# Is There a Business Case for Verbal Abuse?

An In-Depth Investigation of Incentive Interplay and Profitability in Garment-Producing Factories

An honors thesis for the Department of Economics

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## Abstract

This paper explores the economic determinants and outcomes of verbal abuse in developing country garment factories. The first question addressed is if and how verbal abuse derives from firm incentive structures. The second question is whether abuse is profitable. The purpose is to understand the hypothesized existence of a business case for verbal abuse. A model is developed to incorporate verbal abuse as an integral component of firm motivational structure wherein supervisors employ verbal exhortation to encourage higher production levels from the workforce. The proposed theory contends that, in the absence of an incentivizing piece-rate wage, workers will be subject to increased levels of verbal abuse to deter shirking behavior. If it is demonstrated that verbal exhortation leads to high levels of productivity from a worker, then it could possibly be the case that firms are profit-maximizing in their decision to pay workers hourly and take a tolerant stance toward verbal abuse (contingent on the degree of presumed disutility workers suffer from being abused). Alternately, if verbal abuse is found to have negative profitability implications, firms would be acting sub-optimally and would have an incentive to better monitor the abuse. Results from analysis of firm incentive structures confirm that supervisors do use verbal abuse as a supplementary motivational tool. However, results also refute the possibility for a business case, demonstrating that verbal abuse has detrimental implications for firm profits, both by negatively impacting worker productivity and generating a costly compensating differential.

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Section 1: Introduction

According to the 2014 Workplace Bullying Institute national survey report, 27% of all workers in the United States are currently victims of workplace abuse or have been in the past. Defined as "abusive conduct that is threatening, intimidating, humiliating, work sabotage or verbal abuse," workplace abuse is a well-documented and pervasive phenomenon in firms worldwide (Namie et al. 2014, 3). Specifically, survey data and reports collected from garment factories in developing countries reveal that textile workers are particularly vulnerable to myriad forms of workplace abuse. Although prior investigations demonstrate the existence and detrimental effects of abuse, very little economic research has been conducted to understand the management characteristics that give rise to such behavior, or to consider the impact of abuse on firm productivity and profitability.

One well-documented and frequent manifestation of workplace abuse is verbal exhortation. Prior psychology literature explores the foundational characteristics of verbal abuse in the workplace and identifies a multitude of adverse repercussions for worker health and well-being. However, there is currently a gap in the academic literature when it comes to understanding workplace verbal abuse from the business viewpoint of firms. This paper seeks to build on prior verbal abuse research by expanding the analysis to an economic perspective. More specifically, this paper explores the possibility that certain abusive behavior might somehow fit in to a profit maximizing strategy, and thus be actively tolerated by firms.

Exploring verbal abuse from a business perspective involves an analysis of the underlying economic factors that drive the behavior as well as the resulting impact on revenues and costs. Beginning with the former, previous literature identifies psychological factors, such cognitive load, power imbalance, or widespread stereotyping, as the foundational purveyors of verbally

abusive behavior by supervisors. However, it could also be the case that, lacking an alternate means of compelling workers to increase productivity, supervisors with production-based incentives actively employ verbal abuse as an instrument to stimulate worker effort. In this capacity, verbal abuse could arise in a context where supervisors are especially determined to extract additional productive effort from the workers they oversee.

Shifting to a consideration of the economic impact, if it is the case that verbal abuse is an effective tool for motivating workers, the abuse would correspondingly be tied to higher revenues. Firms may therefore perceive verbal abuse as a cheaper means of motivating workers as compared to a monetary incentivizing wage, giving managers a rationale to feign willful ignorance. On the other hand, it could also be the case that despite being used as a mechanism to incite productive efforts, in reality verbal abuse has the opposite effect by exacting a psychological toll that reduces productive efficiency.

In addition to output considerations, verbal abuse could also factor in to firm cost figures in the form of worker wages. It could be the case that abusive treatment incurs a level of disutility so as to necessitate a compensating differential, requiring firms to pay higher wages to victims of abusive treatment. Alternately, if victimization actively eroded an individual's sense of agency or self-worth, verbal abuse could have the reverse effect of lowering demanded wages.

The separate impacts on revenues and costs must therefore be carefully considered when assessing the profit-maximizing possibilities of verbal abuse. In the case that verbal abuse either decreased workers' productive efficiency or sufficiently increased demanded wages by some compensating differential, firms would be mistaken in their tolerance of verbal abuse. However, if verbal abuse demonstrably increased individual efficiency without significantly driving wage costs, then firms would rationally encourage verbal abuse as a profit-maximizing strategy.

This paper investigates the previously unexplored economic determinants and implications of verbal abuse in the firm setting, and probes the underlying incentivizing mechanisms that motivate individually operating self-interested agents. To investigate the phenomenon of supervisor verbal abuse, the proceeding analysis focuses on survey data collected from workers and managers in garment sector factories in Jordan, Vietnam, and Indonesia. The analysis seeks to establish a more cohesive understanding of workplace verbal exhortation in the contextual firm environment, the root of its existence, and its implications for revenues, costs, and profits.

The paper is organized as follows:

- Section 2 provides a literature survey of relevant psychological, sociological, and economic research relating to workplace abuse and aggression, as well as firm incentives and organization.

- Section 3 outlines a theoretical model of workplace verbal abuse. The proposed model employs a 3-tiered structure with individually utility-maximizing agents at each level of a firm hierarchy. The section concludes with hypothesized implications for the determinants and impacts of verbal abuse.

- Section 4 proposes an empirical strategy for testing the hypotheses proposed by the theoretical model derived in Section 3.

- Section 5 discusses the utilized dataset and provides summary statistics and construction of relevant test variables.

- Section 6 summarizes the results of the experiment, including a discussion of the conclusions that can be drawn, possible limitations, and proposed steps for future analyses.

- Section 7 concludes the analysis and summarizes overall findings and implications.

Section 2: Literature Review

The injurious effects suffered by victims of verbal abuse are chronicled in numerous studies, and comprise a significant portion of the literature on workplace bullying. In a 2000 study, Tepper demonstrated that employees who perceived their supervisor as abusive suffered a multitude of mental and physical health problems, reported lower life satisfaction, and were more likely to quit their jobs. Rospenda (2009) showed that workplace abuses are strong predictors of negative job and health outcomes, and an increased risk for injury, illness, and assault. LeBlanc & Barling (2004) also found that victims of directed aggression tended to have reduced emotional and physical well being, and a low level of organizational commitment. Leck (2006) and Baron (1998) also noted a frequent disconnect between perceptions of the victim and behaviors of the abuser, with victims more likely to view bullying as an accepted practice of organizations and to feel that management would be indifferent to their complaints (Leck, 2006). The perception of victims that management is tolerant of abuse suggests that a significant portion of abuse cases remain unreported, even as negative health and job outcomes persist.

Although the detrimental effects of verbal abuse are well-documented, it is necessary to also consider fundamental structural and environmental facets of firms that underlie such behavior, and to consider the possibility that individuals may be actively choosing to abuse if they perceive it to be in their best interest. In this way, supervisors may be using verbal exhortation as a motivational instrument to ensure maximum effort on the part of their subordinates or to deter shirking. If verbal abuse is perceived as a profitable mechanism to induce optimal effort levels, firms could feasibly have an interest in allowing the behavior to persist

To provide a framework for this possibility, this section begins with a review of the relevant literature pertaining to the organizational factors underlying motivation, productivity,

efficiency, and shirking, which draws primarily from the field of labor economics. The focus then shifts to the core psychological research relating to the phenomena of aggression and verbal abuse, which explores the environmental determinants and individual implications of abusive workplace relations.

Within the scope of Labor Economics, the recently developed field of Personnel Economics concentrates on the application of economic theory to the human resource division of firms. A large portion of the literature deals with incentive schemes and motivation for workers and managers, and with an examination of the counterbalancing effects of a piece rate versus hourly wage system (see Lazear 2000; Banker 1996; Fernie et al. 1996). An additional subset of Personnel Economics and some literature in the field of Behavioral Economics analyze the workplace dynamics that contribute to an individual worker's decision to withhold optimal effort levels, commonly referred to as "shirking" or "free-riding."

One of the fundamental questions firms face, and the basis for Personnel Economics, is how to optimally determine wages and incentive structures. The cornerstone theory of Personnel Economics is that workers will respond to incentives, which has motivated numerous studies aimed at identifying the optimal employee incentive structure. According to agency-theoretic models, agents (workers in this case) trade off a disutility for work effort and expected increase in compensation from output. The principal (the firm), must design incentive schemes to mediate the two. In a seminal study, Lazear (2000) evaluated data from Safelite Glass Corporation, a large automobile glass manufacturer that, in 1994 and 1995, underwent a shift in compensation method from hourly wage to piece rate. By examining worker level data, Lazear found that the adoption of a piece rate system led to a 44 percent increase in productivity for the company as a whole. He demonstrated that average output per worker as well as average worker ability both rise after the introduction of piece-rates, and that there is an additional tenure effect over time as

individuals learn on the job and less able workers are induced to leave. Additionally, in a longitudinal study of a national retail store chain, Banker, et al. (1996) demonstrated how switching to an incentive scheme that rewarded workers who surpassed a sales goal and terminating those who fell short increased net sales, and that this effect endured over time. Additional studies contribute further conclusive evidence in favor of the link between individual compensation and performance.

Some critics of the pay-for-performance model in firms argue first, that using monetary motivations tends to decrease intrinsic motivation to work, and second, that such systems can be difficult to implement and manage, ultimately leading to more costs than benefits (Baker, et al. 1988). However, by and large, evidence indicates that in industries where performance is easily measured and intrinsic motivation is less relevant, as is the case with sweatshops, performance-based incentive contracts are tied to higher performance levels (see Banker, et al. 1996; Bandiera 2009; Lazear 2000; Prendergast, 1999).

Bandiera et al. (2007) expanded on the compensation-productivity link by extending the analysis to a hierarchically organized firm, where managerial compensation is contingent on the average productivity of the bottom-tier workforce. Through analysis of managerial compensation in a fruit-picking company, the study found that adding a daily performance bonus to the same level of managers' fixed wages induced average worker productivity to rise by 21 percent. Individual analysis of worker-level statistics indicated that this productivity increase was a byproduct of a simultaneous "targeting effect," whereby managers opted to target their focus toward more able, productive workers as well as a "selection effect," that led managers to hire only the more capable workers. These results provide strong evidence for the conclusion that as supervisor and manager incentives are tied directly to the productivity of the subordinates they

oversee, their personal desire to motivate optimal effort and ensure a high production level increases, an important implication for the determinants of verbal exhortation.

Bandiera et al. (2009) further expanded the work on managerial compensation by drawing a connection between managers' incentives and a propensity to favor workers with whom they are socially connected. By again examining the productivity of managers and workers in the fruit-picking industry, the analysis demonstrated that a lack of production-linked incentives for managers will result in a propensity to favor workers with whom they were "socially connected," regardless of worker ability. Introducing worker-performance based incentives induced managers to remove their social biases, and ultimately improve firm productivity.

Although a preponderance of literature causally links incentives to performance, Sanders and Walia (2012) provide an important caveat to this relationship, by pointing out that when combined with considerable levels of pressure, incentives can actually have the reverse effect of what is intended. They propose a model that incorporates counter-productive performance pressure in which incentives induce both positive and negative outcomes. The model, which combines "distraction theories" and "explicit monitoring theories," predicts that under situations of extreme pressure, performance-based incentives have the potential to give rise to lower levels of productive effort as well as lower levels of performance, an effect termed "shirking under pressure" (Sanders and Walia, 2012). The key implication of this finding is that there is the potential for an information problem whereby supervisors could be employing verbal abuse as an incentivizing mechanism but inducing the exact opposite effect by imposing high levels of psychological pressure that ultimately yield poorer performance.

In addition to exploring the motivating forces at play for individuals in a workplace context, a significant body of literature has also identified factors that contribute to an individual's decision to withhold effort. Kidwell and Bennett (1997) surveyed research from

economic, psychological and sociological literature studying sub-optimal effort levels that arose during group-oriented tasks, termed "shirking," "free-riding," or "social loafing." They combine the relevant literature to construct a "Propensity to Withhold Effort" model that incorporates the economic incentives as well as relevant social, moral, and group structures.

Apart from noting the previously discussed wage structures, relevant economic literature tends to focus on a firm's structural components, such as work-group size, as important contributing factors to individual effort level. Research on individual productivity within a group setting dates back to the 19th Century when Ringelmann conducted studies demonstrating that the performance of group rope-pulling was inferior to what should have been expected from previous individual performance (Kravitz and Martin, 1986). Many subsequent studies corroborated this finding, demonstrating that anonymity and the difficulty of individual monitoring contributed to work group size being positively correlated with sub-optimal effort levels (Alchian and Demsetz 1972).

Literature in the fields of Management and Social Psychology deals more specifically with group characteristics as they relate to effort levels. Specifically, studies have demonstrated that an employee's perception of peer compliance tends to encourage the individual to contribute a comparable level of effort (Heckathorn 1990). Sanctions, both monetary and non-monetary, are proven to be effective means of ensuring peer compliance, again indicating a social pressure and compliance link (Masclet et al. 2003). In addition, perceptions of equity and altruism also tend to decrease individual likelihood to shirk or free ride (see Albanese et al. 1985; Jackson and Harkins 1985). By and large, studies support a conclusion that in-group cooperation and mutual support discourage any single individual from withholding effort.

Relevant literature clearly demonstrates that firm incentives typically contribute positively to motivating worker and supervisor effort toward efficient production levels, and that external

factors ranging from group size to equity perceptions tend to deter optimal effort. A logical conclusion therefore is that supervisors use verbal abuse as an instrument to induce productive effort levels where there is a perception of workers shirking. However, it is also a possibility that supervisors are not actively choosing their level of verbal abuse with the intention of maximizing productivity, but rather are responding instinctually or subconsciously to workplace stressors or firm power dynamics. Bandura (1973) discusses the social learning theory of human aggression and notes that "man is endowed with neurophysiological mechanisms that enable him to behave aggressively, but the activation of these mechanisms depends upon appropriate stimulation and is subject to cortical control" (Bandura 1973, 29). Specifically, literature in the field of social psychology has examined in-depth the effects that cognitive load and power have on one's perception and treatment of others.

Cognitive Load is defined as the time at which one reaches the limit of one's mental capacity, and can often lead individuals to behave differently than they would in situations devoid of stress and pressure. Specifically, when faced with high levels of cognitive load, individuals are more apt to display dehumanizing and stereotyping behaviors. Additionally, individuals under cognitive load are more likely to revert to the known, rather than explore alternative solutions. In one oft-cited study, Darley and Batson (1973) observed that rushed and harried individuals under strict time pressures were more likely to dismiss or ignore a man in an alleyway visibly in need of assistance. In a specific examination of the individual determinants of workplace bullying, Mathisen et al. (2011) found that supervisor stress correlated strongly with workplace bullying, more so than any individual personality traits (Mathisen et al. 2011, 646). In the context of sweatshops, the psychological effects of cognitive load indicate that supervisors under a high level of stress from buyer pressures or unrealistic quota requests would be expected to dismiss humane considerations in favor of the instinctual response of verbal exhortation.

Furthermore, they would be more willing and inclined to abuse individuals that they perceived as sub-human and stereotypically incapable.

Additionally, studies have demonstrated that individuals in the mindset of dehumanization are also less likely to register a lack of efficacy from their implemented punishments. More precisely, Bandura (1975) noted that dehumanization acts as an impetus for self-reinforcement of cruelty. In Bandura's study, subjects were able to punish targets who had been characterized as dehumanized, humanized, or neutral, and found that subjects exhibited significantly more aggressive punishment when primed to regard their targets as dehumanized. In a second study, which rendered punitive actions ineffective, results demonstrated that subjects in a dehumanizing mindset would rapidly escalate the intensity of their punishments to extreme levels, even when punishments demonstrably failed to eliminate errors. These findings imply that supervisors under severe time and production pressures, in addition to being more apt to perceive their worker line as sub-human, would also have the tendency to operate under a skewed perspective of the efficacy of verbal abuse. In fact, a perception of ineffectiveness may even lead abuse levels to intensify and escalate more rapidly.

In addition to cognitive load, power is a subject explored in-depth by social psychologists and is a natural consequence of the hierarchical structure of sweatshops. Power is broadly defined as an individual's relative capacity to modify states by providing or withholding resources or administering punishments (Keltner et al. 2003). Notably, research has shown that a perception of power, whether real or imagined, significantly increases an individual's tendency to be action-focused, engage in stereotyping behavior, and generally disregard the interests of low-powered subordinates (see Galinsky et al. 2003; Kipnis 1972; Keltner et al. 2003). In a series of simulated experiments, Galinsky et al. (2003) demonstrated that perceived power in one context led individuals to take direct action in general, and also specifically to take action to achieve their

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own egocentric desires. An earlier study by Kipnis (1972) examined a simulated supervisor-worker power construct, and found that perceived power led individuals to increase attempts to influence subordinates and generally undervalue the worth and individuality of the less powerful. A later paper by Keltner et al. (2003), linked power to an individual's likelihood to use others as a means to one's own end as well as the tendency to stereotype, resort to automatic social cognitive responses, and engage in socially inappropriate behaviors.

At the other extreme, a perceived lack of power has been demonstrated to have the opposite effect, diminishing an individual's perception of his or her own agency and capacity to act. Specifically, Galinsky et al. (2003) noted that study participants in a low power mindset were far less likely to take efficacious action toward achieving personal goals or desires. This correlation between perceived power and self-efficacy is directly illustrated by an experiment implemented by Galinsky et al. in which the propensity for study participants to move an irritating fan was observed for individuals in both a high-power and low-power mindset. High-power participants took action to terminate the annoyance twice as often as not, as compared to their low-power counterparts who only took action in roughly half of the observed cases. The link between power and action for the victim of abusive treatment could indicate that if verbal abuse were to induce a feeling of powerlessness in the victim, it could simultaneously have the result of lowering his or her ability to take alternative action. This could be manifested in a reluctance to take action against one's abuser, or a decreased likelihood to seek alternate employment opportunities.

Overall, research indicates that power alters an individual's perception of limits, and makes one far more likely to act in pursuit of goals. Lack of power has the opposite effect, diminishing one's sense of ability to take action and behave proactively. In the case of supervisors, a sense of power could engender a lack of perceived limits to behavior and make

them more proactive about motivating workers through any possible means. Additionally, power is especially linked to making an individual "goal-oriented," implying that if the supervisor has a single-minded goal to maximize output then power will exacerbate their nuclear focus on achieving high production levels. This singular focus, coupled with the simultaneous effects of stereotyping, dehumanization, and devaluation, lays the foundation for an environment primed for abuse. Alternately, workers with an eroded sense of power might be less likely to take action toward ending the abuse, or proactively removing themselves from the abusive context by resigning their position.

As a cohesive body, the relevant psychological literature intimates that verbal abuse levels differ depending on the supervisor's and the worker's individual situations, specifically with regard to levels of cognitive load and power perception. In addition to the supervisor's or worker's particular situation of stress, cognitive load, and power, workplace environmental factors also play a proven significant role in engendering abusive behaviors. Roscigno et al. (2009) applied OLS regression techniques to demonstrate empirically that particular organizational characteristics tended to give rise to workplace bullying. His results demonstrated that all variables relating to victim powerlessness, such as low pay and job insecurity, are significant in explaining workplace abusive behavior. In addition, organizational chaos also significantly contributed to predicted rates of abuse.

Additionally, O'Leary-Kelly et al. (1996) propose a framework for organizational aggression based on prior research in the area of aggressive behavior. One such example is "social learning theory," which suggests that individuals who receive positive outcomes from aggressive acts or operate in an environment in which aggression is rewarded or tolerated are more likely to personally engage in aggressive behaviors. They additionally propose the possibility that organizations can contribute to aggressive tendencies through physical

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environmental factors such as crowding, overheating, and noise as well as cultural factors such as rewarding aggressive behavior or treating employees aversively. Bandura (1973) further emphasized the importance of context by arguing that human behavior as a whole is a result of "stimulus events that evoke it and the reinforcing consequences that alter it" (Bandura 1973, 41). Put simply, supervisors situated in an environment that is notably tolerant, supportive, or conducive to verbal abuse, are more likely to partake in abusive behaviors themselves.

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In summary, the economics literature tends to reinforce the conclusion that workers respond positively to incentives, and are more likely to withhold maximum effort in the situation of low-powered incentives, large group sizes, or perceived inequality.  Along similar lines of reasoning, supervisors for whom incentives are tied to the productivity of the individuals for whom they are charged with overseeing are more likely to behave in the way they perceive as optimal in achieving optimal productive effort. The psychology literature contends that situational influences that contribute to a sense of power, stress, or cognitive load could all have the effect of increasing the likelihood of supervisors using verbal exhortation. Alternately, a weakened perception of power may erode the likelihood of a worker to take action in his or her own defense, either by reporting the abuse or by searching for employment elsewhere. Cultural factors also play a pivotal role in priming an environment for abuse.

There is clearly an abundance of interacting factors at play in relation to individual incentives and productivity. The following section introduces a theoretical framework for understanding verbal abuse in a factory context, and explores the relative levels of abuse, production, and profitability that would exist under varying incentive conditions and subject to differing degrees of factory-wide abuse.

Section 3: Theoretical Model

Effort toward production on the part of a worker can be elicited through an array of strategies which may be pecuniary, such as incentive pay, or non-pecuniary, such as verbal exhortation. A supervisor's verbal interactions with workers may be positive or negative, and may be sufficiently negative so as to constitute verbal abuse. A theoretical framework is presented below in which verbal abuse is an inherent component of firm motivational structure and is used as an alternative to, or in conjunction with, monetary compensation to induce worker productivity.

The solution strategy is as follows:

- The conditions are first derived under which verbal abuse is more effective at inducing productivity for an individual worker basis compared to an incentivizing (piece-rate) wage.
- The problem is next approached from the firm's perspective, to consider the profit implications for tolerating verbal abuse under different incentive structures.
- Additional social psychological factors are then incorporated, allowing for consideration of the impact of external influences such a stress and production pressures on verbal abuse levels.
- The section finishes by outlining the conclusions that can be extrapolated from the model at an individual and firm level as they could relate to empirical testing of the data.

To consider the phenomenon of verbal abuse as it relates to the incentive structure and profitability of a firm, a three-agent model is employed to illustrate production decisions and working conditions. For simplicity sake, a firm is assumed to be composed of one manager, one supervisor, and one worker. The manager sets the incentive structure, the supervisor chooses

verbal exhortation, and the worker chooses work effort subject to the incentive structure implemented by the manager and the verbal exhortations of the supervisor.

The worker is charged with the task of production, exerting a chosen effort level, $e$, toward generating output, $q$. The supervisor oversees the worker, and can opt to use verbal abuse to elicit work effort. The manager sets the compensation structure for the worker and supervisor, where compensation can come in the form of base rate or piece rate for both the worker and the supervisor. Worker wages are denoted as $\alpha$ and $\beta$ and supervisor wages as $\delta$ and $\gamma$ for base-rate and piece-rate respectively. In addition to rewarding work effort, the manager may punish verbal abuse that exceeds the profit-maximizing level. The manager seeks to implement the profit-maximizing wage and punishment structure of the firm, subject to supervisor choice of verbal abuse and its potential effects on profits.

Output of a given worker $i$ is given by

(1)        $q_i = \min\{e_i + \theta v_i, k\}$

where $e_i$ is the individual's level of effort, $v_i$ is the amount of verbal abuse directed at the worker, $\theta$ is a measure of the relative effectiveness of verbal exhortation on increased productivity, and $k$ is capital per worker. The sign of $\theta$ is theoretically ambiguous, however, the theory of the firm is predicated on the assumption that $\theta$ is positive, implying that verbally abusing a worker will induce a larger output .The model additionally makes the simplifying assumption that shouting is the only motivational mechanism under the control of the supervisor. Additional motivational techniques are discussed below.

The structure of the firm is modeled as follows:

The worker's net pay is determined by a combined hourly wage, $\alpha$, and piece rate salary, $\beta$, that is multiplied by the quantity produced. The worker is taken to have a utility function that

depends positively on money income and negatively on work effort and verbal abuse. The firm must structure a configuration of monetary compensation and working conditions that yields a level of worker utility that exceeds a worker's reservation level.

The worker's participation constraint, then, is given by

(2) $\quad (\alpha + \beta q)(\bar{e} - e) - v^d \geq \bar{u}_w,$

where, $(\alpha + \beta q)$ represents the worker's monetary earnings, $(\bar{e} - e)$ is a multiplier sensitive to the disutility caused by additional effort, $v$ is the level of verbal abuse and $d$ is a measure of the magnitude of disutility from being subjected to verbal abuse. $\bar{u}_w$ is the worker's reservation utility which, if not met, will induce the worker to quit the firm. The worker chooses effort level, $e$, in order to maximize utility subject to the incentive structure.

