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**Short Term Employment Transitions in Urban
India: Role of Minimum Wages**

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Abstract

This paper studies the minimum wage effect on the transitions of men and women workers from covered to uncovered sector as well as to unemployment and out of labour force. Using border discontinuity design, first differencing and the individual level panel data for the urban region for the years 2017-18 to 2022-23, and novel data on more than 1800 minimum wages, this paper finds that an increase in minimum wage results in transition of women workers out of the covered sector, however, for male workers this paper finds null employment transitions effects. The study on heterogeneous effects reveal that the results are primarily driven by low-skilled female workers belonging to the regions of high labour market concentration where 10 percent increase in minimum wage result in a fall in probability that a worker remains in covered sector by 1.5 percent. Contrary to this, we find favorable labour market conditions for low-skilled male workers in the regions of high labour market concentration. The results are robust to various specification choices.

Keywords: Minimum Wage, Employment transitions, Gender, India

JEL Codes: J16, J3, J42

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INTRODUCTION

The curiosity to understand the costs and benefits of the minimum wage legislation in conjunction with the rise of innovative econometric applications impelled the rise of voluminous and rich literature since the early 1990s. In his seminal analysis, Stigler (1946) explored the economics of minimum wage legislation. According to him, the impact of minimum wages on aggregate employment is dependent on the market structure. In a perfectly competitive labour market, wages are usually set by the market forces rather than the individual employers. In this case, the imposition of a minimum wage above the market-clearing wage for low-skilled workers can result in a reduction in employment. However, this might not hold true in the real world, with overwhelming evidence of monopsonistic labour markets where employers set up wages at the low end of the labour markets (Manning 2011 and Soundarajan 2019). Therefore, in the case of a monopsonistic market enacting minimum wages can result in an increase in employment if it is below the threshold wage. If minimum wages are set up above this threshold wage, then that can result in a decline in employment.

Earlier studies have investigated the role of monopsony power in explaining the gender gaps in labour markets outcomes (Card et al. (2016), Morchio and Moser (2021), Caldwell and Oehlsen (2022)). The findings point to two complementary channels resulting in gender gaps, first, a *bargaining* channel which arises when women possess low bargaining to ask for higher wages, and second, *sorting* channel that occurs if women are less probable to be employed in higher wage firms. Card et al. (2016) find that women are less likely to work at firms that pay higher premiums to either gender, with sorting effects being most important for low and middle-skilled workers. In the presence of binding minimum wage there is a possibility that women are sorted out, especially low-skilled women, and are replaced by men in monopsonistic labor market.

Several studies have found that the minimum wage has a differential impact on men and women in the labor market (Blau and Kahn, 2003; Botero et al., 2004; Rubery and Grimshaw, 2011; Hallward-Driemeier et al., 2015; and Majchrowska and Strawinski, 2018, among others). Much of the evidence points to a narrowing of the gender wage gap as the minimum wage increases because women's wages are more likely than men's to be at or near the minimum wage. However, the textbook treatment of minimum wages as a price floor under perfect competition suggests that the reduction in the gender wage gap due to the minimum wage is potentially offset by a reduction in full time employment among women. Rubery and Grimshaw (2011) argue instead that employers enjoy monopsonistic power in the labor market and women tend to have less bargaining power for negotiating a higher wage due to various reasons. However, most of the wage gap studies do not set forth to discuss the gendered employment dynamics and there is scant literature on the same (Kim and Williams, 2021). Moreover, these dynamics have not been explored in the presence of monopsony.

This study aims to bridge this gap in literature where it looks at the gendered employment dynamics in the presence of high and low market concentration. Herfindahl-Hirschman Index (HHI) is constructed using Economic Census data to estimate the level of market concentration at the district level. Short-term transition in employment status is calculated based on the individual and household level panel data given in the Periodic Labour Force Survey (PLFS) for the years 2017-18 to 2022-23. This unique transition data is then merged with minimum wage data collated for the first time based on the year wise state level notifications. Using first differencing model and Border Discontinuity Design this study finds that an increase in minimum wage results in transition of women workers out of the covered sector, however, for male workers this study finds null employment transitions effects. The study on heterogenous effects reveal that the results are primarily driven by low-skilled female workers belonging to the regions of high labour market concentration where 10 percent increase in minimum wage result in a

fall in probability that a worker remains in covered sector by 1.5 percent. Contrary to this, we find that favorable labour market conditions for low-skilled male workers in the regions of high labour market concentration. Further, we find that female workers are transitioning from covered sector either to unemployed or out of labour force.

