

# 출장복명서

기업생태계연구본부 기업제도연구실  
신위뢰

## I. 출장개요

1. 출장자: 신위뢰 부연구위원
2. 출장지: 뉴욕 (미국)
3. 과제명: 고령화, 저성장 시대의 산업경쟁력 제고 방안 연구
4. 출장목적: SIOE(Society for Institutional and Organizational Economics) 컨퍼런스 참가 및 발표, 고령화 및 산업경쟁력 관련 전문가 면담
5. 출장일: 2017년 6월 21일-2017년 6월 27일

## II. 세부일정

일정	장소	목적
6월 21일 -6월 21일	인천/뉴욕	세종-인천공항-뉴욕 도착 (JFK)
6월 22일	뉴욕	Prof. Migrow (U. of Manchester) 면담 및 컨퍼런스 발표 준비
6월 23일	뉴욕	firms and inequality 세션 참가, poster 세션 참가
6월 24일	뉴욕	페이퍼 발표, Dr. Williamson U.S. DOJ, Antitrust Division) 면담
6월 25일	뉴욕	competition law and policy 세션 참가 및 키노트 강연 참가
6월 26일 -6월 27일	뉴욕/인천	뉴욕-인천공항-세종

### III. 출장 수행내용

#### □ 고령화와 기술 발전

##### ○ 고속련 고령 인력의 생산성 변화

- 컨퍼런스에서 Ash와 MacLeod는 고속련 노동자들이 고령화됨에 따라, 퍼포먼스에서 어떠한 변화를 가져오는지에 대하여 연구한 결과를 발표함.
- 이를 연구하기 위해, 미국 대법원 판사들의 업무자료를 분석: 1947년-1994년 자료
- 또한 은퇴제도와 고령 인력의 노동 유인을 논의하기 위해 dynamic programming problem을 정의함.
- 연구 결과, 고령의 판사들은 상대적으로 젊은 판사들과 비교해봤을 때, 동일한 업무 분량을 소화해 내지만, 상대적으로 낮은 퀄리티의 판결을 생산함. (참고로 판결의 퀄리티는 미래에 인용되는 횟수로 결정됨)
- 또한, 은퇴 나이가 늦을수록 높은 퀄리티의 판결문을 생산함.
- 고정 은퇴제도(은퇴 나이가 결정되어있는 시스템)은 판결문의 퀄리티에는 영향을 끼치지 않지만, 판사들로 하여금 판결의 양(업무 분량)에는 부정적인 영향을 끼침.

##### ○ 기술 발전에 따른 인력 구조의 변화

- Ma, Ouimet, Simintzi는 기업합병이 기업의 신기술 채택과 노동생산성, 인력 구성에 어떠한 영향을 미치는지에 대하여 연구함.

- 이를 위해 <Thomson's SDC>, <IPUMs (Integrated Public Use Microdata Service by American Community Survey)> 데이터가 사용됨.
- 기업합병은 효율성 제고와 재무 제한조건 완화에 도움을 주고, 이는 신기술 채택과, 자동화를 촉진시킴.
- 위의 영향으로, 고숙련 노동자들의 생산성이 증가하고, 반복업무를 수행하는 노동자들의 업무대체가 이루어짐. 장기적으로 이는 소득 불균형의 문제로 이어짐.

#### □ 중국의 경쟁정책

- 중국 정부는 경쟁정책의 일환으로 미디어를 이용하여, 기업의 이미지를 떨어뜨리는 <public shaming> 정책을 전략적으로 사용하고 있음.
- 경쟁국의 반독점법 관련 조사에서 기업의 협조가 제대로 이루어지지 않은 경우, 미디어를 이용하여 해당기업의 이미지를 실추시키는 내용을 방송하고, 이러한 public shaming 정책이 주식시장과 연관있음을 밝힘.
- 예를 들어, Biostime 라는 이유식 회사는 public shaming 이후, 3일간 -22%의 주식가격 하락이 있었음.

