

Pontificia Universidad Javeriana

Facultad de Ciencias Economicas Administrativas y Contables

Maestría en Economía

Trabajo de grado titulado:

Affirmative Action and Within Social Mobility of a Discriminated Group

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2012

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Abstract

Affirmative Action policies that ensures an equal distribution of income between groups might have different outcomes over social mobility. This work explores the effects of Affirmative Action on a coefficient of social mobility: the probability that a person born in a poor family becomes rich in his adult life. Using an OLG model—which includes discrimination to a group—I show that “early” and “late” Affirmative Action imply different values of the coefficient of social mobility for the discriminated group; “late” affirmative action tends to deter social mobility while “early” affirmative action propitiates it.

Social mobility, discrimination, affirmative action.

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1 Introduction

Affirmative Action (henceforth AA) policies are intended to combat group inequality. Typically, the members of the favored group are overrepresented among the households with the lower levels of income. The AA must generate a set of incentives that result in a more equal distribution of income between groups (at least in the long run). In the United States of America, AA have been systematically adopted for several decades to reduce the differences between the white and the black population. One of the most discussed policies is the use of racial preferences in

graduate school admissions; where the evidence of whether AA help or harm the objective group is mixed (see Bowen and Bok (1998) and Sander (2004) for evidence in favor and against).

In the public sphere and the academia exists a debate: which type of AA, “*early*” or “*late*”¹, can diminish group inequality at the lower social cost. According to Fryer and Loury (2005), in some sectors², exists the widespread idea that “The earlier in education or career development Affirmative Action is implemented, the better” (Fryer and Loury (2005) [page 16]). The authors consider the statement a myth and establish conditions where not necessarily *early* is better than *late* AA; they conclude *early* or *late*? is still an open question.

Fang and Fryer (2003) confront the question with a theoretical model of endogenous education and employment, where *early* and *late* AA consists of quotas in higher education and quotas in job placement. They show under which circumstances *early* is better than *late* AA; as the university’s misallocation cost³ increases *late* outperforms *early*.

The literature has been focused on the efficacy (Bowen and Bok (1998); Sander (2004); see Heckman and Krueger (2005) for a general discussion of interventions through the life cycle) and the efficiency (Fryer and Loury (2005); Fang and Fryer (2003)) of the alternative AA policies. I propose an additional element to be considered on the debate: social mobility. Even the AA policies that can achieve an equal distribution of income between groups, might generate different outcomes over social mobility.

I examine the effect of AA over social mobility looking at the situation of a poor member of the discriminated group relative to a poor member not discriminated. Split the working population into the rich (have a qualified job) and the poor (non-qualified job); consider the between welfare differences much bigger than the within differences⁴. Then, the relative situation of two poor people can be characterized by their probability to become rich; a statistic I call the coefficient of social mobility.

I show the effects of *early* and *late* AA on the coefficient of social mobility with an OLG model. The model incorporates two determinants of the intergenerational mobility found in the literature (see Piketty (2000)): family transmission of wealth (through inheritances) and differences in abilities. The two factors play a key role in the model because determine the cost and benefits of education: the main driver of social mobility⁵.

The *early* AA is a subsidy on the education cost for the discriminated group, the *late* AA are quotas for the qualified jobs; both guarantee equality between groups. The discrimination I consider consists of employers that offer a lower wage for the members of an identifiable group. Is a reduced form of the discrimination by tastes presented in Becker (1971) or the negative stereotypes presented in Coate and Loury (1993).

Coate and Loury (1993) say that wage discrimination is not important, because is easily detected, meanwhile discrimination in job assignment is a subtle phenomenon that AA must counteract. I show that wage discrimination could not be detected and could mimic job discrimination as the outsider (policy maker or the corresponding authorities) can’t observe the

¹Depending whether AA is used on education or career development, is classified as “early” or “late” AA.

²This is a common argument of the critics of racial preferences in higher education (see Fryer and Loury (2005))

³Refers to the social cost of admitting a student that afterwards drop school

⁴The within differences in income of rich people might be big if the distribution of income have a fat tail to the right. I neglect the observations that belong to the tail and focus on the “normal” poor and the “normal” rich.

⁵In the model social mobility is equivalent to the occupational social mobility and therefore education plays a major role.

abilities.

