

DISCRIMINATION AND MARKET STRUCTURE

Reuven Brenner
New York University

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Introduction

There are several possible explanations for racial and ethnic discrimination: one is sheer irrationality (and on this neither economists nor other social scientists have anything to say); another is exploitation; still another is the desire to limit competition.¹ Probably a widely accepted view among economists is that discrimination in the United States today can be explained by the scarcity of information on characteristics of individuals. Then a substitute channel of information (color, sex, or race) is used to ascribe to each individual in a certain group the characteristics attributed to that group, and prejudice or discrimination results. However, why some particular groups were disliked and not others and why groups discriminated against, who have faced similar conditions, have reacted in different ways are questions which have not been addressed in the literature. In general, analysis has assumed tastes to be given, and it has concentrated on groups who have lower incomes than the rest of the population. There has been no attempt to

analyze the exceptions to this rule, for example the Jews, who have higher incomes than the rest of the population. This study examines the rationale behind the emergence of tastes for discrimination against certain groups and gives a model which can shed light on the strikingly different occupational structure and incomes of discriminated minorities.²

Approach to the subject of discrimination as it appears in Gary S. Becker, The Economics of Discrimination, or Kenneth J. Arrow, "Some Models of Racial Discrimination in the Labor Market," follows these lines: an exogeneously given taste for discrimination against some groups exists. In order to satisfy this taste, individuals are willing to give up something either directly or through a lost opportunity to carry out a transaction with some persons instead of others. This study shows that explaining the emergence of this taste sheds light on the occupational structure not just of one group which has been discriminated against (the Blacks), but also of other groups (Jews and Gypsies, for example). The analysis predicts the circumstances under which market discrimination against these groups decreases, and explains why occupational structures may differ even among groups who have been discriminated against for similar reasons.

The first section points out why the taste for discrimination emerges against groups which are relatively mobile, and some predictions are drawn as to the occupational structure of mobile groups. The second section presents a formal model, where the meaning of "social discrimination" is captured and predictions are made as to the secular changes in the incomes of discriminated groups. The third section discusses the relationship between limiting competition (in particular in the market of ideas), and the emergence of the taste for discrimination. The fourth section presents the empirical evidence and the conclusions follow.

I. Discrimination, Mobility and the Prisoner's Dilemma

The terms "discrimination" or "prejudice" refer, by definition, to markets where either the identity of the sellers, or of the buyers is known and this knowledge affects the price of exchanged goods and services. Let's define such markets as "personal." In contrast to these markets there are others--call them "anonymous" or "impersonal"--where neither the identity of the producer, nor that of the buyer are known to the market participants. The model developed in this section shows both

the variables which determine individuals' choice between these two markets, and the circumstances in which only personal markets will exist.³

Let us look first briefly at the conditions of the Prisoner's Dilemma⁴ and their implications for the subject of personal markets. This game is a two person, non-zero sum game where each of the players can use two strategies. The game refers to situations where one player faces information costs in discovering both the strategy chosen by the other player and his intention to play just one, or repeated games. Assume that the two strategies available to one player, a seller of a good, are to provide a high quality good or to cheat and provide a low quality good. The other player is the buyer of the good who is willing to pay the price P_1 for the high quality good and P_0 for the low quality good. The buyer is aware of the fact that he cannot assess, without additional costly information, either the quality of the good or the intention of the seller to carry out one or repeated transactions with him. When just one transaction is expected, the equilibrium outcome of the game is for a low quality good to be exchanged at a low price. However, when repeated transactions are expected with the same players--this is defined as a supergame--the equilibrium in this market is characterized by a high

quality good being produced at the higher price and fraud is thus eliminated. There are two strategies which lead to this outcome: a) either both players immediately realize that they expect repeated transactions, or b) it is profitable for one player, the seller of the good or service, to advertize his intentions. In the second case the seller will provide high quality goods at a low price, expecting only later to converge to the equilibrium of the supergame.⁵ This analysis stays unchanged when the buyer is an employer, the seller is an employee, and the uncertainty is the employee's level of effort.

Let clarify the market structures which can be characterized by this game: since I assume that there is uncertainty in discovering the sellers' intentions and that the quality of the good depends on the number of expected transactions, the game cannot apply to buyers and sellers in perfectly competitive markets. For, by definition, these markets are characterized by one price and by perfect information on the qualities of the goods exchanged. But perfectly competitive markets require both many buyers and many sellers, a rare situation in some of the circumstances to which I later refer. The value of future transactions with any particular buyer or seller in perfectly competitive markets is zero, while in the game described above the present value of expecta-

tions for future transactions is positive. One interpretation for this positive value is that personal relationships substitute for information costs for determining quality. When the costs of using the price mechanism for obtaining information on quality are prohibitive, due to the small size of the population, for example, substitutes like honor, honesty, trustworthiness and reputation prevent fraud. This is precisely the meaning of expectations for repeated transactions having a positive value.⁶

While in competitive markets of goods the value of future transactions with buyers or sellers is zero, for labor markets the value of personal relationships is zero either if there is no uncertainty on the employee's level of effort (a situation which may best fit some strictly mechanical jobs), or when a long term contract exists between employers and employees, which substitutes for personal relationships.

Consider two groups in an economy which is characterized only by personal markets⁷--a majority which is relatively less mobile and a minority which is perceived as relatively more mobile for exogeneous reasons (in the third section the exogeneity will be specified). Members of the majority expecting repeated transactions among themselves exchange high quality goods in personal markets and the employees have relatively

high incomes. At the same time they expect to obtain low quality goods and services from members of the mobile minority in these markets, and thus they are willing to pay only a low price.⁸ Buyers from the majority are suspicious of mobile groups because they know that interim profits obtainable by a fraudulent seller may exceed any long-term costs in loss of reputation. Such expectations are especially likely if the seller or the employee can leave the market at a relatively low cost; this is how a minority is perceived as mobile.⁹

These arguments lead to the following predictions:

1) The mobile minority has the incentives to avoid markets where transactions are based on long-term relationships and enter others which are impersonal. Thus, we would expect to find mobile minorities to be concentrated in perfectly competitive markets as soon as they are feasible.¹⁰ For only these markets are impersonal, i.e., all information on the characteristics of goods is given by the market mechanism, identity of the producer is unknown, and present value of future transactions with any particular customer is zero. There is a dynamic process that occurs with the arrival of a minority perceived as mobile; suppose now that both the minority and the majority can choose between entering two markets,

personal and impersonal, and assume that for the majority the expected rates of return in the two markets are equal before the arrival of the minority. For the minority, assumed to have the same distribution of abilities as the majority, the two expected returns are not equal: in the personal markets they expect a lower rate than the majority. Thus, they have greater incentives to enter impersonal markets. Although their influx there decreases the rate of return, this rate is still higher than the one they expect to obtain in the personal markets. Simultaneously, members of the majority will exit this market expecting higher returns in the personal markets. This process implies that some competitive markets (depending on the minority's size) will be dominated by members of the mobile minority--both as employers and as employees. However, the transition from markets where exchange is based on personal relationships to perfectly competitive markets is not instantaneous, but slow. While in personal markets exchange can be based on trust, honesty and honor, and less literacy, arithmetics and laws are required, transactions in impersonal markets are more demanding of all these substitutes, since contracts replace trustworthiness. Thus we would expect groups who have greater incentives to enter impersonal

markets to have a greater demand for education (formal or not) than the rest of the population.

2) This process of entering competitive markets is profitable for the mobile minority whether it intends to settle down or not. If it intends to settle down, an alternative strategy also becomes profitable: the minority may signal its changed intentions to the majority through various channels. The game suggests one such optimal strategy: selling high quality goods at a low price for a while, or making great efforts for a relatively low wage for a while, and only later expecting to converge to the equilibrium of the supergame. The initial outcomes of this optimal strategy can be viewed as an implicit form of investment¹¹ in information capital, capital which exists among members of the majority but not in markets where the majority trades with the minority. In particular, this argument implies that the minority has greater incentives than the majority to invest in activities which bring reputation, reputation being both a substitute for personal acquaintance and a signal for the minority's changed intentions toward future mobility.¹² In conclusion, it is in personal markets that the same service is sold at two different prices and market discrimination results. Notice, however, that the

strategy of selling high quality goods at a low price for a while will be adopted by a mobile minority only if it considers discrimination to be endogeneous or, according to Phelps' definition, statistical. Otherwise, if the minority perceives the majority's taste for discrimination to be exogeneous, this strategy is no longer optimal, since building up reputation (call it "information capital") will not change an "exogeneous" taste. In this case the optimal strategy is to enter perfectly competitive markets.