The supervisor is also paid an hourly rate and a piece rate. Supervisor utility is positively related to money income and negatively related to effort utilized to motivate the worker. As with the worker, the firm must provide the supervisor a combination of pay and working conditions that yields a level of utility that exceeds a reservation level. The participation constraint for the supervisor, then, is

(3) $\quad (\delta + \gamma q)(\psi_i \bar{v} - v) \geq \bar{u}_s,$

where $(\delta + \gamma q)$ is the supervisor's monetary earnings, and $\bar{v} - v$ is a measure of the relative disutility for engaging in verbal abuse.

It is important to note that this setup assumes that supervisors experience a decline in utility as they choose to abuse at higher levels of intensity. However, some supervisors may, in fact, gain utility from the exercise of power over their subordinates. Further, the tolerance for verbal abuse may reflect a perceived norm within a particular firm or culture. $\psi_i$ accounts for this heterogeneity in a simple manner by allowing the individual's "threshold" $(\bar{v})$ for shouting to

vary per individual based on factors ranging from cultural influences to pure enjoyment of power assertion.

The manager seeks to maximize profits by optimally setting the compensation structure and punishing sub-optimally high levels of verbal abuse. The firm's profit is given by

(4) $\qquad \pi = pq - (\alpha + \beta q) - (\delta + \gamma q) - rk,$

where $p$ is price and $rk$ measures capital costs. The firm chooses $\alpha,\ \beta,\ \delta,\ \gamma$, and can control firm-wide levels $v$ by regulating and punishing unwanted verbal exhortation on the part of supervisors. For the sake of simplicity, $k$ is assumed to be fixed in the short run.

Backward induction is used to reason through each individual agent's optimal choice. The optimizing choices provides insight as to how and why verbal abuse relates to the broader scheme of firm incentive structures, productivity, and profitability.

The first stage in solving the model involves an individual-level analysis of the impact of wages, incentives, and verbal abuse on worker and supervisor behavior. Monetary incentives affect an individual worker's effort level, $e$, which has an impact on a supervisor's choice of $v$, both of which are key determinants of output. It is therefore necessary first to understand the interconnected responses and relationships of the worker and supervisor equations before moving to a broader analysis of firm-wide profit implications.

In order to understand the circumstances under which verbal abuse would be viewed by supervisors as an attractive form of worker motivation, two polar cases are considered. Worker compensation is first assumed to depend only on base pay with no monetary incentive linked to production levels. Second, worker compensation is taken to depend exclusively on a piece rate linked to production with no base wage.[1] Comparing the outcomes under these two

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[1] The firm's capacity to limit verbal abuse is temporarily ignored in both cases during this initial comparison, giving supervisors freedom to select a level of verbal abuse that maximizes personal utility independent of firm intervention.

compensation structures yields insight regarding the broader impact of incentives on productivity, and verbal abuse levels.

If the worker's chosen effort level responds sensitively to monetary incentives but there is a negligible productivity-boost from verbal abuse, one would intuitively expect output per worker to be very responsive to increases in $\beta$, and firm decisions to be reflected in a preference for piece rate worker pay and strict monitoring of verbal abuse by the supervisor. If, however, it is the case that even in the absence of monetary incentives workers exert high effort levels and productivity is greatly enhanced by the use of verbal abuse, one could imagine a case in which production would be augmented by the removal of a piece-rate and managerial tolerance of a high level of verbal abuse.

Beginning with worker choice, the worker takes as given the incentive structure, ($\alpha$ and $\beta$), as well as the level of verbal abuse ($v$) chosen by the supervisor. Under a purely piece-rate system, worker participation constraint is given by

(2a) $\qquad \beta q(\bar{e} - e) - v^d \geq \bar{u}_w$

Substituting quantity from equation (1) into the worker participation constraint in equation (2a) yields

(2a') $\qquad \beta(e + \theta v)(\bar{e} - e) - v^d \geq \bar{u}_w$

The worker is assumed to choose work effort $e$ to maximize utility given in equation (2a'). Utility-maximizing work effort is easily found to be

(5a) $\qquad e^* = \dfrac{\bar{e}}{2} - \dfrac{\theta v}{2}$

Under a system of flat rate compensation, a worker's participation constraint is given by

(2b) $\qquad \alpha(\bar{e} - e) - v^d \geq \bar{u}_w$

The worker is assumed to believe that some minimal work effort is necessary to remain employed. Thus, work effort choice is

(5b)    $e* = e_0,$

where $e_0$ represents the baseline level of effort an individual worker would opt to exert in the absence of any motivation or incentives other than the implicit threat of termination. Baseline work effort is bounded above by the maximum tolerable effort level. That is, $e_0 < \bar{e}$. $e_0$ can be thought of as the minimum effort required of a worker to keep his or her position at the factory and can be assumed to be less than the situation in which the worker is monetarily motivated $\left( e_0 < \dfrac{\bar{e}}{2} - \dfrac{\theta v}{2} \right)$. Substituting in optimal effort levels (equations 5a and 5b) into the output equation (equation 1) yields output as a function of verbal abuse under the two incentive structures:

(1a)    $q = \dfrac{\bar{e}}{2} + \dfrac{\theta v}{2}$

determines output for the piece rate scenario and

(1b)    $q = e_0 + \theta v$

determines output under a flat rate wage.

As can be seen from a comparison of equations (1a) and (1b), the definitive effect on $q$ of the two incentive systems is ambiguous and depends on the relative values of $\bar{e}$, $e_0$, $\theta$ and $v$. As a consequence, incorporating verbal abuse into the incentive structure determining worker effort counters the common assumption that pecuniary incentives are necessarily more effective than an hourly rate in determining worker productivity.

Moving to the supervisor's decision, the optimal choice of $v$ is considered, taking as given effort choice $e$, and the incentive structure, $\delta$ and $\gamma$. Substituting quantity chosen by the worker

under the worker piece-rate condition (equation 1a) into the supervisor's participation constraint (equation 3) yields

(3a) $\quad \left(\delta + \gamma \left(\dfrac{\bar{e}}{2} + \dfrac{\theta v}{2}\right)\right)\left(\psi_i \bar{v} - v\right) \geq \bar{u}_s.$

The model is degenerate if supervisor compensation depends exclusively on hourly compensation. Thus, $\delta$ is assumed to be constant. For simplicity purposes and without loss of generality, $\delta$ is set to 0, implying that the supervisor is paid exclusively on a piece-rate basis. The implication is that the supervisor has a vested interest in the quantity being produced by the worker.[2] A supervisor's participation constraint is therefore given by

(3b) $\quad \gamma \left(\dfrac{\bar{e}}{2} + \dfrac{\theta v}{2}\right)\left(\psi_i \bar{v} - v\right) \geq \bar{u}_s$

 Choosing $v$ to maximize supervisor utility subject to this constraint yields

(6a) $\quad v*_{\beta} = \dfrac{\psi_i \bar{v}}{2} - \dfrac{\bar{e}}{2\theta}.$

Alternately, under the condition that the worker is paid hourly (where quantity is given by equation 1b), the supervisor aims to maximize

(3b') $\quad \gamma \left(e_0 + \theta v\right)\left(\psi_i \bar{v} - v\right) \geq \bar{u}_s$

The utility maximizing level of $v$ under this condition becomes

(6b) $\quad v*_{\alpha} = \dfrac{\psi_i \bar{v}}{2} - \dfrac{e_0}{2\theta}.$

Critically, it is evident by comparing (6a) and (6b) that verbal abuse is higher in the case where worker's compensation is not linked to output.  Comparing verbal abuse in equations (6a) and (6b) yields

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[2] It can be shown that under a scenario where supervisor is paid both hourly and piece compensation, verbal abuse is increasing in $\gamma$ (piece rate) and decreasing in $\delta$ (hourly wage)

(7) $\qquad v*_\alpha = \dfrac{\psi_i \bar{v}}{2} - \dfrac{e_0}{2\theta} > \dfrac{\psi_i \bar{v}}{2} - \dfrac{\bar{e}}{2\theta} = v*_\beta$

The implication of equation 7 is that in the absence of wages operating as a motivational device to generate worker output, supervisors with output-oriented motives will employ verbal abuse as an instrument to discourage the worker's tendency to shirk.

Combining these findings and substituting values in for each component yields the following table:

**Table 1**

|  | $v$ | $e$ | $q$ | $e$, with $v$ substituted | $q$, with $v$ substituted |
|---|---|---|---|---|---|
| **β case:** Workers monetarily incentivized | $\dfrac{\psi_i \bar{v}}{2} - \dfrac{\bar{e}}{2\theta}$ | $\dfrac{\bar{e}}{2} - \dfrac{\theta v}{2}$ | $\dfrac{\bar{e}}{2} + \dfrac{\theta v}{2}$ | $\dfrac{3\bar{e}}{4} - \dfrac{\theta \psi_i \bar{v}}{4}$ | $\dfrac{\bar{e}}{4} + \dfrac{\theta \psi_i \bar{v}}{4}$ |
| **α case:** Workers paid hourly | $\dfrac{\psi_i \bar{v}}{2} - \dfrac{e_0}{2\theta}$ | $e_0$ | $e_0 + \theta v$ | $e_0$ | $\dfrac{e_0}{2} + \dfrac{\theta \psi_i \bar{v}}{2}$ |

Notably, as mentioned previously, verbal abuse definitively rises in the presence of misaligned pecuniary incentives. Interestingly, however, the directional effects of $e$ and $q$ remain ambiguous and are subject to the relative values of model parameters ($\psi_i$, $\theta$, $\bar{v}$, $\bar{e}$, $e_0$). It is therefore possible for individual worker output to be higher under an hourly-wage system if it is the case that $q_\alpha \geq q_\beta$, where $q_\alpha$ is the quantity produced under conditions of misaligned incentives and $q_\beta$ is the quantity under aligned, production-based incentives. For $q_\alpha \geq q_\beta$, it must be the case that $e_0 + \theta v \geq \dfrac{\bar{e}}{2} + \dfrac{\theta v}{2}$, which simplifies to

(8) $\qquad\qquad e_0 \geq \dfrac{\bar{e}}{2} - \dfrac{\theta \psi_i \bar{v}}{2}.$

A similar analysis can be performed in consideration of effort under the different incentive structures. Given the assumption that $e_\alpha \leq e_\beta$ (worker effort is higher when it is monetarily incentivized), a comparison of equations 5a and 5b implies that

(9) $$e_0 \leq \frac{3\bar{e}}{4} - \frac{\theta\psi_i\bar{v}}{4}$$

Comparing inequalities (8) and (9), it is clear that the restriction on $e_0$ that is necessary to guarantee that $e_\alpha \leq e_\beta$ may be consistent with $q_\alpha \geq q_\beta$. That is, it is possible for quantity to be higher with misaligned incentives even though work effort is lower.

Due to the fact that quantity in this model includes an effort component and a component related to verbal abuse, a lower level of $e$ could be counterbalanced by a high productivity boost from verbal abuse, $\theta v$. It is therefore theoretically plausible for production to increase under a low-powered pecuniary incentive structure supplemented by high levels of verbal abuse. A high level of baseline effort on the part of the worker $(e_0)$, a large productivity effect from shouting $(\theta)$, and a high tolerance for verbal abusing or inflated perception of power on the part of the supervisor $(\psi_i\bar{v})$ will all increase the probability that quantity is higher when the worker is paid by a base rate rather than production-linked pay.

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The preceding analysis has two basic implications for verbal abuse and effort at the individual worker level: i) holding all else constant, hourly pay for workers will induce supervisors to employ higher levels of verbal exhortation and ii) under certain conditions, verbal abuse can be a more effective means of increasing output than a production-based wage.

However, in addition to an individual worker-level analysis, the case must also be considered from the broader firm perspective. Despite the potential for inducing higher levels of production, verbal abuse also incurs additional costs to the firm in the form of worker and

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supervisor disutility. The balance of firm revenues and costs must therefore be considered when determining the firm's optimizing profit decisions. The following analysis considers how the firm's structuring of incentives and tolerance of verbal abuse relate specifically to the profit-maximization goals of firms.

Prior to a supervisor's choice of $v$ and a worker's choice of $e$, factory managers make decisions with regard to worker wages $(\beta, \alpha)$ and supervisor wages $(\delta, \gamma)$. Before the model is expanded to incorporate the firm's capacity to regulate factory-wide levels of abuse, profits are first considered under the preliminary assumption that the scope of managerial control exists exclusively through the structuring of wages. That is, firms can manipulate the pecuniary incentive schemes, but take as given the consequent level of verbal exhortation that the supervisor opts to employ $(v^*)$. Under the previously established conditions, the firm is again taken to make a binary decision between a fixed-rate wage and a piece-rate wage, subject to the participation constraints of both workers and supervisors, and the level of verbal abuse, $v^*_\alpha$ or $v^*_\beta$ chosen by the supervisor.

Wages for workers and supervisors can be obtained from their respective participation constraints under both an aligned and a misaligned wage structure. Beginning with the case where workers are monetarily incentivized, solving for $\beta$ by substituting equation 5a (the expression for $q$) into equation 2a (the expression for worker utility) yields:

(10a) $\quad \beta = \dfrac{\bar{u}_w + v^d}{\left(\dfrac{\bar{e}}{2} + \dfrac{\theta v}{2}\right)^2}$

In the parallel case of misaligned incentives, solving for $\alpha$ by substituting equation 5a' into equation 2a' yields

(10a')   $\alpha = \dfrac{\overline{u}_w + v^d}{\left(\overline{e} - e_0\right)}$

Supervisor wages can similarly be obtained under each scenario. For the case where the worker is financially incentivized, solving for $\gamma$ in equation 3b (the expression for supervisor utility) yields

(11a)   $\gamma = \dfrac{\overline{u}_s}{\left(\dfrac{\overline{e}}{2} + \dfrac{\theta v}{2}\right)\left(\psi_i \overline{v} - v\right)}$

Alternately, supervisor wages subject to an hourly worker wage are given by

(11a')   $\gamma = \dfrac{\overline{u}_s}{\left(e_0 + \theta v\right)\left(\psi_i \overline{v} - v\right)}$

Firm profits are defined as

(4)      $\pi = pq - \left(\alpha + \beta q\right) - \left(\delta + \gamma q\right) - rk$

and substituting wages, quantity, and verbal abuse from the piece rate and fixed rate conditions respectively (Table 1, Equations 10a, 10a', 11a, and 11a') gives firm profits as:

(4a)     $\pi_\beta = p\left(\dfrac{\overline{e}}{4} + \dfrac{\theta \psi_i \overline{v}}{4}\right) - \dfrac{\overline{u}_s}{\left(\dfrac{\psi_i \overline{v}}{2} + \dfrac{\overline{e}}{2\theta}\right)} - \dfrac{\overline{u}_w + \left(\dfrac{\psi_i \overline{v}}{2} - \dfrac{\overline{e}}{2\theta}\right)^d}{\left(\dfrac{\overline{e}}{4} + \dfrac{\theta \psi_i \overline{v}}{4}\right)} - rk$

(4a')    $\pi_\alpha = p\left(\dfrac{e_0}{2} + \dfrac{\theta \psi_i \overline{v}}{2}\right) - \dfrac{\overline{u}_s}{\left(\dfrac{\psi_i \overline{v}}{2} + \dfrac{e_0}{2\theta}\right)} - \dfrac{\overline{u}_w + \left(\dfrac{\psi_i \overline{v}}{2} - \dfrac{e_0}{2\theta}\right)^d}{\left(\overline{e} - e_0\right)} - rk$

Note, based on a comparison of (4a) and (4a'), that the relative magnitude of profits under the separate wage structures is ambiguous $(\pi_\alpha ? \pi_\beta)$. The ambiguity arises in part from the ambiguous relationship between $q_\alpha$ and $q_\beta$ and in part from the wage parameters. Profits could

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be higher or lower under either incentive structure. Considering each term in equations (4a) and (4a') yields the following insights:

1) The relative magnitude of revenue in the two cases depends on quantity under each condition, which in turn depends on model parameters. Importantly, as price increases, the production differential becomes increasingly significant, so that the firm will tend to favor the incentive structure that yields more efficient production levels.

2) Supervisor wages are unambiguously higher in the case where workers are paid a flat rate wage. This outcome is due to the fact that the supervisors require a compensating differential for the consequent increase in their use of verbal abuse. Supervisors are assumed to get disutility from verbal exhortation and require additional compensation for increasing their effort toward motivating workers in the absence of worker pecuniary incentives..

3) The denominator of the term corresponding to the worker's wages will be smaller in the piece rate scenario (implying an increase in cost) due to the fact that workers have to be compensated for the disutility accrued from higher levels of $e$ exerted when incentivized. However, the numerator will be smaller as well, due to the lower levels of verbal abuse and its resulting disutility. Depending on the values of parameters, specifically $d$, the relative effects of these factors is not determinant. The marginal disutility a worker perceives from the exertion of additional effort versus the endurance of additional verbal abuse dictates whether worker costs will be higher under a piece rate or a flat rate payment structure.

Although the costs associated with supervisor compensation definitively rise under a flat-rate wage scheme for workers, the ambiguity of revenues and worker compensation indicates that profitability is likewise ambiguous, and firms will not unequivocally favor a piece rate or flat rate wage when supervisors have absolute control over their verbally abusive behavior. The manager's decision of how to structure incentives would therefore come down to an analysis of

the relative productivities of workers under both scenarios, as well as the marginal disutility accrued to workers that would require counterbalancing compensation.

Alternately, and perhaps more realistically, firms can be considered as having the additional capacity to monitor verbal abuse levels in the factory by regulating and punishing unwanted verbal exhortation on the part of supervisors (if $v^*$ led to adverse profit effects). By imposing managerial standards, firms can directly control the ability to choose the "optimal" level of verbal abuse from a profitability perspective. Furthermore, in choosing $v$, firms also implicitly set the amount of output, $q$, that will be produced. Therefore, firm managers would be expected to control levels of verbal abuse to the point that maximizes profits by balancing the productivity increase with the additional employee appeasement costs, subject to the income constraints of workers and supervisors.

Firms in this case seek to maximize $\pi$ choosing $\beta, \alpha, \gamma$, and $v$. If the profit maximizing level of verbal abuse, $v_\pi^*$, is found to be lower than the supervisor's optimal choice of verbal abuse, $v^*$, then the firm has an incentive to curtail verbal abuse to the profit-maximizing level, by way of a tax or alternative monitoring and punishment procedure.

To solve for the optimizing level of verbal abuse from a firm-wide profitability perspective, profits are again considered, subject to the participation constraints of workers and supervisors. However, rather than taking as given the supervisor's optimal level of verbal abuse, $v^*$, $v$ is instead left as a choice variable for the firm to evaluate and set. For simplicity purposes, rather than thinking of firms as designing an optimal punishment scheme, $v$ can instead by assumed to be wholly within the control of the firm, implying that managers have the power to "choose" an optimal level of verbal abuse as well as wages for workers and supervisors.

Profits under a piece rate scenario are described as

(4b)     $\pi_\beta = p\left(\dfrac{\bar{e}}{2} + \dfrac{\theta v}{2}\right) - \dfrac{\bar{u}_s}{\left(\psi_i \bar{v} - v\right)} - \dfrac{\bar{u}_w + v^d}{\left(\dfrac{\bar{e}}{2} + \dfrac{\theta v}{2}\right)} - rk$

and under the flat-rate misaligned scenario:

(4b')     $\pi_\alpha = p\left(e_0 + \theta v\right) - \dfrac{\bar{u}_s}{\left(\psi_i \bar{v} - v\right)} - \dfrac{\bar{u}_w + v^d}{\left(\bar{e} - e_0\right)} - rk$

Taking the derivative with respect to $v$ and setting equal to 0 yields the profit-maximizing choice of $v$. For the piece rate scenario this maximization is described by:

(12a)     $\dfrac{d\pi_\alpha}{dv} = \dfrac{\theta p}{2} - \dfrac{\bar{u}_s}{\left(\psi_i \bar{v} - v\right)^2} - \dfrac{d v^{d-1}}{\left(\dfrac{\bar{e}}{2} + \dfrac{\theta v}{2}\right)} + \dfrac{\bar{u}_w + v^d}{2\left(\dfrac{\bar{e}}{2} + \dfrac{\theta v}{2}\right)^2} = 0$

and, alternately, under that flat-rate scenario:

(12a')     $\dfrac{d\pi_\beta}{dv} = \theta p - \dfrac{\bar{u}_s}{\left(\psi_i \bar{v} - v\right)^2} - \dfrac{d v^{d-1}}{\left(\bar{e} - e_0\right)} = 0$

The firms' optimal choice of verbal abuse therefore depends on a number of interrelated factors. To more clearly understand the mechanics of how verbal abuse affects the individual components of firm profits, it is helpful to consider the case from a marginal perspective, by comparing the marginal benefit (the increase in revenues), of an increase of verbal abuse versus the marginal cost the abuse incurs by generating worker and supervisor disutility.

Total revenues for the firm are simply $p*q$, and total costs are given as the latter portion of the profit equation comprising worker and supervisor wages as well as capital costs. Given the assumption that quantity is linearly increasing in verbal abuse (see equation 1), holding all else constant, revenues are universally increasing as verbal abuse rises. Alternately, costs are almost universally increasing, as wages must rise to compensate workers and supervisors for the disutility associated with additional verbal abuse. The optimal level of verbal abuse from the firm's

perspective, therefore, occurs at the point where the marginal increase in revenues subject to verbal abuse ($\frac{dTR}{dv}$) is exactly equal to the marginal cost to the firm of additional verbal abuse ($\frac{dTC}{dv}$). When one more unit of $v$ increases revenues and costs equally, the firm is profit-maximizing in its tolerance of supervisors' use of verbal abuse.

Beginning with the revenue side, substituting equations 1.1a and 1.1b into the expression for total revenue yields

$$(13a) \quad TR_\beta = p(\frac{\bar{e}}{2} + \frac{\theta v}{2})$$

in the case of aligned incentives and

$$(13a') \quad TR_\alpha = p(e_0 + \theta v)$$

in the case of misaligned incentives. The marginal effect of verbal abuse on total revenue in the aligned case is therefore

$$(14a) \quad \frac{dTR_\beta}{dv} = \frac{\theta p}{2}$$

and in the misaligned case

$$(14a') \quad \frac{dTR_\alpha}{dv} = \theta p.$$

Notably, revenues are consistently increasing in verbal abuse under both structures, but revenues are twice as sensitive to increases in verbal abuse in the case where workers are not monetarily incentivized.

Shifting to cost considerations, firm total costs in the aligned wage scenario are

$$(15a) \quad TC_\beta = \frac{\bar{u}_s}{\left(\psi_i \bar{v} - v\right)} + \frac{\bar{u}_w + v^d}{\left(\frac{\bar{e}}{2} + \frac{\theta v}{2}\right)} + rk.$$

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and for the misaligned scenario are given as

$$(15a') \quad TC_\alpha = \frac{\bar{u}_s}{\left(\psi_i \bar{v} - v\right)} + \frac{\bar{u}_w + v^d}{\left(\bar{e} - e_0\right)} + rk.$$

Marginal effects of verbal abuse on costs in the piece rate and fixed rate scenario respectively are given by

$$(16a) \quad \frac{dTC_\beta}{dv} = \frac{\bar{u}_s}{\left(\psi_i \bar{v} - v\right)^2} + \frac{dv^{d-1}}{\left(\frac{\bar{e}}{2} + \frac{\theta v}{2}\right)} - \frac{\bar{u}_w + v^d}{2\left(\frac{\bar{e}}{2} + \frac{\theta v}{2}\right)^2}$$

$$(16a') \quad \frac{dTC_\alpha}{dv} = \frac{\bar{u}_s}{\left(\psi_i \bar{v} - v\right)^2} + \frac{dv^{d-1}}{\left(\bar{e} - e_0\right)}.$$

The firm optimally chooses the level of verbal abuse at which the expressions for $\frac{dTR}{dv}$ and $\frac{dTC}{dv}$ are equal. Graphically, two different renderings of this optimization with varying parameters can be seen in Appendix 1.

Several interesting conclusions come to light through a comparison of the profit implications of verbal abuse under the two polar incentive structures:

1) As previously mentioned, the marginal impact on revenues of an increase in verbal abuse under a fixed-rate wage structure is lower than that under a piece-rate scenario. The discrepancy is due to the interacting effects of motivational techniques. Under a piece-rate scenario workers are choosing a higher $e$ than the minimum effort required because they personally have a vested interest in the amount of quantity produced. Therefore, when $v$ is employed, the resulting increase in productivity allows workers to scale back their effort level without experiencing a resulting decline in quantity.

