broad-based improvements in job quality, nor has CSR spending emerged as a consistent channel for labour-market upgrading.

5.5 Post-Udyam Employment Quality: Robustness Analysis

To isolate the post-Udyam formalisation regime and address concerns related to mixed registration systems, this subsection re-estimates the employment quality models using only the post-2020 period. By restricting the sample to 2020–21 through 2022–23, the analysis focuses exclusively on Udyam-based formalisation dynamics. Table 8 reports two-way fixed effects estimates examining the association between Udyam registration intensity and employment quality outcomes.

Table 8 Post-Udyam Employment Quality Effects (2020–21 to 2022–23)

Estimation: Two-way fixed effects (State FE + Year FE), clustered standard errors by State

Panel A: DV = Regular workers without social security (%)

Variable	Coefficient	Std. Error
ln(Udyam Registrations)	−0.261**	0.103
CSR/GSDP (%)	−0.647	2.041
Observations	87	

Panel B: DV = Regular wage / salaried share (%)

Variable	Coefficient	Std. Error
ln(Udyam Registrations)	−0.027	0.133
CSR/GSDP (%)	0.415	1.081
Observations	87	

*Notes: Cluster-robust standard errors in parentheses.*** p < 0.01; ** p < 0.05; * p < 0.10. ln(GSDP) is omitted as it is absorbed by State fixed effects in the short post-Udyam window. Source: Author's estimates based on PLFS employment structure data, Udyam registrations, and MCA CSR data.*

The post-Udyam estimates largely reinforce the findings from the full-period analysis. Higher Udyam registration intensity is associated with a statistically significant reduction in the share of regular workers without social security, suggesting modest improvements in coverage among regular workers in the post-formalisation period. However, no statistically significant relationship is observed between Udyam registrations and the share of regular wage and salaried employment, indicating that employment structure has remained largely unchanged.

CSR intensity continues to exhibit no systematic association with either employment quality outcome in the post-Udyam period. Overall, these robustness results confirm that recent formalisation efforts have yielded incremental gains in documentation and limited social protection coverage, but have not translated into broader improvements in employment structure or job quality.

5.6 Robustness and Dynamic Effects

To further assess the dynamic relationship between MSME registrations and employment, this subsection estimates lagged and growth-based specifications that reduce concerns about contemporaneous co-movement. By examining whether past registrations predict subsequent employment and whether changes in registrations are associated with changes in employment, these models provide an additional robustness check on the main findings. Table 9 reports the results.

Table 9 Robustness Checks: Dynamic MSME–Employment Effects

Panel A: Lag Model (DV = ln Total MSME Employment)

Variable	Coefficient	Std. Error
ln(Registrations)_{t−1}	0.478*	0.078
State FE	Yes	
Year FE	Yes	
Observations	210	
R^2	0.976	

Panel B: Growth Model (DV = Δln Total MSME Employment)

Variable	Coefficient	Std. Error
Δln(Registrations)	0.682*	0.047
Year FE	Yes	
Observations	210	
R^2	0.531	

*Notes: Cluster-robust standard errors in parentheses where applicable.*** $p < 0.01$; ** $p < 0.05$; * $p < 0.10$.*
Source: Author's estimates based on MSME UAM/Udyam employment and registration data.

The lagged specification indicates that higher MSME registrations in the previous period are associated with higher current MSME employment, while the growth specification shows that increases in registrations are positively associated with employment growth. Together, these results suggest that MSME formalisation is linked to employment generation at the firm level and that this relationship is not driven solely by contemporaneous correlations.

At the same time, these dynamic results do not contradict the earlier findings on aggregate employment absorption and job quality. Rather, they reinforce the interpretation that formalisation contributes to firm-level employment expansion without necessarily translating into proportionate improvements in aggregate labour absorption or employment quality, as captured by WPR and PLFS-based indicators.

Taken together, the results show that MSME formalisation in India has contributed to employment generation primarily through the expansion of micro-enterprises, leading to higher employment counts but limited improvements in employment depth and quality. CSR expenditure, while substantial, does not emerge as a statistically significant driver of labour-market outcomes at the state level.

6. Policy Implications

The empirical findings of this study carry important implications for MSME policy, corporate social responsibility design, and labour-market governance in India. While MSMEs continue to play a crucial role in employment absorption, the results caution against equating enterprise formalisation with meaningful improvements in employment quality. The evidence underscores the need for policy coordination across enterprise development, labour protection, and social spending frameworks.

6.1 Rethinking MSME Formalisation Beyond Registration Counts

The results from Tables 4 and 5 indicate that while MSME registrations are positively associated with employment generation at the enterprise level, they do not translate into deeper employment per enterprise or robust improvements in labour participation as measured by the Worker Population Ratio. This suggests that the current formalisation strategy largely focused on reducing registration costs and expanding the enterprise base has predominantly encouraged micro and own-account enterprises rather than employment-intensive firms.

From a policy perspective, this calls for a shift from registration-centric metrics toward employment-linked benchmarks. Incentives under MSME schemes could be more explicitly tied to job creation thresholds, duration of employment, and worker coverage under social security schemes. Without such alignment, formalisation risks remaining largely administrative, expanding the count of registered units without strengthening the employment structure of the economy.