3) Mobile minorities will prefer living in cities where anonymity and concealment of information are cheaper, and where education and competitive markets are more feasible.

The analysis above implies that since the mobile minority lacks information capital (call it "trust"), its income should be lower than the majority's. Discussions on discrimination in the literature, which mainly concentrate on Blacks, emphasize that Blacks have lower incomes than whites. However, none of these studies attempts to explain why some discriminated groups have higher incomes than the rest of the population. Let us analyze whether this model enables one.

The supergame is achieved when the majority expects to play the same game over and over. The "same game" means expectations that the game will be repeated with the same players and that relative prices will stay constant.¹³ Suppose that due to exogeneous reasons the relative advantage of trade based on personal acquaintance decreases and the majority acquires the same incentives that the mobile minority already has. This will happen when income increases, population increases, mobility of the population increases, or costs of obtaining information on quality through some markets decrease. Each of these changes decreases the probability of carrying out repeated transactions with the same individuals in the future. Simultaneously they change relative prices; in particular lower information costs increase the probability of losing reputation because of fraud (when notice: loss of reputation is similar to loss of wealth). These predictions can now be made: before one of these changes occurs, the majority acquires a taste for discrimination against a relatively mobile minority, and the income of a majority's member is higher than of a similarly qualified minority member. However, when for the whole population the incentive to enter perfectly competitive markets increases, market discrimination diminishes and the income of the minority

increases relative to the majority. The minority's income may become even higher than the majority's, since it now possesses capital that the majority does not, namely a greater amount of market specific capital. Thus even if the once mobile minority is still discriminated against in some personal markets, it may have higher incomes than the rest of the population since the value of the capital it owns has gone up. In addition to suggesting an explanation for the relatively high income of a once mobile minority, these arguments lead to two further predictions: a) that market discrimination, as reflected by differences in income, decreases when one of the four conditions mentioned above is fulfilled; b) in places where the share of competitive relatively to that of personal markets is greater a smaller discrimination against mobile groups is expected. This last point reinforces my previous argument about the minority's preference to live in cities.

The model presented here can also be applied to women in the labor force. Women move in and out of the labor force more frequently than men do. Thus expecting a smaller number of transactions with women, and knowing that eventually when leaving the labor force they will be independent of previous evaluations, employers expect a

lower level of effort from women than from men. Women will thus have lower wages. This discrimination is, however, efficient as long as women do not change their intentions. If they do, then as shown there are various strategies by which women can signal their changed intentions to employers. These strategies lead, in the long run, to the new equilibrium condition characterizing expectations for repeated transactions. This analysis holds, however, only when there is no restriction to competition by union membership, or by minimum wage legislation or by other interventions in market activities.¹⁴ When these interventions exist, the market's ability to signal changed intentions is impaired.¹⁵ This leads to an increased demand for substitute channels of communicating changed intentions, in particular the political channel, and we find an increased demand for quotas, for example. Thus, the unexpected effects of some earlier legislation has had to demand for additional legislation--this issue will be a subject for further separate research.

In the next section the points made above are captured by a simple formal model which makes additional predictions for the occupational structure and the secular changes in the incomes of discriminated groups, and it shows why these characteristics could be so strikingly different among these groups.

II. Human Capital and Personal Relationships

As shown in the previous section, acquaintance with sellers substitutes for information on the quality of goods in personal markets, and honesty and trust are efficient devices for eliminating fraud when the population is relatively small and immobile. Since obtaining information through markets is a costly activity, and sometimes prohibitive, when the size of the population is relatively small, personal acquaintance can be viewed as part of the individual's full income due to its effects on lowering the price of quality. Personal relationships (kinship, friends) also provide insurance: individuals can rely on extended families as insurance for old age, against hunger or against illness.¹⁶ These personal relationship substitute for various forms of market insurance and losing kinship or friends is, depending on the elasticity of substitution, like losing physical wealth.

Let P_0 and A_0 be the amount of personal and non-personal wealth that an individual starts with and let $V = W(P_0, A_0)$ be the individual's full wealth. If all markets are competitive the value of P is zero (but until we have families and friends this is a remote, for the

moment incomprehensible, condition) and in an Arrow-Debreu framework no distinction should be made between the two sources of wealth. Both conditions fit some ideal (?), abstract model where no discrimination occurs anyway. Assume that an individual maximizes his utility over two periods. Let c_1 and c_2 be the consumption levels in these two periods and λ_1 and λ_2 be, respectively, the proportions of time invested during the first period in education (or in capital demanded in perfectly competitive markets) and in personal relationships. Let $v_0 = wT$ be the full income during the first period, T representing the time constraint and w the wage rate. $f(\lambda_1, \lambda_2)$ is the individual's income in the labor market¹⁷ during the second period and $R(\lambda_2)$ is the additional resources available to him because of his investment in personal relationships.

The assumption that income in the labor market is also a function of λ_2 stems from the arguments presented in the first section: in occupations where the individual's level of effort cannot be assessed without additional costly information, personal relationships or some other form of long-term contract enable an efficient allocation of resources. Thus the average productivity of capital based on personal relationships will depend on the share of competitive markets in the economy. The

additional term $R(\lambda_2)$ shows that personal relationships affect not only the income in the labor market but also in the market of goods and in some insurance markets. When the quality of goods is subject to uncertainty, personal relationships decrease the relative price of quality and of search. Also, there are more subtle forms of insurance and self protection; for example, intoxication might lead to transgression of the law, an event more costly for a mobile minority (who lacks information capital in a new country) than for the rest of the population.¹⁸ Or for people who fear the confiscation of their wealth, wearing expensive clothing is more costly, since clothes reveal information on wealth.¹⁹ If these groups decrease their risks by avoiding drinking, and by avoiding dressing up, the amount they spend on these devices of self-protection should be subtracted from their wealth. For, the pleasures of drinking or of dressing nicely are opportunities foregone, and foregone opportunities are the economic definition of costs. These arguments imply that in addition to affecting income in the labor market, the amount of capital based on personal relationships (including insurance in political markets) affect the individual's wealth--these effects are represented by the coefficient of $R(\lambda_2)$.

The maximization problem for the unconstrained individual is:

$$(1) \quad L = \max U(c_1, c_2)$$

$$(2) \quad \text{s.t.} \quad c_1 + s = (1 - \lambda_1 - \lambda_2)v_0 + W(P_0, A_0)$$

$$(3) \quad c_2 = f(\lambda_1, \lambda_2) + R(\lambda_2) + s(1+r)$$

When the two equations represent the household's budget constraints in the two periods, s is the amount of saving and r is the rate of interest. The wealth constraint is obtained by substituting s in the second equation, which becomes:

$$(4) \quad c_1 + \frac{c_2}{1+r} = \frac{f(\lambda_1, \lambda_2) + R(\lambda_2)}{1+r} + (1 - \lambda_1 - \lambda_2)v_0 + W(A_0, P_0).$$

The first order conditions are:

$$(5) \quad \frac{\partial U}{\partial c_1} = U_1 + \delta = 0$$

$$(6) \quad \frac{\partial U}{\partial c_2} = U_2 + \frac{\delta}{1+r} = 0$$

$$(7) \quad \frac{\partial U}{\partial \lambda_1} = -v_0 + \frac{f_1(\lambda_1, \lambda_2)}{1+r} = 0$$

$$(8) \quad \frac{\partial U}{\partial \lambda_2} = -v_0 + \frac{f_2(\lambda_1, \lambda_2) + R'(\lambda_2)}{1+r} = 0$$

where δ is the Lagrange multiplier. From (7) and (8) the usual Fisher condition on the rate of substitution between present and future consumption can be derived. f_1/v_0 and $(f_2 + R')/v_0$ define the rate of return on human capital and on capital based on personal relationship. Both equal $1+r$, where r can be viewed as the rate of return on physical capital.

