

Bonus Culture:

Competitive Pay, Screening, and Multitasking

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Introduction

- Recent years: explosion of pay (levels and differentials), especially performance-based pay, at top echelons of many occupations
- Large bonuses and salaries needed, it is typically said, to “retain talent” and “top performers” in finance, corporations, medicine, academia, as well as to incentivize them to perform to the best of their high abilities.

- “There are other reasons to care about top pay. One is incentives. The role of pay is not to get executives to work harder (most are workaholics already, toiling towards an appointment with the heart surgeon), but to **recruit good managers** and get them to take difficult decisions. Shutting a subsidiary, sacrificing a pet project or forgoing a tempting acquisition is not much fun. Without the **spur of high pay**, managers tend to avoid such things” .

(The Economist, Special report on executive pay, 04/2012)

- Yet trend has been accompanied by mounting revelations of dismal performance, severe moral hazard, outright fraud  
- Often impose negative spillovers on rest of society (bailouts), but even when not, firms involved themselves ultimately suffer:
 - ▶ Large trading losses, declines in stock value, loss of consumer goodwill, regulatory fines and legal liabilities, bankruptcy.
- Impact of pay supposed to retain and incentivize “talent” thus somewhat of puzzle; also with respect to existing literature:
 - ▶ Papers defending high pay packages = based on competitive, efficient allocation of managers to firms
 - ▶ Papers criticizing them = based on failures of competition: capture, rents (CEO’s “setting their own pay”), or externalities on third parties (consumers, environment, taxpayers)



"Acting responsibly is below my pay grade."



This work

- Labor market competition can interact with incentive structure inside firms to undermine **work ethics** –the extent to which agents “do the right thing” (for the firm; a fortiori for society) beyond what material self-interest commands
 - ▶ Increased competition: technical change (IT, general vs. firm-specific skills), entry / internationalization, reduced mobility costs deregulation of certain labor markets
- **Two mechanisms for destructive escalation of pay**
 - ▶ This paper: multitasking, screening and competition
 - ▶ Other paper: reputation, corporate culture and competition
- Common feature: increased competition makes it more difficult for firms to properly balance benefits and costs of high-powered incentives ⇒ “bonus culture” reducing efficiency

Rise and role of performance pay

- Lemieux et al. (2009) show that has been an important contributor to the rise in US wage inequality
 - ▶ Fraction of jobs explicitly paid based on performance: 38% in the 1970s ↗ 45% in the 1990s
 - ▶ Returns to both observable skills (education, experience, job tenure) and unobservable ones much larger in such jobs
 - ▶ Interaction of these two factors can account for 21% of increase in variance of male log -wages, and for $\approx 100\%$ above 80th percentile

Increased competition for talent

- Frydman (2005): skills & careers of top executives, 1936-2003:
 - ▶ General increase in human capital + important shift (since 70's) from **firm-specific** skills to more **general** managerial ones (e.g., engineering degrees \rightsquigarrow MBA's).
 - ▶ Diversity of managers' sectoral experiences acquired over course of their careers also steadily increased
 - ▶ Argues that these decreases in mobility costs have intensified competition for managerial skills
 - ▶ Executives with a higher general human capital received higher compensation, were most likely to switch companies

Fabbri-Marin (2011)

- ▶ Show that domestic and (to a lesser extent) global **competition for managers** has contributed significantly to the rise of executive pay in Germany, particularly in banking sector.

"Talent quickly migrated from investment banks to hedge funds and private equity. Investment banks, accustomed to attracting the most-talented executives in the world and paying them handsomely, found themselves losing their best people (and their best MBA recruits) to higher-paid and, for many, more interesting jobs... Observing the remarkable compensation in alternative assets, sensing a significant business opportunity, and having to fight for talent with this emergent industry led banks to venture into proprietary activities in unprecedented ways. From 1998 to 2006 principal and proprietary trading at major investment banks grew from below 20% of revenues to 45%. In a 2006 Investment Dealers' Digest article... one former Morgan Stanley executive said... that extravagant hedge fund compensation...was putting upward pressure on investment banking pay, and that some prop desks were even beginning to give traders "carry." Banks bought hedge funds and private equity funds and launched their own funds, creating new levels of risk within systemically important institutions and new conflicts of interest. By 2007 the transformation of Wall Street was complete. Faced with fierce new rivals for business and talent, investment banks turned into risk takers that compensated their best and brightest with contracts embodying the essence of financial-markets-based compensation." (Desai 2012, The Incentive Bubble).


