

Perform now?! - The effect of imposed payment schemes on workers' performance

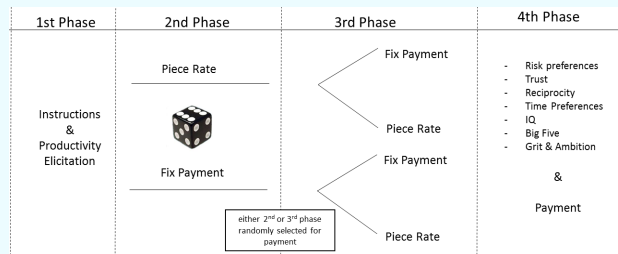
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Introduction

- How do workers react to an imposed remuneration scheme if sorting is not possible?
- What is the effect on output and stress?
- Real effort experiment in the lab to show how output and stress vary under a fixed payment and variable payment scheme

Experimental Design



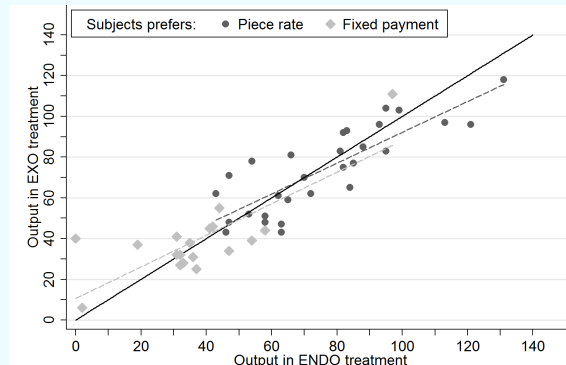
- EXO treatment: Subjects are selected into a payment scheme
- ENDO treatment: Subjects select payment scheme themselves
- Order of 2nd and 3rd phase was randomized
- Task: Multiplying two digit with a one digit number (Dohmen and Falk, 2011)

Results (1) – Productivity Determines Sorting

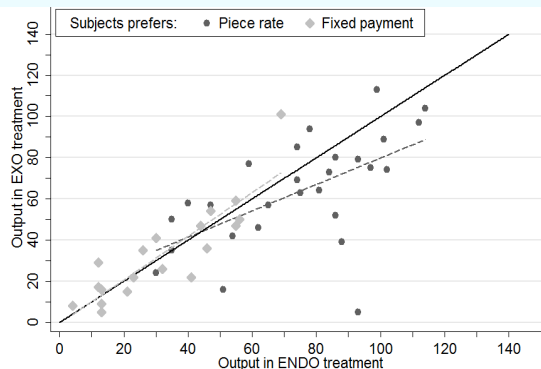
	Determinants of choosing a piece rate					
	(1)	(2)	(3)	(4)	(5)	(6)
	ENDO treatment			EXO treatment		
Productivity	0.0361** (0.014)	0.0355*** (0.0124)	0.0444** (0.0178)	0.00145 (0.00452)	0.00291 (0.00471)	0.00582 (0.00534)
Female		-0.0984 (0.14)	-0.0228 (0.143)		0.131 (0.109)	0.164 (0.121)
ENDO treatment first		-0.0618 (0.116)	-0.0602 (0.121)		-0.128 (0.104)	-0.127 (0.109)
Risk attitude			-0.0381 (0.0258)			-0.0281 (0.0224)
Discount rate			0.214 (0.165)			-0.00969 (0.122)
Reciprocity			0.0628 (0.0408)			0.0301 (0.034)
Negative reciprocity			0.000943 (0.024)			0.00021 (0.0224)
Altruism			0.0127 (0.0385)			0.00281 (0.0277)
Observations	93	93	93	93	93	93

Note. The table shows marginal effects of the independent variables evaluated at the mean of a probit regression. The dependent variable takes the value 1 if the piece rate was chosen. Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Results (2) – Weak Reactions to Imposed Payment Schemes



- Within subject comparison: EXO treatment is piece rate
- Relationship between output in the EXO and ENDO treatment
- If subject prefers piece rate:
constant = 16.54 (7.716), slope = 0.756 (0.089), (standard error)
- If subject prefers fixed payment:
constant = 10.6 (10.222), slope = 0.775 (0.269), (standard error)



- Within subject comparison: EXO treatment is fixed payment
- Relationship between output in the EXO and ENDO treatment
- If subject prefers piece rate:
constant = 15.72 (10.218), slope = 0.641 (0.150), (standard error)
- If subject prefers fixed payment:
constant = -4.962 (5.318), slope = 1.0595 (0.194), (standard error)

Results (3) – Piece Rate Increases Stress

	Determinants of Stress			
	(1)	(2)	(3)	(4)
Productivity	-0.0167** (0.00688)	-0.0165** (0.00747)	-0.0166** (0.00755)	-0.0137* (0.00743)
EXO Treatment	0.114 (0.138)	0.135 (0.176)	0.116 (0.179)	0.103 (0.175)
Piece rate	0.867*** (0.148)	0.886*** (0.193)	0.846*** (0.238)	0.820*** (0.231)
Preference for fix payment		0.0405 (0.291)	0.000632 (0.333)	-0.0734 (0.328)
EXO x prefers fix payment		-0.0478 (0.334)	-0.0578 (0.344)	-0.0112 (0.334)
EXO x prefers fix x piece rate			0.099 (0.411)	0.0565 (0.398)
1 if Female				0.408*** (0.154)
Observations	186	186	186	186
R-squared	0.214	0.214	0.214	0.248
Joint coefficient interactions	-	-	1.004***	.968***

Note. The table shows linear regressions with the standardized behavioral measure of stress as dependent variable. The last row indicates the coefficient of the linear combination if EXO, piece rate and prefers fix payment take the value 1. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Conclusion

1. Imposing a piece rate does not increase performance of "fixed workers"
2. Imposing a fixed payment does not decrease performance of "piece raters"
3. One of the driving factors behind a sorting decision is an individual's productivity. Conditional on productivity preferences do not seem to matter for the sorting decision
4. A variable payment always increases stress levels
5. Imposing a payment scheme seems to be ineffective and inefficient to increase output

References

- Cadsby, C. Bram, Fei Song, and Francis Tapon. 2007. "Sorting and Incentive Effects of Pay-for-Performance: An Experimental Investigation." *Academy of Management Journal*, 50(6): 387-405.
- Dohmen, Thomas, and Armin Falk. 2011. "Performance Pay and Multi-dimensional Sorting: Productivity, Preferences and Gender." *American Economic Review*, 101(2): 556-590.
- Lazear, Edward P. 2000. "Performance, Pay and Productivity." *American Economic Review*, 90(5): 1346-1361.

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