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Exploring Wage-Employment Dynamics in India's Organized Manufacturing Sector

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Abstract

This paper examines the relationship between real wages and employment trends in India's organized manufacturing sector using Annual Survey of Industries for the period 1981-1982 to 2022-2023. Using Vector Error Correction Model (VECM), we examine the response of employment to shocks in different variables like real wages, prices and real Gross Value Added. We attempt to find a long-run cointegrating relationship and direction of causality between these variables. Through Variance Decomposition results, we find that output and prices play an important role in explaining variation in employment while wages account for negligible employment variance. Thus, allowing downward flexibility in wages to achieve the objective of 'Ease of Doing Business in India' is a sub-optimal strategy since it neither generates jobs nor enhances workers' welfare. The government must rather use output and price incentives to create more jobs in the organised manufacturing sector.

Keywords: manufacturing, Cointegrating, Decomposition, downward

1. INTRODUCTION

In the opening lines of the introduction to the Wealth of Nations, Adam Smith established that labour is the ultimate source of wealth of a nation. "The annual labour of every nation," he wrote, "is the fund which originally supplies it with all the necessaries and conveniences of life." Thus, Smith regarded labour to be the primary factor of production.

Despite his objections to legislative and other restrictions on the free play of market forces, Smith's sympathy with the position of the labourer is evident in his explicit remark concerning wage regulation, that "when the regulation ... is in favour of the work- men, it is always just and equitable; but it is sometimes otherwise when in favour of the masters." In general, Smith believed that a just and equitable wage regulation imposes no real hardship upon the masters and that "the interest of... those who live by wages is ... strictly connected with the interest of the society.

The organised manufacturing sector can play a big role in structural transformation of the Indian economy by absorbing surplus labour from the agriculture and informal sector. It has been well documented that India's manufacturing sector has lagged behind other sectors in terms of output production, wage growth as well as employment generation. The Indian economy directly transformed from being an agriculture-based economy to a service sector-led economy bypassing the manufacturing sector. Yet for growth to be sustainable, it is imperative to focus on employment generation in the manufacturing sector.

Wages are considered as a potent tool: both in terms of enhancing living standards of the labourers as well as generating demand in the economy which can kick start a virtuous cycle of employment. However, wages are also seen as cost to the firms and thus, firms press for lower wages which can increase labour demand and create more employment. (CONCLUSION=The cost of hiring labour needs to be reduced for firms for ease of doing business but wages should not be a means to achieve this. Labour laws can be made more flexible by removing rigidities in terms of hiring and firing but provisions related to minimum wages and social security should not be diluted, especially at a time when trade unions have become weak.)

In this paper, we try to examine the impact of wage incentives on employment in the organised manufacturing sector in a time-series framework. The paper is organised as follows**:** The next section reviews the existing literature on response of employment to wages which is measured through wage elasticity of employment. In Section 3, we describe our data sources and construction of variables. In Section 4, we present an aggregate analysis of trends in labour market variables in the organised manufacturing sector. In Section 5, we use the use vector-error correction model to estimate the long-run relationship between employment, wage and other labour market variables at the all-India level. Section 6 presents state-wise analysis of impact of different incentives on employment generation. Finally, Section 7 summarizes the findings with policy implications.

2. LITERATURE REVIEW

There have been several studies which have examined the response of employment to wages. The World Bank (1989), using the ASI data for the 1980s, estimated employment elasticity with respect to wage at −0.8, and argued that faster growth of real wages during the 1980s slowed down growth in employment in the organized manufacturing. Nagaraj (1994), however, opposed these findings. Using the ASI data for the 1980s at a disaggregated level, he found no significant evidence to support this view. In a more rigorous analysis, Bhalotra (1998), using the ASI data for 1979–1987, found employment response to wage relatively low, ranging from −0.28 to −0.44.

Goldar (2000), using the same ASI data, found that a unit increase in the growth in wage reduced employment growth by 0.51 during 1980–1981 to 1990–1991 and by 0.67 over 1990– 1991 to 1997–1998. He reinforced the finding that the growth rate in real wages had a significant effect on employment growth, and added that the decline in the growth rate in real wages in the 1990s was one of the main causes of the acceleration in employment growth. Nagaraj (2004), however, re-estimated Goldar’s model regressing employment on wage, man-days, and GVA, and found a statistically valid relationship between growth in employment and wages across industries only when product market variables (such as GVA) were included in the model.

Mitra (2013), analysing the ASI data from 1998–1999 to 2007–2008, estimated wage elasticity with respect to all persons at −0.77 and with respect to workers at −0.54 although this was statistically insignificant. In another study, Mitra (2013) noted that the elasticity of employment with respect to wages across many countries is quite low, even when it takes the right sign (negative).

More recently, Mitra et al (2018) use simultaneous equation model to estimate the wage elasticity. They take employment to be a function of value added and wage rate (log-linear form). However, value added itself is determined by capital and labour. The simultaneous equation system is given as:

$$\ln GVA = a_0 + a_1 \ln K + a_2 ln\, EMP + e1$$

$$\ln EMP = b_0 + b_1 lnGVA + b_2 lnEMOL + e2$$

Where GVA is gross value added, K is capital, EMP is labour, EMOL is emolument per employee, and e1 and e2 are random errors.