#### IV. 출장의 성과

- 고령화 연구에 대한 최근 연구 탐구
- 새로운 경제학 연구 방법론 습득
- 미국 법무부 반독점 부서 경제학자와 네트워크 형성
- 연구원 홍보

## V. 참고자료

SIOE 발표 자료

\* 다음 페이지에 슬라이드 첨부

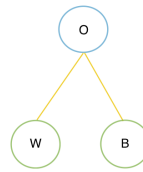
## Discrimination in Organizations

### Discrimination in Organizations: Optimal Contracts and Regulation

Wiroy Shin

KIET-Korea Institute for Industrial Economics & Trade

SIOE 2017

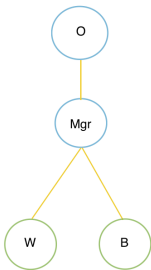


- ▶ Existing economic models of discrimination
  - Becker (1957), Coate and Loury (1993), Peski and Szentes (2013)
  - Models for a sole proprietorship with production workers (two level hierarchy)
  - Baseline models for small organizations

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## Discrimination in Organizations



- ▶ The owner delegates to the manager
- ▶ Information gap between the owner and the manager: productivity of workers, the manager's type (fair or discriminatory?)
- ▶ Discrimination arises from an Agency problem — This can't be analyzed by the two-level hierarchy model.

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## Contribution of this paper

1. The first paper studying discrimination in hierarchical organizations – what can be done inside and outside of the organizations to ameliorate the situation?
  - a. How can the manager be controlled by contractual arrangements? – Gap Projection Mechanism
  - b. Does the optimal contract achieve the first-best (complete fairness and efficiency)? – No
  - c. If not, can regulations help? - Yes, but badly designed regulation could be counter-productive .

### Related Literature

- ▶ Taste-based discrimination: Becker (1957), Stiglitz (1973)
- ▶ Statistical discrimination: Phelps (1972), Coate and Loury (1993)
- ▶ Winter (2004), Peski and Szentes (2013)

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## Contribution of this paper

2. Distinct features of the screening problem and the solution
  - ▶ Multidimensional decisions and private information
  - ▶ Sequential and partial information revelation to principal
  - ▶ No information-aggregation
  - ▶ Existence of tractable solutions

### Related Literature

- ▶ Rochet and Stole (2003)
- ▶ Courty and Li (2000), Kräbmer and Strausz (2015), Hart et al. (2015)
- ▶ Armstrong (1996), Biais et al. (2000)

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## Revelation Principle

### How to solve?

- ▶ Direct mechanism (Myerson, 1981) - The manager reports his private information to the owner, and the owner decides rules: whom to promote  $Q(\cdot)$  and a payment level of the manager  $P(\cdot)$ .

### Applications

- ▶ favoritism in public procurement, resource allocations to subordinate institutions, corporate governance

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## Timeline

### Model

1. The owner specifies a contract:  $\langle Q, P \rangle$ .
2. The manager (but not the owner) knows his own discriminatory preference type  $\theta$ , and observes each worker  $i$ 's productivity:  $x_B, x_W$ .
3. The manager reports this productivity information  $z_B, z_W$  to the owner including information regarding his personal discriminatory preference on the workers  $t$ .
4. The owner promotes one worker  $Q(t, z_B, z_W)$  and observes the output (perfectly correlated with the productivity) of the promoted worker  $x_{Q(t,z)}$ . However, she remains ignorant about the worker who was not promoted and the type of the manager.
5. The owner compensates the manager according to the contract:  $P(t, z_B, z_W; x_{Q(t,z)}) \in [0, x_{Q(t,z)}]$

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## Assumptions

### Productivity

- ▶  $x_i$ , is i.i.d drawn from  $X_i = [0, \bar{c}] \sim f_i$  (pdf)
- ▶  $x = (x_B, x_W) \sim f$  (pdf),  $\mu$  (measure)

### Discrimination coefficient

If the manager is discriminatory, and the promoted worker's identity is  $B$ , the manager earns disutility equivalent to  $d$ .