Related literature

- Executive / managerial compensation
 - ▶ Rosen 1981, Bertrand-Mullainthan 1999, Bebchuk-Fried 2004, Frydman-Saks 2005, Hermalin 2005, Gabaix-Landier 2008, Acharya et al. 2011, 2012...
- Multitasking
 - ▶ Holmstrom-Milgrom 1991, Itoh 1991, Dewatripont et al. 1999, Fehr-Schmidt 2004, Kosfeld-von Siemens (2011)...
- Competitive screening
 - ▶ Rothschild-Stiglitz 1976, Armstrong 2001, Rochet-Stole 2002, Bartling et al. 2011...
- Intrinsic, extrinsic and reputational motivations
 - ▶ Frey 2000, Bénabou-Tirole 2003, 2006, Besley-Ghatak 2005, Besley 2006, Ellingsen-Johannesson 2008...

Preferences and technology

- Agents (workers) exert efforts a, b in activities A, B

$$U(a, b; \theta, y, z) = va + (\theta + b)y + z - C(a, b).$$

- Activity A : long-term investments, cooperation, teamwork...
 - ▶ Not (easily) measurable \Rightarrow cannot be contracted upon:
 - ▶ Effort a driven only (simplification) by intrinsic motivation v : altruism, company spirit, love of job well done, etc. 
 - ▶ Value v for this "ethical" task is common (here)
- Activity B : individual output, sales, short-term revenue...
 - ▶ Measured \Rightarrow affine compensation $(\theta + b)y + z$
(unrestricted nonlinear contracts \rightsquigarrow similar results)
 - ▶ Productivity $\theta + b$, talent $\theta \in \{\theta_H, \theta_L\}$ is private information
- Effort cost $C(a, b)$ increasing & convex in (a, b) , with $C_{ab} > 0$

Worker behavior and utilities

- When facing contract (y, z) , agent θ solves

$$\max_{(a,b)} \{va + (\theta + b)y + z - C(a, b)\} \Rightarrow a(y) \downarrow, b(y) \uparrow$$

- Utility:

$$\begin{aligned} U(y; \theta, z) &= va(y) + yb(y) - C(a(y), b(y)) + \theta y + z \\ &\equiv u(y) + \theta y + z \end{aligned}$$

- ▶ “Allocative” term $u(y)$ depends on endogenous efforts
 - ▶ “Redistributive” one, $\theta y + z$, does not
- Outside option $\bar{U} \Rightarrow$ participation constraint:

$$U(y; \theta, z) = u(y) + \theta y + z \geq \bar{U}$$

Firms and social welfare

- Profit from worker θ under contract (y, z)

$$\begin{aligned}\Pi(\theta, y, z) &= Aa(y) + (B - y) [\theta + b(y)] - z \\ &\equiv \pi(y) + B\theta - (\theta y + z).\end{aligned}$$

- ▶ Allocative term $\pi(y)$ – redistributive term + surplus $B\theta$

- Social surplus from worker θ under contract (y, z)

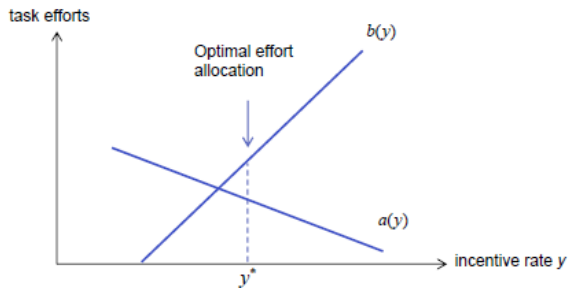
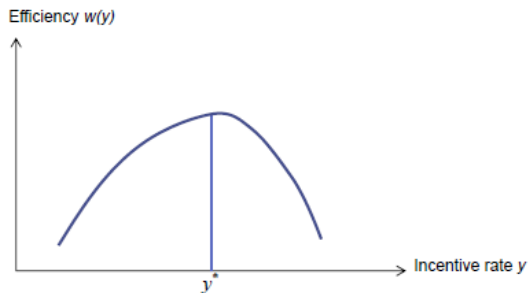
$$W(\theta, y) = u(y) + \pi(y) + B\theta \equiv w(y) + B\theta$$

