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EFFICIENT LEGAL PROCEDURE AND STATISTICAL DISCRIMINATION

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Abstract

Recent reports about airline passengers with Muslim names having been detained by the Dutch police has brought the issue of profiling by race and religion in the course of policing decisions. Government rhetoric around the world remains at unease with a practice that their law enforcement agencies continue to practice. A presidential declaration, known as the Clinton Order, attempted to outlaw racial profiling in policing in the United States. Some lawyers and economists take exception to the logic underlying above reservations against selective attention to visibly identifiable groups. Arguments against selective attention are thought to conflate statistical discrimination entailed in efficient policing with an intention to discriminate on racial or religious grounds. This note examines the informational basis of statistical discrimination to argue that such discrimination, under certain precise conditions derived here, can indeed mask an intention to discriminate on racial ground.

Keywords: Racial bias; Group identity; Police search; Racial Profiling, Terrorism

Efficient legal procedure and statistical discrimination

1. Introduction

The view that the criminal justice system targets socially disadvantaged groups, whether based on class or race, for worse treatment has long been debated in the literature (see e.g. McConville et al. 1997; Smith 1997). One aspect of this debate concerns the way profiles of potential law breakers are drawn up in the decision to interrogate. How is the decision taken to stop someone to interrogate that person while others are allowed to proceed unhindered? If that decision is based on membership of some observationally distinct group, the approach to policing is based on racial profiling.¹

If it just happens that members of a particular group are stopped more often in the course of pursuing a policy that allocates scarce police resources toward activities that maximise the number of criminals apprehended and convicted, then that is called efficient policing. Any apparent manifestation of discrimination can be attributed to “business necessity” (Borooah 2001). If the selection of targets is contaminated with the *intention* to disadvantage particular groups, then there is manifest bigotry. What we mean in common parlance by the word discrimination is bigotry,² but the literature in economics attempts to separate the two types of discrimination, statistical discrimination and bigotry.³ Whether racial profiling, *per se*, in the selection of observationally identifiable groups by race or religion for special police attention is a manifestation of prejudice in policing has been a focus in recent literature (Borooah 2001, Knowles et al 2001, Brunson and Miller 2006, EPW 2006). This paper contributes towards a new way of examining this particular debate.

The debate in economics concerns attempts at devising statistical tests to for technical efficiency. If the selection of individuals for interrogation, stop and search or whatever, is found to satisfy conditions for technical efficiency, then it is concluded that there is no bias in the process. This paper maintains that there is a logical flaw in this economic approach in that an intention to disadvantage someone because of who he is (member of a particular ethnic or religious group) rather than what he is (a potential criminal) is consistent with conditions for technical efficiency that are reported in the literature. *Thus our contention is that these tests are not sufficient to rule out the presence of bigotry in the selection of targets for interrogation.*⁴

¹ The phrase ‘observationally distinct’ is used in a broad sense here. For example, people with a type of surname associated with a religion or geographic location are, for the purposes of our paper, are observationally distinct.

² We use the terms racial bias, bigotry, prejudice and bias interchangeably. The other form of discrimination is statistical discrimination.

³ The distinction between statistical discrimination (acceptable) and bigotry (unacceptable) is a peculiarly important feature of the literature in economics, which attempts to introduce empirically verifiable propositions in a highly emotive debate. Lawyers appear to be less bothered about clarity and are less likely to draw a clear line between emotion and reason. For example, in the immediate aftermath of 9/11, views were being expressed even in liberal legal circles about jettisoning long-established legal processes. Writing soon after the event, William Stuntz went so far as to suggest that a form of ethnic “tax” in the form of invidious treatment suffered through the criminal justice system might be needed for the wider benefit of society (Stuntz 2002). This ethnic “tax” was a regrettable necessity. This ‘tax’ might be levied by giving “police the power to seize or search groups, with or without any ground for suspecting individual members of these groups”.

