Can Discriminatory Behaviour Persist in Perfectly Competitive Markets?

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Introduction

Research Question

- Can discriminatory outcomes due to taste discrimination persist in the long run in perfectly competitive markets?
- Put differently, do competitive forces tend to push out the resource misallocation due to discriminatory tastes?
- We will argue that Becker's intuition, which is based on discrimination being "inefficient", will be removed by potential entrants with neutral tastes is based on the assumption of no frictions in the labour market
- We will show that the effects of discriminatory tastes may get amplified by frictions to the extent that even "neutral" firms act in discriminatory ways

What we do

- We can think of this as a theory of *passive* discrimination
- We propose a mechanism where market frictions (in particular, worker moral hazard) interact with the presence of discriminatory biases
- The basic model that I will present today is based on an unpublished working paper (Ghatak, 1999) that applied Greif's (1993) model of efficiency wages based on community-based punishment if caught shirking.
- Recently, in ongoing work with Debraj Ray, we are revisiting the issues in much greater depth.

Background

- Arrow (1973) motivates his definition of discrimination as follows: *"The fact that different groups of workers, be they skilled or unskilled, black or white, male or female, receive different wages, invites the explanation that the different groups must differ according to some characteristic valued on the market. In standard economic theory, we think first of differences in productivity. The notion of discrimination involves the additional concept that personal characteristics of the worker unrelated to productivity are also valued on the market."*
- This implies discrimination is not only unfair (different treatment of same productivity) but also inefficient in terms of misallocation of talent and may undermine investment incentives, which further accentuate the problem

Background

- Think of two individuals who are identical in all respects in terms of their economic potential and yet get treated very differently due to their social identity leading to very different outcomes.
- This could be in the labour market, capital market, housing market, or also in terms of schools and health care access, how they are treated in the justice system, access to social networks.
- One broad way to think about discrimination and how economists think about it is to relate it to the core building blocks of economic models

Background

- **Preferences**: They determine demand, both final consumption demand and demand for factors of production, such as labour and intermediate inputs from firms, can be influenced by conformism to social norms
- **Informational and contractual frictions**: These affect everyone but may create additional barriers for minority groups in the labour (and capital) markets
- **Market equilibrium**: Market forces of supply and demand may accentuate discriminatory tendencies
- **General equilibrium**: Discrimination can spill over from one market to another
- **Access to Public Goods**: Asymmetry in this respect can accentuate inequalities

Background

- The first generation of economic theories of discrimination can be divided into two general classes: taste-based and statistical.
- Gary Becker's seminal 1957 book *The Economics of Discrimination* (Becker, 1957) introduces discrimination in the preferences of employers (and in various extensions to co-workers, customers) and then studies how it affects labour demand and market equilibrium

Implications of the Becker Model

- In a competitive labour market, workers are paid their marginal product and because they have lower costs, non-prejudiced employers will expand to the point where it is no longer necessary for workers who are subject to bias to work for prejudiced firms (implying that the wage gap will be eliminated).
- That is, market forces should eliminate discrimination, but there will be *segregation*
- To the extent there is insufficient segregation, the wage differential would be driven by the behaviour of marginally prejudiced firms

Implications of the Becker Model

- Becker acknowledged a strange feature of his model, noted by Kenneth Arrow (Arrow, 1972a,b, 1973): because prejudiced employers sacrifice profits by discriminating, they will ultimately be driven out of the market in a long-run competitive setting.
- This is the implication of free entry and constant returns to scale then prejudicial employers should be competed out of the market as they are “inefficient”
- Another way of looking at it is asking what prevents minority groups to form their own firms and hire minority workers?

Extensions of the Becker Model

- Subsequent research proposed several modifications to the Becker framework that can generate equilibrium wage gaps: nepotism (Goldberg, 1982), search and adjustment costs (Black,1995; Lang, Manove and Dickens, 2005), and employer-employee transitions of prejudiced individuals (Charles and Guryan, 2008).