Assume w strictly quasi-concave, maximum at y^* , $w'(y^*) \equiv 0$

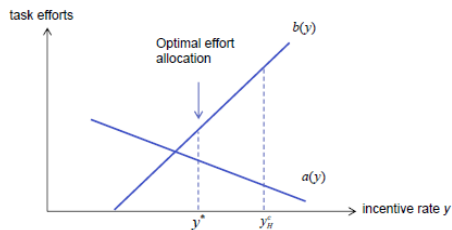
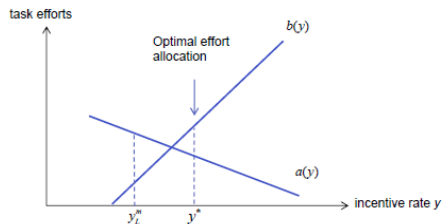
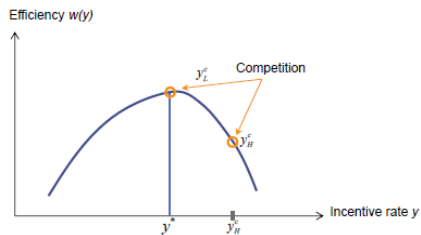
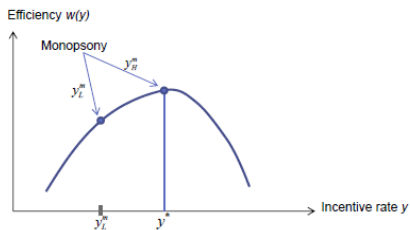
$$w'(y) = Aa'(y) + (B - y)b'(y)$$

- If “ethical” task a also has spillovers on rest of society (consumers, environment, taxpayers): evaluate $w(y) + e \cdot a(y)$. Will only strengthen the key results.

Optimal task allocation



Visual preview of basic results



Monopsony employer (or collusion)

- Assume wants to employ both types. True iff q_L not too low
- Selects menu of contracts $\{y_i, z_i\}_{i \in \{L, H\}}$ to maximize

$$\max_{(y, z)} \left\{ \sum_{i=1,2} q_i [\pi(y_i) + (B - y_i)\theta_i - z_i] \right\}$$

subject to incentive constraints:

$$u(y_i) + \theta_i y_i + z_i \geq u(y_j) + \theta_i y_j + z_j \quad \text{for } i = H, L$$

and low-productivity type's participation constraint

$$u(y_L) + \theta_L y_L + z_L \geq \bar{U}.$$

- Familiar from contracting literature:

- ▶ $y_H \geq y_L$: power of incentives non-decreasing in type
 - ▶ Low type's participation constraint is binding, $U_L = \bar{U}$
 - ▶ High type's rent equals extra utility obtained by mimicking low type: $U_H = \bar{U} + (\Delta\theta)y_L$
- Monopsonist thus solves:

$$\max_{(y, z)} \left\{ \sum_{i=1,2} q_i [w(y_i) + B\theta_i] - \bar{U} - q_H(\Delta\theta)y_L \right\} \Rightarrow$$

$$y_H^m = y^*, \quad q_L w'(y_L^m) = q_H \Delta\theta, \quad \text{implying } y_L < y^*$$

- Indeed optimal to hire both types iff

$$q_L [w(y_L^m) + B\theta_L - \bar{U}] \geq q_H y_L^m \Delta\theta \iff q_L \geq \underline{q}_L$$

Proposition (monopsony employer)

Suppose that monopsonist wants to employ both types ($q_L \geq \underline{q}_L$). Then $y_H^m = y^*$ and $y_L^m < y^*$ is given by

$$w'(y_L^m) = \frac{q_H}{q_L} \Delta\theta$$

The welfare loss is $L^m = q_L [w(y^*) - w(y_L^m)]$

- No distortion at the top + firm gives suboptimally low-powered incentives to L type, so as to reduce rents $y_L \Delta\theta$ left to H type
- L^m rises with $\Delta\theta$, e.g. higher θ_H (SBTC). Mean-preserving spread in θ reduces total welfare

Perfect competition

- Large number of firms compete for workers, free entry
 - ▶ Offers incentive-compatible menus $\{y_i, z_i\}_{i \in \{L, H\}}$
 \Rightarrow worker utilities $\{U_L, U_H\}$
 - ▶ Let (y_H, z_H) and (y_L, z_L) denote contracts selected in equilibrium by H and L agents, respectively
- Characterize **separating competitive equilibrium allocation** (zero profits and no cross-subsidies). Then, investigate existence and uniqueness of equilibrium
- In such an allocation, each operating contract makes zero profit

$$\Pi(\theta_H, y_H, z_H) = 0 \iff \pi(y_H) + (B - y_H) \theta_H = z_H,$$

$$\Pi(\theta_L, y_L, z_L) = 0 \iff \pi(y_L) + (B - y_L) \theta_L = z_L,$$

\Rightarrow pins down z_H and z_L .

