MIT 14.662 Spring 2018: Lecture 5 – Superstars and Mediocrities

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February 21, 2018

Agenda

1. **Motivation: Superstars**
2. **Assignment Models**
3. **How Much do CEOs Contribute?**
4. **Mediocrity in Talent Markets**

Top 1% Income Share: English-Speaking Countries

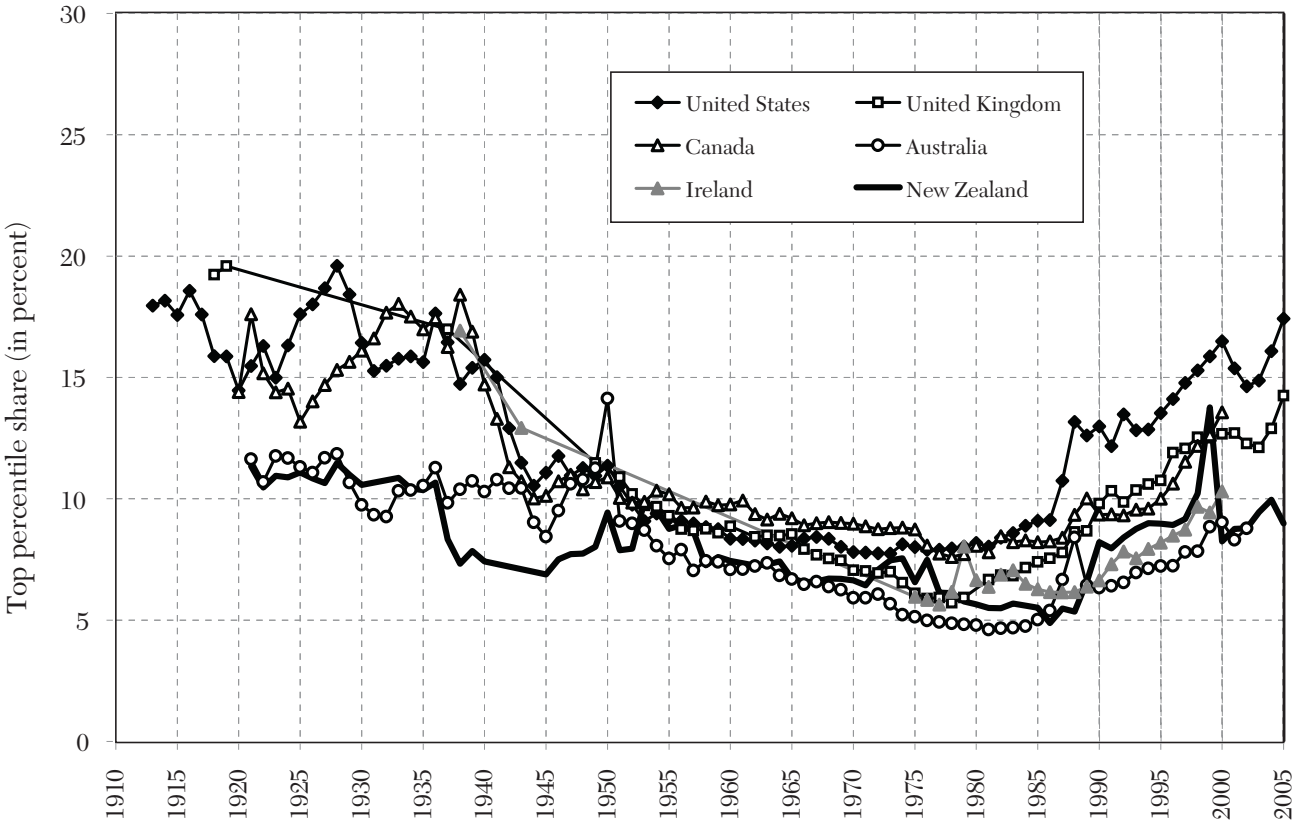
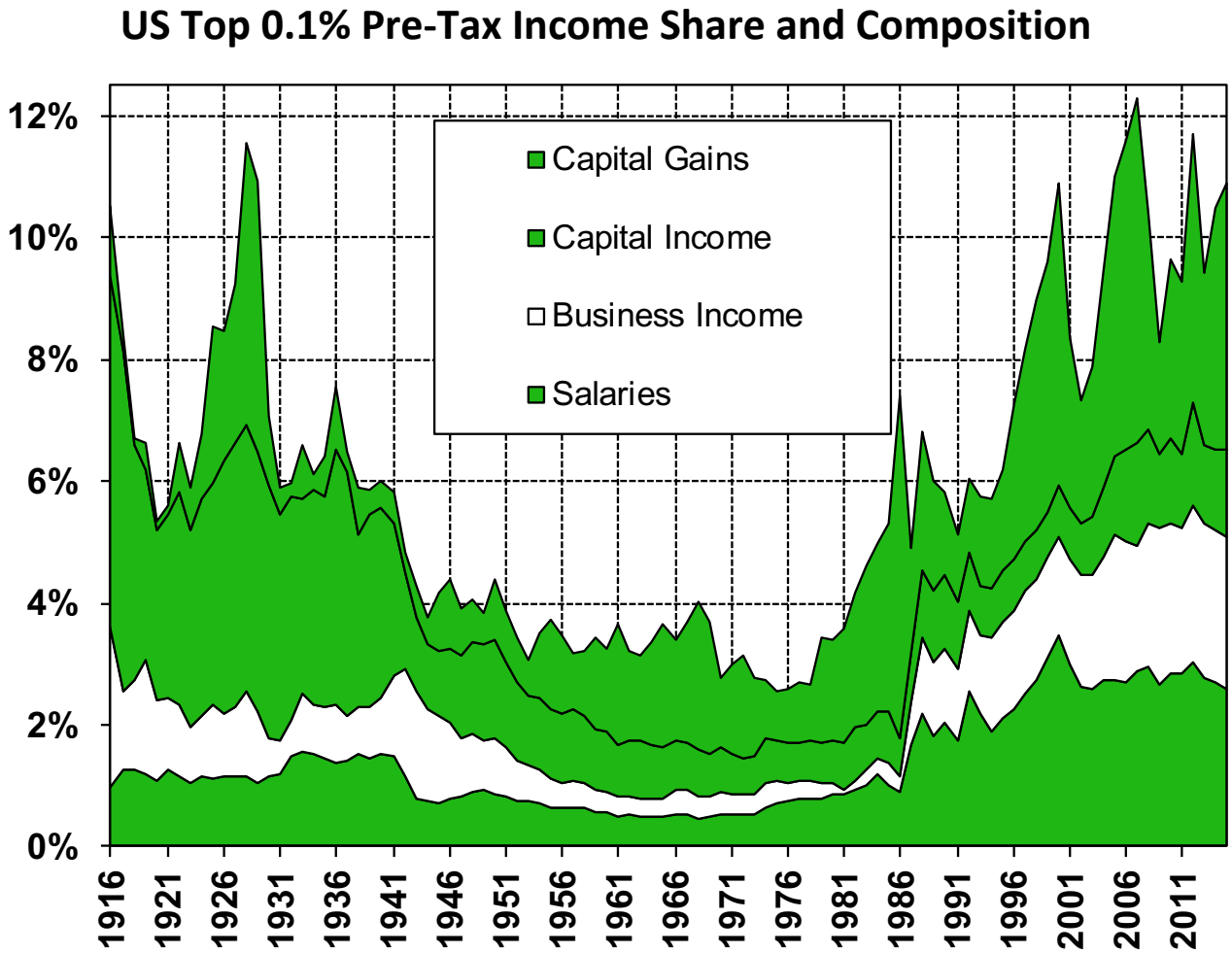


Figure 8. Top 1 Percent Share: English Speaking Countries (*U*-shaped), 1910–2005

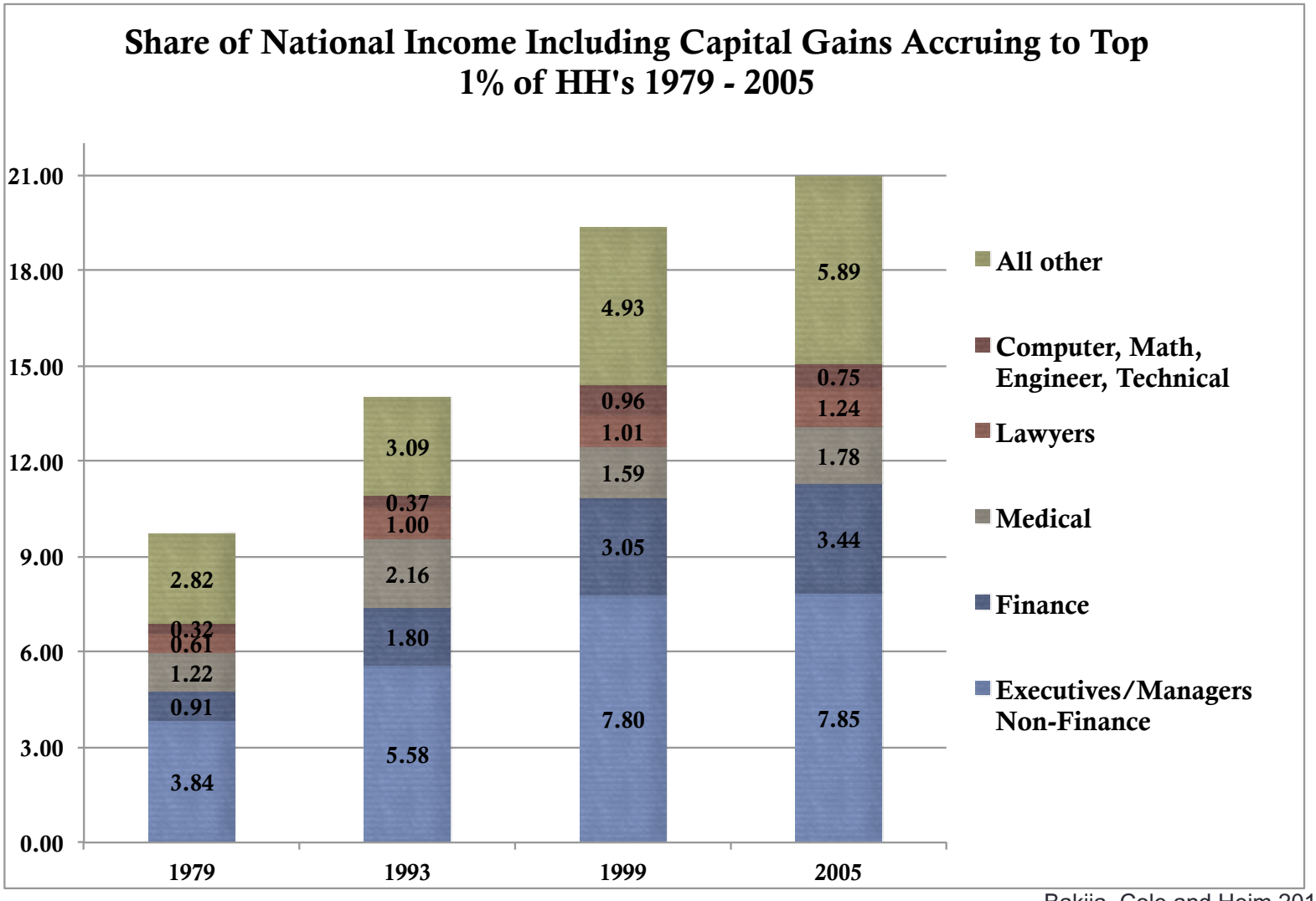
Atkinson, Piketty, Saez 2011

Level and Composition of U.S. Top 0.1% Income Share



Source: Piketty and Saez, 2003 updated to 2015. Series based on pre-tax cash market income including or excluding realized capital gains, and always excluding government transfers.