Nepotism/Homophily

- Goldberg (1982) argues that if one reformulates the Becker framework with firms as maximizing utility rather than profits, then instead of discrimination against a group, it maybe nepotism (or, homophily) towards its own group : the firm acts as if the white wage was lower than it actually is, because the firm earns some non-monetary utility from hiring white workers.
- Importantly, in Goldberg's framework the sellout price of a firm is not equal to its money profit level, but rather its utility level.
- In the original Becker model, discriminating employers should be willing to sell their firm to non-discriminators (who can earn higher profits), in the nepotism case nepotistic employers earn a non-pecuniary return from staying in the market.
- Goldberg's model can thus generate long-run wage differentials (unlike the Becker model).

Search and adjustment costs

- If there are search frictions then discrimination can persist (we will return to this theme later)
- Black (1995) presents a random search model of employer discrimination with search costs in which he assumes that information about employment opportunities is costly to attain, and that workers randomly encounter firms in the market.
- Search costs imply that workers will sequentially search across employers to look for a good employment match.
- In this type of model, workers accept a job/wage if the expected value of the offer is greater than or equal to the expected value of additional search (taking into account the costs that would be incurred by additional search).

Search and adjustment costs

- The equilibrium is determined by the workers' reservation wage.
- With prejudiced employers in the market, minorities face a lower probability of finding a position that dominates their current offer, lowering their reservation wage.
- Because of this lower reservation wage, minorities are wiling to accept an offer with a lower wage, which provides all employers (not just prejudiced employers) an incentive to offer minorities lower wages.
- In equilibrium, minority workers are employed only at unprejudiced firms, but they earn lower wages than comparable nonminority workers whenever any prejudiced firms are in the market.
- That is, unlike the Becker model, in Black's model the whole distribution of prejudicial tastes matter, not just the prejudice of the marginal firm.

Employer-employee transitions

- In the NBER working paper version of Charles and Guryan (2008), the authors illustrate a third modification to the Becker model that can generate long-run wage differentials.
- They argue that in the long run prejudiced employers have two options: they can be unprofitable, or can shut down and transition to instead be a worker at another firm.
- If prejudiced employers consider the outside option of the co-worker interactions they will have if they shut down the firm, it does not necessarily follow that prejudiced employers shut down in the long run.
- This is a bit like the Goldberg (1982) argument – there are non-pecuniary gains from owning a firm relative to the outside option

Contribution

- My original paper was focused on introducing frictions in the labour market and provided an alternative mechanism to search frictions to show that “taste for discrimination” of prejudiced employers can have spillover effects on “neutral” employers
- A more interesting question – could there be a *multiplier effect* of taste discrimination?
- In Black (1996), if the fraction of employers with discriminatory tastes go to zero, then observed indicators of discrimination vanish as well, but that may not be the case in an efficiency wage framework
- My ongoing work with Debraj Ray is exploring this issue.

Efficiency Wages

Efficiency Wages

- The worker's choice of effort cannot be observed by the firm and so efficiency wages are a particular form of giving incentives to workers to supply effort.
- Employers pay their workers higher-than-market wages so that workers in effect enjoy a premium (or a rent)
- To the exent that shirking is detected ex post (even with some probability) and firms fire workers in such a situation workers will supply more effort as they value the wage premium

Efficiency Wages

- Shapiro and Stiglitz (1984) is one of the best-known examples of a formal model, and they show that even in competitive markets there must be some unemployment in equilibrium, otherwise being fired upon poor performance is not costly for the worker (Eswaran and Kotwal, 1985 came up with a similar model around the same time).
- Several other efficiency wages mechanisms have been put forward in the literature, all of which involve firms paying workers more than what their outside option is.
- Akerlof (1982) have provided a theory that this could be based on reciprocity - worker morale is improved and they put in extra effort recognizing that firms are treating them well

Efficiency Wages

- Higher wages reduce worker quits and labour turnover costs (Salop, 1979)
- Higher wages attracts more applicants and increase hires (Weiss, 1980)
- In the development economics literature, there is a longstanding argument that employers have an incentive to pay higher wages to ensure higher productivity better-nourished workers are more efficient (Leibenstein, 1957, Mirrlees, 1976, Stiglitz, 1976, Bliss and Stern, 1978, and Dasgupta and Ray, 1984).