Let λ_2^* be the optimal fraction of time invested in personal relationships and λ_1^* be the optimal fraction invested in education. We will now compare these amounts with the optimal amounts invested in these two forms of capital by members of a mobile group. The formal meaning of mobility is that the returns on investment in personal relationships are expected to be smaller. By investing $\lambda_2 T$ in this capital, the minority member's expected returns are only $\alpha R(\lambda_2)$ and $f(\lambda_1, \beta \lambda_2)$, $0 < \alpha, \beta < 1$, since there is a positive probability that this capital will be lost. Also, if other people expect an individual to be relatively more mobile, they will avoid contact with him, increasing the costs of establishing personal relationships. Without loss of generality let $\alpha = \beta$; then instead of condition (8) we obtain:

$$(9) \quad \frac{f_2 + R'}{v_0} = \frac{1 + r}{\alpha}$$

i.e., these individuals will invest less in personal relationships and more in education than a similarly able member of the rest of the population.²⁰ This comparison is valid since only production functions and not utilities are involved. Let $\hat{\lambda}_1$ and $\hat{\lambda}_2$ be the optimal fractions of time the mobile minority invests in education and in personal relationships. Then, since its opportunity set is smaller than the majority's, its wealth and income are smaller.

The measured incomes in the labor market in the second period are $f(\lambda_1^*, \lambda_2^*)$ and $f(\hat{\lambda}_1, \alpha \hat{\lambda}_2)$. Suppose that α unexpectedly increases between the two periods. This will happen, according to the previous discussion when the size of the population or its mobility increases, or the costs of obtaining information on quality decreases.²¹ Both lead to greater incentives to enter perfectly competitive markets, and the returns on

capital based on personal relationships decrease. Thus, the income of mobile minorities, who have a higher level of education and of specialization in activities related to perfectly competitive markets, increases relative to that of the rest of the population (they increase by the amount of $f_2 \hat{\lambda}_2 d\alpha$, when $d\alpha$ is positive for the minority), and it may become higher in absolute terms. Thus, although a positive α may still exist, the income of a mobile group may be higher than that of the rest of the population, and so income alone will not measure accurately whether there is still market discrimination or not. Secular changes in the relationship between the incomes of the two groups could be used as a measure for changes in the degree of discrimination, but that measure would also be subject to the reservation that intergenerational effects may counteract it. Once the older generation has both higher incomes and a higher level of education, education becomes relatively cheaper for the younger generation (since education is cheaper for children with more educated parents), and even if they are discriminated against, their incomes can be higher. In conclusion, if the trend of markets becoming less personal and more competitive continues, education becomes the mobile minority's "inherited luck."

Let . . . emphasize . . . the implicit assumptions behind this model: $f(\cdot, \cdot)$ is also a function of the size of the population; the income of a mobile minority is smaller, the smaller its size. For example, assume that in the community where the minority settled, all trade was based on personal relationships. In order to "enter" competitive markets, the size of the minority would have to be relatively large. Otherwise, the equilibrium condition is characterized by the minority being segregated, producing low quality services and having relatively low incomes. If their size were larger, the mobile minority could develop a perfectly competitive market where their income could be higher, although still lower than the majority's. This argument sheds light on the different behavior of Gypsies and Jews, the first group being of a much smaller size, and it implies that mobile minorities will migrate to economies where the share of competitive markets is greater. Now notice that if all markets were competitive (which implicitly means a large number of buyers and sellers), no market discrimination could occur when the size of the minority was relatively large.²² For example, suppose that the employers belonging to the majority want to discriminate: this would imply that they are ready to pay less for workers belonging to the mobile minority. However, if

the members of the mobile minority have no obstacles (because of size, legal constraints, lack of education), to entering perfectly competitive markets, they can become employers in these markets and hire workers belonging to their group. Although there will be segregation in the sense that both employers and employees of a firm will belong to one group, there will be no differences between the wages of employees from the majority and the minority, and so there will be no market discrimination. Also, since perfectly competitive markets mean that the identity of producers is unknown, the price that the minority will get for its output will be the same as the majority gets and this will determine both the number of minority-owned firms and the number of employers and employees. Of course, if consumers discriminate between the goods produced by the two types of firms, the solution will be different. But then markets cannot be competitive since consumers somehow identify the producers. This argument allows the following prediction: if not all markets are competitive, we expect that the percentage of employers (or entrepreneurs) among the discriminated minority will be higher than among the majority.²³

Let us examine within this framework the effects of other forms of discrimination (unrelated to mobility)

like exploitation, when migration to another country is not feasible or it is not profitable (as it was not profitable for Jews to change their religion--see the next section). Since most research on this topic has concentrated on discrimination against Blacks, we will try to use this model to make predictions for the circumstances they have faced. First, slavery must be precisely defined: assume that it means restriction of certain groups to play one, imposed strategy, for example an occupation of one type of low quality, mechanical job where performance can be judged and enforced cheaply. What maximization problem do the slaves solve? Since their standards of work are set, education is forbidden by law, and the probability of being sold and separated from family can be viewed as exogeneous (this is now the interpretation of $\beta < 1$), the slaves do not have much incentive to invest either in education or in personal relationships with their kinship.²⁴ One of the endogenous variables that the slave may decide upon is his level of effort, but even this variable is constrained by the information the owner has on the slave's average productivity; he thus can impose this level of effort through a method of incentives and punishments.²⁵ In such circumstances slaves will have a small stock of human capital (they may attempt to educate themselves illegally,

but this is again relatively more costly), and a small stock of capital based on personal relationships. This conclusion implies that when the slaves are eventually freed they have a smaller full wealth than groups who have been poor but still had incentive to invest in personal ties among themselves.²⁶ The model makes an additional prediction: assume that the choice a slave faces is either to remain in slavery or to try to escape. Escape means that there is a positive probability of getting a higher reward on education and on personal ties. The model predicts that in places where escape is more feasible, slaves will have a higher level of education and stronger family ties. Since owners of slaves are rational, we would also expect that in such places they would award their slaves more freedom in order to decrease incentives to escape. The very preliminary empirical evidence presented later supports this view.

In conclusion, the same model that predicts a higher level of education, and higher incomes for some groups who have been discriminated against because of mobility also predicts lower levels of education and lower incomes for other discriminated groups (if they were slaves, or their size was relatively small). The difference between Blacks and other discriminated groups, in terms of this model is that relative to other groups Blacks

had a smaller stock of not only physical wealth and human capital, but also of capital based on personal relationships, even among their own group. In this sense their situation could probably be best compared with groups, who for exogenous reasons, have lost their families and had relatively low levels of education (like the first wave of Irish immigrants after the Potato famine).²⁷ Also notice that when not all markets are impersonal, the model suggests that there is no distinction between "social" and "market" discrimination. This result seems to justify the argument behind the Supreme Court's decision in Sweatt v. Painter, which held that Blacks must be admitted to state law schools. The court observed that in segregated schools Blacks would have no opportunity to develop contacts with the students who are likely to occupy important positions on the bench and bar after graduation.²⁸

III. Preventing and Eliminating Discrimination

If the model described in the previous sections accurately describes some forms of statistical discrimination, it also shows the difficulties in inferring

from prices, incomes and occupational statistics the presence of discrimination.

Discrimination is said to occur when the same good or the same service is sold at two different prices. The first difficulty with this definition arises when we consider the term "the same": for example, when employees differ in their intentions to stay in the labor force, even if they have the same qualifications, they are not "the same." Since intentions are hard to measure, differences in wages of similarly qualified employees may not necessarily imply discrimination, but just indicate differences in estimated intentions. At the same time the fact that some minorities have higher incomes than the rest of the population does not imply that there is no discrimination against them; this was also a point made in the models presented in the previous sections. Finally, the fact that some groups are segregated in some occupations does not necessarily imply that they are discriminated against now; this allocation may be an outcome of optimal or enforced investments in the past and intergenerational effects.

But to limit the definition of discrimination to observed prices or incomes is misleading. A foregone opportunity also decreases an individual's income, and differences in opportunities for different groups in the

population imply that these groups pay different prices for similar goods. Thus, legal constraints on some groups in the population must be taken into consideration when the subject of discrimination is examined. The questions which arise with respect to this form of discrimination are: in what sense this discrimination can be viewed as "endogenous" or "exogenous;" what are its implications for the occupational structure of the groups who are discriminated against; and whether this form of discrimination leads to policy implications different from those obtained when discrimination is only statistical. These issues are examined below.

