

Inequality and Race: Models and Policy

by

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Abstract

Race and ethnicity play a central role in understanding the structure of inequality in the United States. In this paper, we focus on the economic chasm between black and white America and on what economic theory can contribute to our understanding of both inequality and the design of effective policy. We review recent models of labor market discrimination and the intergenerational transmission of inequality. Our main conclusions are: 1. Modern theories of statistical discrimination and of human capital investment in a social context provide support for activist government policies to combat racial inequality, and 2. Not all policies that appear to be equity-enhancing will in fact have positive effects.

I. Introduction

Race and ethnicity play a central role in understanding the structure of inequality in the United States. In this paper, we focus on the economic chasm between black and white America and on what economic theory can contribute to our understanding of both the sources of inequality and the design of effective policy. Our main conclusions are: 1. Modern theories of labor market discrimination and of human capital investment in a social context provide support for activist government policies to combat racial inequality, and 2. Not all policies that appear to be equity-enhancing will in fact have positive effects. It is good if equal opportunity policies are well-intentioned — it is better if they are well-informed.

In the original economic models of discrimination, the racial prejudice of firms, workers, and customers produced racial wage differentials; these differentials were difficult to sustain under market pressure. Though intuitively plausible, these models were thus limited as theoretical foundations for persistent income differentials between two groups with equal average productive capacity. In *The Bell Curve*, Herrnstein and Murray suggest that racial income differentials can be explained as the outcome of market forces determining the compensation of two groups not equal in innate productive capacity. The new economics of race, however, does not require differences in innate abilities to produce economic inequality, nor does it rely on noncompetitive labor markets. Models of statistical discrimination provide a plausible explanation for wage differentials due to information problems that are not eroded by competition, and recent theories of the intergenerational transmission of inequality trace persistent differences in the compensable skills of black and white workers to racially segregated communities.

Three themes run through this essay.

The first theme is that the racial identification of workers can interact with the *social* processes of human capital accumulation in communities and human capital valuation by employers in ways that

generate externalities. In the presence of such externalities, laissez-faire need not lead to efficient outcomes. Well-focused policies can therefore improve *both* efficiency and equity.

Our second theme is that we need to understand both labor market equilibrium and pre-labor market behavior to explain the economic gulf between the races. Much of the economic literature has dealt with these two topics separately, but in the new economics of race there is an emphasis on the links between pre-market investment in human capital and labor market outcomes. New models of labor market discrimination explain wage differentials in competitive labor markets that are maintained through informational externalities. The resulting wage structure reduces the incentives of black workers to invest in difficult-to-observe skills, and generates a racial gap in labor market productivity. The new models of the intergenerational transmission of inequality center on group effects in the accumulation of human capital. These models show how past discrimination affects family and community resources, and therefore contemporary economic equilibrium.

The third theme is that the micro-incentives of black and white agents matter for the design of effective policies. Well-intentioned, but improperly focused, policies may interact with the incentives and reactions of agents in such a way as to be ineffective or even reinforce negative externalities. We try in this essay to outline some of the policy lessons learned, and to point to questions which remain unresolved.

The new economics of race has focused on the causes of racial inequality, on the implications of anti-discrimination and other egalitarian policies for economic efficiency, and on the limits of government intervention in promoting both equitable and efficient outcomes. Some of the principal policy-relevant results are:

- In the presence of labor market discrimination, equal opportunity policies can improve labor market efficiency as well as reduce inequality by increasing the incentives of minority workers to invest in human capital.
- With imperfectly-informed regulators, employers will attempt to evade equal opportunity restrictions. Affirmative action policies that regulate outcomes provide an enforcement

mechanism that can be lower cost than the regulation of process, but their long-run efficacy is uncertain. In some situations, affirmative action policies can eliminate negative group stereotypes, and therefore be self-enforcing; in others, affirmative action policies can reinforce negative stereotypes by reducing incentives for individual minority workers to excel.

- When there are community effects on human capital accumulation and communities are economically or racially stratified, income inequality can persist over time in the absence of policy intervention, and small initial differences in income may be magnified by human capital spillovers. Community integration can improve the welfare of both high-income and low-income groups in the long run.
- If both jobs and communities are racially segregated, labor force integration is not an adequate substitute for community integration, and may not lead to long-run convergence of black and white income.
- Financial transfers *per se* are unlikely to be effective responses to racial inequality, since they do not change incentives to acquire human capital.
- With positive human capital spillovers, large temporary interventions may be effective while small permanent ones have no long-run effect.

There are two parts to this essay. In the first, we deal with appropriate policy toward ongoing *de facto* discrimination.¹ In the second, we examine the legacy of past discrimination and the role of the social separation of black and white Americans as a transmission mechanism from the past to the present. In each case, we try to draw the link between positive models and normative policy.

II. Labor Market Discrimination and Anti-Discrimination Policy

Policies designed in the 1960's to combat racial discrimination in labor markets and educational opportunities have been scaled back in the 1990's, charged with being both unnecessary and unfair. The eradication of *de jure* discrimination eventually achieved wide public support, but policies to combat less

transparent racial barriers in jobs and education have been more difficult to sell. Affirmative action, which denotes efforts to enforce some kind of proportional participation of blacks and whites in job categories, government contracts, and higher education, has been the principal target of criticism. Charges of “reverse discrimination” have mobilized long-standing public dissatisfaction with affirmative action initiatives and in many arenas they have been, or are about to be, eliminated.

The attacks on and the defense of policies such as affirmative action involve arguments about the responses of both firms and workers to government intervention in hiring and compensation. Critics argue that employers will respond to the enforcement of affirmative action goals by hiring unqualified minority workers and that this leads to unfair reverse discrimination, to inefficient production, and to reduced incentives for minority workers to become qualified. Supporters of affirmative action respond that the hiring of minority workers can improve information and thus efficiency in the labor market, breaking down unfavorable stereotypes and improving the incentives of formerly-excluded workers to invest in job skills. Inherent in the discussion is a comparison of labor market equilibria with and without anti-discrimination policy with both firms and workers permitted to react to the (possibly imperfect) enforcement of such policies. Economic theory has much to contribute in sorting out the effects of regulation on market equilibria and, as we shall see, the results are sometimes surprising.

On what dimension can anti-discrimination policies be expected to “improve” labor market equilibria? The obvious answer is that policies that reduce racial inequality lead to allocations that are preferred on equity grounds to those that would result in the absence of intervention. Competitive markets, under certain well-defined conditions, can be shown to produce goods and services efficiently in response to the signals of prices, so that no individual can be made better off without someone else being made worse off. However, if the distribution of incomes that results from the free play of markets is too unequal, then redistribution can improve social welfare. Such redistributions, if made through any mechanism other than lump-sum taxes and transfers, will tend to distort prices and incentives, and thus will be inefficient.