The Model

The Model

- Consider a worker who earns $\overline{u}$ if unemployed which is the reservation wage
- Let δ be the discount factor
- w is the wage that is paid (to be determined endogenously)
- c is the cost of effort
- The worker looks for employment, unless he or she is already employed
- If employed, the expected lifetime payoff is V_E; and if she is unemployed, it is V_U

The Model

- Let p be the probability that an employed worker retains the job next period, while with probability $(1-p)$ there is an exogenous separation
- Similarly, if the worker is unemployed, q is the probability of finding a job next period, while $(1-q)$ is the probability of remaining unemployed
- Then we have the following recursive equations describing V_E and V_U :

$$\begin{aligned} V_E &= w - c + \delta p V_E + \delta (1-p) V_U \\ V_U &= \overline{u} + \delta q V_E + \delta (1-q) V_U. \end{aligned}$$

The Model

- These two linear equations in V_E and V_U can be solved simultaneously but it is simpler if we look at:

$$V_E - V_U = w - c - \overline{u} + \delta (p - q) (V_E - V_U).$$

- This can be solved as:

$$V_E - V_U = \frac{w - c - \overline{u}}{1 - \delta (p - q)}.$$

- The incentive-compatibility constraint (ICC) is

$$w - c + \delta p V_E + \delta (1 - p) V_U \geq w + \delta V_U$$

- The left-hand side gives the payoff of a worker who puts in effort and the right-hand side gives the payoff if the worker shirks, gets detected, and is fired

The Model

- Notice that it is being assumed that the worker becomes unemployed but is indistinguishable for a worker who is unemployed but did not shirk - i.e., the employment history of workers is not common knowledge among employers
- The ICC can be simplified as

$$\begin{aligned} \delta p \left(V_E - V_U\right) &\geq c \\ \text{or, } \delta p \frac{w - c - \overline{u}}{1 - \delta \left(p - q\right)} &\geq c. \end{aligned}$$

- This allows us to solve for w:

$$w \geq c + \overline{u} + \frac{c}{\delta p} \left\{1 - \delta \left(p - q\right)\right\}.$$

- Observe that it is increasing in q and $\overline{u}$: the more likely a worker finds employment conditional on being unemployed or the higher is the worker's payoff while being unemployed (self-employment, unemployment benefits), the higher will have to be the wage premium to prevent the worker from shirking

Conditioning on Employment History

- Now consider the possibility that a worker who gets fired if he or she is caught shirking by a firm, then his record is publicly accessible by all firms
- We will call such a worker one with a “bad” record
- Here we assume this “marking” happens with certainty but it is easy to allow for some noise (e.g., with some probability $\sigma \in [0, 1]$ a worker’s record become publicly accessible with σ capturing the quality of information flows)

Multilateral punishment strategy

- We can show that in equilibrium, no firm will want to hire such a worker and so the lifetime expected payoff of such a worker is $\underline{V}_U = \frac{\overline{u}}{1-\delta}$ (see the Appendix for the details)
- Assuming that is the case, the incentive-compatibility constraint is now

$$w - c + \delta p V_E + \delta (1 - p) V_U \geq w + \delta \underline{V}_U$$

- This can be rewritten as:

$$w - c + \delta p (V_E - V_U) \geq w - \delta (V_U - \underline{V}_U)$$

- This simplifies to:

$$\delta p (V_E - V_U) \geq c - \delta (V_U - \underline{V}_U).$$

Conditioning on Employment History

- Now,

$$\begin{aligned} V_U &= \overline{u} + \delta q V_E + \delta (1-q) V_U \\ \underline{V}_U &= \frac{\overline{u}}{1-\delta} \end{aligned}$$