- ▶  $\theta \in \{0, d\} \sim \nu$  (pmf)

### No outside options

The owner cannot fire the manager nor can the manager refuse to provide the reports about  $\theta$  and  $x$ .

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## Utility

### Owner's profit

$$\pi(t, z; x) = x_{Q(t,z)} - P(\xi_Q(t, z; x)) : \text{outcome} - \text{payment}$$

### Manager's utility

$$u(t, z; \theta, x) = P(\xi_Q(t, z; x)) - d \cdot \mathbb{1}_{Q(t,z)=B} \cdot \mathbb{1}_{\theta=d} : \text{payment} - \text{discrimination coefficient}$$

### Incentive Compatibility condition

The manager cannot achieve higher utility by lying about the workers' productivity levels and his discrimination type.

$$\forall \theta, t \in \Theta \text{ and } \forall x, z \in X,$$

$$P(\xi_Q(\theta, x; x)) - d \cdot \mathbb{1}_{Q(\theta,x)=B} \cdot \mathbb{1}_{\theta=d} \geq P(\xi_Q(t, z; x)) - d \cdot \mathbb{1}_{Q(t,z)=B} \cdot \mathbb{1}_{\theta=d}$$

## The owner's optimization problem

The owner's optimization problem is choosing the optimal  $Q$  and  $P$  to **maximize the expected profit**, subject to the **incentive compatibility constraint**. That is,

$$\max_{Q,P} \sum_{\theta \in \Theta} \int_{x \in X} \nu(\theta) \cdot f(x) \cdot \pi(\theta, x; x) dx$$

$$\text{s.t. } u(\theta, x; \theta, x) \geq u(t, z; \theta, x) \quad \forall \theta, t \in \Theta \text{ and } \forall x, z \in X.$$

**Profit-max Mechanism**  
when the manager's discriminatory characteristic is known by the owner  
 $\nu(d) = 1$

▶ Incomplete info

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## One-type case on the manager's personal type

The study on the one-type case helps to understand the two-types case in two ways:

1. It provides necessary conditions for the optimal mechanism of the two-types case
2. The optimal mechanism of the one-type case can be a simple alternative improving the status quo of the two-types case.

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## Full information(first-best) allocation

Suppose that no information gap exists between the manager and the owner. The manager must report  $z = x$ . Then, The owner doesn't need to pay any information rent to the manager and she can promote whoever has higher productivity.

$$\begin{aligned} Q^F(z) &= B, & \text{if } x_B > x_W \\ Q^F(z) &= W, & \text{if } x_B < x_W \end{aligned}$$

$$P^F(\xi_Q(z, x)) = 0.$$

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## Profit-max mechanism

### Lemma 2

WLOG, the optimal mechanism punishes the detectable lie by giving the minimum level of compensation to the manager.

### Lemma 3

If two reports (one true and one false) produce the same outcome, then a payment scheme should treat them equally in a set of incentive compatible mechanisms.

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## Profit-max mechanism

### Lemma 4

If some available deviation leads to  $W$  to be promoted, in order to select  $B$ , the owner must at least compensate the manager as much as the discrimination coefficient  $d$ .

### Lemma 5

Except the detectable lies, the optimal payment rule depends only on the identity of the promoted worker, not on the performance of the worker.

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## Profit-max mechanism

### Theorem 1 - the owner's profit max mechanism

**Profit maximization** subject to the owner's limited information, and to the manager's incentive compatibility constraints, is achieved by the following arrangement.

1. If the manager reports a productivity gap ( $z_B - z_w$ ) exceeds  $d$ , then the owner promotes  $B$ .
2. If the owner observes productivity different to what the manager promised, then she pays the manager 0 (detectable lie).
3. Otherwise, if the owner promotes  $B$ , she pays  $d$  to the manager. if the owner promotes  $W$ , she pays 0 to the manager.