⁴ There is a different issue that is raised in Borooah (2002), Chakravarty (2002), Dominitz (2003), and EPW (2006). When a group is targeted for police attention, a greater proportion of innocent members of the target group suffer the harassment of police interrogation. The ratio of the number of people arrested for interrogation in terrorist incidents and the number that are subsequently prosecuted is low. Thus a large fraction of those that are interrogated by the police are innocent victims of police attention. An example of the experience of residents in a predominantly Muslim slum in Bombay is related below (EPW 2006, p 3743): “...300 were rounded up ... with residents complaining that they were dragged out of their homes by policemen -- 11 were finally detained”. Also see footnote 8 below.

The paper is organised as follows. Section 2 provides a background to the debate about profiling before the current panic set in over terrorism. Section III introduces the idea of statistical discrimination and explains the difference between this form of discrimination and prejudice. Section 4 discusses the problem of establishing motivation to discriminate using the type of data that is commonly interrogated to reveal the existence of technical efficiency in policing. Section 5 suggests an argument for scepticism, the algebraic details of which is placed in an appendix, and Section 6 concludes, followed by an appendix outlining the relevant algebra.

2. Background

The question of stop and search policies gained prominence in the UK during the Stephen Lawrence Enquiry, a public judicial enquiry conducted by Sir William McPherson and colleagues into the murder of a black teenager Stephen Lawrence for which the police failed to apprehend the culprits leading to allegations of racial prejudice and corruption, including charges that senior police officers were in the pay of major criminals. The report (McPherson 1999) examined, *inter alia*, the attitude of the police towards race. It was noted in the report that “racial disproportionality in police stop and search is attributable to officers targeting minority groups” (Waddington et al 2004). The underlying concern was that there was racial discrimination in the choice of targets, and the report coined the term “institutional racism”. This is a concern that may have informed, in a different context in the United States, the 1999 Clinton Order against profiling because racial profiling is a “morally indefensible, deeply corrosive practice” (Knowles et al 2001, p. 204). The question of profiling has again resurfaced in the context of concern over terrorism.

The argument underlying the Clinton Order that profiling, *per se*, is an unacceptable form of discrimination is dismissed by some along the line of reasoning explained below. If members of an observationally identifiable group are found to commit a particular type of offence disproportionately more frequently than members of other observationally identifiable groups, then the use of that information specifically in the design of methods for evidence gathering is simply an indication of efficient policing. Stop and search policies are one such method of gathering information. If the members of a particular group are stopped more frequently than that fact, in itself, is not a manifestation of bias. Efficient policing entails the use of all relevant information, including information about group characteristics that could help predict the probability of a suspect having committed a crime. In this view, unacceptable group-specific discrimination, prejudice, in stop and search is present only when the selective targeting of a group for interrogation is not commensurate with evidence that group membership is “objectively related to offending” (Smith 1997, p. 331). Thus objections to selective attention by the police to visibly identifiable groups, it is maintained, conflate efficient policing with racial discrimination. For allegations for there to be racial discrimination, there must be an intention to disadvantage based on group membership, *per se*.

There may not be any objection in principle to the use of statistical models in the design of criminal justice systems (Birmingham 1970, Tribe 1971), but doubts remains about the nature of evidence that is available to establish whether the targeting of visibly identifiable groups is indeed based on their objective probability of

offending.⁵

The idea of objective probability of offending is central to the debate. Suppose that a violent assault takes place in a shop located in the city centre where there are policemen and two groups of civilians, able bodied men and frail old men incapable of movement without help, milling around. Police immediately cordon off the area to look for the culprit. If the police target only the able bodied men amongst those who are milling around the streets for search, the requirement for attention based on the objective probability of offending would be met. No one from the other group could have committed the crime. The police are not biased, in the sense that the term has earlier been defined in Footnote 2, against able bodied men. They are simply doing their job efficiently. Now consider a slightly more complex case of a type of crime where one could not be definite that a particular category of visibly identifiable people are the only ones capable of committing the crime. Blind pursuit of efficiency leads to an unintended consequence as we shall presently see.