Legal barriers to entry into some markets and some occupations are attempts to restrict competition in the market of goods and in the labor market.²⁹ The rationale for preventing some groups from entering certain markets is that these steps increase the sellers' income whether they are employers or employees. At the same time they make the buyers worse off. Harassment of religious groups is a particular example of limiting competition--in this case in the market of ideas.³⁰

Specific restrictions imposed on some groups will affect their occupational structure: if some groups are subject to frequent harassment by authorities through

confiscation of resources, taxation or expulsion, we expect that these groups will invest in occupations where the contemplated economic activity is completed in a relatively short time and in types of capital that cannot be easily confiscated. This implies that these groups will invest less in agriculture and industry and will prefer trade, or other intermediary professions where time elapsed between production and sale is shorter. Also, they will have greater incentives to invest in human capital³¹ which cannot be confiscated and in physical capital which is relatively easy to conceal, like cash, gold or jewelry.³² The restrictions also increase the probability of the group's migration.³³ Thus, in the country where the minority has found its way mobility will be viewed as an exogenous characteristic of the group. This conclusion is reinforced by the fact that due to greater mobility, a minority will have kinship in more dispersed places than the rest of the population, making further mobility cheaper.

Limiting competition therefore constrains the occupational choice of groups and it makes their mobility cheaper. A third effect exists if restrictions come for religious reasons: the minority may decide to change its religion. But this is not costless: as historical documents indicate, this option was generally given at a

very high price. For example, in England during the Middle Ages, the King claimed as his compensation all the converts' wealth.³⁴ In Western Europe during the same period converted Jews were only allowed to become serfs.³⁵ Considering these alternatives staying a Jew was not such a bad deal after all. Moreover, changing religion breaks family ties, and the effects such ties have were discussed in the previous sections.

The evidence also shows that Jews were not discriminated against from the fall of the Roman Empire until the 8th century. They earned their living from agriculture (like the rest of the population). Christians visited synagogues and sometimes even preferred the Jewish to Christian preachers, and in Spain the lands of Christians were blessed by both the clergy and the rabbi. Enforcement of the Church's legislation against Jews started with the rise of the feudal manor and the Church's becoming the State Church--a rather clear sign of monopoly power.³⁶ Once this happens, discrimination against a religious minority or a scientific minority (both potential competitors in the market of ideas, and substitutes for the State ideology) can be viewed as exogenous. For, if the population is illiterate the costs of comparing ideas (i.e., buying substitutes) becomes prohibitive. Generations grow up learning ideas by oral communication (in

which case inconsistencies are less likely to be discovered),³⁷ and since education, in particular literacy, is a costly activity a persistence of tastes over generations will result. Thus, while we may view the attempts to limit competition as endogenous, the learned taste to discriminate against some groups can later be viewed as exogenous. Even if the initial rationale for limiting competition disappears, the taste for discrimination will persist since to learn why our ancestors have discriminated against some groups is not a first priority in our learning process.

One can argue that the causality is not from legislation and attempts to limit competition to tastes, but the contrary: there is an exogenous, irrational taste and the majority incorporates it into the laws of the country. Both the previous evidence and the evidence presented in the next section . contradict this view.

These arguments thus clarify the meaning of an exogenous taste for discrimination and they lead to a further understanding of the occupational structure of groups who have been discriminated against. The predictions obtained in the previous sections, where only the effects of statistical discrimination were examined still hold true for this case, when the taste becomes exogenous.

For, once this taste exists, those who grow up learning it will avoid contact with members of some groups. The discriminated minorities, expecting such behavior will avoid personal markets and will have greater incentives to enter competitive markets than the rest of the population. These conclusions have two implications.

a) The comparison made in the next section between the economic structure of groups discriminated against on religious grounds or due to mobility is valid. The differences in their occupational structure allow for conclusions on remedies, conclusions based on data for more than just one group. This is an advantage on the recent discussions on discrimination in the economic literature which mainly concentrate on Blacks. For, observations, however elaborate, on just one group cannot distinguish (by definition) between the hypothesis that differences in observed prices or incomes are due to differences in abilities, or due to discrimination. The empirical evidence in the next section indicates that differences in behavior are a result of facing different circumstances rather than having different abilities.

b) It is important to examine whether the taste for discrimination is statistical³⁸ or exogenous (in the sense described above), for the two have different implications. Where the taste is statistical, the more mobile group

may either enter competitive markets or show⁴ changed intentions as to its mobility in personal markets, where eventually the equilibrium of the supergame will be achieved. If, however, the taste is exogenous, the discriminated group will be concentrated in competitive, anonymous markets. Thus, the market's ability to overcome a statistical taste is greater than its ability to overcome an exogenous taste, although in both cases the model, and the empirical evidence presented in the next section, imply that if markets become more competitive, market discrimination will diminish. These conclusions (as to the discriminated group's optimal strategy) assume, however, that the minority already has the appropriate education to enter competitive markets. If it lacks it, the market process may be rather slow; the empirical evidence indicates both that education is a prerequisite for competitive markets, and it shows how long it took for various groups to acquire it.

As argued in this section, a taste for discrimination may emerge from attempts to limit competition. The remedy for preventing the emergence of this taste is to enable competition in the market of goods, the labor markets and the market of ideas. Notice, however, that this conclusion is different from advocating free speech

or laissez-faire. For, if the length of time is relatively short for competing views to be presented, or for substitutes in the market of goods to be produced (and these conditions exactly define monopoly power), restricting speech is like restricting monopoly and both improve the allocation of resources. As argued above, the emergence of the taste for discrimination against Jews can be attributed to the Church's monopoly power (facilitated by the illiteracy of the population), and which affected the allocation of resources for long periods of time.

IV. Empirical Evidence

The groups that fit into the first category--discrimination in the market of ideas--are the Jews, the Parsees, the Huguenots, the Protestants and later the Protestant Dissenters. Some of these groups became mobile as a result of restrictions imposed on them: the Jews, Parsees and the Huguenots. There are other groups like the Gypsies, immigrants, Palestinians, whose mobility is not associated with differences in religion. Mainly evidence on these groups will be compared below, although additional, fragmented evidence on other groups (women, Blacks, Scots and others) will be mentioned.³⁹ The

evidence supports the predictions of the hypothesis presented in the first sections, where the assumption made was that the minority and the majority have similar abilities, only the circumstances they faced differed. The evidence further supports the hypothesis presented in the previous section on the relationship between the emergence of a taste for discrimination and legal constraints.

A. Size of Discriminated Groups

Jews and Gypsies who both have a long history of mobility have strikingly different occupational structures. This model explains this dissimilarity by their different numbers. The Gypsies arrived in Europe during the Middle Ages, when markets were still based on personal relationships.⁴⁰ While the ability to enter or develop relatively competitive markets was feasible for Jews (who could trade between cities since in their travelling they were hosted by Jews in the other villages),⁴¹ this strategy was not feasible for Gypsies. The later difference in their education can also be related to this difference in absolute size: while the demand for education, in particular literacy, is higher for mobile groups than for the rest of the population (because of greater demand for written communication due

to dispersion and the incentives to enter perfectly competitive markets), specialization of some members of the group in education is prohibitive when the size of the population is relatively small: this is just one particular application of Adam Smith's point on the division of labor being limited by the extent of the market.⁴² However, the predictions of the model are confirmed when we look at the Gypsies' occupations: secondhand dealers, wandering salesmen, fiddlers (an easily transferable profession), circus players and fortune tellers. The model suggests an explanation for their reputation as fraudulent sellers: their expected mobility. There is a clear difference between these statements and the hypothesis that people simply dislike Jews, Gypsies or strangers, that Jews enjoy education, thrive on competition and have greater abilities than the rest of the population, and Gypsies like to cheat and are an inferior race. This hypothesis does not provide any testable implications: it attributes tastes to some groups after knowing their occupational structure and income, and it does not tell us under what circumstances the majority will be less hostile toward strangers in the market, nor does it define "strangers." The predictions made here, however, were independent of any particular observation--the Gypsies just happen to be one observation in my sample.

The relationship between the size of groups and their economic structure is investigated in Brenner (1979b). The statistical evidence there strongly support the view that where the size of the population is greater, formal markets substitute for exchange based on personal relationships and this substitution is accompanied by a greater economic development. (see Appendix)

B. Entrepreneurship and the Income
of Mobile Groups

The income of discriminated and mobile groups has increased relative to the rest of the population and even surpassed it when one of the conditions mentioned in the first sections were fulfilled (there are not yet precise measures of the share of personal and competitive markets in the economy).⁴³ In the U.S. not only Jews but all immigrant groups, holding schooling and labor market experience constant, have higher incomes than the rest of the population. This is the evidence presented in Chiswick (1978), relying on data from the 1972 Census, and in Brenner (1979a), where the data on Jews and the rest of the population for an earlier period is presented.⁴⁴ But the same evidence exists for other groups: Brenner (1979a) shows that the income of Parsees, a tiny minority in India (but concentrated in one place) has increased

relative to the rest of the population during the 17th century with the arrival of the Europeans and the increased growth rate. The rise of the Jews in Western Europe during the 15th and 16th centuries is also correlated with the four conditions mentioned in the first sections. Assuming that growth rates measure the increased share of relatively impersonal markets (since the market replaces the family "marketplace"), these evidences are consistent with the predictions of the model.