To the best of our knowledge no paper has studied the gendered employment dynamics in the presence of varying labour market concentrations. Although Kim and Williams (2021), find that minimum wage has negative impact on married women's bargaining power in Indonesia, they neither explicitly investigate employment transitions and nor account for monopsony in their study. Menon and Rodgers (2017) in their study provided the impact of minimum wages on male and female employment and earning in India. They found that in rural areas minimum wages have a positive differential impact on earnings, where impact is more for males, and null employment effects both for male and female. Further, minimum wages have little or no impact on labour market outcomes, both for male and female, in urban areas. However, in their paper Menon and Rodgers (2017) do not study employment transitions and neither account for differential degrees of labour market concentration nor skill level. After accounting for labour market concentration and skill level, we find a negative employment effects for low-skilled female workers who belong to the regions of high labour market concentration in urban areas, which is contrary to the findings of Menon and Rodgers (2017).

Our study contributes to literature in several ways, first, it adds to the the literature on the impact of minimum wages on employment. Some studies have found a positive or null impact of minimum wages on wages and employment (in Card and Krueger (1994), Dickens et al. (1999), Dube (2019), Lemos (2009), Dube et al.(2010), Dinkelman and Ranchhod (2012), Bhorat et al. (2013), Giuliano (2013), Dolton et al. (2015), Gudibande and Jacob (2017), Cengiz et al. (2017), and Menon and Rodgers (2017), Soundarajan.V (2019), Gopalan (2020), Mansoor

and O'Neill (2021)), while several others have found a negative impact of minimum wages on employment including Neumark and Wascher (1992), Bell (1997), Burkhauser et al. (2000), Strobl and Walsh (2003), Machin and Wilson (2004), Lemos (2004), Gindling and Terrell (2009), and Neumark et al. (2014). The divergent findings in the literature can be attributed to the structure of labour markets (degree of monopsony power), the bargaining power of the trade unions, and the ability of the industrial sector to pass through the increasing costs to the consumers (Dube, 2019). Second, it adds to the literature that explores heterogeneous minimum wage effects in the presence of varied labour market concentration (Azar et. al., 2023). Third, it contributes to the literature that explores transition of workers in labour market (Sarkar, Sahoo, and Klasen, 2019). Fourth, it adds to the limited literature on impact of minimum wages on labour market outcomes looked from a gendered lens (Blau and Kahn, 2003; Botero et al., 2004; Rubery and Grimshaw, 2011).

DATA SOURCE

The study makes use of individual and household panel of Periodic Labour Force Survey (PLFS) 2017-18, 2018-19, 2019-20 and 2020-21, 2021-22 and 2022-23 (MOSPI, 2023).¹ The panel data is available for urban sector. PLFS is a nationally representative annual survey by the National Statistical Organisation of the Government of India to estimate the Labour Force Participation Rate (LFPR), Unemployment Rate, share of different types of employment, earnings distribution, and its dynamics. We use the individual level information on activity status, earnings, age, gender, education level, marital status, and household level socioeconomic variables, like, caste, religion, as available in this database for the analysis here. The labour force information on the activity status of the worker is collected using two approaches for the reference period, viz., last seven days referred as Current Weekly Status (CWS), and last

¹ The PLFS data is accessed from Ministry of Statistics and Programme Implementation (MOSPI), Government of India

365 days referred as Usual Primary and Secondary Status (UPSS). The information on both earnings and hours worked for all those in the workforce is available in the database only for CWS and hence the worker categories: employer, regular, casual, and own-account worker are based on weekly status.