Suppose that a pattern between age – divided into two groups, old and young -- and the propensity to commit a particular type of crime emerges upon examination of a database containing information about criminals convicted of the above type of crime. A greater proportion of the young appears to commit this crime.⁶ Age is not established as a determinant of crime but it is a proxy variable for the prediction of crime. Now the use of age to select people for targeting by the police seeking to apprehend criminals becomes more problematic. A criterion for non-ageist policing might be, following the approach suggested by Borooh (2001, p. 34), to target the two groups in proportion that satisfies the requirement that group-specific stop and search rates are set so as to equalise group-specific conviction rates. The difficulty is that the above non-ageist selection process for targeting individuals for stop and search purposes paradoxically becomes ageist if we consider the probability of simultaneously being innocent and also being a target for stop and search (Chakravarty 2002, Dominitz 2003)⁷. The policy of targeting could now create a feeling of alienation from the police in the target group (Brunson and Miller 2006).⁸ There are deeper statistical problems with the identification of a group neutral (e.g. colour blind) policy of gathering information in the course of apprehending law breakers.⁹ One of these problems is analysed here in this paper, especially in Section 6.

⁵ This is a problem that is encountered not just in interpreting data in the criminal justice system, but in a wider range of decisions under uncertainty, for example in deciding whether or not to lend money (Munell et al 1996).

⁶ Suppose in this instance that there is no agreed theory of causality between age and that type of crime. Age is simply a proxy for the missing variables that might explain why people commit this particular crime.

⁷ In an earlier draft copy of their paper, Knowles *et al* dwell on the need to reflect on ethical dilemmas entailed in efficient policing: "Efficient outcomes may not be fair" (Knowles et al. 1999, p20), but they abandon this line of argument in the final version published in 2001. Smith (1997, p337) maintains that the balance between efficiency and fairness is achieved in the UK through Due Process in case construction, but Stuntz (1997) is of the opinion that there is an inherent conflict between criminal procedure and criminal justice. The question of what is Due Process, an important matter though it is, has been left out in this paper because the question may be reopened by the courts as new police practices emerge in anti-terrorism cases. Legal opinion on this issue is too volatile to make any coherent sense.

⁸ Consider Borooh (2002, p. 608): "The argument about racial profiling is not about the *effectiveness* of policy, in terms of apprehending offenders [at a point of time], but rather about the *consequences* of policy in terms of the harassing the innocent and, as a corollary, in terms of the broader message that is issued to the Black community at large."

⁹ For example, a dynamic consequence of discriminating on seemingly statistical ground, untainted by prejudice, has been examined by Chakravarty (2006). He considers discrimination in bank lending. It is shown that statistical discrimination, untainted by prejudice, in first round decisions about bank lending can lead to second round decisions that are characterised by prejudice.

Much of the arguments against profiling that are cited above are based on appeals to a sense of fairness. These arguments are also concerned with the dynamic consequences for the perception of legitimacy of the criminal justice system if there is manifest lack of fairness. We do not dwell on the question of legitimacy or fairness, but we take the argument in a new direction to point out a logical problem inherent in the efficiency arguments for profiling. Appealing to basic Bayesian statistical theory, we show that evidence on which effectiveness of policy is judged cannot rule out motivation to disadvantage a particular group that might enter into the calculus of police action. That is because statistical procedures proposed in the literature on efficient policing examine only one type of error entailed in decisions under uncertainty. This evidence is not sufficient to infer whether selection for police attention is motivated solely by concern for efficiency or whether there is indeed an intention to put members of target communities at a disadvantage.

3. Statistical discrimination

To understand the main points of contention, it is necessary to recognise that a major aspect of the debate concerns the delineation of the boundary between two types of discrimination, statistical discrimination and prejudice, examined in the literature on labour economics (Arrow 1972, 1973, Phelps 1972). In the context of stop and search policies often pursued by the police, Borooah (2001) defines statistical discrimination as a form of discrimination that is entailed as a “business necessity” to allocate police resources in searching different groups in proportion to the likelihood of catching those that have committed a crime. A similar approach is taken by Knowles et al (2001) in their discussion of technical efficiency in the selection between black and white motorists for interdiction on US interstate highways as part of a police campaign against those who carry proscribed drugs.

