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SOCIAL STATUS, CULTURE AND ECONOMIC PERFORMANCE*

by

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"Honour makes a great part of the reward for all honourable professions. In point of pecuniary gain, all things considered, they are generally under–compensated... The most detestable of all employments, that of public executioner, is in proportion to the quantity of work done, better paid than any common trade whatever."

Adam Smith (*The Wealth of Nations*, *Book 1 ch. x, part i.*)

Introduction

In analyzing the differences in productive capacity among economies it is usual to concentrate on the physical aspects of the population, the different attributes of capital including human capital and on the available production technologies. Societies, also differ in **culture**, in ways which are relevant for economic development. For instance, there might be different attitudes to work which may translate themselves into different effort levels. There might be also different evaluations of jobs which affect the individual's choices regarding schooling and occupation. The sociological literature recognizes that different occupations have different social status and that workers benefit not only from the wage they receive but also from being associated with a particular occupation. In this paper we follow the sociological literature in emphasizing occupations as a relevant status group. Our discussion of status is closely related to the economic analysis of discrimination against ethnic or racial groups (see Becker [1971] and Arrow [1973]) The main difference is that our discussion more emphasis on acquired characteristics, in particular schooling. Hence, status is determined endogenously within the equilibrium system.

Cultural differences among societies may translate into different status of occupations and can, therefore, affect the choice of education and occupation and, consequently, the equilibrium level of output and wages. Thus, cultural differences can have real economic consequences. Conversely, the economic choices of individuals influence the social status of occupations. In particular, it is well established by sociological research that the social status of an occupation is influenced by economic attributes such as the average wage and the qverage level of education in the occupation. The purpose of this paper is to trace out the relationships between social status and economic outcomes in a general equilibrium framework. In this sense, the sociological and economic approaches are combined within a unified framework. This is in contrast to social scientists who view the two approaches as competing with each other (see Phelps–Brown [1977,ch. 4]).

We use the equilibrium analysis to explain the remarkable stability of occupational rankings across societies and across time. The main insight is that although the average wage affects social status, it is determined endogenously and therefore cannot undermine the working of the "basic factors" such as schooling, sex or race. Thus, if education is assumed to be status enhancing then, in equilibrium, occupations with a large proportion of educated workers must have higher status, whatever are the wages. Combining this result with the standard theory of compensating wage differences, it follows, under some additional assumptions, that high status occupations pay lower wages for a given skill level. Thus, a stable ranking in the occupational wage structure is established. However, the size of the wage and status differences depend on specific cultural and economic circumstances. We argue that societies which stress social status as important part of the reward system will have high wage differences among workers of a given skill who are employed at different occupations. This wage gap implies that workers at the high status occupations have a lower marginal product than workers in the high status occupations. Consequently, aggregate output is reduced. The reduction in output is exacerbated by the reduced amount of capital available for production when workers spend more time in school and need to borrow. We then argue that lower level of output reduces the amount of learning by doing in the economy which reduces the rate of technical change.

There have been several recent attempts to introduce social and cultural considerations in order to explain disparity in growth rates. Baumol [1990] emphasizes the role of social prestige associated with "non productive" (rent seeking) vs. "productive" activities. Cole and al. [1991] argue that social status is used to regulate marriage patterns and therefore affects wealth accumulation and growth. Common to all these papers is the view that cultural differences may have important economic consequences. Our work builds on a similar presumption.

Our model incorporates two types of externalities. The first externality arises from association. If an educated individual chooses a particular occupation the status of this occupation increases, contributing positively to any worker who joins the same occupation. To the extent that workers care about their **relative** position in their occupation (i.e their relative wage) there is also a negative impact on other workers in the occupation. Hence, the net effect of this externality can be negative or positive. The second externality arises from learning by doing. A worker who selects the high status occupation causes a reduction in output which leads to a reduced rate of technical change. The role of externalities in the context of occupational and educational choices is also emphasized by Basu [1989] and Benabou [1991]. Due to these externalities the competitive equilibrium is generally inefficient. This creates the potential for active intervention by the government in occupational and educational choices.