The compilation of minimum wages data is from the state wise notifications of the Labour departments of respective State governments. The minimum wages are notified on a per day basis for 8-hour day based on a list of schedule employment covered in the notification for all wage earners, regardless of their gender, age, or rural/urban location. Not only does the number of scheduled employments vary from state to state for instance, 89 for the Indian state of Odisha and 69 for the state of Bihar), the minimum wages also differ according to the skill levels of the workers for each schedule of employment. This complex system gives rise to more than 1900 minimum wages in India (Mansoor and O'Neill, 2021). Thus, the yearly minimum wage data compiled for this study has a unique value for each schedule employment and for each skill category for every Indian state. The minimum wage data are then mapped on to the employment type of the respective state of the PLFS round. To account for adjustment lags for the internalization of minimum wage in the system, the minimum wages as on 31st December of the previous year of the PLFS round is used (Soundarajan 2019, Menon 2017). Further, for the non-wage earners that is the self-employed we map the minimum wage of a particular scheduled employment to the two-digit industrial category they are engaged in.

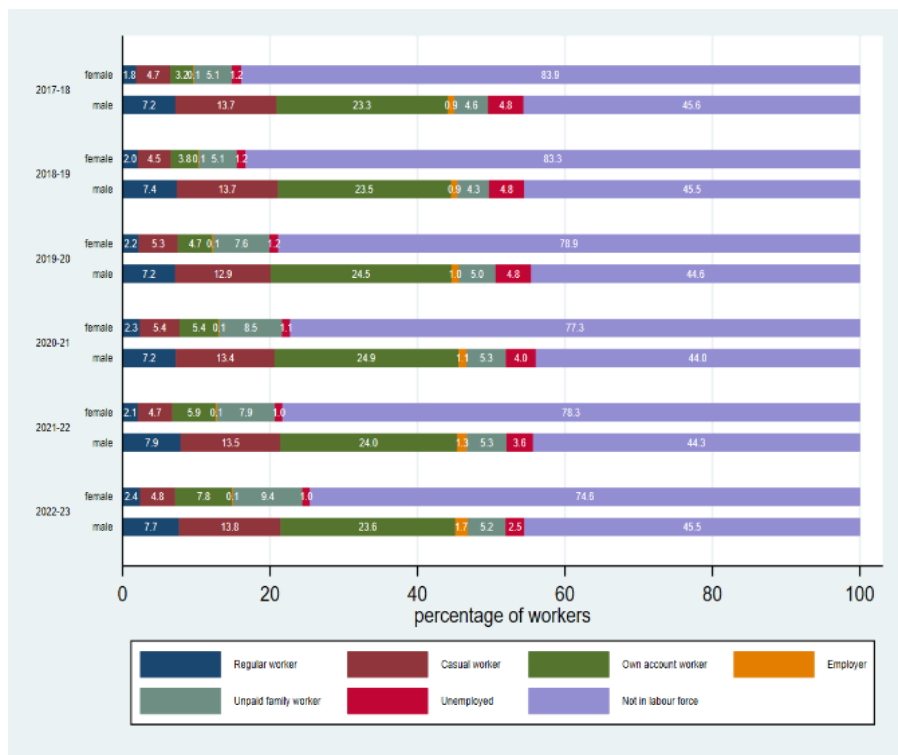
Minimum wage notification announces minimum wage on a per day basis for 8-hour day, hence, there is a possibility that the worker ends up working for more than 8 hours and paid single consolidated amount for the entire workday. Given that the minimum wages are for per (eight-hour) day, the daily earnings from the PLFS data are adjusted to an eight-hour block using the number of hours worked in a day Soundarajan (2019).

For market concentration, a measure of the aggregate employment concentration based on a district level Herfindahl-Hirschman Index (HHI) is constructed based on the number of workers employed by a firm, geographical location of the firm using the sixth Economic Census of Firm (2013) by the Ministry of Statistics and Programme Implementation (MOSPI), Government of India. This index is first calculated at the district level using the number of employees in each firm to capture how much labour is concentrated in each firm and then an overall district level HHI is calculated by summing up the firm level HHIs.