Much of the discussion of anti-discrimination policies, by economists and others, assumes that such intervention must involve an equity-efficiency tradeoff: that improvements in the distribution of

income through affirmative action come at the expense of reduced efficiency. Administrative costs must accompany any regulatory effort, but most concern over the costs of anti-discrimination policy centers on the distortion of private hiring and promotion decisions. Government pressure to employ and promote minority workers may force firms to misallocate labor and sacrifice production, though improved equity provides a countervailing benefit. However, the existence of the equity-efficiency tradeoff is itself suspect, according to most economic models of racial inequality. There are two strands to this literature--one focusing on current labor market discrimination and the other on the persistent effects of past discrimination on the human capital of minority workers. Both provide frameworks in which policies to reduce racial discrepancies in income may be both equity- and efficiency-enhancing.

Simple models of current labor market discrimination provide a straightforward illustration of this point. If two groups of workers, with equal productive capacity, are treated differently by employers, then we say that there is discrimination in the labor market. This implies that discrimination is a market failure--a departure from the economists' paradigm of a perfect market. In a perfectly competitive labor market, workers of equal ability should receive equal compensation. If discrimination is due to market failure then, by the theory of the second best, it may be possible to devise an intervention that both promotes equality and improves efficiency. Not all equity-enhancing policies will be efficient, of course, and much of the recent theoretical literature has concentrated on defining the conditions under which policies such as affirmative action lead to "good" or "bad" outcomes.

The general implications of economic models of labor market discrimination for the sources of racial inequality can be summarized as follows:

- "Taste" models of discrimination, or models based on racial prejudice, generally predict segregation of black and white workers by occupation or firm, rather than wage differentials.
- "Statistical" models of discrimination, in which employers have imperfect information about the productivity of individual workers, result in labor market equilibria in which employers use the perceived productivity of a group, for example black or white workers, as a signal of the productivity of an individual workers. Statistical discrimination can lead to racial wage and

productivity differentials through the operation of a “self-fulfilling prophecy”—faced with a negative stereotype in the labor market about the productivity of black workers, black workers have less incentive to invest in human capital.

III. Models of Labor Market Discrimination

Economists have experienced some difficulty in constructing models in which persistent racial wage differentials can co-exist with reasonably well-functioning labor markets. The search for a theoretical framework has led economists away from early models in which the source of income differentials is racial prejudice to more subtle arguments based on imperfections in information or intergenerational externalities. In the so-called taste models of Becker [1957] and Arrow [1973], discrimination is based on the personal prejudice of employers, who are willing to sacrifice profits to avoid hiring minority workers. Minority workers will be employed only at a lower wage that compensates employers for the disutility of their employment. With all workers identical, and with labor supplied inelastically, there is no efficiency loss associated with this discrimination, but there is redistribution to the disadvantage of minority workers. The wage differential itself, however, is vulnerable to competitive pressure. Low wages provide an opportunity for unprejudiced employers to earn higher profits by hiring the underpaid, but equally productive minority workers. In the absence of complete unanimity in racial prejudice among entrepreneurs and potential entrepreneurs, discriminators will be penalized by the marketplace for their failure to maximize profits, and the wage differential will disappear as discriminating firms are driven out of business.

Variants of the taste model that attribute racial prejudice to workers, or to customers, lead to equilibria in which segregation provides an alternative to wage differentials. Prejudice by co-workers can lead to wage differentials if skill mismatches require integrated production, but there will be a tendency towards segregated firms and wage equality. The case of customer prejudice, in which the services of minority workers are undervalued relative to the services of majority workers, is somewhat distinct since it generates what is in effect a productivity difference between the two types of workers.

Nevertheless, if the production of some goods involves no customer contact, we would expect minority workers to concentrate in this sector, where they experience no disadvantage. If customer demand for goods produced in this sector is large relative to the size of the minority workforce, customer prejudice will not result in discriminatory wage differentials in equilibrium.²

Wage differentials due to prejudice do require government action if prejudiced employers are able to collude to maintain racial barriers to employment. Monopoly profits accrue to the members of this coalition of employers, but an individual non-prejudiced employer will always have an incentive to depart from the agreement and hire minority workers cheaply. If supported by legal or institutional barriers and discriminatory social norms, however, such a coalition can persist for some time. Donohue and Heckman [1991] argue that this was the case in the American South until federal government actions in the 1960's helped break down the coalition by enforcing the desegregation of jobs and schools.³

Racial prejudice in the form of disutility associated with employing, working with, or being served by black workers is thus not completely convincing as the sole source of persistent wage differentials, and most economic models do not suggest a role for government action, rather than market forces, in eroding such differentials. An alternative source of labor market discrimination can be found in imperfect information about worker productivity. Employers are uncertain about the productivity of individual workers and can observe only signals that predict productivity with some error. Under some circumstances, racial stereotypes in an employer's estimates of the productivity of individual workers can arise and persist. "Statistical discrimination" models are based on the notion that black workers are paid less because employers believe that they are less productive or have less accurate information about their productivity. If, in addition, individual investments in human capital respond to expected labor market returns, these negative stereotypes can constitute a self-fulfilling prophecy, as workers who are expected to be less productive turn out to be, as a result of those expectations, less productive in fact.

Racial wage differentials can arise in models of statistical discrimination in two ways. In the signaling model of Arrow [1973] and Spence [1973], and the more recent work of Coate and Loury

[1993b], the employment relation is characterized by multiple equilibria, in which the expectations of employers about worker productivity are confirmed by the actual productivity of workers, after human capital investments have been made and workers have been sorted into job categories. For historical reasons, black workers may be trapped in a low-wage, low-productivity equilibrium while white workers are in a high-wage, high-productivity equilibrium. In essence, race matters because employers think it does. Alternatively, statistical discrimination can be based on differences in the quality of information that employers receive about black and white workers. In Phelps [1972] and Aigner and Cain [1977], for example, personnel managers are predominately white, and are more effective at assessing the skills of workers in their own group, so that the “signal” they receive from white applicants has less noise. The offered wage will be a weighted average of the individual’s own signal and the known average productivity of the group, but the weight placed on the individual signal will be higher for white workers than it is for black workers. Lundberg and Startz [1983] point out that a noisier signal results in a lower return to human capital investments that are not directly observable, so that black workers are in equilibrium less productive and less well-paid. Race matters because black workers are “foreign” to employers.

Models of statistical discrimination have a couple of important characteristics in common. One, they generate racial wage differentials though black and white workers have identical productive capacity and employers are profit-maximizing. It is not in the interests of any individual employer to deviate from the equilibrium wage pattern, and discrimination is not vulnerable to market forces as it is in the “taste” models.⁴ Two, discrimination is inefficient, so that there is a possible role for government anti-discrimination policy which is both equity- and efficiency- enhancing.⁵ It is also possible, however, for government intervention to make things worse, and Coate and Loury concentrate on this case. The inefficiencies in statistical discrimination models arise from underinvestments in human capital by black workers, whose decisions are distorted by labor market discrimination.