Occupations and National Income Shares of Top One Percent of U.S. Households, 1979 – 2005



Bakija, Cole and Heim 2012

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Assignment Models

Assignment models

- Introduced by Nobel Laureate Jan Tinbergen in the 1950s
- 'Popularized' by Sattinger's widely cited 1993 *JEL* survey

Defining feature: Indivisibilities among factors of production

- If the amounts of two matching factors cannot be shifted across different units of production
- Then factors are not necessarily paid their marginal products *in the standard sense*
- It's possible for the wage paid to a given worker to rise or fall due to changes in the distribution of ability of other workers...
- ...*without* any change in the productive attributes of that worker or in the value of her output

Sattinger '73 ECMA: "Comparative Advantage and the Distributions of Earnings and Abilities"

"This paper constructs a model of the allocation of workers to jobs. *The intention is to find the minimum requirements for the distribution of earnings to be different from the distribution of abilities.* It is not necessary to depart from the assumptions of perfect competition or marginal productivity wage determination. *All that is required is that there be comparative advantage* in the performance of tasks by individuals."

Sattinger '73 ECMA: "Comparative Advantage and the Distributions of Earnings and Abilities"

Three big ideas in Sattinger

1. In a conventional skills market, dist'n of wages directly proportional to the dist'n of skill
   - Sattinger wants to find competitive settings where this is *not* the case
2. In Sattinger's model, allocation of workers to jobs *indivisible* from earnings dist'n
   - What you earn *does depend* on where you work
3. Key condition: *Comparative advantage.*
   - With comparative advantage, earnings depends on ability & assignment
   - Assignment magnifies importance of ability
   - Dist'n of earnings may be far more skewed than the distribution of underlying abilities – and never the reverse

See also Rosen 1981 *AER* "The Economics of Superstars"

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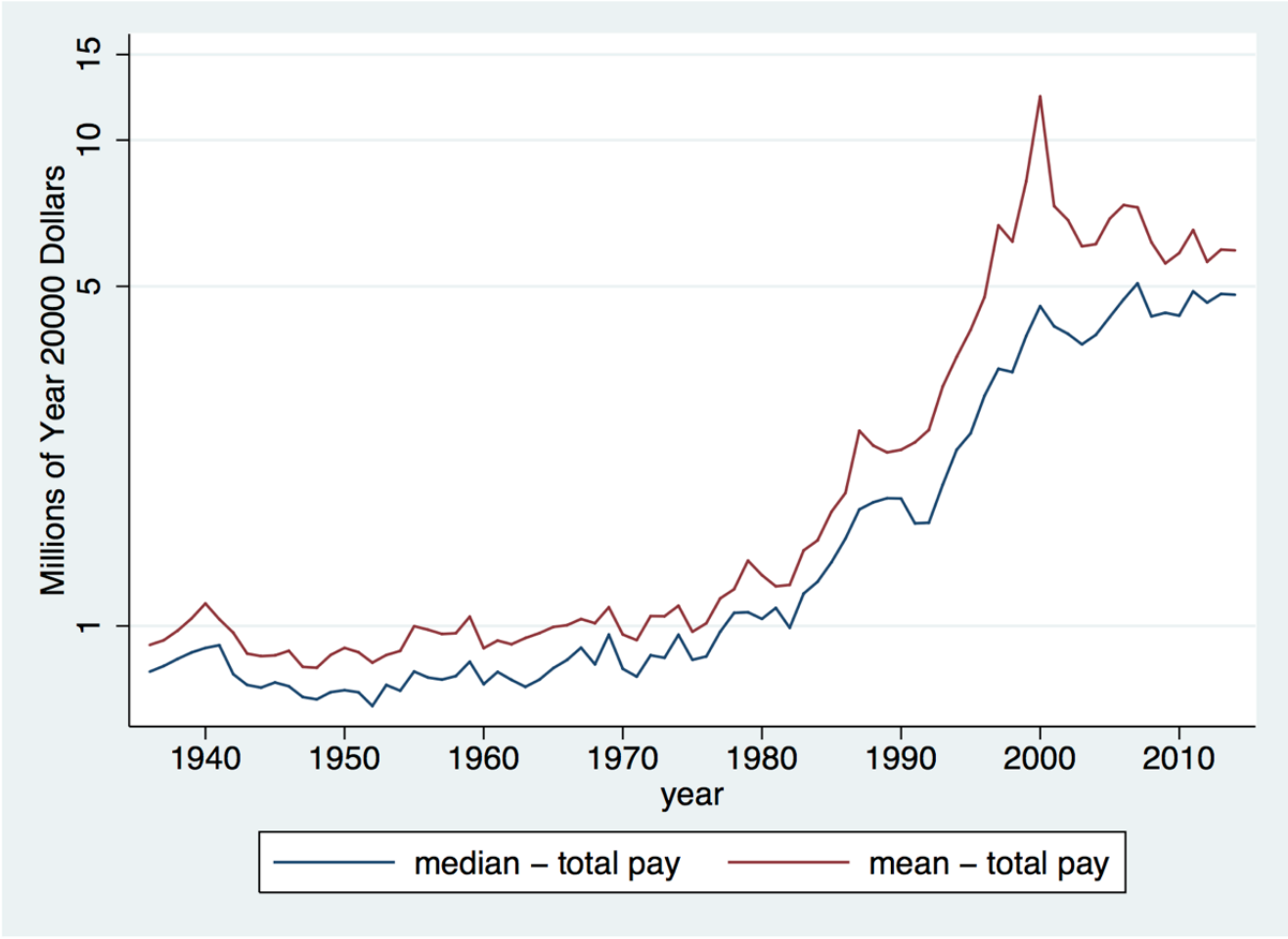
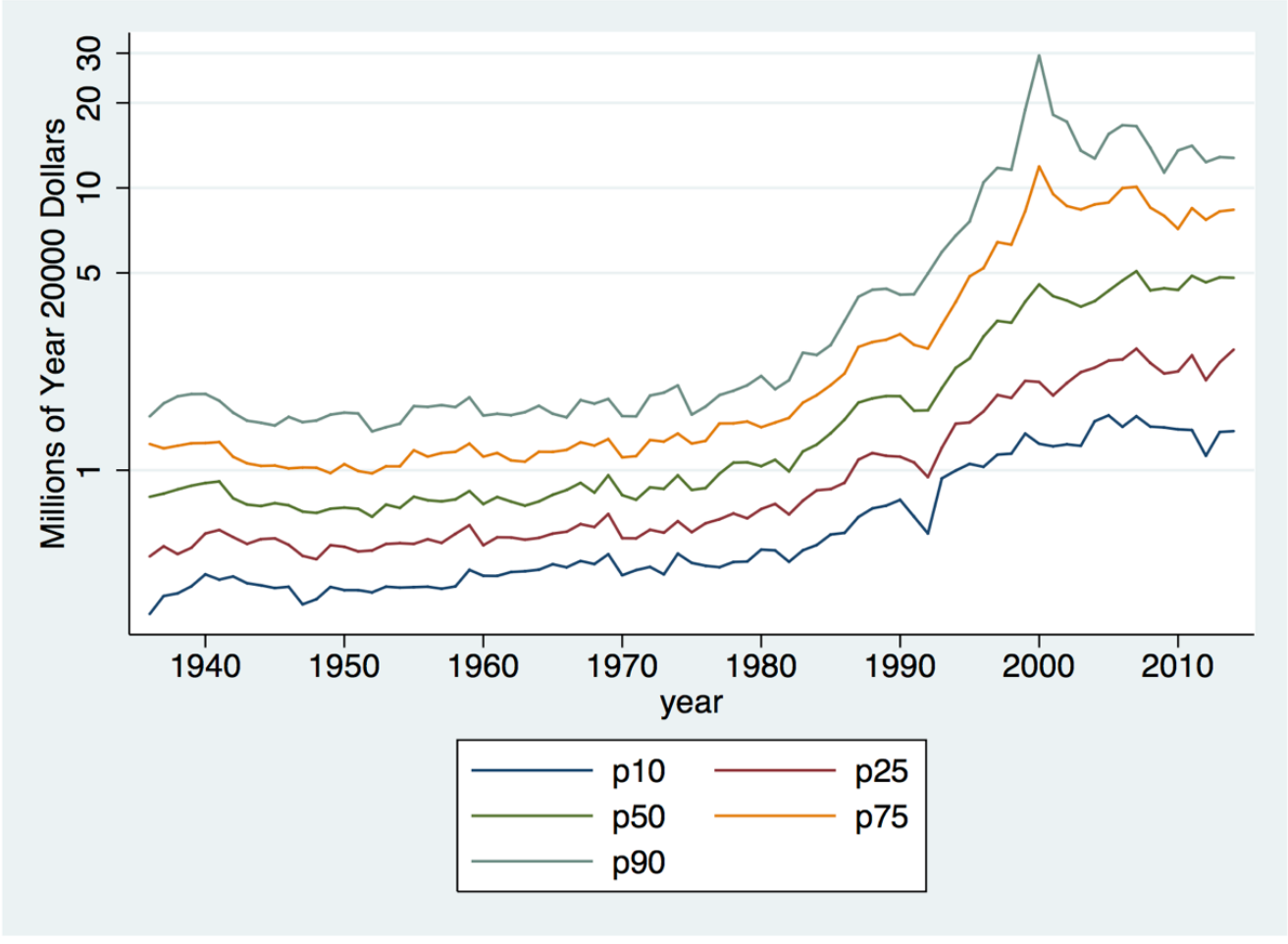
Evolution of U.S. CEO Pay, 1937 – 2013



Frydman, 2016

Note: logarithmic y-scale

Inequality Among U.S. CEOs 1937 - 2013



Frydman, 2016

Note: logarithmic y-scale

Q: How Much of Dist'n of CEO Pay Determined by Dist'n of Ability vs Comparative Advantage (i.e., Assignment)?