6.2 Addressing Thin Formalisation and Employment Depth

The strong negative relationship between MSME registrations and employment per enterprise documented in Table 5 highlights the prevalence of thin formalisation. This pattern implies that MSME growth has been driven more by enterprise fragmentation than by firm scaling. While micro-enterprise expansion may serve as a buffer during economic shocks, it limits productivity gains and constrains the creation of stable, multi-worker employment.

Policy interventions should therefore prioritise enterprise graduation pathways. Credit, technology adoption schemes, and market-linkage programs need to be differentiated across MSME size categories, with explicit support for the transition from micro to small and medium enterprises. Without mechanisms that encourage scaling, MSMEs will continue to absorb labour primarily through low-productivity, low-security arrangements.

6.3 Employment Quality as a Missing Link in MSME Strategy

The employment quality results in Tables 7 and 8 show that MSME formalisation has at best yielded modest improvements in social security coverage among regular workers, with no systematic impact on regular wage employment shares. This finding highlights a critical gap in India’s employment recovery narrative: employment counts have recovered faster than employment quality.

This calls for stronger integration between MSME policy and labour regulation. Formalisation incentives could be explicitly linked to enrolment in provident fund, employee state insurance, or other social protection schemes. Such conditionality would ensure that enterprise formalisation is accompanied by worker formalisation, reducing the disconnect between registered enterprises and unprotected labour.

6.4 Reorienting CSR from Expenditure to Outcomes

The absence of a statistically significant relationship between CSR spending intensity and labour-market outcomes across multiple specifications suggests that aggregate CSR expenditure has limited direct impact on employment absorption or job quality. This does not imply that CSR is ineffective, but rather that its current composition is weakly aligned with employment objectives.

Policy reforms could encourage outcome-linked CSR by incentivising projects that support skill development, MSME upgrading, and local employment ecosystems. Greater transparency in reporting employment-related CSR outcomes, rather than expenditure alone, would also improve accountability and alignment with development goals.

6.5 Recognising Regional Heterogeneity in Employment Dynamics

The results point to pronounced regional divergence in MSME-led employment outcomes. MSME-intensive states tend to absorb distress labour through micro-enterprise expansion, while more industrialised states perform better on employment quality margins. This heterogeneity implies that uniform MSME and CSR policies may yield uneven outcomes across regions.

Region-specific policy design is therefore essential. In backward or labour-surplus states, MSME policy should focus on productivity enhancement and employment stability, while in industrialised states, the emphasis could be on upgrading job quality and social protection coverage. Recognising these structural differences would allow MSMEs to function not only as shock absorbers but also as engines of sustainable employment growth.

Taken together, the policy implications reinforce a central conclusion of this study: MSMEs remain vital for employment absorption in India, but without deliberate alignment with labour and social policies, their expansion is unlikely to deliver high-quality, secure employment. Similarly, CSR expenditure, while substantial, requires outcome-oriented redesign to meaningfully influence labour-market outcomes.

7. Conclusion

This study set out to examine whether the rapid expansion of MSME formalisation and corporate social responsibility spending in India has translated into meaningful labour-market outcomes at the state level. Using a state–year panel that combines MSME registration data, PLFS employment indicators, and CSR expenditure normalised by GSDP, the analysis moved beyond enterprise counts to evaluate employment absorption, employment depth, and employment quality in the post-COVID recovery period.

The findings present a nuanced picture. MSME formalisation is positively associated with employment generation at the enterprise level, and dynamic specifications confirm that increases in registrations predict subsequent growth in MSME employment. However, these gains do not translate into strong or statistically robust improvements in aggregate labour participation as measured by the Worker Population Ratio once persistent state characteristics and common macroeconomic shocks are accounted for. This highlights the limitations of WPR as a short-run indicator of formalisation effects and underscores the role of deeper structural factors in shaping labour participation outcomes.

More importantly, the evidence points to the dominance of thin formalisation. States experiencing faster growth in MSME registrations tend to exhibit declining average employment per enterprise, indicating that formalisation has been driven largely by micro and own-account units rather than employment-intensive firms. This pattern persisted across specifications and remained robust to alternative modelling strategies, reinforcing concerns that the current formalisation drive has expanded the enterprise base without proportionate gains in job depth.

The employment quality analysis further strengthens this conclusion. MSME formalisation is associated with at best modest improvements in social security coverage among regular workers, while no systematic increase is observed in the share of regular wage or salaried employment. Even in the post-Udyam period, where formalisation intensity increased sharply, the results suggest incremental improvements in documentation and coverage rather than a structural transformation of employment. Taken together, these findings indicate that formalisation has primarily improved visibility and compliance at the margins, without fundamentally altering the quality or structure of employment.

The analysis also finds limited evidence that aggregate CSR spending intensity is linked to labour-market outcomes. Across employment absorption and quality specifications, CSR expenditure as a percentage of GSDP does not emerge as a statistically significant determinant. This points to an expenditure–outcome disconnect, likely reflecting the sectoral composition of CSR spending and its weak alignment with employment-oriented interventions. The results do not question the broader social value of CSR, but they do suggest that its current deployment has limited direct relevance for labour-market improvement.