How can anti-discrimination policy affect labor market equilibrium in a model of statistical discrimination? Lundberg and Startz [1983] consider a policy that they label “equal opportunity,” which consists of a prohibition of separate wage schedules for black and white workers. If firms are unable to

perfectly observe individual productivity, but only a “test score” which is an unbiased but noisy predictor of productivity, a profit maximizing wage schedule will rely both on average group productivity and the individual test score. The discriminatory equilibrium consists of two such wage schedules:

$$w_i^W = (1 - b^W) \overline{MP}^W + b^W T_i$$

$$w_i^B = (1 - b^B) \overline{MP}^B + b^B T_i$$

where \overline{MP}^j is the average marginal product of workers in group j , T_i is the “test score” of worker i , and the coefficient b^j increases as the variance of the test score falls relative to the variance of marginal productivity. Since the signal-to-noise ratio of the test is assumed to be higher for white workers than for black workers, they face a higher return to increasing their test score ($b^W > b^B$), and therefore a higher expected return to investments in skills. These investments are not directly observable, consisting of acquired abilities in a general sense, rather than years of education or experience. This model generates underinvestment in such skills for both black and white workers, but the underinvestment is more severe for the group about whom the employers’ information is of poorer quality.

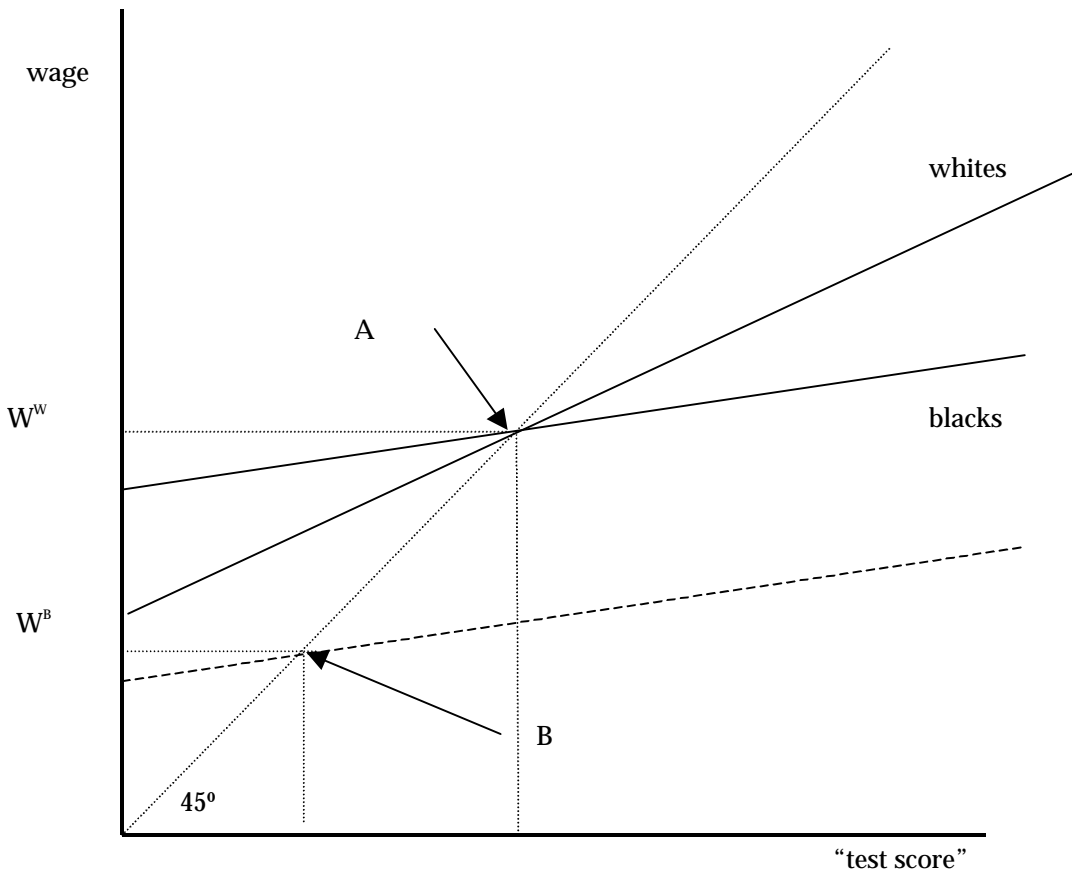


Figure 1

Figure 1 provides a graphic illustration of the model, with the test score shown on the horizontal axis and the wage rate on the vertical. The solid lines marked “whites” and “blacks” show the wage schedules absent any investment in acquiring skills. Black workers are paid less on the margin than white workers (the slope of the black wage line is less than the slope of the white wage line), but average wages and average productivity are equal, as at Point A. This is essentially the model of Aigner and Cain. When, however, workers can invest in productive skills that are not perfectly observable, black workers will have less incentive to invest than white workers. The resulting wage schedule for black workers is shown as the dashed lower line. Point B shows the equilibrium average wage and productivity for black workers. The privately rational lower marginal compensation for acquired skills leads to a social equilibrium in which, though black workers have native abilities equal to those of white workers, they nonetheless have lower productivity and lower wages.

“Equal opportunity” is a government policy requiring that employers offer the same wage schedule to both black and white workers. Profit-maximizing employers will then offer a schedule in which the test score coefficient is a weighted average of the two discriminatory coefficients, thus increasing the investments of black workers and decreasing those of whites. With the marginal cost of skills increasing, however, an equal opportunity policy will increase net social product. The practicalities of enforcing such a policy are not considered by Lundberg and Startz, but Lundberg [1991] examines the opportunities for evasion by employers. Restricting the employer’s use of individual test scores in allocating workers may cause production losses by increasing inappropriate assignments of workers to jobs. The equal opportunity policy will therefore not be self-enforcing, and employers will try to evade it.⁶ Suppose that another piece of information about individual workers, say height, is available to employers. Let height bear no relationship to the productive abilities of workers, but be correlated with group membership. If the anti-discrimination law requires that black and white workers be paid according to the same wage schedule, but does not specify what characteristics are allowable as determinants of wages, profit-maximizing employers will have an incentive to use apparently neutral characteristics, such as height, as a proxy for race in wage determination. It does not seem reasonable that the regulator will possess sufficient information about the true relationship between productivity and worker characteristics, or about the actual personnel policies of firms, to effectively prohibit such evasion.

An alternative to equal opportunity policies that attempt to regulate the process by which firms hire and compensate workers is an affirmative action policy, which monitors and regulates only the outcomes of the firm’s personnel decisions. An affirmative action policy can be represented as a requirement that black workers be represented in each job category proportionately with their representation in the pool of qualified workers, or by the requirement that the compensation of black workers, conditional on the test score easily observed by both firm and regulators, be identical to that of white workers. The rationale for such a policy is that, if the firm is not discriminating, we might expect to observe black workers represented proportionately in each job category. Affirmative action can thus be considered a policy that enables imperfectly informed regulators to enforce equal opportunity.