- Therefore,

$$V_U - \underline{V}_U = \overline{u} + \delta q V_E + \delta (1-q) V_U - \underline{V}_U.$$

- This can be rewritten as:

$$V_U - \underline{V}_U = \overline{u} + \delta q (V_E - V_U) + \delta V_U - \underline{V}_U$$

- By subtracting and adding $\delta \underline{V}_U$ in the right-hand side we can write this in the following form:

$$V_U - \underline{V}_U = \overline{u} + \delta q (V_E - V_U) + \delta (V_U - \underline{V}_U) - (1-\delta) \underline{V}_U$$

- Or,

$$V_U - \underline{V}_U = \frac{\delta q}{1-\delta} (V_E - V_U)$$

Conditioning on Employment History

- The ICC under this equlibrium is

$$w - c + \delta p \left(V_E - V_U \right) \geq w - \delta \left(V_U - \underline{V}_U \right)$$

- Or,

$$\begin{aligned} -c + \delta p \left(V_E - V_U \right) &\geq -\delta \frac{\delta q}{1-\delta} \left(V_E - V_U \right) \\ \delta \left(p + \frac{\delta q}{1-\delta} \right) \left(V_E - V_U \right) &\geq c \end{aligned}$$

Conditioning on Employment History

- We know that
$$V_E - V_U = \frac{w - c - \overline{u}}{1 - \delta(p - q)}$$
- So, the condition is
$$\delta\left(p + \frac{\delta q}{1 - \delta}\right)\frac{w - c - \overline{u}}{1 - \delta(p - q)} \geq c.$$
- Observe that
$$\left(p + \frac{\delta q}{1 - \delta}\right)\frac{1}{1 - \delta(p - q)} = \frac{(1 - \delta)p + \delta q}{1 - \delta(p - q)} = \frac{p - \delta p + \delta q}{1 - \delta p + \delta q}$$
- The left-hand side is increasing in q (this follows from the fact that if $y = (a + x)/(b + x)$ then it is increasing in x so long as $b > a$)
- As a result, w will be decreasing in q, unlike the case of bilateral punishment strategies.

Comparing Efficiency Wages under these two strategies

- Recall that under standard efficiency wages, the wage that satisfies the ICC is:

$$\delta p \frac{w - c - \overline{u}}{1 - \delta (p - q)} \geq c.$$

- Clearly, the wage will be lower when firms condition on past history of workers and so it is in the interest of firms to use it (see the Appendix about why no firm will want to deviate from this norm of not hiring a worker with a chequered history)
- The intuition is simple: now being fired if caught shirking is more costly : not only the current firm will fire you, but other firms will not hire you in the future
- Of course, this is a stark way in which we are showing this: as noted before, we could allow the record of a worker to be shared among firms with some probability σ, which allows for the possibility that they can escape these collective punishment strategies (say, migrating to the city from a small town)

Historical Case Study

- In a well-known paper Avner Greif studied how Maghribi traders, a group of Jewish merchants in the 11th-century Mediterranean, enforced contracts through a private-order institution known as a ”coalition” (Greif, 1993).
- This coalition relied on a multilateral reputation mechanism to deter opportunistic behaviour.
- Multilateral Reputation Mechanism: The traders maintained a network where information about any trader’s behaviour was shared among the group.

Historical Case Study

- If a trader acted dishonestly, they would be ostracized from future business dealings with all members of the coalition, effectively losing access to profitable trade opportunities
- The strong social ties among Maghribi traders and mutual trust within the community reinforced the effectiveness of the reputation mechanism
- What is striking is that in the absence of formal legal institutions, this form of private enforcement facilitated long-distance trade

Applying to Discrimination

- A really important implication of the *multilateral punishment strategy* (MPS) is that anything that increases the probability of a worker being rehired will tend to make her a more attractive hire to all employers.
- Under such a strategy, a worker is never rehired if he or she is caught shirking, and hence the only way the benefits of re-employment enter into her calculations is by increasing the benefit from working for the same wage.
- Under the MPS, the cost of shirking is higher because firms exchange worker records, and hence if caught shirking, the worker will be forever shunned by all firms.
- In contrast, under the standard efficiency wage system, which we will call a *bilateral punishment strategy* (BPS) the cost of being caught shirking is merely unemployment for one period and then facing the same probability as any other unemployed person to be re-employed.