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## Linear outcome-based contracts - are not maximizing profit

### Outcome-based contract?

- ▶ Middle manager receives  $\alpha x_i$ ,  $\alpha < 1$ .
- ▶ The manager only chooses  $B$  if  $\alpha \cdot (x_B - x_W) > d$ .
- ▶  $x_B - x_W > d/\alpha > d$
- ▶ Comparing to the profit-max mechanism, the expected outcome is lower (more frequently, the qualified  $B$  is not promoted), and payment to the manager is higher (in any case,  $\alpha x_i$  is given, instead of the fixed  $d$  for  $B$ 's promotion).

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## Unconditional mechanism when $W$ is always promoted ( $\lambda = 0$ )

Profit-max mechanism when the manager's discriminatory preference is private information  $\nu(d) \in (0, 1)$

A mechanism  $\langle Q^\lambda, P^\lambda \rangle$  is an **unconditional mechanism**, if it promotes  $B$  with probability  $\lambda \in [0, 1]$  and pays zero to the manager regardless of the manager's reports and the owner's information state.

	$i = B$	$i = W$
$t = 0$	$(\emptyset, 0)$	$([0, 1] \times [0, 1], 0)$
$t = d$	$(\emptyset, 0)$	$([0, 1] \times [0, 1], 0)$

Table: Allocation rule and Payment

Unconditional mechanism is incentive compatible.

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## Delegation Mechanism

The manager always promotes  $W$  if he is discriminatory. If he is not discriminatory, the manager follows the first-best allocation rule.

	$i = B$	$i = W$
$t = 0$	$(z_B > z_W, 0)$	$(z_B < z_W, 0)$
$t = d$	$(\emptyset, 0)$	$([0, 1] \times [0, 1], 0)$

Table: Allocation rule and Payment

Delegation mechanism is incentive compatible.

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## Projection Mechanism: Gap projection mechanism

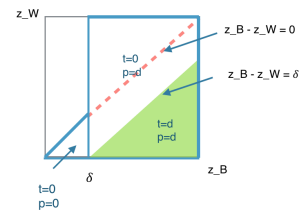


Figure: Productivity Region for  $B$ 's promotion

- ▶ If the manager reports that he is **discriminatory**, the owner selects  $B$  when the two workers' productivity **gap** is higher than threshold  $\delta$  and pays  $d$  to the manager.
- ▶ If the manager reports that he is **fair**, the owner first selects  $B$  when  $B$ 's productivity is higher than threshold  $\delta$ , and pays  $d$  to the manager. When  $B$ 's productivity is less than threshold  $\delta$ , then two worker's productivities are compared.

policy

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## Profit-max Mechanism

## Proof

### Theorem 2

Depending on parameters (e.g., distributions on the worker's productivity, the manager's preference type), the profit-max mechanism is either Projection mechanism or Delegation mechanism.

1. The three mechanisms (Unconditional, Delegation, Projection) are incentive compatible.
2. No other mechanisms are incentive compatible
3. Unconditional mechanism is dominated by other two mechanisms in terms of expected profit.
4. The optimal mechanisms is either Projection mechanism or Delegation mechanism.

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Example:  $x_i \sim \text{Uniform}[0, 1]$  and  $d = 0.2$

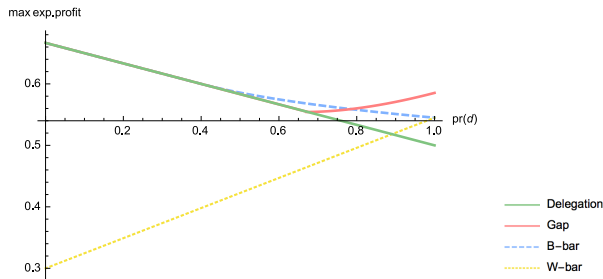
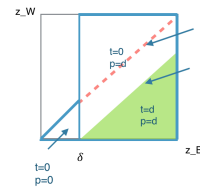


Figure: Maximum expected profits of the four mechanisms: Delegation, Gap, B-bar, and W-bar policy

### Gap Projection Mechanism: Legal issues



- ▶ Imperfectly protected B: it does not 100% avoid direct discrimination.
  - Paper trails for the promotion rule  $\Rightarrow$  EEO violation; possible civil litigation
- ▶ Reverse Discrimination: - Banding and Additional point category
- ▶ Communication issues between the owner and the manager

Is there an equivalent way to implement the allocation and payment minimizing possible litigation cost?  
 Otherwise, should the owner choose non-optimal mechanism (e.g. randomization)?