Q: How much of the inequality of CEO pay is due to CEO ability versus the structure of comparative advantage (i.e., assignment)?

Model structure

- Two factors of production a and b
- Worker quality is denoted as a
- Firm quality is denoted by b, which will be referred to as firm 'size'

Three core assumptions

1. One-dimensional quality of factors
2. Continuity of quality distributions
3. Complementarity between the qualities of factors

Terviö 2008: Setup

Setup

- Production function is continuous, strictly increasing in a and b
- Positive cross-partial between a and b: complements
- Efficiency requires positive assortative matching (*supermodularity*)
- Write the production function *without loss of generality* as

$$Y(a, b) = a \cdot b$$

Notation

- Order abilities by quantile so that $a[i]$ is the ability of the the i^{th} quantile individual, with $a'[i] > 0$
- Denote the distribution function by F_a
- Profile of a is defined by

$$a[i] = a \leftrightarrow F_a(a) = i$$

Equilibrium Conditions

Two equilibrium conditions

1. Sorting constraint—no worker/firm pair wish to rematch
2. Incentive compatibility (participation) constraint—all workers and firms earn at least their outside option

$$
\begin{aligned}
Y\left(a\left[i\right],b\left[i\right]\right)-w\left[i\right] &\geq Y\left(a\left[j\right],b\left[i\right]\right)-w\left[j\right] \quad \forall i,j\in\left[0,1\right] \qquad SC\left(i,j\right)\\
Y\left(a\left[i\right],b\left[i\right]\right)-w\left[i\right] &\geq \pi^{0} \quad \forall i\in\left[0,1\right] \quad PC\ b\left[i\right]\\
w\left[i\right] &> w^{0} \quad \forall i\in\left[0,1\right] \quad PC\ a\left[i\right]
\end{aligned}
$$

Assume that π^0 and w^0 are same for all units

- Lowest active pair breaks even

$$Y\left(a\left[0\right],b\left[0\right]\right)=\pi^{0}+w^{0}$$

- Sufficient cond'n: outside *options* increase more slowly along the profile than do *superstar* options

Equilibrium Conditions

Simplifying the sorting constraints

- With n workers and n firms, there are $2n!$ sorting constraints
- But most constraints are redundant – why?

Equilibrium Conditions

Simplifying the sorting constraints

- With n workers and n firms, there are $2n!$ sorting constraints
- Most constraints are redundant since for $i \geq j \geq k$, $SC(i,j) + SC(j,k)$ implies $SC(i,k)$

The binding constraints are therefore

1. Marginal sorting constraints—so firms don't want to hire next best worker
2. Participation constraints of the lowest types

Equilibrium Conditions

Order binding sorting constraints and use continuity of i

$$\frac{Y\left(a\left[i\right],b\left[i\right]\right)-Y\left(a\left[i-\varepsilon\right],b\left[i\right]\right)}{\varepsilon}\geq\frac{w\left[i\right]-w\left[i-\varepsilon\right]}{\varepsilon}.$$

- Becomes an equality as $\varepsilon\to 0$, yields slope of wage profile

$$w'\left[i\right]=Y_a\left(a\left[i\right],b\left[i\right]\right)a'\left[i\right]$$

  where Y_a is the partial derivative

- To get full wage profile, integrate over the profile and add in the binding participation constraint

$$w\left[i\right]=w^0+\int_0^i Y_a\left(a\left[j\right],b\left[j\right]\right)a'\left[j\right]d\left[j\right]$$

Equilibrium Conditions

- Could equivalently be written in terms of workers choosing firms rather than firms choosing workers

$$\begin{aligned} \pi'[i] &= Y_b(a[i], b[i])\, b'[i] \\ \pi[i] &= \pi^0 + \int_0^i Y_b(a[j], b[j])\, b'[j]\, d[j] \end{aligned}$$

- Conditions also imply that $y = \pi + w$ at each firm
- An extremely tight set of constraints on the problem
  - Wages and profits of each factor depend at quantile i depend on the full profile of factors from quantile 0 to $i - \varepsilon$

The Matching Graph

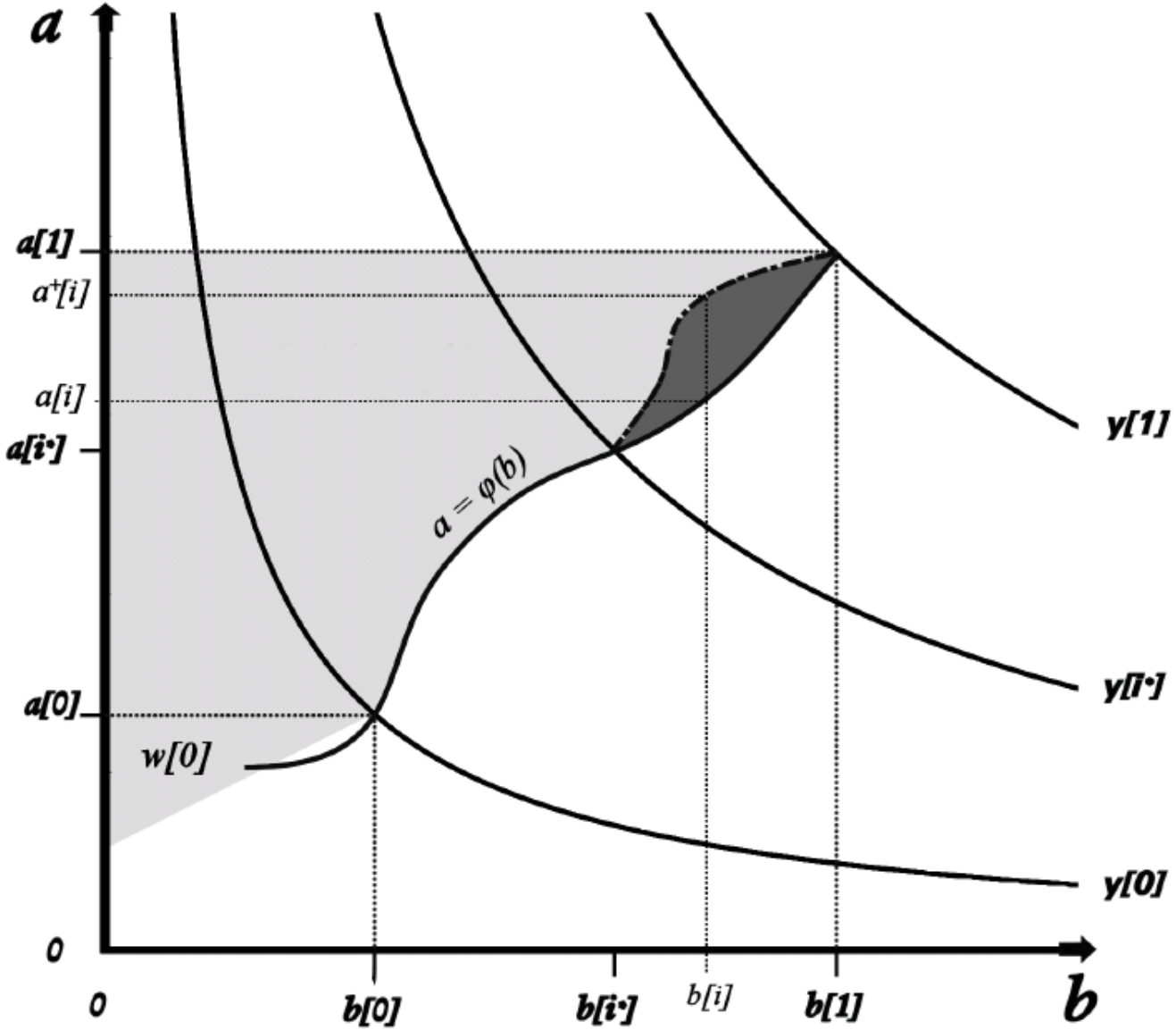
Drawing the matching graph: multiplicative case (WLOG)

- Output accruing from matching a worker of ability a and a firm of ability b is $a \times b$: a rectangle in a Cartesian graph
- Let $a = \varphi(b)$, defined by $a[F_b(b) = \{(a, b) \ \ st. F_a(a) = F_b(b)\}]$ with slope

$$\varphi'(b) = a'[F_b(b)] f_b(b) = \left. \frac{a'[i]}{b'[i]} \right|_{i=F_b(b)}$$

- $\varphi(b)$ is strictly increasing in b, and the slope is given by the relative steepness of a and b at each quantile i

Wage Setting in the Assignment Model



Terviö, 2008

Some Observations on Equilibrium

1. **There is no bargaining in this model**
   - Why?

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   - If there was a jump at some point in the profile of one factor, all of the surplus would go to the factor with the jump
2. **Payments to factors are only affected by the quality of those below them in the ranking**
   - Why?

Some Observations on Equilibrium

1. **There is no bargaining in this model**
   - No bargaining due to the continuity of the distribution of both factors
   - If there was a jump at some point in the profile of one factor, all of the surplus would go to the factor with the jump
2. **Payments to factors are only affected by the quality of those below them in the ranking**
   - Binding constraint on each worker or firm is that the quality/price of the worker/firm just below it in the distribution
3. **The productivity characteristics a and b are essentially ordinal**

Some Observations on Equilibrium

1. **There is no bargaining because of the continuity of the distribution of both factors**
2. **Payments to factors are only affected by the quality of those below them in the ranking**
3. **The productivity characteristics a and b are essentially ordinal**
   - Any increasing transformation of the scale of measurement for a factor's quality combined with the inverse change in the functional form of the production function changes nothing substantive
   - In this sense $Y(a[i], b[i]) = a[i] \times b[i]$ is a general functional form—so long as we are assuming supermodularity

Some Observations on Equilibrium

Q: How is this model different from the canonical model of skill supply and demand?

