ORGANIZATIONS & INCENTIVES

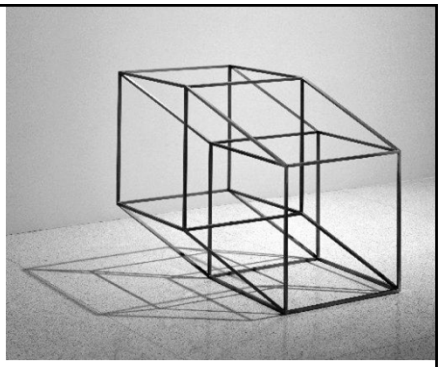
Prof. Michael Gibbs
Winter 2019

INTRODUCTION

- EMBA: Fundamentals → Strategy → Functions → **Integrative**
- Organizations & Incentives
  - what is the purpose of organizational design?
  - what key org. issues will I constantly wrestle with? Why?
  - what structures foster innovation? Adaptation?
  - how can I motivate my employees?
  - why do firms exist? What is an "employee"? How are these changing?
- Organizations are messy & always will be
  - we give some structure w/ "personnel economics" + a bit of sociology & psychology
- Focus on a couple of key issues due to limited time
  - Module I: decision making, structure & Job design
  - Module II: talent management & the employment relationship
  - Module III: performance evaluation & incentives

DETAILS

- Textbook, cases, readings
- Grading
  - 15% participation / professionalism
  - 20% write-ups: due start of classes 1-4
  - 20% problem set: due start of class 5
  - 45% final exam: 90 minutes, closed book, no notes
  - Honor Code
- Contacts
  - michael.gibbs@ChicagoBooth.edu, +1.773.834.4351
  - EXP & AXP: James Traina, traina@ChicagoBooth.edu
  - XP: Kariyushi Rao, kariyushi.rao@ChicagoBooth.com



1. STRUCTURE, CREATIVITY & CONTROL

"The curious task of economics is to demonstrate to men how little they know about what they imagine they can design." [Friedrich von Hayek]

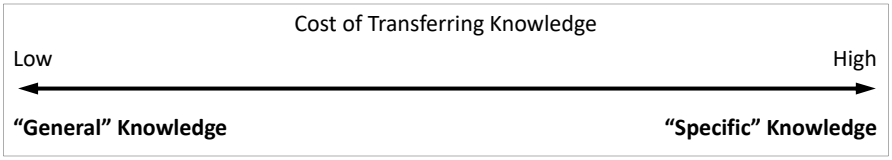
AIRTEX AVIATION

A BRIEF RETURN TO MICROECONOMICS

- Smith, *Wealth of Nations*
  - "… intends his own gain … led by **invisible hand** to promote an end which was no part of his intention … pursuing own interest frequently promotes that of society …"
- Hayek, *Use of Knowledge in Society*
  - "How can … fragments of knowledge existing in different minds bring about results which … to be brought about deliberately, would require a knowledge on the part of the directing mind which no single person can possess?"
  - example: land in City of London
  - **AirTex Aviation**: market-based organization
- Key ideas for organizational design
  - knowledge (information, skills, experience, ideas) is often dispersed
  - decisions & relevant knowledge must be paired together
    - move knowledge to decision maker (centralize); or decision to knowledge (decentralize)
  - decentralization requires coordination, motivation

1. WHEN TO DECENTRALIZE?

- Ideally we'd centralize all decisions, for perfect coordination
- If knowledge is costly to communicate, consider decentralizing decisions that need this knowledge



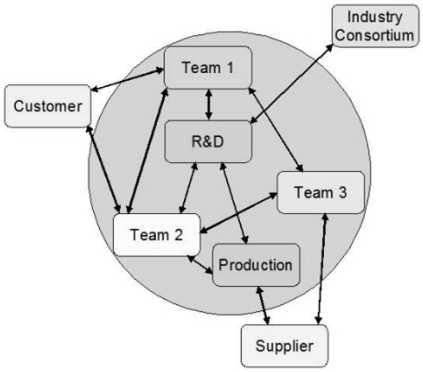
- What types of knowledge are costly to communicate?
  - *Perishable* – must be acted on quickly or loses value
  - *Complex* – many dimensions, interdependencies
  - *Technical* – requires specialized skills to understand
  - *Unforeseeable / Idiosyncratic* – environment is changing, random
  - *Subjective / Experiential* – hard to describe rigorously

WHEN TO CENTRALIZE?

- Correct decision is known
  - certainty, best practices
- Required knowledge is cheap to communicate
- Decentralized decision maker would make poor decisions
  - lack of skills, experience, perspective, poor incentives
- Decision must be coordinated w/ other parts of organization
  - synchronization
  - consistency, standardization, brand, reputation
  - complex decisions *combining* pieces of knowledge
- Risk management is important
  - high downside risk, risk averse owners

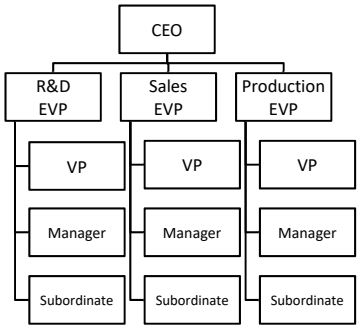
NETWORK STRUCTURE

- *Are Bosses Necessary?*
  - Zappos "holacracy" makes extensive use of network structures to coordinate
    - similar: Scrum / Agile software development
  - essentially an internal market where the asset is "social capital"
  - highly flexible
  - informality may facilitate innovation
  - such structures don't scale; coordination fails when firm size & complexity rise
    - planning, budgeting & accountability difficult



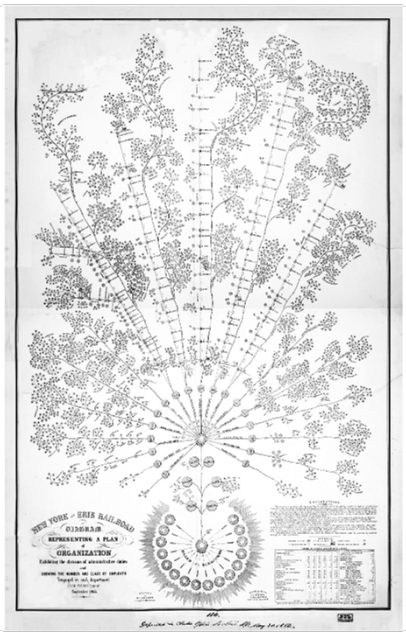
FUNCTIONAL HIERARCHY

- *Radical Idea at the Office: Middle Managers*
  - virtually all orgs. use functional hierarchy, w/ some decisions "centralized"
    - more decentralization of new initiatives, implementation
    - more centralization of approving initiatives; monitoring implementation



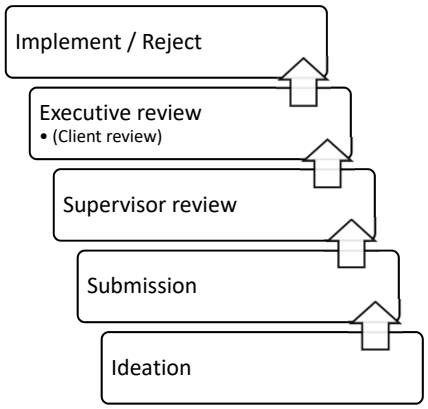
  - other benefits: specialization of skills, clear career paths, performance evaluation
  - scale, geography & complexity → divisional, matrix …

THE FIRST ORG CHART (1854)