### Alternative to Gap Projection Mechanism

- A1. The owner asks the manager only about the two workers' productivity levels.
- A2. A worker with higher reported productivity is promoted (i if  $z_i > z_j$ ). The manager receives  $d$  only if the owner observes the promoted B's productivity ( $x_B$ ) is higher than  $\delta$ .

The truthful reporting equilibrium outcome of the Gap Projection Mechanism can be obtained with an untruthful reporting equilibrium of the alternative mechanism.

### Alternative Mechanism

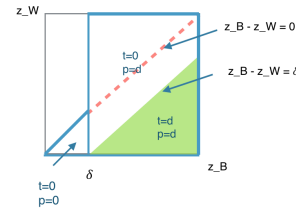


Figure: Productivity Region for B's promotion in Gap Projection Mechanism

- ▶ If he is **discriminatory**, he reports productivity values with  $[z_B > z_W \text{ s.t. } z_B = x_B]$  when the true productivity gap exceeds  $\delta$  ( $x_B - x_W > \delta$ ), and reports  $[z_W > z_B \text{ s.t. } z_W = x_W]$  if  $x_B < \delta$ .
- ▶ If the manager is **fair**, he reports productivity information **truthfully only if  $x_B < \delta$** . If  $x_B > \delta$ , he always reports  $[z_B > z_W \text{ s.t. } z_B = x_B]$  to earn the bonus  $d$  regardless of the true productivity difference  $x_B - x_W$ .

### Conclusion

1. a. What the owner can do best to reduce the discriminatory decisions without compromising the firms profit - Importance of providing incentives reducing the bias
- b. Do profit maximizing decisions by the owner mitigate the manager's discretion completely, **partially**, or not at all?
2. A regulation can improve on the best laissez-faire allocation in terms of the promotion ratio in minority workers. However, it can lead to more unfair situations when it's too aggressive.

Thank you!

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## Examples of Discrimination

- ▶ Eliminating employment discrimination has been a high-priority policy goal in the U.S. for 50 years.
  - Civil Rights Act of 1964

### Discrimination Lawsuits in the U.S.

- ▶ Coca-Cola (2000) No.58 in Fortune 500
  - Racial discrimination - \$192 million (settlement cost)
- ▶ Bank of America (2013) No.21 in Fortune 500
  - Gender discrimination - \$39 million

This paper diagnoses the phenomenon and proposes contractual and regulatory solutions to ameliorate the situation.

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## Plan of this talk

- ▶ Part 1  
Optimal mechanisms in laissez-faire environment  
Analysis on regulation
- ▶ Part 2  
Legal status of the optimal mechanism and its implementation

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## Full information allocation

### Expected profit

$$E[\pi(\cdot; Q^F, P^F)] = E(\max\{x_B, x_W\})$$

### Probability of B's promotion

$$\text{pr}(x_B > x_W) = \frac{1}{2}$$

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## Unconditional mechanism

$$\begin{aligned} \forall z \text{ and } \forall \xi_Q(z, x), \quad Q^\lambda(z) &= B \quad \text{with probability } \lambda \\ Q^\lambda(z) &= W \quad \text{with probability } 1 - \lambda, \text{ and} \\ P^\lambda(\xi_Q(z, x)) &= 0. \end{aligned}$$

- ▶  $E[\pi(\cdot; Q^\lambda, P^\lambda)] = \lambda \cdot E(x_B) + (1 - \lambda) \cdot E(x_W) = E(x_i)$
- ▶ Any unconditional mechanism is incentive compatible.
- ▶  $\langle Q^\lambda, P^\lambda \rangle$  with  $\lambda = 0$  represents the status quo, where the owner does not provide any incentive, and the manager always promotes  $W$ .