1. MP
2. Indivisibilities/assignment
3. Substitutability

CEO Pay and Firm Market Value in 2004

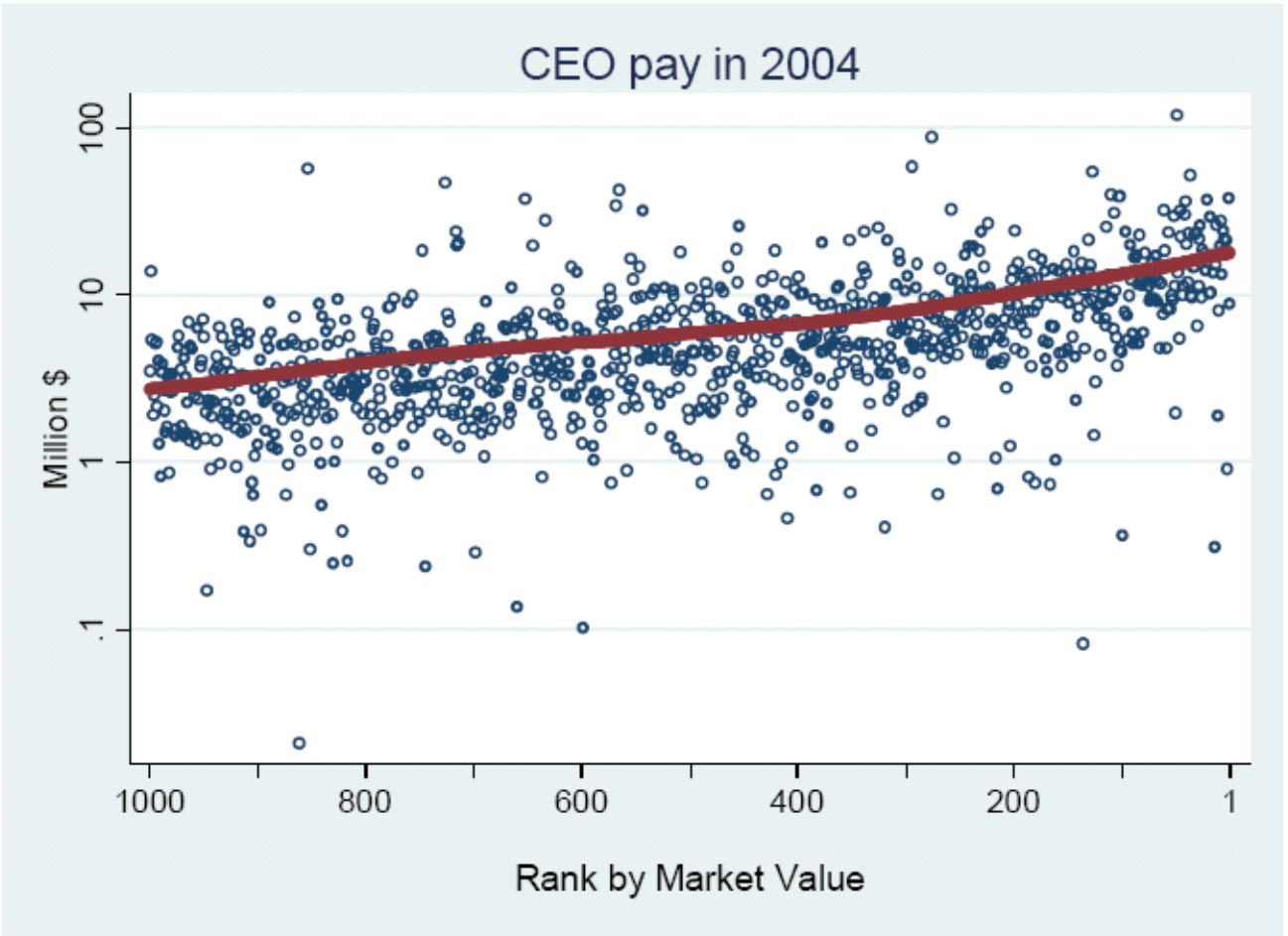


Figure 2. Relation of CEO pay and firm rank by market value in 2004. The smoothed relation (obtained with the Lowess method) appears upwards biased in the graph because the pay levels are depicted on log scale.

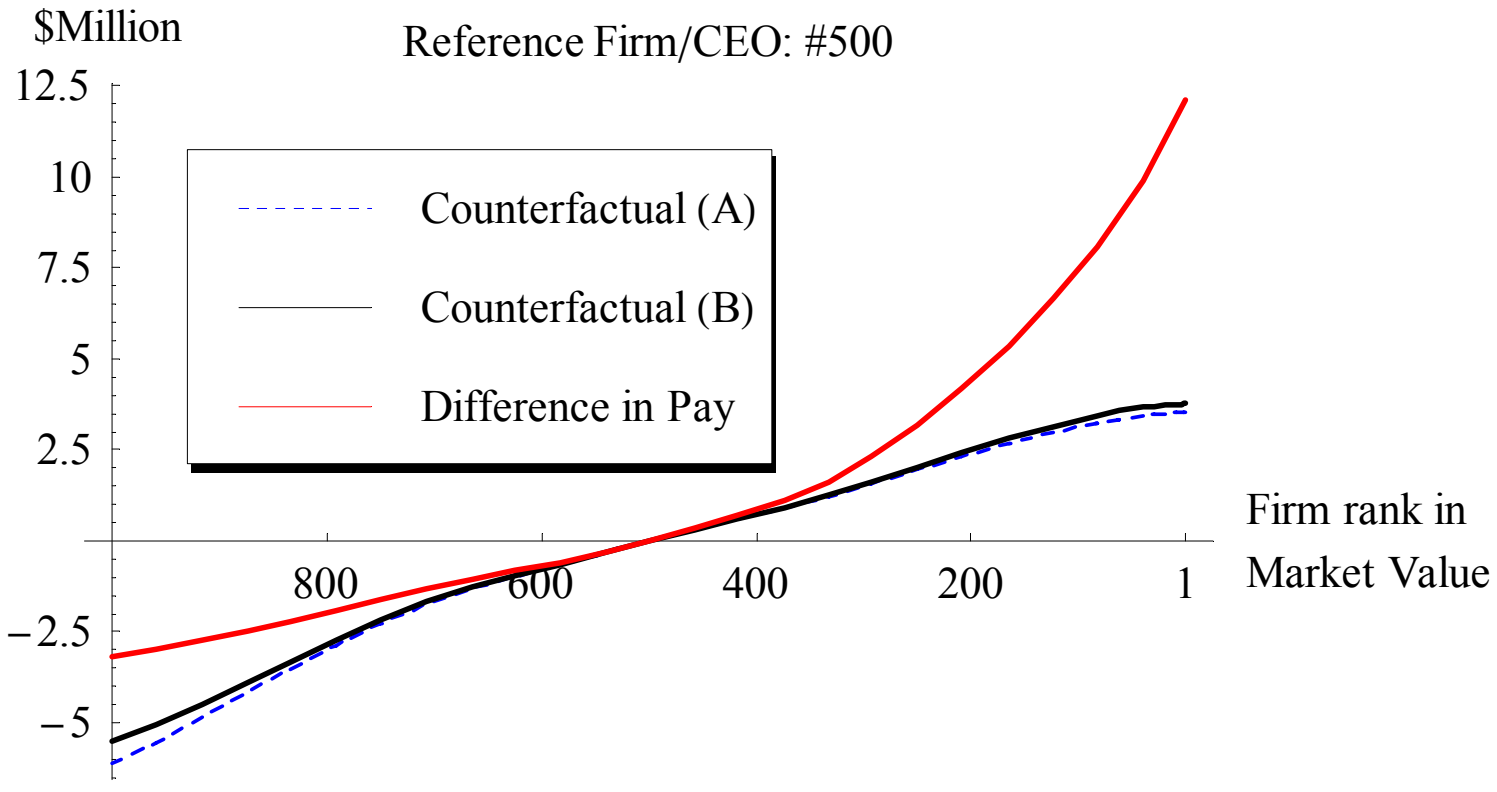
Applying this Model to CEO Pay—Issues

1. Surplus created by CEO-firm interaction is unobserved. *Market value of the firm is affected by the current CEO and by expectations of future productivity. Firm size, an outcome, cannot be treated as the b variable*
2. Part of the market value of the firm reflects the value of capital that can be readily transferred/resold among firms. *This capital is not indivisible and so is not part of the surplus in* $Y(\cdot)$
3. Current market value of a firm depends on the quality of the current CEO and the quality of past and (in expectation) future CEOs
4. Productivity tends to grow over time, and the *expectation of growth affects current market value*
5. The distribution of CEO ability and latent (exogenously determined) firm size (not market value) can change over time
6. Outside options may shift

Applying this Model to CEO Pay—Assumptions

1. The distribution of $a[i]$ and $b[i]$ are time invariant
2. Productivity grows deterministically at rate g at all firms (that's why the scaling lemma is needed)
3. The value of outside options grow at rate g. Terviö uses values between 0.2 and 0.025
4. Discount rate is constant. Uses values between 0.08 and 0.05
5. The impact of past *and future* CEO quality on current firm performance decays at a constant rate $\alpha_{\tau+1} = \alpha_\tau \lambda / (1+\lambda)$. λ determines the decay rate. With $\lambda \to \infty$, only the current CEO affects contemporaneous earnings. Terviö uses values between ∞ and 0.1
6. Adjustable capital must earn market rate of return: subtracted from Y. Terviö assumes that the gross surplus has constant elasticity θ with respect to adjustable capital. Sets share of adjustable capital in Y at values between 0 and 0.8