The content to follow is a general overview of the model; the structure of the baseline model (with no discriminated group); and the extensions to include a minority, discrimination and AA. I provide concrete illustration of the different effect of *early* and *late* AA over social mobility.

2 The model

The people in the economy lives for two periods and have different levels of ability. In the first period decide to study or not, given the cost of education, their abilities and an initial endowment inherited. In the second period work in a qualified job or in a low skilled job depending on his abilities, education and status (Family income). Also, each person have a son⁶ to assign a inheritance; the amount depend on the type of job of the father.

The demand side of the labor market is formed by employers that hire a fixed amount of workers for the qualified jobs. The rest of the workers are hired for the non-qualified jobs. The wage of the qualified jobs depends on the ability of the worker while the wage for the non-qualified is independent of the ability. The employers follow a rule of selection for their qualified spots, where they prefer educated, high ability and rich family employees.

There are two groups in this economy, one of them is a discriminated minority. The discrimination consists on a lower wage that the employers offers to members of the minority relative to an equal, in all other respects, member of the other group.

We call “rich” a person that has a father with a qualified job and therefore a high heritage. The measure of social mobility is defined as the probability that a “poor” individual get a qualified job and then his son become “rich”.

2.1 Setup of the model

Consider an economy with a continuum of households represented by the interval $[0, 1]$ conformed by a “young” member and an “adult” member. Each individual lives for two periods and have a level of ability h known by him since the first period. I suppose that h is a random variable independent from all other variables in the model, in particular is independent of the group the individual belongs to avoid essentialist explanations of group inequality⁷.

When the individual is young receives an initial income, which consists of a transfer $a \in \{\underline{a}, \bar{a}\}$ from the adult of the family, and decide if study paying the cost g . $e_{i,j}$ is a dummy variable equal to one if the member j ($j \in \{y, o\}$; o refers to “old”) of the family i studied. In the second period, if is selected for the qualified job, the person can choose to work in the qualified job or in the non-qualified job. If is not selected for the qualified job he just takes the other job.

The preferences are the same for all the individuals in the economy and are represented by a utility function that depends on the consumption levels of each period. Let be c_y the level of consumption when the individual is young and c_o the second period level of consumption. c_o

⁶Each person belongs to the same group of his father.

⁷It is usually argued that the abilities of a person might be correlated with the abilities of the father. It is a relevant fact for the debate of the optimal level of social mobility (see Piketty (2000)), I am not interested in such level; correlation between the father and son abilities will only imply a lower social mobility in the long run equilibrium. Furthermore, Becker and Tomes (1986) find evidence that ability is moderately heritable (at least for USA).

includes the transfer to the son as a reduced form of a parent that care about the quality of their children in the sense of Becker and Tomes (1976). The utility function is given by:

$$U_t(c_{y,t}, c_{o,t+1}) = c_{y,t}c_{o,t+1} \quad (1)$$

The employers select for the qualified or high productive jobs the prospects with the highest level of education and abilities they can hire. The employer prefers any educated worker over any other non educated worker and the ability is valued by the employer only in the case the worker did study. In the case two workers are equal in education and ability I suppose the employer selects the one that belongs to the rich family (received \bar{a} when was young), because the employer feels “closer” to him in the sense that the rich employer offers some personally desired characteristic to the employee; personal background or culture. Bowles and Gintis (2001) show that cultural transmission of traits explain the intergenerational transmission of economic status.

The selection mechanism of the employer can be described by a lexicographic preferences of the employer over the worker he hires with the following order $\{e_{i,o}, e_{i,o} \times h_{i,o}, a_{i,o}\}$, where the index o refers to the adult of the household and $a_{i,o}$ is the transfer that received the adult of family i when was young⁸. I suppose abilities of the workers are observable for the employer because it is the representative job of the whole adult life and abilities will eventually be revealed⁹.

The wage the firms pay for the non-qualified job is denoted by y and the wage paid for the qualified job departs from an equilibrium minimum salary \bar{y} and incorporates a premium for ability, this wage is given by $\bar{y}(1 + h)$. The fraction of qualified jobs is β , there are $(1 - \beta)$ non-qualified jobs.