Lundberg shows that affirmative action, by allowing employers to use all information about workers in a restricted manner, can result in lower costs of misallocating workers than an alternative “disparate impact” policy.

Coate and Loury [1993b] also consider an affirmative action-type policy, defining it in a similar way as a “results-oriented” rather than “process-oriented” anti-discrimination policy, and ruling out equal opportunity policies that require the regulator to observe all the information used by employers in making hiring and assignment decisions. In their model, however, the enforcement of affirmative action constraints on worker assignment can either improve or exacerbate the information problems that led to a discriminatory equilibrium. The key to this result is a statistical discrimination model in which, unlike Lundberg and Startz, the actions of employers are discrete. Rather than establishing a wage schedule, employers assign workers to one of two jobs. Job one is more rewarding, but satisfactory performance requires that the worker be “qualified.” Workers must undertake a costly investment to become qualified, and must do so before they know their job assignment. Employers observe only group identity and a noisy signal of the worker’s qualifications. Employers choose a threshold standard for each group, assigning to job one all workers whose signal exceeds their group standard. A discriminatory equilibrium is one in which black workers are believed by employers to be less likely to be qualified, are subjected to a higher standard and, in response to the reduced probability of being assigned to job one, are less likely to become qualified. Since there may be multiple equilibria, a negative stereotype held by the employer about black workers can be self-confirming, and black and white workers with identical productive capacity will experience different probabilities of being assigned to good jobs.

An affirmative action policy in this model consists of a requirement that equal proportions of black and white workers be assigned to the high-paid job, and it can have two very different effects, depending on the parameters of the model. Affirmative action may, by increasing the probability that a black worker will be assigned to job one, increase incentives to invest in becoming qualified, and thus eliminate the negative stereotype held by employers. A subsequent removal of the affirmative action constraint will yield a stable nondiscriminatory equilibrium. Alternatively, affirmative action can result

in a “patronizing equilibrium” in which employers lower standards for assignment to job one and, by making this assignment easier to achieve, reduce investment incentives for black workers and exacerbate the employer’s negative stereotype. In the latter case, affirmative action must be permanent to maintain equal job assignments for black and white workers.

Coate and Loury consider two policies other than affirmative action: a subsidy to employers for assigning black workers to job one and a subsidy to black workers for being assigned to job one. These policies have information requirements no more stringent than those required to enforce affirmative action. They show that a marginal subsidy cannot completely eliminate a negative stereotype about black workers, but that a large subsidy to employers can backfire, causing employers to lower their hiring standards so much that beliefs are revised so as to be even more negative than in the initial equilibrium. Subsidies to workers, however, present no such problem. A subsidy to workers always increases their performance, while a subsidy to employers that lowers their standards may lower workers’ performance.

In an entirely different model in which taste discrimination makes employers less likely to hire black workers and reduces their human capital investment, Coate and Loury [1993a] show that affirmative action may result in a patronizing equilibrium similar to that in their informational model. Once again, forcing employers to change their hiring standards may either increase or decrease the marginal returns to human capital investment by black workers. In this model, a gradual policy of affirmative action in which the hiring target is increased slowly is more likely to be successful, since it enables the qualifications of black workers to increase with the target and prevents the reduction of hiring standards that will cause an abrupt affirmative action policy to fail.

The common thread through all the statistical discrimination models is that labor market discrimination can affect workers’ incentives to invest in human capital, and therefore generate productivity differences. An effective anti-discrimination policy is one that, directly or indirectly, succeeds in equalizing the incentives, and therefore the productivity, of black and white workers.

IV. The Intergenerational Transmission of Inequality

The study of intergenerational income mobility has a long history in both economics and sociology, but until recently focused on the family as the mechanism by which economic status is transmitted to the next generation. Parents bequeath earnings ability as well as wealth to their offspring in the form of skills, attitudes towards education and work, and labor market connections. If we think of an individual's stock of characteristics that are valued and remunerated by the labor market as being their stock of human capital, then the human capital of children will be positively related to the human capital of their parents. Loury [1977] expanded this view to include the community environment as well as the home environment among the determinants of a child's opportunity to acquire human capital and showed that, if communities are organized along racial lines, equal opportunity in the labor market need not eradicate racial income differentials, even in the long run. The average stock of human capital in the community is termed "social capital" and is assumed to enter the production function for human capital of the next generation.⁷ Social capital provides a mechanism whereby the human capital of one generation exerts a positive externality on the human capital of the next. Other writers have described this externality as operating through the provision of role models (Wilson [1987]), employee referrals (Montgomery [1991]), investments in community organizations and public educational facilities (Glomm and Ravikumar [1992]), or "the maintenance of a rich and orderly environment in which learning can take place" (Lundberg and Startz [1998]).

The new theory of the intergenerational transmission of inequality has contributed to our understanding of both the causes of inequality and the potential for remedial policy. While the various models differ in important detail, they are alike in having a basic framework of competitive, individually rational behavior combined with a positive feedback operating through community effects or social capital. In broad sweep, the contributions to understanding the causes of inequality are:

- Inequality today can be the historical legacy of past discrimination. Segregation perpetuates past discrimination even if there is no contemporary discrimination.

- Residential stratification by income or skills can be the laissez-faire equilibrium of the economy.
- Small differences in the initial conditions of the races may be magnified by the paths through which social capital is transmitted. Indeed, systems involving the formation of social capital can have highly nonlinear response mechanisms. Some models generate endogenous “poverty traps” in which a group may be perpetually caught through accidents of history.

V. Models of the Intergenerational Transmission of Inequality

The new models of the intergenerational transmission of inequality emphasize the effects of both segregation and positive feedback through social capital on persistent group inequalities. Positive feedback arises because individual acquisition of human capital depends positively on social capital and social capital formation in turn depends positively on average individual human capital, resulting in a familiar multiplier effect. Segregation allows social capital, and therefore the human capital acquisition process, to differ between two communities. Recent models vary in the microeconomic source of the externality involved in social capital formation and in the mechanism by which separation of the groups is maintained in equilibrium. Temporarily setting aside the details, we begin with a generic illustrative model.

The Simple Analytics of Social Capital and Segregation

The role of positive feedback loops in the formation of human and social capital and the way this positive feedback interacts with segregation can be illustrated in a simple analytical model. An individual's human capital, and therefore her economic status, depends in part on her own ability and in part on the social capital of her community. Social capital depends in part on the average human capital of individuals in the community and in part on the average human capital in the society at large. The relative importance of these two components determines the role of segregation in the transmission of historical differences. The model shows, in a generic way, that both social capital and segregation matter for explaining the gap between the races. Omitted, for the purpose of illustration, are the specific micro-channels that determine the importance of social capital and segregation.