To solve the problem of endogeneity, they take the reduced form equations in the first step where each of the endogenous variables (i.e. GVA and EMP) is expressed as a function of the exogenous variables in the model, i.e., K and EMOL. The reduced form equations are estimated by OLS and the fitted values of the endogenous variables are generated which are then used in the right-hand side of the structural model replacing their observed values.

Applying two-stage-least-square method to the structural model, they find that the wage elasticity of employment as per 2SLS estimate is around -0.25. However, the OLS estimate of the elasticity of employment with respect to emolument per person is only 0.10 and it is statistically insignificant. They argue that the results from the simultaneous equation model are more reliable. Thus, wage reduction can encourage labour demand to some extent. However, they caution that labour deregulation cannot have miraculous effect on employment as the emolument per person is not highly significant.

Thus, excepting the World Bank study for the 1980s, and Goldar's work for the 1980s and early 1990s, other studies negate the existence of any resounding relationship between wage and employment in the organized manufacturing sector in India.

3. DATA SOURCES AND VARIABLES

This study is based on the Annual Survey of Industries (ASI) time series data[1], available on the website of Ministry of Statistics and Programme Implementation. Our final data set spans years (1981to 2022–23), the most recent year for which the ASI data is available). For convenience, we refer to a particular financial year by the first calendar year. ASI covers only those establishments, which are employing 10 or more workers with power or 20 or more without power.

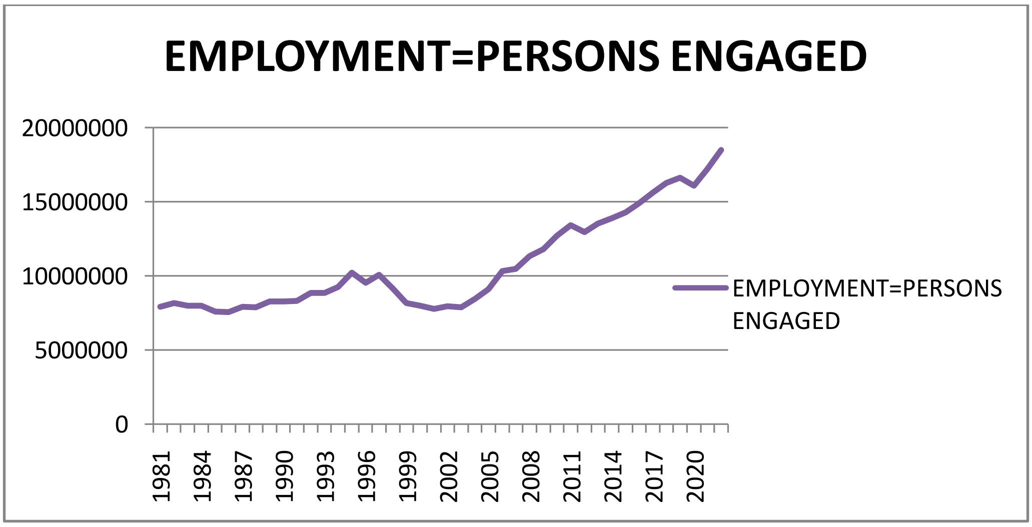
The variable "total persons engaged" is taken as representative of total employment. "Total emoluments" represent the nominal wages and salaries of the employees. We add net value added to depreciation to obtain gross value added. We deflate nominal wages and salaries by the consumer price index for industrial workers (CPI-IW), gross value added by the wholesale price index for manufactured products (WPI-MP). Data for CPI-IW and WPI-MP were obtained from the RBI Handbook of Statistics. Throughout our analysis, we consider 2011-12 as the base year.

Thus, we finally use 4 variables- EMP (employment), WAGES (real emoluments), RGVA (real GVA at 2011-12 prices) and PRICE (wholesale price index) -all in logarithmic forms.

4. AGGREGATE ANALYSIS OF TRENDS

Based on several recent studies, the Indian organised manufacturing sector can be characterised by the following trends in labour market variables:

Figure 1 shows the absolute levels of employment in organised manufacturing from 1981 to 2022. Employment includes production workers, managers, supervisors, and clerical staff. After a small initial fall in absolute employment till 1986, there was growth till the mid-1990s. The worst period for organised manufacturing employment was between 1997 and 2002.Employment growth rate in organised manufacturing accelerated sharply after 2004–05(Goldar, 2011). This was the period when the organised manufacturing sector performed relatively better in terms of job creation.



[1] http://mospi.nic.in/asi-summary-results

Figure 1: Employment trend

Source: Authors' calculations based on ASI data

Figure 2 shows that growth in employment in any period is much weaker compared to the rise in output, indicating a large increase in labour productivity over the period. While employment roughly doubles in this period, output goes up more than 12 times. It has been shown empirically that the aggregate employment elasticity over the entire period is 0.69. Thus, the growth elasticity of employment in the organized manufacturing sector has not been impressive and the sector has been witnessing jobless growth. One important reason for low employment elasticity in the organised manufacturing sector has been the rising capital intensity of production, especially in industries like automobiles and consumer electronics.