Labour Market and Minimum Wages Framework in India

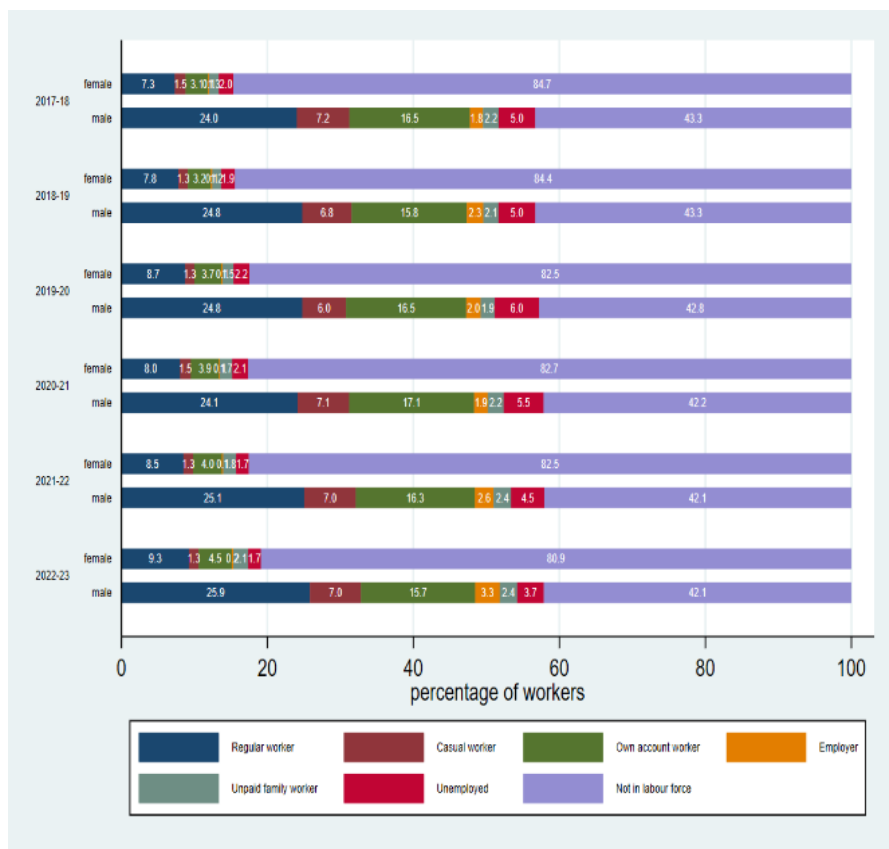
Employment in India is characterized by two major categories, the self-employed (or non-wage earners, the majority of whom are own-account workers), and wage earners for whom the employment relationship is linked through the payment of wages. According to PLFS in 2020-21, 47 percent of the workers are self-employed, and the rest 53 percent are wage earners as per the CWS criteria. The PLFS subdivides wage earners into regular salaried workers and casual workers who accounted for 26.9 percent and 26.1 percent respectively in 2020-21. Regular or salaried workers have continuous employment, with a periodic (weekly or monthly) wage compensation (Estupinan et al., 2020). On the other hand, casual workers, are usually engaged in informal jobs, are under-employed with irregular working cycles, and compensated on daily basis (ILO, 2018). The self-employed composes of employers, unpaid family workers, and own-account workers accounting for 3.5 percent, 27.5 percent and 69 percent respectively in 2020-21. The highly dominant own-account workers are mostly home-based workers, and their earnings fluctuate like the casual workers (ILO, 2018).

Figure 1: Gender and Year Wise Distribution of Worker Type for Rural Area



Apart from these, there are unpaid (domestic workers) and the unemployed in the labour market. These two categories do not report either wages or earning, but changes in minimum wages could potentially influence change in worker type and hence their numbers. However, as mentioned earlier in the Indian context, a shift in worker type into these categories from other types are rare and will need a different framework to analyse given the absence of earnings data for them and hence is beyond the scope of this study. Figure 1 and 2 shows gender and year wise distribution of worker type in rural and urban area respectively.

Figure 2: Gender and Year Wise Distribution of Worker Type for Urban Area



In India the minimum wages are governed by the Minimum Wage Act (1948) wherein a worker covered under the minimum wage notification by the force of the decree is legally entitled to receive a minimum wage. The states in India notify minimum wages for the schedule employments covered under the act. Firms that form part of the scheduled employments not covered under the minimum wage act are not mandated to pay their employees the legislated minimum wages. This implies that there are wage-earners in India that are not covered under the minimum wage legislation. In addition to uncovered wage-

earners, there are self-employed workers who do not come under the ambit of the Minimum Wage Act (1948). In this paper the analysis is carried out on male and female workers, aged between 15 years and 59 years, that are covered under minimum wage legislation in India and who have reported non-zero earnings and working hours.