The transfer to the young of the family consists of \underline{a} if the adults get the non-qualified job and \bar{a} otherwise ($\bar{a} > \underline{a}$). As the adults with non-qualified jobs earn the same wage, then the transfer to the son is the same. On the other hand, workers of qualified jobs earn different wages. I suppose the transfer is the same to let the distribution of income to be tractable and, as Becker and Tomes (1976) show, the parental expenditure on the sons is a concave function of the parent income: the differences on optimal inheritance between the high wages workers could be neglected as it would be not significant relative to the difference between the transfers of the poor and the average transfer of the rich¹⁰.

The restrictions for the parameters values that do not trivially exclude the poor from education and assure the transfers are feasible are

$$\underline{a} > g > 0, \underline{y} > \underline{a}, \bar{y} > \bar{a} \quad (2)$$

and I assume h is a draw from an uniform distribution with support $[0, 1]$. $h_{i,y,t}$ refers to the young member of the family i at time t . The ability doesn't change over time $h_{i,y,t} = h_{i,o,t+1}$ and the individuals have complete information.

⁸If the firm have to choose between two workers equally preferred it selects one of them randomly.

⁹Either by long term contracts or job skill experience.

¹⁰Becker and Tomes (1976) refer to the expenditure on the quality of the children for this assertion. This concept is directly related to the inheritance presented in the model because it is the endowment that can be invested in education improving “quality”.

2.2 Model equilibrium

We can deduce some immediate implications from the setup of the model. First, if the qualified jobs are β , then the rich families are a fraction β of the population. Second, given the selection mechanism of the employer an initially poor worker ($a_o = \underline{a}$) will not get a qualified if did not studied.

Note that there cannot be a Nash equilibrium where the fraction of the population that achieve $e = 1$ is higher than β . Those who paid the cost of education g and did not get hired would be better off if they change their decision and don't study¹¹.

\bar{y} is the price that adjusts to ensure that the β qualified jobs are taken, all other terms are constants. We are interested in the set of parameter values that imply a non trivial equilibrium (in the sense that social mobility exists).

To find the equilibrium with social mobility assume that every individual that decides to study get a qualified job. Then, finding the level of \bar{y} that equals supply and demand of qualified jobs we will get the model equilibrium. This is in fact an equilibrium because in this scenario there are none individuals that would like to change their decisions given the choices of the rest of the economy. The next section provide a more formal assessment of the equilibrium.

2.2.1 The optimal decision of education

The young member of the family has to decide if he gets education or not. Given our point of departure if and only if $e_{i,y} = 1$ then the next period the adult of family i will be hired in a qualified job. So the optimal choice of the young member of family i can be expressed as:

$$e_{i,y,t} = \begin{cases} 1 & \text{if } \bar{y}_{t+1}(1 + h_{i,o,t+1})(a_{i,y,t} - g) \geq \underline{y}a_{i,y,t} \\ 0 & \text{otherwise} \end{cases} \quad (3)$$

this follows from the fact that if the individual decides to study $c_{y,t} = a_{i,y,t} - g$ and $c_{o,t+1} = \bar{y}(1 + h_{i,y,t})$.

Given that the left hand side of the inequality in (3) is strictly increasing in h and not bounded, then there exists some h^* that satisfies:

$$\bar{y}_{t+1}(1 + h_t^*)(a_{y,t} - g) = \underline{y}a_{y,t} \quad (4)$$

h^* is then:

$$h_t^* = \frac{g - \left(1 - \frac{\underline{y}}{\bar{y}_{t+1}}\right) a_{y,t}}{a_{y,t} - g} \quad (5)$$

The individual with ability h_t^* is indifferent between study or not, any other individual with the same initial endowment a and a higher h will decide to study, and those with lower h will not study; h_t^* constitutes the threshold for the distribution of abilities. There is one threshold for each possible value of a , define \underline{h}_t^* as the corresponding threshold of the poor's and \bar{h}_t^* the one of the rich's:

¹¹Stands because of the complete information assumption.

$$\underline{h}_t^*(\tilde{y}_{t+1}) = \frac{g - (1 - \tilde{y}_{t+1})\underline{a}}{\underline{a} - g} \quad (6)$$

$$\bar{h}_t^*(\tilde{y}_{t+1}) = \frac{g - (1 - \tilde{y}_{t+1})\bar{a}}{\bar{a} - g} \quad (7)$$

where $\tilde{y}_{t+1} = \frac{y}{\bar{y}_{t+1}}$ is the ratio of wages without considering the premium of ability.