Technical efficiency in the above context entails apprehending the maximum number of motorists in violation of drug laws per unit of police effort directed at stopping motorists to search them. If the above interdiction policy is technically efficient, then, at the margin: "searching one subgroup of motorists" should not yield a "higher return" than the searching of another subgroup (Knowles et al 2001, p.206).¹⁰ We call this the condition for observed technical efficiency at equilibrium as the Condition of Equal Return (CER). The properties of CER will be examined presently in some detail.

The line of argument developed in separating prejudice from technically efficient policing follows on from Becker's pioneering work on defining prejudice as a taste for discrimination (Becker 1971), and summarised in his Nobel lecture (Becker 1993). His idea of defining prejudice (or bigotry) as a taste for discrimination implies that one is prepared to pay for being able to indulge in that taste.¹¹ The intensity of that taste in policing, in the

¹⁰ I have come across a glib interpretation of the CER. Suppose that there are two groups of people, Green and we have evidence that members of the Green group are marginally more prone than members of the Red group. If resources are limited and only half of the population can be interrogated, it would be technically efficient to devote all resources to interrogating only members of the Green group. That is only true if all interrogations were conducted simultaneously and there was no cost associated with targeting only members of the Green group. That is a restrictive case of CER, which is articulated for more general cases specified in the literature.

¹¹ In common usage, the jargon 'taste for discrimination' is used interchangeably with the word 'bigotry'. Knowles et al (2001, p. 205) use the term prejudice (p.205), and Borooah (2001) uses the word bigotry. We use the two phrases – taste for discrimination and racial prejudice –

context of stop and search policies, can be measured by the extent of the willingness to sacrifice technical efficiency in the selection of motorists for attention. The beauty of this approach is that there is no need to collect explicit data on any intention to discriminate to ascertain if there is manifest prejudice in police behaviour. This approach is in keeping with a long tradition in economics of attempting to explain "behaviour without reference to anything other than [observed] behaviour" (Little 1949, p.97), notwithstanding reservations expressed in some quarters (Sen, 1973). If a clear and empirically testable distinction between statistical discrimination and taste for discrimination in policing can be made, then there is potential to bring the emotive issue of racial profiling into the realm of dispassionate discourse.

This line of research seeks to use observed data to devise tests for technical efficiency of stop and search policies. Our argument is that the absence of a taste of discrimination in observed behaviour, by reference to technical efficiency, does not preclude a motivation to discriminate.

4. The data

There are three hurdles that must be crossed before it could conclusively be alleged that racial prejudice is evident in police decisions to stop and search:

- 1) There must be an intention by officers to visit disadvantage on a group of people because of their race by subjecting these people to the inconvenience of being stopped and searched.
- 2) It must be possible to devise a test of the above intention using data that are potentially available.
- 3) The above test must reject the null hypothesis of the absence of an intention to visit disadvantages on a group of people because of their race.

Implicit in this discussion is the need to separate incidences of disadvantages that may accrue to a particular racial group due to any unintended consequence of policies that are not necessarily designed with an intention to discriminate on ground of race.¹²

The concept of the taste for discrimination, commonly called racial prejudice, is the "property of the [police] officer's utility function" (Knowles et al 2001, p 205). A prejudiced policeman may derive satisfaction by discriminating against people belonging to some observationally identifiable group because of who these people are and not what they are. A police officer who does not harbour a desire to discriminate against any racial group might nonetheless search a disproportional number of people for technical efficiency. The test for technical efficiency requires data only on the proportionality of stop and search by racial groups, for example Black and White, and the subsequent vindication or otherwise, in terms of arrest and conviction, of the decision to stop and search. The data that is needed is as follows:¹³

and the word bigotry interchangeably in this paper, but without necessarily stating in this note any explicit ethical view on the desirability or otherwise of being prejudiced. The moral case against prejudice is not considered here in this paper.