Overall, the study contributes to the literature by empirically disentangling employment quantity and employment quality in the context of MSME-led recovery, and by integrating CSR intensity into a state-level labour-market framework. The findings caution against equating formalisation and social spending with automatic improvements in employment outcomes. Instead, they highlight the need for policy approaches that explicitly link enterprise growth, labour protection, and social investment.

The study is not without limitations. The analysis relies on state-level aggregates and employment reported at the time of MSME registration, which may not fully capture firm dynamics or worker transitions over time. Employment quality indicators are drawn from

survey data and may be subject to reporting and measurement constraints. Future research could build on this framework by incorporating firm-level data, sectoral heterogeneity, and longer post-Udyam time horizons to better understand the pathways through which formalisation and social spending affect labour outcomes.

Despite these limitations, the evidence presented here offers a clear message: India's post-pandemic employment recovery has been quantitatively resilient but qualitatively constrained. MSMEs continue to function as critical employment buffers, and CSR expenditure has expanded substantially, yet neither has automatically delivered secure, high-quality employment. Bridging this gap requires moving beyond counts and expenditures toward outcome-oriented strategies that place employment quality at the centre of enterprise and development policy.

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Appendix A. Variable Definitions and Construction

This appendix provides detailed definitions and construction methods for all variables used in the empirical analysis. Variables are defined at the state–year level unless otherwise specified.

Table A1. Variable Definitions and Data Sources

Variable	Definition	Construction / Measurement	Source
Worker Population Ratio (WPR)	Employment absorption indicator	Percentage of population aged 15 years and above that is employed under usual status	PLFS (NSO)
Regular Workers without Social Security	Employment quality (primary outcome)	Share of regular wage/salaried workers not covered by PF, pension, or ESI	PLFS (NSO)
Regular Wage / Salaried Employment Share	Employment structure (robustness outcome)	Share of workers engaged in regular wage/salaried employment	PLFS (NSO)
MSME Registrations	Enterprise formalisation measure	Total registered MSMEs in a state-year	UAM (pre-2020), Udyam (post-2020)
MSME Intensity	Enterprise density	MSME registrations per 1,000 population	Constructed
Employment per MSME	Employment intensity	Total MSME employment divided by number of MSMEs	Constructed from MSME panel
Udyam Formalisation Intensity	Post-COVID formalisation scale	ln[1 + (Udyam registrations ÷ population × 1,000)]	Udyam Portal
CSR Intensity	CSR spending effort	CSR expenditure as a percentage of GSDP	MCA, MoSPI
Gross State Domestic Product (GSDP)	Economic scale control	Natural logarithm of real GSDP	MoSPI / RBI

Post-Udyam Dummy	Policy regime indicator	Equals 1 for years ≥ 2020–21, 0 otherwise	Constructed

Notes on Variable Construction

MSME registration data from the Udyam Registration Portal (post-2020) and the Udyog Aadhaar Memorandum (UAM) system (pre-2020) are combined into a bridged state-level panel, explicitly accounting for the institutional break introduced by the Udyam regime. To ensure comparability across states of different sizes, MSME registrations are normalised by population and expressed in logarithmic form where appropriate.

CSR expenditure is expressed as a share of GSDP to capture relative development effort rather than absolute spending, thereby avoiding size-driven bias in large states. All monetary variables are expressed in real terms where applicable.

Appendix B. Summary Statistics of Key Variables

Table B1 presents descriptive statistics for the main variables used in the empirical analysis. The table reports the mean, standard deviation, minimum, maximum, and number of observations for each variable across the balanced and unbalanced state–year panels used in Sections 4 and 5. Employment outcomes are drawn from the PLFS state-level panel, MSME variables are constructed from the bridged UAM–Udyam dataset, and CSR intensity is measured as CSR expenditure relative to GSDP.

Table B1. Summary Statistics

Variable	Mean	Std. Dev.	Min	Max	Observations
Worker Population Ratio (WPR, %)	53.818	7.618	35.500	74.500	196
Regular workers without social security (%)	49.277	4.878	35.000	58.000	196
Regular wage / salaried employment share (%)	25.419	6.838	15.000	46.000	196
MSME registrations (total)	217,730.041	435,335.583	139	2,767,292	196
Total MSME employment	992,503.684	1,450,993.851	1,528	7,828,348	196
Employment per MSME	7.318	4.884	2.202	58.114	196

CSR expenditure / GSDP (%)	0.050	0.038	0.000	0.217	150
ln(GSDP)	12.854	1.599	9.355	15.251	175

Notes:

WPR and employment quality indicators are based on PLFS usual-status estimates for persons aged 15 years and above. MSME registrations and employment refer to enterprise-reported values at the time of registration and are drawn from a bridged UAM–Udyam state-year panel. CSR intensity is computed as state-wise CSR expenditure divided by GSDP. Differences in the number of observations reflect data availability across sources and years.