- In separating equilibrium, L type must receive his symmetric-information efficient allocation:


$$y_L^c = y^* \quad \text{and} \quad z_L^c = \pi(y^*) + (B - y^*)\theta_L.$$

- Low type should not benefit from mimicking the high type:

$$w(y^*) + B\theta_L \geq u(y_H) + \theta_L y_H + z_H = w(y_H) + B\theta_H - y_H \Delta\theta.$$

- Most attractive separating contract for H types involves minimum distortion, subject to unappealing to L types

$$w(y_H^c) = w(y^*) - (B - y_H^c) \Delta\theta.$$

- Uniquely defines y_H^c , with $y^* < y_H^c < B$
- Show that no profitable deviation from this **least-cost separating** allocation when q_L not too low (\sim Rothschild-Stiglitz 1976) 

Proposition (perfect competition)

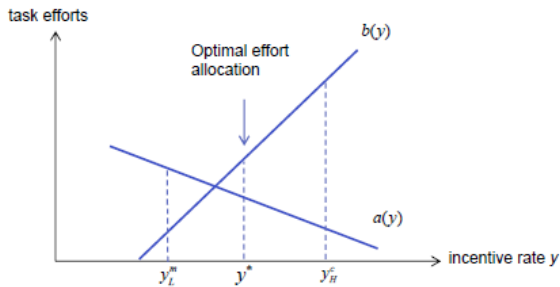
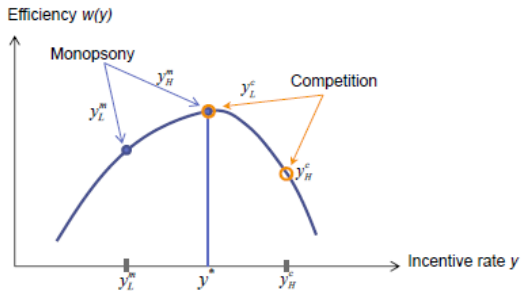
Let $q_L \geq q_L^*$. The unique competitive equilibrium involves two separating contracts, both resulting in zero profit:

- Low-productivity workers get (y_L^c, z_L^c) with $y_L^c = y^*$
- High-productivity ones get (y_H^c, z_H^c) , where $y_H^c > y^*$ is given by

$$w(y^*) - w(y_H^c) = (B - y_H^c)\Delta\theta.$$

- The welfare loss is $L^c = q_H [w(y_L^*) - w(y_H)] = (B - y_H) q_H \Delta\theta$

- Now opposite distortion: gives **too high-powered** incentives to H types, so as to attract them, screen out L types
- L^c rises with A and also with $\Delta\theta$, e.g. higher θ_H (SBTC)
Mean-preserving spread in θ reduces total welfare



Welfare: monopsony versus competition

- Single task ($A = 0$) : competitive outcome $y^c = y^*$ efficient
- Multitasking: $L^m < L^c$ iff

$$q_L [w(y^*) - w(y_L^m)] < q_H [w(y^*) - w(y_H^c)]$$

- ▶ Occurs when competition pushes y_H^c above y^* by (sufficiently) more than monopsony depresses y_L^m below y^*
- ▶ Quadratic cost: $C(a, b) = a^2/2 + b^2/2 + \gamma ab \implies$

Proposition

With quadratic cost, social welfare is lower under competition than under monopsony iff

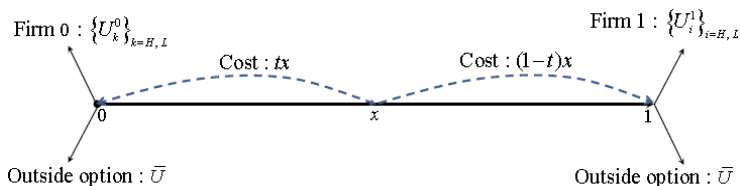
$$\frac{q_H}{2q_L} + \sqrt{\frac{q_H}{q_L}} < \left(\frac{\gamma}{1 - \gamma^2} \right) \left(\frac{A}{\Delta\theta} \right).$$

Imperfect Competition

- How does intensity of labor market competition affect levels and structure of compensation, task allocations, profits, welfare?
⇒ Develop Hotelling-like variant to parametrize competitiveness
- Unit continuum of workers, uniformly distributed on $x \in [0, 1]$
- Two multitask firms, $k = 0, 1$, at each end, can recruit them
 - ▶ Worker located at x chooses to work for Firm 0 (resp., 1) ⇒ cost equal to the distance tx (resp., $t(1 - x)$)
 - ▶ θ and x are independent; x not observable by employers, ⇒ cannot condition contracts on it
- Outside options: in standard Hotelling model, agents can also “stay put” and reap a fixed \bar{U} .
 - ▶ But then t affects not only competitiveness *within* the market (firm 1 vs. 2) but also, mechanically, that of the *outside* option

Modified Hotelling

- “Co-located outside option”: instead of receiving \bar{U} for free, agents must “go and get it” at either the end of $[0, 1] \Rightarrow$
 - ▶ Same cost tx or $t(1-x)$ as if choose firm 0 or firm 1