Given that the fraction of the population that is rich is β and that h is uniformly distributed in $[0, 1]$ the number of young rich people that decide to study is $\beta(1 - \bar{h}_t^*)$ and the number of young poor people that study is $(1 - \beta)(1 - \underline{h}_t^*)$. Then, the wage of the qualified jobs that ensures the equilibrium in the labor market is the \bar{y}_{t+1} associated with a \tilde{y}_{t+1}^* that equals the number of qualified jobs with the number of total individuals in the economy that obtained $e = 1$:

$$\beta \left(1 - \bar{h}_t^*(\tilde{y}_{t+1}^*)\right) + (1 - \beta) \left(1 - \underline{h}_t^*(\tilde{y}_{t+1}^*)\right) = \beta \quad (8)$$

if \tilde{y}_{t+1}^* is such that $\bar{h}_t^*(\tilde{y}_{t+1}^*) \in (0, 1)$ and $\underline{h}_t^*(\tilde{y}_{t+1}^*) \in (0, 1)$.

Solving 8 for \tilde{y}_{t+1}^* we have:

$$\tilde{y}_{t+1}^* = 1 - \frac{\frac{\beta g}{\bar{a} - g} + (1 - \beta)\frac{g}{\underline{a} - g} - (1 - \beta)}{\frac{\beta \bar{a}}{\bar{a} - g} + (1 - \beta)\frac{\underline{a}}{\underline{a} - g}} \quad (9)$$

\tilde{y}_{t+1}^* is a function of the parameters and is constant over time. Specifically \tilde{y}_{t+1}^* is a continuous function of g for $g \in (0, \underline{a})$ where:

$$\lim_{g \rightarrow 0^+} \tilde{y}_{t+1}^* = 2 - \beta > 1 \quad (10)$$

it means that when the cost of education is too low the wage for some individuals is higher if they work on the non-qualified job. In the case of $g = 0$, $\bar{h}_t^* = \underline{h}_t^*$ and hence the chance to be a qualified worker is the same for all the population (prior to the draw of h).

I restrict the model for values of g sufficiently near¹² to \underline{a} such that $\tilde{y}_{t+1}^* < 1$, a sufficient condition to have that all of the workers would earn a higher wage in a qualified job than in the non-qualified one. Such values of g exist because \tilde{y}_{t+1}^* is strictly decreasing in g and

$$\lim_{g \rightarrow \underline{a}^-} \tilde{y}_{t+1}^* = 0 \quad (11)$$

$\tilde{y}_{t+1}^* < 1$ is desired in this model as it generates a wage gap between qualified and non-qualified workers and hence makes more sense associate a rich family to one which is conformed by an adult that works in the qualified job.

The equilibrium is characterized by the following:

- The equilibrium ratio of wages in (9).

¹²It cannot be arbitrarily near to \underline{a} because $\frac{\bar{a} - g}{\bar{a}} < \tilde{y}_{t+1}^* < 2 \left(\frac{\bar{a} - g}{\underline{a}}\right)$ must hold to ensure that effectively $\bar{h}_t^*(\tilde{y}_{t+1}^*) \in (0, 1)$ and $\underline{h}_t^*(\tilde{y}_{t+1}^*) \in (0, 1)$. Both conditions are satisfied by a wide set of plausible values of the parameters, for example $g = \frac{\underline{a}}{2} = \frac{\bar{a}}{4}$ and $\beta \in (0, 0.4)$.

- All the poor that have a level of abilities higher than (6) study and the next period are hired for the qualified job. The rest don't study and work in the non-qualified job.
- All the rich young people that have a level of abilities higher than (7) study and the next period are hired for the qualified job. The rest don't study and work in the non-qualified job.
- Given that g belongs to a set that ensures that $\tilde{y}_{t+1}^* < 1$, then $\bar{h}_t^* < \underline{h}_t^*$.

The last item shows how the model is able to replicate the simple fact that a poor young has less chances of being rich in the future than a rich young. Also we have that only the more able poor young individuals will get the high income jobs.