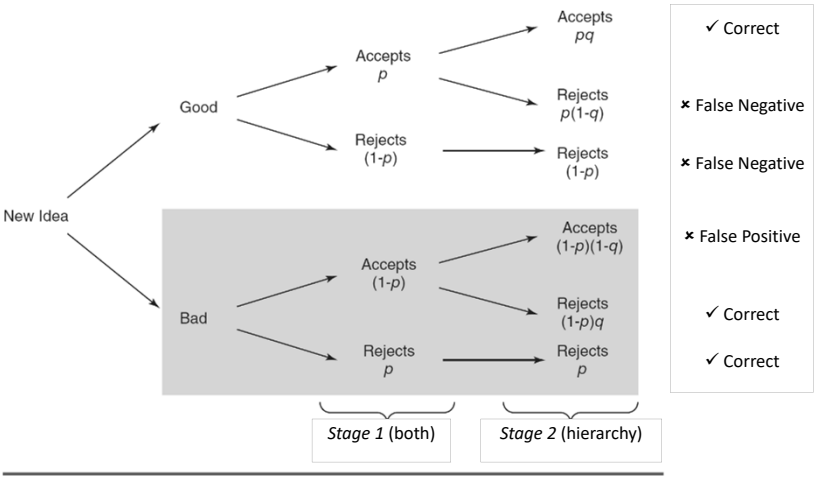
2. STRUCTURE & INNOVATION

- HCL's Idea Portal: how can we foster more innovation?



EVALUATION OF IDEAS

FIGURE 5A.1
HIERARCHICAL STRUCTURE



IS A HIERARCHY CONSERVATIVE?

- N = "creative" worker's ave. # of ideas per period
- p > ½: probability of correct decision at 1st evaluation
- q [> p]: probability of correct decision at 2nd evaluation

	Flat		Hierarchy
Rate For One New Idea			
Accept Good Idea	p	>	p·q
False Negative	1-p	<	1-p·q
False Positive	1-p	>	(1-p)(1-q)
Reject Bad Idea	p	<	1-(1-p)(1-q)
Overall Throughput			
Accept Good Ideas	2N·p	>	N·p·q
False Negatives	2N(1-p)	>	N(1-p·q)
False Positives	2N(1-p)	>	N(1-p)(1-q)
Reject Bad Ideas	2N·p	>	N[1-(1-p)(1-q)]

- Hierarchies
  - evaluate ideas more slowly
  - evaluate fewer ideas for the same # of employees
  - make fewer changes, good & bad
  - make fewer mistakes of either kind
- What environments favor a hierarchical or flat structure?

TRADING OFF CREATIVITY & CONTROL

- There is a fundamental tradeoff between creativity & control
  - improving control → creativity suffers, & vice versa
  - only way to break tradeoff: spend more resources (e.g., NASA)
    - more skilled decision makers; training; better info & analysis tools
- Other ways to adjust the balance toward creativity or control
  - (de)centralize stages of a decision
    - 1. initiatives (strategy) ↓
    - 2. ratification (tactics) ↑
    - 3. implementation↓
    - 4. monitoring↑
  - "skunkworks" – separating parts of org. from each other
  - personality of staff … conservative or liberal
  - constraints to limit downside risk (e.g., budgets)
  - incentives … downside punishments & upside rewards

EXAMPLES

- FDA too conservative, or too aggressive, in new drug approval?
  - Chorus (Paul Owens, XP83) – autonomous division of Eli Lilly
    - "lean proof to concept": small team, flat org. model, minimal oversight
    - defer investments not needed to validate
    - get to "killer experiment" ASAP, then terminate, or invest of significant resources
- Growth-stage new ventures
- Alphabet
  - abandoned "20%" policy years ago
  - separate divisions improve focus, discipline, performance measurement
    - for what types of products might this structure work well? (HP; Sony)
  - X for "moon shots" – needed formal processes
    - Rapid Evaluation Team; Foundry / internal incubator

MODULARITY & ADAPTABILITY

- *Modularity*: additional principle that can help make your organization more adaptable
  - evolutionary biology
- *Why Amazon is Eating the World*
  - modular structure : where possible, different parts set up as separable platforms
  - allows innovation to focus on module → faster, less risky, more likely to succeed
  - allows exposure to outside competition → better evaluation & incentives
    - also true at AirTex Aviation

SUMMARY

- What is the primary purpose of organizational design?
  - **create, locate, combine & use knowledge effectively**
- What other goals must be balanced against this?
  - efficiency
  - standardization & consistency
  - coordination
  - risk management
- Your organizational design should
  - focus on key pieces of knowledge that drive strategy
  - (de)centralize decisions using this knowledge, if costly or cheap to communicate
  - coordinate decision makers, via various mechanisms
- Next: apply the ideas to job design; add motivation; more on creativity

2. JOB DESIGN

"*Between labor & play stands work … Whether a job is to be classified as labor or work depends, not on the job itself, but on the tastes of the individual who undertakes it.*" [W.H. Auden]

THE RITZ-CARLTON

1. JOB DESIGN CONCEPTS

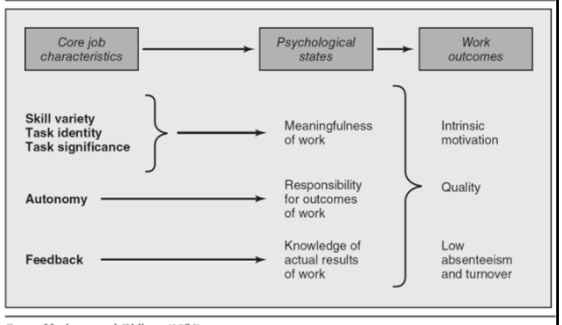
- Idea #1: Specialization (Smith, 1776)
  - best match of talent to task
  - lower investment in training
  - maximize on-the-job learning
  - why we have economies
  - why functional hierarchy is common

- Idea #2: Taylorism (1920s)
  - experts (industrial engineers) figure out & implement best practices
  - example: **UPS**
- Effects: "***Classical***" job design
  - centralization (low discretion worker)
  - narrow (few tasks)
  - low skill requirements
  - job may be poorly motivating

"MODERN" JOB DESIGN

- *How to Kill Creativity*
  - "... intrinsic motivation can be increased considerably by even subtle changes in … **challenge**, **freedom**, resources, workgroup, supervisor encouragement, org. support"
- Idea #3: Intrinsic Motivation (Hackman et al, 1960s)
  - design job so worker is *learning* → psychologically motivated
  - Skill (& Task) Variety
    - job is a "stretch" or **challenge**
  - **Autonomy** = decentralization
    - **Feedback** = effects of decisions
    - these facilitate learning
    - consider having worker collect data
- Effects: "***Modern***" job design
  - multitasking
  - high & multi-skilled
  - decentralize
  - job may be highly motivating

FIGURE 7.1
PSYCHOLOGICAL MODEL OF INTRINSIC MOTIVATION

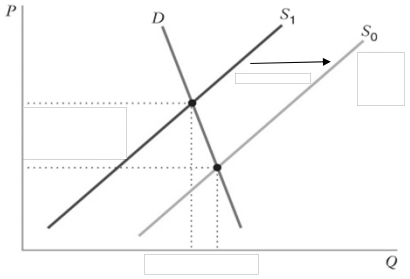


Source: Hackman and Oldham (1976)

HOW DO EMPLOYEES VALUE JOB ATTRIBUTES?

[HELLIWELL & HUANG 2010]

- Willingness to pay for a 1 std. dev. increase in a job attribute
  - **trust in your manager (worth 36% pay raise)**
  - **job with variety of tasks to perform (21%)**
  - **job requiring high levels of skills (19%)**
  - having time to finish assigned work (11%)



WHY 2 BROAD APPROACHES TO JOB DESIGN?