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## Profit-max mechanism

### Detectable Lie

An owner's informational state  $\xi_Q(z, x) = (z_B, z_W, x_{Q(z)})$  is a **detectable lie** if  $x_{Q(z)} \neq z_{Q(z)}$ .

Suppose that the manager reports  $(z_B = 0.5, z_W = 0.7)$  when  $(x_B = 0.9, x_W = 0.4)$ , and the owner promotes  $W$ . After promotion, the owner realizes an output  $x_{Q(z)} = 0.4 \neq z_W$ . In this case, the lie is detected.

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## Profit-max Mechanism

### Expected profit

$$\begin{aligned} E[\pi(\cdot; Q^*, P^*)] &= E(\max\{x_W, x_B - d\}) \\ &> E(x_W) = E[\pi(\cdot; Q^{\lambda=0}, P^{\lambda=0})] \end{aligned}$$

### Probability of B's promotion

$$0 < \text{pr}(x_B - x_W > d) < \frac{1}{2}$$

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Projection Mechanism:  
B-bar projection mechanism

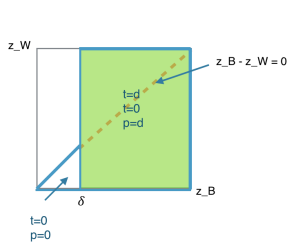


Figure: Productivity Region for B's promotion

- ▶ If the manager reports that he is **discriminatory**, the owner selects **B** when **B's productivity** is higher than threshold  $\delta$  and pays  $d$  to the manager.
- ▶ If the manager reports that he is **fair**, the owner first selects **B** based on the **rule above**, and pays  $d$  to the manager. If **B's productivity** is less than  $\delta$ , then two worker's productivities are compared to each other.

Projection Mechanism:  
W-bar projection mechanism

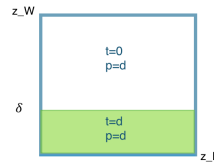


Figure: Productivity Region for B's promotion

- ▶ If the manager reports that he is **discriminatory**, the owner selects **B** when **W's productivity** is less than threshold  $\delta$  and pays  $d$  to the manager.
- ▶ If the manager reports that he is **fair**, the owner always selects **B**, and pays  $d$  to the manager.

Example:  $x_i \sim \text{Uniform}[0, 1]$  and  $d = 0.2$

$\nu(d) = 0.9$	Delegation	Gap	B-bar	W-bar
Maximum profit	0.516	0.570	0.551	0.520
Optimal threshold		0.270	0.726	0.300
$\nu(d) = 0.5$				
Maximized profit	0.583	0.583	0.585	0.422
Optimal threshold		1.000	0.904	0.300
$\nu(d) = 0.1$				
Maximized profit	0.650	0.650	0.650	0.3245
Optimal threshold		1.000	1.000	0.300

Table: Maximum expected profit and optimal threshold

Legal issues in treatment of the manager

Communication between the owner and the manager:

- ▶ Is it legal to ask about the manager's personal characteristic regarding bias?
  - ▶ No actual harassment is involved.
  - ▶ The manager is not punished from revealing his true type. He rather receives a bonus
- ▶ Legal view and economic view might not match: in that case, another communication method (e.g. indirect questions obtaining the same information) should be designed.

Regulation

Policy Implementation

1. Suppose that the firm owns a nonatomic continuum of identical branches, where each branch has its own manager with the single promotion decision problem.
2. A regulator can observe the aggregate promotion result of the firm, the ratio of **B** workers in the promotion.
3. By Law of Large Numbers, from the allocation rule  $Q$ , the owner can perfectly forecast the ratio of **B** workers in the promotion.
4. The regulator wants such ratio to be  $r$ . If the firm fails to achieve the threshold, there is a levy  $\tau$ .