The explanations given to these empirical evidences were based either on a vague theory of entrepreneurship (by Weber, Hagen, Hoselitz and others),⁴⁵ or on a mere assumption of differences in abilities, which is not different from the assumption of entrepreneurship (in Chiswick, 1978). This study suggests an alternative explanation: since both discriminated groups and new immigrants lack information capital, their relative advantage is in entering competitive markets. With the secular increase in the share of impersonal markets, there will be an increase in the income of these groups relative to the rest of the population, even if they have the same formal education and abilities.

As argued, these groups have greater incentives to be self-employed and develop perfectly competitive

markets;⁴⁶ both characteristics can be viewed as part of the concept of "entrepreneurship." Moreover, for members of mobile groups to become "innovating" entrepreneurs is cheaper since they are more educated and mobility itself implies having access to information that the rest of the population can have only at higher costs. The correlation between Jews and entrepreneurship was widely discussed in the literature (see Kahan, (1978a, 1978b), Weber, Sombart and many others); that today in the U.S. Jews are still disproportionately self-employed (see Brenner and Kiefer, 1980), may be due either to continuing discrimination or to intergenerational effects. There are additional evidences: a) in the 17th and 18th centuries, economic innovation in France was correlated with the Huguenots (a discriminated minority in the market of ideas, who were finally thrown out of France); b) in the English Industrial Revolution the Protestant Dissenters, a persecuted group comprising only 7% of the population, provided 43% of innovating entrepreneurs; c) a detailed study of Colombia showed that the Antioquenos, a socially discriminated group and 40% of the population, provided at the turn of the 20th century, when the acceleration in growth rates took place, 70% of entrepreneurs, while having lower formal education and lower incomes than the rest of the population before growth started; d) following the restoration

in 1868, the organization of Japan depended in great measure on the samurai of the lower grade, who have been discriminated against; e) for diplomatic reasons, the Russian church ritual was revised in 1667--some "old Believers" left the Church and from then until 1917 were persecuted with various degrees of severity; the Old Believers were prominent as entrepreneurs in the accelerating growth that occurred in Russia during the last half of the 19th century.⁴⁷

Meanwhile the model sheds light on: a) the timing of the increase in the relative incomes of mobile and discriminated groups without assuming an exogenous decrease in the taste for discrimination; b) the increase in the relative incomes of groups without assuming differences in abilities; c) disproportionate self-employment.

Some may argue that by definition the sample used here is biased, for otherwise why would a Jew be a Jew, a Protestant a Protestant, and an immigrant an immigrant? Again, the empirical evidence and the model provide an answer. From the beginning of the Christian Era until about the middle of the Twelfth Century, the countries of Western Asia, Syria and Northern Africa were the main centers of Jewish habitation, at some times numbering a million or more. Babylon and Persia had large numbers of Jews until the Twelfth Century, and Turkey claimed the largest Jewish population in the Sixteenth. In the course

of time all these centers lost much or all of their Jewish population. Since there are neither records of massacres, nor of continuous emigration (in contrast to evidence in Western Europe), one must ascribe this decline to assimilation, which means growing similarity with the rest of the population. In Western Europe during the same period of time the choice given to Jews, if they converted, was to either renounce their wealth or become serfs. So to stay Jewish can hardly be viewed as a matter of self selection.⁴⁸

The model does suggest a selection mechanism for migration but which is not based on different abilities, but rather on the differences in expected gains from migration. First, minorities have the incentive to migrate from economies where the share of personal markets is large to economies where this share is relatively small. In particular, discriminated minorities have greater incentive to migrate than majorities. As the model shows, a member of the majority (who has more capital based on personal ties) would gain less by migrating than a member of a discriminated group. In particular, since the relatively rich in a population have more connections (in particular, political ones), migration will be a choice of the relatively poor--and early migration to the U.S. attests to these predictions of the model. This selection

mechanism implies that migration is not based on differences in abilities although those who migrate may have a greater stock of market specific capital if they have been discriminated against in their country of origin.⁴⁹

C. Education, Literacy and Competitive Markets

The level of education of mobile groups will be higher than that of the rest of the population. Several distinct arguments imply this prediction: a) when physical wealth is perceived as relatively more risky due to taxation, or confiscation, investing in human capital becomes preferable (see Brenner and Kiefer, 1980); b) while exchange in personal markets is based on trust and honor (and also, today, on just a handshake in the heavily Jewish diamond trade), exchange in impersonal markets requires money and contracts (see Appendix) and both imply an increased demand for literacy. This experience in making contracts may shed light on the disproportionate concentration of Jews and Parsees in law (see Brenner, 1979a); c) mobility and the resulting dispersion increase the demand for literacy, since the value of written communication increases.⁵⁰ Jews and Parsees had a higher percentage of literates than the rest of the population among both men and women, even before having relatively higher levels of formal education. The Palesinians, who only thirty years ago had a level of education and

literacy similar to that of the rest of the Arabs in Syria, Jordan and Egypt, have now, only thirty years later, both a higher level of education and a higher level of literates (Brenner and Kiefer, 1980). The Scots, during the 17th and 18th centuries, were absent from leading European intellectual activity and the mass of Scottish people were "illiterate and so lacking in culture that they were regarded by many as helplessly savage;" a century later they were concentrated in trade and had better schools and a higher rate of literacy than the English. The Scots were discriminated against (in the sense that the English avoided contact with them): Adam Smith complained to the Oxford administration for discriminating against Scottish students, while Mill tried to conceal his Scottish origin.⁵¹

From the evidences presented above it is hard to deduce which of the three effects is the strongest in inducing literacy. But as a policy recommendation, only the relationship between competition and literacy matters, since nobody will advocate confiscating physical capital or arbitrarily increasing the mobility of groups as a means to increase the demand for literacy.

The previous evidence raises the question of why some groups succeed relatively rapidly when the circumstances they have lived in change unexpectedly (for example, the Palestinians thirty years after being in

diaspora). The explanation this model suggests is both the difference in initial physical wealth and the difference in wealth based on personal relationships.⁵² An empirical evidence rarely mentioned in the economic literature supports this view: the West Indian Blacks are disproportionately represented among Black professionals.⁵³ Their education and income is higher than those of afro-Americans, and their rate of involvement in crime is lower. Their history of slavery seems at first sight similar to that of other Blacks. There are, however, two differences: the West Indian Blacks were allowed to grow most of their own food on land and during time set aside for this purpose, in contrast to Blacks on American plantations who were either given food by their owners or supplied through the market. This situation was not due to the greater altruism of West Indian slave owners. Since Blacks were 90% of the population and the geographic pattern was such that escape and survival were more feasible than in the American South, in order to decrease the slaves' incentives to escape their owners gave them better conditions.⁵⁴ In terms of the model, the probability of escape and their higher incomes imply a higher level of education (whether formal or not) and a greater capital based on personal ties. The smaller amount of wealth based on personal relationship among

Blacks (who initially were not a homogeneous group) is the difference in terms of this model between their condition and the condition of other minorities with similar amounts of physical wealth. Finding a measure for wealth based on personal relationships will be the subject of further research.

D. Politics and Discrimination

In addition to showing their occupations being concentrated in trade (retail trade in particular since there the period of time elapsing between producing and selling is relatively short), finances and education, the model also shows why other occupations were avoided by these groups: namely, the military and politics, and why political candidates will not make attempts to campaign for the votes of mobile people. The Prisoner's Dilemma suggests that mobile people will avoid markets that are one play oriented or where trust is still crucial capital for success. Both the military and politics are examples of such markets. Also, a candidate who wants to maximize his votes in some geographical area has greater incentives to invest in relatively less mobile groups. Stigler (1979) analyzed the relationship between votes on Selective bills and the social characteristics of constituents. He found that the prediction based on a

self-interest theory of legislation (i.e., that laws pass benefiting members of strong interest groups), is more consistent with the evidence than predictions based on a benevolent theory of legislation. Such legislation favored handicaps (to an extent probably not yet understood by other voters),⁵⁵ and one reason for that is given by this model: the handicapped being relatively less mobile, politicians have greater incentives to attract their votes. This theory of legislation, that mobile groups could not expect success in traditional political parties (is this the reason for the disproportionate participation of these minorities in new political parties?) and their sheer number may explain why groups who were already perceived as mobile did not have political power.

