



Tufts
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Labor
Lab

Piece-Rate Pay and Turnover Intention

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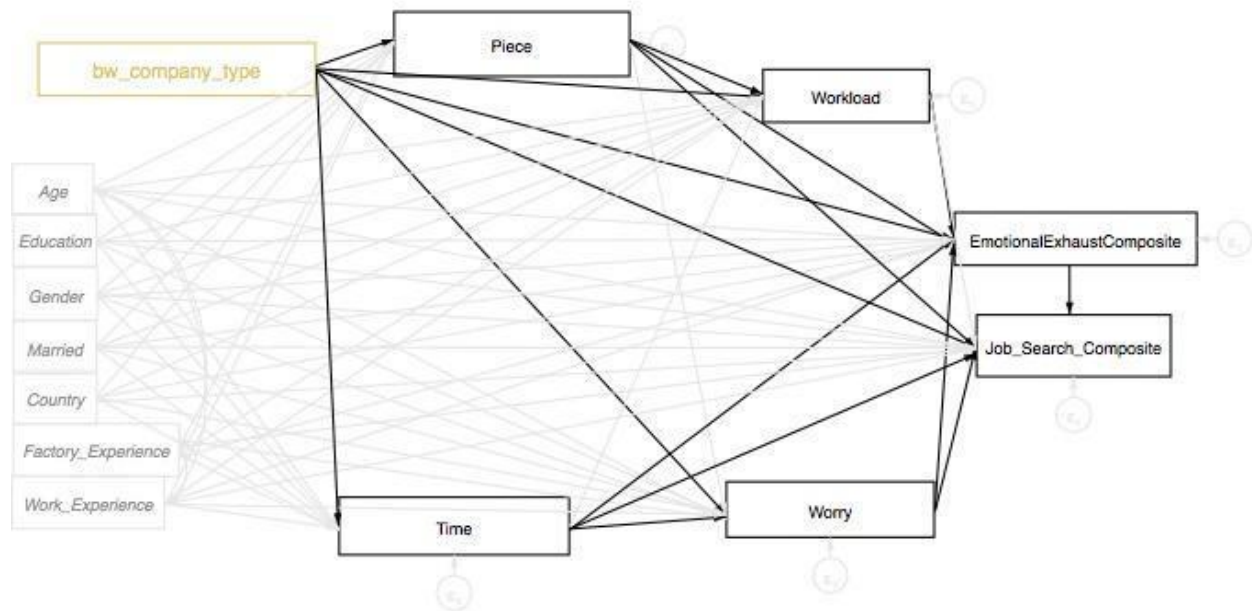
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Key Findings

- Workers in Better Work factories are more likely to get paid by time than by piece, which in turn may decrease workload and worry, and thus decrease emotional exhaustion.
- Ultimately, this decrease in emotional exhaustion may lead to decreased turnover intentions, showing us that the pay structure offered by Better Work makes workers less likely to think about leaving their jobs.
- Better Work workers are less likely to have turnover intentions because of the work environment that is created through their pay structure. Better Work employees are less likely to get paid only by piece, decreasing workload and worrying. They are also more likely to get paid by a combination of both piece and time.

Piece-Rate Pay and Turnover Intention

Model 1:



Variables of Interest:

bw_company_type: Is the worker a member of a Better Work factory? (binary)

Piece: Are you paid by piece? (binary)

Time: Are you paid by time? (binary) *note: *Piece* and *Time* are not mutually exclusive; workers who are paid by both piece and time will have *Piece*=1 and *Time*=1

Workload: How heavy was your workload during the last month? (1-Often not enough to keep me busy, 2-Sometimes not enough, 3-Just the right amount, 4-Sometimes too much, 5-Entirely too much for me to handle)

Worry: I often worry about finishing everything I have to do. (agreescale)

EmotionalExhaustComposite: A composite measure of emotional exhaustion, consisting of the frequency at which a worker feels fatigued or frustrated by their job.

Job_Search_Composite: A composite measure of a worker's intention to leave their current job (also known as turnover intention), consisting of thoughts about quitting, moving sectors, or devoting effort to looking for a new job.