- Participation constraint now **unaffected** by t . Also, sensible:
 - ▶ Two business districts, each with multitask firm + competitive fringe or informal sector where everyone has productivity \bar{U}
 - ▶ Each agent produces \bar{U} “at home”, but then must travel or adapt to one or the other marketplace to sell his output

Screening with imperfect competition

- Each firm $k = 0, 1$ offers an incentive-compatible menu of compensation schemes $\{y_i^k, z_i^k\}_{i=H,L}$, in which workers who opt for this employer self-select. Utility provided by firm k to type i :

$$U_i^k \equiv u(y_i^k) + \theta_i y_i^k + z_i^k.$$

- Worker of type i , located at x , chooses firm $k = 0$ vs. iff $\ell = 1$,

$$U_i^k - tx \geq \max \{ \bar{U} - tx, \bar{U} - t(1-x), U_i - t(1-x) \}$$

- First inequality $\Rightarrow U_i^k \geq \bar{U}$. In any equilibrium in which both firms attract L -types, therefore, $U_i^\ell \geq \bar{U} \Rightarrow$ second inequality is redundant. Firm k 's share of workers of type i is then

$$x_i^k(U_i^k, U_i^\ell) = \frac{1}{2} + \frac{U_i^k - U_i^\ell}{2t}$$

- Firm k thus chooses (U_L, U_H, y_L, y_H) to solve:

$$\begin{aligned} \max \{ & q_H [U_H - U_H^\ell + t] [w(y_H) + \theta_H B - U_H] \\ & + q_L [U_L - U_L^\ell + t] [w(y_L) + \theta_L B - U_L] \} \end{aligned}$$

subject to:

$$\begin{aligned} U_H &\geq U_L + y_L \Delta \theta && (\mu_1) \\ U_L &\geq U_H - y_H \Delta \theta && (\mu_2) \\ U_L &\geq \bar{U} && (v) \end{aligned}$$

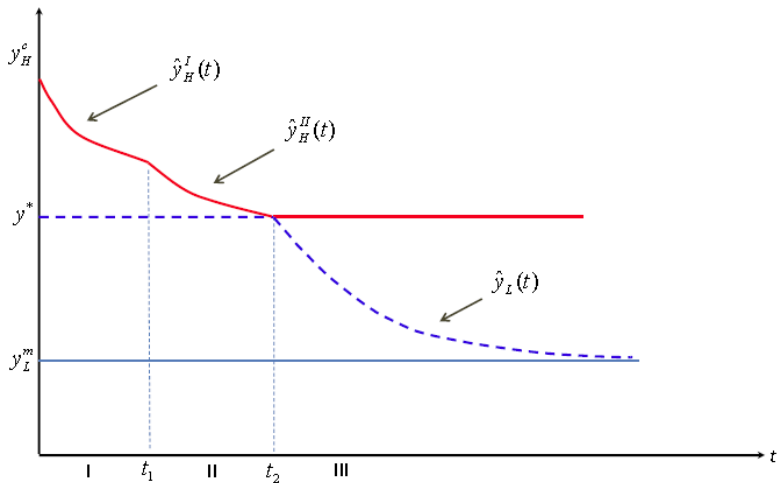
- Solve for symmetric equilibrium contracts / mechanisms
 - ▶ Also check equilibrium against deviations to “cornering” the market(s) for H or L , or conversely dropping out L 's.

Solving for equilibrium: intuitions

- Large t , equilibrium should resemble monopsonistic one:
 - ▶ Main concern is limiting H types' rent \Rightarrow distort $y_L < y^* = y_H$
- Small t : equilibrium should resemble perfectly competitive one
 - ▶ Main concern is attracting H types \Rightarrow forces firm to offer $y_H > y^* = y$
- Firms 1 and 2 always competing for H types.
 - ▶ If t low enough, also for L types $\Rightarrow U_H > U_L > \bar{U}$
- As $t \nearrow$, H types' responsiveness to higher U_H declines \Rightarrow can afford to give them lower or rent, $y_H \Delta \theta$ or $y_L \Delta \theta \Rightarrow$
 - ▶ y_H, y_L nonincreasing in t .