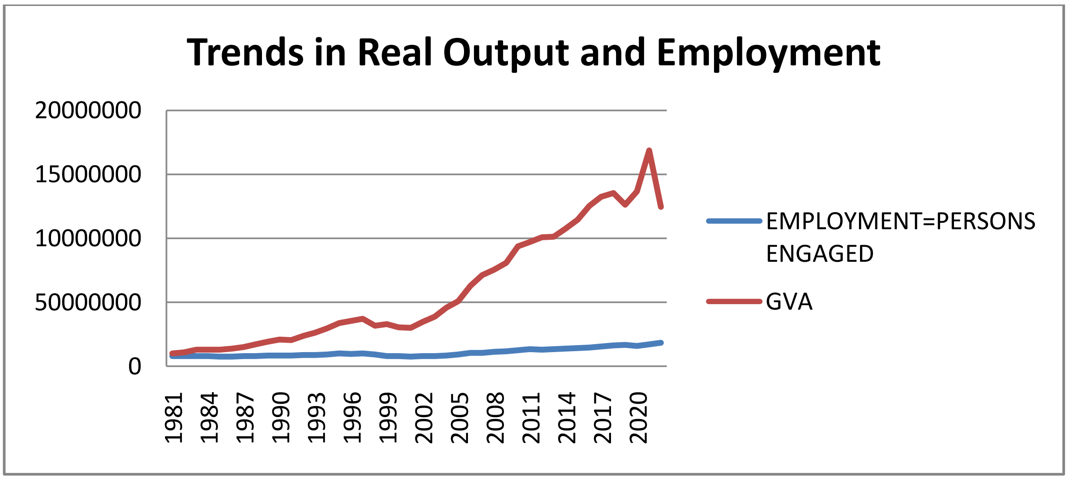


Figure 2

Source: Authors' calculations based on ASI data

5. METHODOLOGY

We first test the Stationarity of the variables in our model, check for cointegration between them and then, estimate a vector-error correction model to estimate the response of employment to shocks in wages, rgva and prices. Finally, through variance decomposition, we determine the direction of causality between the variables.

5.1 Unit Root Tests

We perform the ADF (Augmented Dickey Fuller) Test and Philip Perron Test on the 4 series-EMP,RGVA,PRICE,WAGES(all in logarithmic form).All the four series are found to be non-stationary in their level form but stationary in their first difference form(growth rate form).The results are as shown below:

Table 1: Unit Root Test on Log Levels and First difference forms

Variable	ADF Test Statistic	Conclusion
Ln_emp	1.001	Unit root exists
Ln_rgva	-1.017	Unit root exists
Ln_price	-2.361	Unit root exists
Ln_wages	0.329	Unit root exists
Rog in emp	-5.100	No unit root
Rog in rgva	-4.855	No unit root
Rog in price	-3.257	No unit root

Rog in wages	-6.080	No unit root

5.2 Johansen Cointegration Test

Performing Johansen Cointegration Test, we find a cointegrating relationship among the variables. The results are reported below:

Table2 : Johansen Cointegration Test

Series: LO_EMP LOG_RGVA LOG_RWAGE LOG_P
Lags interval (in first differences): 1 to 1

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.569034	66.99152	47.85613	0.0003
At most 1 *	0.466391	33.32244	29.79707	0.0188
At most 2	0.146265	8.198748	15.49471	0.4444
At most 3	0.045754	1.873352	3.841465	0.1711

Trace test indicates 2 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level

Since the variables have a cointegrating relationship, we estimate a Vector error correction model.

5.3 Vector-Error Correction Model (VECM)[2]

An error correction model allows us to study the short-run dynamics in the relationship between employment, wages, rgva and prices. Error correction is a mechanism for ensuring cointegration between the variables. If we stack our variables- emp, price, rgva and wages (all in logarithmic forms) into a vector X_t,we can obtain our VECM equations as follows:

$$\Delta X_t = C + \Pi X_{t-1} + \sum_{i=1}^{\rho-1} \Lambda_i \Delta X_{t-i} + \varepsilon_t$$

where

$X_t = \begin{pmatrix} emp_t \\ price_t \\ rgva_t \\ wages_t \end{pmatrix}$ (all variables are in their log forms),

Π is a vector of adjustment coefficients,

ΠX_{t-1} represents the error correction term,

Λ_i represents the coefficient matrix of the i^{th} lag ofΔX_t,

ρ represents the optimal number of lags or the order for Vector Autoregression (VAR) of the I (1) variables (as per Akaike Information criterion).The order of the corresponding VECM is always one less than the VAR.So if optimal lags for VAR is ρ,then the optimal lags for VECM is $\rho - 1$.