Payment processes can also contribute to the cognitive load system described above, as expectations surrounding remuneration can also impact workers' levels of emotional well-being and long-term outcomes. Accordingly, this model incorporates payment variables into the previous system by exploring the relationship between membership in a Better Work factory, types of pay, workload, worry, emotional exhaustion, and turnover intention. *Bw_company_type* is the treatment variable, the intermediate variables are *Piece*, *Time*, *Workload*, and *Worry*, *EmotionalExhaustComposite* is the short-term outcome variable, and *Job_Search_Composite* is the long-term outcome variable.

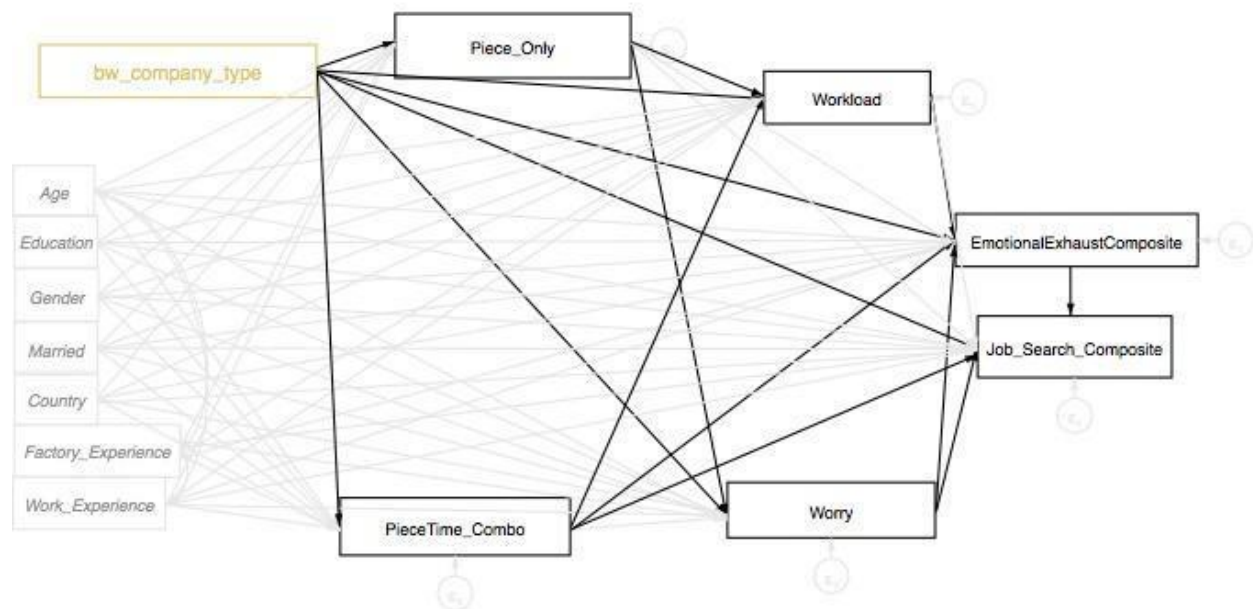
We want to examine how pay incentives change the environment of a factory. Yeh, Cheng, and Chen (2009) found that "employees earning through a performance-based pay" in Taiwan are more likely to have "the longest working hours... and [the] highest percentage of workers who perceived high stress at work." In addition, "employees earning through performance-based and piece-rate pay systems showed higher scores for personal burnout and work-related burnout, as compared to those who were given fixed salaries"(Yeh, Cheng, and Chen 2009). This analysis tests whether these effects are present in Indonesian and Vietnamese garment factories and whether Better Work alleviates any of these effects by offering an improved pay structure. We found a strong significant negative effect of *bw_company_type* on *Piece* and a strong significant positive effect on *Time*, which tells us that workers in Better Work factories are less likely to get paid by piece and more likely to get paid by time. Furthermore, there is a strong significant positive relationship between *Piece* and *Workload*, and a strong significant negative relationship between *Time* and *Worry*. Those who get paid by piece are more likely to think their workload is too heavy, and those who get paid by time are less likely to worry about finishing everything they have to do. *Workload* and *Worry* both have significant positive relationships with *EmotionalExhaustComposite*, showing that those who have a heavy workload and worry about finishing everything they have to do are more likely to be emotionally exhausted. Finally, *EmotionalExhaustComposite* has a positive significant relationship with *Job_Search_Composite*, showing that those who are emotionally exhausted are more likely to have turnover intentions. The relationships above can be combined to form a system that may describe Better Work training's effect on emotional exhaustion and turnover intention through the pay structure it offers its workers:

bw_company_type → *Piece/Time* → *Workload/Worry* → *EmotionalExhaustComposite* → *Job_Search_Composite*