This conditions effectively represent an equilibrium because, given the decisions of the rest of the individuals and \tilde{y}_{t+1}^* , a person that didn't studied is not willing to change the decision as he has such a low h for their given status (rich or poor) that even if he could get hired on the qualified job he prefer not to study. On the other hand, those which study are not willing to change their decision because they would get a zero probability of getting hired given the rule of selection of the employers and the return in the qualified job exceeds the loss in utility attributed to study. Finally, given the decisions of the households, the rule of selection of the employers imply that all the individuals with $e = 1$ are hired and the rest send to the non-qualified job because the number of people that invest in education is the same as the number of qualified jobs.

Coefficient of social mobility (Ω): Is the probability that a poor young become rich in his adult life. A measure of the extent to which an individual born in a poor family might get a job with high wage, or in other words become rich. The coefficient is calculated as:

$$\Omega = 1 - \underline{h}^* \quad (12)$$

Ω is negatively affected by the cost of education g . As g increases and becomes a bigger fraction of \underline{a} the equilibrium is conformed by a higher \underline{h}^* and the coefficient of social mobility decreases; the relevant measure of the cost of education for the model is the percentage of the poor young endowment \underline{a} that represents the cost of education g relative to the same percentage for the case of a rich young $\left(\frac{\bar{a}-g}{\bar{a}}\right)$.

2.3 The model with a minority group

There are two identifiable groups in the economy. The group denoted by the letter b is the minority and represents a fraction B of the population, the majority group is denoted by w . We define \underline{b}_t as the percentage of the poor population that belongs to the group b at time t and \bar{b}_t as the percentage of the rich population that belongs to the group b . $(\bar{h}_{j,t}^*, \underline{h}_{j,t}^*)$ are the corresponding thresholds for the group $j \in \{b, w\}$. There are no essential differences between the individuals of the two groups, the preferences and the distribution of abilities are the same. In the case that the employer does not discriminate by group we have that:

$$\bar{h}_{b,t}^* = \bar{h}_{w,t}^* = \frac{g - (1 - \tilde{y}_{t+1}) \bar{a}}{\bar{a} - g} \quad (13)$$

$$\underline{h}_{b,t}^* = \underline{h}_{w,t}^* = \frac{g - (1 - \tilde{y}_{t+1}) \underline{a}}{\underline{a} - g} \quad (14)$$

and therefore, for any initial conditions (\bar{b}_0, b_0) the economy converges to a situation of equitable distribution of wealth between groups defined as an equilibrium where $\left(\frac{\bar{b}_t}{b_t}\right) = 1$. Suppose the minority groups due to historical factors begins with a distribution that satisfies $\left(\frac{\bar{b}_t}{b_t}\right) < 1$, the members of the group are more represented on the poor sector of the population, eventually they will converge, but what determines how fast this convergence is achieved is one key question. In this simple framework the speed of convergence, defined as the percentage growth of the number of families from the group in the rich sector of the economy is given by:

$$\frac{\Omega_t(1-\beta)}{\beta} \frac{b_t}{\bar{b}_t} - \bar{h}_t^* \quad (15)$$

The speed of convergence is bigger for economies with higher social mobility Ω , group inequality might become a persistent feature for countries with low social mobility even if there are no differences between the essential characteristics and the incentives faced by the members of different groups.

2.4 Group discrimination

There is wage discrimination to the minority group. Let be \bar{y}_b the minimum wage for a member of group b in a qualified job such that $\bar{y}_b = \alpha \bar{y}_w$ with $\alpha \in (0, 1)$. As I said, it is a reduced form of the discrimination by tastes (Becker (1971)) or negative stereotypes (Coate and Loury (1993)).

The employer could perceive a loss in welfare when he has to work with a member of the group b (“tastes”), instead of a member of the group w , and therefore offers a lower wage to a member of the group b relative to an identical member of the group w . On the other hand, with negative stereotypes the employer have an apriori distribution of the abilities of the group b where the more probable values are low levels of h . Then, the members of the group b will earn lower wages for several years while the employer update his apriori beliefs. $(1-\alpha)$ account for the loss on the average wage of the member of the group b implied by the discriminatory learning process of the employer; Kim and Loury (2009) illustrate the discriminatory learning process in a model were the society updates the “group reputation” from prior beliefs.

Incorporating the group discrimination we have that $\bar{h}_{b,t}^* = \bar{h}_{w,t}^*$ and $\underline{h}_{b,t}^* = \underline{h}_{w,t}^*$ does not hold in general. I evaluate the effects of this type of discrimination looking to the steady state or long run equilibrium. Let x^{ss} the steady state level of any variable x .