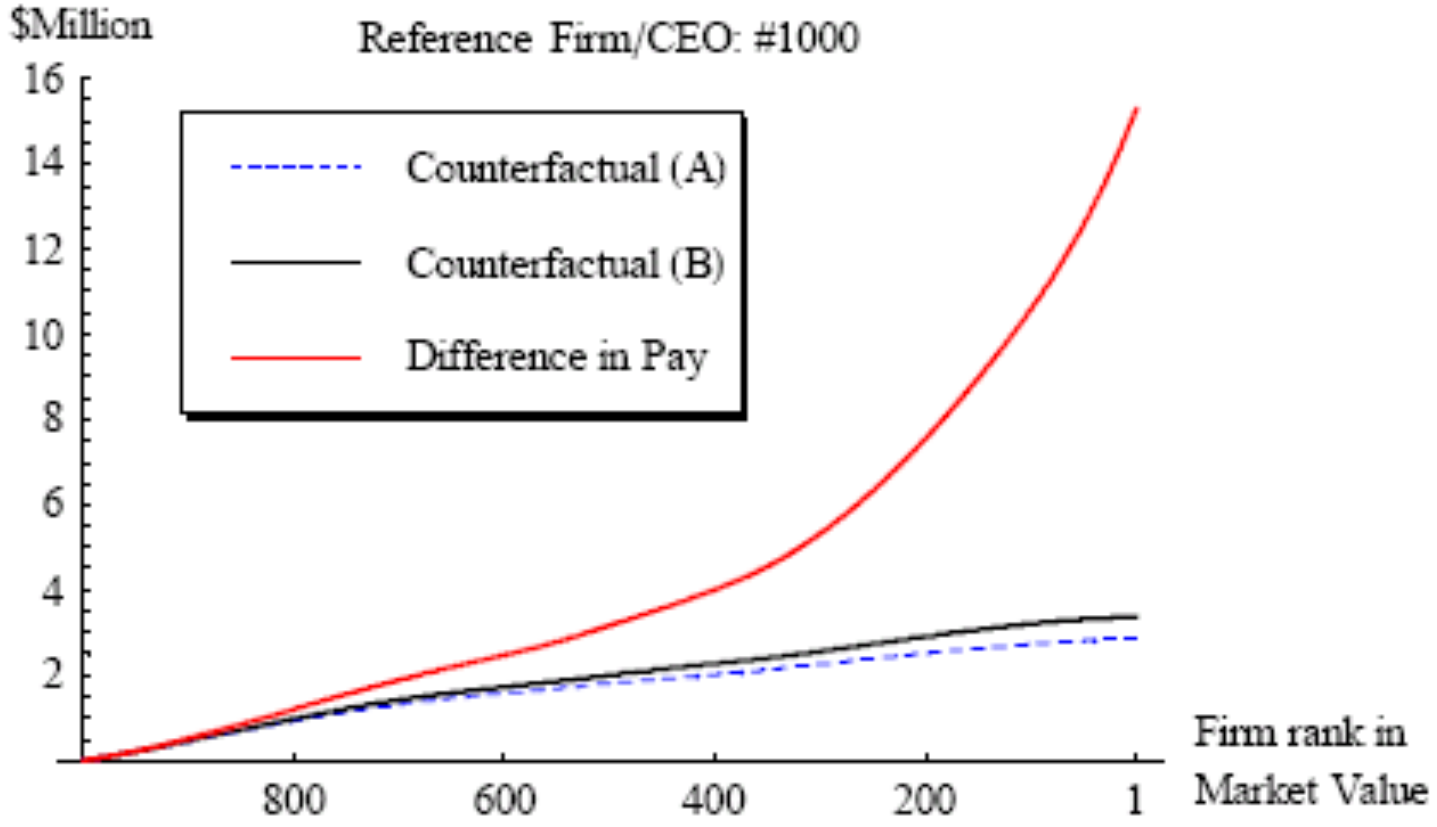
Hypothetical Effect on Surplus (and CEO Pay) of Replacing All Firms with Median Firm, Holding CEO Ability Fixed



[1] The counterfactual difference that CEOs would make to economic surplus created at the reference firm if they were to replace the actual CEO at the reference firm. The value is calculated under two assumptions of the model parameters (A and B, defined in Table 1). The red line depicts the difference in actual pay of the CEOs relative to that of the reference rank.

Terviö, 2008

Hypothetical Effect on Surplus (and CEO Pay) of Replacing All Firms with Smallest Firm, Holding CEO Ability Fixed



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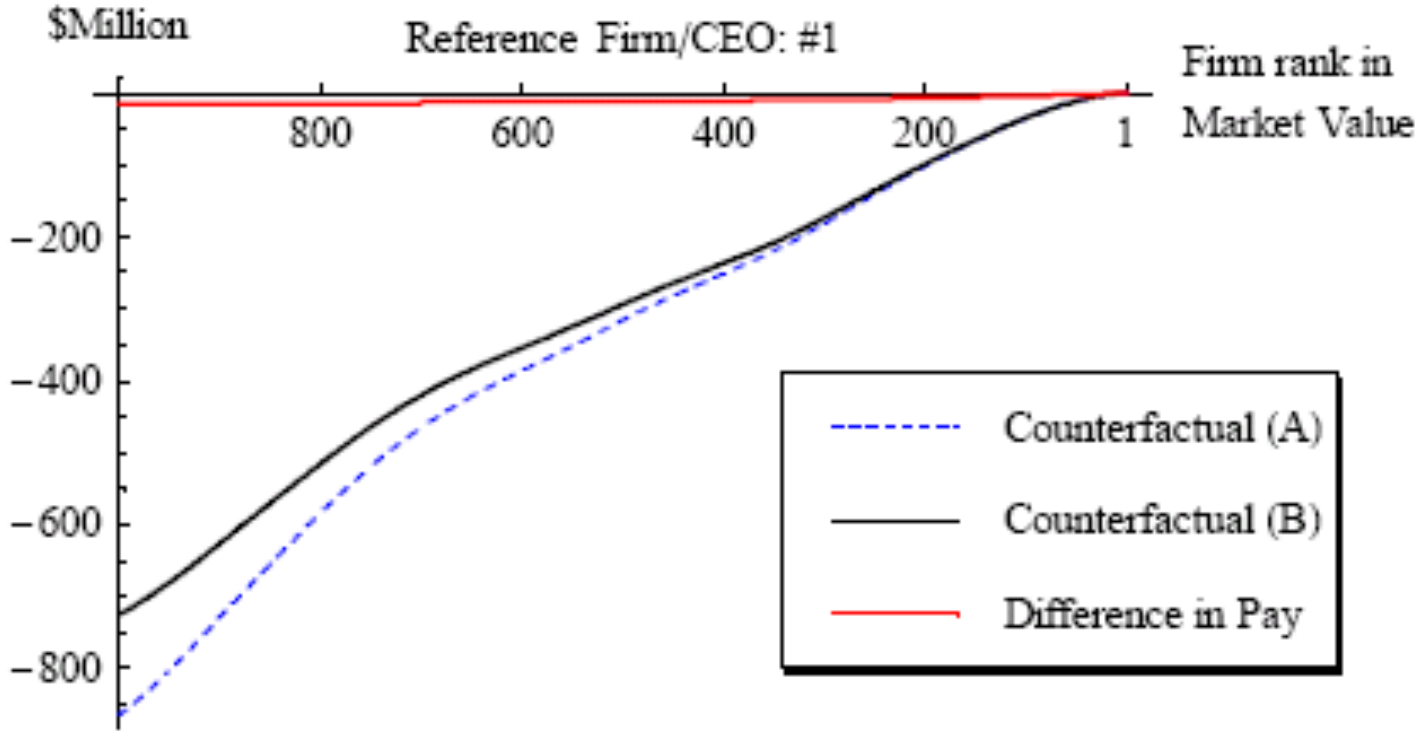
Hypothetical Effect on Surplus (and CEO pay) of Replacing All Firms with Largest Firm, Holding CEO Ability Fixed



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Terviö, 2008

Inferred Relative Ability of CEO 750, 500, 250, and 1, Relative to Lowest Ranked (#1,000) CEO

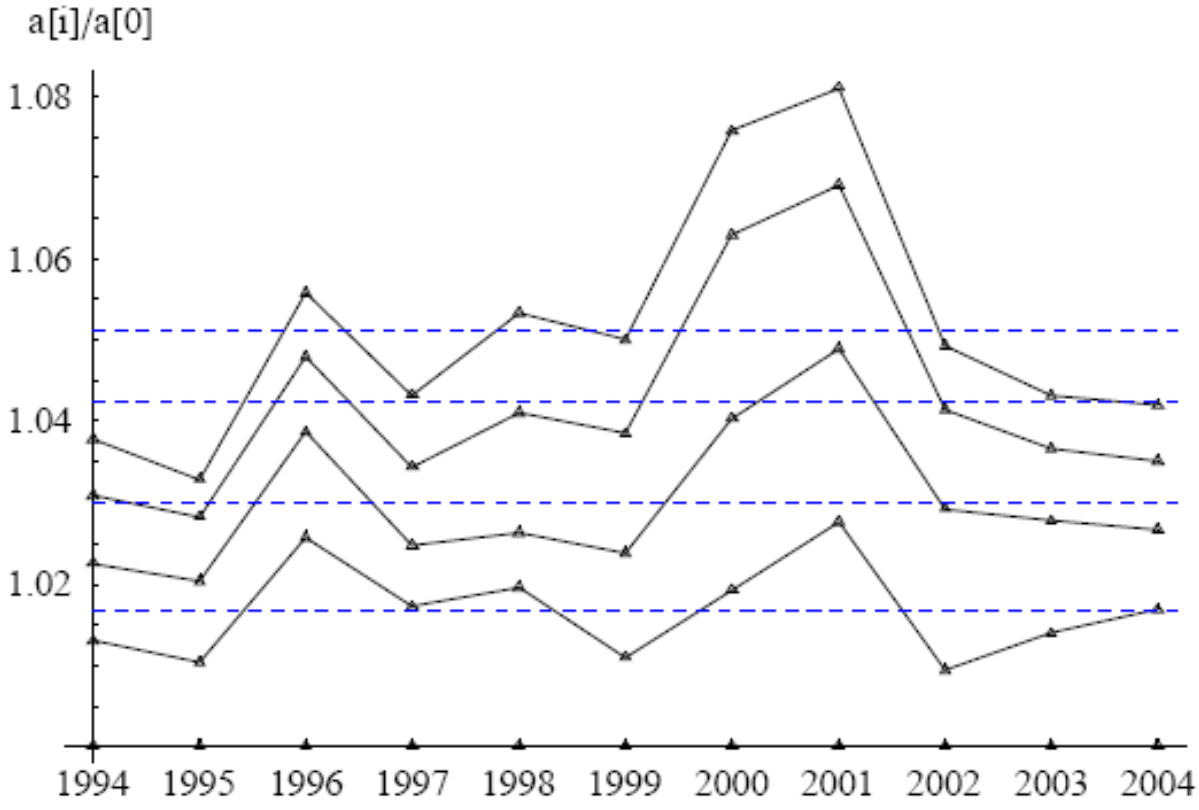


Figure 5. Inferred CEO abilities at 1st, 250th, 500th, and 750th largest firm (relative to 1000th) by year. Dashed lines give the average over this time period, used as the time-invariant distribution of ability in Section 5.3.[2]

Are Wages Equal to Marginal Products?

"It would be incorrect to say that factors earn their marginal productivity by the usual definition of marginal productivity, because the increase in output if the individual of ability $a[i]$ were to increase in ability is proportional to $b[i]$. But if she were to increase in ability, then, in equilibrium, she would also move up in the ranking and be matched with a higher b—and other individuals would have to move down and experience a decrease in productivity…*The relevant margin here is whether an individual will participate in the industry or not—and if not, then the effect of the resulting rearrangement of remaining individuals is part of the marginal product.*"

Valuing a Talent's Marginal Product

Consider hypothetical case where highest ability worker, index $a[1]$, falls in ability to equal lowest ability worker $a[0]$

- This "demotion" means that each firm other than $b[0]$ will have to match with a slightly lower ranked worker
- Previously, total output was equal to:

$$Y = \int_0^1 Y(a[j], b[j])\, d[j]$$

- Now, each firm except for the lowest ranked firm $b[0]$ pairs w/ slightly lower quality worker

$$\Delta Y[j] \equiv Y[j] - \hat{Y}[j] = Y(a[j], b[j]) - Y(a[j-\varepsilon], b[j]). \quad (1)$$

- Note that $a[\cdot]$ continues to refer to the values of a in the *original* distribution, not the new distribution

What is the Loss in Output?