Workers in Better Work factories are more likely to get paid by time than by piece, which in turn may decrease workload and worry. This decreased workload and worry may decrease emotional exhaustion -- i.e., fatigue and frustration on the job. Ultimately, this decrease in emotional exhaustion may lead to decreased turnover intentions, showing us that the pay structure offered by Better Work makes workers less likely to think about leaving their jobs.

There are also direct effects between some of the variables, such as between *bw_company_type* and *Workload*, *Worry*, *EmotionalExhaustComposite*, and *Job_Search_Composite*. These effects are all negative, showing that membership in a Better Work factory is associated with a decrease in workload, worrying, emotional exhaustion, and turnover intention. There is also a direct positive relationship between *Worry* and *Job_Search_Composite*, showing that those who worry more are more likely to have turnover intentions. There are also direct effects of *Piece* and *Time* on *EmotionalExhaustComposite* and *Job_Search_Composite*. Getting paid by time decreases emotional exhaustion and turnover intention. However, our analysis also shows that being paid by piece also decreases emotional exhaustion and turnover intention. This is shown by the -0.173 and -0.146 coefficients below. This result is contrary to our theory. Since *Piece* and *Time* are not mutually exclusive in our analysis, our results may be complicated by workers who get paid mostly by time, but also receive some piece-rate pay (perhaps in the form of production bonuses). To parse out this effect, a Model 2 below compares workers who get paid only by piece to workers who get paid by a combination of both piece and time. This model allows us to compare the effects of incentive pay to hourly pay in an environment that omits any interaction effects, and also allows us to see if getting paid by both piece and time increases workload and worry compared to getting paid only by piece.

Model 2:



Variables of Interest:

bw_company_type: Is the worker a member of a Better Work factory? (binary)

Piece_Only: I get paid only by piece. (binary, where 1=only by piece and 0=only by time or by both piece and time)

PieceTime_Combo: I get paid by both piece and time. (binary, where 1=by both piece and time and 0=only by piece or only by time)

Workload: How heavy was your workload during the last month? (1-Often not enough to keep me busy, 2-Sometimes not enough, 3-Just the right amount, 4-Sometimes too much, 5-Entirely too much for me to handle)

Worry: I often worry about finishing everything I have to do. (agreescale)

EmotionalExhaustComposite: A composite measure of emotional exhaustion, consisting of the frequency at which a worker feels fatigued or frustrated by their job.

Job_Search_Composite: A composite measure of a worker's intention to leave their current job (also known as turnover intention), consisting of thoughts about quitting, moving sectors, or devoting effort to looking for a new job.

Model 2 shows that when any interaction between *Piece* and *Time* is parsed out, there is a very clear effect of incentive piece-rate pay on workload and worry. *Bw_company_type* has a strong negative relationship with *Piece_Only* and a strong positive relationship with *PieceTime_Combo*, showing that Better Work employees are less likely to get paid only by piece, but are more likely to get paid by a combination of piece and time, compared to non-Better Work employees. *Piece_Only* has strong significant positive relationships with *Workload* and *Worry*; however, *PieceTime_Combo* also has a strong significant positive relationship with *Workload*. This tells us that although getting paid only by piece increases workload and worry, getting paid by a combination of both piece and time also increases workload compared to workers who get paid only by time. The coefficient on *Workload* for *Piece_Only* is .156 compared to the coefficient on *Workload* for *PieceTime_Combo* of .113, which shows that getting paid by a combination of piece and time increases workload less than getting paid by only time. Therefore, getting paid by a combination of both piece and time is better than getting paid only by piece. The same positive relationship exists between *Workload* and *Worry* and *EmotionalExhaustComposite* as in the previous model, where an increase in workload or an increase in worrying indicate increased emotional exhaustion. Finally, *EmotionalExhaustComposite* has a positive significant relationship with *Job_Search_Composite*. The following system can be used to describe how Better Work's payment structure can affect longer-term outcomes such as emotional exhaustion and turnover intention:

bw_company_type → *Piece_Only/PieceTime_Combo* → *Workload/Worry* →
EmotionalExhaustComposite → *Job_Search_Composite*