Applying to Discrimination

- Applying this logic has a very interesting implication in the context of discrimination
- Anything that improves the worker's probability of re-employment strengthens her incentive to shirk under the standard efficiency wage system—what it means is being fired for shirking is not so costly
- This means they are more expensive to hire, and to the extent there are firms who have a taste for discrimination, it would be minority workers or women who will be more attractive to hire for neutral firms
- This would tend to temper the effect of discrimination

Applying to Discrimination

- In sharp contrast, under the MPS, anything that improves the re-employment probability *conditional on not shirking* increases the incentives of a worker, as by not shirking he or she enjoys a higher wage than the reservation payoff and maintains a good reputation that will raise re-employment chances conditional on an accidental separation.
- This means *W* workers with a clean record face a higher re-employment chances than *B* workers
- But this means the efficiency wage that needs to be paid to *B* workers is higher, and that makes them unattractive to hire to even neutral firms
- Therefore, labour market frictions can reinforce discriminatory tendencies

Ambiguous Role of Social Networks

- Conforms with the casual empirical observation that discrimination is more observed within close-knit societies, often in rural areas (e.g., the caste-system in Indian villages), relative to more anonymous and individualistic settings, such as in urban areas (though the effect of networks are not absent there too)
- One explanation is social norms are enforced more effectively in close-knit societies, and deviations are punished with social sanctions (e.g., Akerlof's (1976) model of caste discrimination).
- In contrast, our model shows that exclusion of minorities need not necessarily be enforced by third-party or group sanctions to deviants but by eminently sensible cost-benefit calculations.

Ambiguous Role of Social Networks

- Economists have a conflicted attitude about economic efficiency in economies dominated by close-knit social networks, such as those in villages.
- Within such social networks, people have a lot of information about each other which is efficient from the point of view of reducing transaction and coordination costs and providing insurance.
- Yet, social norms and attitudes which restrict economic enterprise and mobility are prevalent in such environments, which can restrict economic progress
- Our results suggest that better information flows can be a double-edged sword and hence, can be interpreted as a way of reconciling these two seemingly opposite views.

Appendix

Appendix

- The ICC we had earlier was

$$\delta\left(p+\frac{\delta q}{1-\delta}\right)\left(V_E-V_U\right)\geq c$$

- Notice that the left hand side of the ICC for the firm that is contemplating a deviation is less than that of other firms sticking to the multilateral punishment strategy as

$$\delta p\left(1+\frac{\delta q}{1-\delta}\right)=\delta p+\delta p\frac{\delta q}{1-\delta}<\delta\left(p+\frac{\delta q}{1-\delta}\right)=\delta p+\delta\frac{\delta q}{1-\delta}.$$

- We have from earlier

$$V_E-V_U=\frac{w-c-\overline{u}}{1-\delta\left(p-q\right)}.$$

- This means the deviating firm effectively has to pay a higher efficiency wage for hiring a worker with a bad history

Appendix

- The intuition is simple : under a multilateral punishment strategy, a worker has two gains from not shirking - he or she maintains the current job and also a good history, so that if there is an accidental separation, the worker can find another job more easily
- A worker with a bad history will work to enjoy the higher wages of a firm that has given him or her a second-chance but knows that conditional on an accidental separation, he or she will not be hired by other firms
- To offset this, a firm has to pay a higher efficiency wage to this worker and this makes it unattractive to any firm to hire a worker with bad history
- In other words, these punishment strategies are self-enforcing.