Observations on different mobile groups at various times and in different countries support this view of legislation.

Table 1 presents the percentage change in the total population and in that of Jews in various counties and cities in Germany. Both populations have increased during the same period of time by roughly one percent (see Table 2). Notice that the large fluctuations in the Jewish population are not because of a small sample: for the first eight observations, the Jewish population was between

TABLE 1Percentage Change in Jewish and
Total Population*

<u>1910-1925 :</u>	<u>Total</u>	<u>Jews</u>
Prussia	8.91	10.11
Bavaria	7.23	-10.84
Saxony	3.86	32.23
Wurtemberg	5.85	- 9.64
Baden	7.92	- 7.07
Thuringia	6.54	- 5.68
Hessen	- 2.52	-15.22
Hamburg	13.59	2.22
Oldenburg	12.86	- 0.79
Brunswick	1.52	- 0.23
Anhalt	6.01	-17.57
Bremen	13.12	-18.18
Lippe	8.42	-22.18
Lubeck	9.75	0.96
Waldeck	6.60	- 4.79
 <u>Saar Region</u>		
1825-1850	33.32	49.62
1850-1900	164.57	229.07
1900-1922	38.90	31.20
1922-1927	7.98	- 4.27

*Source: Harry S. Linfield Statistics of Jews New York: The American Jewish Committee, 1931.

TABLE 2

Jews, Total Population and
Percentage of Jews*

	<u>Total</u>		<u>Jews</u>		<u>P.C. of Jews</u>	
	1910	1925	1910	1925	1910	1925
Germany	57,898,395	62,410,619	535,120	564,379	0.92	0.90

*Source: Linfield, op.cit.

20,000 and 50,000 while for Prussia, the number was 400,000. Of course, the first column implies movement from rural to urban areas, but the local urban population could not have had the movement pattern of Jews. These numbers then imply that the probability of carrying out repeated transactions with Jews either in the political markets or in the market of goods was smaller than the same probability for the rest of the population.

The second group is that of Japanese Americans who have had a very large rate of return to their homeland in the early decades of their stay in the U.S. (see Table 3). Between 1890 and 1900, 27,000 Japanese immigrated. Since in 1890 there were 2,000 in the U.S. and in 1900 only 24,300, we may deduce that roughly 20% have returned during this period. Between 1900 and 1910, 118,000 arrived but only 38,000 stayed, the total Japanese population in 1910 being 72,157. For later years the migration rates are not representative due to the "Gentlemen's Agreement" (from 1909 to 1924) and the Exclusion Law since 1924. The existing piece of evidence in Table 3 still shows a relatively high rate of return of Japanese to their homeland.

The third group is Puerto Ricans: the Decennial Census (1970, p. 14) shows that half of the Puerto Ricans returning home have stayed in the U.S. for less

TABLE 3Japanese Americans*

<u>Year</u>	<u>Total Admitted</u>	<u>Total Departed</u>
1908	9544	4796
1909	2432	5004
1910	2598	5034
1911	4282	4869
1912	5358	5437
1913	6771	6647
1914	8462	6300
1915	9029	5967
1916	9100	6922
1917	9159	6582
1918	11114	7691
1919	11404	8328
1920	12868	11662

*Source: Y. Ichinashi Japanese in the United States Stanford: Stanford University Press, 1932

than five years.⁵⁶ This would roughly imply that for a politician the probability that the same Puerto Ricans will vote for his re-election is one-half, or from the point of view of the politician the mobility of this group is 50%. This contrasts with mobility rates between states of 0.7% for the 55-64 age group, 1.75% for the 40-54 age group, 2.75% for the 35-44, 3.8% for the 30-34 and 7% for the 20-29 age group.⁵⁷

As a final evidence, Palestinians today are scattered in many Arab countries. In some of them they face exactly the same type of restrictions that Jews have faced in Europe ("numerus clausus" in education, as discussed below), and it would be hard to speak in this case of any long term enmity.

Two reasons can then be given for the lack of political power of these groups: a) their relatively small number and b) their mobility. Since in New York a 10% minority is not small enough to explain the Puerto Rican lack of political power and since there are minorities with similar sizes to the Japanese who did not face restrictions, we see that mobility plays a role in understanding their lack of political support.

Another question is why some specific restrictions were imposed on these groups in the 19th and 20th centuries. The restrictions were not in the market of ideas;

Jews were left free to practice their religion. Instead, legislation enforcing "numerus clausus" was imposed on them. This legislation meant restricting their numbers in high schools and in universities both as students and faculty. These restrictions were imposed in Russia, Hungary, Germany and Poland in periods of time when the demand for education of the majority increased.⁵⁸ The same restrictions are now imposed on Palestinians in Kuwait, while in Abu-Dhabi and in Jordan their number is limited in military and relatively high administrative positions.⁵⁹ This legislation can be understood if we remember that both Jews and Palestinians have had higher levels of education than the rest of the population. Thus, "numerus clausus" restricts competition in the market for highly skilled labor and it is not due to some irrational hatred.

E. Living in Cities

Discriminated minorities will prefer living in cities since entering perfectly competitive markets is more feasible there, trade and education are city specific occupations and cities are more impersonal: anonymity and the concealment of information and thus assimilation are cheaper there. The evidence shows that Jews were living in cities (when they were given the choice): in

Western Europe from the 19th century 95% of them lived in cities; 97% of the Parsees lived in Calcutta, and today U.S. minorities are concentrated in cities.

F. Women and Blacks in the U.S.

The final evidence which supports the hypothesis presented in this study refers to women and Blacks in the U.S. Polachek's⁶⁰ and Beth Niemi's⁶¹ studies show the differences in intra-market mobility between women and men explain part of the difference between their wages and between their unemployment rates, and Becker (1957) found that Blacks are concentrated in relatively competitive industries.

Conclusions

The model presented in this study and the empirical evidence supporting its predictions have shed light on the meaning of market and social discrimination. The same model predicts strikingly different occupational structures for minorities who have been discriminated against, depending on the specific economic circumstances they have faced and their size. The benefit of this generalization of a model on discrimination is clear: it leads to deriving conclusions about the remedies for preventing

discrimination and for diminishing an already existing taste.⁶²

The model has some rather general implications, unrelated to the subject of discrimination, which will be subject for further research.

a) In addition to a distinction between competitive and non-competitive markets, the model and the evidence suggest that a distinction must also be made between personal and impersonal markets. Analysis of the structure of an economy based on personal relationship is in particular relevant for economies where either the size of the population is relatively small or income is relatively low, since in such economies the costs of using the market mechanism are prohibitive. In these circumstances trust, honor and love--call them "morals" or "ethics"--substitute for the market mechanism. Thus, the model implies that the subject of economic development should be treated more carefully: the transition from personal to impersonal markets is time consuming, it requires literacy, contracts and legal procedures assuring their enforcement, and these conditions constrain the speed at which competitive markets can grow.

b) The model enables an analysis of the structure of primitive societies; this is done in Brenner (1979b). Some historical events: the correlation between the rise

of Protestantism and growth can also be reexamined. The model implies that the causality was not from the market of goods to the market of ideas, as Weber's famous thesis on the Protestant ethics suggests, but rather that both were a consequence of an increase in population and in life expectancy, which at that time could be viewed as exogenous (see McNeil, 1976, 1978).

c) Returning to the subject of discrimination, the model gives justification for subsidizing education for a group in the economy who is less educated than the rest of the population. The costs of not subsidizing it may be high for the rest of the society, since the risk of these groups buying fraudulent ideas is greater (superficial distorted Marxist ideas, or ideas sold in Jonestowns, for example). The problem of finding the best means to achieve this goal will also be a subject for further research.⁶³

Appendix

The relationship between personal and impersonal markets , and the size of the population and its mobility is tested in Brenner (1979b). I quote here part of the results: the test was done on 60 primitive societies, where the relationship between population, mobility and market structure can be more easily detected. Since the data is qualitative only the maximum likelihood method could be used. PO denotes the size of the population, D its density, σ the standard deviation, the numbers in paranthesis the t-statistics, n the number of observations and m the number of iterations at which convergence was achieved.