In our analysis, as per Akaike Information criterion, our optimal lag length for VAR of the four variables (in their logarithmic forms) is 2 and thus for VECM is 1.Thus, our first equation of VECM is given by:

[2]Source: http://statmath.wu.ac.at/~hauser/LVs/FinEtricsQF/FEtrics_Chp4.pdf

$$\Delta emp_t = \mu_{emp} + \alpha_{emp} (\beta_1 emp_{t-1} + \beta_2 price_{t-1} + \beta_3 rgva_{t-1} + \beta_4) + \lambda_1 \Delta emp_{t-1} + \lambda_2 \Delta price_{t-1} + \lambda_3 \Delta rgva_{t-1} + \lambda_4 \Delta wages_{t-1} + \varepsilon_t$$

Similarly, we get other 3 equations for $\Delta price_t$, $\Delta rgva_t$, $\Delta wages_t$.We now estimate these equations and get the following VECM results

TABLE 3: THE ESTIMATED VECM

Standard errors in ( ) & t-statistics in [ ]

Cointegrating Eq:	CointEq1
LO_EMP(-1)	1.000000
LOG_RWAGE(-1)	0.694506 (0.26984) [2.57378]
LOG_RGVA(-1)	-2.472847 (0.44593) [-5.54542]
LOG_P(-1)	1.927614 (0.35909) [5.36805]
C	-0.129096

Error Correction:	D(LO_EMP)	D(LOG_RW...	D(LOG_RGVA)	D(LOG_P)
CointEq1	-0.098027 (0.03258) [-3.00852]	-0.143794 (0.05050) [-2.84755]	0.072900 (0.05382) [1.35450]	-0.001841 (0.01946) [-0.09461]
D(LO_EMP(-1))	-0.084207 (0.21165) [-0.39786]	-0.173369 (0.32802) [-0.52854]	0.714235 (0.34960) [2.04299]	-0.045628 (0.12638) [-0.36105]
D(LOG_RWAGE(-1))	-0.207403 (0.15272) [-1.35804]	-0.200213 (0.23669) [-0.84589]	-0.408835 (0.25227) [-1.62065]	-0.173502 (0.09119) [-1.90259]
D(LOG_RGVA(-1))	0.322943 (0.12251) [2.63599]	0.147954 (0.18987) [0.77923]	0.329885 (0.20237) [1.63013]	0.203682 (0.07315) [2.78429]
D(LOG_P(-1))	0.272509 (0.27302) [0.99812]	0.474337 (0.42313) [1.12102]	-0.326585 (0.45098) [-0.72417]	0.479903 (0.16302) [2.94374]
C	-0.001955 (0.01632) [-0.11979]	0.037018 (0.02529) [1.46379]	0.069939 (0.02695) [2.59478]	0.025307 (0.00974) [2.59728]
R-squared	0.388809	0.231407	0.187498	0.452885
Adj. R-squared	0.298928	0.118379	0.068012	0.372427
Sum sq. resids	0.063389	0.152254	0.172953	0.022601
S.E. equation	0.043179	0.066918	0.071322	0.025782
F-statistic	4.325817	2.047340	1.569206	5.628836
Log likelihood	72.18930	54.66417	52.11474	92.81535
Akaike AIC	-3.309465	-2.433208	-2.305737	-4.340768
Schwarz SC	-3.056133	-2.179877	-2.052405	-4.087436
Mean dependent	0.020437	0.056481	0.065630	0.052946
S.D. dependent	0.051569	0.071270	0.073879	0.032546

Determinant resid covariance (dof adj.)	6.40E-12
Determinant resid covariance	3.34E-12
Log likelihood	301.4793
Akaike information criterion	-13.67397
Schwarz criterion	-12.49175
Number of coefficients	28

Thus, the error correction term is given by:

$$EC_t = \ln emp_t + 1.92 \ln price_t - 2.47 \ln rgva_t + 0.69 \ln wages_t - 0.129$$

So the estimated long-term relationship between employment and other variables is:

$$\ln emp_t = 0.129 - 1.92 \ln price_t + 2.47 \ln rgva_t - 0.69 \ln wages_t + \varepsilon_t$$

This is the cointegrating equation.

The estimated adjustment coefficient is significant at 5% level in the employment equation. Thus, in the long run, it is the employment variable that adjusts to maintain the long-run relationship estimated above. The adjustment coefficient is -0.098which shows the speed of adjustment towards equilibrium. Thus, 9.82 percent per year adjustment will occur in employment to restore the equilibrium.

The results show that the 'real wages' and 'total persons engaged' are negatively and significantly correlated in the long run, which is quite in line with their relationship that exist. Long-term wage elasticity of employment is 0.69. Employment and RGVA have a positive long-run relationship as expected. Employment and price have a negative long-run relationship which is unexpected since price rise is expected to be beneficial for employment creation.

5.4 Impulse Responses

Impulse responses trace the dynamic effects of structural shocks on the endogenous variables. Each response includes the effect of a specific shock on one of the variables of the system at time t, then at t+1 and so on.