[GIBBS, LEVENSON & ZOGHI 2010; CAROLI & VAN REENEN 2001]

- Modern & Classical jobs 30-35x more prevalent than predicted
  - "mixed" job designs far less common

- **Classical**
  - figure out best practices; impose those
  → effective for focus on efficiency, uniformity, control
  → lends itself to automation / mechanization

- **Modern**
  - worker learns; continuous improvement
  → effective in complex, evolving, unpredictable settings
  → likely when jobs are not easily automated
  → org. change, ↑ competition, investment in R&D or IT …
  - service jobs tend to be more "Modern" in design
    - though may not have high skill requirements

"One of the first requirements for a man who is fit to handle pig iron as a regular occupation is that he shall be so **stupid & phlegmatic** that he more nearly **resembles in mental make-up the ox** than any other type. The man who is mentally alert & intelligent is entirely unsuited to the **grinding monotony** of this type of work."

Frederick Taylor, 1923

Teach workers 7-step thinking process: **analyze symptoms + theorize causes + test theories + establish causes** + simulate remedy + test + establish controls to hold gain

Joseph Juran, 1950s

WHAT TIPS THE BALANCE?

- These are opposite approaches. What situations favor each?

Classical	⇔	Modern
simple	product / service	complex
homogeneous	customers	heterogeneous
closed	relationship w/ customers	open
standardized	strategic emphasis	customized
price	strategic emphasis	quality
downside risk	opportunities	upside potential
stable	environment	evolving
rigid	ability to change	adaptable
low skill	employees	high skill
want simple job	employees	want challenge

- In practice use a blend, as at Ritz Carlton

2. HOW DOES NEW TECHNOLOGY AFFECT JOBS?

[LEVY & MURNANE 2005]

- We constantly see headlines about a **labor market "robot apocalypse"**
- Throughout history, technology has had opposing effects
  - sometimes ***Substitutes*** for humans (automation) … sometimes ***Complements***:

- **1962: Boeing 727**
  - 131 passengers, 100,000 parts
  - 81 month development
- 5,000 engineers
  - 1000s of blueprints, done by hand
  - construct full-scale model
  - parts specifications for machining
  - fix errors & imperfections
- ½ of 44 tons = "shims"
  - 0.5 inch (1.27 cm) tolerance

- **1994: Boeing 777**
  - 305 passengers, »100,000 parts
  - 52 month development
- Small team of engineers
  - CAD/CAM entire plane
  - computer controlled machine tools
  - facilitates global outsourcing of parts
  - greater focus on design, customization
- Better quality, far fewer shims
  - 0.023 inch (0.06 cm) tolerance

ARTIFICIAL INTELLIGENCE = ROBOT APOCALYPSE?

- Big Data brings new applications for "thinking" machines
- *Data Mining* allows machines to uncover patterns in data
- *Machine Learning* algorithms are similar to old methods: decision trees analogous to programming … but developed by the computer
- ***Neural Network*** algorithms inspired by neuroscience: **mimic human thinking**, including abstract & hierarchical thinking

APPLICATIONS

- **Algorithmic, repetitive**
  - pricing 1000s of airline routes / fare classes
  - drafting legal briefs
  - setting salesforce commissions
- **Physical**
  - autonomous vehicles, tractors
  - robots to climb & clean wind turbines
  - tractors
- **Language**
  - job interviews
  - analysis of call center customer satisfaction
  - Alexa, Siri
  - aiding human translators
- **Decision guidance**
  - anesthesia
  - aiding diagnosis of lung cancer
  - cancer treatment recommendations

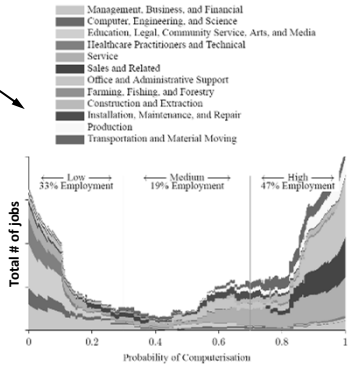
"**AI is the ultimate breakthrough** … most exciting in last 5 years is 'deep neural networks' fundamentally **giving us human perception**, whether speech or image recognition, & that's just **magical to see**"

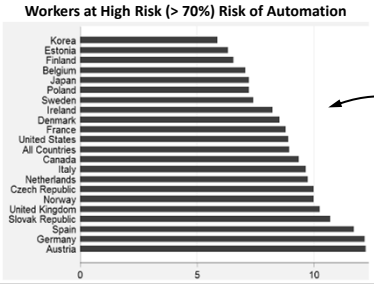
Satya Nadella 2017

LIKELY AUTOMATION OF JOBS

[FREY & OSBORNE 2013; ARNTZ ET AL 2016]

- Oxford ML researchers
  - 70 occupations rate "automatable" 0/1
  - use to predict automation in 700 occupations
- Conclusion: **roughly 50% of jobs likely to be automated soon**!





- Estimating automation risk by tasks yields very different conclusions
  - job = set of tasks that vary in ease of automation
  - workers specialize in non-automatable niches; automate part & evolve job design

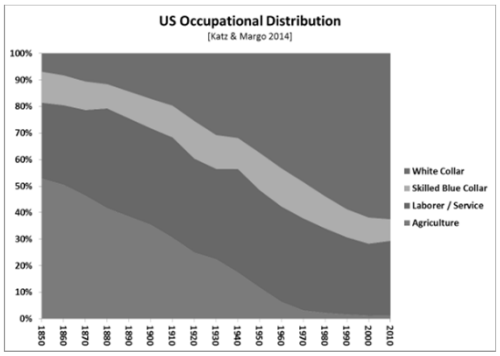
WHAT CAN BE AUTOMATED, WILL BE, AS *IT* COSTS ↓

Type of Task	Attributes That are Difficult to Automate	Example
Non-routine	complex unpredictable changing	tax law law enforcement computer networking
Manual	object recognition mobility in unmapped spaces fine dexterity	sorting random objects restaurant table service surgery
Cognitive	managing change continuous improvement creativity innovation abstract analysis	organizational restructuring total quality management art pharmaceutical research economic theory
Social	service negotiation teaching collaboration management / coordination leadership	nursing sales professor orchestra project management CEO

- Most desirable skills?
  - markets have long valued ***Cognitive*** skills
  - ***Social*** skill intensive occupations have grown across all skill levels
  - these are ***complements***: highest job & pay growth in occupations needing ***both***

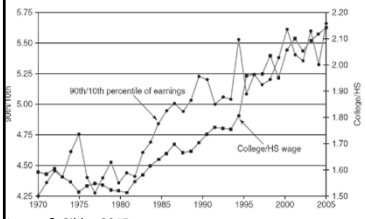
ROBOT WARS?