¹² Possible unintended consequences have been mentioned in earlier footnotes. We take a narrow procedural definition of prejudice, as described in Footnote 2, in common with the literature that is the focus of our concern here. The concept of institutional racism, as that term is used in the McPherson (1999) report, takes a substantive view of racism where explicit intention is not required for racism to occur.

¹³ Whilst the example given here is of motorists interdicted whilst driving, the underlying issue is more general and applies to a much wider range of circumstances where group-specific selection for interrogation is made by law enforcement authorities.

1. The breakdown by race of the sample population, e.g. the number of motorists travelling on a particular road over a specified period that are interdicted and searched for contraband material.
2. Amongst those that are Black in the above sample, the fraction that is found to be in violation of the law, e.g. by carrying contraband material.
3. Amongst those that are White in the above sample, the fraction that is found to be in violation of the law, e.g. by carrying contraband material.

If the stop and search decision is vindicated by the Condition of Equal Return (CER), the requirement of technical efficiency, then any discrimination in the choice of targets may be due to “business necessity”, to borrow a phrase from Borooah (2001), untainted by prejudice. It is indeed true that if CER is a necessary condition for search decisions that are not tainted by a taste for discrimination. It is not a sufficient condition.

We demonstrate that it is possible, under certain specific circumstances that are explained below, for the police to have ‘a taste for discrimination’ and yet meet CER in policing.¹⁴ CER is not sufficient to rule out ‘taste for discrimination’ because the condition does not explicitly require use of information on the fraction of innocent people, identified by race, that are stopped and searched.

5. A case for Scepticism

Suppose that we live in a world where the law proscribes transportation of books on ethics. This world is also populated by equal numbers of Red and Blue motorists, and they have equal probability of offending against the law.

Define a perfect outcome of policing as that outcome whereby everyone in possession of contraband is interdicted and no one who is interdicted is found to be without contraband. The perfect outcome may not be observed in practice for at least three reasons: a) Resources are limited. b) There is statistical limitation in our knowledge about who is an offender. c) Taste for discrimination may be present.

Not all those who are interdicted are subsequently found to be in possession of contraband. Likewise, not all those who happen to be in possession of contraband are interdicted. We have limitations in resources and knowledge, we have to lower our sights and accept a weaker definition of the perfect outcome, that technical efficiency obtains and policing is untainted by prejudice. If we restrict ourselves with an examination of whether the conditions for technical efficiency are satisfied, we need not consider the second piece of data, information about those who are stopped and subsequently found to be innocent. We illustrate by way of an example here that technical efficiency does not rule out prejudice.

We outline the algebra in Appendix 1 below illustrating that the Condition of Equal Return is still possible to be

¹⁴ Racial profiling for the detection of terrorists could also fall into the category of decisions examined here.

satisfied in the background of prejudice. The algebra is needed to understand the restrictions implicit in our proof. The restrictions are on the parameters defining the relative probabilities above for the two groups of motorists. The point is that it is possible, albeit under certain parameter restrictions defining the degree of bias, for police decision to stop and search be based on manifest bias against one group without compromising the condition of technical efficiency being satisfied in the allocation of police effort in targeting these groups.

A heuristic outline of the illustrative example is given below. First we need to define precisely a few concepts. First is the idea of conditional probability. The probability that a motorist who is also guilty being stopped and searched is called the conditional probability, conditioned upon being guilty, of being stopped and searched, $P(G|S)$. Likewise, the probability that a motorist who is guilty who also happens to be searched is called the conditional probability, conditioned upon being searched, of the person also being guilty, $P(S|G)$. Technical efficiency simply entails that $P^R(G|S) = P^B(G|S)$, where R and B stand for Red and Blue, respectively. What we show in the Appendix is that, under certain restrictions on parameter values, it can indeed happen that the above equality obtains even when $P^R(S|G) > P^B(S|G)$ and also $P^R(S|NG) > P^B(S|NG)$. This set of inequalities may be regarded as manifestation of bias against Red motorists.