Our paper emphasizes the relationship between the distribution of wealth and occupational choice. Workers with high non–wage income have higher demand for status and will select the high status occupations. The accumulation of wealth increases the demand for status and causes shifts towards high status–low marginal product–occupations thus reducing output and growth. In this way, our model includes factors which can partially offset the effects arising from increasing returns. This is in contrast to a current fashion which focuses solely on the role of increasing returns (see, for instance, Lucas [1988] and Romer [1986]). We perform simulations to asses the relative importance of these factors. In our model an increase in inequality also induces a shift towards the high status occupations and reduce output and growth. A similar conclusion is reached by Banerjee and Newman [1991] who link occupational choice and risk taking (entrepreneurship) and argue that capital market imperfections force poor people to become employees.

1. Occupational Status

Sociologists have long recognized that a person's occupation affects his standing in society. There appears to be a relatively well established occupational hierarchy and workers in highly ranked occupations enjoy higher status. Substantial empirical work have shown that different individuals in a given society rank occupations in a similar way. The ranking is stable over time and is similar across countries. In addition, it was found that occupations which are highly ranked by many individuals can be characterized by having a large proportion of educated workers and high average wages. Other factors such as sex ratio and racial composition are occasionally relevant but less important.[1]

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[1]Max Weber first introduced the concept of status as a technical term. He defined status as an "effective claim for social esteem". He viewed occupations as "status groups", that is, "a plurality of persons who, within a larger group, successfully claim a special social esteem". He argued that occupational status depends "above all" on the amount of training required for the specialized functions and the opportunities for earnings. (see Weber [1978, pp. 141, 302–307]). Empirical measures of occupational ratings were elicited by asking respondents to judge an occupation as having excellent, good, average, somewhat below average or poor standing (along with a do not know option) in response to the item: "For each job mentioned, please pick out the statement that best gives **your own personal** opinion of the **general standing** that such a such a job has". Surveys of this type has been conducted in the U.S by N.O.R.C since 1947. At the top of both the 1947 and 1963 lists one finds: Judges, Physicians and Scientists and Cabinet members. In the middle one finds one finds: Artists, Teachers and Policemen. In the bottom one finds: Plumbers Janitors and Garbage collectors (Hodge and al.[1966]). Similar rankings have been obtained from other countries. Rankings are closely correlated across countries. The

Building on these findings we write:

$$s_j = S(\overline{w}_j, \overline{h}_j, a_j). \qquad (1)$$

where, s_j is the social status of occupation j, $\overline{w}_j$ is the average wage in occupation j, $\overline{h}_j$ is the average level of skill (human capital) in occupation j and a_j is a vector of other occupational characteristics such as sex ratio or racial composition. The first two partial derivatives of S(.,.,.) with respect to the average wage and the average skill are assumed to be positive.

Our working hypotheses in this paper is that social status, as defined by (1), is an important ingredient in occupational and educational choices of each individual. Since, by definition the social status of occupations is influenced by the aggregation of the occupational and educational choices of all individuals in the society, we obtain a feedback structure familiar to economists who analyze the determination of wages (or prices) by "market forces".

Consider an economy with a fixed number of workers. Workers are characterized by their preferences and endowments. Endowments consist of two types of capital: physical

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average correlation between pairs of countries is about 0.8. (See Trieman [1977, pp. 80], Kelley [1990, pp. 345].) Rankings are correlated across time in the, about 0.9 in the U.S. (See Hodge and al.[1966].). In addition, "People in all walks of life, rich and poor, educated and ignorant, urban and rural, male and female view the prestige hierarchy in the same way" (Trieman [1977, pp. 59]). Trying to explain these subjective evaluations by observable characteristics of occupations one finds that the proportion of respondents who gave an excellent or good score is best explained by the mean income and education (or the percent with high school education and the proportion of workers with high incomes) in each occupation. ([Duncan 1961], Nam and Powers [1983, ch. 3]) capital (or property), p, and human capital, h. A person obtains income by renting his endowments to firms at the going rental rates. Physical capital earn the same return, π, in all economic activities. Human capital may earns different returns at different applications. The reason is that human capital cannot be separated from its owner. Hence, if, for some reason, workers enjoy working in occupation j they may be willing to rent their human capital at a lower rate. Let ρ_j denote the rental rate for human capital in occupation j. The labor earning of a worker endowed with h who works in occupation j are given by $w_j = h\rho_j$. The non–wage income of a worker endowed with physical capital p is $y = \pi p$. The total income (consumption) of a worker endowed with (p,h), who works in occupation j, is given by $\pi p + \rho_j h$.