- Implementing new tech is always slower than predicted
- New technology creates new products, faster growth
- Economy always absorbed new tech, *without* mass unemployment
  - e.g., **women entering the labor force**



TECHNOLOGY IS "POLARIZING" LABOR MARKETS

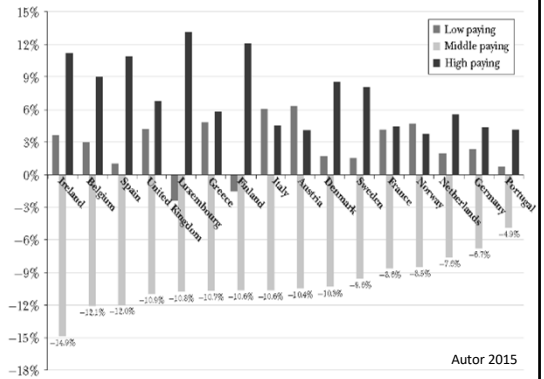
Relative Earnings of High v. Low Skill US Workers



Lazear & Gibbs 2015

- Trends began ≈ 1980
- IT (+ globalization) are creating political pressures in many nations

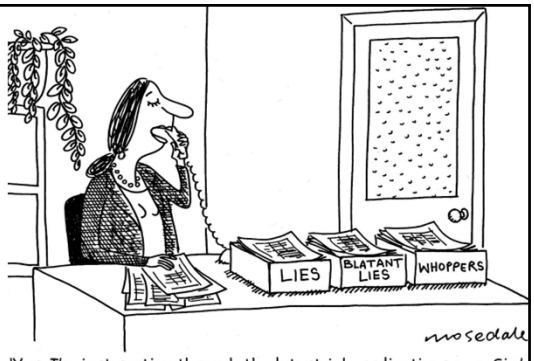
Changes in Occupation Employment Shares, EU, 1993-2010



Autor 2015

SUMMARY

- Good job design builds on ideas from Lecture 1
  - create & use knowledge effectively
  - extent of (de)centralization is a key part of job design
  - creativity v. control
  - continuous improvement
- "Plus ça change, plus c'est la même chose" [Karr]
  - (the more things change, the more they stay the same)
- We added an important new topic: motivation
  - job design has important effects on the extent & type of motivation
  - we discuss more later in classes 4-5; Daniel Pink video listed in syllabus
- Next: brief discussion of talent; employment relationship
  - these issues were important in the RC case



'Yes. I'm just sorting through the latest job applications now, Sir.'

3A. TALENT MANAGEMENT

"I sent the club a wire stating, 'Please accept my resignation. I don't want to belong to any club that will accept me as a member.'" [Groucho Marx]

THE NATURE OF THE FIRM

[COASE 1937]

- Coase asked why firms exist: why do many economic activities occur in *organizations* instead of by arms-length transactions?
  - AirTex Aviation?
  - Coase's explanation: "transactions costs," broadly defined
- Microeconomics focuses on spot-market transactions. That doesn't get us far with labor markets (why we have this course!)
  - "employee" very different from "supplier"
    - terms of economic transaction often complex, of uncertain length, & not specified in detail
    - employee grants large discretion to employer
    - "contract" governed not just by price, but also important informal elements
  - firms & employment evolving
    - greater use of outsourcing, modularity, focus on core, due to IT / telecom advances
    - Uber & others pushing legal definition of "employee"
    - blockchain may push these trends further

AMAZON V. RITZ CARLTON

- In this module we think about the *employment transaction*
  - is an employee an input, partner, or something else?
  - how might the employment relationship vary with your answer?
  - what is the role of corporate culture?
- First, we briefly discuss elements adding complexity to this transaction
  - firms have different patterns of organization, depending on employee economics
- Then, we think about economics of "contracting" to govern this transaction efficiently
  - firms have different patterns of employment relationship / culture
- Concepts
  - sorting: screening, adverse selection, signaling, real options
  - investment in (2 types of) human capital
  - implicit contracting (next lecture)

amazon

1. SCREENING V. RISKY HIRES

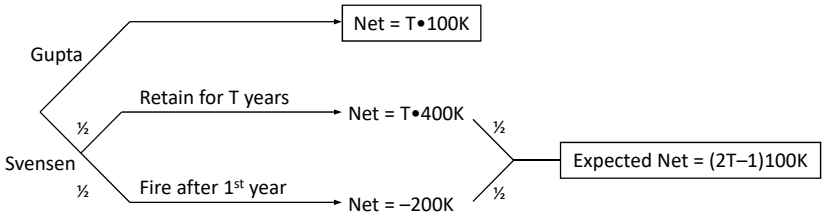
[SCHMIDT & HUNTER 1998]

- Most hiring methods are disappointingly ineffective
  - high rates of false positives/negatives
  - effect of Internet on recruiting?
  - employee referrals
- Expect high error rate in hiring
  - most accurate screen = job performance …

Meta-Analysis of Job Applicant Selection Methods			
Predictor	Validity	Multiple Correlation	Incremental Validity
General mental ability	.51		
Work sample test	.54	.63	.12
Structured interview	.51	.63	.12
Knowledge test	.48	.58	.07
Integrity test	.41	.65	.14
Unstructured interview	.38	.55	.04
Assessment center	.37	.53	.02
Biographical questionnaire	.35	.52	.01
Conscientiousness test	.31	.60	.09
Interest tests	.10	.52	.01

EMPLOYEES AS REAL OPTIONS

- You have a position to fill in a London investment bank
  - salary = £100K; will work for the firm T years
  - Gupta predictably produces £200K per year
  - Svensen may produce £500K, lose £100K (50-50 odds)
    - ignore discounting, assume firm is risk neutral (reasonable assumption?)
- They have equal expected productivity. Which is a better hire?



- A new hire is a "real option," if you can limit downside risk by firing
  - false negatives are costly too; it may pay to take risks in hiring

WHEN IS *HIRING AN ODDBALL* MORE USEFUL?

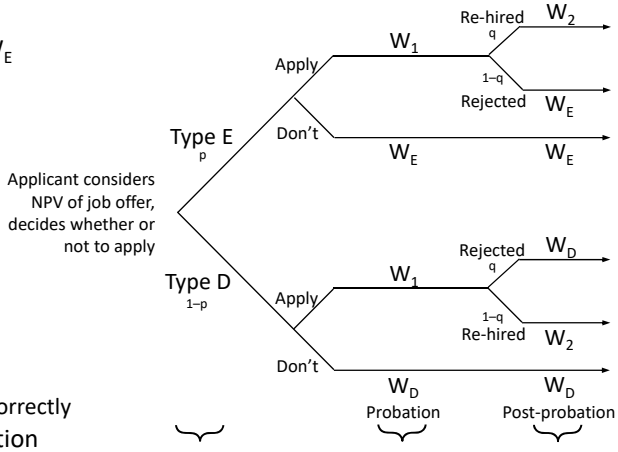
- … the riskier the candidate
  - (holding expected productivity constant)
  - candidates w/ less experience (younger, switching occupation or industry)
  - new positions in firm
- … the smaller the downside, larger the upside
  - if hiring a "portfolio" & can diversify
  - the lower are termination costs
  - creative jobs with high upside potential
  - creative / adaptable people
- … if $Pay_{Star} < Productivity_{Star}$. But won't a star's market value be high?
  - if long-term contracts can limit outside options (ML baseball)
  - if stars are not easily identified by competitors
  - if switching jobs is costly (thin labor market for skills; firm-specific productivity)

2. SIGNALING & RECRUITING

- Sometimes an applicant knows their potential better than the firm → *adverse selection* ("lemons") problem
  - how might this be mitigated?
- You are a risky candidate, but believe you have high potential. How might you distinguish yourself from less-talented applicants?
  - invest in difficult-to-obtain credentials (one reason you're here)
  - *signal* confidence in yourself by accepting risky job / pay
- Now flip the question: can an employer structure the job offer to encourage only more talented to apply?
  - generating *self-selection* by candidates

PROBATION AS SELF SELECTION

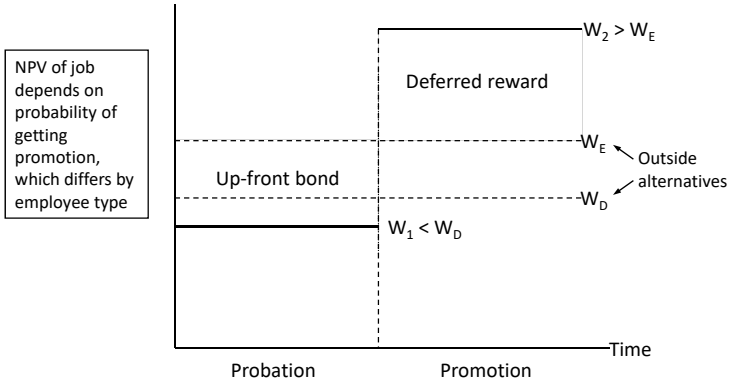
- 2 types, E & D. Applicants know which type they are
  - Q = productivity; $Q_D < Q_E$
  - reservation wages $W_D < W_E$