We proceed in three steps. First, we characterize the process determining individual human capital as a function of individual ability, of possible discrimination, and of the social capital available in a community. Second, we define social capital as a function of the average level of human capital in the black and white communities. Third, we solve for the equilibrium in which levels of individual human capital and of social capital are mutually consistent.

Suppose there are two groups, denoted W and B . Let A represent natural ability, S social capital, and H , human capital, so that A_i^B is the native ability of i th person from group B , H_i^W is the human capital of the i th person from group W , and so on. (Implicitly, we assume that economic status is proportional to human capital.) As a simplification, suppose that the human capital development of the white majority can be taken to be unaffected by the black community. Let black human capital depend on individual ability and the social capital of the current and previous generation

$$H_{i,t}^B = A_{i,t}^B + a[1 - g][S_t^B + gS_{t-1}^B] \quad (1)$$

The social capital of the black community depends on the average (denoted by overbars) levels of human capital in the black and white communities.

$$S_t^B = b\bar{H}_t^B + (1 - b)[\bar{H}_t^W] \quad (2)$$

We can solve equations (1) and (2) for the average level of human capital.

$$\bar{H}_t^B = \frac{1}{1 - ab[1 - g]} \left\{ \bar{A}_t^B + a[1 - b][1 - g][\bar{H}_t^W + g\bar{H}_{t-1}^W] \right\} + \frac{abg}{1 - ab[1 - g]} \bar{H}_{t-1}^B \quad (3)$$

Equation (3) is a distributed lag model. The parameter a , $0 \leq a < 1$, controls the relative importance of individual ability versus social capital with the importance of social capital growing as a increases. The parameter b reflects the degree of segregation; in this simplified model we assume that the black community is a very small minority of the population, so that $b = 1$ is complete segregation and $b = 0$ is complete integration. Finally, the intergenerational transmission of social capital is very important as g approaches 1 and is unimportant as g approaches 0.

The purpose of this model is to show how the effects of past discrimination can persist into the present-- indeed can be magnified--even though the inherent abilities of blacks and whites are equal and there is no contemporaneous discrimination. Persistent inequality requires both segregation and a social capital externality: neither is sufficient alone. This is seen formally here and in greater detail in Lundberg and Startz [1998]. One can think of contemporaneous discrimination being modeled as a reduction in A , effectively society prevents blacks from utilizing their abilities fully in market activities. If social capital does not affect individual human capital acquisition, then $a = 0$ in equation (3), and the reduction in A reduces human capital 1-for-1. If $a > 0$ the feedback through decreased social capital formation increases the damage done by discrimination. From equation (3), the short-run multiplier on discrimination is $\frac{1}{1-ab(1-g)}$. Solving for steady-state equilibrium, we can see that the multiplier increases to $\frac{1}{1-ab}$ in the long run.

What are the long-term effects of past discrimination? If social capital doesn't matter or society is completely integrated or there is no intergenerational transmission of social capital ($a, b, g = 0$), then past discrimination has no legacy, as the lagged term at the right of equation (3) drops from the model. In general, however, all three elements contribute to the maintenance of racial human capital gaps long after the cessation of active discrimination. To focus on the role of segregation, suppose that the intergenerational transmission of social capital is very important. With $a = g = 1$ equation (3) simplifies to

$$\bar{H}_t^B = \bar{A}_t^B + (1-b)\bar{H}_{t-1}^W + b\bar{H}_{t-1}^B \quad (4)$$

With complete integration, $b = 0$, earlier low levels of black human capital are irrelevant and discrimination has no lasting effect. In contrast, with complete segregation, $b = 1$, the effects of past discrimination on black human capital persist forever.

A principal aim of policy research is to identify the exact channels through which social capital formation and segregation operate. This simple model illustrates why social capital formation and

segregation both matter. In a sense, a large part of the literature on intergenerational transmission can be viewed as explaining why $a, b, g > 0$. Neither phenomenon is as simple as it appears in our model, and it is easy to identify some important questions. We take social capital formation in equation (2) to depend on a straightforward average of human capital. The real process might well depend on the 10th percentile or the 90th percentile rather than the mean. Perhaps this would help explain what appear to be threshold effects in phenomena such racial “tipping” of neighborhoods. We treated the effect of segregation on black and white communities symmetrically in equation (2). It may be more realistic to set $b = 1$ to show the white community as more isolated from the black community than vice versa. We set human capital acquisition in equation (1) to depend on lagged social capital, but specific questions such as school integration rest precisely on the relative important of adult influence versus age-peers.

If social capital is transmitted through communities, then we need to understand how communities are formed. For our purposes, the literature on the intergenerational transmission of inequality can be classified according to whether separation of agents into groups is explained by income or by race. (The separation of classes is generally called “stratification” when groups are defined by income, as opposed to “segregation” when the separation is by race.) We begin with income stratification, which is of considerable interest for understanding inequality in general.

Stratification by income

An exciting strand of the new literature examines the causes and effects of endogenous income stratification. Two questions arise. Why is it in the interest of an individual to stratify and more specifically why do high-income agents wish to isolate themselves? If there is an advantage to being among high-income agents, what mechanisms prevent low-income agents from mingling? The primary references are Bénabou [1993, 1994, 1996a] and Durlauf [1994, 1996].

The driving force in these models is the effect of spillovers between agents with different skill levels. In other words, agents gain from mingling with other agents, in either human capital accumulation or in production, and gain more from mingling with high-level (in skill or ability) agents than from low-level agents. It is frequently assumed that high-level agents gain more from being with

other high-level agents than do low-level agents-- at least in human capital acquisition. Thus high-level agents are willing to spend more than low-level agents in order to stratify.

Nonetheless, an individual low-level agent would, *ceteris paribus*, also prefer to be with high-level agents. Two mechanisms that enforce the geographic separation of agents into two communities have been identified. The first is a market mechanism. Because the high-income community has desirable externalities, land rent in that community is bid up. This land rent rises to the point where agents are indifferent between earning a high income at the cost of expensive investment in human capital and high land rents and earning low income with lower human capital investment and low rent. The second mechanism revolves around public choice. The high-income community may use the political mechanism to create artificially high zoning barriers or raise other expenses of living in the high-income community. These two mechanisms differ in their implications for both distributional and social efficiency issues.

Consider the market mechanism. That the poor and rich are both indifferent between living in either community is an equilibrium condition of the model. So, while these models have strong apparent results about income distribution, they do not speak to the distribution of economic welfare in the ways one might expect. This illustrates an important “bottleneck” in theories of purely endogenous stratification. If, as economists prefer, agents act only in isolation without barriers modeled *ex cathedra*, then it is very difficult to derive an equilibrium in which living in a low-income community hurts the poor, despite the commonplace observation that stratification is worse for the poor than for the rich.