2) The marginal effect of verbal abuse on costs has an additional term in Equation 16a, the piece rate expression, which derives from an envelope theorem effect of verbal abuse that

occurs when workers are both motivated by production-based pay as well as verbally exhorted. Under a fixed wage rate, verbal abuse channels in to the worker's utility function solely as disutility. Under a piece-rate, however, workers' wages are inherently linked to production, and verbal abuse in turn increases productivity, thereby generating a feedback loop. Verbal abuse therefore has a simultaneous positive and negative effect on worker expenses from the firm perspective, both increasing worker disutility but also increasing quantity, which in turn allows for a lower wage.

3) It is not possible to deduce with certainty whether the optimizing choice of $v$ from the firm's perspective will be definitively higher under either incentive structure. The ambiguity is due to the fact that, while verbal abuse is more efficient at increasing production when workers are not pecuniarily motivated, the abuse also has a more direct impact on costs, as it singularly factors in to workers' income constraints as disutility, and thereby necessitates higher pecuniary compensation.

4) The relative values of parameters is crucial in determining both the attractiveness of verbal exhortation from a profitability perspective under any circumstances as well as which incentive scheme will ultimately yield higher profits. Several observations include:

i.   A higher value of $\bar{e}$ (threshold for work effort) raises the profit-maximizing level of $v$ in both cases.

ii.  A higher value of $e_0$ lowers the profit maximizing level of $v$ in the flat-rate scenario. If workers have a high baseline level of $e$ that they will exert sans incentives, the use of verbal abuse is rendered less necessary.

iii. A higher value of $d$ lowers the profit maximizing level of $v$. Intuitively, if workers get high levels of disutility from verbal abuse it is more costly for the firm to counterbalance via higher compensation.

iv. A higher $p$ will raise the profit maximizing level of $v$. Since production is monotonically increasing with verbal abuse, a higher price per unit makes additional verbal abuse more attractive.

Ultimately, the model does not illustrate with certainty whether optimal verbal abuse from the firm's perspective is higher or lower under either wage structure. Profits are likewise ambiguous, and in either case dependent on optimal $v$ ($v_\pi$ *). It therefore becomes necessary to turn to the data in order to derive values for the relevant parameters and develop a complete understanding of verbal abuse as it truly contributes or detracts from firm profitability.

**\*\*\*\*\***

Before concluding the theoretical section, it is necessary to close with a brief discussion of certain relevant psychological factors. Verbal abuse has been proven to have extensive and significant links to psychological factors both in its origination as well as its negative effects. The following discussion briefly considers the social psychological factors that could have an impact on the model, both in contributing to the persistence of verbal abuse as well as its resulting ramifications for workers' mentality.

Up to this point the model has assumed that the primary grounds for the existence of verbal abuse is a supervisor's need to motivate the workforce. However, this assumption ignores the important possibility that there are alternative motivational options available to the supervisor to influence line productivity. Other factors, such as stress induced by the pressure to meet production quotas, could be an important contributing force that drives supervisors to revert to the impulsive use of verbal exhortation.

To consider accounting for stress and cognitive load, the theoretical framework can be adapted by designing the setup such that $v$ is a subset of $a$, where $a$ is defined as supervisory attention directed at the worker. The amount of managerial attention that is conveyed in the

form of $v$ is given by $f(a)$, where $f$ is a function of the supervisor's stress level, cognitive load, and the prevailing factory culture. In other words, if supervisors were under significant performance pressure as a result of deadlines and production quotas or situated in a factory culture where verbal abuse was a cultural norm, prevailing literature suggests that a larger portion of $a$ would be manifested in the form of verbal abuse. Under this framework, quantity is expressed as $q = e + \theta a$, and the supervisor has the ability to motivate workers via means other than verbal abuse. Since $v$ is a subcomponent of $a$, it follows that $v \leq a$, implying that the amount of verbal abuse is less than or equal to the total cumulative motivational supervisory effort.

Under this setup, the worker's utility function is unchanged. However, under the assumption that supervisors get equal disutility from shouting and using an alternative motivational means, their utility function is now given by

(3c) $\qquad (\delta + \gamma q)(\psi_i \bar{a} - a) \geq \bar{u}_s.$

Performing the equivalent backwards induction analysis as in the previous case yields the same results for workers' optimal choice of $e$ and supervisors' optimal choice of $a$. The divergence of the two cases appears when considering worker wages and the consequential implications for firm profits.

Under a system with alternative motivational techniques, profits under an aligned wage structure are given by:

(4c) $\qquad \pi_\beta = p\left(\dfrac{\bar{e}}{2} + \dfrac{\theta a}{2}\right) - \dfrac{\bar{u}_s}{(\psi_i \bar{a} - a)} - \dfrac{\bar{u}_w + (f(a))^d}{\left(\dfrac{\bar{e}}{2} + \dfrac{\theta v}{2}\right)} - rk$

and under a misaligned structure:

(4c') $\qquad \pi_\alpha = p(e_0 + \theta a) - \dfrac{\bar{u}_s}{(\psi_i \bar{a} - a)} - \dfrac{\bar{u}_w + (f(a))^d}{(e - e_0)} - rk.$

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Notably, revenues are equivalent to those derived under the previous conditions, and supervisor compensation likewise remains unchanged.[3] However, workers require less compensation due to the absence of the disutility incurred when all supervisory efforts are communicated in an abusive manner. Profits, therefore, will be higher when supervisors utilize positive motivational techniques as compared with abusive techniques. A further implication is that environmental factors that affect the social psychology of supervisors could predispose supervisors toward the use of verbal abuse in a manner that has sub-optimal implications for profits

Shifting focus to the aftermath side of verbal abuse, in addition to causing disutility to workers, verbal abuse as an assertion of power could have meaningful psychological effects on a worker's mental health. The primary mechanism through which the exercise of power would occur would be by creating a feeling of powerlessness and lack of agency in an individual subject to constant abusive treatment.

If verbal abuse were to lower self-esteem and erode an individual's perception of self-efficacy, a worker's mindset toward empowerment and ability to take action could feasibly be manifested in a reduction of $\bar{u}_w$. Psychological studies demonstrate that when put in a low-powered mind-set, individuals have a diminished perception of their own personal agency and are therefore less likely to take action. Consistently being subjected to verbal abuse therefore could lead workers to lose sight of alternative options and to overlook their own ability to relocate to other places of employment. If this is the case, worker utility could be rewritten as:

(2c)     $\left(\alpha + \beta q\right)\left(\bar{e} - e\right) - v^d \geq \bar{u}_w{}^{\phi v}$

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[3] Assuming that alternative motivational techniques are equally effective as verbal abuse and supervisors still get disutility from motivational efforts.

where $\phi \le 0$ and $\bar{u}_w$ is therefore decreasing in verbal abuse at a marginally diminishing rate. From an individual worker's perspective the presence of power channel implies a lower (perceived) reservation utility, and therefore lower wages and overall utility. From the firm's perspective, verbal abuse would have positive profit implications because workers would require less compensation to reach their threshold willingness to work. Holding all else constant, verbal abuse would also be higher, as workers would be willing to tolerate higher levels of abuse before quitting.

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The preceding sections include a host of implications for productivity, profits and abuse levels, and provide an outline of the various interconnected relationships of incentives and their related parameters. At the heart of the matter lies the question of how firms choose to motivate and incentivize their workforce in the most efficient, profit-maximizing manner. This model offers a number of insights and hypotheses that, when turning to the actual data, will be useful in guiding the empirical analysis and testing:

*Hypothesis 1*: For a business case to exist, output on an individual-basis is predicted to be higher subject to higher levels of verbal abuse.

*Hypothesis 2*: Verbal abuse is predicted to be higher under the condition that workers are being paid a flat rate as compared to a piece rate. Verbal abuse is also predicted to be higher subject to a low willingness to work on the part of the worker.

*Hypothesis 3*: Verbal abuse is predicted to be higher subject to the supervisor being paid a piece rate as compared to a flat rate, and subject to an inflated perception of power.

*Hypothesis 4:* Relative productivity under a piece rate versus a wage rate structure is ambiguous, and depends on model parameters, worker effort levels, and optimal verbal abuse levels from the firm perspective.

*Hypothesis 5:* If verbal abuse were to have a significant negative effect on worker and supervisor utility, firms would have an incentive to take measures to actively curtail the amount of factory-wide verbal abuse.

*Hypothesis 6:* The marginal effect of verbal abuse on revenues is higher when the worker is paid solely by flat rate.

*Hypothesis 7*: Social psychological factors such as the supervisor stress level, cognitive load, or a prevailing factory culture favoring verbal abuse all have the potential to prompt supervisors to resort to verbal abuse in favor of other managerial techniques, and this effect has negative profit implications. Alternately, verbal abuse could induce a feeling of powerlessness in the worker that skewed their perception of alternative options and ability to take action to improve their situation.

Section 4: Empirical Strategy

Empirically testing the model developed in the Section 3 involves measuring the directional relationships between verbal abuse and the prevailing incentive structures, compensation, individual productivity, and profits. Specifically, obtaining evidence for the previously derived hypotheses involves four stages of analysis:

i. Assessing the impact of different incentive structures, both for the worker and the supervisor, on supervisors' chosen levels of verbal abuse (Hypotheses 2 and 3). The model predicts a positive relationship between supervisor piece-rate pay and verbal abuse, and a negative relationship between worker piece-rate pay and verbal abuse.

ii. Assessing the impact of verbal abuse on individual worker wages to test the potential for a compensating differential for victims of verbal abuse (Hypothesis 5). The model predicts higher wages paid to victims of verbal abuse, possibly tempered by a loss of agency resulting from a feeling of powerlessness (Hypothesis 7).

iii. Assessing the impact of verbal abuse on individual worker-level productivity to determine whether verbal abuse is an effective means for supervisors to extract additional productive output from workers (Hypothesis 1). The model predicts that for verbal abuse to be a part of a profit-maximizing strategy, the relationship would be positive.

iv. Assessing the comprehensive impact of verbal abuse on firm profitability to determine the factory-level implications of pervasive verbal abuse.

A more specific description of the purpose and design of each experimental stage is as follows:

*i) A regression of Verbal Abuse on factory incentive schemes and individual and workplace characteristics*

The first step of the empirical strategy involves an examination of verbal abuse and the characteristic components of a factory that give rise to its existence. Previous literature suggests

that verbal abuse is an unintended byproduct of a negative work environment, stemming both from a disorganized and unpleasant physical environment as well as the psychological mindsets of employees. The determinant effects of environmental and social psychological characteristics would be substantiated if verbal abuse were shown to significantly relate to organizational chaos, cognitive load, or power dynamics.

The proposed model in Section 3 additionally hypothesizes that firm incentive structures play a key role in inducing verbally abusive behavior. If abuse levels are definitively linked to the incentive structures of the firm, this would tend to indicate that verbal exhortation operates as a strategic motivational tool. On the other hand, it could also be the case that the firm is unintentionally structuring incentives in a way that unproductively inclines supervisors to verbally abuse their subordinates.

To test these possibilities, worker reports of verbal abuse is regressed as the dependent variable in the following form:

$$(17)\ Verbalabuse = \beta_0 + \beta_1 Sewer\_Incentives + \beta_2 Sup\_Incentives + \beta_3 Psych_{ij} + \beta_4 Demographics_{ij} + \varepsilon$$

*Verbalabuse* measures the level of verbal abuse experienced by workers, and *Sewer_Incentives* and *Sup_Incentives* measure the percentage of wages dependent on line production for workers and supervisors respectively. *Psych$_{ij}$* is a measure of the theorized psychological contributors to verbal abuse such as stress and stereotyping, and *Demographics$_{ij}$* captures a range of demographic controls. The precise measurement of each variable is outlined in Section 5.

*ii) A regression of wages on verbal abuse*

The second stage of empirical testing involves an evaluation of the relationship between verbal abuse and monetary payments to workers to test for the existence of a compensating differential for the victims of verbally abusive treatment. In the case that wages statistically rise in the presence of verbal abuse, workers require supplementary compensation for enduring the

disutility of abusive treatment. This would be costly to firms, and would indicate an error if it were also the case that revenues did not rise by a greater or equal margin. If it is the case that wages statistically decline in the presence of verbal abuse, this would support the possibility that verbal abuse erodes a workers sense of agency or self-worth. Workers might have a distorted perception of the wages they could be earning elsewhere or feel broadly less empowered to demand higher wages, which could indicate a profit-maximizing strategy for the firm. If it is the case that wages were not statistically linked to verbal abuse then the abuse could either be occurring in error, or for the purposes of its impact on productivity rather than costs.

To test these possibilities, worker wages are regressed on levels of verbal abuse:

(18) $Wages = \beta_0 + \beta_1 Verbalabuse + \beta_2 Ind\_Capital_{ij} + \beta_3 Demographics_{ij} + \varepsilon$

*Wages* measures the hourly earnings of a worker, and *Verbalabuse* measures the experienced level of verbal abuse. *Ind_Capital_{ij}* is a measure of the individual capital of a given worker, including education and experience, and *Demographics_{ij}* includes a range of demographic controls. The precise measurement of each variable is described in Section 5.

*ii) A regression of worker efficiency on verbal abuse*

The third piece of analysis involves testing the effect of verbal abuse on worker productivity. The model hypothesizes that supervisors employ verbal exhortation as a mechanism to spur productive effort on the part of workers, and that a positive relationship between verbal abuse and efficient output might incline firms to promote supervisors' abusive behavior. The second stage of empirical analysis therefore involves a test of the relationship between worker productivity and verbally abusive treatment.

If it is the case that verbal abuse increases the productivity of workers with statistical significance, this would provide evidence for the argument that verbal abuse is successfully used to induce greater work effort from underperforming workers. If it is the case that verbal abuse

decreases the productivity of workers with statistical significance, the conclusion would be that verbal abuse actually operates counter-productively and the abuse is likely occurring in error. If it is the case that verbal abuse is not significant in its effect on worker productivity then the abuse is either occurring in error, or there is a simultaneous impact on workers' sense of agency that lowers demanded wages.

To test the hypotheses relating to verbal abuse and efficiency, individual worker productivity is regressed on worker reports of verbal abuse:

(19) $Ind\_Productivity = \beta_0 + \beta_1 Verbalabuse + \beta_2 Ind\_Capital_{ij} + \beta_3 Demographics_{ij} + \varepsilon$

*Ind_Productivity* measures the relative productivity of a given individual, and *Verbalabuse* again captures the experienced level of verbal abuse. *Ind_Capital$_{ij}$* is a measure of the individual capital of a worker including education and experience, and *Demographics$_{ij}$* measures assorted demographic controls. The precise measurement of each variable is described in Section 5.

Due to the potential for dependent variable endogeneity, a two stage least squared regression is implemented. Verbal abuse is logically correlated with unobserved variation in individual productivity, meaning that given an exogenous shock that affected a worker's output potential, verbal abuse would likewise be affected. Instrumental variables for verbal abuse are therefore necessary to control for error term correlation.

*iv) An analysis of the impact of verbal abuse on firm profits*

The next logical step of analysis toward ascertaining the full role of verbal abuse in factories would involve a test of the relationship between firm profits and verbal abuse, to clearly gauge the potential business case for verbal abuse. If verbal abuse is positive in its impact on profits, firms would be profit-maximizing in their encouragement of its existence, and would structure incentives and working environments in a manner conducive to verbal abuse. Alternately, if verbal abuse is negative in its impact on profits, firms would be erroneous in

allowing verbal exhortation to persist. Profit-maximizing firms would structure incentives in a way that minimized verbal abuse, and construct a working environment in a manner that minimized the inclination toward abuse.

Unfortunately, data limitations preclude a full regression analysis of profits on verbal abuse. The relevant data is presented and preliminary relationships are discussed, as well as steps for future analysis pertaining to the question of profitability.

Section 5: Data and Empirical Specifications

*5.1: Better Work Background*

      The utilized datasets come from survey data collected by Better Work, a program targeting labor standard improvements in the garment sector of developing countries (Better Work, 2012). Established in 2007 and beginning operations in 2009, Better Work is a partnership between the International Labor Organization and the International Finance Corporation focused on enforcing factory compliance with labor laws and standards as well as improving the business competitiveness of producing countries (International Labor Organization: Better Work 2014). The organization is currently active in nine countries worldwide, seven of which have established programs underway. For some countries, including Jordan and Haiti, compliance with Better Work programs is mandated by the national governments. For others, such as Indonesia, Vietnam and Nicaragua, program participation is voluntary (Better Work, 2012).

      The Better Work program involves factory audits, labor standards improvement, and stakeholder involvement (International Labor Organization: Better Work, 2014). The assessment service involves data collection by Enterprise Advisors to evaluate factory compliance with a wide array of labor standards and labor law. A separate Impact Evaluation program organized by researchers at Tufts University conducts surveys of workers and managers in each factory. Surveys and enterprise assessments are the source of the data for the following analyses, and will be discussed in further depth below.

      Better Work additionally offers advisory and training services to help improve labor standards in all factories. Individual advisory services utilize the assessment reports to determine shortcomings in compliance and work directly with the factory to develop an improvement plan (Better Work, 2012). Better Work additionally provides training courses that address widespread

trends in compliance failures with tailored curriculum to adapt for a range of cultures and languages (Better Work, 2012).

Finally, Better Work seeks to partner with international buyers by engaging in a formal agreement to support the program. Better Work Buyer Partners are offered the opportunity to join a global program alliance, contribute to the structuring of Better Work's governance, and participate in factory training sessions, among others. This partnership allows buyers to work in tandem with Better work to support the common goal of improving workplace conditions of suppliers (Better Work, 2012).

*5.2: Better Work Survey Data Overview*

The analyses presented in Section 6 rely primarily on data from the Impact Evaluation surveys conducted by the research team at Tufts University. Surveys comprise in-depth questionnaires of factory workers and managers to ascertain working conditions and employee perspectives. Each factory survey incorporates five instruments, four of which are individually surveyed managers and the fifth of which includes a random selection of factory workers. The manager surveys include the Financial Manager, General Manager, Human Resources Manager, and Industrial Engineer, and topics range from unit output to total employment. The worker survey portion consists of a maximum of 30 randomly selected workers, not to exceed five percent of the total workforce. Participation is voluntary, and is randomized within the factory. Workers are stratified by position, and include sewers, packers, mechanics, and supervisors among others. The worker surveys cover a wide array of topics, including basic demographics and information such as wages, hours, health, family life, and contracts.

The Enterprise Assessments use a checklist approach to determine noncompliance on each sub-point of surveyed labor issues. Each country assessment includes a common section covering core international labor standards that derives from the ILO Declaration on

Fundamental Principles and Rights at Work. The fundamental rights are freedom from exploitive child labor, discrimination, and forced labor and the rights to freedom of association and collective bargaining. Country assessments also include a second section composed of questions related to working conditions that is tailored to assess compliance with country-specific national labor laws. Such topics include compensation, occupational safety, and working time (Better Work, 2012).

Survey data ranges from 2010 to 2013, and the total number of surveyed factories varies by country and by year. Table 2 describes the number of factories surveyed each year in each respective country.

**Table 2**

### Number of Factories Surveyed per Year by Country

|  | *2010* | *2011* | *2012* | *2013* |
|---|---|---|---|---|
| **Jordan** | 13 | 15 | 6 | 24 |
| **Vietnam** | 43 | 46 | 49 | 50 |
| **Haiti** | - | 23 | 7 | - |
| **Indonesia** | - | 35 | 29 | 17 |
| **Nicaragua** | - | - | 6 | 4 |

As previously specified, the empirical strategy involves four stages of analysis, with unique dependent and independent variables to be tested. According to the existence and quantity of survey observations for each country, the tests incorporate additional variation to allow for individualized country analyses. Due to low numbers of total observations, Haiti and Nicaragua were excluded from the analysis, and tests are run on factory data taken from Jordan, Vietnam, and Indonesia.

The following four subsections include summary tables and descriptive statistics of the utilized variables for each of the four empirical components, separated by country. Additionally,

an exhaustive index of all variables, their corresponding survey questions, and available answer options can be found in Appendix 2.

*5.3.1 : Verbal Abuse Regression Data Descriptions*

As specified in Section 4, to test the hypothesized theories regarding the determinants of workplace verbal abuse, verbal abuse is regressed on measures of incentive structures, psychological factors, and demographic control variables (Equation 17).

The dependent variable measuring verbal abuse comes from individuals' responses to a worker survey question that queries "Is verbal abuse such as yelling or vulgar language a concern for workers in your factory?" Workers had 7 response options, with 1 coding for "Not a concern" and 2 through 7 coding for "Yes," with additional notes.[4] Workers could also opt to answer "Do not know" (coded as -8) or "Do not want to answer" (coded as -9). For purposes of the empirical analysis, *Verbalabuse* is treated as a dummy variable, where 0 corresponds to a worker who answered that verbal abuse is not a concern, and 1 corresponds to any worker who selected any level of concern. For some tests in Vietnam and Jordan, an additional adjustment is made to recode actively declined responses (-8 or -9) as positive reports of verbal abuse, with the assumption that respondents who chose not to answer were likely reluctant victims fearing retribution.[5] Table 3 shows the tabulations for *Verbalabuse* in each country, alongside the corresponding observations after applying the recoding for voicing reluctance.

Additionally, to further address the issue of survey participants fearing identification as informants, a variable *Avg_VA* is constructed to measure the average verbal abuse a typical worker could expect in a given factory based on aggregate responses of workers per firm. Positive responses are summed and divided by the number of total respondents per factory. Table 4

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[4] For a complete list of survey options, see Appendix 2

[5] Note: these adjustments are not applied to Indonesian observations due to an already very high positive response rate that seems to indicate a lack of reluctance in reporting grievances.

includes summary statistics for the dependent variable, *Avg_VA*, as well as the dummy variable

*Verbalabuse* for each of the respective countries. Charts 1a, 1b, and 1c show histograms of the

*Avg_VA* distribution prior to the inclusion of declined responses.

**Table 3**

### Tabulation of Verbal Abuse Responses before and after Voice Adjustment

| | Jordan | | Vietnam | | Indonesia |
|---|---|---|---|---|---|
| *"Is verbal abuse a concern for workers in your factory?"* | **Original Responses** | **Voice Adjusted** | **Original Responses** | **Voice Adjusted** | **Original Responses** |
| *No* | 366 | 366 | 4,718 | 4,718 | 242 |
| *Yes* | 307 | 438 | 377 | 418 | 890 |
| **Total** | 673 | 804 | 5,095 | 5,136 | 1132 |

Note 1: Responses were adjusted by coding "Do not want to respond" and "Do not know" as "Yes"
Note 2: The voicing adjustment was not applied in Indonesia due to very high report levels

**Table 4**

### Summary Statistics for *Avg_VA* and *Verbalabuse*

| | | **Mean** | **Median** | **SD** | **Min** | **Max** | **Count** |
|---|---|---|---|---|---|---|---|
| **Jordan** | *Avg_VA* | 0.45 | 0.4 | 0.2 | 0.0 | 1.0 | 1468 |
| | *Verbalabuse* | 0.46 | 0.0 | 0.5 | 0.0 | 1.0 | 673 |
| **Indonesia** | *Avg_VA* | 0.78 | 0.8 | 0.2 | 0.0 | 1.0 | 2241 |
| | *Verbalabuse* | 0.79 | 1.0 | 0.4 | 0.0 | 1.0 | 1132 |
| **Vietnam** | *Avg_VA* | 0.07 | 0.0 | 0.1 | 0.0 | 0.6 | 5136 |
| | *Verbalabuse* | 0.07 | 0.0 | 0.3 | 0.0 | 1.0 | 5095 |

**Chart 1a**



Jordan: Average Reports of Verbal Abuse, by factory

**Chart 1b**



Vietnam: Average Reports of Verbal Abuse, by factory

**Chart 1c**



Indonesia: Average Reports of Verbal Abuse, by factory
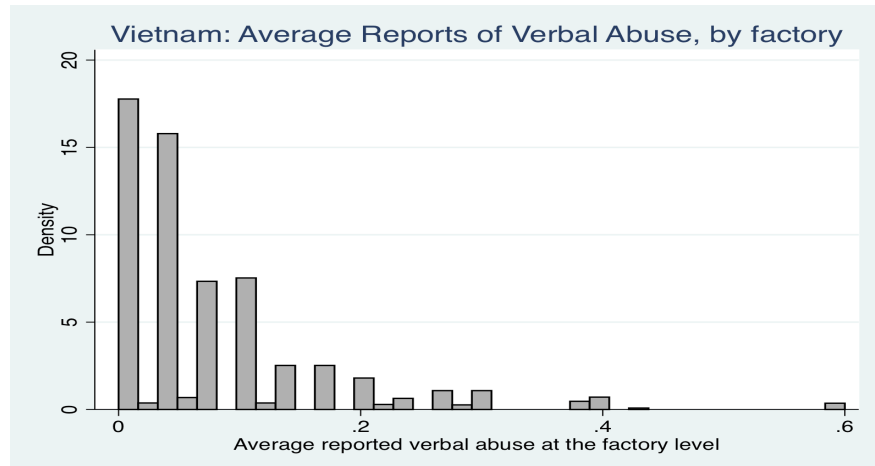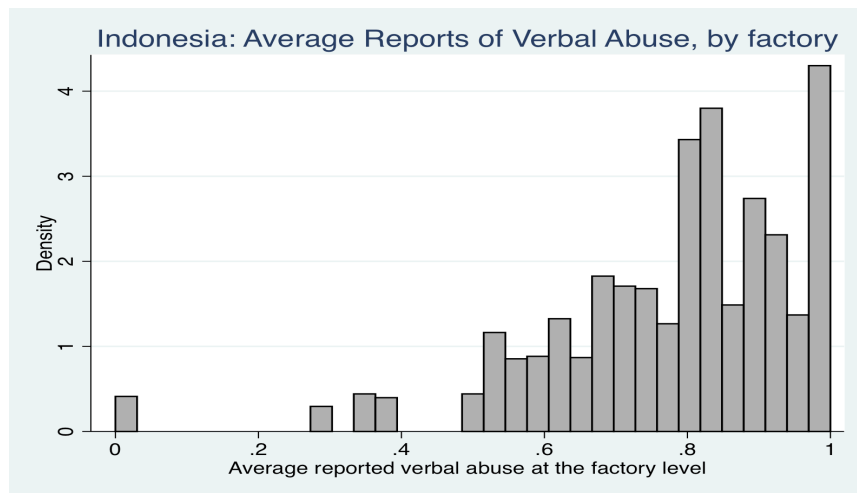
Measures for the independent variables of interest, *Sewer_Incentives* and *Sup_Incentives*

derive from questions posed to the Human Resources Manager of each firm that ask "What

fraction of a sewer's pay is based on her own production?" and "What percentage of a typical

supervisor's pay is based on the performance of the workers he or she supervises?" respectively.

