Private Enterprise Development in Low-Income Countries

The Morale Effects of Pay Inequality

Emily Breza, Supreet Kaur and Yogita Shamdasani

A month-long field experiment with full-time Indian manufacturing workers reveals that relative pay comparisons in the workplace have significant effects on worker attendance, effort, and social cohesion. These negative morale effects are completely mitigated when pay differences are clearly justified.

Introduction

Traditionally economic theory predicts that workers care about only their own wage levels when making effort and labour supply decisions (i.e. deciding whether to look for jobs or how many hours to work). However, a long tradition in economic thought - as well as in psychology, sociology, and human resource management - has advanced the notion that individuals also care about their pay relative to that of their co-workers. This implies that relative pay may be a compensating differential - affecting utility and therefore the willingness to accept work at a given absolute pay level. There are two channels through which increased utility leads to higher output and productivity. First, utility effects could translate into changes in worker effort, and therefore output (direct channel). In addition to direct utility effects, a large literature in social psychology, sociology, and organizational behaviour emphasizes the potential for externalities across workers (that is the effect of an increase in utility for workers that did not experience it). Under this view, a change in morale by some workers can affect group cohesion or harmony in an organization as a whole – with implications for aggregate welfare and productivity. These implications are valid if we believe that workers do indeed care about relative pay - a hypothesis for which we have limited field evidence. In this paper, we empirically test the validity of this view using a field experiment with manufacturing workers.

Policy context

This research was conducted in rural Orissa, India, during the agricultural lean season. Residents of this region largely engage in low-skill activities such as subsistence agriculture and basic manufacturing. A dominant source of wage employment is through markets for casual daily labour, usually for work in agriculture, construction and low-skill manufacturing. The predominant pay structure in this region is that of a flat, daily wage.

Methodology

We set up a field experiment with manufacturing workers employed in small factories to test whether relative pay affects worker behaviour at economically significant magnitudes. Male workers between the ages of 18-55 were recruited from nearby villages surrounding our factories. They engaged in low-skilled manufacturing tasks full-time for one month, and were paid a flat daily wage. We organized workers randomly into teams of three, and assigned teams to different wage regimes. Within a team, all members produced the same exact product (e.g. rope), while every team within a factory produced a different product (e.g. rope vs. brooms). Production was an individual activity — teammates sat together but did not do any work jointly. Because each worker's two teammates were the only other people at the factory

making the same product, they were likely the most salient reference group for wage comparisons.

The employment period began with a 14 day training period for each of the tasks. During the training, factory staff focused on making sure that the workers fully understood how to complete their tasks and how to ensure a baseline level of quality demanded in the market. On day 10, workers were given individual, private feedback by the factory manager on their rank relative to the other members of the team. Once training ended, workers' baseline productivities were assessed, and we ranked each worker as the lowest, medium, or highest productivity worker within his respective team. We then randomly assigned teams to wage treatments and informed each worker in private of his new wage.

We designed wage treatments that allowed us to fix workers' absolute pay levels, while creating variation in co-worker pay. Each team is then randomized into one of four wage structures:

- Heterogeneous: Each team member was paid according to his productivity rank within the team, where the rank is based on workers' baseline productivity level, i.e. the productivity of the worker before the intervention. The wages for the lowest, middle, and highest productivity workers are wL, wM, and wH, respectively.
- Compressed L: All team members are paid the same daily wage of wL.
- Compressed M: All team members are paid the same daily wage of wM.
- Compressed H: All team members are paid the same daily wage of wH.

This allowed us to compare two workers of similar baseline productivity who received the same wage, but varied in the wages of their co-workers. After being randomized into these treatments at the end of training, each person worked under his assigned wage for almost three weeks, after which the fixed one-month employment contract ended.

To test for the role of perceived justifications, i.e. the degree to which the subjects perceive the wage to be arbitrary, we cross-cut the wage treatment with two additional sources of variation. First, we varied actual fairness — the extent to which pay differentials overstated productivity differentials between co-workers. Second, we varied perceived fairness - the extent to which workers could observe co-worker productivity.