Using ASI data at the all-India level, we obtain the impulse responses corresponding to a shock in wages are displayed in Table and Figure

Table 4: Effect of Cholesky One S.D. LN_WAGES Innovation

Period	LO_EMP	LOG_RGVA	LOG_RWAGE	LOG_P
1	0.000000	0.000000	0.041746	-0.009079
2	-0.012259	-0.013264	0.027429	-0.020700
3	-0.015677	-0.016770	0.024990	-0.025935
4	-0.016771	-0.018160	0.024054	-0.028569
5	-0.016649	-0.018903	0.024446	-0.029885
6	-0.016307	-0.019559	0.025127	-0.030723
7	-0.015965	-0.020244	0.025834	-0.031374
8	-0.015711	-0.020917	0.026436	-0.031949
9	-0.015525	-0.021542	0.026937	-0.032464
10	-0.015386	-0.022098	0.027348	-0.032923

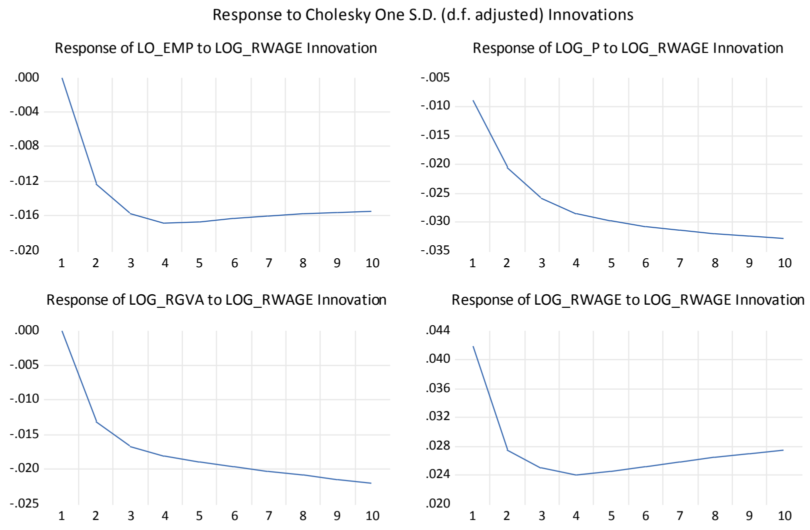


Figure 3: Dynamic Responses to Wage shock

The impulse responses corresponding to a shock in PRICES are displayed in Table 5 and Figure 4.

Table 5: Effect of Cholesky One S.D. LN_PRICE Innovation

Period	LO_EMP	LOG_RGVA	LOG_RWAGE	LOG_P
1	0.000000	0.000000	0.000000	0.023375
2	0.001953	-0.004349	0.004609	0.034510
3	-0.005618	-0.003901	-0.003868	0.037928
4	-0.009444	-0.001383	-0.009876	0.041338
5	-0.012682	0.002927	-0.015625	0.044582
6	-0.014349	0.007349	-0.019669	0.048060
7	-0.015548	0.011521	-0.022947	0.051322
8	-0.016349	0.015156	-0.025519	0.054289
9	-0.017011	0.018278	-0.027680	0.056875
10	-0.017558	0.020930	-0.029499	0.059105

Cholesky One S.D. (d.f. adjusted)
Cholesky ordering: LO_EMP LOG_RGVA LOG_RWAGE LOG_P

A one-standard-deviation shock to prices in India's manufacturing sector leads to a temporary decline in wages, employment, and real GVA. In the short run, rising input costs, such as raw materials and energy, increase overall prices but do not immediately translate into higher output or wages due to price stickiness and competitive pressures (Kapoor et al., 2017). Firms face squeezed profit margins and reduced consumer demand, leading to wage stagnation and job cuts, especially in the informal sector (Ministry of Labour and Employment, 2013).

The initial decline in real GVA reflects the cost-push inflation effect, where increased production costs outweigh output gains. However, as firms adjust and improve efficiency over time, they pass on costs to consumers or increase productivity, causing real GVA to rise after a few periods. This delayed response is consistent with Goldar (2013), who noted that manufacturing output often lags following price shocks. In summary, while a price shock initially reduces wages, employment, and GVA, the manufacturing sector eventually recovers as firms adjust to the new cost environment.