Answer options range from 0 to 11, with 0 coding for "none" and 11 coding for "all," and the

mid-range values corresponding to 10 percentage point increments of aggregate pay. Table 5

illustrates a detailed breakdown of the key dependent variables *Sewer_Incentives* and *Sup_Incentives*

for each of the analyzed countries.

**Table 5**

**Tab of Incentive Schemes for Workers and Supervisors**

| Variable Coding | What fraction of a sewer's pay is based on her own production? | Jordan | | Indonesia | | Vietnam | |
|---|---|---|---|---|---|---|---|
| | | Count | Percent | Count | Percent | Count | Percent |
| 0 | None | 683 | 71.7% | 1028 | 71.6% | 2218 | 57.3% |
| 1 | Less than 10 percent | 41 | 4.3% | 171 | 11.9% | 30 | 0.8% |
| 2 | 10 to 20 percent | 89 | 9.3% | 53 | 3.7% | 120 | 3.1% |
| 3 | 20 to 30 percent | 20 | 2.1% | 30 | 2.1% | 61 | 1.6% |
| 4 | 30 to 40 percent | 58 | 6.1% | 28 | 1.9% | 13 | 0.3% |
| 5 | 40 to 50 percent | - | - | 28 | 1.9% | 21 | 0.5% |
| 6 | 50 to 60 percent | - | - | 26 | 1.8% | 60 | 1.5% |
| 7 | 60 to 70 percent | 58 | 6.1% | - | - | 30 | 0.8% |
| 8 | 70 to 80 percent | - | - | 44 | 3.1% | 120 | 3.1% |
| 9 | 80 to 90 percent | 4 | 0.4% | - | - | 256 | 6.6% |
| 10 | All of a sewer's pay depends on her number of pieces completed | - | - | 28 | 1.9% | 944 | 24.4% |
| | **Total** | **953** | | **1436** | | **3873** | |

| Variable Coding | What percentage of a typical supervisor's pay is based on the performance of the workers he or she supervises? | Jordan | | Indonesia | | Vietnam | |
|---|---|---|---|---|---|---|---|
| | | Count | Percent | Count | Percent | Count | Percent |
| 0 | None. Supervisor pay does not depend on line production. | 683 | 68.4% | 506 | 39.3% | 2286 | 59.3% |
| 1 | Less than 10 percent | 20 | 2.0% | 56 | 4.3% | 347 | 9.0% |
| 2 | 10 to 20 percent | 61 | 6.1% | 83 | 6.4% | 90 | 2.3% |
| 3 | 20 to 30 percent | 58 | 5.8% | 58 | 4.5% | - | - |
| 4 | 30 to 40 percent | - | - | - | - | 90 | 2.3% |
| 5 | 40 to 50 percent | 29 | 2.9% | 121 | 9.4% | 60 | 1.6% |
| 6 | 50 to 60 percent | 30 | 3.0% | - | - | 33 | 0.9% |
| 7 | 60 to 70 percent | 58 | 5.8% | 30 | 2.3% | 30 | 0.8% |
| 8 | 70 to 80 percent | - | - | 45 | 3.5% | 120 | 3.1% |
| 9 | 80 to 90 percent | - | - | 49 | 3.8% | 195 | 5.1% |
| 10 | A supervisor's pay depends only on line production | 60 | 6.0% | 341 | 26.5% | 604 | 15.7% |
| | **Total** | **999** | | **1289** | | **3855** | |

For demographic control variables, Jordan is the only survey to inquire after respondents

countries of origin (due to the large contingency of migrant workers), and a variable *Birthplace* is

therefore included to account for possible ethnicity biases. For all countries, a variable *Female* is included, coded 0 for male respondents and 1 for female respondents.

Measures of psychological factors, specifically cognitive load and power, varied in availability and response rate for each country, and a range of variables are therefore used in the analyses. The variables used consistently for all country regressions are a measure of managerial perception of supervisor stress levels and worker-reported comfort levels with supervisors. The variable *Sup_Stress* comes from a section of questions posed to general managers regarding top problems within the factory. The survey asks managers to rate the problematic degree of "stress level of supervisors" on a scale of 1 to 4, with a response of 1 corresponding to a "Serious Problem" and a response of 4 corresponding to "Not a Problem." The variable *Sup_Comfort* is constructed from responses to a question posed to workers that asks "If you were having a problem at your factory, how comfortable would you feel seeking help from your supervisor?" Responses are coded on a scale of 1 to 5, with 1 corresponding to "very comfortable" and 5 corresponding to "not comfortable at all."[6]

In addition to *Sup_Stress*, a supplemental measure of factory chaos is included for each country to control for environmental contribution to cognitive load and stress. For Indonesia and Vietnam a variable *Rush_Orders* derives from the same set of "problem" variables posed to General Managers, and asks the degree to which "Too many rush orders" is perceived as a major factory issue with the answers again being scalar from 1 to 4. For Jordan, a variable *Late_Penalty* derives from the General Managers' rating of the problematic level of "Customer penalties for late deliver" on the same 1 to 4 scale.

According to relevant literature, concern with low wages is an important contributor to verbal abuse levels. The variable *LowWageConcern* is a dummy constructed from worker responses

to the question "Are low wages a concern for workers in your factory?" and the control is used

for the Vietnam analysis. Unfortunately, very low response rates by surveyed workers in

Indonesia and Jordan precluded the variable's inclusion in the primary analysis, but

supplementary regression tables in the appendix demonstrate its relevance.

Finally, measures to control for potential supervisor biases that could contribute to the

frequency and magnitude of abuse also differed for each country according to applicability and

availability. For Jordan, the widespread existence of migrant labor instills an inherent

opportunity for ethnicity bias, which is measured in part by the previously described *Birthplace*

variable and is supplemented by *Sup_Language*, a dummy variable that indicates workers'

responses to the question "Does your supervisor speak your language?" For Indonesia, potential

biases are measured by a variable constructed from worker responses to a question regarding

obstacles to promotion: workers are asked, "Are there any barriers you face getting promoted in

your factory?" and the variable *Promotion_Bias* is coded as 1 for all respondents for answered

"Ethnic Minority" and 0 otherwise. Additionally, to proxy for individual factory initiatives

toward enforcing fair working conditions, a dummy variable *Ind_CBA* is included which relates

whether a given worker is a member of a Collective Bargaining Agreement. The same variable is

used for Vietnamese workers.

A complete table of summary statistics for all variables used in the subsequent analyses

can be found in Appendix 3, divided into separate tables by country. Appendix 4 includes a

breakdown of all factor variables, including the previously mentioned *Birthplace, Sup_Comfort*,

*Sup_Stress*, *Rush_Orders,* and *Late_Penalty*

Several notes on data limitations:

1) Vietnam has a low number of positive reports of verbal abuse, which could either stem from a

fear of reporting or cultural factors that preclude supervisors' use of verbal abuse. Low levels of

variation in the primary dependent variable make it difficult to draw conclusive results with regard to the link between verbal abuse and incentive structures.

2) Relative to the size of the dataset, Indonesia has a very low response rate for individuals who answered the question regarding verbal abuse (roughly 50%), which greatly reduces the dataset. Manager responses to the question of incentive schemes are likewise missing many observations, and also generally lack variation, with almost all workers paid solely by the hour.

3) For Jordanian workers, ethnicity seems to play a major role in decision to report grievances, with ethnic Jordanians far more likely to report positive instances of verbal abuse than migrant workers, as can be observed below in Table 6. This problem is corrected for partially by using averages per factory, and by including birthplace dummy variables in the regression with verbal abuse as the dependent variable of interest.

**Table 6**

## Jordan: Cross Tabulation of Verbal Abuse Reports and Migrant Workers

| | Verbal abuse concern | | |
|---|---|---|---|
| **Ethnicity** | *No* | *Yes* | **Total** |
| *Jordanian Worker* | 61 | 179 | **240** |
| *Migrant Worker* | 305 | 128 | **433** |
| **Total** | **366** | **307** | **673** |

*5.3.2: Wages Regression Data Descriptions*

The second step outlined in Section 4 involves a test of the relationship between earnings and verbal abuse by running a regression with individual wage rate as the dependent variable to test for a potential compensating differential (Equation 18).

The data for wages comes from worker-reported standard payment figures, adjusted for pay frequency and converted into hourly dollar values. Workers are first asked "How often are

you paid?" with options including weekly, biweekly, etc. and next asked "How much money did you receive the last time you were paid?" with answers recorded in respective national currencies. The numerically reported salaries are first adjusted according to pay frequency to determine average weekly pay, then divided by an individual's total weekly work hours,[7] and lastly converted to US dollars according to approximated current prevailing exchange rates.[8] Additional adjustments are made to correct for clear instances of misreporting where workers entered wage values in thousands or millions. Respondents who lacked pay regularity are omitted. Charts 2a, 2b, and 2c depict wage distributions for the worker samples in Jordan, Vietnam, and Indonesia respectively.

**Chart 2a**



Jordan: Hourly Pay in US Dollars

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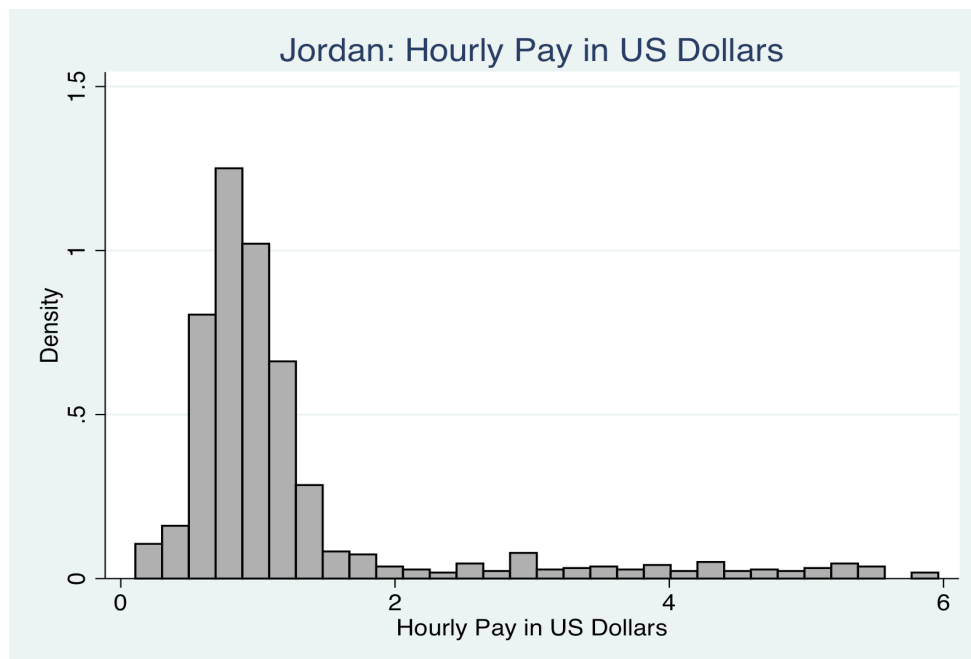
[7] Total weekly hours are calculated separately for each worker according to responses to questions regarding weekly workdays, average start times, and average end times. Additional adjustments are made for clear instances of mistaken usage of AM versus PM. Summary statistics for weekly total hours are included in Appendix I.
[8] Applied rates are 21,000 Vietnamese Dong to the US dollar, 0.71 Jordanian Dinar to the US dollar, and 12,000 Indonesian Rupiah to the US dollar

**Chart 2b**



Vietnam: Hourly Pay in US Dollars

**Chart 2c**



Indonesia: Hourly Pay in US Dollars
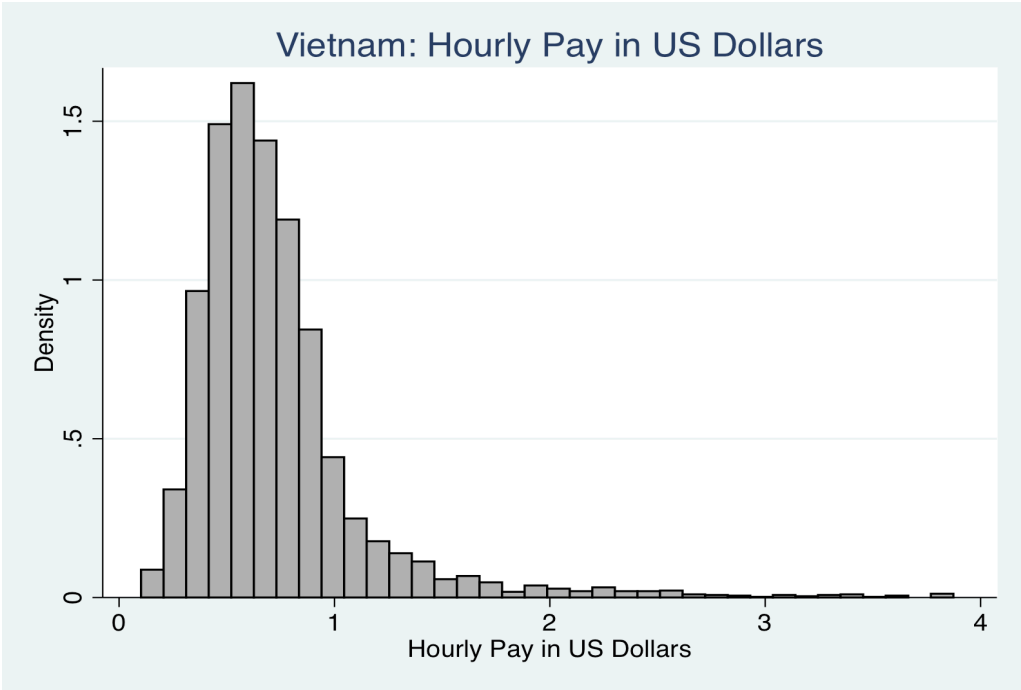
For the Jordan dataset, observations exceeding \$6 per hour (greater than the 99th percentile) are excluded from the analysis. For the Indonesia dataset, observations below \$0.05 are excluded from the analysis (less than the 1st percentile). The log of wages is calculated as the dependent variable of interest for all countries to allow for a logarithmic distribution.

Measures of verbal abuse as the key independent variable are equivalent to those utilized in stage 1, and additional versions are performed to allow for adjustments controlling for the previously discussed reporting concerns.

Measures of individual capital include educational attainment, years of experience, training, and number of promotions. For the variable *Education*, workers are asked, "what is your highest level of education?" with response options varying according to each country's respective education system. *Education* was regressed as a factor variable to allow for variation in returns to distinct educational tiers.[9] Experience level is measured by the variable *Years_atfactory_adj*, which derives from workers' responses to the question "How long have you been working in your factory?" In Jordan and Indonesia the survey response options were presented as ranges with varying time units. Responses are therefore recoded to convert all answers to units of years, as well as to assign the median value of the selected range.[10] Vietnam workers were prompted to input a numerical value in either months or years, and month values were divided by a factor of 12.

The variable *Promoted* represents workers' responses to the question "Have you been promoted since you entered the factory?" with observations reflecting the number of promotions obtained, capped at a maximum of 3.[11] To measure training in Indonesia and Vietnam the

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[9] Note: For Indonesia, respondents who chose "No Formal Education" were excluded from the analysis, as there were only 3 such responses.

[10] For example, if a worker selected "7-9 months," the variable is reassigned the value .667.

[11] 0= no promotions, 1=one promotion, 2= two promotions, 3= three or more promotions.

variable *BasicSkillsTraining* is a dummy variable for workers' responses to the query "Did you

receive training on basic skills when you first started working in this factory?" For Jordan, the

variable *Days_Training* is constructed from the Human Resources Manager survey question that

asks, "How much time is spent on basic skills training for a typical new employee?" Responses

are recoded to convert all answers to units of days, as well as to assign the median value of the

selected range.

Additional control variables include individual contract specifications as well as job titles.

The variable *Contract_Type* is regressed as a factor variable to control for distinct contract types.

Options include "Training," "Subcontract," "Bonded," and "Fixed Time," among others. All

options are listed and summarized in detail in Appendix 3. Workers are additionally asked

"What is your job in the factory," and dummy variables, *Job_[type]* are included to control for

position-based pay discrepancies. Individuals who identified as "Supervisor" are excluded from

all regressions. Table 7 is an exhaustive list of job types and observation counts, separated by

country. Finally, year dummies are included to control for countrywide monetary value and

wage trends.

**Table 7**

## Job Description Breakdown, by Country

| | Jordan | | Vietnam | | Indonesia | |
|---|---|---|---|---|---|---|
| **Job Title** | **Count** | **Percentage** | **Count** | **Percentage** | **Count** | **Percentage** |
| Sewer | 695 | 45.0% | 2546 | 49.1% | 1130 | 50.6% |
| Cutter | 93 | 6.0% | 156 | 3.0% | 144 | 6.5% |
| Spreader | 33 | 2.1% | 109 | 2.1% | 14 | 0.6% |
| Checker | 62 | 4.0% | 408 | 7.9% | 61 | 2.7% |
| Mechanic | 26 | 1.7% | 3 | 0.1% | 16 | 0.7% |
| Packer | 88 | 5.7% | 289 | 5.6% | 83 | 3.7% |
| Quality Control | 98 | 6.3% | 65 | 1.3% | 196 | 8.8% |
| Helper | 149 | 9.6% | 402 | 7.8% | 236 | 10.6% |
| Other | 234 | 15.1% | 1076 | 20.7% | 328 | 14.7% |
| Supervisor | 67 | 4.3% | 132 | 2.5% | 24 | 1.1% |
| **Total** | **1,545** | | **5,186** | | **2,232** | |

Summary statistics for all variables can be found in Appendix 2, and Appendix 3 includes a breakdown of all factor variables, including *Education* and *Contract_Type*.

*5.3.3: Productivity Regression Data Descriptions*

The third stage, as outlined in Section 4, involves testing the directional effect of verbal abuse on an individual's productive efficiency by regressing productivity on verbal abuse and controls for individual capital and demographic characteristics (Equation 19).

Due to data availability limitations for the dependent variable, the third stage of analysis is run exclusively on data from Vietnamese factories. The key dependent variable, *Time_to_Target*, is constructed from worker reports of the time of day he or she typically completes the production target set by his or her supervisor. The question was posed both for Monday and Friday completion times, and each was subtracted from reported start times on the corresponding day, to yield a measure for hours to completion. Adjustments are made for clear instances of mistaken usage of AM versus PM.  Table 8 provides summary statistics for the variables *Time_to_TargetM* and *Time_to_TargetF*, and Chart 3a and 3b illustrate the corresponding histograms.

**Table 8**

## Vietnam: Summary Statistics for Dependent Variable in Productivity Regression Analysis

| *Standard time needed to reach daily production target* | **Mean** | **Std. Dev.** | **Min** | **Max** | **Obs** |
|---|---|---|---|---|---|
| *Monday* | 10.01 | 1.56 | 3.5 | 16 | 1581 |
| *Friday* | 10.064 | 1.56 | 3.5 | 16.5 | 1543 |

Measures of verbal abuse as the key independent variable are equivalent to those utilized in stages 1 and 2. The analysis is performed both with individually reported grievances as well as factory averages to measure the likelihood of abuse risk. Additional versions are also estimated to allow for recoding of declined responses to address the voicing concern.

**Chart 3a**



Vietnam: Hours to Production Target Completion (Monday)

**Chart 2b**



Vietnam: Hours to Production Target Completion (Friday)
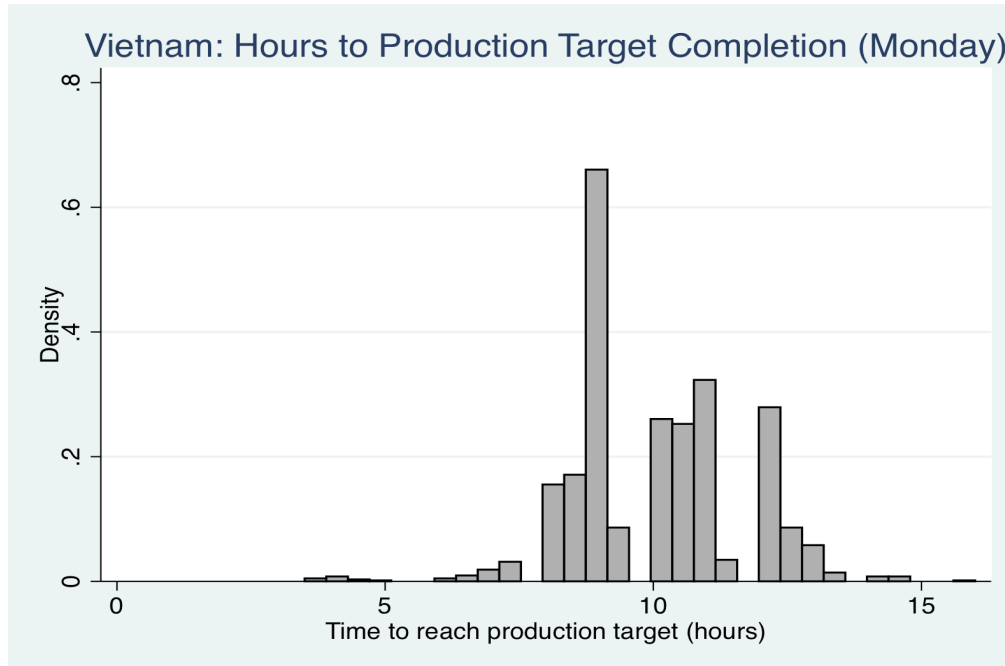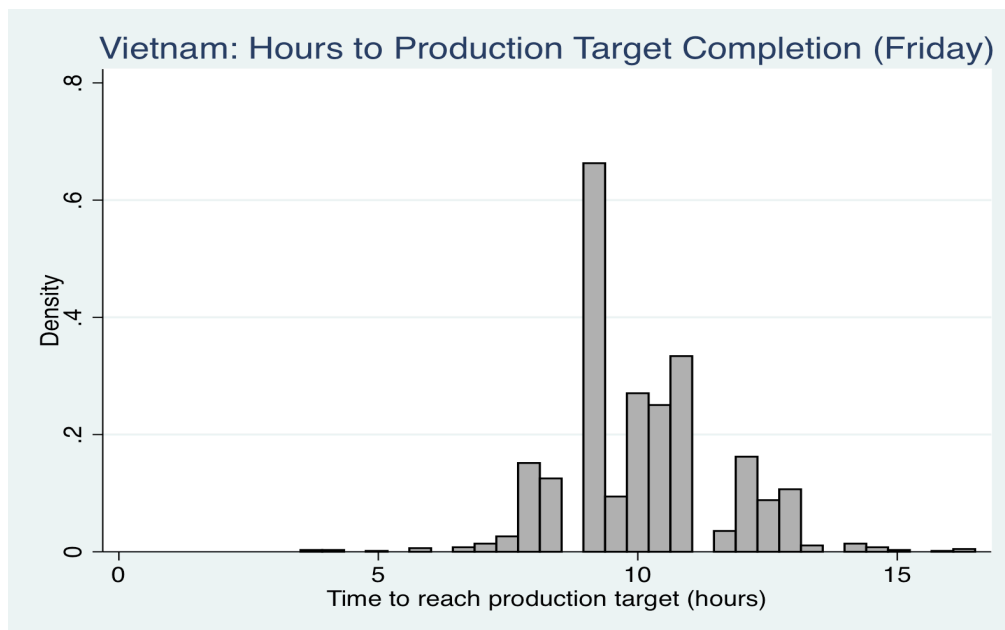
Measures of individual capital include education, years of experience, and training, as previously described in stage 2 of the analysis. Demographic controls include age and gender. In

accordance with the literature asserting that fairness and equity have an impact on worker productivity, *Ind_CBA* is included to proxy for the existence of worker rights systems. Finally, *Rush_Orders* is again included to control for organizational chaos and pressure that could detract from an individual's productive efficiency.