Proposition (Imperfect competition)

There exists unique $t_2 > t_1 > 0$ such that unique equilibrium is:



Hotelling with screening: incentives of low and high types

Proposition (Imperfect competition)

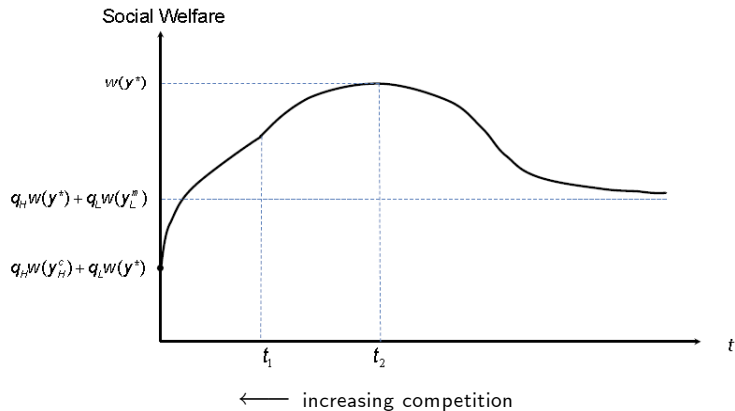
There exists unique $t_1 > 0$ and $t_2 > t_1$ such that:

- ① *Region I (strong competition): for all $t < t_1$,*
 - ▶ *Low type's IRC is not binding, $U_L > \bar{U}$*
 - ▶ *Low type's ICC binds: $U_H - U_L = \hat{y}_H(t)\Delta\theta$*
 - ▶ *Wages are $y_L = y^* < \hat{y}_H(t)$, strictly decreasing in t , from y_H^m .*
- ② *Region II (medium competition): for all $t \in [t_1, t_2)$,*
 - ▶ *Low type's IRC binds, $U_L = \bar{U}$*
 - ▶ *Low type's ICC binds: $U_H - U_L = \hat{y}_H(t)\Delta\theta$*
 - ▶ *Wages are $y_L = y^* < \hat{y}_H(t)$, strictly decreasing in t .*
- ③ *Region III (weak competition): for all $t \geq t_2$,*
 - ▶ *Low type's IRC binds: $U_L = \bar{U}$*
 - ▶ *High type's ICC binds: $U_H - U_L = \hat{y}_L(t)\Delta\theta$*
 - ▶ *Wages are $y_L = \hat{y}_L(t) < y^* = y_H$, with $\hat{y}_L(t)$ strictly decreasing in t and $\lim_{t \rightarrow +\infty} \hat{y}_L(t) = y_L^m$.*

The optimal degree of competition

Proposition

Social welfare is hill-shaped as a function of the degree of competition in the labor market, reaching the first-best at t_2 where $y_L = y^ = y_H$.*



Distribution of surplus

- How are gains and losses distributed among the different actors?

Proposition

*As labor market becomes more competitive (t declines), both U_H and U_L increase (the latter, weakly), but *inequality* in workers' utilities, $U_H - U_L$ always *strictly increases*. Total profits strictly decline.*

Income inequality

- Consider total earnings $Y_i \equiv [b(y_i) + \theta_i] y_i + z_i$, as well as separate contributions of performance-based and fixed pay

Proposition

As labor market becomes more competitive, both Y_H and Y_L increase (weakly). Furthermore,

- 1 *Over Regions I and II (high and medium competition), inequality in total pay $Y_H - Y_L$ rises, as does its performance-based component. Inequality in fixed wages declines.*
- 2 *Over Region III (low competition), inequality in performance pay declines, while inequality in fixed wages rises. Inequality in total pay thus need not be monotonic. With quadratic costs, a sufficient condition for it to be is $B \leq \gamma A + (1 - \gamma^2)\Delta\theta$.*

- Consistent with Lemieux et al. (2009), Frydman (2007), Frydman and Saks (2005)

Regulating pay

- Focus on case of perfect competition, most relevant

Proposition (efficient bonus cap)

If the regulator caps bonuses at y^ , the only equilibrium is a pooling one in which all firms offer, and all workers take, the single contract $(y^*, \pi(y^*) + (B - y^*)\bar{\theta})$, thereby restoring the first best.*

- May not be so simple, if firms can:
 - ▶ Relabel fixed and variable compensation \Rightarrow only total pay can be regulated, or taxed
 - ▶ Easily switch to alternative rewards that are even less efficient screening devices than bonuses: latitude to serve on other companies' boards, engage in own practice or consulting, lower lock-in to company (low clawbacks, easier terms for quitting)

Inefficient bonus cap

- Suppose that:
 - ▶ \$1 paid by the employer in the alternative “currency” yields utility λ_i to a type- i , where $1 > \lambda_H > \lambda_L$
 - ▶ Absent regulation, employers do not use inefficient transfers:

$$\frac{|w'(y_H^c)|}{\Delta\theta} < \frac{1 - \lambda_H}{\Delta\lambda}$$

Proposition

Assume that $q_H / q_L < \Delta\lambda / (1 - \lambda_H)$

- 1 *Bonus cap $y^* \leq \bar{y} \leq y_H^c \Rightarrow$ unique eqbm is separating: low types receive symm-info contract (y^*, z_L^c) , high types get bonus \bar{y} , non-monetary transfer $\zeta_H^r \searrow$ in \bar{y} , monetary transfer z_H^r .*
- 2 *Social welfare is (Pareto) increasing with cap level $\bar{y} \Rightarrow$ maximized without regulation ($\bar{y} = y_H^c$).*

- Intuitions for condition and result.