- Job offer
  - W_1 during probation
  - evaluate performance
    - q = probability we screen correctly
  - W_2 if retained after probation
  - Es should expect better than alternative → $W_1 + qW_2 + (1–q)W_E > 2W_E$
  - Ds should expect worse than alternative → $W_1 + (1\text{-}q)W_2 + qW_D < 2W_D$

PROBATION & SIGNALING BY APPLICANTS

- Probation improves applicant self-selection if
  - $\mathbf{W_1 < W_D + (1–q)(W_D – W_2)}$ $< W_D < W_E <$ $\mathbf{W_E + (W_E – W_1)/q < W_2}$ $\rightarrow$ $\mathbf{W_1 < W_2}$
  - Ds never apply
  - Es "post a bond" ($W_1 – W_E$) during probation, earn deferred reward ($W_2 – W_E$) later



NOTES

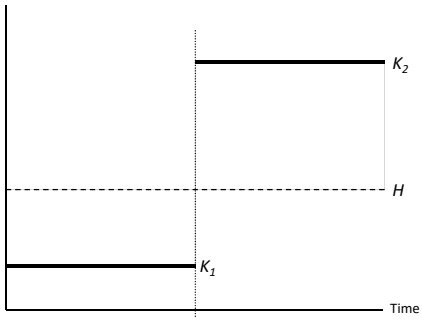
- Probation = a specific type of pay for performance. Any performance-based pay will similarly improve recruiting
  - thus, even if there is no incentive (motivation) effect, it can be useful
- Instead of firing after probation, consider
  - contract hiring (Uber?)
  - fixed duration employment contracts
  - temps

SORTING EMPLOYEES: SUMMARY

- Variance in employee fit adds complexity to employment transaction
  - screening, signaling
  - organizational patterns diverge, depending on nature of upsides & downsides
- Talent has large upside → design recruiting, job & career for *Oddballs*
  - screen for upside potential, not just downside risk
  - consider *lowering* (broadening) selection standards at early stages
  - give applicant time to develop … then evaluate carefully at "up or out" stage
- Talent has large downside → screen extensively before committing
  - screen for traits correlated with failure
  - more rigorous selection standards
  - many rounds of evaluation during application
  - probation may also be useful, but focused on weeding out hiring mistakes
- Next, consider *investment* in employees

3. INVESTING IN TALENT

- Should firm *invest* in employee skills?
  - productivity ↑ dramatically for high-skill workers, mostly due to *IT*
- Becker's model of investment in "human capital"
  - H = productivity with no training
  - K_1, K_2 = productivity with training
    - *firm-specific human capital* (FSHC): training ↑ productivity only at our firm
    - *general human capital* (GHC): training ↑ productivity at all firms



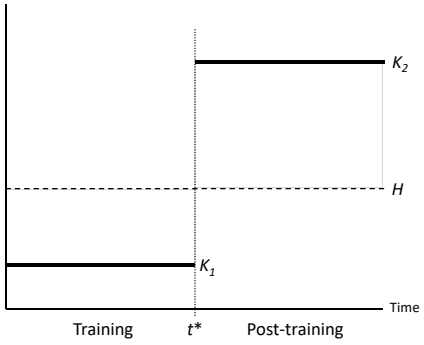
Training should occur if NPV > 0
- including non-pecuniary benefits, which may be important in education

WHO PAYS FOR GENERAL TRAINING?

- What are examples of General Human Capital?
- GHC → employee can earn more elsewhere → difficult for employer to earn return → *individual should usually pay for GHC investments*
  - pay ≈ productivity
  - turnover has little cost to employee or employer … employment is transactional
- Many firms offer some GHC training (e.g., MBA). Why?
  - employees may pay implicitly, through lower pay
  - firm may be efficient trainer; practical skills better learned at work
  - for low training, firm may recoup costs; not all employees are at quit margin
  - tax arbitrage
  - education or training benefits may improve recruiting self selection
  - single out & develop employees targeted for future leadership roles

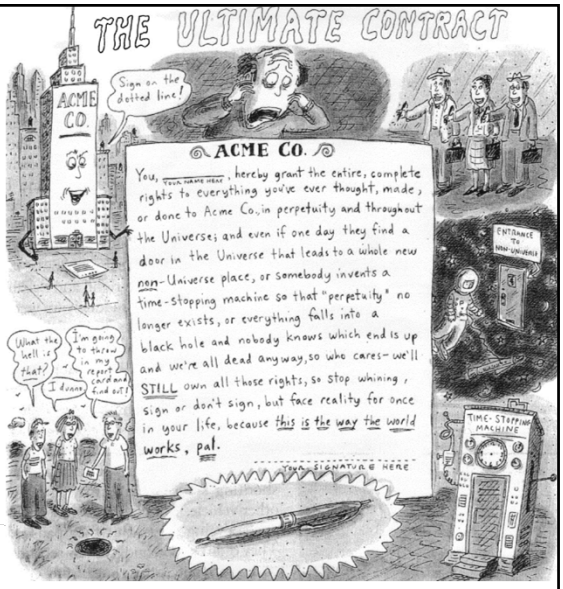
WHO PAYS FOR FIRM-SPECIFIC TRAINING?

- What are examples of Firm-Specific Human Capital?
- FSHC is more complicated …
  - after training productivity = K_2 at this firm, but H elsewhere
  - firm & employee have incentive to stay together after training, unlike w/ GHC
- If you pay for training, hoping to earn later ROI, you risk "Hold-Up" by the other side. How to resolve?
  - split investments & returns
  - works if adequate trust / reputation



SUMMARY: TALENT MANAGEMENT

- Not simply recruiting, training & keeping employees happy
  - employee turnover may be healthy
  - employees may be key firm assets … *or* essentially commodity inputs
  - employment may be quasi-partnership … *or* arms-length transaction
  - efficient corporate culture may be paternalistic … *or* Darwinian
- When small differences in talent → large differences in success …
  - … if large downside risk, screen more carefully
  - … if large upside potential, find & exploit "real option" value from risky hires
    - "lower" (broaden) recruiting standards, use more pay for performance, "probation"
- Should you invest in your people?
  - many skills are best learned by doing, not in school
  - implicitly charge by offering as part of pay / benefits mix
  - if partly firm-specific skills



3B. THE EMPLOYMENT RELATIONSHIP

"A verbal contract isn't worth the paper it's written on." [Goldwyn]

SHARED INVESTMENTS & EMPLOYMENT

- Employment fundamentally changes with "relationship-specific" investments (ROI is lost if relationship ends)
  - FSHC
  - IP: suppose key employee develops new technology for your firm
    - like GHC, employee might take (some) value if they quit, due to imperfect patents
    - like FSHC, employee used firm resources to develop IP
    - similar issues arise in many areas of business; e.g., JVs
- Employment is no longer transactional. Solutions?
  - partnership organizational form
    - pay key employees much of the value they create, or they'll quit
    - also creates good incentives to invest, etc.
  - treat employees as quasi partners
    - Ritz Carlton v. Amazon; *Can Lean Manufacturing Put an End to Sweatshops?*
  - non-compete (next)
  - formal contracts to cover all contingencies (following)