Employment Transition Effects

We first estimate the effect of the change in minimum wages on the transition of workers from covered to uncovered sector as well as to unemployed and not in labour force. To estimate the effect of change in minimum wages on the employment transition of workers, model based on first differencing as provided in Alaniz, Gindling and Terrell (2011) is used:

continued

$$Prob(Emp_{ijst} = 1) = \beta_0 + \beta_1 \Delta \ln MW_{jst} + \beta_2 \Delta \ln GDP_{st} + \delta_t + \delta_s + \delta_t \times \delta_s + \mu_{ijst} \quad (1)$$

where the dependent value takes the value of '1' if the worker stays in the covered sector at time t_q and $t_q + 3$ or $t_q + 1$ and $t_q + 3$ and takes value of '0' if worker transitions to uncovered sector or becomes unemployed or goes out of the labour force. As minimum wages data for each year is observed on 31st December, the change in worker employment status is observed from quarter 1 (t_q) or quarter 2 ($t_q + 1$) to quarter 4 ($t_q + 3$) with this last quarter of the survey round chosen as a transition quarter to account for adjustment lags in minimum wages. $\Delta \ln MW_{ijst}$ is the change in log of real minimum wages applies to individual i belonging to industry j in state s between time t_q and $t_q + 3$ or $t_q + 1$ and $t_q + 3$. $\Delta \ln GDP_{st}$ is the change in log of real gross state domestic product for state s between time t and $t + 1$. This helps to control the change in labour demand situation in the states. δ_t and δ_s are the time and state fixed effects, respectively, that are common for all workers in state s for year t to control for shocks occurring in states and

time invariant geographical characteristics respectively. $\delta_t \times \delta_s$ are the interaction between state and time fixed effects and is included additionally compared to the earlier specifications as the time frequency here is quarterly. Thus, this state-time interaction variable could account for any unexpected shocks or demand and supply conditions at the state level that might influence the participation of the workers and is also correlated with the state-level changes in the minimum wage (Card 1992; Card and Krueger 1995; Gindling and Terrel, 2011 and Menon and Rodgers, 2017). Robust standard errors are clustered at the state-industry level (which corresponds to the level at which minimum wage is notified by the state government).

Coefficient β_1 provides the probability of worker staying back in the covered sector with the change in minimum wages. However, a negative coefficient would give the probability of a worker transitioning out of the covered sector to the uncovered sector as well as to unemployed and not in labour force. Table 1 covers results which imply that an increase in minimum wages results in statistically significant decline in female employment. The result for female workers is driven by low skilled workers belonging to the region of high market power where 10 percent increase in minimum wage will result in a fall in probability that a worker remains in covered sector by 1.5 percent. However, for male workers we find null employment transitions effects.

Table 1: Marginal Effects of Minimum Wages on a Probability of Worker Transitions from Covered Sector to Uncovered Sector and Unemployed or Not in Labour Force

Workers working in covered sector	Female		Male	
	Marginal Effect	Standard Error	Marginal Effect	Standard Error
All Workers	-0.050	0.023**	-0.021	0.018
Low Skilled and High Market Power	-0.151	0.049***	-0.019	0.030
High Skilled and High Market Power	-0.027	0.026	-0.029	0.015*
Low Skilled and Low Market Power	-0.028	0.096	-0.022	0.051
High Skilled and Low Market Power	-0.047	0.047	-0.011	0.031

Note: Standard errors clustered at the state-industry level. Asterisks are based on standard p -values *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Sampling weights have been included.

Next, we explore where workers go who leave the covered sector. For this we estimate multinomial logit model using the sample of all workers employed in the covered sector at time t_q and $t_q + 1$. Where these workers can be found in time $t_q + 3$: (i) stay in covered sector, (ii) move to uncovered sector, or move to (iii) unemployed or not in labour force category. Particularly, $TRANS_{ikz,st}$ indicates whether worker moves from sector k (the covered sector) into sector z (z = move to uncovered sector or unemployed or not in labour force). The base category is that worker stays in the covered sector.

