An Economics Perspective on Fairness:
Can Free Markets Lead to Fair Markets?

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RICE

Running Example

▶ To avoid anything politically incorrect, I'm going to to return to my business school training.

▶ MBAs partition themselves into two sects:
  1. Poets (folks whose undergrad major was in arts/ humanities),
  2. Quants (folks who majored in a science/ engineering/...).

▶ This label is indelible and determined by your birth (undergrad)
  ▶ Like race, gender, etc.

THE DEAN

This talk is from the perspective of biz-school dean who wants to ensure poets and quants are treated "fairly," e.g. on the job market.

1. What kinds of fairness does econ concern itself with?

2. (When) Should this dean be worried?

3. Can "free markets" hurt?

4. Can interventions help?

IF I CEASE TO MAKE SENSE

Reference Materials:

▶ Classics: Becker (1957), Arrow (1971), Phelps (1972)

▶ Survey 1: Fang and Moro (2010).

▶ Survey 2: Cowgill and Tucker (2019) (later this morning!)

A (Simplistic) Model

MBAs on the job market have multiple components of their type:

1. Their visible sect: P(oet) or Q(uant).

2. Other observables (past employment, undergraduate institution)

3. Their innate productivity $x \in \mathbb{R}_+$.

Think of x as e.g. the dollar value of work the candidate would do if hired.

"Fairness" for the purpose of this talk captures the idea that hiring should depend on productivity and not on sect membership. Other observables are "neutral."

Two kinds of discrimination

Historically, delineated two kinds of qualitatively different discrimination:

1. Taste-Based Discrimination: sect-membership directly enters employer's tastes and is therefore used in hiring.

   ▶ "I dislike working with poets so I don't hire them." (Becker)

2. Statistical Discrimination: sect-membership is correlated with and therefore informative about productivity, hence used in hiring.
   ▶ "I'm not a good judge of programmers, and the job requires a lot of programming. Quants are on average better programmers. So I don't hire poets." (Arrow, Phelps)

Both result in hiring outcomes (quants hired, poets unemployed) different from what society views as fair (most productive people employed), but via different channels.

An Ideal World

▶ A line of arguments suggest that *ceteris paribus*, a free (a.k.a. competitive) market might eliminate/ ameliorate unfair outcomes (starting with Becker).

▶ I suggest viewing the argument not as something that *will* happen, but as trying to crystallize a chain of reasoning by which something *can* happen. (Arrow and Hahn)

▶ Understanding the causal chain helps us understand when markets *can* help, and conversely, when they *might* make things worse.

ARGUMENT 1: TASTE-BASED DISCRIMINATION

Here's a sketch of the argument:

1. Suppose market outcomes were discriminating against poets for taste-based reasons.
2. Implies there are productive poets who are unemployed/ not getting a fair wage.
3. Imlies scope for an unbiased firm to enter, hire productive poets at sub-competitive wages and profit.

$\implies$ As long as there are enough potential entrants who don't have taste-based biases against poets, and entry is free/ cheap; long-run outcomes will be fair.

Claimed Moral: Sufficient diversity in tastes and free entry will ensure market outcomes are free of taste-based discrimination.

ARGUMENT 2: STATISTICAL DISCRIMINATION

A little shakier, but also more interesting as a topic for research:

1. Suppose current employers are statistically discriminating against poets.

2. Again, implies that there are productive poets who are unemployed/ not getting a fair wage.

3. Implies a person/ algorithm that can better judge the productivity of poets than sect-label would have market value.
   $\vdots$

N. Eventually, all available predicitive information will be incorporated into firms' decisions.

Claimed Moral: With free markets, all available information will be worked into firms' decisions. Sect identity only used to the extent it contains is predicitive on top of all other information.
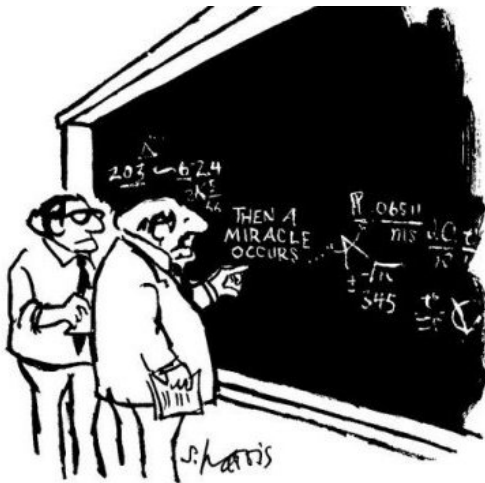
"I THINK YOU SHOULD BE MORE EXPLICIT HERE IN STEP TWO."

Being More Explicit in Step 2

Taking this argument seriously requires us to be more clear about how better predictors of productivity are:

- found,

- experimented with,

- incorporated.

In each of these cases, we find potential pitfalls or *frictions* that may prevent discrimination from being eliminated.

After, I discuss possible interventions.