- Dividing equation (1) by ε and letting $\varepsilon \to 0$, we take the limit of

$$\frac{\Delta Y[j]}{\varepsilon} = \frac{Y(a[j], b[j]) - Y(a[j-\varepsilon], b[j])}{\varepsilon}$$

to get

$$Y'[j] = Y_a(a[j], b[j])\, a'[j]$$

- Integrate over the full distribution of units to obtain the total loss in output:

$$\Delta Y = \int_0^1 Y_a(a[j], b[j])\, a'[j]\, d[j]$$

This is the net reduction in output caused by worker $a[1]'s$ demotion

Are Wages Equal to Marginal Products?

Compare reduction in output to the change in the wage bill

- The wage of the previously highest ability worker falls from

$$w[1] = w^0 + \int_0^1 Y_a(a[j], b[j]) a'[j] d[j]$$

to

$$\hat{w}[1] = w^0$$

- The change in the wage for worker $a[1]$ is

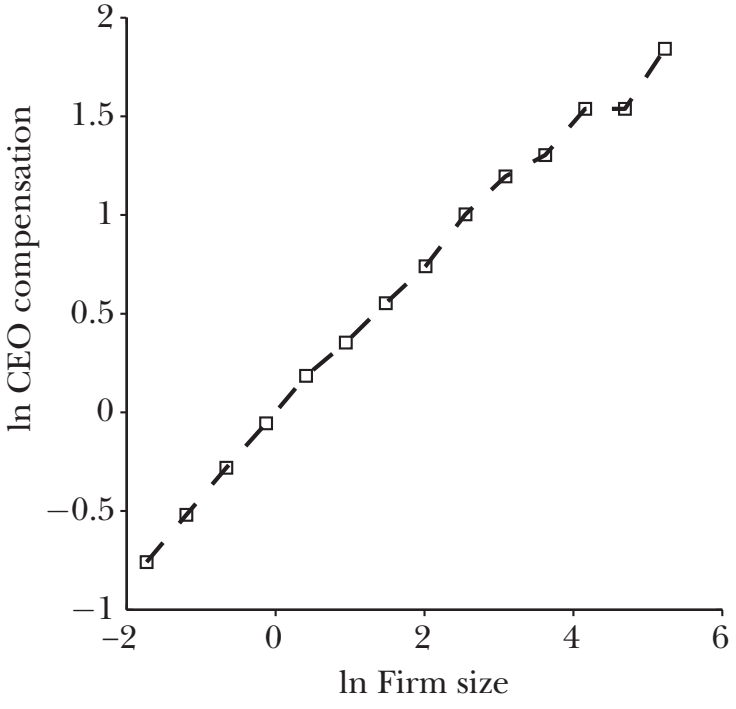
$$\begin{aligned} w[1] - \hat{w}[1] &= w^0 + \int_0^1 Y_a(a[j], b[j]) a'[j] d[j] - w_0 \\ &= \int_0^1 Y_a(a[j], b[j]) a'[j] d[j] \end{aligned}$$

Identical to fall in total output, ΔY, confirming Tervi\"o's claim

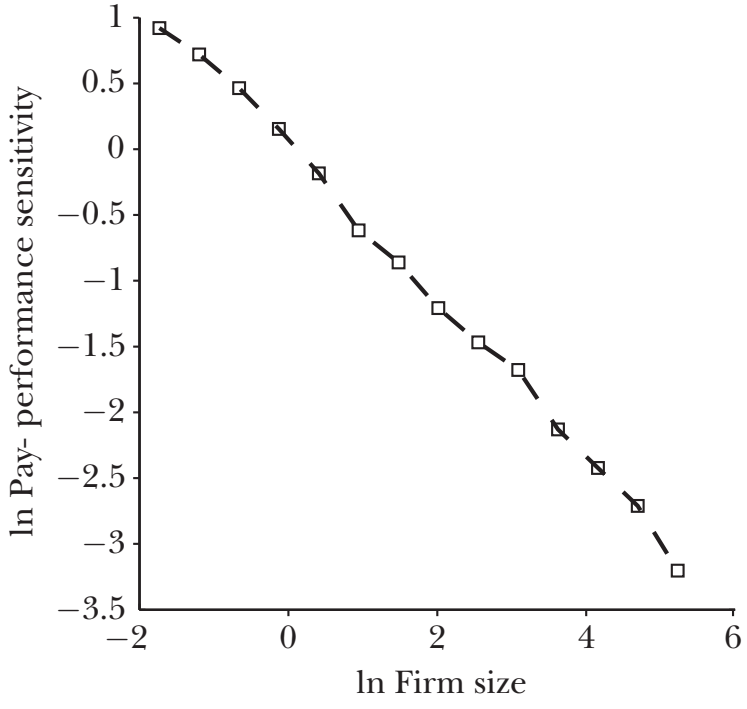
CEO Pay Increasing in Firm Size, Performance Sensitivity of Pay Decreasing

CEO Pay and CEO Pay–Performance Sensitivity versus Firm Size

A: CEO Compensation



B: Pay-Performance Sensitivity



Gabaix 2016

U.S. CEOs Are Paid More than in Other Countries (2006)

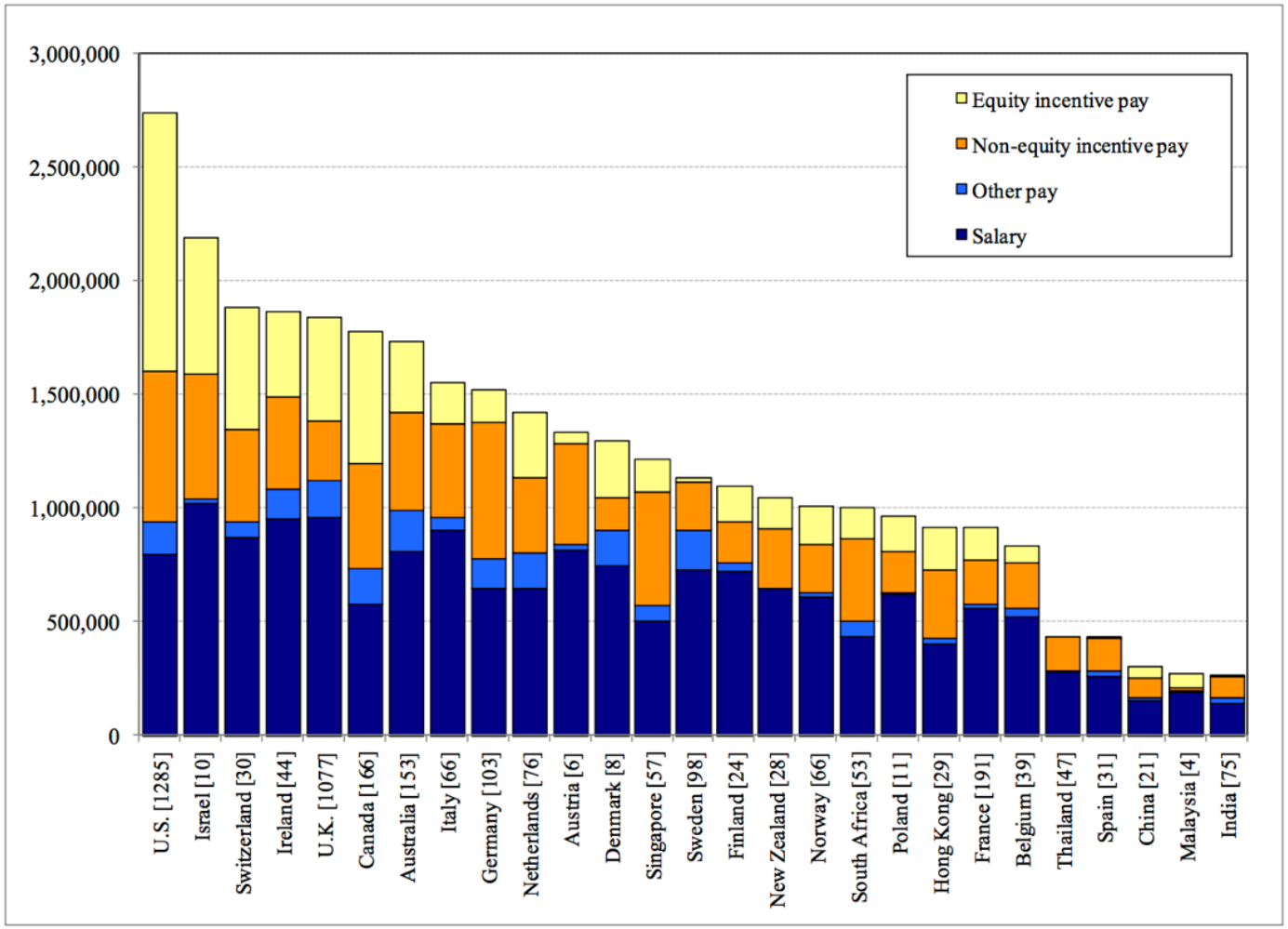
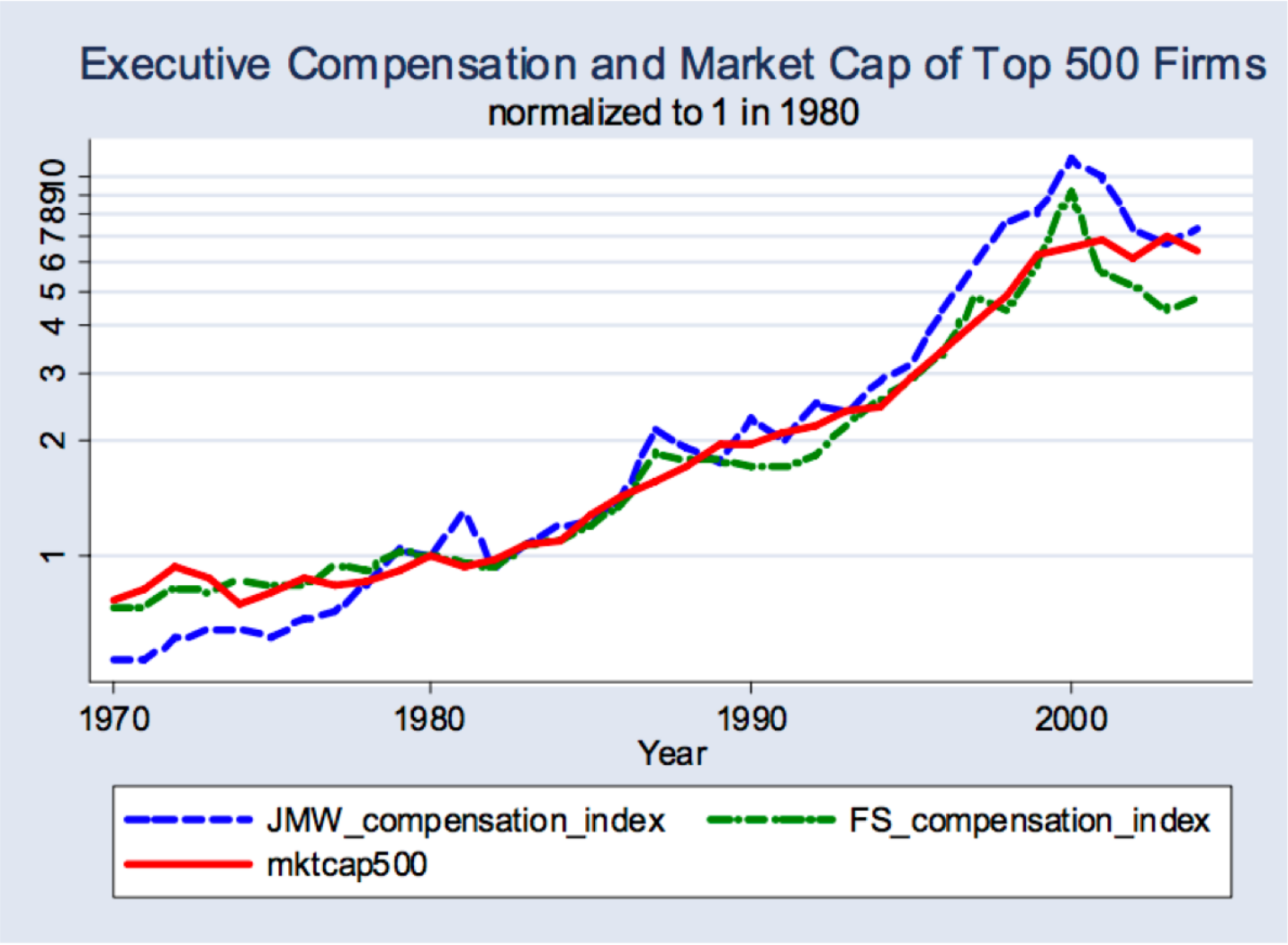


