Performance Pay and Assortative Matching

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Abstract

We show that couples sort on performance pay with dual receipt couples much more likely than predicted by random. In addition, we show that the return to performance pay appears largely invariant to whether or not one's spouse earns performance pay. This implies that the distribution of family income will be less equitable than that of individual income as sorting concentrates the performance pay return among households with higher pay.

JEL Codes: J12, J33

Keywords: Performance Pay; Assortative Matching.

1. Introduction

In the past three decades performance pay receipt has risen, especially among high pay workers (Lemieux et al., 2009; Bell and Van Reenan, 2015). This has been associated with increased individual earnings inequality although the extent varies by country (Lemiuex et al. 2009 and Bryan and Bryson 2016). Assortative matching on education has also risen (Schwartz and Mare, 2006) and has also been associated with increased earnings inequality among households (Greenwood et al, 2014).

We link these literatures examining whether spouses match on performance pay receipt. Such matching would concentrate performance pay premiums within families creating a greater increase in household than in individual inequality. This conclusion rests on performance pay earnings premiums being independent of the number of performance pay earners in the family.

Parts of theory argue against matching. Performance pay represents riskier compensation causing risk averse couples to hedge with one performance pay and one fixed pay contract. Indeed, in matching markets agents facing very different risk profiles will match to share them (Lia et al, 2016). Performance pay designed to elicit effort may also generate specialization in which one spouse concentrates on market work taking a performance pay job while the other concentrates on home production taking a lower effort non-performance pay job (Heywood and Parent 2017).

Alternative theory argues for matching. Many couples meet at work and performance pay provision differs by workplaces. Moreover, high ability workers will both match and sort into performance pay. Similarly, risk tolerance may cause individuals to both seek performance pay and marry those with similar risk preferences (Bacon et al. 2014).

These arguments make matching on performance pay an empirical issue, as is the earnings consequence of both partners receiving performance pay. Brown (1990) argues that while performance pay typically creates incentives for greater productivity and earnings, it can also

provide a low productivity and earnings alternative to those unable or unwilling to get a fixed pay job. In this view specialization leads one spouse to a performance pay job that like self-employment, allows more home production. The total premium for both spouses receiving performance pay is lower than implied by two individual premiums. On the other hand, "power couples" (Costa and Kahn 2000) may both receive performance pay and be highly committed to market work. This reinforces itself encouraging greater work effort and yielding higher pay than implied by individual premiums. Such cross-productivity influences could also result from one spouse learning how to succeed in performance pay jobs from the other (Huang et al. 2009).

2. Data and Method

We draw data from the British Household Panel Survey (BHPS) from 1998 to 2008; before 1998 performance pay information was less detailed. The BHPS allows us to observe couples, performance pay and earnings for all adult household members. It provides measures for receiving individual performance pay (IPP) and for bonuses (see Green and Heywood, 2016). We limit our sample to married, different sex couples both between 20 and 65 and working at least 20 hours/week.

INSERT TABLE 1

Tables 1a and 1b cross-tabulate the receipt of performance pay by spouses and provide initial evidence of matching. If spouses matched randomly, the predicted share of households both receiving IPP would be .086 when it is actual .102. Thus, the extent of above random (excess) matching is over 19 percent for those receiving IPP and it is over 32 percent for those receiving bonuses.

We further examine the relationship between own and partner's receipt by estimating variants of:

$$\Pr(PP_{it}) = \alpha PP_{jt} + \boldsymbol{X_{ijt}}'\beta \qquad (1)$$

Here i indexes individuals and j their partners, PP indicates performance pay receipt and X is a vector of controls. α provides the conditional relationship between partners and own PP receipt, α>0 indicates assortative matching in PP receipt.

We next examine the influence of variations in within household PP receipt on earnings. We estimate variants of the following log wage equation separately by gender:

$$Ln\text{Wage}_{ijt} = \gamma PPOnlyOwn_{ijt} + \theta PPOnlySpouse_{ijt} + \rho Dual_{ijt} + \boldsymbol{X_{ijt}}'\beta \qquad (2)$$

Wage_{ijt} is the earnings of spouse i in household j at time t. $PPOnlyOwn$ is whether that worker i is the only spouse in household j to receive performance pay, $PPOnlySpouse$ is whether worker i's spouse is the only one to receive performance pay in household j and Dual is whether both spouses in household j receive performance pay.

We compare coefficients γ and ρ. If $\gamma > \rho$, the premium of worker i is lower when the spouse earns performance pay. If $\gamma < \rho$, the premium of worker i is higher when the spouse earns performance pay. For women the first would suggest specialization in non-market work and the second concentration on market work.

The second test involves the coefficient θ. This measures the influence on the wages of a worker without performance pay wages when the spouse earns performance pay. Again, a negative sign for women might indicate reducing effort or specializing less in market work. Alternatively, a positive sign could again suggest concentration in work effort, even if not result taking a performance pay job. We extend this by including individual fixed effects.

4. RESULTS

Table 2 reports probit marginal effects of the conditional correlation between partner (PP$j)$ and own performance pay receipt (PP$i)$ at time t.