For domestic trade, DT, the following result is obtained:

$$DT = -4.43 + 0.745 PO + 0.45 D$$

$$\sigma = 1.4 \quad \sigma = 0.29 \quad \sigma = 0.25$$

$$(-3.18) \quad (2.57) \quad (1.75)$$

$$m = 16$$

$$n = 60 ,$$

For reciprocal exchange, RE, the density of the population turns out to be insignificant , and the size of the population turns out to be significant, with the expected negative sign:

$$RE = 2.92 - 0.539 PO$$

$$\sigma = 1.2 \quad \sigma = 0.25$$

$$(2.44) \quad (-2.14)$$

$$m = 13$$

$$n = 60 .$$

The probability of finding personal ties, LI, as being relatively important in determining economic activity as a function of the size of the population and its density is given below:

$$\begin{array}{rcl}
 \text{LI} = & -1.29 & + 0.11 \text{ PO} + 0.59 \text{ D} \\
 \sigma = & 1.17 & \sigma = 0.25 \quad \sigma = 0.29 \\
 & (-1.1) & (0.437) \quad (2.02) \\
 \\
 & m = 4 & \\
 & n = 60 & .
 \end{array}$$

Thus, the density of the population, rather than its absolute size, determines a dominant role for kinship in economic activities.

Finally, the presence or absence of a money market is discussed below. In monetary theory the argument found in textbooks is that when the number of transactions increases, money saves transaction costs. We would then expect that the presence of money in the economy will be positively related to the absolute size of the population. As to its density, the size of the population staying constant, the implication is unclear: although a greater density implies a greater number of expected transactions, it also lowers the price of reciprocal exchange and thus decreases the demand for a medium of exchange (family ties and trust substitute for it). The results below show that the absolute size of the population, rather than its density, is the predictor of the presence or absence of money markets:

$$\begin{aligned}
 \text{MO} &= -4.44 + 0.74 \text{ PO} + 0.24 \text{ D} \\
 \sigma &= 1.35 \quad \sigma = 0.27 \quad (\sigma = 0.27) \\
 &(-3.27) \quad (2.71) \quad (0.87)
 \end{aligned}$$

$$m = 14$$

$$n = 60$$

$$\begin{aligned}
 \text{MO} &= -4.40 + 0.82 \text{ PO} \\
 \sigma &= 1.37 \quad \sigma = 0.26 \\
 &(-3.2) \quad (3.19)
 \end{aligned}$$

$$m = 14$$

$$n = 60 ,$$

where MO denotes the qualitative money market variable,

Mathematical Appendix

The second order conditions, and the sign of $\frac{d\lambda_1}{d\alpha}$ are obtained below:

$$(1) \quad \begin{vmatrix} U_{11} & U_{12} & & & 1 \\ U_{12} & U_{22} & & & \frac{1}{1+r} \\ & & f_{11} & f_{12} & \\ & & f_{12} & (f_{22} + R') & \\ 1 & \frac{1}{1+r} & & & \end{vmatrix} > 0$$

Differentiating the first order conditions we obtain:

$$(2) \quad f_{11} d\lambda_1 + \alpha f_{12} d\lambda_2 = -f_2 d\alpha$$

$$f_{12} d\lambda_1 + \alpha(f_{22} + R') d\lambda_2 = -(f_2 + R') d\alpha$$

$$\Rightarrow \text{sign} \left(\frac{d\lambda_1}{d\alpha} \right) = \text{sign} [-f_2(f_{22} + R') + f_{12}(f_2 + R')]$$

and making the ordinary assumptions on production functions, i.e. $f_{22} < 0$,

$R'' < 0$, $f_{12} > 0$, this term is positive.

Notes

*I am grateful for helpful comments from participants at the NBER seminar in New York, Ruth Klinov and Richard A. Posner.

¹See Becker (1957), Arrow (1971), Posner (1974), Phelps (1962).

²Without assuming differences in abilities, or taste.

³This distinction also serves as the departure point for the analysis in Brenner (1979). The statistical tests there strongly support the predictions made by the model developed in this section, which rely on this distinction. They are briefly presented in the Appendix.

⁴See Luce and Raiffa (1966), pp. 94-104 for the definition of this game. The conditions of the convergence to the optimal strategy of the supergame (i.e., the repeated game) are: a) the discount rate of future games is not too small (so that the sum of expected payoffs converges), or b) the repeat probability of facing the same game in the future is not too small.

⁵For the analysis of the two strategies, see Luce and Raiffa (1966). For additional implications of this game, see Davis (1973), Ch. 5. For other applications in economics, see Brenner (1979a) and a brief reference in Akerlof (1970).

⁶These arguments also imply that discrimination and nepotism (i.e., trade based on personal relationship) are two sides of the same model and both save on exactly the same type of information costs. They are both efficient and they substitute for the costs of using the price mechanism in discovering the qualities of the goods and services in the market. Notice that I use the term "personal" instead of "imperfect" market, since the last seems to imply that these markets were inefficient. But when the size of the population is relatively small, for example, personal markets are efficient and ethics substitute both for the price mechanism and enforcement costs. Also see Brenner (1979b). Notice that the size which is relevant is the one that members of a society can transact with, which is limited by income, transportation costs and so forth.

⁷This will occur when the size of the population is relatively small, immobile or income relatively low. See Brenner (1979b).

⁸If the minority actually enters these markets and produce low quality goods, they are discriminated against "statistically" (according to Phelps' definition), when some members of the group do not in fact intend to be mobile. The lower income of this group is due to their lack of information capital, because of the absence of personal relationships.

⁹That repeated transactions eliminate fraud is a point made also by Darbi and Karni (1973). In other words, a relatively mobile minority may be accused of playing a different game than the majority by having a single-play orientation. Whether the minority is actually playing a different game is another question: if they expect to be mobile and cannot enter perfectly competitive markets, they probably do. But if the mobile minority intends to settle down, then it will play another strategy, which is specified in the text.

¹⁰When the population, or income increases. See footnote 6.

¹¹This is one form of advertising. In terms of the Prisoner's Dilemma, the meaning of this strategy is playing for a while the (6,-4) type outcome, when the payoff matrix

is (5,5), (6,-4), (-4,6) and (-3,-3). See Luce and Raiffa (1966).

¹² Thus, mobile minorities who intend to settle down have greater incentives to innovate, since innovations bring reputation, and reputation is a market substitute for some personal relationship. Also notice that these minorities have greater incentives to invest in education as a substitute for specific training, since they realize that firms have smaller incentives to invest in their specific training.

¹³ The incentives to enter into a long-term contract, or the amount of "trust" in the market also depends on the variability of relative prices in the economy. See Brenner (1979c). When these changes are perceived to be permanent rather than temporary, each game is expected to be played just once. In such conditions, the incentives to enter into long-term contracts decreases.

¹⁴ For: a) the self-interest of union members to increase minimum wage (since it increases the demand for their skilled labor relatively to those without skills), restricts the relatively unskilled group's ability to signal its changed intentions; b) if profits are

regulated, a firm may be permitted to earn $x\%$ on its investment. Since the purchase of capital is, by definition, an addition to the firm's investment, when demand increases the firm will invest in a new plant rather than hiring more labor (since the firm is not permitted to earn more profits on hiring labor). The result is that the demand increases for both capital and skilled labor if physical capital and human capital are complementary inputs, as Schultz (1975) and Griliches (1964) suggest (they argue that education facilitates adaptation to technological change). Since white males have a higher level of education than Blacks and women, even if regulated firms do not discriminate, they will hire more white workers than competitive unregulated firms.

¹⁵See Posner (1972), Ch. 27; Alchian and Kessel (1962); Sowell (1975). The issues they discuss are the following : When profits are externally controlled, the opportunity cost of hiring members of discriminated groups whose wages are lower than their productivity is zero,

making an exogenous taste for discrimination extremely cheap. The railroad industry, which was tightly regulated by the ICC hired blacks only as porters for decades, while until the middle of the 19th century (before regulation) blacks dominated railroad occupations in the South, except for conductors. The telephone industry also had a low percentage of black employees, even in jobs which did not require relatively high skills. Minimum wage legislation leads to the same result: again, the opportunity cost for discrimination at this skill level becomes zero. Therefore, once either of these legislations exist, another legislation will be demanded--quotas--in order to counteract the unexpected results of some initial interventions. Notice: the argument in Ft. 14 obtains the same results without assuming an exogenous taste for discrimination.

¹⁶See Posner (1979b), Brenner (1979b).

¹⁷The implicit assumption behind the model is that all markets are to some extent personal. However, we can separate between two types of markets: one competitive, where the income is $g(\lambda_1)$ and the other personal, where the

income for the majority is $f(\lambda_1)$, while for the minority it is only $\alpha f(\lambda_1)$, and the same qualitative results as in the text can be obtained.