Data Limitations

In some cases, the ability to find better/ fairer predictors may be limited by available data. For example:

1. Only the productivity of MBAs who actually get the job is observed.
2. But then if initial hiring decisions are not at random, then observed productivity statistics are biased.

Example: Boston Street Bump

Boston Street Bump aimed to fairly allocate street-fixing funds by distributing a free smartphone app that would send information about potholes. But the data it has then correlates with who has smartphones (rich people) and where they drive (rich neighborhoods).

EXPERIMENTATION AND INCENTIVES

In other settings, individual entities may be able to experiment (e.g. on hiring decisions) to find better predictors.

▶ If exerimentation is costly (e.g. the cost of being stuck with a subpar worker), then it has to be sufficiently valuable to recoup the costs.

▶ Many possible ways society's preferences and firm's preferences over experimentation can differ:

  ▶ Firm may be more myopic (managers are shortlived).

  ▶ Firms privately pay cost of experimentation, but value of experimentation may be public.

Let's go over some of these channels in detail.

PRIVATE COSTS, PUBLIC BENEFIT

- ▶ One possible issue is a variant of a "public goods problem:"
    - ▶ Firms privately pay the cost of experimentation (e.g. cost of bad employees).
    - ▶ However outcomes of experimentation are public (e.g. everyone sees whether the hired employee succeeded or failed, and can refine their predictor).
- ▶ In this case, experimentation is a public good and is under-provided in equilibrium.
- ▶ In other "knowledge industry" settings, there are institutions to ensure that experimenter gets to keep sufficient rents to ensure s/he experiments enough (e.g. patents, see Tirole and Weyl 2012).
- ▶ Here, such institutions might be patently (heh!) unfair.

HIDING EMPLOYEES

Milgrom and Oster (87) propose a simple model in which firms can hire talented poets, with hired poets being paid less on average than comparable quants, and promoted less.

Their basic premise is what they term an "invisibility hypothesis":

▶ The abilities of the disadvantaged (poets) are only observed by the hiring firm at lower level positions, and only observed by the competing firms if they are promoted to more visible high-level positions.

Hiring disadvantaged poets and keeping them in low-positions means less competition for their services.

COMPETITIVE OUTCOMES

We've already seen that "market" or "competitive" incentives may diminish the incentive for firms to learn better predictors, and subsequent competition may nevertheless lead to "unfair" outcomes.

But if e.g. firms can privately benefit from experimentation, then there may be "sufficient" experimentation relative to a social planner.

But fair outcomes require all/ enough firms to actually learn the "best" predictor. Will this occur?

A Lemons problem

▶ Imagine a setting with two firms competing for employees.

▶ Suppose Firm A has somehow learned how to optimally predict poets' productivities.

▶ Firms see workers' observables and offer a wage— worker is profitable if wage is lower than productivity.

▶ Firm A can slow down the rate at which Firm B learns how to predict poets' productivities:

   ▶ Essentially Firm A can offer wages that "pick off" the best poets among the ones Firm B makes an offer too.
   ▶ Since Firm B knows that firm A is picking off the best poets, it knows that it will make a loss on the poets it does hire.
   ▶ Firm B therefore chooses not to hire poets/ underexperiments.

Dynamics and Two-sided Incentives

So far, poets and quants were unmodeled: they were objects rather than agents with incentives/ actions.

Productivity etc. was modeled as an *exogenous* quantity rather than something the agent could *endogenously* impact.

But in our applications, the latter may be more appropriate, and agents' incentives should also be taken into account.

Now there is the possibility of feedback loops— agents' incentives determine

Self-Confirming Equilibria

Consider the following example

- ▶ Between undergrad and MBA, agents can choose to invest in learning programming.
- ▶ Investment is costly, but eventual programming productivity is independent of whether quant or poet and depends only on whether you invest.
- ▶ Whether they choose to invest depends on their perception of the payoffs.

Note that Poets and Quants are now *a priori* symmetric.
Nevertheless note there are asymmetric *self-confirming* equilibria:

- ▶ Employers discriminate against Poets. Poets understand they will be discriminated against and don't invest in learning programming. But this justifies discriminating against poets.

(Coate and Loury 92, Foster and Vohra 92)

REMEDIES

- ▶ If markets don't work, what does? Unfortunately, not a ton of guidance from the literature...

- ▶ One consistent advice from the literature: regulators should avoid the urge to regulate "inputs" (i.e. what decision makers can and cannot use).

EXAMPLE: TEXAS 10
After case law blocked race-based affirmative action, the Texas legislature passed a law guaranteeing any student in the top 10% of a Texas high school admission in UT.

- ▶ But if you can't regulate inputs, you have to measure outcomes which can be hard/ require more oversight.

Concluding Remarks

▶ Long tradition of trying to understand whether and when "free markets" result in "fair" outcomes.

▶ Taste-based discrimination will generally be resolved by free markets unless the taste is pervasive.

▶ Statistical discrimination can be more "sticky," and the mechanisms by which it might resolve may involve things different from free markets.

▶ Not clear how to intervene when markets don't work.