INSERT TABLE 2

Clearly, spouses associate based on type of performance pay not merely the presence of any performance pay. Men are 4.8 percentage points more likely to receive if their spouse does while women are 4 percentage points more likely to receive IPP if their spouse does. Despite the many added controls, these are much larger differences than implied by the simple cross-tabulation. Similar estimates are also found for bonuses. The proportional influence for women is far larger as the mean levels of IPP and bonuses are 18 and 36 percent for males but only 13 and 25 percent for women.

Table 3 reports estimates of (2) by pooled OLS and fixed effects where the control variables include typical earnings controls for both worker i and their spouse. This is motivated by the desire to hold constant other household factors that influence individual effort (labor supply) and choice of a performance pay job. Full estimates are available on request.

These estimates report the influence on own earnings of three states of the world relative to a couple where neither receive performance pay. For each performance pay type these are (1) the focal individual receives the household's only performance pay; (2) the spouse receives the household's only performance pay; or (3) both spouses receive performance pay.

INSERT TABLE 3

Column 1 and 3 show that the returns for own receipt are broadly similar across genders with .092 log wages associated with only males earning IPP while for only females is .100 log wages. The premium is .092 when only males earn bonuses and .076 when only women earn bonuses. In neither case are the gender differences significant.

The next comparison shows small and statistically insignificant increases in own earnings for women when their spouse earns performance pay but they do not. Males, however, appear to have about .3 higher log earnings when their spouse receives performance pay and they do not. This could indicate joint concentration of effort toward work.

Finally, we examine dual receipt. The male returns are virtually identical in the dual receipt case as in own receipt alone. The female returns suggest a larger return to dual receipt. It is half again as large and significantly different at a 10% level. The female dual bonus receipt case is slightly but insignificantly smaller from own receipt alone.

To control for unmeasured heterogeneity, we estimate specifications with individual fixed effects (columns 2 and 4 of Table 3). The coefficients on performance pay are smaller as one would anticipate after controlling for ability sorting and other unmeasured. Nonetheless, both men and women earn positive premiums for performance pay of around 4 or 5 percent when the spouse does not earn performance pay.

Dual receipt is associated with returns for both men and women that are of a similar magnitude to own receipt. While these coefficients vary slightly, own receipt is never significantly different from dual receipt. Receipt by a partner alone is never significant for females but it remains so for males whose spouse receives bonuses. Again, this is consistent with joint work intensification rather than specialization of production.

A further concern is that we limit specialisation by excluding marriages where one partner works less than 20 hours. In unreported estimates we re-estimate (2) allowing for any hours of work. The pattern of estimated coefficients is essentially unchanged.

5. CONCLUSION

We find evidence of substantial matching on performance pay but little evidence that the matching alters returns. Those who are the only spouse on performance pay seem to earn a return approximately equal to what they would earn if their spouse was also on performance pay. Thus, we argue that the matching helps increase inequality across households above that across individuals.

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TABLE 1a: Bonus

		Female		
		0	1	Total
	0	8,938	2,438	11,376
Male	1	4,529	1,810	6,339
	Total	13,467	4,248	
Excess Match		0.102/0.086 = 19.05%		

TABLE 1b: IPP

		Female		
		0	1	Total
	0	12,897	1,659	14,556
Male	1	2,633	522	3,155
	Total	15,530	2,181	
Excess Match		0.029/0.022 = 32.46%		

TABLE 2: Own and Partner's Rreceipt

VARIABLES	(3)	(4)	(5)	(6)
	IPP		Bonus	
	Male	Female	Male	Female
Partner IPP	0.0483***	0.0399***	-0.00102	-0.000285
	(0.0129)	(0.00958)	(0.0153)	(0.0107)
Partner Bonus	0.00992	-0.00196	0.0562***	0.0419***
	(0.00947)	(0.00678)	(0.0133)	(0.0101)
Observations	16,355	16,493	16,353	16487

*Standard errors clustered at individual level in parentheses. All models control for own and partner's age, age^2, educational level, hours of work, private sector employment, industry and occupation along with region and wave dummies. ***1%*

Table 3: Log Hourly Earnings, 1998-2008

VARIABLES	(1) Male OLS	(2) Male FE	(3) Female OLS	(4) Female FE
IPP (Own)	0.0916***	0.0396***	0.100***	0.0543***
	(0.0116)	(0.00626)	(0.0139)	(0.00840)
IPP (Partner)	0.0320**	0.00439	0.0111	0.00412
	(0.0140)	(0.00773)	(0.0104)	(0.00680)
IPP (Dual)	0.103***	0.0244*	0.150***	0.0669***
	(0.0255)	(0.0130)	(0.0234)	(0.0141)
Bonus (Own)	0.0916***	0.0381***	0.0756***	0.0474***
	(0.0106)	(0.00567)	(0.0126)	(0.00758)
Bonus (Partner)	0.0273**	0.0225***	-0.000223	0.000806
	(0.0129)	(0.00698)	(0.00967)	(0.00613)
Bonus (Dual)	0.0901***	0.0462***	0.0667***	0.0370***
	(0.0163)	(0.00836)	(0.0145)	(0.00910)
Observations	16,003	16,003	16,006	16,006
R-squared	0.387		0.477	
Groups		3,538		3,534

*All models control for own and partner's age, age^2, educational level, hours of work, private sector employment, industry and occupation along with region and wave dummies. Standard errors are clustered at the individual level. **,*** 5% and 1%*