6. Conclusions

The idea of efficient delivery of criminal justice is an attractive idea. However, there are problems of reliance on technical efficiency to justify profiling. We do not discuss whether profiling is a regrettable necessity or an avoidable folly in the deployment of police resources. In this paper, we simply examine attempts at modelling police behaviour to ensure if technical efficiency is achieved without compromising society's aversion to racial prejudice. We suggest that revealed behaviour in police stop and search actions do not contain adequate information that is needed to put our minds at rest that racial prejudice is not hidden behind the veil of technical efficiency.

When we observe behaviour which at first sight appears to indicate evidence of racial prejudice, it is important not to jump to conclusions about the existence of racial prejudice. The data need to be further scrutinised to establish if there is indeed an "underlying motivation" to discriminate (Knowles et al 2001, p.205). However, motivation is notoriously difficult to establish, and the literature on statistical discrimination relies on tests for technical efficiency. We explain here that the separation of the normative question of prejudice from the seemingly *wertfrei* use of race as a predictive variable in decisions under uncertainty cannot be made by reference to tests for technical efficiency based on observed data.

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Appendix 1

This appendix is concerned with illustrating by way of a numerical example the proposition that the Condition of Equal Return can be satisfied even when there is a desire to disadvantage a particular group in the selection of targets for stop and search policies.

The conditional probabilities of search and arrest are given below. S denotes search and G denotes guilty of being in possession of contraband. NG denotes not guilty, without possession of Thus we can write:

For Red motorists

$$P^R(S|G) = \alpha, \text{ and } P^R(S|NG) = \beta$$

The fraction of motorists carrying proscribed books on ethics = $P^R(G)$

For Blue motorists,

$$P^B(S|G) = a, \text{ and } P^B(S|NG) = b$$

The fraction of motorists carrying proscribed books on ethics = $P^B(G)$

By assumption,

$$P^G(G) = P^R(G) = \delta.$$

All the parameters --- α , a , β , b , and δ -- lie between 0 and 1.

We can now calculate, for each group, the conditional probabilities, applying Bayes Law, of being guilty and also being searched.

For Red motorists,

$$P^R(G|S) = [\delta\alpha]/[\delta\alpha + (1-\delta)\beta] \quad \text{A.1}$$

For Blue motorists,

$$P^B(G|S) = [\delta a]/[\delta a + (1-\delta)b] \quad \text{A.2}$$

Recall the assumptions that there are equal numbers of Blue and Red motorists, and they are equally likely to carry contraband. Therefore, we can conclude that, in the absence of a taste for discrimination, $\alpha = a$, and $\beta = b$. However, parameter α need not equal parameter β , and the parameter 'a' need not equal the parameter 'b'. These two sets of parameters -- (α , a) and (β , b) -- denote two different aspects of the ability to make decisions under uncertainty.¹⁵

¹⁵ The ability to identify a criminal is not the same as the ability to identify that an innocent person is not a criminal. See discussion in Rousseeuw (1991) and Chakravarty (1993).

The condition of equal return, if it is observed to prevail in the data, would show that $P^R(G|S) = P^B(G|S)$. Thus CER entails:

$$[\delta\alpha]/[\delta\alpha + (1-\delta)\beta] = [\delta a]/[\delta a + (1-\delta)b] \quad \text{A.3}$$

Now let us investigate if the satisfaction of the above condition is compatible with a taste for discrimination.

Suppose that the parameters values are such that $\alpha > a$ and $\beta > b$. This might reasonably be construed as manifestation of a taste for discrimination by the police against Red motorists. However, it is still possible to satisfy Equation A.3 above.

A trivial case might be $\alpha = 2a$ and $\beta = 2b$. All that is required for CER is that the following condition holds:

$$[\alpha / a] = [\delta\alpha + (1-\delta)\beta] / [\delta a + (1-\delta)b] \quad \text{A.4}$$

If $\alpha = 2a$ and $\beta = 2b$, then the Left Hand Side above takes on the value 2 and the Right Hand Side is also equal to 2.