Earnings policies

- If cannot distinguish performance-related vs. fixed compensation
⇒ can only cap, or tax, total earnings Y

Proposition

Let total earnings be capped at \bar{Y} . If q_L is high enough,

- 1 *Unique eqbm is separating: low types receive their symm-info contract (y^*, z_L^c) , high types get package (y_H^r, z_H^r, z_H^r)*
- 2 *Any tightening of the earnings cap (reduction in Y) leads to a Pareto deterioration.*

- Confiscatory tax is welfare-reducing, but some positive taxation always optimal to remedy bonus culture

Proposition

A small tax τ on total compensation always improves welfare:

$$dW/d\tau|_{\tau=0} > 0. \quad \text{▶}$$

Noisy performance measurement

- So far, A non-measurable / noncontractible \Rightarrow
 - ▶ relies on intrinsic motivation, or fixed incentives external to the firm (reputational, law, norms)
- Now allow **both tasks** to be (noisily) measured/incentivized,
 - ▶ e.g., yearly bonus and deferred compensation
- Outputs in tasks A and B : $\theta^A + a + \varepsilon^A$ and $\theta^B + b + \varepsilon^B$,
 - ▶ $\varepsilon^A \sim \mathcal{N}(0, \sigma_A^2)$ and $\varepsilon^B \sim \mathcal{N}(0, \sigma_B^2)$
- Compensation packages (y_i^A, y_i^B, z_i) for $i = H, L$
- Mean-variance preferences

$$(\theta^A + a)y^A + (\theta^B + b)y^B + z - C(a, b) - \frac{r}{2} \left[(y^A)^2 \sigma_A^2 + (y^B)^2 \sigma_B^2 \right]$$

- Let $\Delta\theta^A \equiv \theta_H^A - \theta_L^A \geq 0$ and $\Delta\theta^B \equiv \theta_H^B - \theta_L^B > 0$

- Total surplus is $w(y) + A\theta^A + B\theta^B$, where

$$w \equiv Aa(y) + Bb(y) - C(a(y), b(y)) - \frac{r}{2} \left[(y^A)^2 \sigma_A^2 + (y^B)^2 \sigma_B^2 \right]$$

- Competition \Rightarrow least-cost separation: $y_L = y^*$ and

$$w(y^*) - w(y_H) = (A - y_H^A) \Delta\theta^A + (B - y_H^B) \Delta\theta^B$$

Proposition

- (1) Monopsony \Rightarrow H types get first-best incentives, L types are *underincentivized* in both tasks
- (2) Competition \Rightarrow L types get first-best incentives, H types are *overincentivized* in both tasks
- (3) In both cases, normalized *distortions equalized* across tasks:

$$\frac{1}{\Delta\theta^A} \partial w / \partial y^A = \frac{1}{\Delta\theta^B} \partial w / \partial y^B$$

Quadratic cost

- $C(a, b) = a^2/2 + b^2/2 + \gamma ab$

Proposition

The first-best incentive

$$y^{A*} = \frac{r\sigma_B^2 (A - \gamma B) + A}{1 + r(\sigma_A^2 + \sigma_B^2) + (1 - \gamma^2)r^2\sigma_A^2\sigma_B^2},$$

is decreasing in B , σ_A^2 , and increasing in A , σ_B^2 , while y^{B} has opposite properties. Both are decreasing in risk aversion, r .*

Proposition (incentive distortions)

The relative *overincentivization* of task B compared to task A induced by competition is equal to the relative *underincentivization* of B compared to A induced by monopsony:

$$\frac{y_H^{B,c} - y^{B*}}{y_H^{A,c} - y^{A*}} = \frac{[1 + r(1 - \gamma^2)\sigma_A^2] \Delta\theta^B + \gamma\Delta\theta^A}{[1 + r(1 - \gamma^2)\sigma_B^2] \Delta\theta^A + \gamma\Delta\theta^B} = \frac{y^{B*} - y_L^{B,m}}{y^{A*} - y_L^{A,m}}$$

It increases with:

- (i) the noise σ_A^2 in task A, and decreases with the noise σ_B^2 in task B
- (ii) the comparative advantage $\Delta\theta^B / \Delta\theta^A$ of H types for task B vs. A
- (iii) workers' risk aversion r , iff $\sigma_A^2 / \sigma_B^2 > \Delta\theta^A / \Delta\theta^B$

- More noisy task A = less efficient screening device
- Task where H types have greater advantage = more efficient screening device

Proposition (effort distortions and efficiency losses)

(1) Competition distorts high-skill agents' *effort ratio* away from task A (monopsony: from B), $a_H^c / b_H^c < a^* / b^* < a_L^m / b_L^m$, iff

$$\frac{A - \gamma B}{B - \gamma A} > \frac{\Delta\theta^A}{\Delta\theta^B}.$$

(2) Competition reduces the *absolute level* of effort on task A, $a_H^c < a^*$, while increasing that on B (monopsony: opposite), iff

$$\frac{\gamma r \sigma_A^2}{1 + r \sigma_B^2} > \frac{\Delta\theta^A}{\Delta\theta^B}.$$

(3) Let $q_L \geq q_L^*$. Social welfare is *lower under competition* than under monopsony iff $q_H / q_L < (\kappa^c)^2$

Summary and conclusions

- Main points:
 - ▶ Competition for more desirable agents can be destructive of work ethic (more generally, effort allocation), reduce total welfare
 - ▶ Optimal degree of labor market competitiveness
- Methodological contribution:
 - ▶ Combines multitasking, screening, and imperfect competition that ranges over full spectrum (none to frictionless)
- Implications for income inequality, driven by performance pay
- Analyze role of regulation / taxation of bonuses or total pay
- Possible extensions: entry, other screening problems...

Existence and uniqueness of equilibrium

- Could a firm profitably deviate from this least-cost separating allocation, using **cross-subsidies** to maintain IC?
- An incentive-compatible allocation $\{U_i^*, y_i^*\}_{i=H,L}$ is **interim efficient** iff \nexists other incentive-compatible $\{U_i, y_i\}_{i=H,L}$ that
 - ▶ Pareto dominates it: $U_H \geq U_H^*$, $U_L \geq U_L^*$, with at least one $>$
 - ▶ Makes employer break even on average:
 $\sum_{i=H,L} q_i [w(y_i) + \theta_i B - U_i] \geq 0$

Lemma

1) The least-cost separating allocation is **interim efficient** iff

$$q_H w'(y_H^c) + q_L \Delta \theta \geq 0$$

2) It is then the **unique** competitive equilibrium.

3) Interim-efficiency of the LCS allocation holds iff q_L not too low

4) When it does not, there is no equilibrium in pure strategies

Linear taxes

- Linear taxes τ on total pay:
 - ▶ Distorts full-information baseline $y^*(\tau) \Rightarrow$ efficiency loss on both types. But second order at $\tau = 0$
 - ▶ Reduces types' compensation differential $y(1 - \tau)\Delta\theta$ under any given contract $\Rightarrow L$ lessens L 's incentive to mimic \Rightarrow firms have less need to screen through high-powered $y_H^{net}(\tau)$
- Therefore, a small tax always improves welfare

$$\left. \frac{dy_H^{net}}{d\tau} \right|_{\tau=0} < 0 < \left. \frac{dW}{d\tau} \right|_{\tau=0}$$



- “It might sound surprising to a skeptical public, but **culture** was always a vital part of Goldman Sachs’s success. It revolved around **teamwork, integrity, a spirit of humility, and always doing right by our clients**. The culture was the secret sauce that made this place great and allowed us to earn our clients’ trust for 143 years. It wasn’t just about making money; this alone will not sustain a firm for so long. It had something to do with **pride and belief in the organization**. I am sad to say that I look around today and see virtually no trace of the culture that made me love working for this firm for many years. I no longer have the pride, or the belief...”
- “Weed out the **morally bankrupt** people, no matter how much money they make for the firm. And get the culture right again, so people want to **work here for the right reasons**. People who care only about making money will not sustain this firm –or the trust of its clients– for very much longer”.

(Greg Smith, resigning Goldman Sachs executive director, 03/14/2012)



Mervyn King on motivation and financial incentives

- “The second lesson is that motivation does not come from financial incentives alone. Again, the financial sector has done us all a disservice in promoting the belief that massive financial compensation is necessary to motivate individuals...

Motivation is more than mere money. Over the years, the people who have impressed me most in business have been those motivated primarily by the desire to show that their products are the best. By being passionate about what they produce, and the customers whom they serve, they achieve success, and, in so doing, they make money, almost as a by-product. There is no substitute for passion and commitment to one's sport or business.

(Mervyn King, BOA governor, 08/11/2012)