There are also significant direct effects between variables. *Bw_company_time* has a direct negative relationship with *Workload*, *Worry*, *EmotionalExhaustComposite*, and *Job_Search_Composite*. In addition, *PieceTime_Combo* has a direct negative relationship with *EmotionalExhaustComposite* and *Job_Search_Composite*, meaning that workers who get paid by both piece and time tend to be less emotionally exhausted and have less turnover intention than workers who get paid solely by time. This may be due to the fact that piece-rate pay includes production bonuses, which allow the worker to make money outside of their regularly scheduled hours. Higher wages are linked with less emotional exhaustion and less turnover intention, and thus getting paid by a combination of both piece and time may allow workers to make more money if they choose to by receiving production bonuses. This is further supported by the finding that *PieceTime_Combo* is linked with an increase in *Workload* but not in *Worry*, showing that some may choose to take on extra work to increase their pay, but are not forced to do so. This effect is different than workers who get paid only by piece because production bonuses can be considered as an incentive for optional extra work, which is less stressful than getting paid entirely by production amount.

Using this model, it is evident that Better Work workers are less likely to have turnover intentions because of the work environment that is created through their pay structure. Better Work employees are less likely to get paid only by piece, decreasing workload and worrying. They are also more likely to get paid by a combination of both piece and time. While this combination can increase workload, it does so less than paying solely by piece. Decreased workload and worrying are linked to decreased emotional exhaustion and ultimately to decreased turnover intention. Parsing out the interaction effect of *Piece* and *Time* allows us to see more clearly that piece-rate pay systems can be detrimental to a worker's mental and emotional health, and may ultimately lead them to leave their jobs.

All significant relationships are highlighted in the tables below. In Model 1, all relationships have a p-value less than .01, with the exception of *bw_company_type* → *Workload* and *Time* → *EmotionalExhaustComposite*, which have p-values less than .05. In Model 2, all relationships have a p-value less than .01, except for *bw_company_type* → *Workload* which has a p-value less than .05.

Model 1 (includes workers who get paid by both Piece and Time):

	1	2	3	4	5	6
VARIABLES	Piece	Time	Workload	Worry	EmotionalExhaustComposite	Job_Search_Composite
bw_company_type	-0.0418*** (0.0131)	0.0848*** (0.00998)	-0.0498** (0.0235)	-0.117*** (0.0254)	-0.240*** (0.0333)	-0.0796*** (0.0192)
Piece			0.113*** (0.0286)	-0.00843 (0.0308)	-0.173*** (0.0406)	-0.147*** (0.0237)
Time			-0.0427 (0.0374)	-0.154*** (0.0404)	-0.123** (0.0530)	-0.193*** (0.0307)
Workload					0.322*** (0.0190)	-0.00165 (0.0111)
Worry					0.382*** (0.0175)	0.0937*** (0.0104)
EmotionalExhaustComposite						0.165*** (0.00753)
Age	-0.00392*** (0.00124)	0.000917 (0.000945)	-0.00299 (0.00221)	0.00793*** (0.00239)	-0.0179*** (0.00314)	-0.00801*** (0.00180)
Country	-0.0205 (0.0135)	-0.262*** (0.0103)	0.824*** (0.0262)	0.287*** (0.0283)	-0.437*** (0.0400)	-0.112*** (0.0231)
Factory_Experience	-0.00314* (0.00182)	-0.00420*** (0.00139)	0.00708** (0.00324)	0.00536 (0.00350)	0.0229*** (0.00460)	-0.00104 (0.00268)
Education	-0.0406*** (0.00719)	0.00660 (0.00548)	0.111*** (0.0128)	0.0468*** (0.0139)	-0.00997 (0.0183)	0.0684*** (0.0104)
Gender_Preference	0.0182** (0.00718)	-0.00928* (0.00548)	0.0679*** (0.0128)	0.00274 (0.0139)	-0.0822*** (0.0182)	-0.0231** (0.0104)
Married	0.0666*** (0.0169)	-0.0448*** (0.0129)	-0.0534* (0.0303)	0.0444 (0.0326)	-0.0578 (0.0429)	-0.0851*** (0.0247)
Work_Experience	0.00549*** (0.00172)	0.00162 (0.00131)	0.00370 (0.00307)	-0.00972*** (0.00331)	-0.00504 (0.00433)	-0.00288 (0.00249)
Constant	0.604*** (0.0517)	1.177*** (0.0394)	1.072*** (0.108)	2.141*** (0.116)	2.009*** (0.157)	1.862*** (0.0908)
Observations	6,521	6,521	6,521	6,521	6,521	6,521
Standard errors in parentheses						
*** p<0.01, ** p<0.05, * p<0.1						