## Owner's problem under regulation

The promotion ratio of  $B$  with a mechanism  $\langle Q, P \rangle$  is

$$\rho(Q) = \nu(d) \cdot \mu(\chi_B^d(Q)) + (1 - \nu(d)) \cdot \mu(\chi_B^0(Q)).$$

Given  $(r, \tau)$ , the owner's optimization problem changes as follows combining the laissez-faire profit  $\pi(\theta, x; x)$  and the regulatory penalty  $\tau$ .

$$\max_{Q, P} \sum_{\theta \in \Theta} \int_{x \in X} \nu(\theta) \cdot f(x) \cdot \pi(\theta, x; x) dx - \tau \cdot 1_{(\rho(Q) \neq r)}$$

s.t.  $u(\theta, x; \theta, x) \geq u(t, z; \theta, x) \quad \forall \theta, t \in \Theta \text{ and } \forall x, z \in X.$

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## Unfairness

Given an arbitrary allocation rule  $Q$ , **unfairness of the allocation rule  $Q$**  is defined as follows:

$$\begin{aligned} \phi(Q) = & \sum_{t \in \{0, d\}} \nu(t) \cdot [\mu(x_W > x_B | x \in \chi_B^t(Q)) \cdot \mu(\chi_B^t(Q)) \\ & + \mu(x_B > x_W | x \in \chi_W^t(Q)) \cdot \mu(\chi_W^t(Q))]. \end{aligned}$$

The measure evaluates frequency of discriminatory incidents: given an allocation rule  $Q$ , worker  $j$  is promoted even though worker  $i$ 's productivity is higher than worker  $j$ 's productivity.

### Lemma 17

Given an arbitrary  $r \in (0, 1)$ , Unconditional mechanism is more unfair than other incentive compatible mechanisms (Projection, Delegation).

$$\max\{\phi(Q^c), \phi(Q^0)\} < \phi(Q^{\lambda=r}).$$

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## Results

- ▶ Regulators (e.g. EEOC) can enforce an organization to promote worker  $B$  as much as they want. – Theorem 3, Corollary 4 ▶ e.g., Gap Projection Mechanism
- ▶ However, such policy decisions need caution. – Theorem 4 and Example 5
- ▶ A regulation can induce undesirable negative side effects: high frequency of unfair events by choosing a less expensive method. (by randomization) – Lemma 15 and 17

## Legal Issues on Implementation

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## The core statutes

The Civil Rights Act of 1964 is the main law prohibiting discrimination in employment opportunities (Title VII; e.g. hiring, job assignments, promotions, pay and benefits, and discharge) and educational opportunities (Title IV; e.g. college admission).

*“Title VII of the Civil Rights Act of 1964 (Title VII) makes it unlawful to discriminate against someone on the basis of race, color, national origin, sex or religion. The Act also makes it unlawful to retaliate against a person because the person complained about discrimination, filed a charge of discrimination, or participated in an employment discrimination investigation or lawsuit.”*

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## Affirmative action

Affirmative action measures can be adopted in three circumstances

1. Voluntary affirmative action
2. Court-ordered affirmative action
3. Affirmative action for under-represented minorities and women in workplaces of contractors of the federal government

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## Weber test

1. There must be a manifest imbalance in the relevant workforce.
2. The plan cannot unnecessarily trammel the rights of non-beneficiaries.
3. The plan must be temporary, seeking to eradicate traditional patterns of segregation.

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## Legal cases in the U.S. and their implications

- ▶ Layoff or replacement trammel the rights of non-beneficiaries.
- ▶ Quotas are generally not allowed, but exception exists in court-ordered affirmative action.
- ▶ Preferential treatment can be used: different cutoff levels are not allowed, but demographic identity can be used as an additional point category. Banding (e.g. test scores are categorized by ranges and compared by the category) might be allowed, but point boosting is not allowed.
- ▶ Improving diversity can be part of goals of educational institution. However, in workplaces, a justification of an operational need for diversity is limited without evidence of past discrimination.

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## Gap Projection Mechanism

The Gap Projection Mechanism has affirmative action components and ameliorates the discriminatory outcome of the status quo.

- ▶ it provides a bonus to the manager for promoting  $B$  when conditions are met.
- ▶ compared to the status quo, it increases a promotion ratio of  $B$ .

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