To control for hypothesized correlation between the key dependent variable and the error term, a two stage least squared regression is employed with two instrumental variables used as predictors of verbal abuse. The first utilized instrumental variable is the previously discussed *Sup_Comfort*, measuring the reported comfort level a worker feels in approaching his or her supervisor with a concern. The second, *Bullying_Compliance*, comes from the Vietnam Enterprise Assessment, representing an external Better Work source's judgment of factory compliance with the question "Have any workers been bullied, harassed, or subjected to humiliating treatment?"

Summary statistics for all variables can be found in Appendix 2.

*5.3.4: Profts Discussion Data Descriptions*

Although data limitations inhibit a full regression analysis of firm profits on verbal abuse, preliminary findings with regard to directional correlation are briefly addressed. Data from Vietnam Financial Manager reports of costs and revenues is used to construct a measure of firm profits. A single observation of average verbal abuse is used to measure factory-wide verbal abuse. Chart 4 depicts a histogram of firm profits, measured in US dollars, and Table 9 provides summary statistics for the measures of revenues and costs used in the construction of the profit variable, as well as for the profit variable itself. Revenue and Cost figures exceeding $30,000,000 are dropped, and only positive profit values are considered.

**Chart 4**
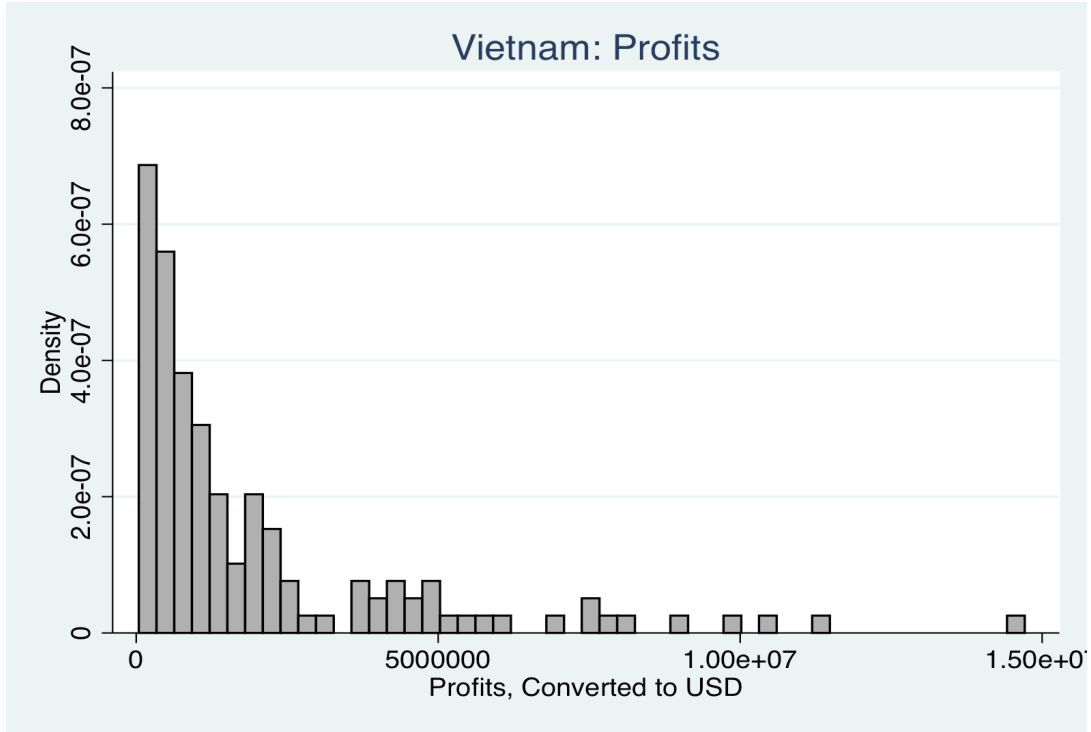


**Table 9**

## Vietnam: Profit Analysis Summary Statistics

**Prior to Data Adjustments**

|  | Mean | Median | SD | Min | Max | Count |
|---|---|---|---|---|---|---|
| *CostsUSD* | 1,569,420.40 | 250,381.00 | 3,808,550.20 | 3,095.20 | 24,748,714.00 | 177 |
| *Revenue* | 3,948,816.30 | 1,274,247.00 | 7,482,034.20 | 120,000.00 | 50,000,000.00 | 146 |
| *Profits* | 2,341,433.70 | 928,203.70 | 4,995,117.10 | -7,048,857.00 | 41,690,332.00 | 142 |

**Post-Data Adjustments**

|  | Mean | Median | SD | Min | Max | Count |
|---|---|---|---|---|---|---|
| *CostsUSD* | 1,017,137.00 | 194,076.20 | 2,540,147.70 | 14,057.10 | 18,244,000.00 | 130 |
| *Revenue* | 3,017,348.40 | 1,210,992.50 | 4,445,764.40 | 120,000.00 | 27,000,000.00 | 130 |
| *Profits* | 2,000,211.40 | 970,630.80 | 2,543,894.00 | 43,642.80 | 14,712,857.00 | 130 |

Section 6: Results and Discussion

As outlined in Sections 4 and 5, four tiers of analysis are executed to parse out the role of verbal abuse in factory operations. Factory verbal abuse is first considered from the perspective of its origination, followed by its resulting impact. Presentations and discussions of results for each stage are as follows:

*6.1: Verbal Abuse Regression Results*

The dependent variable *Avg_VA* is regressed on the key independent variables *Sewer_Incentives* and *Sup_Incentives* as well as hypothesized psychological factors and additional control variables for each of the three countries. Clustered standard errors are used by factory ID to control for factory fixed effects. Tables 10a, 10b, and 10c display the regression results, and asterisks correspond to significance levels of 5, 10, and 15 percent. For Jordan and Vietnam, results are presented with the voice-adjusted dependent variable, where declined responses are counted as positive reports. Original runs prior to the recoding are displayed in Appendix 5.

The results from Jordan offer a strong confirmation of the theoretically derived relationship between firm incentive structures and verbal abuse. *Worker_Production_Pay* is statistically significant at the 10% level and has a negative coefficient, implying that as workers are more monetarily incentivized, their probability of being subjected to verbal abuse declines.[12] *Sup_Performance_Pay* is significant at the 1% level, and has a positive coefficient, indicating that incentivizing supervisors monetarily will predispose them to use additional measures, such as verbal abuse, to augment the productivity of workers on which their pay depends.

The coefficients on factor variables *Late_Penalty* and *Sup_Stress* can be interpreted as a relative comparison of abuse to the level predicted when the response was "serious problem."

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[12] The statistical significance could be lower than it would otherwise be due to a notable lack in variation for worker pay schemes (71.7% of factories pay workers exclusively by an hourly rate)

Versions 3 and 4 from Jordan therefore indicate that as management perceives customer penalties for late deliveries as a lesser problem within a factory, the existence of verbal abuse correspondingly declines (as can be inferred by the negative coefficients on variables for "modest" and "minor" problems).

**Table 10a**

| Jordan: Average Verbal Abuse, Adjusted for Declined Responses | | | | |
|---|---|---|---|---|
| | (1) | (2) | (3) | (4) |
| VARIABLES | Avg_VA | Avg_VA | Avg_VA | Avg_VA |
| | | | | |
| Worker_Production_Pay | -0.052*** | -0.052*** | -0.064*** | -0.045** |
| | (0.030) | (0.027) | (0.021) | (0.070) |
| Sup_PerformancePay | 0.039*** | 0.036*** | 0.035*** | 0.025*** |
| | (0.001) | (0.001) | (0.000) | (0.001) |
| Female | | 0.088*** | 0.069*** | 0.047*** |
| | | (0.010) | (0.010) | (0.024) |
| Sup_Language | | | -0.023 | 0.010 |
| | | | (0.368) | (0.707) |
| Late_Penalty: Modest Problem | | | -0.142 | -0.049 |
| | | | (0.158) | (0.582) |
| Late_Penalty: Minor Problem | | | -0.230*** | -0.159** |
| | | | (0.035) | (0.099) |
| Sup_Stress: Modest Problem | | | 0.210* | 0.168 |
| | | | (0.128) | (0.167) |
| Sup_Stress: Minor Problem | | | 0.170 | 0.149 |
| | | | (0.207) | (0.231) |
| Sup_Stress: Not a Problem | | | 0.012 | -0.009 |
| | | | (0.933) | (0.946) |
| Sup_comfort | | | | 0.010** |
| | | | | (0.061) |
| Birthplace_Bangladesh | | | | -0.165*** |
| | | | | (0.002) |
| Birthplace_Sri_Lanka | | | | -0.139*** |
| | | | | (0.006) |
| Birthplace_Pakistan | | | | -0.058 |
| | | | | (0.309) |
| Birthplace_China | | | | 0.055 |
| | | | | (0.406) |
| Birthplace_Other | | | | -0.099** |
| | | | | (0.076) |
| Constant | 0.510*** | 0.452*** | 0.517*** | 0.533*** |
| | (0.000) | (0.000) | (0.000) | (0.000) |
| | | | | |
| Observations | 817 | 817 | 716 | 708 |
| R-squared | 0.154 | 0.185 | 0.374 | 0.458 |

Robust pval in parentheses
*** p<0.05, ** p<0.1, * p<0.15

The coefficients on supervisor stress levels are not significant, but the effect of supervisors' cognitive load could be reflected in the variable measuring concerns with late penalties, a likely contributor to supervisor cognitive load and stress. Lack of statistical significance in the variable *Sup_Stress* could also be a result of skewed managerial perspective, or due to the masking effects of such variables as *Late_Penalty* or *Sup_PerformancePay*.[13]

The coefficient for *Female* is positive and statistically significant at the 5% level, indicating that women are more likely to be victims of verbal abuse than men. As previously noted, birthplace is closely related to reports of verbal abuse, and significantly decreases an individual's likelihood to report abusive treatment. This could be a result of cultural influences, a generalized sense of intimidation, or a lack of agency on the part of migrant workers.

Overall however, the results in Jordan provide strong support for the argument that verbal abuse is interconnected with firm incentive structures and arises at times when supervisors desire additional productive effort. When workers are minimally incentivized, effort and efficiency are likely to decline, prompting supervisors to supplement the absent monetary motivation with verbal exhortation. Additionally, when supervisors have high-powered incentives, they have a personally vested interest in production levels, and are therefore more likely to employ additional measures to stimulate output.

The analysis for Vietnam and Indonesia provide less conclusive results with regard to incentive structure interactions, likely due to country-specific data limitations. Vietnam observations lack variation in the dependent variable, with very low reports of verbal abuse. The lack of positive responses suggests the potential for a widespread reluctance to report abuses. Rather, one of the strongest predictors of verbal abuse is *Sup_Comfort*. The positive coefficient

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[13] *Sup_Stress* and *Late_Penalty* have a positive correlation of 0.23 and *Sup_Stress* and *Sup_PerformancePay* have a positive correlation of 0.19.

indicates that workers who report increasing discomfort approaching their supervisor are also

more likely to be in an environment with prevalent levels of verbal abuse.

**Table 10b**

| | (1) | (2) | (3) | (4) |
|---|---|---|---|---|
| **Vietnam: Average Verbal Abuse, Adjusted for Declined Responses** | | | | |
| VARIABLES | *Avg_VA* | *Avg_VA* | *Avg_VA* | *Avg_VA* |
| *Worker_Production_Pay* | 0.005 | 0.005 | 0.003 | 0.003 |
| | (0.235) | (0.231) | (0.357) | (0.344) |
| *Sup_PerformancePay* | -0.005 | -0.005 | -0.003 | -0.004 |
| | (0.199) | (0.198) | (0.360) | (0.271) |
| *Female* | | 0.008 | 0.005 | 0.004 |
| | | (0.275) | (0.400) | (0.509) |
| *LowWageConcern* | | | 0.060*** | 0.059*** |
| | | | (0.000) | (0.000) |
| *Rush_Orders: Modest Problem* | | | -0.031** | -0.033** |
| | | | (0.051) | (0.065) |
| *Rush_Orders: Minor Problem* | | | -0.019 | -0.016 |
| | | | (0.439) | (0.577) |
| *Rush_Orders: Not a Problem* | | | -0.039* | -0.037 |
| | | | (0.112) | (0.225) |
| *Sup_comfort* | | | 0.026*** | 0.025*** |
| | | | (0.000) | (0.000) |
| *Ind_CBA* | | | | -0.008* |
| | | | | (0.107) |
| *Sup_Stress: Modest Problem* | | | | 0.023 |
| | | | | (0.326) |
| *Sup_Stress: Minor Problem* | | | | 0.013 |
| | | | | (0.661) |
| *Sup_Stress: Not a Problem* | | | | 0.004 |
| | | | | (0.888) |
| *Constant* | 0.087*** | 0.080*** | 0.055*** | 0.053*** |
| | (0.000) | (0.000) | (0.000) | (0.016) |
| Observations | 3,439 | 3,439 | 3,067 | 2,893 |
| R-squared | 0.033 | 0.034 | 0.154 | 0.163 |

Robust pval in parentheses
*** p<0.05, ** p<0.1, * p<0.15

Other interesting and relevant features of the Vietnam analysis include the high level of

statistical significance on the first factor variable of *Rush_Orders*, indicating that factories with rush

order deliveries reported as a "serious problem" are more likely to foster a verbally abusive

environment than those in which the problem is less severe. Prior to the inclusion of supervisor

stress, the third factor variable for *Rush_Orders* corresponding to "not a problem," likewise predicts a lower level of verbal abuse.[14] The coefficient for *LowWageConcern* is extremely significant and positive, indicating that concern with low wages increases the likelihood of verbal abuse, as was suggested by surveyed psychological literature. Additionally, *Ind_CBA*, denoting an individual's representation by a Collective Bargaining Agreement, has a negative coefficient, statistically significant at the 5% level, indicating that such representation decreases an individual worker's probability of being verbally abused.

The Indonesian dataset is greatly limited by a very low response rate for the key dependent variable. Observations also steeply attenuate across variants due to missing responses for many of the dependent variables, resulting in a heavily diminished dataset.[15] Additionally, Indonesia has the reverse problem of Vietnam with regard to reporting reluctance, with nearly 80 percent of respondents citing verbal abuse as a concern.[16] The high quantity of grievance reports suggests either a widespread dissatisfaction among workers, or a fairly universal presence of verbal abuse across factories. Minimal amounts of variation in the dependent variable coupled with low variation in worker pay schemes (72 percent are paid exclusively by the hour) and large amount of data loss due to missing observations combine to make the analysis significantly less robust.

Similar to Vietnam, the variables that persist in significance for their effects on verbal abuse are measures of bias and supervisory comfort levels. Reported discomfort with the respondent's supervisor has a positive relationship with verbal abuse, significant at the 1% level, and *Promotion_Bias* is positively related to verbal abuse, significant at the 10% level.

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[14] *Rush_Orders* and *Sup_Stress* have a positive correlation of 0.42.
[15] Of the original 2,257 observations, only 577 remain by the final run of the regression.
[16] Of total workers surveyed, only 50% responded to the question regarding verbal abuse, 80% of whom reported a positive concern.

**Table 10c**

| | Indonesia: Average Verbal Abuse | | | |
|---|---|---|---|---|
| | (1) | (2) | (3) | (4) |
| VARIABLES | Avg_VA | Avg_VA | Avg_VA | Avg_VA |
| | | | | |
| Worker_Production_Pay | -0.010 | -0.010 | 0.000 | 0.001 |
| | (0.480) | (0.481) | (0.973) | (0.907) |
| Sup_PerformancePay | -0.013 | -0.013 | -0.001 | 0.001 |
| | (0.193) | (0.185) | (0.931) | (0.921) |
| Female | | -0.041 | -0.027 | -0.014 |
| | | (0.296) | (0.441) | (0.627) |
| 2.Rush_Orders | | | 0.084 | 0.086 |
| | | | (0.187) | (0.224) |
| 3.Rush_Orders | | | 0.023 | 0.047 |
| | | | (0.722) | (0.596) |
| 4.Rush_Orders | | | 0.178* | 0.173 |
| | | | (0.116) | (0.272) |
| 2.Sup_Stress | | | | -0.033 |
| | | | | (0.668) |
| 3.Sup_Stress | | | | -0.065 |
| | | | | (0.504) |
| 4.Sup_Stress | | | | -0.017 |
| | | | | (0.903) |
| Promotion_Bias | | | | 0.027** |
| | | | | (0.073) |
| Sup_comfort | | | 0.056*** | 0.069*** |
| | | | (0.003) | (0.001) |
| Constant | 0.836*** | 0.873*** | 0.622*** | 0.597*** |
| | (0.000) | (0.000) | (0.000) | (0.000) |
| | | | | |
| Observations | 1,164 | 1,164 | 753 | 577 |
| R-squared | 0.072 | 0.076 | 0.162 | 0.193 |

Robust pval in parentheses
*** p<0.05, ** p<0.1, * p<0.15

Overall, the preceding analysis of stage 1 provides persuasive evidence in support of the psychology literature relating to verbal abuse. Results indicate that stress levels, organizational chaos, biases and stereotyping all contribute positively to the likelihood and persistence of workplace verbal abuse. Vietnam results additionally demonstrate that low wages contribute positively to the occurrence of verbal abuse. This finding is corroborated by including *LowWageConcern* in the final Jordan and Indonesia regressions, and results are displayed in Appendix 6. Although observation counts drop drastically, the variable is very statistically

significant (below the 5% level for each) and positive in both cases, indicating the key relevancy

of low wages in contributing to verbal abuse.

Additionally, results from Jordan offer persuasive evidence in support of the theoretical

model, demonstrating that firm incentive structures also play a significant role in encouraging

supervisors to apply verbal exhortation as a supplementary motivational mechanism.

With the knowledge that verbal abuse is integral to factory operations, incentives, and

environmental factors, the subsequent steps of the analysis aim to obtain an understanding of the

effects of verbal abuse on factory productivity and costs, with the ultimate goal of determining

whether or not verbal abuse could be a profit-maximizing strategy.

*6.2: Wages Regression Results*

The dependent variable log of hourly pay measured in US dollars is regressed on the key

independent variable verbal abuse, as well as measures of individual capital and demographic

characteristics (Equation 18). Clustered standard errors are used by factory ID numbers to

control for factory fixed effects. Tables 11a and 11b show regression results from Jordan, first

performed using individual reports of verbal abuse as the key independent variable, and

subsequently using within-factory averages to control for potential voicing concern and low

observation count. Table 11c shows results from Indonesia.[17] Vietnam analysis was less

conclusive, with low levels of abuse reports seeming to impede statistical significance. However,

the directional effects of verbal abuse are similar to those observed in the Jordan and Indonesia

analysis, and the full Vietnam regression analysis results can be found in Appendix 7.

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[17] Note: Controls for job type and years are included in the analyses, but are omitted from Tables 6.2a, 6.2b and 6.2c
for purposes of space. Relevant job types are discussed below.

**Table 11a**

**Jordan: Hourly Wages, using Individual Reports of Verbal Abuse**

| VARIABLES | (1) logHourlyPayUSD | (2) logHourlyPayUSD | (3) logHourlyPayUSD |
|---|---|---|---|
| Verbalabuse | 0.124*** | 0.119** | 0.149*** |
| | (0.034) | (0.099) | (0.030) |
| Female | | -0.158*** | -0.188*** |
| | | (0.025) | (0.003) |
| Education: Primary School | | -0.013 | -0.027 |
| | | (0.942) | (0.879) |
| Education: Lower Secondary School | | 0.102 | 0.089 |
| | | (0.618) | (0.654) |
| Education: Upper Secondary School | | 0.104 | 0.108 |
| | | (0.574) | (0.565) |
| Education: Short-Term Technical Training | | 0.018 | 0.100 |
| | | (0.928) | (0.663) |
| Education: Long-Term Technical Training | | 0.815*** | 0.835*** |
| | | (0.041) | (0.021) |
| Education: Professional Secondary School | | 0.142 | 0.138 |
| | | (0.425) | (0.440) |
| Education: Junior College Diploma | | 0.155 | 0.125 |
| | | (0.332) | (0.478) |
| Education: Bachelor's Degree | | -0.010 | 0.029 |
| | | (0.972) | (0.931) |
| Years_atfactory_Adj | | 0.025*** | 0.029*** |
| | | (0.045) | (0.022) |
| Promoted | | 0.076*** | 0.080** |
| | | (0.048) | (0.056) |
| Days_Training | | 0.002*** | 0.002*** |
| | | (0.021) | (0.034) |
| Contract_Type: Apprentice | | | -0.051 |
| | | | (0.814) |
| Contract_Type: Home Work | | | -0.398*** |
| | | | (0.026) |
| Contract_Type: Subcontract | | | -0.312** |
| | | | (0.093) |
| Contract_Type: Bonded | | | 0.229 |
| | | | (0.433) |
| Contract_Type: Probationary | | | -0.299 |
| | | | (0.225) |
| Contract_Type: Temporary | | | -0.471*** |
| | | | (0.013) |
| Contract_Type: Fixed Time | | | -0.096 |
| | | | (0.403) |
| Contract_Type: Unlimited Time | | | -0.146 |
| | | | (0.155) |
| Constant | -0.079 | -0.184 | -0.080 |
| | (0.266) | (0.500) | (0.778) |
| | | | |
| Observations | 508 | 393 | 373 |
| R-squared | 0.023 | 0.113 | 0.161 |

Robust pval in parentheses
*** p<0.05, ** p<0.1, * p<0.15

## Table 11b

**Jordan: Hourly Wages, using Factory Averages for Verbal Abuse**

| VARIABLES | (1) logHourlyPayUSD | (2) logHourlyPayUSD | (3) logHourlyPayUSD |
|---|---|---|---|
| Avg_VA | 0.175* | 0.256*** | 0.291*** |
| | (0.112) | (0.011) | (0.008) |
| Female | | -0.099** | -0.129*** |
| | | (0.073) | (0.011) |
| Education: Primary School | | 0.099 | 0.077 |
| | | (0.461) | (0.606) |
| Education: Lower Secondary School | | 0.157 | 0.151 |
| | | (0.187) | (0.209) |
| Education: Upper Secondary School | | 0.179** | 0.160* |
| | | (0.076) | (0.139) |
| Education: Short-Term Technical Training | | -0.062 | -0.050 |
| | | (0.634) | (0.754) |
| Education: Long-Term Technical Training | | 0.696*** | 0.724*** |
| | | (0.013) | (0.006) |
| Education: Professional Secondary School | | 0.203** | 0.216** |
| | | (0.067) | (0.079) |
| Education: Junior College Diploma | | 0.243*** | 0.213*** |
| | | (0.013) | (0.043) |
| Education: Bachelor's Degree | | -0.013 | -0.006 |
| | | (0.962) | (0.984) |
| Years_atfactory_Adj | | 0.015* | 0.019 |
| | | (0.122) | (0.150) |
| Promoted | | 0.087*** | 0.090*** |
| | | (0.008) | (0.011) |
| Days_Training | | 0.001*** | 0.001*** |
| | | (0.041) | (0.031) |
| Contract_Type: Apprentice | | | -0.143 |
| | | | (0.287) |
| Contract_Type: Home Work | | | -0.432*** |
| | | | (0.018) |
| Contract_Type: Subcontract | | | -0.330*** |
| | | | (0.005) |
| Contract_Type: Bonded | | | 0.209 |
| | | | (0.488) |
| Contract_Type: Probationary | | | -0.295** |
| | | | (0.053) |
| Contract_Type: Temporary | | | -0.181 |
| | | | (0.319) |
| Contract_Type: Fixed Time | | | -0.205*** |
| | | | (0.028) |
| Contract_Type: Unlimited Time | | | -0.155** |
| | | | (0.093) |
| Constant | -0.148** | -0.362** | -0.183 |
| | (0.051) | (0.058) | (0.343) |
| | | | |
| Observations | 1,055 | 830 | 771 |
| R-squared | 0.028 | 0.090 | 0.123 |

Robust pval in parentheses
*** p<0.05, ** p<0.1, * p<0.15

Beginning with results from Jordan, verbal abuse is a positive and significant predictor of wages in both cases, but observations are extremely limited in the individual case as can be seen in Table 11a.