Model 2 (omits any interaction between Piece and Time):

VARIABLES	1	2	3	4	5	6
	Piece_Only	PieceTime_Combo	Workload	Worry	EmotionalExhaustComposite	Job_Search_Composite
bw_company_type	-0.0853*** (0.00998)	0.0438*** (0.0110)	-0.0498** (0.0235)	-0.117*** (0.0254)	-0.241*** (0.0333)	-0.0797*** (0.0192)
Piece_Only			0.156*** (0.0314)	0.146*** (0.0340)	-0.0510 (0.0445)	0.0443* (0.0254)
PieceTime_Combo			0.113*** (0.0286)	-0.00783 (0.0309)	-0.172*** (0.0406)	-0.145*** (0.0236)
Workload					0.322*** (0.0190)	-0.00174 (0.0111)
Worry					0.382*** (0.0175)	0.0937*** (0.0104)
EmotionalExhaustComposite						0.165*** (0.00753)
Age	-0.000883 (0.000945)	-0.00305*** (0.00104)	-0.00298 (0.00221)	0.00793*** (0.00239)	-0.0179*** (0.00314)	-0.00800*** (0.00180)
Country	0.262*** (0.0103)	-0.283*** (0.0114)	0.824*** (0.0262)	0.287*** (0.0284)	-0.437*** (0.0400)	-0.111*** (0.0231)
Factory_Experience	0.00419*** (0.00139)	-0.00730*** (0.00153)	0.00708** (0.00324)	0.00537 (0.00350)	0.0229*** (0.00460)	-0.000981 (0.00268)
Education	-0.00642 (0.00548)	-0.0340*** (0.00604)	0.111*** (0.0128)	0.0468*** (0.0139)	-0.00990 (0.0183)	0.0685*** (0.0104)
Gender_Preference	0.00898 (0.00548)	0.00920 (0.00604)	0.0679*** (0.0128)	0.00278 (0.0139)	-0.0822*** (0.0182)	-0.0231** (0.0104)
Married	0.0443*** (0.0129)	0.0224 (0.0142)	-0.0536* (0.0303)	0.0445 (0.0326)	-0.0578 (0.0429)	-0.0851*** (0.0247)
Work_Experience	-0.00162 (0.00131)	0.00711*** (0.00145)	0.00370 (0.00307)	-0.00974*** (0.00331)	-0.00503 (0.00433)	-0.00293 (0.00249)
Constant	-0.177*** (0.0394)	0.781*** (0.0435)	1.029*** (0.0948)	1.987*** (0.103)	1.885*** (0.139)	1.667*** (0.0802)
Observations	6,521	6,521	6,521	6,521	6,521	6,521
Standard errors in parentheses						
*** p<0.01, ** p<0.05, * p<0.1						

Works Cited

Yeh, Wan-Yu, Yawen Cheng, and Chiou-Jung Chen. "Social Patterns of Pay Systems and Their Associations with Psychosocial Job Characteristics and Burnout among Paid Employees in Taiwan." *Social Science & Medicine* 68, no. 8 (2009): 1407-415.
doi:10.1016/j.socscimed.2009.01.031.