Given an equilibrium ratio of wages $\tilde{y}^{ss} < 1$ and a α sufficiently close to 1 such that the equilibrium allow for social mobility of both groups we have:

$$\frac{g - (1 - \tilde{y}^{ss}/\alpha) \bar{a}}{\bar{a} - g} = \bar{h}_b^{ss} > \bar{h}_w^{ss} = \frac{g - (1 - \tilde{y}^{ss}) \bar{a}}{\bar{a} - g} \quad (16)$$

$$\frac{g - (1 - \tilde{y}^{ss}/\alpha) \underline{a}}{\underline{a} - g} = \underline{h}_b^{ss} > \underline{h}_w^{ss} = \frac{g - (1 - \tilde{y}^{ss}) \underline{a}}{\underline{a} - g} \quad (17)$$

in the steady state equilibrium the number of members of each group in each sector (poor and rich) is equal across time, then can be shown that

$$\frac{\bar{b}}{\underline{b}} = \frac{(1 - h_b^{ss})(1 - \beta)}{\bar{h}_b^{ss} \beta} \quad (18)$$

$$\frac{\bar{w}}{\underline{w}} = \frac{(1 - h_w^{ss})(1 - \beta)}{\bar{h}_w^{ss} \beta} \quad (19)$$

From (16), (17), (18) and (19) can be obtained that

$$\frac{\bar{b}}{\underline{b}} < 1 < \frac{\bar{w}}{\underline{w}} \quad (20)$$

Then we have that the discrimination in income led to a long run equilibrium with group inequality where the minority group is concentrated in the poor sector of the population.

“Discriminatory wages for the same work is a flagrant violation of equal-employment laws, and relatively easy to detect” (Coate and Loury (1993) [page 1222]). One characteristic of this result is that an outsider observer, for example a researcher or the policy-maker, if does not observe the individuals abilities but only the gross income ($\bar{y}_j(1 + h)$) of the worker, might not be able to identify the wage discrimination in the qualified jobs because despite $\bar{y}_b < \bar{y}_w$ as $h_b^{ss} > h_w^{ss}$ the discrimination is hidden by the different distribution of abilities between groups. Furthermore, as the wage discrimination imply (20), it could mimic discrimination in job placement.

3 Affirmative action in the model

Consider a policy-maker that sets the objective to get in the discriminatory environment an equitable distribution of qualified jobs implementing two possible types of AA, “late” and “early” AA. “late” AA is designed in this model as quotas on the qualified jobs and “early” AA as a subsidy on the cost of education for the members of group b . Both policies achieve $\frac{\bar{b}}{\underline{b}} = 1$, which of them implies a higher Ω ?

3.1 Late AA

If there is no policy intervention then the economy converges to an equilibrium where $\frac{\bar{b}}{\underline{b}} < 1$ as shown before. The policy maker sets the constraint to the employers that a fraction \bar{B} of the qualified jobs must be taken by members of the group b . Let \bar{b}^{ss} be the steady state equilibrium with no AA policies, because $B > \bar{b}^{ss}$ then $\tilde{y}^{AA} < \tilde{y}^{ss}$ in order to achieve that the employer can assign the quota in equilibrium. In the short run, if inequality is high at the moment the policy is implemented, there could be a patronizing equilibrium¹³, nevertheless the economy will converge to a steady state where only the educated obtain the qualified jobs.

In the *late* AA equilibrium, we have that $\bar{y}^{AA} > \bar{y}^{ss}$ implying that more members of the w group are willing to study if they were hired for the qualified job (see (18) and (19)). Nevertheless, with the quotas the group w have less spots in the qualified jobs and therefore, in equilibrium, just a fraction of the w members that are willing to study decide to do so. The

¹³Is an equilibrium where members of the discriminated group that did not studied are hired for the qualified jobs just to fulfill the quota.

rest decide to not study because, according to the rule of selection of the employer, wont get the qualified job: they are less able than the other prospects. I call the people that do not study because the lack of spots the discouraged students. The discouraged students are the main difference between the *late* AA equilibrium and the previous ones.

Because the wage of the group b is still $1/\alpha$ times lower than that of group w we have that $\underline{h}_b > \underline{h}_w$, so the coefficient of social mobility of the discriminated population is lower than that of the rest of the economy.