Figure 1: CEO Total Compensation Controlling for Sales and Industry

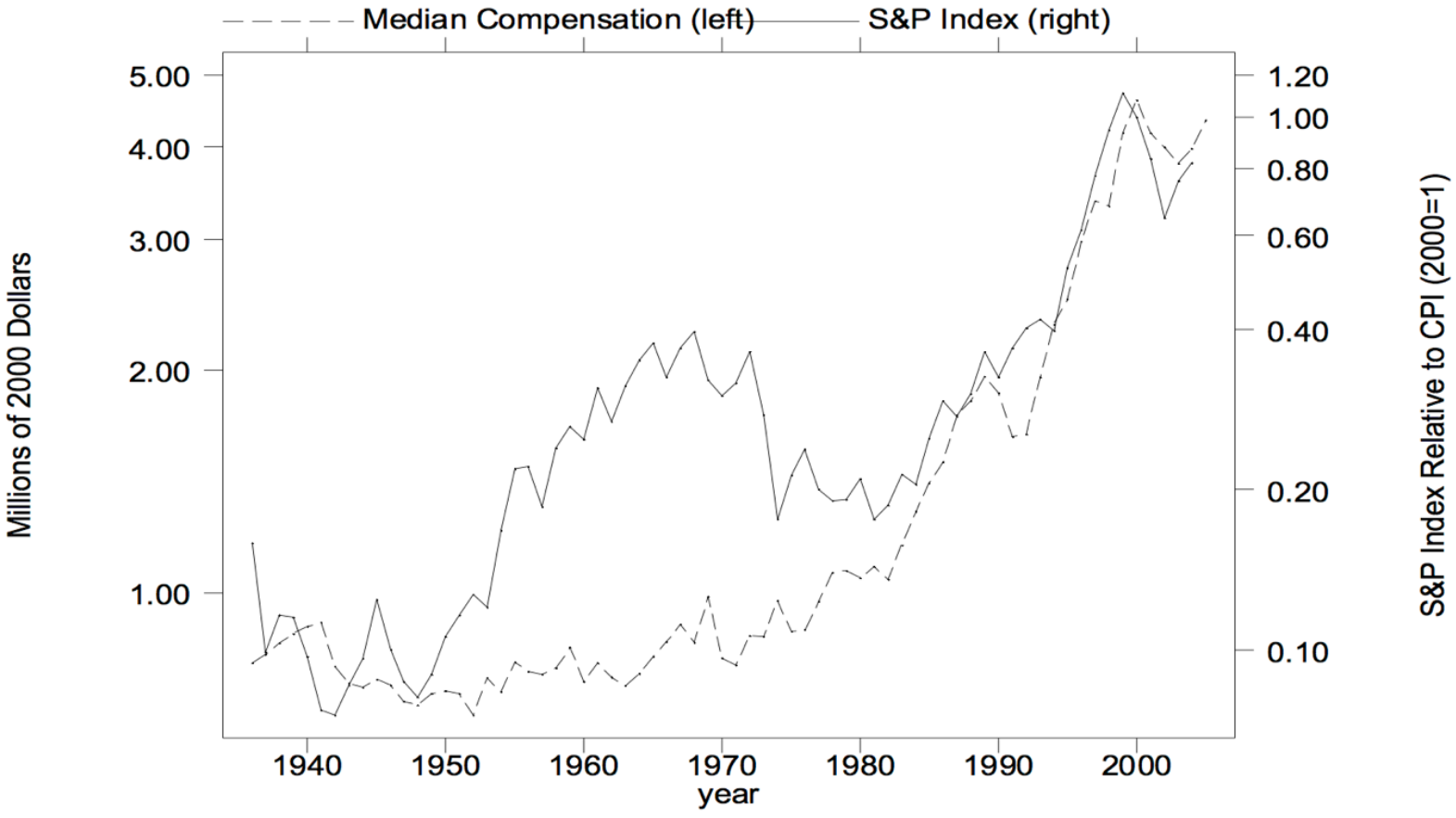
Fernandes, Ferreira, Matos and Muphy 2009

U..S. CEO Pay Tracks Market Capitalization, 1970 - 2004



Gabaix and Landier, 2006

But this Relationship Does Not Hold Over the Longer Run



Frydman, 2016

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Superstars vs Mediocrities

Sattinger/Rosen assume that talent is known to the market

- With full info, wages paid to talent likely to be efficient

Terviö 2009: how does talent become known? Two observations

1. To be 'discovered,' one must first 'audition'
   - In the Terviö model, knowledge about worker quality is a joint output of production
   - Richard Caves: "Nobody Knows" property—one cannot evaluate talent without putting it to use
   - Implies that there is real resource cost to discovering talent—capital or just attention
2. The person (or firm) that discovers the talent does not necessarily have the ability to capture the full value of that talent discovery

A setting with (1) and (2) may generate market inefficiencies

A Toy Example—But the Full Model is Awesome

Consider a market for movie stars

1. **Talent**
   1. Talent θ_i of movie star i is ex ante unknown
   2. Talent distribution is $\theta \sim U[0, 100]$: $E[\theta] = 50$ and $E[\theta|\theta \geq \psi] = 50 + \psi/2$
2. **Production**
   1. Cost c of making a movie is $\$4,000K$
   2. Quality of movie produced is equal to talent of star: $Y(\theta_i) = \theta_i$
   3. Quality of movie and hence θ_i is publicly observed

A Toy Example

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   3. Quality of movie and hence θ_i is publicly observed
3. **Careers**
   1. Careers are $T \leq 16$ periods
   2. Stars' outside option is $w_{0i} = 0$ for all i
4. **Market structure**
   1. Demand for movies is downward sloping
   2. Free entry of movie firms into the industry
   3. Everyone is risk neutral

Solution Concept

Solution approach

1. Solve for output price P where firms break even from making movies
2. Solve for threshold θ^* where novices stay in industry—become veterans
3. Calculate wages, quality, retention, etc.

Two cases

1. Workers *cannot* borrow to enter industry and *cannot* sign indentured servitude contracts
2. Workers can borrow to enter industry

Case 1: No Worker Borrowing, No Indentured Servitude

Output price

- Competitive free entry: P^* allows movie-making firms to break even
- P^* : $P \times E[Y] - 4,000K = 0$ where $E[Y] = 50$
- Implies that $P^* = 80K$

Retention threshold

- All novices with $\theta_i \geq 50$ become veterans: 50% of novices are retained
- *Why?*

Case 1: No Worker Borrowing, No Indentured Servitude

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Retention threshold

- All novices with $\theta_i \geq 50$ become veterans: 50% of novices are retained
- Why? Because in expectation they produce weakly better movies than the random novice

Case 1: No Worker Borrowing, No Indentured Servitude

Quality of movies

- Average veteran movie quality $E[Y|\text{Vet}] = E[\theta|\theta \geq \theta^*] = 75$
- If 50% of novices are fired, then 2 must be hired in each period to maintain steady state employment
- **The fraction of novices in the industry is...**

Case 1: No Worker Borrowing, No Indentured Servitude

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- If 50% of novices are fired, then 2 must be hired in each period to maintain steady state employment
- **The fraction of novices in the industry is**

$$\Pr[\text{Novice}] = \frac{\text{Novices}}{\text{Novices+Vets}} = \frac{1/(1-\theta^*)}{1/(1-\theta^*)+15} = \frac{2}{17} = 0.118$$

- **Average movie quality is...**

Case 1: No Worker Borrowing, No Indentured Servitude

Quality of movies

- Average veteran movie quality $E[Y|\text{Vet}] = E[\theta|\theta \geq \theta^*] = 75$
- If 50% of novices are fired, then 2 must be hired in each period to maintain steady state employment
- The fraction of novices in the industry is

$$\Pr[\text{Novice}] = \frac{\text{Novices}}{\text{Novices+Vets}} = \frac{1/(1-\theta^*)}{1/(1-\theta^*)+15} = \frac{2}{17} = 0.118$$

- **Average movie quality is**

$$\begin{aligned} E[Y] &= (1-0.118) \times E[\theta|\text{Vet}] + 0.118 \times E[\theta|\text{Novice}] \\ &= (1-0.118) \times 70 + 0.118 \times 50 \\ &= 72 \end{aligned}$$