NON-COMPETE AGREEMENTS

- One way to reduce risk of employee Hold-Up
  - often difficult to enforce in court; legal system balances firm interest in protecting assets, v. employee liberty in choosing employer
- Possible clauses
  - adequate notice before leaving
  - describe new employer, job duties
  - train successor; introduce to clients
  - prohibit recruiting colleagues to leave as well
  - tie vesting to non-compete performance after leaving
- Restricting outside options imposes cost on employee
  - compensate through higher salary or signing bonus when making offer
  - if non-compete signed after employment starts, compensate w/ lump sum
    - also helps legal enforceability

4. EMPLOYMENT CONTRACTING

EXPLICIT & IMPLICIT CONTRACTS

- *Implicit Contract* = agreement not relying on explicit contract
- Why use? Explicit contracts have substantial limitations
  - too many contingencies, too costly
  - many contingencies are unforeseeable
  - some actions cannot be verified / enforced even if we try
  - lower transactions costs (sometimes) via reciprocity
- How do we make implicit contracts work?
  - align incentives: shared investment & later benefit, reducing incentive to renege
  - signal: pay up-front cost, limit future options, offer insurance, severance clause
  - personality: hard to change, but advantage if yours makes you credible
  - invest in reputation; foster reciprocity

INVESTING IN REPUTATION, RECIPROCITY

- Reputation: can potential business partners trust you?
  - more data & low variance help (high t-statistic)
    - long history; stability & consistency of actions over time
    - stick to prior agreements, esp. when costly
    - transparency
  - if little data, any action significantly affects reputation
    - first date, meeting, class, employee onboarding: **British prisons**
    - when circumstances change dramatically: crisis, greenfield v. acquisition
- Reciprocity: Axelrod's famous repeated Prisoner's Dilemma contest
  - Tit for Tat: 1st cooperate; then do what opponent just did. Simplest & won
  - conditions found in successful strategies (TFT has all 4)
    - "Nice": most important – don't defect before your opponent does
    - "Retaliating": as necessary
    - "Forgiving": fall back to cooperation if opponent stops defecting
    - "Non-Envious": do not strive to score more than the opponent
- What are RC, AZ cultures? Are they aligned with the businesses?

SUMMARY: EMPLOYMENT RELATIONSHIP

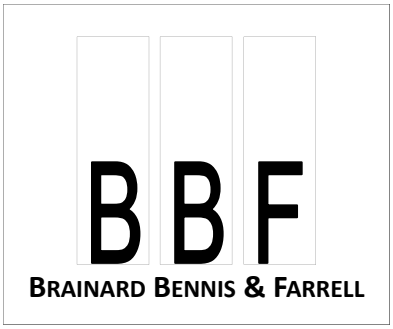
- Microeconomics → explicit contracting on pay, hours
- Job design → tasks, **delegation**, learning / improvement expectations
- Imperfect info. about varying skill → sorting & signaling
  - multi-period contracts, **evaluation**, rewards or termination
- Training → investing in human capital
  - divergent organization models: employee as supplier, partner in **shared investment**
- Delegation, evaluation, shared investment → **implicit contracting**
  - reliance on promises / reputation, since future is complex & unpredictable
  - corporate culture has business function
  - these considerations matter more in some settings than others
- Next: more on motivation – "extrinsic" pay for performance

4. PERFORMANCE EVALUATION

"Not everything that counts should be counted, & not everything that can be counted counts." [Sign on Einstein's office door]

INTRODUCTION

- Hayek emphasized how markets use knowledge … but they also provide incentives to create value, via asset ownership & prices
  - in this Module we analyze employee incentive compensation
- People respond strongly to incentives → powerful but dangerous tool
- Many incentive plans are poorly-designed
  - "Incentive schemes with high risk features … are common. Most firms do not have effective systems & controls to adequately manage increased risks."
    - UK Financial Services Authority, 2012
- With understanding of the economics of incentives, you can do better. Incentive plans must meet 2 conditions to motivate
  1. **effective evaluation** … does my evaluation reflect my contributions well?
  2. **adequate reward** … is my reward tied to my evaluation?



1. NUMERIC PERFORMANCE MEASUREMENT

- What is an effective performance evaluation? It captures all of the employee's effects on firm value, & nothing else
  - motivate value creation; shield from unnecessary risk
  - put differently: ideal evaluation includes all *controllables*, & nothing uncontrollable
- Quantifying performance is clearly preferred if possible, so start by choosing one or more measures. What should you look for?
  - risk profile
  - distortion
  - potential for manipulation

RISK PROFILE

- It is important to distinguish 2 kinds of "risk"
- *Uncontrollable Risk* = random events we cannot foresee or react to
  - "classical" concept of risk
    - ex: macroeconomic conditions
- *Controllable Risk* = (possibly random) events we can, to some extent, foresee or react to
  - typically, employee knows more than you b/c they do the job
    - ex: customer requests in store that day
- What are examples?
- Both affect performance, but they have different incentive implications

UNCONTROLLABLE RISK

- Exposing employee to more uncontrollable risk raises cost of incentive
  - e.g., suppose Pay = a + b·(Perf. Measure) = a + b·(True Perf. + ε)
    - a = base salary; b = commission rate
    - ε = uncontrollable risk
  - variance in pay = $b^2\sigma_\varepsilon^2$
  - stronger incentive b → greater risk for the employee
- How can we address this?
  - spend more to measure performance more accurately (filter more risk)
  - raise base salary a to provide more risk premium
  - lower commission b to reduce risk … but also lower incentives

CONTROLLABLE RISK

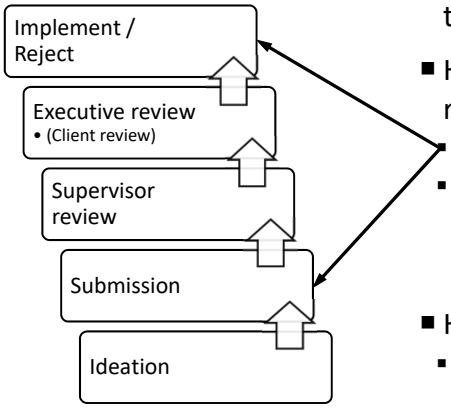
- We may not want to filter out controllable risk
  - want employee to manage this risk, so want to include in performance measure
    - seek out & use information that arises as they do their job ("specific knowledge")
    - foresee, prevent, react to events where possible
    - take initiative
- If the job entails more controllable risk
  - use a measure that includes its effects to the extent possible
  - give stronger incentives, not weaker

DISTORTION

- Always remember: "You get what you pay for"
  - any measure other than "firm value" distorts incentives
  - distortions arise 2 ways
    - focus on what is easy to measure
    - measure doesn't match job design
  - examples?
- The more distorted a measure, the lower its weight for rewards

EXAMPLE: MOTIVATING CREATIVITY

HCL's Idea Portal



- *The Challenge of Motivation* argues that incentives undermine creativity
- HCL ran an experiment to see if rewards could improve innovation
  - reward suggestion or implementation?
  - our findings on reward
    - increased idea quality
    - decreased idea quantity
    - no variation by relative intrinsic motivation
- How to reconcile?
  - distortion of performance measure

POTENTIAL FOR MANIPULATION

- Additional problem: employee may manipulate performance
  - take actions that improve the measure, but not firm value
  - ex: Colorado potato beetles; virtually any accounting #
- If the measure is more manipulable, tie it less to rewards
  - measures tend to degrade over time: the longer a measure is used, the more employee can figure out how to manipulate it
  - narrower measures (below) are usually easier to manipulate