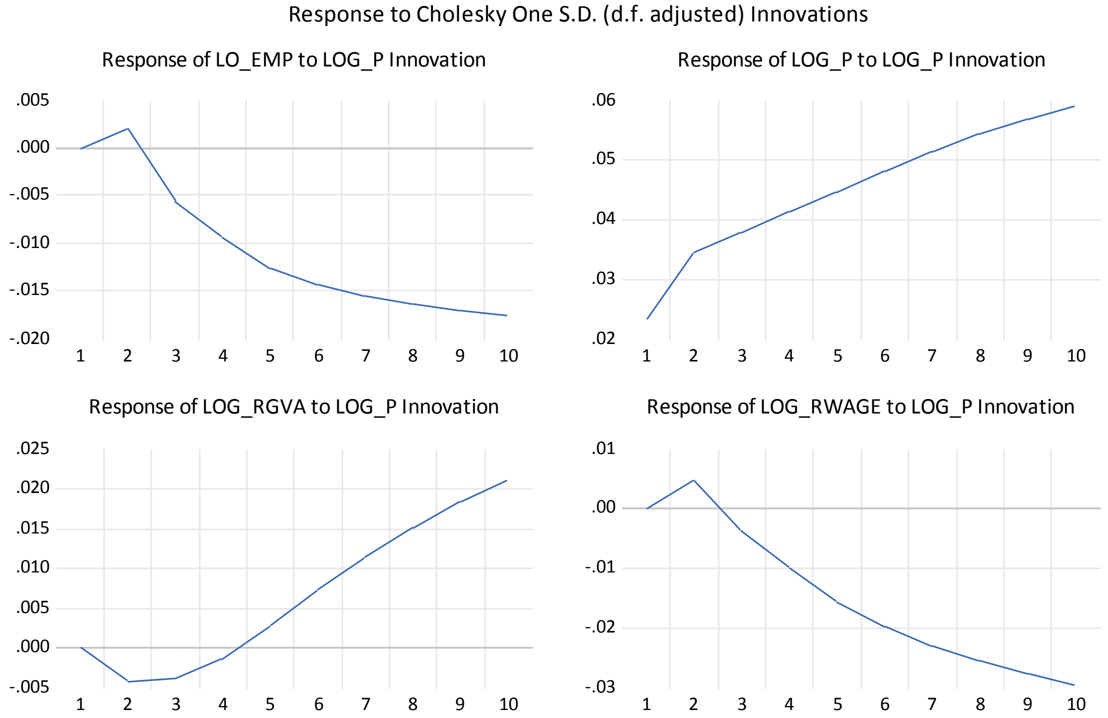


Figure 4: Dynamic Responses to Price shock

Table 6: Effect of Cholesky One S.D. LN_EMP Innovation

Period	LO_EMP	LOG_RGVA	LOG_RWAGE	LOG_P
1	0.043179	0.038527	0.038676	0.004674
2	0.046827	0.063555	0.033697	0.006113
3	0.063394	0.070504	0.049253	0.012738
4	0.067938	0.072301	0.054941	0.013973
5	0.071779	0.070075	0.060447	0.013822
6	0.072776	0.067485	0.063006	0.012226
7	0.073515	0.064866	0.065031	0.010493
8	0.073822	0.062701	0.066379	0.008782
9	0.074135	0.060887	0.067540	0.007305
10	0.074393	0.059394	0.068505	0.006040

An employment shock in India's manufacturing sector often leads to increased wages but can cause a decline in real GVA due to diminishing returns to labor, especially in labor-intensive sectors like textiles. Additionally as an example of NREGA spillover,when employment rises without a corresponding increase in capital or technology, labor productivity tends to fall, which boosted employment but did not lead to proportional GVA gains due to low worker skills (World Bank, 2011). Similarly, 2016 demonetization caused temporary employment growth but resulted in lower productivity and stagnating GVA (Goldar, 2013).

In sectors like automobiles, employment growth leads to wage increases due to labor shortages, as firms raise wages to attract skilled workers, but productivity gains remain limited (Hasan et al., 2013; Deshpande and Sharma, 2016). Also for instance the PLI scheme for electronics also saw wage hikes alongside employment growth, reflecting a mismatch between labor demand and supply (Economic Survey, 2021).

Despite rising wages, prices often fall due to price stickiness and external competition. In globalized sectors like textiles, firms face price pressures, limiting their ability to pass on higher wages to consumers (Balakrishnan, 2007; Kapoor et al., 2017). Thus, employment shocks in India's manufacturing sector typically lead to wage increases without proportional gains in GVA or prices.