Case 1: No Worker Borrowing, No Indentured Servitude

Earnings of movie stars

- **Expected career earnings of a veteran is**

$$15 \times (P^* \times \{E[\theta_i | \theta_i \geq \theta^*]\} - 4,000) = 30,000K$$

- **Top lifetime wage in the industry is**

$$15 \times (P^* \times 100 - 4,000) = 60,000K$$

- **Expected lifetime earnings (rents) for a novice are...**

Case 1: No Worker Borrowing, No Indentured Servitude

Earnings of movie stars

- **Expected career earnings of a veteran is**

$$15 \times (P^* \times \{E[\theta_i | \theta_i \geq \theta^*]\} - 4,000) = 30,000K$$

- **Top lifetime wage in the industry is**

$$15 \times (P^* \times 100 - 4,000) = 60,000K$$

- **Expected lifetime earnings (rents) for a novice are therefore**

$$\left(1 - \frac{50}{100}\right) \times 30,000 = 15,000K$$

Expected value of being randomly chosen to make a movie is $\$15,000K =$ **rents**. *But that's not the biggest cost*

Superstars vs Mediocrities

	Case 1 Constrained	Case 2 Unconstrained
	Quality of talent	
Talent threshold θ^*	50	
$E[\theta \mid \text{Veteran}]$	75	
Pr[Novice]	12%	
$E[\theta \mid \text{Incumbent}]$	72	
Average movie quality	72	
	Wages and Output Prices	
Talent price P^*	$\$80K$	
Top wage $P^* \times 100 - \$4,000$	$\$4M$	
$E[\text{Career earnings} \mid \text{Vet}]$	$\$30M$	
Wage of novice	\$0	
$E[\text{Rents} \mid \text{Novice}]$	$\$15M$	

Case 2: Workers Can Pay to Make a Movie

- **Assume that novices pay $\$1,500K$ to make first movie**
- **Output price**
  - Competitive free entry: P^* allows movie-making firms to break even
  - $P^* : P \times E[Y] - 4,000K + 1,500K = 0$ where $E[Y] = 50$.
  - Implies that $P^* = 50K$
- **Retention threshold**
  - $\theta^* : P^* \times \theta^* - 4,000K = 0$. $\theta^* = 80$
  - Notice retention threshold is now higher because novices pay to make movies
  - Tougher industry for vets!

Case 2: Workers Can Pay to Make a Movie

Quality of movies

- Average veteran movie quality $E[Y|\text{Vet}] = E[\theta|\theta \geq 80] = 90$
- If 80% of novices are fired, then 5 must be hired in each period to maintain steady state employment
- **The fraction of novices in the industry is...**

Case 2: Workers Can Pay to Make a Movie

Quality of movies

- Average veteran movie quality $E[Y|\text{Vet}] = E[\theta|\theta \geq 80] = 90$
- If 80% of novices are fired, then 5 must be hired in each period to maintain steady state employment
- **The fraction of novices in the industry is**

$$\Pr[\text{Novice}] = \frac{\text{Novices}}{\text{Novices+Vets}} = \frac{1/(1-\theta^*)}{1/(1-\theta^*)+15} = \frac{5}{20} = 0.25$$

- **Average movie quality is**

$$\begin{aligned} E[Y] &= (1-0.25) \times E[\theta|\text{Vet}] + 0.25 \times E[\theta|\text{Novice}] \\ &= 0.75 \times 90 + 0.25 \times 50 \\ &= 80 \end{aligned}$$

Case 2: Workers Can Pay to Make a Movie

Earnings of movie stars

- Expected career earnings of a veteran is

$$\begin{aligned} &= 15 \times (P^* \times \{E[\theta_i | \theta_i \geq \theta^*]\} - 4,000) \\ &= 15 \times (50 \times 90 - 4,000) \\ &= 15 \times 50 = 7,500K \end{aligned}$$

- Top lifetime wage in the industry is

$$15 \times (50 \times 100 - 4,000) = 15,000K$$

- **Expected lifetime earnings (rents) for a novice are...**

Case 2: Workers Can Pay to Make a Movie

Earnings of movie stars

- Expected career earnings of a veteran is
  $15 \times (P^* \times \{E[\theta_i | \theta_i \geq \theta^*]\} - 4,000) = 7,500K$
- Top lifetime wage in the industry is
  $15 \times (50 \times 100 - 4,000) = 15,000K$
- **Expected lifetime earnings (rents) for a novice are therefore**

$$
\begin{aligned}
&= \left(1 - \frac{\theta}{100}\right) \times 7,500K - 1,500K \\
&= 0.2 \times 7,500K - 1,500K \\
&= 0
\end{aligned}
$$

Expected value of being randomly chosen to make a movie is $0.
No rents

Superstars vs Mediocrities

	Case 1 Constrained	Case 2 Unconstrained
	Quality of talent	
Talent threshold θ^*	50	80
$E[\theta \mid \text{Veteran}]$	75	90
Pr[Novice]	12%	25%
$E[\theta \mid \text{Incumbent}]$	72	80
Average movie quality	72	80
	Wages and Output Prices	
Talent price P^*	$\$80K$	$\$50K$
Top wage $P^* \times 100 - \$4,000$	$\$4M$	$\$1M$
$E[\text{Career earnings} \mid \text{Vet}]$	$\$30M$	$\$7.5M$
Wage of novice	\$0	$-\$1.5M$
$E[\text{Rents} \mid \text{Novice}]$	$\$15M$	$\$0M$

"Has Beens"—Use Retained Rents to Subsidize Failing Careers

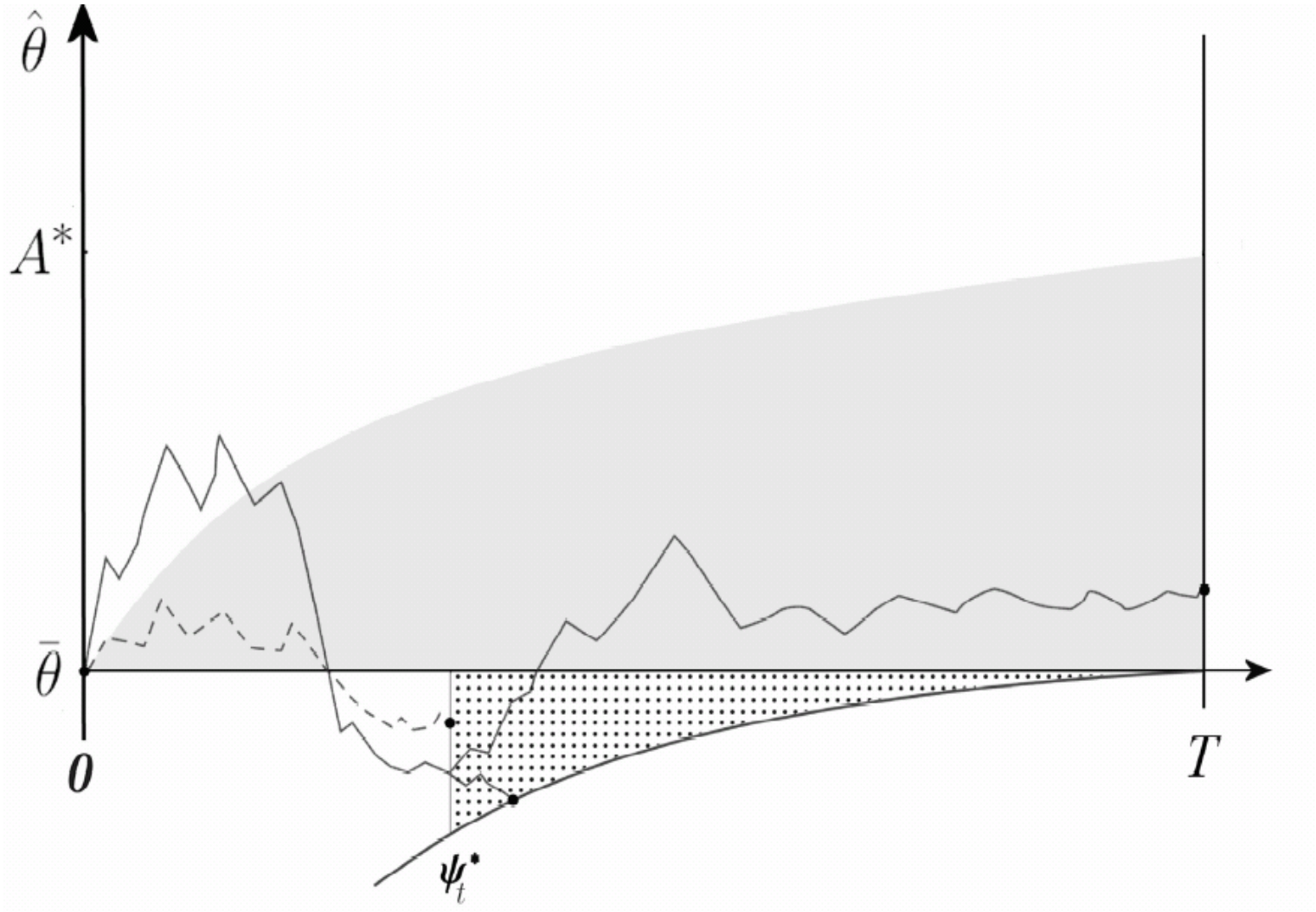

Figure 2. *Mediocrities and Has-beens.*

Terviö 2007

Observations

1. How much of the labor market is a 'Talent' market versus a 'skills' market? Distinguish three forces:
   - Skills
   - Comparative advantage
   - Assignment
2. How much of talent scarcity is a problem of scarce discovery versus intrinsic scarcity?
   - Talent can receive large rents even when that talent is mediocre
   - Ex-post realization of *known* talent may induce artificial scarcity
   - See Pallais' 2014 *AER* paper — takes Mediocrities paper as starting point
3. Claim: Talent is *not* scarce. But discovery of talent is costly

What is Marko Terviö's secret... Could it be the Umlauts?

Ünited Stätes Toughens Image With Umlauts

WASHINGTON, DC—In a move designed to make the United States seem more "bad-assed and scary in a quasi-heavy-metal manner," Congress officially changed the nation's name to the Ünited Stätes of Ämerica Monday. "Much like Mötley Crüe and Motörhead, the Ünited Stätes is not to be messed with," said Sen. James Inhofe (R-OK). An upcoming redesign of the Ämerican flag will feature the new name in burnished silver wrought in a jagged, gothic font and bolted to a black background. A new national anthem is also in the works by composer Glenn Danzig, tentatively titled "Howl Of The She-Demon."