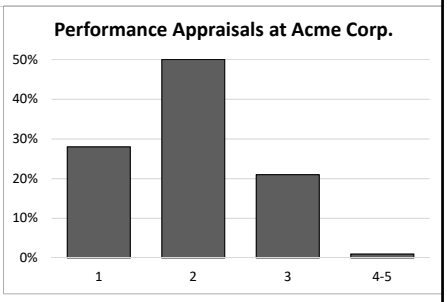
SCOPE

- Useful way to think about performance measure properties is *Scope*
  - narrow measures focus on fewer aspects of performance; broad on more
  - ex: department v. firm profit

Narrow (fewer factors)	Broad (more factors)
Less Uncontrollable Risk ✓	*More Uncontrollable Risk* ✗
Less Controllable Risk ✗	*More Controllable Risk* ✓
More Distortion ✗	*Less Distortion* ✓
Easier to Manipulate ✗	*Harder to Manipulate* ✓

- You face a key tradeoff
  - might use a narrow measure *only* because it reduces uncontrollable risk
  - broad measures: more controllable risk, distort less, harder to manipulate
    - use in "Modern" jobs with multitasking, multiskilling & more decentralization

2. SUBJECTIVE EVALUATION



- Alternative to numeric evaluation
- Typical problems
  - inflation & compression of ratings
  - reluctance for negative feedback
    - de-motivating?
  - favoritism, "yes men," pressure on evaluator
  - low trust of evaluator
  - weak evaluator incentives
  - half-life of appraisal systems ≈ 5 years
- Everyone hates subjective evaluation, so why is it always used?

BASED ON A TRUE STORY …

- Holly Frost manages your main factory, outside Boston
  - a profit center: she gets an annual bonus based on factory profit
- There is a heavy snowstorm and the roof collapses

- As Holly's boss, how do you evaluate her performance?
  - what do you need to know to do the evaluation?
  - what does your answer depend on?
  - is profit the right performance measure in this case?

WHY USE SUBJECTIVE EVALUATIONS?

- Good evaluation requires judgment, because metrics are imperfect
- Subjectivity, if done well, improves incentives many ways
  - reduce uncontrollable risk, distortion, & manipulation
    - what is "uncontrollable" & what is "controllable"?
  - improve risk taking
  - improve decision making (use of controllable risk)
    - encourage pro-active preparation, effective reaction
  - give incentive system flexibility
  - expand communication between manager & employee
  - be a form of training

CONDUCTING A SUBJECTIVE EVALUATION

- Think retrospectively: "what did he know & when did he know it?"
  - avoid hindsight bias: given what was known, were correct decisions made?
  - if not foreseeable, were responses appropriate?
  - did employee try to "pass the buck" or take responsibility?

  → reward performance
- More importantly, think prospectively: what can be improved?
  - information, training, etc.

  → responsibilities, future evaluation criteria & expectations
- Goal: performance management, not just evaluation

IMPROVING SUBJECTIVE EVALUATION

- Multiple evaluators (if feasible) may reduce bias & favoritism
- Provide supervisors w/ performance data, training in evaluation, structured forms to give some guidance
- Provide oversight & allow employees to challenge evaluations
- Leadership makes careful & fair evaluation a high priority
  - evaluate on ability to do performance management
  - culture of constructive feedback giving & receiving
  - reminder: How do employees value job attributes?
    - ↑ 1 s.d. trust in your manager → worth 36% pay raise
- Do views on subjective evaluation vary with culture?

FORCED CURVES

- Famously used at GE, Microsoft, tried by many firms
  - GE: top 20%; middle 70%; bottom 10%
  - consistent low rating → "Performance Improvement Plan": improve, transfer or out
  - one form of general approach of *relative performance evaluation*
- What problem is it trying to solve?
- Where does it work best?
  - significant uncontrollable risk affects the group of employees
  - larger groups of employees to fit curve
  - teamwork less important
  - culture more aggressive / Darwinian
  - extensive attention paid to coaching & development
  - employees given clear expectations about weeding out
  - legal liabilities monitored carefully, care taken that evaluations are on performance
- Downsides?

IMPLEMENTATION

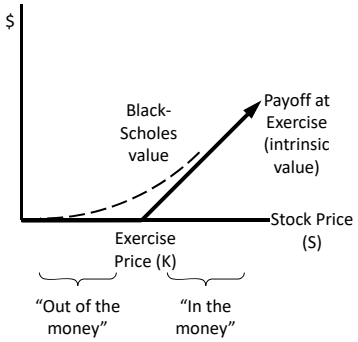
- Reverse engineer the measure to try to foresee problems
  - how will behavior be distorted?
  - how will employees manipulate the plan?
  - how will they (mis)manage risks? Try to pass blame?
- Scale up intensity of monitoring when risks are greater
- Consider clawbacks, bonus banks, caps
- Don't forget supervisor incentives

SUMMARY

- Choose numeric measures matching job as closely as possible
  - how much is measure affected by uncontrollable risk?
    → if a lot, consider narrow scope, or relative evaluation if risks similar across employees
    → you'll have to pay more (risk premium) for more risk
  - or is risk controllable?
    → if a lot, this measure supports decentralization
  - how will it distort behavior? (it will)
    → if a lot, consider broader scope (or adding a second measure)
  - how might employee manipulate the measure?
- Subjective evaluation is necessary & important
  - mitigate problems with numeric measures
  - few managers take seriously; few are good at it
- Next: how to tie the evaluation to rewards

[SARA'S OPTIONS: INTRODUCTION]

- Employee options differ from traditional options
  - can't trade, even if vested
  - can't hedge
  - undiversified
  - restricted stock = option w/ K = 0
- (Why) Give employees options?
  - financing?
  - sorting?
    - risk aversion; ability; inside info re: success
  - retention?
  - incentives? Below …



$$S \cdot \frac{1}{\sqrt{2\pi}} \int_{-\infty}^{\left[\frac{\ln(S/K)+(r+\frac{1}{2}\sigma^2)T}{\sigma\sqrt{T}}\right]} e^{-\frac{1}{2}(x/\sigma)^2} dx \; - \; Ke^{-rT} \cdot \frac{1}{\sqrt{2\pi}} \int_{-\infty}^{\left[\frac{\ln(S/K)+(r-\frac{1}{2}\sigma^2)T}{\sigma\sqrt{T}}\right]} e^{-\frac{1}{2}(x/\sigma)^2} dx$$

Current stock price	$129
Exercise price	$129
Interest rate (risk free)	6.32%
Dividend rate	0.0%
Years until expiration	5 Years
Annual s.d. of stock returns (Volatility)	48%
Black-Scholes value per option	$64.79

Black Scholes value of 1 Clear Lake option offered to Sara

How parameters affect BS Value

	Benchmark value	New value	New BS value	% change
	Benchmark BS Value = $64.79			
S	$129	$142	$75.32	16.3%
		$116	54.62	-15.7
K	$129	$142	61.13	-5.6
		$116	68.81	6.2
T	5 years	10 years	88.44	36.5
		1 year	27.87	-57.0
D	0%	5%	43.01	-33.6
		2.50%	52.96	-18.3
s	48%	70%	81.65	26.0
		30%	49.81	-23.1
r	6.32%	8.32%	68.57	5.8
		4.32%	$60.97	-5.9%

5. INCENTIVE COMPENSATION

"Without merit there should be no reward." [Chinese proverb]

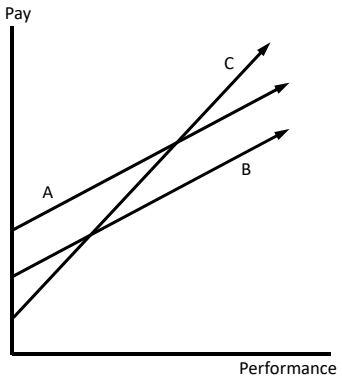
INTRODUCTION

- We now think about how to tie that evaluation to rewards
  - easier in practice than evaluation
- First note what we don't focus on: level of pay
  - level of pay = expected value of whole package, not just salary
  - what does level depend on?
    - market supply & demand for this type of skills
    - extent of uncontrollable risk in the pay package
    - desire to attract better talent through more at-risk pay