Verbal abuse is significant at the 5% level for individual reporting and at the 1% level for average reports. Positive coefficients denote that higher verbal abuse corresponds to predicted higher wages for workers. Significance in both cases provides more definitive confirmation that the two are related. Due to the severe limitation of observation numbers in the individual case, the results for other control variables are more easily analyzed in the second group of regressions, displayed in Table 11b.

The coefficient on *Female* is negative and statistically significant at the 1% level, indicating that being a woman meaningfully detracts from one's earning potential. *Years_at_factory* has a positive coefficient, implying increasing wages as employment tenure accumulates, however statistical significance diminishes as additional control variables are added to the analysis. *Promoted* has a positive coefficient and is highly statistically significant, implying that an individual's wages grow with the number of promotions he or she is granted. *Days_Training* also has a positive coefficient and is significant at the 5% level, indicating that the length of time a factory commits to training new employees results in higher earning potential.

Education dummy variables are compared to the omitted case of "no formal education," and higher levels of education are positively related to earnings. Specifically, long-term technical training is associated with the highest predicted wages, followed by professional secondary school, junior college diploma, and upper secondary school. Coefficients for most of the lower educational tiers are not statistically significant.

Coefficients on contract dummy variables are measured in relation to a "training" contract, and all significant contract types are associated with lower hourly rates. Workers with a

"Home Work" contract are predicted to have the lowest earnings, followed by "Subcontract," "Probationary," "Fixed time," and "Unlimited Time." Coefficients for temporary and apprentice contracts are not statistically significant.

Job type coefficients are measured relative to the omitted group of sewers, and the only titles that are statistically significant are packers and cutters. Packers are predicted to earn higher wages than sewers and cutters are predicted to earn less.

An important note regarding the Jordan wage analysis for verbal abuse is the potential for omitted variable bias due to the exclusion of birthplace from the analysis. As previously noted, a worker's decision to report on verbal abuse is heavily influenced by whether he or she is a migrant worker, and foreign-born workers also tend to earn slightly lower wages. This bias is controlled for somewhat by including variables for different contract types and job descriptions. Variables describing birthplace are so closely related to reports of verbal abuse that their inclusion overshadows the key independent variable, and they are therefore excluded from the regression analysis.

For the Indonesia analysis, due to an apparent lack of reporting reluctance, analysis is performed using individual reports of verbal abuse as the dependent variable, without creating factory averages. Verbal abuse is positively related to wages, and the coefficient is significant at the 10% level. This result seems to confirm the finding in Jordan that workers who are verbally abused require a compensating differential to counterbalance the disutility incurred by being verbally abused.

A surprisingly few number of other variables are statistically significant for the Indonesia regression, possibly due to the large reduction in observation count. University-level education relates positively to hourly wages and is significant at the 1% level. Receiving basic skills training also increases a worker's expected earnings, although statistical significance drops slightly after

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the addition of job type control variables. In version 3 of the analysis, subcontracted workers are predicted to earn lower wages than workers operating on a training contract, and in both versions 3 and 4, unlimited time contracts have negative, statistically significant coefficients. Cutter is the only job type to register statistical significance, and is negative in comparison to sewers, statistically significant at the 5% level.

**Table 11c**

| | Indonesia: Hourly Wages | | | |
|---|---|---|---|---|
| | (1) | (2) | (3) | (4) |
| VARIABLES | logHourlyPayUSD | logHourlyPayUSD | logHourlyPayUSD | logHourlyPayUSD |
| | | | | |
| Verbalabuse | 0.070** | 0.067** | 0.076** | 0.077** |
| | (0.063) | (0.077) | (0.091) | (0.092) |
| Female | | 0.045 | 0.047 | 0.019 |
| | | (0.559) | (0.536) | (0.812) |
| Education: Junior High | | 0.038 | 0.054 | 0.063 |
| | | (0.501) | (0.368) | (0.293) |
| Education: High School | | 0.049 | 0.065 | 0.096 |
| | | (0.404) | (0.332) | (0.200) |
| Education: University | | 0.361*** | 0.349*** | 0.414*** |
| | | (0.000) | (0.000) | (0.002) |
| Years_atfactory_Adj | | | -0.002 | -0.001 |
| | | | (0.780) | (0.883) |
| BasicSkillsTraining | | | 0.081*** | 0.064* |
| | | | (0.041) | (0.109) |
| Contract_Type: Apprentice | | | -0.184 | -0.162 |
| | | | (0.358) | (0.346) |
| Contract_Type: Home Work | | | -0.327 | -0.294 |
| | | | (0.175) | (0.279) |
| Contract_Type: Subcontract | | | -0.108* | -0.093 |
| | | | (0.137) | (0.231) |
| Contract_Type: Bonded | | | -0.016 | -0.028 |
| | | | (0.841) | (0.746) |
| Contract_Type: Probationary | | | -0.116 | -0.111 |
| | | | (0.373) | (0.401) |
| Contract_Type: Temporary | | | -0.036 | -0.044 |
| | | | (0.747) | (0.704) |
| Contract_Type: Fixed Time | | | -0.084 | -0.075 |
| | | | (0.272) | (0.348) |
| Contract_Type: Unlimited Time | | | -0.154*** | -0.146** |
| | | | (0.032) | (0.050) |
| Constant | -0.693*** | -0.776*** | -0.713*** | -0.699*** |
| | (0.000) | (0.000) | (0.000) | (0.000) |
| | | | | |
| Observations | 801 | 801 | 665 | 665 |
| R-squared | 0.005 | 0.009 | 0.025 | 0.044 |

Robust pval in parentheses
*** p<0.05, ** p<0.1, * p<0.15

In Vietnam, the minimal positive reports of verbal abuse seem to detract from statistical significance, although the estimated coefficient for verbal abuse is positive, and very similar in magnitude to that found in the Jordan analysis. All other variables behave in the manner that would be expected based on human capital theory. Measures of individual human capital, including education, years worked at the factory, and number of promotions all meaningfully increase an individual's predicted earnings. Job types and contract types also affect wages with statistical significance, as does gender. Expected earnings rise with extreme statistical significance every year, reflecting the increasing minimum wage laws in Vietnam.

In sum, although the precise relationship between wages and verbal abuse is difficult to decipher, the preceding analysis supports the existence of a hypothesized compensating differential that requires firms to pay higher wages to appease abused workers. Results also discredit the hypothesis that verbal abuse greatly erodes a worker's sense of agency, allowing firms to pay lower wages. Additionally, if it is the case that there is a simultaneous impact on worker agency that diminished workers' perception of their earning potential, the observed compensating differential would be larger than that implied by the estimated coefficients, as there would be an unobserved negative pull on wages. Overall however, the analysis implies that firms are not using verbal abuse as a profitable intimidation tactic, or are doing so mistakenly. Results demonstrate that verbal abuse is costly to firms in the form of additional wage expenses. To complete the picture of verbal abuse in its profit interactions, the next stage of analysis involves investigating the role verbal abuse plays in motivating workers, its impact on productivity, output, and ultimately revenues.

6.3: Productivity Regression Results

A Two Stage Least Squared is performed in which the dependent variable *Time_to_Target* is regressed on instrumented measures of verbal abuse as the key independent variable. The

instrumental variables *Sup_Comfort* and *Bullying_Compliance* are used to control for endogeneity in the key independent variable due to correlation between the error term for a worker's productivity and the existence of verbal abuse. As noted in Section 4, data restrictions limit the analysis exclusively to Vietnam. Clustered standard errors are used by factory ID to control for factory fixed effects. Tables 12a and 12b display the regression results, using time taken to reach a production target on Fridays and Mondays as the respective dependent variables, and individual reports of verbal abuse as the key independent variable of interest. Reporting reluctance was accounted for by coding declined responses as positive reports of abuse in both cases. Additional regressions performed prior to the voice recoding can be found in Appendix 8, and an equivalent analysis performed using factory-level averages of verbal abuse can be found in Appendix 9. Asterisks correspond to significance levels of 5, 10, and 15 percent.

Individual accounts of verbal abuse are used to allow for a closer link between the abuse perceived by a given individual as it relates to his or her own productive efficiency. Note that as previously discussed, counts of positive reports in Vietnam are very low, possibly reflecting instances of underreporting. If cases of verbal abuse are greater in reality than those reported, statistical significance would likely be higher than indicated by the presented analysis.

Notably, verbal abuse increases the predicted time an individual requires for completion of his or her daily production by approximately one hour, significant at the 10% level in both cases. A positive coefficient implies that individuals subjected to verbal abuse are less efficient at completing a given level of production than they are if they are not subjected to verbal exhortation. This finding runs contrary to the proposal that verbal abuse could be an effective motivational tool to substitute for incentivizing wages. Rather, verbal abuse has the opposite effect, diminishing a worker's productive efficiency.

## Table 12a

**Vietnam: Time to Production Target (Friday), with Individual Reports and Voice Adjusted**

| VARIABLES | (1)<br>Time_to_TargetF | (2)<br>Time_to_TargetF | (3)<br>Time_to_TargetF | (4)<br>Time_to_TargetF |
|---|---|---|---|---|
| Verbalabuse | 0.822* | 0.885** | 0.859* | 0.933* |
| | (0.111) | (0.092) | (0.114) | (0.119) |
| Age | -0.007 | -0.008 | -0.009 | -0.015** |
| | (0.338) | (0.294) | (0.275) | (0.073) |
| Female | -0.075 | -0.097 | -0.095 | -0.088 |
| | (0.710) | (0.616) | (0.624) | (0.674) |
| Education: Primary School | | -1.008 | -0.870 | -1.058 |
| | | (0.191) | (0.272) | (0.300) |
| Education: Lower Secondary School | | -0.937 | -0.871 | -1.038 |
| | | (0.229) | (0.277) | (0.316) |
| Education: Upper Secondary School | | -1.041 | -0.936 | -1.155 |
| | | (0.188) | (0.251) | (0.273) |
| Education: Short-Term Technical Training | | -0.920 | -0.737 | -0.972 |
| | | (0.388) | (0.498) | (0.448) |
| Education: Long-Term Technical Training | | -1.228* | -1.160 | -1.249 |
| | | (0.135) | (0.166) | (0.229) |
| Education: Professional Secondary School | | -1.760*** | -1.683*** | -1.756* |
| | | (0.035) | (0.048) | (0.102) |
| Education: Junior College Diploma | | -1.091 | -1.163 | -1.296 |
| | | (0.175) | (0.159) | (0.213) |
| Education: Bachelor's Degree | | -1.909** | -1.742* | -2.304** |
| | | (0.072) | (0.108) | (0.085) |
| Years_atfactory | | 0.003 | 0.001 | -0.000 |
| | | (0.863) | (0.945) | (0.982) |
| Weeks_Training | | | -0.009 | -0.014 |
| | | | (0.595) | (0.355) |
| BasicSkillsTraining | | | -0.183* | -0.229** |
| | | | (0.109) | (0.051) |
| Ind_CBA | | | | 0.082 |
| | | | | (0.654) |
| Rush_Orders | | | | -0.019 |
| | | | | (0.816) |
| Constant | 10.223*** | 11.267*** | 11.364*** | 11.771*** |
| | (0.000) | (0.000) | (0.000) | (0.000) |
| | | | | |
| Observations | 1,233 | 1,232 | 1,084 | 971 |
| R-squared | | 0.003 | 0.017 | 0.021 |

Robust pval in parentheses
*** p<0.05, ** p<0.1, * p<0.15

## Table 12b

**Vietnam: Time to Production Target (Monday), with Individual Reports and Voice Adjusted**

| VARIABLES | (1) Time_to_TargetM | (2) Time_to_TargetM | (3) Time_to_TargetM | (4) Time_to_TargetM |
|---|---|---|---|---|
| Verbalabuse | 0.483 | 0.534 | 0.499 | 0.925** |
|  | (0.286) | (0.255) | (0.283) | (0.085) |
| Age | 0.001 | 0.000 | 0.003 | -0.001 |
|  | (0.892) | (0.955) | (0.762) | (0.928) |
| Female | 0.025 | -0.015 | -0.051 | -0.060 |
|  | (0.874) | (0.921) | (0.751) | (0.717) |
| Education: Primary School |  | -0.007 | 0.169 | 0.271 |
|  |  | (0.987) | (0.706) | (0.580) |
| Education: Lower Secondary School |  | 0.014 | 0.136 | 0.203 |
|  |  | (0.973) | (0.749) | (0.673) |
| Education: Upper Secondary School |  | -0.114 | 0.064 | 0.025 |
|  |  | (0.785) | (0.883) | (0.961) |
| Education: Short-Term Technical Training |  | -0.508 | -0.230 | -0.415 |
|  |  | (0.377) | (0.701) | (0.482) |
| Education: Long-Term Technical Training |  | 0.011 | 0.152 | 0.406 |
|  |  | (0.987) | (0.830) | (0.554) |
| Education: Professional Secondary School |  | -0.912** | -0.731* | -0.732 |
|  |  | (0.068) | (0.146) | (0.184) |
| Education: Junior College Diploma |  | 0.163 | 0.204 | 0.261 |
|  |  | (0.769) | (0.751) | (0.712) |
| Education: Bachelor's Degree |  | -1.798*** | -1.507*** | -1.645*** |
|  |  | (0.000) | (0.007) | (0.013) |
| Years_atfactory |  | 0.005 | 0.005 | 0.000 |
|  |  | (0.760) | (0.773) | (0.986) |
| Weeks_Training |  |  | -0.022* | -0.028*** |
|  |  |  | (0.128) | (0.044) |
| BasicSkillsTraining |  |  | -0.177** | -0.181** |
|  |  |  | (0.083) | (0.090) |
| Ind_CBA |  |  |  | 0.329* |
|  |  |  |  | (0.147) |
| Rush_Orders |  |  |  | 0.020 |
|  |  |  |  | (0.759) |
| Constant | 9.884*** | 9.974*** | 9.978*** | 9.755*** |
|  | (0.000) | (0.000) | (0.000) | (0.000) |
| Observations | 1,265 | 1,264 | 1,106 | 984 |
| R-squared |  | 0.013 | 0.025 | 0.024 |

Robust pval in parentheses
*** p<0.05, ** p<0.1, * p<0.15

Regression results of the preceding productivity analyses prior to the inclusion of instrumental estimation can be found in Appendix 10. The coefficients on the primary independent variable are positive, and have higher associated significance levels than those in the

Two Stage Least Squares version. The predicted coefficients for verbal abuse are lower in magnitude than their instrumented counterparts. Higher coefficients in the 2SLS version is likely due to a tighter distribution for the instrumented variable that arises from the predicted measure taking values between 0 and 1 rather than the strict binary values of the raw data.

Higher education levels, specifically professional secondary school, junior college diploma and a bachelors degree, are all associated with faster time to production target by one or two hours (negative coefficients). Receiving basic skills training also makes one more likely to have a shorter completion time in both cases. Additionally, in the Monday runs, length of time spent training also slightly increases production efficiency, significant at the 5% level.

There are several important notes to bear in mind with regard to the preceding efficiency analysis. The first is that the sample represents a severely reduced dataset due to high counts of missing observations for the key dependent variables. Only 1,581 and 1,543 observations remain for Monday and Friday production target completion times respectively, out of an original 5,441 Vietnamese survey respondents. The low response rate for other independent variables further attenuates the analyzed pool.

The second qualification to the above analysis is that production time measure does not take into account variation in production targets. If data had been available, time to production target would be adjusted according to magnitude of target quantity, but the dataset unfortunately did not include a complete enough measure. The preceding analysis instead assumes that targets are randomly distributed, and the primary analysis is performed using individual reports of verbal abuse to allow for variation within a single factory, assuming targets are generally similar within a given factory

Overall however, results provide preliminary support for the conclusion that verbal abuse impedes individual efficiency, thus decreasing individual output and hindering firm production.

The current size of the datasets unfortunately precludes a full factory-level regression

analysis of the impact of verbal abuse on profits. However, a preliminary examination of the

basic relationship between the two seems indicative of a negative link. Chart 5 shows a scatter

plot of factory profits and corresponding factory-wide averages of verbal abuse.

Simply observing a negative trend between verbal abuse and profits does not necessarily

imply a causal relationship as it is likely the case that factories suffering from low production

levels may possess many characteristics that predispose a factory to verbal abuse, rather than the

other way around. However, the individual-level analysis demonstrating an increase in costs (in

the form of worker wages) and decrease in revenue (in the form of diminished worker

productivity) coupled with this trend serves as a solid foundation for an argument against

workplace verbal abuse.

**Chart 5**
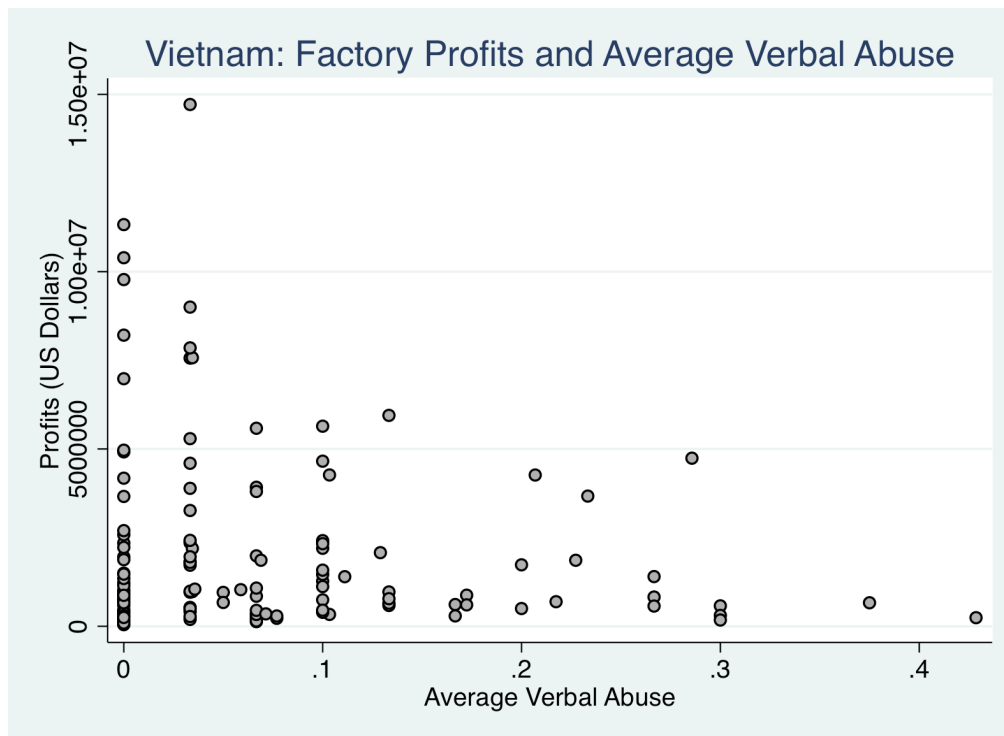
The preceding analysis began with an examination of the determinants of workplace verbal abuse, and results confirm the previous literature's assertion that psychological factors within a firm contribute positively to fostering an environment primed for verbal abuse. Specifically, measures of stress and cognitive load, power differentials, and stereotyping within a given factory all predict higher levels of verbal abuse.

Additionally, the Jordan analysis offers strong verification of the theoretically modeled relationship between incentive structures and verbal abuse. This finding further substantiates the hypothesized role of verbal abuse as a motivational mechanism employed by supervisors to induce additional output on the part of underperforming workers. If workers are paid by the piece, they are less likely to be personally invested in the quantity of pieces produced, thereby lowering output, and inducing supervisors to instead resort to abusive techniques. Alternately, if supervisors are monetarily incentivized according to line production, their personal desire for pecuniary reward leads them to use a familiar means of motivation to increase production levels on the part of the workers they oversee.

The latter part of the analysis probed the relationship between verbal abuse and the potential costs and benefits to firms. Analysis of worker wages as they relate to verbal abuse demonstrates a strong link between worker reports of verbal abuse and higher hourly wages. Higher payment to abused workers suggests a positive compensating differential, which would represent a loss to firms.

An analysis of worker productivity as it relates to verbal abuse offers preliminary evidence in support of the proposition that verbal exhortation actually diminishes individual efficiency, thereby lowering quantity produced as well as revenues. This finding, coupled with the stage 1

analysis demonstrating the integral role of verbal abuse in firm incentive structures indicates that verbal abuse has the opposite of its intended motivational effects.

Finally, initial examinations of the relationship between factory profits and verbal abuse levels indicate a negative profitability trend. Although the causal nature of the trend has yet to be statistically established, this observed relationship in tandem with the preceding analyses provides a convincing foundation of evidence toward the conclusion that verbal abuse is definitively not profit maximizing.

*6.6: Next Steps*

This paper offers an analytical basis for a business case against verbal abuse. Future steps toward a deeper analysis of verbal abuse as an economic operator in the workplace setting would include the following:

1) An analysis of verbal abuse on a more varied range of pay schemes to allow for a clearer understanding of the causal link between incentive structures and verbal abuse. Running separated regressions for hourly rate and piece rate workers to allow for a coefficient comparison in the wages and productivity regression (hypothesized in the theoretical model).

2) Fine-tuning the variable specifications for psychological determinants of verbal abuse to allow for a subtler, multifaceted understanding of how each component operates independently and in interaction with one another.

3) Parceling out the individual operands in the wage regression to determine the portion of wage differential that comes from disutility compensation versus a loss of agency.

4) Performing productivity analysis on additional countries, and executing robustness checks by testing alternate measures of productivity and using a range of instrumental variables.

5) Performing multiple regression analysis of firm profits on verbal abuse and controlling for error term correlation to ascertain the causal relationship rather than mere correlation.

Section 7: Conclusion

      The 2013 Better Work Impact Brief for Vietnam notes that better working conditions are statistically correlated with higher firm profits. Specifically, the report cites that a one percent increase in worker perceptions of verbal and physical abuse and sexual harassment correlates to a 1.14% increase in profits (Impact Brief: Better Work Vietnam 2013). However, this negative relationship does not by itself imply a causal link between verbal abuse and firm profitability. It could be the case that low productivity is itself the basis for supervisors' use of verbal abuse, and that the resulting exhortation serves to incite a productive drive on the part of underperforming workers. Firms might therefore perceive verbal abuse as a necessary and effective tool for motivating workers who are performing inefficiently and could be actively tolerant of the abusive techniques should they perceive it to be profit-maximizing.

      However, the preceding findings effectively discredit the possibility that verbal abuse could be a profit-maximizing strategy for firms. Not only does a negative working environment lay the foundation for verbal abuse, but verbal abuse also detracts from firm profitability both by eroding individual worker efficiency and generating a compensating differential that requires higher wages paid to victims. The fact that verbal abuse continues to persist at pervasive rates

indicates either mistaken perceptions on the part of firms or a widespread lack of organizational awareness.

Profit-maximizing firms should prioritize the prevention of verbal abuse of workers. The Workplace Bullying Institute emphasizes the positive reward cycle of bullying, whereby unpunished bullies adopt the invincible perception than they can carry on their abusive treatment unchecked forever. Suggestions to reduce levels of workplace bullying include punishments of perpetrators, as well as a shift in factory culture from tolerance to discipline (WBI - The Workplace Bullying Institute, 2014). Mitigating the psychological contributors such as stress levels, power differentials and stereotyping would also cut back on abuse levels.

Additionally, results demonstrate that incentive structures also play an integral role in encouraging supervisors to use verbal abuse, both in the absence of monetary incentives for workers as well as through supervisor pay structures that are overly dependent on line production. Management could therefore reduce verbal abuse levels by monetarily incentivizing workers based on individual production as well as ensuring that supervisor salary does not depend exclusively on the physical output of the workers he or she oversees. Alternately, instructing supervisors on positive motivational strategies rather than verbal exhortation would ensure that productive efforts continued while removing the detrimental emotional and profitability impacts of verbal abuse.

In short, firms have no business case for verbal abuse. Rather, the profit-maximizing strategy would be an effective and sustained program toward alleviating and monitoring factory-wide verbal abuse.