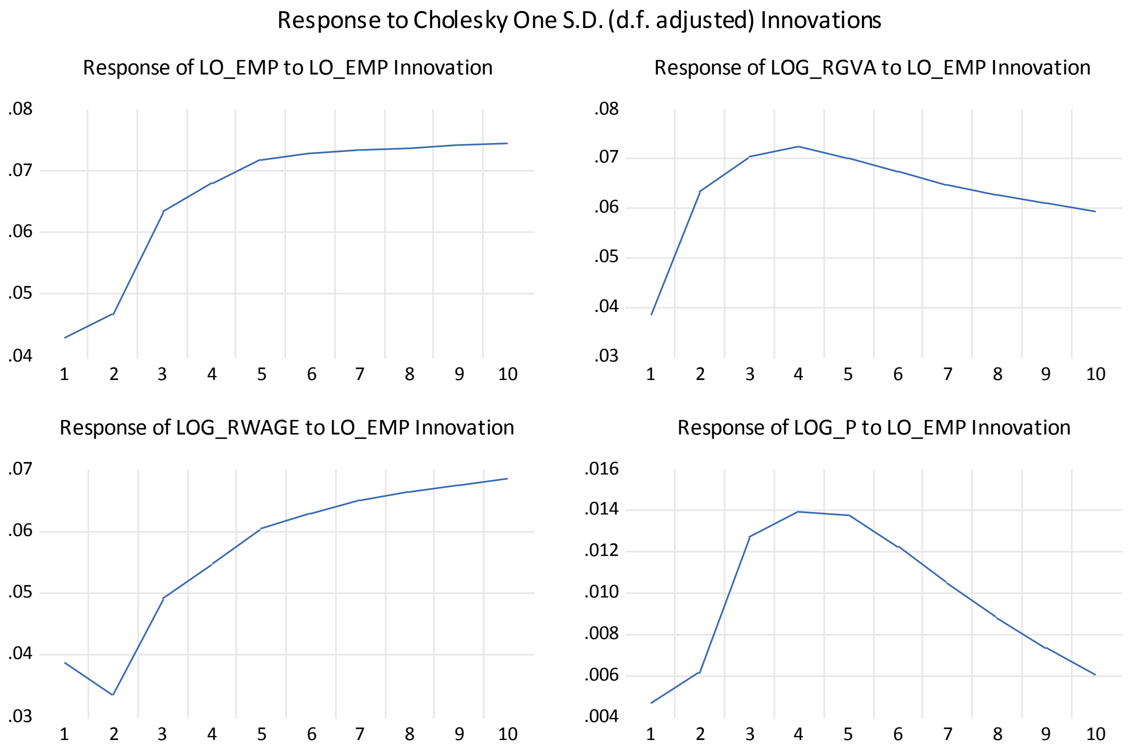


Figure 6: Dynamic Responses to EMP shock

Table 7: Effect of Cholesky One S.D. LN_RGVA Innovation

Period	LO_EMP	LOG_P	LOG_RGVA	LOG_RWAGE
1	0.000000	-0.003750	0.060021	0.035206
2	0.023921	0.000809	0.057088	0.054125
3	0.025934	-0.001831	0.058288	0.059149
4	0.032297	-0.003668	0.053050	0.068317
5	0.033403	-0.007390	0.048454	0.072145
6	0.034973	-0.010734	0.043692	0.076011
7	0.035606	-0.013975	0.039767	0.078566
8	0.036314	-0.016738	0.036380	0.080874
9	0.036844	-0.019132	0.033558	0.082755
10	0.037350	-0.021159	0.031157	0.084407

The impulse response analysis shows that a one-standard-deviation shock to real GVA in India's manufacturing sector increases wages and employment but reduces prices. These results reflect the interplay of productivity gains, labor market dynamics, and competitive pressures.

Higher GVA boosts firm revenues, enabling wage hikes to attract and retain skilled workers, consistent with the Efficiency Wage Hypothesis. Studies, including Hasan et al. (2013) and the Economic Survey (2017-18), link output growth to wage increases in skill-intensive industries. Similarly, employment rises as firms expand labor demand, amplified by the multiplier effect, as noted by Kapoor and Krishnapriya (2017) and Goldar (2013).

The decline in prices stems from cost-efficiency gains, where productivity reduces unit costs, and firms lower prices to stay competitive. Balakrishnan and Parameswaran (2007) and post-GST studies (Economic Survey, 2018-19) document such trends in globally competitive sectors like steel and FMCG. Export-oriented industries, such as textiles, also reduced prices to compete with low-cost producers like Bangladesh (World Bank, 2020).

These results align with theory and evidence, highlighting how productivity improvements drive wage and employment growth while fostering price reductions in India's manufacturing sector.

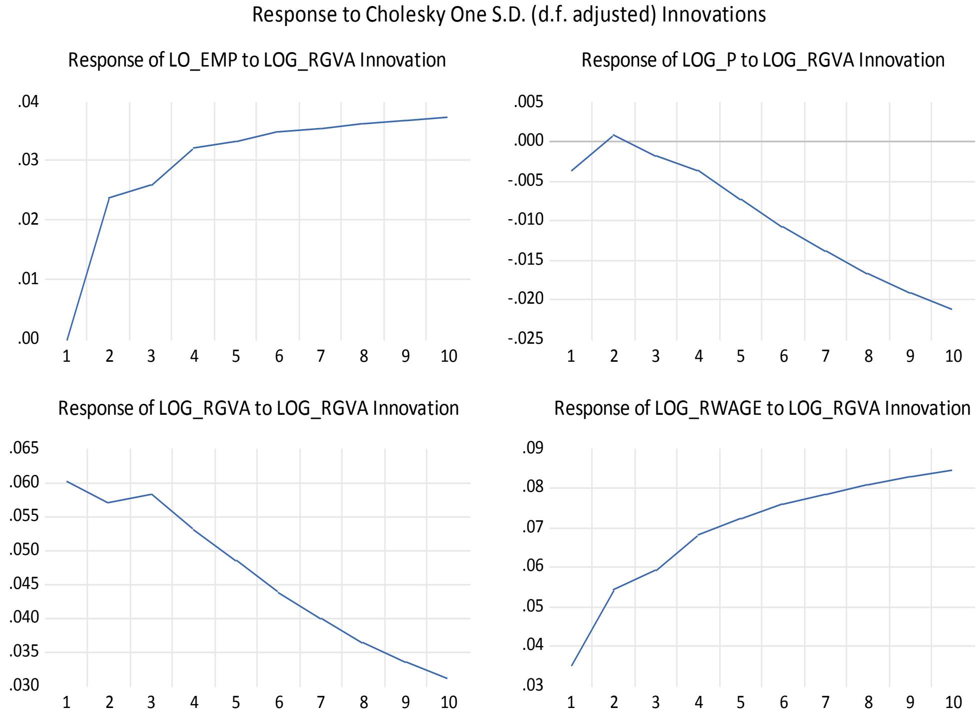


Figure 7: Dynamic Responses to RGVA shock

5.5 Variance Decomposition

In a sequence of movements of a variable, the variance decomposition gives us the proportion of those movements due to shocks to itself and to shocks to other variables. In our 4-variable recursive ordering for EMP, PRICE, RGVA and WAGES, all of the first period forecast-error variance of EMP is due to shocks in employment itself. This is so because EMP was placed first in the ordering and shocks to other variables do not affect employment contemporaneously.