SARA'S OPTIONS

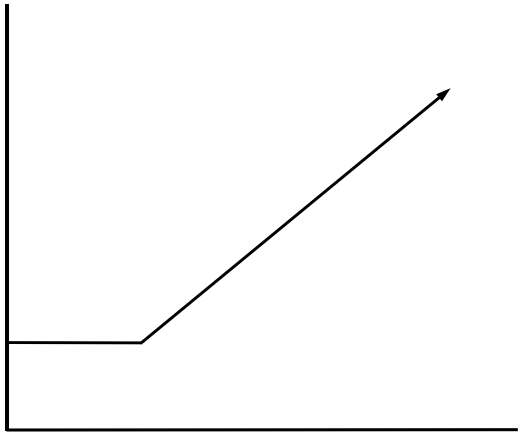
OPTIMAL INCENTIVE INTENSITY

- Consider these simple pay plans
  - which has stronger incentives?
  - A v. B?

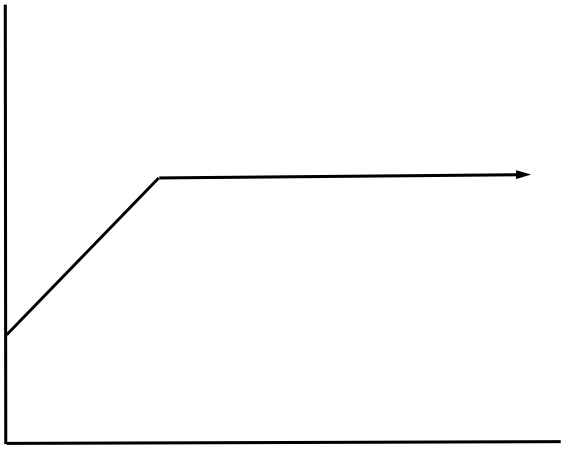


- Use stronger incentives when …
- … reinforce strategy more
  - weak intrinsic motivation
  - effort has more impact on firm value
  - sorting for talent is more important
- … evaluation is more effective
  - more "controllable risk"
  - less "uncontrollable risk"
    - employee less risk averse
  - measure has low distortion
  - measure harder to manipulate
  - subjective evaluation done well & trusted more

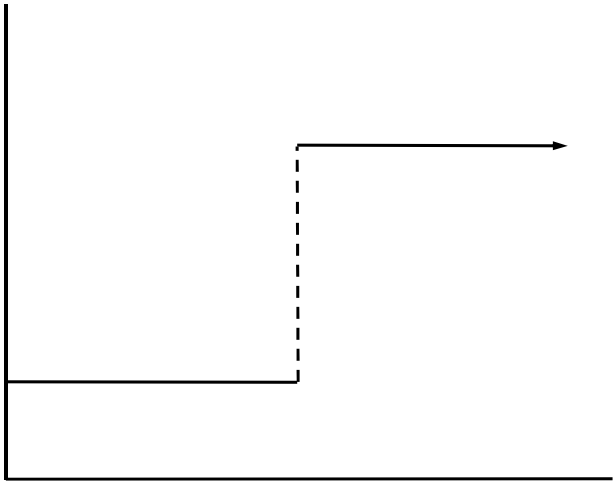
BASE + QUOTA



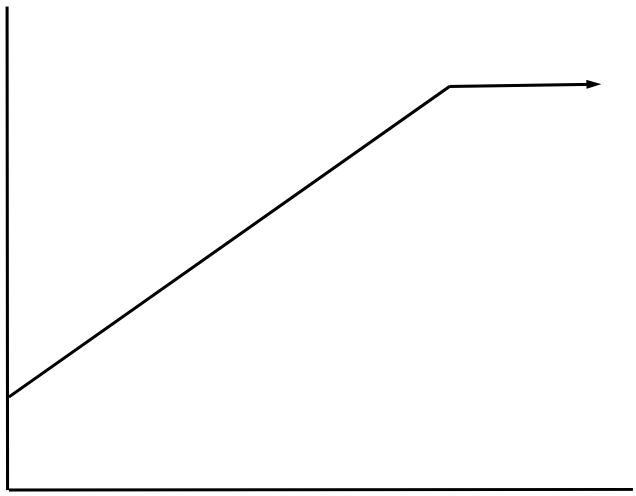
PUNISHMENT



LUMP-SUM BONUS, PROMOTION, DEMOTION



CAP



SUMMARY: DESIGN

- First (hardest, most important) evaluate performance
  - the more flawed the measure, the weaker should the incentive be
  - subjective evaluation / discretionary bonus to "fix" problems & make the overall incentive better
- Then (easier) tie pay to performance
  - risk & opportunity → reward shape
    - base + quota reduces employee's downside risk
      - can facilitate stronger incentives
      - changes incentives for risk taking
  - targets often motivate gaming if performance is near target
    - caps may reduce gaming, but can hurt recruitment / retention
    - consider subjective cap to balance these
  - simplicity is a virtue
- All jobs also have implicit incentives
  - promotions are most important in many firms

SUMMARY: IMPLEMENTATION

- Good incentives require a fair system
  - ability to modify & evolve the plan
    - experimentation, communication (in both directions)
  - subjective evaluations
    - pay attention to training, monitoring & motivation of evaluators
- MBO-style approach turns evaluation into on-going performance management
- Constant tension between coaching / development & evaluation

CLOSING REMARKS

"Chaos was the law of nature; Order was the dream of man." [Henry Adams]

DOES MANAGEMENT REALLY WORK?

[BLOOM, SADUN & VAN REENEN 2012]

- Policies we discussed → ↑ productivity, ROI, quality, growth, survival
  - ☑competitive, human-capital intensive industries
  - ☑countries with less labor market regulation
  - ☑importing firms & multinationals
  - ☒less prevalent in government-owned, family firms
- Why do practices vary?
  - no "cookbook": org design is complex; policies are complementarity; tradeoffs
  - lack of management knowledge, competitive pressure

ORGANIZATIONAL DESIGN: GOALS & IDEAS

- Sorting / matching
- Investment
- Creation & use of knowledge
- Motivation
- Adaptation / evolution

- Incomplete / asymmetric info
  - screening, adverse selection, signaling
- Investment
  - human capital; reputation; learning
- Bargaining / contracting
  - hold up; implicit contracting
- Decision making
  - specific v. general knowledge; coordination; Type I v. Type II errors
- Motivation
  - agency theory; intrinsic motivation

THEMES

- Firms can be thought of as "mini economies"
  - use of knowledge + coordination + incentives
- Organization's role is largely to create & effectively use of knowledge
  - human capital & intellectual property
  - specialized & general skills
  - specific knowledge of time & place; integration; knowledge management
  - central optimization or decentralized adaptation?
  - creativity v. control
- Organizational design must match strategy
  - each firm faces different goals, constraints & tradeoffs
  - use these concepts to craft organizational policies matching your situation

THEMES

- What's good for employees is good for the firm
  - maximize shared value creation – not zero sum
- Good structure, jobs, evaluation, incentives & leadership maximize employee potential in powerful ways
  - use & share knowledge, creativity effectively
  - design jobs to maximize employee learning
  - provide training in problem-solving skills to reinforce learning
  - drive powerful intrinsic motivation
  - provide evaluations that fairly & reasonably match responsibility, then "set the employee loose" to maximize performance
  - reward performance to motivate more & drive "intrapreneurship"