These stratified equilibrium are generally socially inefficient. Bénabou [1993] emphasizes that education is geographically restricted but that production cuts across geographic areas. Externalities in education can lead to the wrong skill mix, considering the patterns of complementarity in production. In Bénabou’s model, individual agents choose different investments in human capital to become “high-skill,” “low-skill,” or “unemployable.” One possible equilibrium is for there to be a high-skill “suburb” and a “ghetto” of unemployed rather than low-skill workers. While this pattern is privately optimal, the absence of low-skill workers is so damaging to production that even the high-skill workers are hurt.

What does this say about policy? Mandated integration would be Pareto- improving. This point is worth reiterating This is a carefully specified model in which all agents could be made better off if integration could be costlessly imposed. Note, however, that stratification arises out of individual, not collective action, so one cannot simply eliminate *de jure* rules. It is also noteworthy that Bénabou distinguishes between segregation in the workplace and in human capital accumulation. The inefficient equilibrium arises even though the workplace is fully integrated. (This is also an important element of Lundberg and Startz (1998).)

Public choice mechanisms for maintaining separation are developed in Fernandez and Rogerson [1996]. In these models, the high-skill agents “capture” part of the externality generated by their skills by raising barriers to prevent the low-skilled from sharing them. These barriers can include exclusive zoning or high property tax rates. Since these choices are made in voting models, not in markets, it is unsurprising that the result is not socially efficient. These models also correspond to some traditional ideas about integrationist public policy: reducing zoning barriers, imposing scatter-site housing, etc. Since the high-skilled workers in these models are capturing rents they are likely to resist such measures.

Models of purely endogenous stratification show how small, non-zero, differences in initial conditions can be greatly magnified. The endogenous stratification models of Bénabou [1996a] and Durlauf [1994] show how small initial differences in human capital can lead to complete stratification. In Bénabou this separation occurs because of the positive feedback in which it is in the private interest of the agents with slightly better than average endowments to live only with agents with high human capital, which raises the private return to human capital acquisition, further increasing the incentive of those who are better off to live among themselves. Over time, the separation becomes complete. Durlauf presents a stochastic model with similar economics. Here the “small” differences can arise out of shocks rather than initial conditions. Depending on the parameters and shocks, a community can develop where there is so little incentive to acquire human capital that a “poverty trap” ensues from which families never escape.

In addition to the positive prediction, these models have a strong policy implication. Bénabou [1994] shows that, stratification “is *independent of financial resources ... redistributive policies have no effect* on either the distribution of educational attainment or the efficiency of equilibrium.” (Italics in the original.) Durlauf [1996] shows a similar result. In this context, policies that attempt to treat inequality without understanding the incentive mechanisms that cause inequality are likely to be unsuccessful.

Finally, Bénabou [1996b] presents a model in which stratification is given *exogenously* by skill level (and concomitantly by income) and considers short-run versus long-run efficiency issues. The productive relationships in his model are such that homogeneity of skills is efficient for society. This presents an interesting intertemporal policy tradeoff. In static equilibrium, segregation by skill is more efficient than integration. So in the short run integration policy is costly. However, integration leads to more homogenous skills in the future while segregation does the opposite. Thus in the long run integration is more efficient. Depending on parameter values, the net present value of this dynamic effect can outweigh the static inefficiency. In this way there is a tradeoff between equity and efficiency in the short run, but integration is more equitable and more efficient in the long run.

Segregation by Race

It is a fact of American life that society is stratified by race as well as income, and that race has a strong effect on measures of attainment even after socioeconomic background and other measurable aspects of family resources have been controlled for. We would like to treat the racial segregation of neighborhoods and social networks as the endogenous outcomes of individual choices of community and friends. Yet economic models have almost nothing to say about racial segregation, other than to appeal to “tastes.”⁸ The endogenous stratification models do not address this issue directly but they do suggest that, given stratification of communities by race as well as income, it may not be surprising that initial differences in human capital arising out of America’s racial history have persisted and that these persistent differences may be large. In addition, it seems reasonable to speculate that whatever forces generate racial segregation, they are probably reinforced by the kind of income stratification described above.

Lundberg and Startz [1998] take racial segregation to be exogenous, although mobility is allowed between white and black communities at some cost. The model applies the techniques of “new growth theory,” to persistent racial inequality in the United States, using the analogy of the “two nations” of black and white America. In this model agents live two periods, investing in costly human capital in the first and producing and receiving income in the second. In the first period, the cost of acquiring human capital depends on the social capital in the community of parents’ residence. In the second period, workers contribute to the social capital of their residence community and engage in work whose productivity depends on both their own human capital and the social capital of the community in which they work. In addition, there may be spillovers in human capital acquisition in which the social capital of the better-off group provides some benefit to the worse-off group. Without such spillovers, a human capital gap generated by past discrimination will be permanent--income of the two groups will never converge, even if there is no contemporary discrimination.

One policy conclusion is fairly immediate. Simple financial transfers to the black community will have little effect on inequality except for the dollar value of the transfer itself. Unlike subsidies for human capital acquisition, financial transfers do not affect incentives to acquire human capital and therefore have no effect on the dynamics of social capital formation and inequality. (The same conclusion is reached in Bénabou [1994] and Durlauf [1996].) Once the question of subsidies is raised one should consider whether a given dollar devoted to subsidizing human capital acquisition is more efficiently spent as a direct subsidy to an individual or directly on community infrastructure. This last question has received little attention to date.

Since the 1960s there has been a great deal of workplace integration but relatively little residential integration. In Lundberg and Startz, workplace mobility is permitted, but there is a transition cost paid by a black worker who acquires a “white” job. Those with the most to gain move first and, as black workers “migrate” to an originally white work world, the dynamics of human capital accumulation depend on whether their human capital continues to contribute to the social capital of those “left behind.” Suppose, first, that when black workers move to a majority job, they take their human capital out of the origin community. The future social capital of the minority community is

reduced as its most able workers leave. As a result, opportunities in the minority community deteriorate. Each successive period, the next most able group of minority workers leave, and conditions spiral downward, as in Wilson's description of the creation of an underclass.⁹

In contrast, suppose the most able black workers obtain "majority" jobs, but remain living in segregated communities. These job migrants have both positive and negative effects on the social capital of the black community. The workers taking majority jobs acquire more human capital than they otherwise would, and so their direct effect on the black community's social capital is positive. However the workers taking majority jobs are the most able and their exit reduces the average human capital in minority jobs and the investment incentives of those who remain. The net effect on the minority community and on racial inequality depends on the parameters of the model. One possible outcome is a stable equilibrium with a permanent income disparity between the two communities. In equilibrium, the black community contains a mix of majority and minority job-holders, and the negative effect of the marginal migrant on minority jobs is just equal to the positive direct contribution to social capital.