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# Appendix 1
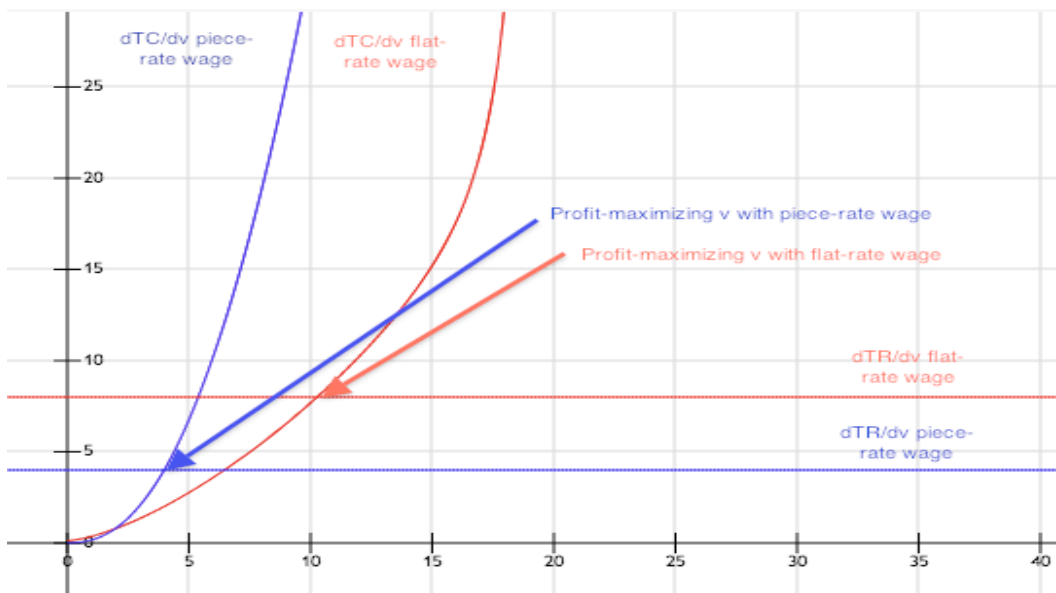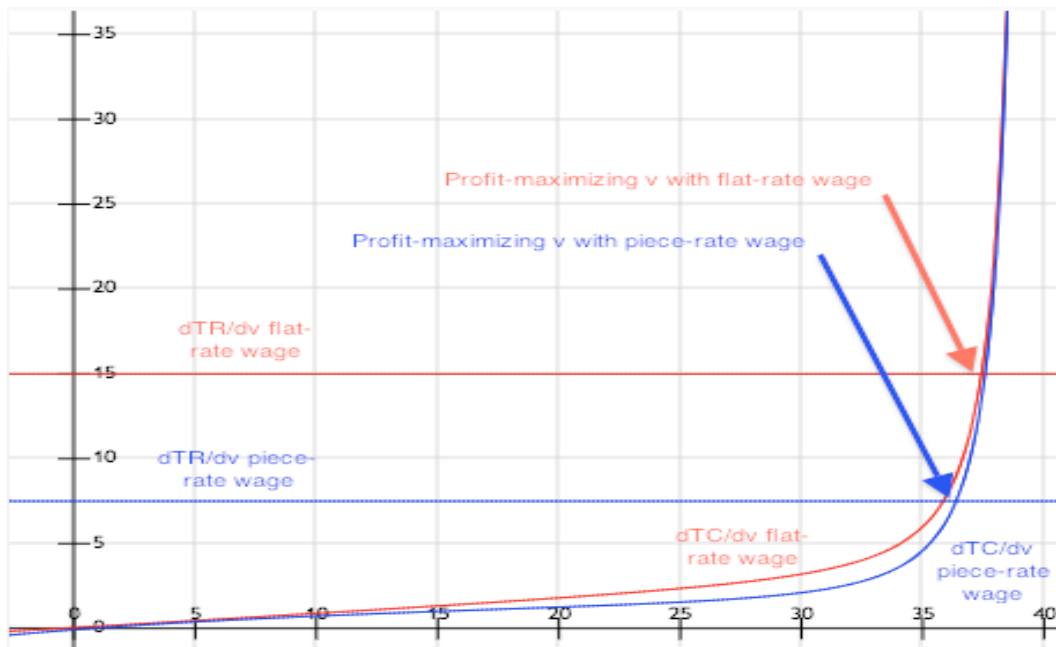
# Appendix 2

Index of all variables used in analysis

| Variable Name | Survey Question Wording | Range of Possible Answers | Respondent | Notes |
|---|---|---|---|---|
| *Avg_VA* | "Is verbal abuse such as yelling or vulgar language a concern for workers in your factory?" | 1: No, not a concern<br>2: Yes, discussed with co-workers<br>3: Yes, discussed with supervisor or manager<br>4: Yes, discussed with the trade union representative<br>5: Yes, considered quitting<br>6: Yes, threatened a strike<br>7: Yes, caused a strike<br>-7: Not asked<br>-8: Do not know<br>-9: Do not want to answer | Worker | Variable is first coded as a dummy in the same manner as Verbalabuse. Observations are then averaged across workers within a single factory to give a measure of the perceived likelihood any given worker would have of being verbally abused. Partially accounts for relactancy to report abuse. |
| *BasicSkillsTraining* (Indonesia and Vietnam) | "Did you receive training on basic skills when you first started working in this factory?" | 0: No<br>1: Yes | Worker | |
| *Birthplace* | "Where were you born?" | 1: Jordan<br>2: Bangladesh<br>3: Sri Lanka<br>4: Pakistan<br>5: China<br>6: Other | Worker | |
| *Bullying_Compliance* | "Have any workers been bullied, harassed, or subjected to humiliating treatment?" | 0: No<br>1: Yes | Compliance Data | |
| *Days_Training* (Jordan) | "How much time is spent on basic skills training for a typical new employee?" | 0: Less than 10 minutes<br>1: 10 to 30 minutes<br>2: 30 to 60 minutes<br>3: 1 to 2 hours<br>4: 3 to 4 hours<br>5: 5 to 8 hours<br>6: 1 to 3 days<br>7: 4 to 6 days<br>8: 1 to 2 weeks<br>9: 3 to 4 weeks<br>10: 1 to 2 months<br>11: 3 to 4 months<br>12: 5 to 6 months<br>13: More than 6 months | Worker | Variable was recoded such that all responses were converted to units of days and as the median value of the selected range. E.g. if a worker responded "6" (1 to 3 days), the variable was coded as "2." |
| *Education* (Indonesia) | "What is your highest level of education?" | 1: no formal education<br>2: Playground<br>3: Elementary<br>4: Junior High<br>5: High School<br>6: University | Worker | |
| *Education* (Jordan and Vietnam) | "What is your highest level of education?" | 1: no formal education<br>2: primary school<br>3: lower secondary school<br>4: upper secondary school<br>5: short-term technical training<br>6: long-term technical training<br>7: professional secondary school<br>8: junior college diploma<br>9: bachelor's degree | Worker | |
| *Female* | "Are you Female or Male?" | 1: Female<br>2: Male | Worker | Variable is coded such that 0 corresponds to male respondents and 1 corresponds to female respondents |
| *HourlyPayUSD* (calculated from the following survey questions) | | | | |
| -*LastPay* | "How much money did you receive the last time you were paid?" | Monetary entry reported in the national currency of the respondent | Worker | |
| -*PayPeriod* | "How often are you paid" | 1: Once each week<br>2: Once every two weeks<br>3: Once each month<br>4: Once every two months<br>5: I do not get paid regularly<br>6: I will get paid when I return home | Worker | Respondents who answered "Once every two months," "I do not get paid regularly" or "I will get paid when I return home" were omitted from the analysis |
| -*TotalHours* (calculated from the following survey questions) | | | | |
| -*DaysWorked* | "What days do you usually work in your factory?" | Monday, Tuesday, Wednesday, Thursday, Friday, Saturday Sunday | Worker | |
| -*HoursStart* | "What time do you usually being work on [Sunday]" | Time value in increments of half hours | Worker | |
| -*HoursEnd* | "What time do you usually end work on [Sunday]" | Time value in increments of half hours | Worker | |

| | | | | |
|---|---|---|---|---|
| *Ind_CBA* | "Are you represented by a collective bargaining agreement?" | 1: Yes<br>2: No | Worker | Variable is recoded such that it is a standard dummy, whereby 0 corresponds to "no" and 1 corresponds to "yes." Variable only used in Jordan regressions |
| *Late_Penalty* | "What are the biggest production management problems that are obstacles to your business success? Please rate each issue. Customer penalties for late delivery" | 1: Serious Problem<br>2: Modest Problem<br>3: Minor Problem<br>4: Not a Problem | General Manager | Vairable is regressed as a factor variable to allow differences in multiple choice responses to correspond to different statistical implications. Avriable only used in Jordan regressions |
| *LowWageConcern* | "Are low wages a concern for workers in this factory?" | 1: No, not a concern<br>2: Yes, discussed with co-workers<br>3: Yes, discussed with supervisor or manager<br>4: Yes, discussed with the trade union representative<br>5: Yes, considered quitting<br>6: Yes, threatened a strike<br>7: Yes, caused a strike<br>-7: Not asked<br>-8: Do not know<br>-9: Do not want to answer | Worker | Variable coded as a dummy, with 0 being a response denying any concern and 1 being a positive concern response (2 through 7). In some secondary runs, responses of -8 and -9 are coded as positive accounts of verbal abuse, with the assumption that a decision not to respond indicates a reluctancy to report abusive treatment. |
| *Promoted* | "Have you ever been promoted since you entered the factory" | 1: Once<br>2: Twice<br>3: More than twice<br>4: No | Worker | Responses of 4 were recoded as 0, so that responses corresponded to the number of promotions awarded to a given individual. |
| *Promotion_Bias* | "Do you face any barriers to being promoted?" Check all that apply.<br>Option 4: Ethnic Minority | 0: No<br>1: Yes | Worker | Variable is only used in Indonesia regressions |
| *Rush_Orders* | "What are the biggest production management problems that are obstacles to your business success? Please rate each issue. Too many rush orders" | 1: Serious Problem<br>2: Modest Problem<br>3: Minor Problem<br>4: Not a Problem | General Manager | Vairable is regressed as a factor variable to allow differences in multiple choice responses to correspond to different statistical implications |
| *Sewers_per_Sup* | "On average, how many workers report to a single supervisor in the sewing department?" | Numerical entry | Industrial Engineer | |
| *Sup_Comfort* | "If you were having a problem at your factory, how comfortable would you feel seeking help from your supervisor?" | 1: Very comfortable<br>2: Comfortable<br>3: Uncomfortable<br>4: Very uncomfortable<br>5: Not comfortable at all | Worker | |
| *Sup_Language* | "Does your supervisor speak your language?" | 1: Yes<br>2: No | Worker | Variable is recoded such that it is a standard dummy, whereby 0 corresponds to "no" and 1 corresponds to "yes." Variable only used in Jordan regressions |
| *Sup_PerformancePay* | "What percentage of a typical supervisor's pay is based on the performance of the workers he or she supervises?" | 1: None<br>2: Less than 10 percent<br>3: 10 to 20 percent<br>4: 20 to 30 percent<br>5: 30 to 40 percent<br>6: 40 to 50 percent<br>7: 50 to 60 percent<br>8: 60 to 70 percent<br>9: 70 to 80 percent<br>10: 80 to 90 percent<br>11: A supervisor's pay depends only on line production | Human Resources Manager | |
| *Sup_Stress* | "What are the biggest production management problems that are obstacles to your business success? Please rate each issue. Stress level of supervisors" | 1: Serious Problem<br>2: Modest Problem<br>3: Minor Problem<br>4: Not a Problem | General Manager | Vairable is regressed as a factor variable to allow differences in multiple choice responses to correspond to different statistical implications |
| *Time_to_Target* (Vietnam, calculated from the following survey questions) | | | | |
|   -*FinishTargetTime* | "What time do you usually finish your production target on [Monday]?" | Time value in increments of half hours | Worker | |
|   -*HoursStart* | "What time do you usually begin work on [Monday]?" | Time value in increments of half hours | Worker | |
| *Verbalabuse* | "Is verbal abuse such as yelling or vulgar language a concern for workers in your factory?" | 1: No, not a concern<br>2: Yes, discussed with co-workers<br>3: Yes, discussed with supervisor or manager<br>4: Yes, discussed with the trade union representative<br>5: Yes, considered quitting<br>6: Yes, threatened a strike<br>7: Yes, caused a strike<br>-7: Not asked<br>-8: Do not know<br>-9: Do not want to answer | Worker | Variable coded as a dummy, with 0 being a response denying any concern and 1 being a positive concern response (2 through 7). In some secondary runs, responses of -8 and -9 are coded as positive accounts of verbal abuse, with the assumption that a decision not to respond indicates a reluctancy to report abusive treatment. |

| | | | | |
|---|---|---|---|---|
| *Worker_Production_Pay* | "What fraction of a sewer's pay is based on her own production?" | 1: None<br>2: Less than 10 percent<br>3: 10 to 20 percent<br>4: 20 to 30 percent<br>5: 30 to 40 percent<br>6: 40 to 50 percent<br>7: 50 to 60 percent<br>8: 60 to 70 percent<br>9: 70 to 80 percent<br>10: 80 to 90 percent<br>11: All of a sewer's pay depends on her number of pieces completed | Human Resources Manager | |
| *Years_atFactory* (Vietnam, caluculated from the following survey questions) | "How long have you been working in this factory (years)?" | Numerical value of years | Worker | |
| *-Fac_OveraYear* | "Have you been working in this factory for more than one year?" (If responded answers "yes," they then input the numerical value of years, if "no," then the numerical value of months) | 0: No<br>1: Yes | Worker | |
| *-Months_atFactory* | "How long have you been working in this factory (months)?" | Numerical value of months | Worker | |
| *Years_atFactory_adj* (Indonesia and Jordan) | "How long have you been working in your factory?" | 1: 0-3 months<br>2: 4-6 months<br>3: 7-9 months<br>4: 10-12 months<br>5: 13-18 months<br>6: 19-23 months<br>7: 2 years<br>8: 3 years<br>9: 4 years<br>10: 5 years<br>11: 5 to 8 years<br>12: 9 or more years | Worker | Variable was recoded such that all responses were in years, and took the value of the median of the selected range. E.g. if a worker responed "5" (13-18 months), the variable took the value of 1.29 |

# Appendix 3

## Jordan : Basic Summary Statistics for All Variables

|  | Mean | Median | SD | Min | Max | Count |
|---|---|---|---|---|---|---|
| *Avg_VA* | 0.45 | 0.4 | 0.2 | 0.0 | 1.0 | 1468 |
| *Birthplace* | 2.49 | 2.0 | 1.6 | 1.0 | 6.0 | 1440 |
| *Contract_Type* | 6.57 | 8.0 | 2.9 | 1.0 | 9.0 | 1333 |
| *Days_Training* | 53.91 | 24.5 | 57.3 | 0.0 | 165.0 | 1232 |
| *Education* | 4.31 | 4.0 | 2.1 | 1.0 | 9.0 | 1458 |
| *Female* | 0.69 | 1.0 | 0.5 | 0.0 | 1.0 | 1473 |
| *HourlyPayUSD* | 1.33 | 0.9 | 1.2 | 0.1 | 6.7 | 1126 |
| *LastPay* | 224.61 | 160.0 | 454.9 | 1.0 | 8118.0 | 1362 |
| *Late_Penalty* | 2.01 | 2.0 | 1.0 | 1.0 | 4.0 | 1216 |
| *LowWageConcern* | 0.61 | 1.0 | 0.5 | 0.0 | 1.0 | 716 |
| *PayPeriod* | 2.92 | 3.0 | 0.4 | 1.0 | 3.0 | 1325 |
| *Promoted* | 0.49 | 0.0 | 0.8 | 0.0 | 3.0 | 1455 |
| *Sup_comfort* | 1.96 | 2.0 | 1.1 | 1.0 | 5.0 | 1427 |
| *Sup_Language* | 0.84 | 1.0 | 0.4 | 0.0 | 1.0 | 1447 |
| *Sup_PerformancePay* | 2.65 | 1.0 | 3.0 | 1.0 | 11.0 | 999 |
| *Sup_Stress* | 2.32 | 2.0 | 1.0 | 1.0 | 4.0 | 1245 |
| *TotalHours* | 57.77 | 60.0 | 19.4 | 1.0 | 131.0 | 1272 |
| *Verbalabuse* | 0.46 | 0.0 | 0.5 | 0.0 | 1.0 | 673 |
| *Worker_Production_Pay* | 2.00 | 1.0 | 2.0 | 1.0 | 10.0 | 953 |
| *Years_atfactory_Adj* | 3.09 | 2.0 | 2.6 | 0.2 | 9.0 | 1408 |

## Indonesia: Basic Summary Statistics for All Variables

|  | Mean | Median | SD | Min | Max | Count |
|---|---|---|---|---|---|---|
| *Avg_VA* | 0.78 | 0.8 | 0.2 | 0.0 | 1.0 | 2241 |
| *BasicSkillsTraining* | 0.17 | 0.0 | 0.4 | 0.0 | 1.0 | 2241 |
| *Contract_Type* | 6.93 | 8.0 | 2.3 | 1.0 | 9.0 | 1719 |
| *Education* | 4.14 | 4.0 | 0.7 | 1.0 | 6.0 | 2238 |
| *Female* | 0.88 | 1.0 | 0.3 | 0.0 | 1.0 | 2241 |
| *HourlyPayUSD* | 0.56 | 0.6 | 0.2 | 0.0 | 1.0 | 1438 |
| *Ind_CBA* | 0.49 | 0.0 | 0.5 | 0.0 | 1.0 | 1508 |
| *LastPay* | 1797.61 | 1290.0 | 1878.9 | 1.0 | 9999.0 | 1658 |
| *LowWageConcern* | 0.86 | 1.0 | 0.3 | 0.0 | 1.0 | 446 |
| *PayPeriod* | 2.68 | 3.0 | 0.5 | 1.0 | 3.0 | 2092 |
| *Promotion_Bias* | 0.28 | 0.0 | 0.5 | 0.0 | 1.0 | 1649 |
| *Rush_Orders* | 2.08 | 2.0 | 0.9 | 1.0 | 4.0 | 1667 |
| *Sup_comfort* | 1.83 | 2.0 | 0.6 | 1.0 | 5.0 | 1751 |
| *Sup_PerformancePay* | 5.21 | 3.0 | 4.3 | 1.0 | 11.0 | 1289 |
| *Sup_Stress* | 2.19 | 2.0 | 0.9 | 1.0 | 4.0 | 1726 |
| *TotalHours* | 48.97 | 45.5 | 8.4 | 5.0 | 78.0 | 1880 |
| *Verbalabuse* | 0.79 | 1.0 | 0.4 | 0.0 | 1.0 | 1132 |
| *Worker_Production_Pay* | 1.98 | 1.0 | 2.2 | 1.0 | 11.0 | 1436 |
| *Years_atfactory* | 6.65 | 7.0 | 3.5 | 1.0 | 12.0 | 2223 |
| *Years_atfactory_Adj* | 3.12 | 2.0 | 2.9 | 0.2 | 9.0 | 2142 |

## Vietnam: Basic Summary Statistics for All Variables

|                        | Mean       | Median    | SD        | Min  | Max        | Count |
|------------------------|------------|-----------|-----------|------|------------|-------|
| Age                    | 30.64      | 29.0      | 7.1       | 19.0 | 66.0       | 5132  |
| Avg_VA                 | 0.07       | 0.0       | 0.1       | 0.0  | 0.6        | 5136  |
| BasicSkillsTraining    | 0.62       | 1.0       | 0.5       | 0.0  | 1.0        | 5136  |
| Bullying_Compliance    | 0.01       | 0.0       | 0.1       | 0.0  | 1.0        | 4485  |
| Contract_Type          | 4.41       | 5.0       | 0.8       | 1.0  | 6.0        | 5095  |
| Education              | 3.29       | 3.0       | 1.0       | 1.0  | 9.0        | 5135  |
| Female                 | 0.81       | 1.0       | 0.4       | 0.0  | 1.0        | 5136  |
| HourlyPayUSD           | 0.73       | 0.6       | 0.4       | 0.1  | 3.9        | 4795  |
| Ind_CBA                | 0.90       | 1.0       | 0.3       | 0.0  | 1.0        | 4923  |
| LastPay                | 3466516.15 | 3200000.0 | 3349634.0 | 0.0  | 88888888.0 | 5034  |
| LowWageConcern         | 0.13       | 0.0       | 0.3       | 0.0  | 1.0        | 5049  |
| PayPeriod              | 2.94       | 3.0       | 0.2       | 1.0  | 3.0        | 5109  |
| Promoted               | 0.21       | 0.0       | 0.6       | 0.0  | 3.0        | 5093  |
| Rush_Orders            | 2.01       | 2.0       | 1.0       | 1.0  | 4.0        | 4524  |
| Sup_comfort            | 1.24       | 1.0       | 0.6       | 1.0  | 4.0        | 5105  |
| Sup_PerformancePay     | 3.68       | 1.0       | 4.0       | 1.0  | 11.0       | 3855  |
| Sup_Stress             | 2.18       | 2.0       | 0.8       | 1.0  | 4.0        | 4760  |
| Time_to_TargetF        | 10.06      | 10.0      | 1.6       | 3.5  | 16.5       | 1543  |
| Time_to_TargetM        | 10.01      | 10.0      | 1.6       | 3.5  | 16.0       | 1581  |
| TotalHours             | 58.30      | 59.0      | 10.1      | 8.0  | 120.0      | 4978  |
| Verbalabuse            | 0.07       | 0.0       | 0.3       | 0.0  | 1.0        | 5095  |
| Weeks_Training         | 4.96       | 2.0       | 6.1       | 0.0  | 25.2       | 4336  |
| Worker_Production_Pay  | 4.58       | 1.0       | 4.5       | 1.0  | 11.0       | 3873  |
| Years_atfactory        | 3.49       | 3.0       | 3.4       | 0.0  | 20.0       | 5129  |

# Appendix 4

**Jordan Verbal Abuse Regression: Coding Breakdown for Factor Variables**

| | Stress level of supervisors | No. |
|---|---|---|
| **1** | Serious Problem | 310 |
| **2** | Modest Problem | 452 |
| **3** | Minor Problem | 254 |
| **4** | Not a Problem | 229 |
| | **Total** | **1245** |

| | Customer penalties for late delivery | No. |
|---|---|---|
| **1** | Serious Problem | 489 |
| **2** | Modest Problem | 285 |
| **3** | Minor Problem | 384 |
| **4** | Not a Problem | 58 |
| | **Total** | **1216** |

| | Birthplace | No. |
|---|---|---|
| **1** | Jordan | 520 |
| **2** | Bangladesh | 265 |
| **3** | Sri Lanka | 451 |
| **4** | Pakistan | 3 |
| **5** | China | 30 |
| **6** | Other | 171 |
| | **Total** | **1440** |

| | If you were having a problem at your factory, how comfortable would you feel seeking help from your supervisor? | No. |
|---|---|---|
| **1** | Very comfortable | 558 |
| **2** | Comfortable | 584 |
| **3** | Uncomfortable | 144 |
| **4** | Very uncomfortable | 63 |
| **5** | Not comfortable at all | 78 |
| | **Total** | **1427** |

**Jordan: Coding Breakdown for *Education* and *Contract_Type***

| | Education | No. |
|---|---|---|
| **1** | no formal education | 70 |
| **2** | primary school | 202 |
| **3** | lower secondary school | 270 |
| **4** | upper secondary school | 490 |
| **5** | short-term technical training | 37 |
| **6** | long-term technical training | 48 |
| **7** | professional secondary school | 199 |
| **8** | junior college diploma | 98 |
| **9** | bachelor's degree | 44 |
| | **Total** | **1,458** |

| | What type of contract do you have | No. |
|---|---|---|
| **1** | Training | 182 |
| **2** | Apprentice | 67 |
| **3** | Home Work | 47 |
| **4** | Subcontract | 32 |
| **5** | Bonded | 22 |
| **6** | Probationary | 45 |
| **7** | Temporary | 71 |
| **8** | Fixed Time | 501 |
| **9** | Unlimited Time | 366 |
| | **Total** | **1,333** |

**Vietnam Verbal Abuse Regression: Coding Breakdown for Factor Variables**

| | Stress level of supervisors | No. |
|---|---|---|
| 1 | Serious Problem | 796 |
| 2 | Modest Problem | 2686 |
| 3 | Minor Problem | 883 |
| 4 | Not a Problem | 395 |
| | **Total** | **4760** |

| | Too many rush orders | No. |
|---|---|---|
| 1 | Serious Problem | 1790 |
| 2 | Modest Problem | 1539 |
| 3 | Minor Problem | 536 |
| 4 | Not a Problem | 659 |
| | **Total** | **4524** |

| | If you were having a problem at your factory, how comfortable would you feel seeking help from your supervisor? | No. |
|---|---|---|
| 1 | Very comfortable | 4216 |
| 2 | Comfortable | 618 |
| 3 | Uncomfortable | 221 |
| 4 | Very uncomfortable | 50 |
| | **Total** | **5105** |