Occupations are characterized by the average characteristics of the workers in the group. We may refer to the utility relevant aggregate properties of an occupation as its social characteristics. This wording is based on the distinction between private remuneration and collective rewards. All workers, irrespective of their own endowment, share equally in the aggregate properties of their occupation. A worker can influence his "honor" or "social esteem" throughout the society via his association with an occupation since the latter forms a "status group". In addition, the worker's satisfaction and or his social esteem may depend on his rank within his occupation, as measured by his relative pay. This formulation stresses the externality aspect of social status.

We write the utility of a worker with endowment (p,h) who works in occupation j as:

$$u_j(p, h) = U(y+w_j, s_j, w/\overline{w}_j) = U(\pi p+\rho_j h, S(\rho_j \bar{h}_j, \bar{h}_j, a_j), h_j/\bar{h}_j), \tag{2}$$

where, all partial derivatives of U(.,.,.) are assumed to be positive. Thus, in evaluating a particular job a worker examines not only his own remuneration but also the average earnings and the average skill of his co–workers. The average wages in an occupation enter in two ways into the worker's preferences. First, a higher average wage raises the status of the occupation. Second, holding the workers own endowments fixed, it reduces his relative rank within the occupation.[2] The net effect may be negative or positive depending upon whether one prefers to be "first among foxes" or "last among lions".

As we have already mentioned, sociologists note the remarkable **stability** of the occupational ranking according to social status across time and country (see Treiman [1977], Kelley [1990] and Hodge and al. [1966]). We shall now show that, under the maintained assumptions, this stability is sustained by the economic forces of competition.

<u>PROPOSITION 1</u>: Under free occupational mobility, ranking by social status is fully determined by the ranking of active occupations by their average endowment of human capital $\bar{h}_j$ and the other basic characteristics a_j. In particular, holding all other characteristics constant, occupations with a high proportion of skilled workers will have, in equilibrium, higher social status.

<u>PROOF</u>: Consider any two active (non–empty) occupations i and j such that $\bar{h}_j > \bar{h}_i$ and $a_i = a_j$. We want to show that, in equilibrium, $s_j > s_i$. Suppose, by contradiction, that $s_i \geq s_j$. Then, by the monotonicity of the status function $S(.,.,.)$, $\rho_j\bar{h}_j < \rho_i\bar{h}_i$ which

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[2]One might, somewhat imprecisely, refer to the relative wage effect as the status of the worker **within** his occupation. Jencks [1972, pp. 247–250] notes the weak correlation between job satisfaction and occupational status (or with wages and education) and argues that satisfaction depends largely on comparisons **within** groups and not **between** groups. A similar observation is made by Phelps – Brown [1977, pp. 129]. In a recent paper, Robson [1990] follows this tradition and defines status as the rank of a person in the distribution of wealth. Thus, utility depends on the relative wages as well as absolute wages. He shows that these preferences have important implications to risk taking, generating non concavities and a demand for gambling.

implies $\rho_j < \rho_i$. Hence, by the monotonicity of U(.,.,.), for every possible endowment (p,h), we have

$$(3) \qquad U(\pi p+\rho_j h,\ s_j,\ h/\bar{h}_j) < U(\pi p+\rho_i h,\ s_i,\ h/\bar{h}_i).$$

However, this cannot hold in equilibrium with free occupational mobility, since in this case no one will choose j. □

The main insight is that although the average wage enters the status function, it is determined endogenously and therefore cannot undermine the working of the "basic factors" such as schooling, sex or race. We emphasize that the proof of Proposition 1 does not require that all workers have the same tastes. It is sufficient that the aggregate S(.,.,.) will be common and that all utility functions are strictly monotone in private income and social status. The assumption that that S(.,.,.) is common to all individuals can be questioned. As emphasized by Arrow [1973], universality of tastes is of crucial importance in explaining the persistence of wage differences which are generated by tastes for discrimination. Indeed, in the context of discrimination such an assumption of the commonalty of tastes may be unwarranted.. There is ample evidence, however, that judgments of occupational ranks are closely correlated across individuals.