Fryer and Loury (2005) say that it is a myth that “Many Non-minority Citizens are Directly Affected by Affirmative Action” and attribute the results of the surveys, that report a high percentage of the population claiming they were negatively affected by AA, to erroneous perceptions. The number of members of the w group that were harmed by the policy is $B - \bar{b}^{ss}$: the qualified jobs that lost the group w after the policy. Nevertheless, if we make a survey probably the discouraged students of w would perceive they were harmed by AA “of course, ¡the quotas!, if there were no quotas I could get a qualified job” but only some members of this group (the more able) were really affected by the quotas. Without the quotas the rest of the members would say “It is too costly to study for such low wages” and wont study anyway.

3.2 *Early* AA

A subsidy to the cost of education g is implemented such that the cost of education for the individuals in group b is γg with $\gamma \in (0, 1)$. The level of γ that ensures an equilibrium with $\frac{\bar{b}}{\underline{b}} = 1$ satisfies that $\underline{h}_b < \underline{h}_w$. This can be proven finding the levels of γ that satisfy $\underline{h}_b = \underline{h}_w$ and $\bar{h}_b = \bar{h}_w$, these levels are correspondingly $\underline{\gamma}$ and $\bar{\gamma}$ and are obtained as:

$$\bar{\gamma} = \frac{\bar{a}}{c}(1 - 1/\alpha) + 1/\alpha \quad (21)$$

$$\underline{\gamma} = \frac{a}{c}(1 - 1/\alpha) + 1/\alpha \quad (22)$$

because $\underline{\gamma} < \bar{\gamma}$ then $\underline{\gamma} < \gamma < \bar{\gamma}$ and this implies effectively that $\underline{h}_b < \underline{h}_w$ or conversely that $\Omega_b > \Omega_w$: the coefficient of social mobility is higher for the discriminated population relative to the rest of the economy.

Discrimination by tastes and negative stereotypes would tend to diminish as the employers get great exposure to the members of the discriminated group. *early* and *late* AA policies guarantee the same degree of exposure (the B fraction of the qualified workers) but not to the same representative worker of the minority. The representative worker for the case of *early* AA has more ability; in the case of *late* his parents are richer. If the discrimination is explained by negative stereotypes concerning the ability, the exposure generated by *early* AA might be desirable¹⁴. Instead, if the discrimination is by tastes and exposure to a member of the discriminated group with similar cultural or personal background is effective, then *late* AA would produce better results to diminish discrimination.

¹⁴The assumption that ability is not inherited is behind this idea.

4 Conclusions

With an OLG model I have posed the question whether different types of AA might affect social mobility. Defining a coefficient of social mobility I have found that, with discrimination on wages to a minority group, *early* AA induce a higher social mobility of the discriminated group than *late* AA, and while *early* reinforces the natural selection of the more skilled workers *late* affirmative action propitiates the reproduction of dynasties through generations. The results stands on a not negligible private cost of education and follows from the fact that a *late* AA policy, consisting of quotas for the qualified jobs, sets a very unequal competition (for the jobs) where the rich members of the discriminated group have the advantage: studying implies a lower lost in welfare for them. *early* AA reduces the advantage of the rich's by lowering the cost of education and therefore allows more people to achieve social mobility.

I propose the value of the coefficient of social mobility of the discriminated group relative to the coefficient of the rest of the economy as a measure of equality in opportunities. A measure that can characterize the differences in welfare (or condition) of the poor population of the discriminated group relative to the rest of the poor population. The *early* AA is closer to achieve equal opportunities by allowing the discriminated people to have a higher value of the coefficient (relative to the not discriminated). It does not necessarily imply inequality in favor of the discriminated group, because the members of the discriminated group that become rich earn lower wages than an equal in abilities member of the not discriminated group. *late* AA achieve an equal distribution of income between groups in the model but the poor members of the discriminated group are in a worst condition than the rest of the economy.

Finally, two remarks that emerge from the model are: First, wage discrimination might not be easy to detect. Wage discrimination could be hidden by endogenous different distribution of abilities of the qualified workers. Second, I provide an additional illustration of the Fryer and Loury (2005) statement that it is a myth that “Many Non-minority Citizens are Directly Affected by Affirmative Action”

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