Career Concerns and Career Choice

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NET Institute Conference, May 2009
Motivation

“Nothing will ever become of you, Einstein!” – quote attributed to a teacher of Albert Einstein. People are better informed about their own talent than others.

“A doctor’s reputation is made by the number of eminent men who die under his care.” – George Bernard Shaw. Reputation has a different effect in high and low visibility jobs; examples of high visibility (performance observed by everyone) vs low visibility (performance observed by current employer):

- open source versus closed source software development
- CEOs of publicly listed companies with large media exposure versus CEOs of firms funded by private equity
- academia (publications publicly visible) versus private industry
- politicians in federal and state versus local governments
Main Result

Questions:

- Do workers exert more effort in high visibility jobs or in low visibility jobs? They may exert less effort in high visibility jobs.
- Do firms invest in more general human capital in high or low visibility jobs? Possibly more in high visibility jobs.
- (Do workers exert more effort in jobs with performance based payments or with fixed wages? (conjecture)) Possibly more in fixed wage jobs.
- Are workers willing to incur costs to participate in high visibility jobs? Yes.

Basic Intuition: career choice effect: more effort and choice of high visibility job are substitutes for signaling high ability; the latter may crowd out the former.
Related Literature

- Career Concerns: Fama (80), Holmstrom (82), Gibbons and Murphy (92), Dewatripont, Jewitt and Tirole (99), ...
- Human Capital: Becker (64), Acemoglu and Pischke (98), ...
- Information Disclosure: Mukherjee (08a,b), Bar-Isaac, Jewitt and Leaver (07)
- Informational Advantage of Current Employer: Waldman (84), Greenwald (86), Hermalin (02), Li (07)
- Career Concerns in Open Source: Johnson (02), Lerner and Tirole (01), Lee, Moisio, and Weiss (03), Leppamaki and Mustonen (03), Spiegel (05)
- Reputational Concerns of Politicians: e.g. Suurmond, Swank and Visser (04)
Basic Model

- two periods
- competitive industry of employers (zero expected profits)
- two types of workers:
  - fraction $\lambda$: talented (T), probability of success $p(e)$
  - fraction $1 - \lambda$: untalented (U), probability of success 0
- worker observes signal about ability, $\sigma \sim G_T, G_U$, monotone likelihood ratio property; implies posterior probability of being talented $\eta$ (most of paper: distribution with two mass points $\eta_1$ and $\eta_2$)
- first period profits: high visibility $\pi_s^s$, $\pi_f^s$
  - low visibility $\pi_s^f$, $\pi_f^f$
- net present value of second period expected productivity $\Pi_T$ and $\Pi_U$
Timing

1. period:
   1. Employee observes private signal $\sigma$ about his talent.
   2. Employee chooses either a high or a low visibility job.
   3. [Employee chooses effort $e$.] [The employer invests in human capital and thereby increases second period productivity.]
   4. The probability of success is $p(e)$ for talented and 0 foruntalented workers.
   5. Success or failure are observed by the current employer for low visibility jobs and by all employers for high visibility jobs.

2. period: outside offers and renegotiation; for low visibility job bargain about surplus: employee gets $\alpha$, employer $1 - \alpha$ of surplus (Nash bargaining solution)
Outcome Basic Model

for $p = 1$

separating equilibrium: low visibility $\eta = \eta_1$, high visibility $\bar{\eta} = \eta_2$

($\eta < \bar{\eta}$)
Effort

probability of success $p(e)$ depends on effort $e$ ($p' > 0$, $p'(0) = \infty$, $p'(\infty) = 0$, $p'' < 0$, and $p(0) > 0$)

effort relevant utility in high visibility job:

$$\bar{U}(e, \hat{e}) := \eta p(e) \Pi_T + (1 - \eta p(e)) \Pi_\bar{F}(\hat{e}) - e,$$

where $\hat{e}$ is firms’ expectations of equilibrium effort and

$$\Pi_\bar{F}(\hat{e}) = E[\Pi | \bar{F}, \hat{e}] = \frac{(1 - p(\hat{e}))\eta}{1 - \eta p(\hat{e})} \Pi_T + \frac{1 - \eta}{1 - \eta p(\hat{e})} \Pi_U$$

effort relevant utility in low visibility job:

$$\underline{U}(e, \hat{e}) := \eta p(e)[\alpha \Pi_T + (1 - \alpha) \Pi_\bar{F}(\hat{e})] + (1 - \eta p(e)) \Pi_\bar{F}(\hat{e}) - e,$$
Equilibrium Effort Level