Through the rest of this paper we shall ignore other determinants of social status and assume that the social status of an occupation depends only on the average wage in the sector and the percentage of educated workers in the group. Our interest in schooling as a component of social status stems from the fact that this schooling is an acquired attribute. A second simplifying assumption is that the positive effect of the average wage via the status function is more important than its negative effect via the relative rank effect. Hence, we shall omit a_j from the status function and $w_j/\overline{w}_j$ from the utility function. With this stronger set of assumptions one can prove the following:

Colloraly 1 (Compensating Wage Differentials): Occupations with high proportion of skilled workers will have, in equilibrium, a lower rental rate for human capital and thus lower wages for a given level of skill.

Proof: Assume that $\bar{h}_j > \bar{h}_i$. By Proposition 1, and the assumption that a_j is irrelevant, we have $s_j > s_i$. We want to show that, in equilibrium, $\rho_j < \rho_i$. Suppose to the contrary, that $\rho_j \geq \rho_i$. By the assumption that $w_j/\bar{w}_j$ is irrelevant, we obtain that $U(\pi p+\rho_j h, s_j) > U(\pi p+\rho_i h, s_i)$. Hence, no one will choose occupation i, which cannot be an equilibrium. □

Corollary 1 may fail to hold if some or all workers are willing to work in a low status–low wage–occupation just because they have a low endowment of human capital. If such low skill workers are judged inferior by their peers in the high skill occupation (or if they are likely to become envious in the presence of highly paid workers) they may prefer to "stick with the foxes". As an empirical generalization, Adam Smith notwithstanding, the evidence in favor Corollary 1 is not particularly compelling. For instance, in a relatively careful analysis, Duncan and al. [1972, Table 8.16] find that, holding schooling constant, wages are **increasing** in occupational status. Surveying much of the literature, Phelps–Brown [1977,pp. 144] concludes that: " Though valuation set upon work usually agrees with the status accorded to the worker, that valuation is not derived from the status, but is formed independently, according ultimately the willingness to pay of the public for the services or product of the worker". Our own view is that further theoretical development is required for a successful identification and sorting of the impact of social attitudes on the pay structure. We shall therefore adhere, provisionally, to Adam Smith's view and try to explicate it in some detail. In particular, we shall reexamine the problem allowing workers to choose their level of schooling under variety of market situations.

2. Social Status, Wages and Output.

We have seen that the ranking of different occupations by social status may be independent of the wage structure. However, the converse is not true. The social standing of occupations has a strong impact on the equilibrium wage structure. Moreover, we have ascribed higher status to occupations with higher proportion of skilled workers. But how is the distribution number of skilled workers in different occupations determined? In this section we begin to construct a simple model to analyze such interactions. For the sake of exposition we proceed in two steps: In this section we describe a partial equilibrium model in which the interest rate and the level of non wage income are assumed to be exogenously given. In a subsequent section we shall add a credit market in which these two variables will be determined endogenously.

Consider an economy in which there are two sectors (occupations), denoted by a and b, and two skill levels, denoted by l and h. Let n_{ij} be the number of workers with skill level i, $i = l,h$, working in occupation j, $j = a, b$. Each occupation is characterized by a different production function of a single composite good

$$q_j = f^j(n_{hj}, n_{lj}), \quad \text{for } j=a,b, \tag{4}$$

where q_j is the amount of the composite good produced in sector j.

The total amount of the composite good, produced by the two sectors is given by

$$q = q_b + q_a. \tag{5}$$

The production functions $f^j(.,.)$ are assumed to be monotone increasing, strictly concave and homothetic. Hence, the ratio of the marginal products of skilled and unskilled workers for the two occupations is given by

In this model, consumers maximize utility by selecting one of the two occupations and one of the two skill levels. Firms maximize profits by selecting the appropriate mix of skilled and unskilled workers. An equilibrium in this model is defined in the standard way, i.e, a wage vector and an allocation such that in all the markets there is no excess demand and no worker can gain by changing his behavior (i.e., his occupation or education choice). Also no firm can increase its profits by changing the number or type of worker it hires.