One of the most important policy lessons of models with positive feedbacks is that the effects of both the size and timing of policies can be highly nonlinear. Consider a subsidy to human capital acquisition in the minority community in a model with "migration." Such a subsidy has two positive effects on the minority. First, it raises the level of minority human capital. Second, it reduces the incentives to "migrate" so that the minority community retains more of its more able workers. Figure 2 shows an example pattern taken from Lundberg and Startz [1998].

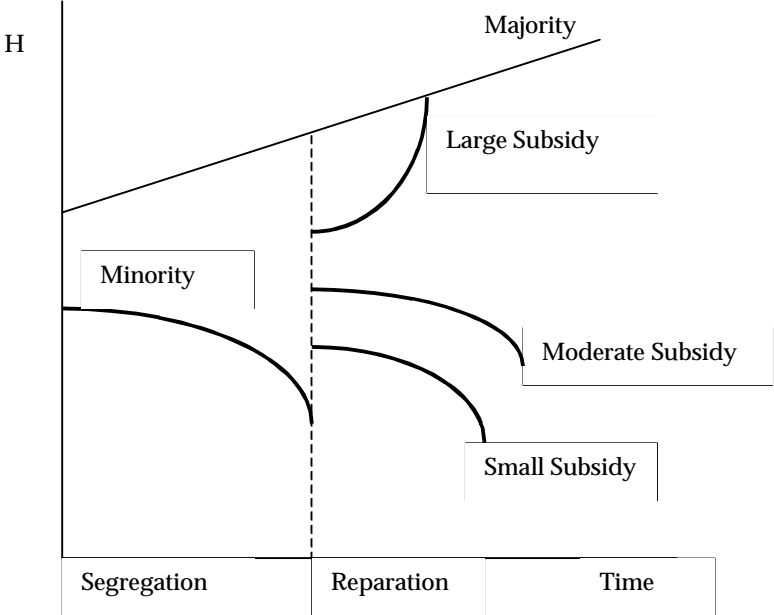


Figure 2

Figure 2 shows human capital on the vertical axis and time on the horizontal. During the period of complete segregation, conditions in the minority community decline relative to the majority community. During the period we label “reparation,” human capital acquisition is subsidized. The effect of a small subsidy is a small improvement over what conditions would have otherwise been. A moderate subsidy improves conditions more and slows “migration” substantially. However, migration is slowed, not halted. Contrast this with a subsidy large enough to reverse the incentives to migrate. As time passes, more and more able workers find it unnecessary to move. Eventually the minority community reaches parity with the majority community and the subsidy can be eliminated. If discount rates are low, the net present value of the cost of the subsidy is smaller for a large, short subsidy than for a small, long subsidy.

In a model with complete segregation, the effect of past discrimination is permanent. However, apart from this extreme case, there are forces that may eventually erode the gap. If the barriers between communities are permeable, then the social capital of the white community will spill over to the black community (and vice versa). If education, both formal and informal, is highly integrated, then the relative economic status of African-Americans will rise relatively quickly. Unfortunately, the degree of segregation between the races at the stage of human capital accumulation is high in the United States--in

contrast, for example, to separation by religious affiliation. In other countries religion or language may play a role similar to that of race in the United States, and a cross-national correlation of cultural separation and income inequality would be of considerable interest.

VI. What Have We Learned About Policy?

The policies that are the heritage of the civil rights movement have failed to close the economic gap between blacks and whites, and have fallen into disfavor with much of the public. The new economics of race provides a fresh look at the sources of racial inequality that may change our views regarding the proper role of government intervention and the appropriate policy levers to promote racial equality. We begin this section with a review of policy implications of these models. Finally, we bring together some general threads running through this literature and then raise some more speculative issues —questions opened, but not settled, by the new models of racial inequality.

Specific policy results include:

- When labor market discrimination is the result of imperfect information, equal opportunity policies can improve efficiency. Imperfect information generates suboptimal incentives to acquire human capital, and this departure from optimality is greater for the discriminated-against group — equalizing the marginal returns to investment raises net efficiency. (Lundberg and Startz [1983])
- Outcomes-oriented affirmative action policies may be more efficient than process-oriented equal opportunity policies, because they allow employers more flexibility in allocating labor while meeting a target. (Lundberg [1991])
- In statistical discrimination models with discrete job assignment, affirmative action policies can either increase or decrease the human capital of minority workers, and thus can either eliminate or reinforce a negative stereotype. It may be more effective to attack negative stereotypes through subsidies for human capital accumulation by black workers than through restrictions on employment decisions. (Coate and Loury [1993b])

- In the presence of community effects in the accumulation of social capital and economic stratification, integration can be Pareto-improving. (Bénabou [1993]) Even when integration has short-run costs, they may be outweighed by long-run benefits. (Bénabou [1996b])
- Labor force integration does not eliminate the need for community integration in combatting the effects of historical discrimination because social capital at the community level is an important determinant of human capital accumulation. (Bénabou [1993], Lundberg and Startz [1998])
- Financial remediation in the form of transfers is ineffective in reducing inequality, as opposed to subsidies for human capital acquisition. (Bénabou [1994], Durlauf [1996], Lundberg and Startz [1998])
- In models with multiple equilibria, strong short-run measures are more cost-effective than weak permanent measures. (Coate and Loury [1993b], Lundberg and Startz [1998])

General Lessons and Unanswered Questions:

Pervasive and persistent discrepancies between the outcomes experienced by two groups, defined according to an economically-irrelevant criterion (race) require a positive explanation. Absent such explanation, there is a natural tendency to attribute differences in outcome to inherent differences between the races. The new economic models of race explain such discrepancies in a manner consistent with the operation of market forces, as the results of group-specific externalities (i.e. imperfect information and use of race as a signal, community effects plus racial segregation). Therefore, policy need not involve an equity-efficiency tradeoff--we are already in a second-best world.

Discussions of remedial policies on racial inequality, and income distribution generally, are often phrased in terms of an equity/efficiency tradeoff. In a world of competitive markets where incentives and exchange between individuals are mediated only through prices and wages, government intervention can only help one individual at the expense of another. However, the new economic models of race and income distribution are characterized by social externalities that make it possible to design policies that increase equity while increasing the size of the social pie. Markets are competitive, but incentives are also transmitted through a variety of community effects. In modern treatments of both

contemporary discrimination and of the contemporary legacy of historical discrimination incentives are mediated through a variety of community effects such as “social capital,” and “group reputation.” The repeated theme is that there are positive feedback loops in which the behavior of individuals affects the attributes of communities and in which the attributes of communities affect the opportunities and incentives of individuals. Intervention at the right point in a system with positive feedback creates productive, effective policies. But the wrong sort of intervention, however well-intentioned, can reinforce the mechanisms in the economy which push the races apart.