Equilibrium effort levels given by first-order conditions
\[ U_e(e, \bar{e}) = 0 \] and
\[ U_e(e, e) = 0 \]

\[ U_e(e, e) < U_e(e, \bar{e}) \] for all \( e \) implies \( \bar{e} < e \) (in stable equilibria, i.e. \( dU_e(\bar{e}, \bar{e})/d\bar{e} < 0 \) and \( dU_e(e, e)/de < 0 \) )
Equilibrium Effort Level

\[ \overline{U}_e(e, e) < U_e(e, e) \iff \overline{\eta} \frac{1 - \overline{\eta}}{1 - \overline{\eta} p(e)} < \alpha \eta \frac{1 - \eta}{1 - \eta p(e)}, \quad \forall e \]

for \( \overline{\eta} \approx 1 \): no effort in high visibility job
for \( \eta \approx \overline{\eta} \): more effort in high visibility job
Separating Equilibrium

\[ \bar{u}_1 + \bar{U}(\bar{e}, \bar{e}) \bigg|_{\eta=\bar{\eta}} \geq u_1 + U(\bar{e}_d, \bar{e}) \bigg|_{\eta=\bar{\eta}} \]

for the high visibility worker and

\[ \bar{u}_1 + \bar{U}(\bar{e}_d, \bar{e}) \bigg|_{\eta=\bar{\eta}} \leq u_1 + U(e, e) \bigg|_{\eta=\bar{\eta}} \]

for the low visibility worker; \( \bar{e}_d, \bar{e}_d \): effort of a high (low) visibility worker when deviating; \( \bar{u}_1, u_1 \): first period utility

Example

\( \pi_s = 5, \pi_f = 4, \pi_s = 1.73, \pi_f = 0.73, \Pi_T = 5, \Pi_U = 0, \bar{\eta} = \frac{9}{10}, \eta = \frac{1}{4}, \) and \( p(e) = 1 - \frac{1}{e^{3/4} + 1}. \) The resulting equilibrium effort level is \( \bar{e} \approx 0.0111792 \) for the high and \( e \approx 0.0119152 \) for the low visibility worker. 

\( \Rightarrow e < \bar{e} \) and separating equilibrium
Investment in General Human Capital

- firms invest $i \geq 0$, second period productivity is $\Pi_T(i)$, $\Pi_U(i)$
- $\Delta \Pi(i) := \Pi_T(i) - \Pi_U(i)$ with $\Delta \Pi > 0$, $\Delta \Pi' > 0$, $\Delta \Pi'' < 0$, $\Delta \Pi'(0) = \infty$, $\Delta \Pi'(\infty) < 1$
- prob of success $p = 1$
- prob of performance being publicly observed $\alpha < \bar{\alpha} \leq 1$
- low visibility firms’ profits
  $$-i + (1 - \alpha) \bar{\eta} \Delta \Pi(i)$$
  (high visibility: $\bar{\eta}$, $\bar{\alpha}$ instead of $\eta$, $\alpha$)
Equilibrium Investment Level

First-order conditions

\[(1 - \alpha)\eta \Delta \Pi'(i) = 1\]
\[(1 - \overline{\alpha})\overline{\eta} \Delta \Pi'(\overline{i}) = 1\]

- Becker (64): \(\alpha = \overline{\alpha} = 1 \Rightarrow i = \overline{i} = 0\) (no investment in general human capital)

- Acemoglu and Pischke (98): \(\eta = \overline{\eta}, \alpha < \overline{\alpha} \leq 1 \Rightarrow i > \overline{i} \geq 0\) (positive investment in general human capital)

- \(\eta < \overline{\eta}\) and \(\alpha < \overline{\alpha} < 1\): possibly \(i < \overline{i}\) (non-monotonicity of \(i\) with respect to \(\alpha\); career choice effect)
Discussion

- costs of visibility $\pi - \bar{\pi}$: literally or because of liquidity constraints/risk aversion
- results also hold for multiple visibility levels $\alpha_i$ with $i = 1, ..., N$
Further Research

- further sufficient conditions when career choice effect dominates and when not (and when negligible)
- crowding out of implicit incentives (career concerns) by explicit incentives (performance based pay)
Conclusions

Strong version of main statement: Adding two realistic assumptions

- worker observes initial private signal
- worker can choose high/low visibility job

leads to career choice effect $\rightarrow$ can overturn standard results

- less effort in high visibility jobs
- more investment in general human capital in high visibility jobs

- (crowding out of implicit incentives by explicit incentives)

More subtle version of main statement: career choice effect dampens standard effects