The equilibrium of this model has a very simple recursive structure. First, from the profit maximization of firms we have

$$(10) \qquad w_{hj}/w_{lj} = \phi_j\left(\frac{n_{lj}}{n_{hj}}\right), \quad \text{for } j=a,b.$$

Since all workers in a given occupation enjoy the same status, and since, by assumption,each occupation requires both types of labor, a necessary condition for equilibrium is

$$(11) \qquad w_{ha}/w_{la} = w_{hb}/w_{lb} = (1+r)^d,$$

where, r is the market interest rate.

Clearly, if (11) does not hold for some occupation j, then either all workers in j become skilled or all of them remain unskilled which cannot be an equilibrium outcome if both types are essential for production. Condition (11) simplifies the description of the equilibrium substantially. We can now prove

<u>PROPOSITION 2</u>: In equilibrium, the sector with the higher skill intensity employs a higher percentage of educated workers, and thus enjoys a higher social status. Wages in this sector will be lower than in the occupation with low skill intensity.

PROOF: Using equations (10) and (11), we obtain that

(12) $$\psi_a(n_{ha}/n_{la}) = \psi_b(n_{hb}/n_{lb}).$$

However, by (9), and the fact that $\psi_i(.)$ are both decreasing, equality (12) can only hold if

(13) $$n_{hb}/n_{lb} > n_{hb}/n_{lb}.$$

It follows immediately from (13) that occupation b has the higher average level of human capital and we can therefore apply Proposition 1 and derive $s_b > s_a$. We can now apply Corollary 1 to obtain: $w_{ha} > w_{hb}$ and $w_{la} > w_{lb}$. □

The results stated in Proposition 2 are closely related to the often noted stability of the educational coefficient in Mincer's earnings function. Mincer's [1974] results verify condition (11) which essentially states that in equilibrium wages should compensate for the investment in schooling. Given this stability in the educational wage differentials across sectors, it must be the case that the skill intensive sector will have a higher proportion of educated workers in equilibrium whether or not it pays the higher wages. Hence, a situation in which the skill intensive sector has low status can only happen if it pays lower wages. But if occupation b has both lower wages and lower status no one will choose it, which cannot occur in equilibrium.

It is interesting to note that Mincer's stability implies stability of the status structure even if schooling is not a factor determining status.

Remark 1: The occupation with high skill intensity will have higher status even if the social status is determined only by the average wage (and not by percentage of educated workers).

Proof: Assuming $s_a > s_b$ yields that the average wage in sector a is higher. Since $\psi_a(.) < \psi_b(.)$ the percentage of educated workers in a is lower. Therefore, it must be that $w_{ha} > w_{hb}$ and $w_{la} > w_{lb}$. In such a case all the workers will choose to work in sector a but, since by assumption (8) both occupations are active, this cannot be an equilibrium. □

We can now conclude:

COROLLARY 2 (Uniform Ranking): Two different economies with different preferences, different distributions of initial wealth and different technologies will have the same ordering of social status, and the same ordering of wages, as long as the ranking by educational intensity is the same. In particular, the sector with the higher educational intensity in production will have the higher status in both economies. Culture as well as wealth may affect the magnitude of the differences in social status and in wages across sectors, but not the ranking itself.

Corollary 2 strengthens Proposition 1 by allowing the distribution of skill to be endogenous thus tracing the differences in average schooling to differences in technology. The fact that technology is the basic determining factor stems from the observation that schooling is an acquired rather than an inherent attribute.

The result that wages are lower at the high status occupation should come as no surprise. The same arguments, based on compensating wage theory, which have led us to conclude that high skill workers command higher wages also imply that less attractive occupations command a higher wage. In both cases the result is a necessary outcome of free access to the various economic options.

An additional attribute of the equilibrium is the sectorial differences in the average wage. Holding skills constant, wages in the high status sector are lower than the wages in the other sector, as wages must compensate for the status differential. However, the lower wages for each skill level do not necessarily imply that $\overline{w}_b$, the average wage in sector b, is lower than the average wage in sector a, $\overline{w}_a$. This is because in sector b there is also a higher percentage of skilled workers who get higher salaries. Due to these opposing effects we cannot provide an a–priori statement on differences in the average wage as it can go both ways depending upon the impact of education on status in equilibrium. Empirically, occcupations with higher status tend to have higher average (median) earnings (see Phelps–Brown [1977, fig. 4.3]).