¹⁸Of course, avoiding drinking also depends on the group's level of education: with a lower level of education, and smaller legal threats (Irish immigrants in the U.S. compared to Jews in Western Europe before the 19th century), new immigrants may drink. For they have neither many secrets to hide ("in vino veritas"), and drinking may be one form of entertainment.

¹⁹See Posner (1979a).

²⁰See Mathematical Appendix.

²¹Or the size of the population, each economic agent may have contact with increases or income increases.

²²In Becker's (1957) model the implicit assumption is that there are no employers who belong to the minority, or if there are, then still somehow the consumers can distinguish between the goods produced by the two groups.

²³Since for a member of the majority the relative advantage of being an employee in a personal market, or an employer in a competitive one, is smaller than for a member of the minority.

²⁴The slave owners have the incentive to separate between families in order to decrease the possibility of collusion. The meaning given now to $R(\lambda)$ is that of investment of time in personal relationships within the family.

²⁵See Becker (1977), pp. 42-47.

²⁶For discriminated groups "closer" ties among themselves (i.e., more trust) substitutes for the more extensive ties of the majority. This capital then substitutes for the exogenously given fact that the size of the group is relatively small.

²⁷Sowell (1975), p. 192; Chapters 3 and 9 attribute the relatively smaller success of Irish-Americans, in comparison to Italians and Poles, who had similar backgrounds and physical wealth, to the fact that the Irish relied on the political mechanism.

²⁸See Posner (1972), p. 529.

²⁹See Posner (1972), Ch. 27; W. Landes (1968) E. Landes (1978). Also see discussion in footnotes 14 and 15 on the effect of minimum wage.

³⁰See Coase (1974) on the parallel between the market for goods and the market for ideas. Also see Posner (1972), ch. 28.

³¹See formal model and discussion in Brenner and Kiefer (1980).

³²See Engelman (1944), Chapters 3 to 6. He notes that cash fulfills the role of insurance in the medieval economy, where mobility was dangerous.

³³Which implies that these groups will invest in transferable forms of professions: natural sciences rather than country specific sciences, musics and so forth.

³⁴See Engelman (1944), p. 29.

³⁵This seems to be one possible answer to the question raised in Stigler and Becker (1977): Why are the Jews Jews? In those circumstances this was optimal.

³⁶See Engelman (1944), Chapters 2-6.

³⁷See Goody (1968) and Brenner (1979b) for discussion on this point.

³⁸See Phelps' (1962) definition.

³⁹There are other groups like the Armenians, the Chinese in Southeast Asia (called the Jews of Asia), the Indian merchants in Africa who seem to fit the model, but no exact evidences are available except that they are concentrated in trade.

⁴⁰Many historians give detailed descriptions of market structures for the Medieval Ages. See Bloch (1961), or a vivid description in Ladurie's "Montaillou" (1978). For arguing in favor of both competitive and imperfect markets, see Cipolla (1967), pp. 10-12, 53-57; de Roover (1951), p. 502; Roll (1953), p. 47.

⁴¹See Engelman (1944), Chapters 4-6; Sachar (1977), Chapters 1 and 2.

⁴²See Adam Smith (1776) and Stigler's (1951) interpretation.

⁴³Although growth rates indirectly measure the replacement of personal by impersonal markets: hospitals instead of care at home, insurance instead of extended family, cook books and books on fairy-tales instead of grandmothers, gossip journals instead of personal gossip and marriage by search of mates through advertising rather than a match from a "good*family." See Brenner (1979b).

⁴⁴Notice that all great immigrant waves have started their economic life by ethnic markets. This is an additional prediction of the model, since a relatively homogenous group of immigrants owns information capital (which saves them transaction costs), but they do not own this capital when they trade with the majority. See Sowell (1975); Chiswick (1978); Kahan (1978b).

⁴⁵For a brief summary of their views, see Brenner (1979a), or Hagen (1975).

⁴⁶Notice that this view of discrimination, of avoiding contacts, sheds also light on the fact that for the relatively more educated the job requires more personal contacts. Expecting it, the discriminated group's incentive to become self-employed is increased.

⁴⁷For these and additional evidence, see Hagen (1975), Ch. 11. Also see the detailed evidence on Parsees in Brenner (1979a).

⁴⁸See Engelman (1944, Ch. 4 ; Sowell (1975), p. 216.

⁴⁹This argument also sheds light on the minorities' (in particular new immigrants) representation in growing industries; see evidence in Kuznets (1972). Since in existing industries, which are not perfectly competitive, transactions are already to some extent personal, immigrants and discriminated minorities have greater incentives to enter new industries. Also, due to the absence of family ties in some places, the costs of moving are lower for new immigrants.

⁵⁰Notice that literacy facilitates a more rapid change in tastes since an additional channel of communication is open: while in the past communication was oral and visual, in literate societies the written text facilitates obtaining information and to discover more cheaply inconsistencies. May be this is the reason that Jews have assimilated more quickly and may be this is the reason that tastes are changing today more rapidly (in the sense that information is obtained more rapidly).

⁵¹See Sowell (1975), p. 217, who notes that from 1750 to 1850, the list of prominent intellectuals is already full of men of Scottish origin: David Hume, Adam Smith, Malthus, Mill, Sir Walter Scott. (Other outstanding British intellectuals at that time were Edmund Burke, an Irish convert from Catholicism and Disraeli.) Also Sowell notes that the Scottish farmers respected education and made sacrifices to get it for their children. Notice the same attitude of Palestinian parents in Brenner and Kiefer (1980).

⁵²See the argument behind the Sweatt vs. Painter decision in Section 3.

⁵³See Sowell (1975), pp. 96-102; Rosenthal (1976).

⁵⁴Also notice that slaves in the Roman Empire were not always treated as badly as those in the American South. Maybe the reason is that white slaves could escape.

⁵⁵See a recent New York Times editorial entitled, "Must Every Bus Kneel to the Disabled?" on Nov. 18, 1979.

⁵⁶See "A Socio-Economic Profile of Puerto Rican New Yorkers," Bureau of Labor Statistics, 1975.

⁵⁷See Mincer (1978) and Center of Population Reports for 1965-1971. Can these numbers explain in part the lack of political patronage of the relatively young?

⁵⁸See the Encyclopedia Judaica and Universal Jewish Encyclopedia under the " numerus clausus" entry.

⁵⁹See Brenner and Kiefer (1980). Notice that discrimination against Palestinians is also social: opposition to marriages with people one day here, one day there: see this quote and other signs of social discrimination in Ben Porath (1968).

⁶⁰Polachek (1975) analyzes the differences in wages taking into consideration interruptions in experience in the labor market.

⁶¹Beth Niemi (1975) compares the inter- and intra-labor force movements of men and women, and explains part of the differences in unemployment rates by the difference in intra-labor force movements.

⁶²It is not accidental that in a recent letter to the editor of the New York Review of Books we find: "Since the beginning of the year there has been a sharp rise in

anti-Semitism in Spain. Growing anti-Semitism can be connected with the proliferation of extremist groups.

. . . Meanwhile the heavy influx into the Spanish job market of highly skilled Latin American refugees--some of them Jewish--has also helped to revive Spanish xenophobia.

. . . [I]n June the respected liberal newspaper El Pais published an article suggesting that Spain's small number of Jews might eventually become a sinister force connected to the Rothschild financial empire [and] one caption read: Israel the real mother; Spain the adopted mother (p. 53, August 16, 1979). Notice, both the restriction of competition and mobility appear implicitly in these statements.

⁶³ Another , tentative , conclusion is the following: free speech which is appropriate for a literate society may be inappropriate for one where the population is illiterate and where there is a threat of a monopoly in the market of ideas. In this circumstance, if the economy starts to grow (due to increased international trade, for example), leaders calling for the preservation of traditions will capture a greater share of the market of ideas than others who advocate impersonal market activities. How the efficient path be found between subsidizing education and restricting speech is a difficult question and it will be a subject for further research. One country which is frequently mentioned by

historians as an example of successful transition from a traditional to a modern economy is Turkey. The path taken by Ataturk was one of strong subsidization of education, restricted freedom of speech (tolerance of some opposition but ruthless toward those he considered extremists), and abolishing Islam as state religion. The model predicts that in communist countries people will become more religious (since religious ideas are the only substitute people can legally buy), and that recent events in developing countries can be understood as being associated with a too rapid shift from personal to impersonal markets.

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