Findings

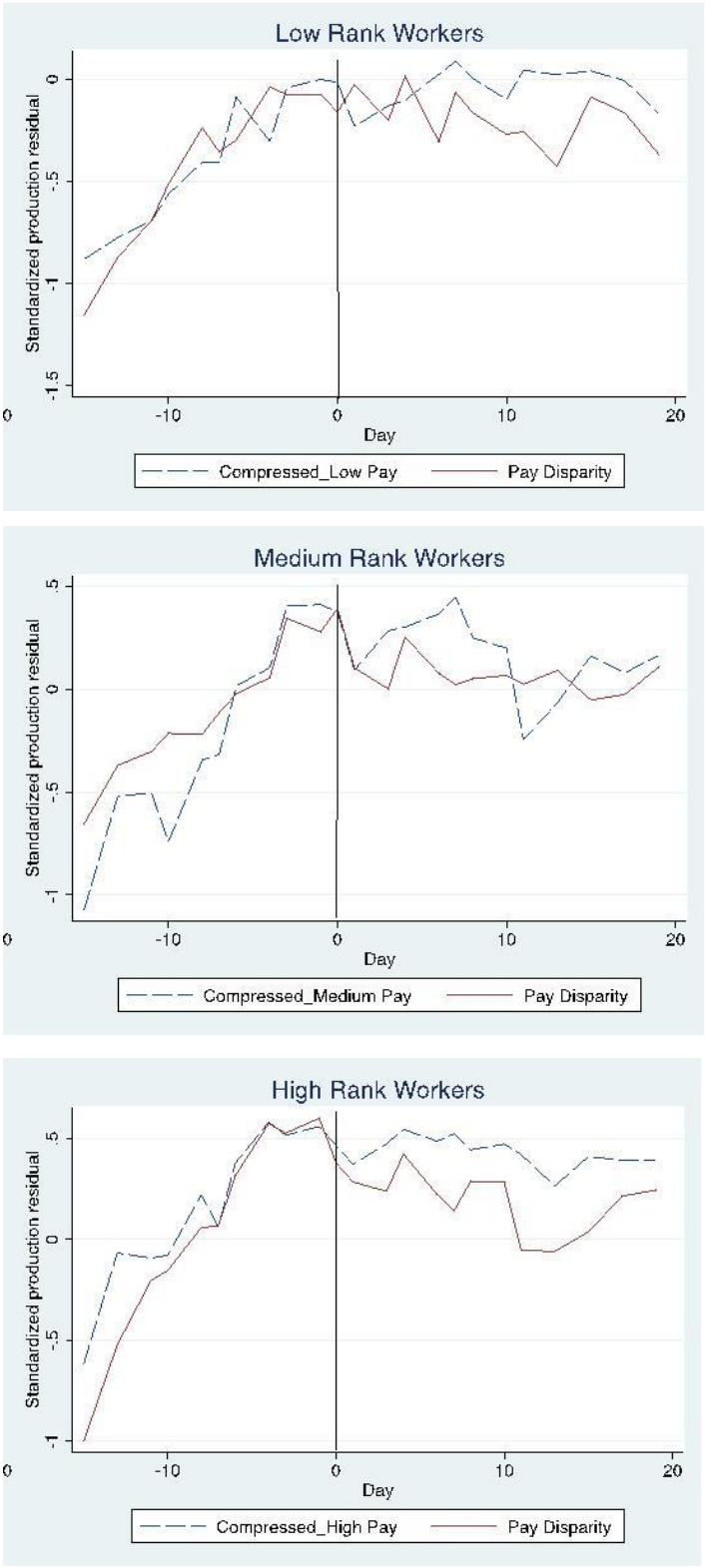
Our results provide support for the importance of wage comparisons among co-workers. First, for a given absolute wage level, workers are less likely to come to work when their co-workers are paid differently from them - regardless of their relative pay rank. Second, output is lower on pay disparity teams; workers who earn less than their peers reduce output by 0.33 standard deviations, and these effects strengthen in later weeks. Figure 1 below plots average production on each day for each of the 3 sets of relevant pairwise comparisons. Among Low rank workers, in the baseline period, production in the Compressed L and Heterogeneous teams shows a common trend as workers gain experience. The treatment ("post") period begins on day 0, when workers are privately told their individual post-training wage. Within about 5 days (i.e. by the first pay period following the wage change), differences in output start to emerge, with workers on Heterogeneous teams (who are paid less than their peers) reducing output relative to the Compressed L teams. In addition, there is no evidence of positive effects of relatively higher pay for High rank workers who are paid more than their peers. In fact, Medium and High rank workers in Heterogeneous pay teams *decrease* their attendance relative to their counterparts on the Compressed M and Compressed H teams, respectively. Third, performance on endline (i.e. the last post-treatment survey) teamwork tasks suggests that pay disparity erodes social cohesion: team members are less able

to cooperate in their own self-interest. Finally, the perceived justification for pay differences plays an essential role in mediating morale effects. When pay differences are clearly justified - co-worker output is highly observable, or one's higher-paid co-workers are substantially more productive than oneself (in terms of baseline productivity) - we detect no negative effects of pay disparity on attendance, output, or team cohesion.

Policy implications

If relative pay concerns affect labour supply, effort, or group cohesion, this could potentially influence many features of the labour market. For example, it could help explain why wage compression — when wages vary less than the marginal product of labour — appears prevalent in both poor and rich countries (Dreze and Mukherjee 1989, Fang and Moscarini 2005, Charness and Kuhn 2007). Furthermore, relative pay concerns could affect how heterogeneous workers are sorted into firms, possibly leading some firms to specialize in higher or lower ability workers (Frank 1984). They could also influence whether labour is contracted through the external market or organized within firm boundaries (Nickerson and Zenger 2008). Such effects could themselves depend on features of production — for example, if the observability of co-worker output affects whether pay differences are perceived as justified (Bracha et al. 2015). Finally, relative pay concerns also have bearing on human resource policies — for example, they could help explain why about one-third of US firms require employees to sign nondisclosure contracts that forbid them from discussing their pay with their co-workers (Card et al. 2011).

Figure 1: Effects of heterogeneous pay on worker output



Notes: Standardized production residual is the residual from a regression of standardized output on a dummy for festival days and dummies for each of the four treatment groups. The figures plot, for each day of the experiment, the average of the residuals for each group of workers (the relevant pairwise comparisons are shown of workers who earn the same absolute wage, but are in Compressed vs. Heterogeneous pay teams). Day=0 is the day wage treatments took effect (i.e. when workers were told their post-training wage).

Private Enterprise Development in Low-Income Countries

Moving Forward…

This project has enabled us to build a substantial research infrastructure in rural Orissa, allowing us to launch a broader research agenda on the causes and consequences of labour market frictions in developing countries.

An extension following this project is to study the implications of wage compression for earnings in casual daily labour markets. We have also developed a novel revealed preference approach that allows us to test for rationing in village labour markets. Rationing occurs when people are willing to work at the prevailing wage but are unable to find employment and indicates frictions in the labour market.