When social status is ignored by the workers then, under standard conditions, the national product, measured here by q, is maximized in the equilibrium outcome. However, if workers care about status then, as we have seen, the equilibrium is characterized by compensating wage differences. Specifically, $\psi_b(.) > \psi_a(.)$ implies $s_b > s_a$, $w_{ha} > w_{hb}$ and $w_{la} > w_{lb}$. This pattern of wage differences implies that total output can be raised by shifting workers to the low status occupation a. Moreover, given the assumed strict concavity of the production functions the loss in output is larger the larger is the gap in wages between the two sectors.

It is important to add that even if the social output is defined more broadly, accounting correctly for individual preferences for status, the competitive equilibrium will be inefficient. This is due to the presence of externalities in the model. All workers in a given occupation benefit if a high skilled worker chooses to join their group. This would suggest that the government ought to subsidize schooling. For two reasons we do not wish to over emphasize this implication. First, as we have argued in Section 1, the externality due to association can also work in the opposite direction. Second, and more important, as we shall show in a subsequent section, there are dynamic externalities which can offset the externality due to association.

3. The Effects of Non–Wage Income

As noted previously, consumers have an additional source of income, namely their physical capital, p, which is independent of the individual's occupational and educational choices. In this section we examine the impact which this exogenous source of income has on social status, wages and the distribution of workers into occupations and skills.

We denote by y the flow of income generated by the worker's physical capital, (i.e., $y = \pi p$.) We assume that y is distributed in the population with incomes ranging between $\underline{y}$ and $\overline{y}$, where, $\overline{y} > \underline{y} > 0$.

An individual at a given level of y can choose among four job–skill options and will choose the one which provides him the highest utility level. His maximal utility is

$$u^* = \text{Max}[U(y + w_{la}, s_a), U(y + w_{ha}/(1+r)^d, s_a), \qquad (14)$$
$$U(y + w_{lb}, s_b), U(y + w_{hb}/(1+r)^d, s_b)].$$

Observe that the comparisons of different schooling options in a given sector are independent of y. This explains why condition (11) is required for equilibrium. On the other hand, the choice between sectors depends on y. The relationship between y and occupational choice depends crucially on whether or not social status is viewed as a "normal" good (see Weiss (1976)). Normality is defined in terms of the impact of wealth on the marginal rate of substitution between private income and social status. We may say that social status is a **normal** good if $\partial(U_s/U_y)/\partial y > 0$ and is an **inferior** good if $\partial(U_s/U_y)/\partial y < 0$.

Weiss [1976] has proved that this definition can be applied as follows: Suppose that all workers view social status as a normal good. Let y_0 be a solution to

$$U(y_0+w_{1a}, s_a) = U(y_0+w_{1b}, s_b). \tag{15}$$

Then, y_0 is unique and all individuals with $y \geq y_0$ will prefer job b if and only if it has the higher status i.e if $s_b > s_a$. This implies that, at any given wages, people with higher wealth prefer to work in the sector which yields higher social status. Thus, the operational meaning of the normality of social status is that it is consumed by individuals with higher initial wealth. Since by Proposition 2 we know that the sector with high skill intensity has the higher status we can conclude:

PROPOSITION 3: Assume that social status is a normal good. Then:

(i) The workers with the higher wealth, i.e. higher y, will work in sector b which has the higher skill intensity and gives the higher social status.

(ii) Wealthy workers are more educated, on the average, but may have lower average wages than poor workers with initial wealth y falling in the range $\underline{y} \leq y \leq y_0$.

Proposition 3 implies that, in equilibrium, workers are divided into two groups according to their initial wealth. Those with $\underline{y} \leq y \leq y_0$ work in sector a with the lower status and those with $y_0 \leq y \leq \overline{y}$ work in sector b with the higher status. The particular value of y which serves as the cut off point, y_0, is determined endogenously together with the equilibrium wages.

This concludes our analysis of occupational and educational choices for a given distribution of wealth. We now turn to the analysis of changes in the distribution of wealth where we wish to examine the impact of changes in the mean and in the spread of the distribution of y.