**Vietnam: Coding Breakdown for *Education* and *Contract_Type***

| | What type of contract do you have? | No. |
|---|---|---|
| 1 | No Contract | 53 |
| 2 | Training or Probationary Contract | 147 |
| 3 | Less than one year temporary contract | 210 |
| 4 | 1 to 3 year contract | 2075 |
| 5 | Indefinite Contract | 2485 |
| 6 | Do not Know | 125 |
| | **Total** | **5,095** |

| | Education | No. |
|---|---|---|
| 1 | no formal education | 28 |
| 2 | primary school | 614 |
| 3 | lower secondary school | 3023 |
| 4 | upper secondary school | 1242 |
| 5 | short-term technical training | 13 |
| 6 | long-term technical training | 49 |
| 7 | professional secondary school | 96 |
| 8 | junior college diploma | 39 |
| 9 | bachelor's degree | 31 |
| | **Total** | **5,135** |

**Indonesia Verbal Abuse Regression: Coding Breakdown for Factor Variables**

| Stress level of supervisors | No. |
|---|---|
| **1** Serious Problem | 455 |
| **2** Modest Problem | 626 |
| **3** Minor Problem | 500 |
| **4** Not a Problem | 145 |
| **Total** | **1726** |

| Too many rush orders | No. |
|---|---|
| **1** Serious Problem | 519 |
| **2** Modest Problem | 656 |
| **3** Minor Problem | 334 |
| **4** Not a Problem | 158 |
| **Total** | **1667** |

| If you were having a problem at your factory, how comfortable would you feel seeking help from your supervisor? | No. |
|---|---|
| **1** Very comfortable | 483 |
| **2** Comfortable | 1122 |
| **3** Uncomfortable | 116 |
| **4** Very uncomfortable | 17 |
| Not comfortable at all | 13 |
| **Total** | **1751** |

# Indonesia: Coding Breakdown for *Education* and *Contract_Type*

| What type of contract do you h | No. |
|---|---|
| **1** Training | 106 |
| **2** Apprentice | 17 |
| **3** Home Work | 25 |
| **4** Subcontract | 188 |
| **5** Bonded | 34 |
| **6** Probationary | 196 |
| **7** Temporary | 33 |
| **8** Fixed Time | 716 |
| **9** Unlimited Time | 404 |
| **Total** | **1,719** |

| Education | No. |
|---|---|
| **1** No Formal Education | 3 |
| **2** Elementary | 463 |
| **3** Junior High | 997 |
| **4** High School | 765 |
| **5** University | 10 |
| **Total** | **2,238** |

# Appendix 5

## Jordan: Average Verbal Abuse

| VARIABLES | (1) Avg_VA | (2) Avg_VA | (3) Avg_VA | (4) Avg_VA |
|---|---|---|---|---|
| Worker_Production_Pay | -0.051*** | -0.050*** | -0.065*** | -0.044** |
| | (0.032) | (0.029) | (0.029) | (0.095) |
| Sup_PerformancePay | 0.043*** | 0.041*** | 0.038*** | 0.028*** |
| | (0.000) | (0.000) | (0.000) | (0.004) |
| Female | | 0.079*** | 0.055** | 0.032 |
| | | (0.033) | (0.088) | (0.209) |
| Sup_Language | | | -0.022 | 0.017 |
| | | | (0.288) | (0.462) |
| Late_Penalty: Modest Problem | | | -0.174* | -0.074 |
| | | | (0.107) | (0.425) |
| Late_Penalty: Minor Problem | | | -0.243*** | -0.167* |
| | | | (0.041) | (0.103) |
| Sup_Stress: Modest Problem | | | 0.268*** | 0.231*** |
| | | | (0.039) | (0.041) |
| Sup_Stress: Minor Problem | | | 0.251** | 0.225** |
| | | | (0.054) | (0.070) |
| Sup_Stress: Not a Problem | | | 0.069 | 0.055 |
| | | | (0.618) | (0.651) |
| Sup_comfort | | | | 0.004 |
| | | | | (0.425) |
| Birthplace_Bangladesh | | | | -0.157*** |
| | | | | (0.005) |
| Birthplace_Sri_Lanka | | | | -0.173*** |
| | | | | (0.006) |
| Birthplace_Pakistan | | | | -0.029 |
| | | | | (0.679) |
| Birthplace_China | | | | -0.007 |
| | | | | (0.913) |
| Birthplace_Other | | | | -0.116** |
| | | | | (0.060) |
| Constant | 0.419*** | 0.366*** | 0.405*** | 0.433*** |
| | (0.000) | (0.000) | (0.000) | (0.000) |
| | | | | |
| Observations | 817 | 817 | 716 | 708 |
| R-squared | 0.148 | 0.171 | 0.382 | 0.464 |

Robust pval in parentheses
*** p<0.05, ** p<0.1, * p<0.15

## Vietnam: Average Verbal Abuse

| VARIABLES | (1)<br>*Avg_VA* | (2)<br>*Avg_VA* | (3)<br>*Avg_VA* | (4)<br>*Avg_VA* |
|---|---|---|---|---|
| *Worker_Production_Pay* | 0.004 | 0.004 | 0.002 | 0.003 |
| | (0.273) | (0.267) | (0.401) | (0.342) |
| *Sup_PerformancePay* | -0.004 | -0.004 | -0.002 | -0.003 |
| | (0.252) | (0.250) | (0.466) | (0.314) |
| *Female* | | 0.009 | 0.006 | 0.006 |
| | | (0.159) | (0.203) | (0.290) |
| *LowWageConcern* | | | 0.058*** | 0.057*** |
| | | | (0.000) | (0.000) |
| *Rush_Orders: Modest Problem* | | | -0.030*** | -0.034*** |
| | | | (0.041) | (0.039) |
| *Rush_Orders: Minor Problem* | | | -0.018 | -0.015 |
| | | | (0.489) | (0.620) |
| *Rush_Orders: Not a Problem* | | | -0.034* | -0.034 |
| | | | (0.112) | (0.213) |
| *Sup_comfort* | | | 0.026*** | 0.025*** |
| | | | (0.000) | (0.000) |
| *Ind_CBA* | | | | -0.010** |
| | | | | (0.061) |
| *Sup_Stress: Modest Problem* | | | | 0.027 |
| | | | | (0.214) |
| *Sup_Stress: Minor Problem* | | | | 0.017 |
| | | | | (0.538) |
| *Sup_Stress: Not a Problem* | | | | 0.005 |
| | | | | (0.839) |
| *Constant* | 0.079*** | 0.071*** | 0.044*** | 0.041*** |
| | (0.000) | (0.000) | (0.002) | (0.046) |
| | | | | |
| Observations | 3,439 | 3,439 | 3,067 | 2,893 |
| R-squared | 0.025 | 0.026 | 0.159 | 0.173 |

Robust pval in parentheses
*** p<0.05, ** p<0.1, * p<0.15

# Appendix 6

**Jordan: Average Verbal Abuse with Low Wage Concern**

| VARIABLES | Avg_VA |
|---|---|
| Worker_Production_Pay | -0.040** |
| | (0.092) |
| Sup_PerformancePay | 0.024*** |
| | (0.011) |
| Female | 0.069*** |
| | (0.031) |
| Sup_Language | -0.010 |
| | (0.756) |
| LowWageConcern | 0.053*** |
| | (0.017) |
| 2.Late_Penalty | -0.033 |
| | (0.718) |
| 3.Late_Penalty | -0.146* |
| | (0.147) |
| 2.Sup_Stress | 0.185** |
| | (0.087) |
| 3.Sup_Stress | 0.205** |
| | (0.084) |
| 4.Sup_Stress | 0.024 |
| | (0.837) |
| Sup_comfort | -0.012 |
| | (0.174) |
| 2.Birthplace | -0.166*** |
| | (0.004) |
| 3.Birthplace | -0.178*** |
| | (0.009) |
| 4.Birthplace | 0.007 |
| | (0.915) |
| 5.Birthplace | 0.061 |
| | (0.453) |
| 6.Birthplace | -0.068 |
| | (0.266) |
| Constant | 0.440*** |
| | (0.000) |
| | |
| Observations | 351 |
| R-squared | 0.513 |

Robust pval in parentheses
*** p<0.05, ** p<0.1, * p<0.15

**Indonesia: Average Verbal Abuse with Low Wage Concern**

| VARIABLES | *Avg_VA* |
|---|---|
| *Worker_Production_Pay* | -0.001 |
| | (0.937) |
| *Sup_PerformancePay* | 0.001 |
| | (0.936) |
| *Female* | 0.073** |
| | (0.062) |
| *LowWageConcern* | 0.130*** |
| | (0.001) |
| *2.Rush_Orders* | 0.059 |
| | (0.285) |
| *3.Rush_Orders* | -0.022 |
| | (0.768) |
| *4.Rush_Orders* | 0.247*** |
| | (0.007) |
| *2.Sup_Stress* | -0.086 |
| | (0.231) |
| *3.Sup_Stress* | -0.122* |
| | (0.144) |
| *4.Sup_Stress* | -0.032 |
| | (0.775) |
| *Promotion_Bias* | -0.020 |
| | (0.468) |
| *Sup_comfort* | 0.051*** |
| | (0.021) |
| *Constant* | 0.544*** |
| | (0.000) |
| | |
| Observations | 131 |
| R-squared | 0.497 |

Robust pval in parentheses
*** p<0.05, ** p<0.1, * p<0.15

# Appendix 7

**Vietnam: Hourly Wages, Adjusted for Declined Responses**

| VARIABLES | (1) logHourlyPayUSD | (2) logHourlyPayUSD | (3) logHourlyPayUSD |
|---|---|---|---|
| *Avg_VA* | -0.016 | 0.019 | 0.238 |
| | (0.933) | (0.914) | (0.207) |
| *Education: Primary School* | | 0.066 | 0.124*** |
| | | (0.386) | (0.020) |
| *Education: Lower Secondary School* | | 0.128** | 0.169*** |
| | | (0.089) | (0.002) |
| *Education: Upper Secondary School* | | 0.157** | 0.204*** |
| | | (0.052) | (0.000) |
| *Education: Short-Term Technical Training* | | 0.357*** | 0.385*** |
| | | (0.049) | (0.026) |
| *Education: Long-Term Technical Training* | | 0.117 | 0.111 |
| | | (0.293) | (0.185) |
| *Education: Professional Secondary School* | | 0.177*** | 0.241*** |
| | | (0.045) | (0.001) |
| *Education: Junior College Diploma* | | 0.338*** | 0.264*** |
| | | (0.017) | (0.006) |
| *Education: Bachelor's Degree* | | 0.581*** | 0.576*** |
| | | (0.000) | (0.000) |
| *Female* | | -0.083*** | -0.098*** |
| | | (0.000) | (0.000) |
| *Promoted* | | 0.044*** | 0.043*** |
| | | (0.000) | (0.001) |
| *Years_atfactory* | | 0.023*** | 0.024*** |
| | | (0.000) | (0.000) |
| *BasicSkillsTraining* | | | 0.005 |
| | | | (0.704) |
| *Competition* | | | 0.000*** |
| | | | (0.000) |
| *JobCutter* | | | -0.084* |
| | | | (0.108) |
| *JobSpreader* | | | -0.017 |
| | | | (0.637) |
| *JobChecker* | | | 0.011 |
| | | | (0.600) |
| *JobMechanic* | | | 0.143*** |
| | | | (0.000) |
| *JobPacker* | | | -0.063*** |
| | | | (0.026) |
| *JobQualityControl* | | | 0.109*** |
| | | | (0.036) |
| *JobHelper* | | | -0.111*** |
| | | | (0.000) |
| *JobOther* | | | -0.032** |
| | | | (0.083) |
| *Contract_Type: Training or Probationary* | | 0.049 | 0.040 |
| | | (0.560) | (0.668) |
| *Contract_Type: Temporary, Less than 1 year* | | 0.212*** | 0.199*** |
| | | (0.007) | (0.025) |
| *Contract_Type: Definite term for 1 to 3 years* | | 0.215*** | 0.205*** |

|  |  |  |  |
|---|---|---|---|
|  |  | (0.005) | (0.017) |
| *Contract_Type: Indefinite or open-ended* |  | 0.292*** | 0.276*** |
|  |  | (0.000) | (0.002) |
| *Contract_Type: I do not know* |  | 0.109 | 0.084 |
|  |  | (0.226) | (0.383) |
| *2010b.year* | 0.000 | 0.000 | 0.000 |
|  | (.) | (.) | (.) |
| *2011.year* | 0.208*** | 0.195*** | 0.201*** |
|  | (0.000) | (0.000) | (0.000) |
| *2012.year* | 0.414*** | 0.393*** | 0.405*** |
|  | (0.000) | (0.000) | (0.000) |
| *2013.year* | 0.536*** | 0.494*** | 0.511*** |
|  | (0.000) | (0.000) | (0.000) |
| *Constant* | -0.738*** | -1.117*** | -1.151*** |
|  | (0.000) | (0.000) | (0.000) |
|  |  |  |  |
| Observations | 4,665 | 4,592 | 4,155 |
| R-squared | 0.206 | 0.295 | 0.311 |

Robust pval in parentheses
*** p<0.05, ** p<0.1, * p<0.15

# Appendix 8

**Vietnam: Time to Production Target (Friday), with Individual Reports of Verbal Abuse**

| VARIABLES | (1)<br>Time_to_TargetF | (2)<br>Time_to_TargetF | (3)<br>Time_to_TargetF | (4)<br>Time_to_TargetF |
|---|---|---|---|---|
| Verbalabuse | 0.822* | 0.885** | 0.872* | 0.924* |
| | (0.108) | (0.089) | (0.109) | (0.108) |
| Age | -0.006 | -0.007 | -0.008 | -0.010 |
| | (0.390) | (0.348) | (0.305) | (0.203) |
| Female | -0.092 | -0.115 | -0.100 | -0.079 |
| | (0.646) | (0.551) | (0.603) | (0.701) |
| Education: Primary School | | -0.997 | -0.860 | -0.825 |
| | | (0.197) | (0.277) | (0.297) |
| Education: Lower Secondary School | | -0.924 | -0.864 | -0.797 |
| | | (0.237) | (0.281) | (0.319) |
| Education: Upper Secondary School | | -1.036 | -0.934 | -0.891 |
| | | (0.191) | (0.252) | (0.278) |
| Education: Short-Term Technical Training | | -0.917 | -0.733 | -0.702 |
| | | (0.389) | (0.500) | (0.530) |
| Education: Long-Term Technical Training | | -1.221* | -1.150 | -0.995 |
| | | (0.138) | (0.170) | (0.221) |
| Education: Professional Secondary School | | -1.749*** | -1.674*** | -1.498** |
| | | (0.037) | (0.049) | (0.077) |
| Education: Junior College Diploma | | -1.081 | -1.154 | -1.046 |
| | | (0.180) | (0.162) | (0.205) |
| Education: Bachelor's Degree | | -1.908** | -1.738* | -2.079** |
| | | (0.071) | (0.110) | (0.075) |
| Years_atfactory | | 0.002 | 0.001 | 0.002 |
| | | (0.901) | (0.954) | (0.922) |
| BasicSkillsTraining | | | -0.188* | -0.239*** |
| | | | (0.101) | (0.041) |
| Weeks_Training | | | -0.009 | -0.016 |
| | | | (0.576) | (0.320) |
| Rush_Orders | | | | -0.000 |
| | | | | (0.999) |
| Constant | 10.214*** | 11.247*** | 11.347*** | 11.438*** |
| | (0.000) | (0.000) | (0.000) | (0.000) |
| | | | | |
| Observations | 1,228 | 1,227 | 1,081 | 996 |
| R-squared | | 0.002 | 0.014 | 0.016 |

Robust pval in parentheses

\*\*\* p<0.05, \*\* p<0.1, \*

**Vietnam: Time to Production Target (Monday), with Individual Reports of Verbal Abuse**

| VARIABLES | (1)<br>Time_to_TargetM | (2)<br>Time_to_TargetM | (3)<br>Time_to_TargetM |
|---|---|---|---|
| *Verbalabuse* | 0.621 | 0.620 | 0.953** |
| | (0.214) | (0.213) | (0.075) |
| *Age* | 0.001 | 0.003 | -0.001 |
| | (0.940) | (0.730) | (0.879) |
| *Female* | -0.011 | -0.046 | -0.054 |
| | (0.944) | (0.773) | (0.741) |
| *Education: Primary School* | -0.010 | 0.166 | 0.255 |
| | (0.981) | (0.710) | (0.602) |
| *Education: Lower Secondary School* | 0.014 | 0.134 | 0.194 |
| | (0.972) | (0.751) | (0.687) |
| *Education: Upper Secondary School* | -0.124 | 0.050 | 0.003 |
| | (0.765) | (0.908) | (0.996) |
| *Education: Short-Term Technical Training* | -0.548 | -0.287 | -0.445 |
| | (0.330) | (0.619) | (0.448) |
| *Education: Long-Term Technical Training* | 0.015 | 0.159 | 0.391 |
| | (0.983) | (0.823) | (0.567) |
| *Education: Professional Secondary School* | -0.937** | -0.765* | -0.754 |
| | (0.062) | (0.129) | (0.171) |
| *Education: Junior College Diploma* | 0.143 | 0.172 | 0.236 |
| | (0.796) | (0.788) | (0.738) |
| *Education: Bachelor's Degree* | -1.820*** | -1.539*** | -1.670*** |
| | (0.000) | (0.007) | (0.013) |
| *Years_atfactory* | 0.005 | 0.005 | 0.000 |
| | (0.757) | (0.773) | (0.989) |
| *Weeks_Training* | | -0.022* | -0.028*** |
| | | (0.124) | (0.046) |
| *BasicSkillsTraining* | | -0.174** | -0.174* |
| | | (0.088) | (0.102) |
| *Ind_CBA* | | | 0.337* |
| | | | (0.137) |
| *Rush_Orders* | | | 0.021 |
| | | | (0.750) |
| *Constant* | 9.964*** | 9.956*** | 9.767*** |
| | (0.000) | (0.000) | (0.000) |
| | | | |
| Observations | 1,258 | 1,100 | 981 |
| R-squared | 0.012 | 0.024 | 0.024 |

Robust pval in parentheses
*** p<0.05, ** p<0.1, * p<0.15

## Appendix 9

**Vietnam: Time to Production Target (Friday), with Average Reports of Verbal Abuse**

| VARIABLES | (1) Time_to_TargetF | (2) Time_to_TargetF | (3) Time_to_TargetF | (4) Time_to_TargetF |
|---|---|---|---|---|
| Avg_VA | 2.113** | 2.265*** | 2.181** | 2.932** |
| | (0.067) | (0.047) | (0.065) | (0.085) |
| Age | -0.011* | -0.012* | -0.013* | -0.016*** |
| | (0.108) | (0.125) | (0.116) | (0.050) |
| Female | -0.076 | -0.088 | -0.086 | -0.073 |
| | (0.704) | (0.647) | (0.654) | (0.724) |
| Education: Primary School | | -0.911 | -0.802 | -0.753 |
| | | (0.316) | (0.384) | (0.433) |
| Education: Lower Secondary School | | -0.830 | -0.794 | -0.709 |
| | | (0.366) | (0.393) | (0.464) |
| Education: Upper Secondary School | | -0.850 | -0.780 | -0.701 |
| | | (0.356) | (0.402) | (0.470) |
| Education: Short-Term Technical Training | | -0.385 | -0.240 | -0.153 |
| | | (0.782) | (0.862) | (0.916) |
| Education: Long-Term Technical Training | | -1.102 | -1.052 | -0.858 |
| | | (0.245) | (0.269) | (0.377) |
| Education: Professional Secondary School | | -1.517* | -1.471* | -1.287 |
| | | (0.112) | (0.125) | (0.197) |
| Education: Junior College Diploma | | -0.933 | -1.006 | -0.898 |
| | | (0.313) | (0.282) | (0.355) |
| Education: Bachelor's Degree | | -1.483 | -1.346 | -1.581 |
| | | (0.187) | (0.237) | (0.195) |
| Years_atfactory | | 0.004 | 0.001 | 0.003 |
| | | (0.818) | (0.942) | (0.871) |
| Weeks_Training | | | -0.008 | -0.016 |
| | | | (0.597) | (0.270) |
| BasicSkillsTraining | | | -0.164* | -0.196** |
| | | | (0.149) | (0.098) |
| Rush_Orders | | | | 0.013 |
| | | | | (0.867) |
| Constant | 10.250*** | 11.139*** | 11.255*** | 11.269*** |
| | (0.000) | (0.000) | (0.000) | (0.000) |
| | | | | |
| Observations | 1,233 | 1,232 | 1,084 | 999 |
| R-squared | | | 0.013 | 0.015 |

Robust pval in parentheses
*** p<0.05, ** p<0.1, * p<0.15

**Vietnam: Time to Production Target (Monday), with Average Reports of Verbal Abuse**

| VARIABLES | (1)<br>Time_to_TargetM | (2)<br>Time_to_TargetM | (3)<br>Time_to_TargetM |
|---|---|---|---|
| Avg_VA | 0.513 | 0.244 | 2.905** |
| | (0.573) | (0.792) | (0.084) |
| Age | -0.002 | 0.000 | -0.008 |
| | (0.811) | (0.981) | (0.359) |
| Female | -0.006 | -0.044 | -0.064 |
| | (0.967) | (0.783) | (0.692) |
| Education: Primary School | 0.019 | 0.177 | 0.342 |
| | (0.967) | (0.705) | (0.608) |
| Education: Lower Secondary School | 0.052 | 0.161 | 0.349 |
| | (0.905) | (0.716) | (0.599) |
| Education: Upper Secondary School | -0.030 | 0.127 | 0.253 |
| | (0.946) | (0.776) | (0.708) |
| Education: Short-Term Technical Training | -0.235 | 0.007 | 0.109 |
| | (0.734) | (0.992) | (0.901) |
| Education: Long-Term Technical Training | 0.019 | 0.136 | 0.604 |
| | (0.978) | (0.849) | (0.461) |
| Education: Professional Secondary School | -0.780* | -0.612 | -0.477 |
| | (0.126) | (0.225) | (0.514) |
| Education: Junior College Diploma | 0.266 | 0.313 | 0.383 |
| | (0.630) | (0.624) | (0.594) |
| Education: Bachelor's Degree | -1.622*** | -1.366*** | -1.332** |
| | (0.001) | (0.008) | (0.057) |
| Years_atfactory | 0.004 | 0.003 | 0.005 |
| | (0.822) | (0.834) | (0.740) |
| BasicSkillsTraining | | -0.183** | -0.160* |
| | | (0.083) | (0.142) |
| Ind_CBA | | | 0.332* |
| | | | (0.148) |
| Rush_Orders | | | 0.029 |
| | | | (0.665) |
| Weeks_Training | | -0.021 | |
| | | (0.152) | |
| Constant | 10.003*** | 10.049*** | 9.488*** |
| | (0.000) | (0.000) | (0.000) |
| | | | |
| Observations | 1,264 | 1,106 | 1,102 |
| R-squared | 0.011 | 0.023 | |

Robust pval in parentheses
*** p<0.05, ** p<0.1, * p<0.15

# Appendix 10

| | (1) | (2) |
|---|---|---|
| | Uninstrumented_1 | Uninstrumented_2 |
| VARIABLES | Time_to_TargetF | Time_to_TargetM |
| | | |
| *Verbalabuse* | 0.326** | 0.266** |
| | (0.061) | (0.065) |
| *Age* | -0.009 | 0.000 |
| | (0.241) | (0.992) |
| *Female* | -0.069 | -0.026 |
| | (0.705) | (0.866) |
| *Education: Primary School* | -0.552 | 0.255 |
| | (0.432) | (0.517) |
| *Education: Lower Secondary School* | -0.492 | 0.221 |
| | (0.480) | (0.541) |
| *Education: Upper Secondary School* | -0.485 | 0.172 |
| | (0.491) | (0.641) |
| *Education: Short-Term Technical Training* | -0.165 | -0.103 |
| | (0.885) | (0.860) |
| *Education: Long-Term Technical Training* | -0.740 | 0.213 |
| | (0.314) | (0.674) |
| *Education: Professional Secondary School* | -1.011 | -0.479 |
| | (0.176) | (0.269) |
| *Education: Junior College Diploma* | -0.665 | 0.408 |
| | (0.379) | (0.520) |
| *Education: Bachelor's Degree* | -1.696** | -1.363*** |
| | (0.061) | (0.004) |
| *Years_atfactory* | -0.000 | 0.000 |
| | (0.995) | (0.989) |
| *BasicSkillsTraining* | -0.262*** | -0.157* |
| | (0.023) | (0.128) |
| *Weeks_Training* | -0.005 | -0.024*** |
| | (0.728) | (0.048) |
| *Rush_Orders* | -0.025 | -0.021 |
| | (0.749) | (0.750) |
| *Constant* | 11.148*** | 10.064*** |
| | (0.000) | (0.000) |
| | | |
| Observations | 1,174 | 1,197 |
| R-squared | 0.020 | 0.027 |

<div align="center">

**Vietnam: Time to Production Target using OLS regression**

Robust pval in parentheses

*** p<0.05, ** p<0.1, * p<0.15

</div>