Crucial to the design of effective policy interventions is a deeper understanding of how the positive feedbacks through social capital and group reputation operate. The new economic models of race demonstrate that micro-incentives matter--that the effectiveness of affirmative action may rest upon the relative importance of discrete labor market hurdles rather than continuous reward structures, or upon how rapidly employer stereotypes adjust relative to the speed of worker qualification adjustments--yet we have little solid evidence concerning the relevant magnitudes. A central issue concerns the definition and measurement of social capital. Does an aggregate measure of income or education capture this idea adequately, or do we need a multi-dimensional concept that incorporates community infrastructure, family interactions, or “culture”? Is social capital to be defined geographically, or by social networks?¹⁰ Do averages serve as sufficient statistics for social capital, or do the extremes exert some independent influence on behavior? A tendency to target averages, or the worst off, may be misguided if the activities of the most fortunate in the community have a disproportionate impact on social capital as, for example, role models. If, as Wilson suggests, the exit of the middle class from urban ghettos has been the cause of rapid deterioration in the social capital of these communities, then this may alter tradeoffs between services to the very poor and services such as public education and police protection that are of value to the middle class as well. Policies are most effective when they change the incentives of those agents whose decisions are close to the margin, so identifying these agents is an important element of policy design. This kind of fine-tuning is difficult and requires much more empirical knowledge than we currently possess, but it is essential with limited policy resources.

The possible interactions of policies that attempt to influence social capital is another important, but relatively untouched, issue in the design of effective policy to reduce racial inequality. Some social scientists have argued that successful policy needs to deal with urban poverty on several fronts.¹¹ Should finite resources be used on a broad front or in a focused attack? Should all efforts be placed on improving public schools - or is such an effort doomed without adequate transportation to take urban workers to suburban jobs? Can improved public safety return businesses to the urban core - or is increased small business capital required first? The apparent ineffectiveness of interventions such as Head Start to improve educational prospects for African-American children suggests that narrowly-focused policies in the face of multi-dimensional racial barriers may be doomed to failure.¹²

Given that conservation of public resources frequently requires that policies be targeted, what are the merits of using race rather than income as a screen? The case for race-based policy is that effective policies are likely to be ones that operate on the externalities that generate or perpetuate inequality. For example, in models of statistical discrimination, a policy that succeeds in changing the equilibrium informational content of racial identification enough to outweigh the cost of restricting privately efficient employer decisions is an effective policy, and is of necessity race-based whether accomplished via affirmative action or training subsidies. An analogous income-based rule, say one that subsidized or targeted a particular income-decile, would be less cost-effective. Policies designed to repair a community's "social capital" need not be overtly race-based, but since American society is racially segregated both residentially and through the social networks of friendship and kinship, community-targeted policies will be racially unbalanced.

Whatever the theoretical merits of race-tested policies, their use is clearly limited by current public distaste. Regulations that forbid overt, identifiable, discriminatory acts remain popular, but policies which are believed to simply favor particular groups have come under increasing fire. Policies that are geographically-based, such as one that targets schools in low-income areas, are less automatically objectionable even though their impact is not racially neutral. The efficacy of such targeting depends in part on the extent to which racially-segregated social capital is based on geography

rather than social networks. In other words, “neighborhood” and “community” are not necessarily synonymous, and the latter is likely to be more racially-segregated than the former.

Do we need to regard social networks, and therefore social capital externalities, as themselves endogenous? Economists have had relatively little to say about these questions, but they are important for interpreting the policy implications of the theoretical models. For example, “integration” is used to describe the removal of barriers between groups over which social capital is defined, i.e. increasing cross-group spillovers. Yet it is not at all clear what integration implies in terms of more concrete policies. As an example of the kinds of question that arise: Is it sufficient that black and white students attend the same college courses and eat in the same student cafeteria, if they still eat at self-segregated tables? Externalities that operate through physical proximity are easily manipulated in an algebraic model, but are perhaps less amenable to politically acceptable changes. While the new economics of race has contributed a great deal about the broad brush of policy, we need to know much more about which specific policies and which policy combinations have the best chance of success.

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Endnotes

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- ¹ There is ample evidence of ongoing racial discrimination in economic transactions, including evidence from controlled experiments. See for example, Ayres and Siegelman [1995]. Neal and Johnson [1996], who find that most of the wage gap between young black and white men can be attributed to "premarket factors," as manifested in a standardized test score, still find that one-third of the wage gap remains unexplained.
- ²² Kahn [1991] describes two cases in which wage differentials do result from customer discrimination and shows that a government policy requiring equal pay for equal work and proportional

representation of minority workers in both sectors will eliminate the pay differential, reduce the real wages of white workers, and may increase or decrease the real wages of black workers.

- ³ Race discrimination does not generally lead to efficiency losses in these models, because their simplicity rules out many of the decisions which discrimination could distort, such as labor supply and human capital investment. The need to discuss a possible role for policy in removing such distortions is eliminated by the conclusion that market forces alone are expected to prevent them from persisting.
- ⁴ Although, if the employer eventually becomes informed about the worker's productivity, wage contracts in which the newly-hired worker posts a bond may be an alternative to wage differentials.
- ⁵ Milgrom and Oster [1987] present an alternative information-based model of discrimination in which affirmative action is efficiency-enhancing.
- ⁶ Not incorporated into the model is the possibility that personnel officers, with more experience in hiring minority workers under equal opportunity, will improve their ability to assess the productivity of these workers. If the abilities eventually equalize, policy intervention will become unnecessary.
- ⁷ Related concepts are the "social capital" of Coleman [1988] and the "ethnic capital" of Borjas [1992,1995]
- ⁸ Economists also explain preferences for steak over meatloaf as a matter of taste, but taking tastes over race as a biological imperative is neither very helpful, nor, given the difference between American and other cultures on this question, probably very accurate. The social formation of preferences is obviously a relevant issue here, but we know very little about how externalities in social formation of preferences compare to externalities in the social formation of productive capacity.
- ⁹ There is an important policy point here which probably should not need to be said, but which probably does. Following an analysis which shows that movement of the most able hurts those left behind, someone will surely leap to the conclusion that an appropriate policy goal would be to discourage the movement of the most able. Typically, economists-qua-economists have not much to

say about ethical values, although implicitly most economists consider social welfare to depend on individual well-being as opposed to group well-being. Many of the policies discussed here focus on a racially-identified group., and it is easy to focus on group welfare while ignoring redistribution within the group. To be blunt, it would require an unusual set of ethics to argue that the cost of remedying past oppression should be borne by those moderately hurt for the benefit of those severely hurt, while both the inheritors of the oppressors and neutral parties are excluded from any costs..

¹⁰ Borjas [1995] presents some evidence that both geographic proximity and social ties defined by ethnic affiliation play some role in the intergenerational transmission of status.

¹¹ William Julius Wilson, Stice Memorial Lectures, University of Washington, 1995.

¹² Currie and Thomas [1995] note that the failure of Head Start to improve outcomes for African-American children may be due either to “inadequacies in these programs” or to “the limited opportunities available to African-American children after they leave the program...”