As shown in Figure andTable, forecast error variance of EMP is mostly the result of shocks to itself at short horizons. At longer horizons, the explanatory share of shocks to employment diminish from 100% to 91% and contribution of RGVA, PRICES and WAGE shocks to movements in employment increases to 7%, 0.8%, 0.3% respectively

TABLE 8: VARIANCE DECOMPOSITION

ORDERING: EMP, PRICE, RGVA, WAGES (in logarithmic forms)

VARIANCE DECOMPOSITION OF	PERIOD	CONTRIBUTION OF			
		EMP	PRICE	RGVA	WAGES
EMP	1	100	.15	0	0
	2	84.81	.19	12.63	2.40
	4	79.35	.84	14.32	4.78
	6	78.49	1.47	14.98	5.34
	8	77.38	1.95	15.38	5.50
	10	76.58	**2.15**	**15.70**	5.56
PRICE	1	3.29	96.71	0	0
	2	2.55	93.54	1.91	1.99
	4	5.68	89.24	1.10	3.73
	6	5.41	89.99	.62	3.97
	8	4.25	91.53	.75	3.47
	10	**3.23**	92.62	1.17	**2.97**
RGVA	1	29.17	1.54	69.27	0
	2	43.90	1.09	53.47	1.54
	4	53.08	0.61	43.63	2.66
	6	57.05	0.55	39.44	2.96
	8	59.09	0.14	36.71	3.05
	10	**60.13**	2.28	**34.52**	**3.07**
WAGES	1	0.07	33.40	23.70	33.81
	2	0.96	28.24	41.20	24.22
	4	0.16	33.31	46.44	12.75
	6	0.21	35.11	46.80	8.16

	8	0.26	35.41	46.52	6.02
	10	**0.31**	**35.37**	**46.19**	4.82

Note: This table reports the percentage of forecast error variance that is attributed to each of the four shocks

The forecast variance of employment is initially driven almost entirely by its own shocks (100% in period 1). This aligns with labor market rigidity theories, where short-term employment levels are slow to respond to external factors due to contracts, hiring frictions, or adjustment costs (Mortensen &Pissarides, 1994). Over time, real GVA explains a growing share of employment variance (15.7% by period 10), reflecting the importance of derived demand for labor, where output growth stimulates employment (Okun's Law). Wages contribute modestly (5.56%), consistent with efficiency wage theories, where higher wages incentivize firms to adjust employment to maintain productivity and profitability.

Price variability remains overwhelmingly self-driven (96.71% in period 1, decreasing marginally to 92.62% by period 10). This reflects the dominance of cost-push and demand-pull inflation theories, where prices are shaped by internal market dynamics, including supply chain factors and consumer demand. Contributions from employment (peaking at 5.68% in period 4) point to cost-push inflation, where increased labor costs due to employment shocks feed into prices. The limited impact of other variables indicates strong price rigidity in Indian manufacturing, a phenomenon explained by the menu cost theory, where firms resist frequent price adjustments.

Apart from this real GVA variability is increasingly driven by employment shocks (29.17% in period 1 to 60.13% in period 10), underscoring the labor-intensive nature of India's manufacturing sector. This is consistent with production function theory (e.g., Cobb-Douglas), where labor is a primary input to output. The minimal contribution of price shocks suggests that output is less sensitive to inflationary pressures in the short term, reflecting the sticky price model, where prices adjust slowly in response to changes in production costs or demand. This dynamic supports the view that Indian manufacturing output depends more on labor market adjustments than on price or wage fluctuations.

Wage forecast variance is initially influenced by price shocks (33.40% in period 1), reflecting cost-of-living adjustments, where inflation pressures drive short-term wage changes. Over time, real GVA becomes the dominant contributor (46.19% by period 10), aligning with marginal productivity theory of labor, which links wages to the output generated by workers. The negligible role of employment shocks in driving wage variance suggests a limited direct relationship, likely due to labor market dualism in India, where formal and informal sectors operate under different wage-setting mechanisms.

6. Conclusion

This study examines the wage-employment dynamics in India's organized manufacturing sector from 1981 to 2022, using a t time-series framework. The findings highlight a weak negative correlation between wages and employment in the long run, suggesting that reducing wages is not a viable strategy for boosting job creation. Instead, Real gross value added (RGVA) emerges as a significant driver of employment, highlighting the importance of output growth in labor demand. The analysis also reveals the challenges posed by jobless growth, driven by rising capital intensity and low employment elasticity, despite substantial output increases. Price shocks, on the other hand, have mixed effects, with short-term disruptions but eventual recovery through productivity adjustments.

In sum, the study concludes that wage flexibility alone cannot address the employment challenges in the organized manufacturing sector.We also found that output incentives are effective in employment generation both in the short-run as well as long-run. Output-linked incentive schemes have a huge potential to create jobs. Thus, production-linked incentive scheme introduced by the government is a step in the right direction at the aggregate level andIndia's organized manufacturing sector requires a paradigm shift in its approach to employment creation.The focus should shift from wage reduction strategies to structural policies that enhance productivity, stimulate demand, and create a conducive environment for labor-intensive growth.

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