$$Prob(TRANS_{ikz,jst} = 1) = \exp(\theta_{ikz,jst}) / (1 - \exp((\theta_{ikz,jst}))) \quad (2)$$

where,

$$(\theta_{ikz,jst}) = \beta_{okz} + \beta_{1kz} \Delta \ln MW_{jst} + \beta_{2kz} \Delta \ln GSDP_{st} + \delta_t + \delta_s + \delta_t \times \delta_s + \mu_{ikz,st}$$

Table 2 covers the result of multinomial logit regression which shows that due to change in minimum wages female workers are transitioning into unemployed or not in labour force. The results show that female workers have higher probability to transition to unemployed/not in labour force from covered sector.²

Table 2: Marginal Effects of Minimum Wages on a Probability of Worker Transitions from Covered Sector to Another Sector

	Female		Male	
Destination Sector:	Marginal Effect	Standard Error	Marginal Effect	Standard Error
<i>All workers: Multinomial Logit Regression (Origin: Covered Sector)</i>				
Uncovered–Self Employed	0.443	0.970	0.328	0.310
Unemployed and Not In Labour Force	0.644**	0.313	0.138	0.409
Sample Size	35510		129543	
<i>Low Skilled & High Market Power: Multinomial Logit Regression (Origin: Covered Sector)</i>				
Uncovered–Self Employed	0.235	1.094	0.527	0.445
Unemployed and Not In Labour Force	0.941**	0.406	0.262	0.465
Sample Size	11173		39477	

Note: Standard errors clustered at the state-industry level. Asterisks are based on standard *p*-values *** *p*<0.01, ** *p*<0.05, * *p*<0.1. Sampling weights have been included.

Table 3 shows the marginal effects of minimum wages on a probability of worker transitions from uncovered sector to covered sector using equation 1. In this case the dependent value takes the value of '0' if the worker stays in the uncovered sector at time *t* and *t* + 1 and takes value of '1' if worker transitions to covered sector. Therefore, a positive

² Similar results have been obtained using the stricter identification strategy of Border Discontinuity Design. The results are not shown in this draft for brevity purposes.

coefficient implies a transition from uncovered to cover sector. The results show that with increase in minimum wages the probability of male workers to transition from uncovered to covered sector is positive. 10 percent increase in minimum wages will result in an increase in probability that a worker transition to covered sector from uncovered sector by .1 percent. The results hold for low skilled workers belonging to the regions of high market power. This implies in high market power regions female workers have a higher probability of transitioning to not in labour force, which also coincides with favourable labour market conditions for male workers.

Table 3: Marginal Effects of Minimum Wages on a Probability of Worker Transitions from Uncovered Sector to Covered Sector

Workers working in covered sector	Female		Male	
	Marginal Effect	Standard Error	Marginal Effect	Standard Error
All Workers	0.001	0.011	0.009	0.006
Low Skilled and High Market Power	0.009	0.012	0.024	0.011**
High Skilled and High Market Power	-0.009	0.019	0.007	0.009
Low Skilled and Low Market Power	0.001	0.023	0.003	0.015
High Skilled and Low Market Power	-0.008	0.034	0.026	0.013**

Note: Standard errors clustered at the state-industry level. Asterisks are based on standard p -values *** $p<0.01$, ** $p<0.05$, * $p<0.1$. Sampling weights have been included.

CONCLUSION

Card et al. (2016) find that women are less likely to work at firms that pay higher premiums to either gender, with sorting effects being most important for low and middle-skilled workers. In the presence of binding minimum wage there is a possibility that women are sorted out, especially low-skilled women, and are replaced by men in monopsonistic labor market. To study whether it is indeed the case, this chapter explore the minimum wage effect on the transitions of men and women workers from covered to uncovered sector as well as to unemployment and out of labour force in the presence of varying labour market concentration. Using the urban level individual and household level panel data, for the years 2017-18 to 2022-23, and data on more than 1800 minimum wages, this paper finds that an increase in minimum wage results in transition of women workers out of the covered sector, however, for male workers we find null employment transitions effects. The study on heterogenous effects reveal that the results are primarily driven by low-skilled female workers belonging to the regions of high labour market concentration where 10 percent increase in minimum wage result in a fall in probability that a worker remains in covered sector by 1.5 percent. Contrary to this we find favorable labour market conditions for low-skilled male workers in the regions of high labour market concentration.

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