Let us first compare two societies, such that the initial wealth in society 1 is a shift by δ of the wealth distribution of society 2. This translation shifts the mean but maintains the same variability of wealth in the two societies. We can prove

<u>PROPOSITION 4</u> <u>(Wealth–Effects):</u> In a society with higher average wealth there will be:

(*i*) A higher total percentage of educated workers.

(*ii*) A greater output of the skill intensive product.

(*iii*) A higher wage gap between the sectors with low and high skill intensity in production.

<u>PROOF</u>: Let y_0^i, i=1,2, be the critical initial wealth which would cause the worker in society i to be indifferent between occupations a and b (see equation (15)). We prove the claim by showing that $y_0^1 < y_0^2 + \delta$. Let us assume, a contrario, that $y_0^1 \geq y_0^2 + \delta$. In such a case, there are more workers in society 2 choosing a and less choosing b. The wages in b are higher while the wages in a are lower than in society 1. Recalling that the percentage of educated workers in each sector is the same in the two societies, we obtain $s_b^1 > s_b^2$ and $s_a^1 < s_a^2$. Given these differences, a worker in society 2, with initial wealth y_0^1, would strictly prefer sector b. This implies a contradiction. Thus $y_0^1 < y_0^2 + \delta$ and therefore, more workers go to sector b in society 1. Since n_{hb}/n_{lb} is constant and greater than n_{ha}/n_{la} in both societies, there is a higher percentage of educated workers in society 1. □

The above claims are highly intuitive. When individuals become richer they pay more attention to the social status of their job. Since status is higher in the skill intensive sector, there will be more workers choosing b and the wage there will decline. At the same time, in order to induce workers to enter the less "glamorous" sector a, salaries in this sector must increase. The resulting increase in the wage gap between sectors also implies that output is reduced. However, since we did not explain the source of the increase in y, we shall postpone the discussion of this effect to a subsequent section.

Consider, next, two societies with the same average wealth, but with different variability. Specifically, let μ be the average income in society 2 and let σ^2 denote the variance. Assume that

(16) $$y^1 = \mu + \lambda(y^2 - \mu), \text{ where } \lambda > 1.$$

Under the stretching (16), society 1 has the same mean and a larger variance than society 2. That is, $E(y^1) = E(y^2) = \mu$ and $V(y^1) = \lambda^2 V(y^2) > \sigma^2$. We can now prove:

<u>PROPOSITION 5 (Increased Inequality)</u>: Suppose that the income distributions in both societies are symmetric around the mean so that the mean and the median coincide. Let the income distribution in society 1 be more variable than in society 2. Then, if status is a normal good, society 1 will have a larger share of its labor force in the high status occupation, a larger wage gap across sectors and a larger percentage of educated workers if and only if the high status occupation comprises less than half of the labor force in society 2.

<u>PROOF</u>: Suppose that $y_0^2 > \mu$. We want to show that $y_0^1 < \mu + \lambda(y_0^2 - \mu)$. Assume, a contrario, that $y_0^1 \geq \mu + \lambda(y_0^2 - \mu)$. Under the hypothesis $y_0^2 > \mu$ it follows from (16) that $y_0^1 > y_0^2$. However, there are more workers in society 1 choosing a and less choosing b. The wages in b are higher while the wages in a are lower than in society 2. Thus $s_b^1 > s_b^2$ and $s_a^1 < s_a^2$. Given these differences, the normality of social status implies that $y_0^1 < y_0^2$, a contradiction. Thus $y_0^1 < \mu + \lambda(y_0^2 - \mu)$. In the same way we can show that $y_0^2 \leq \mu$ implies that $y_0^1 \geq \mu + \lambda(y_0^2 - \mu)$. The claims in the proposition now follow immediately. □

Proposition 5 suggests that the combination of a small educated sector together with high inequality in non–wage income raises the demand for status and reduces the relative wage in the high skill sector. These conditions seems to apply well to countries such as India, for instance. On the other hand, when the educated sector is large, an increase in inequality reduces the demand for status since, in this case, the marginal worker suffers a reduction in wealth. Consequently, the high status occupation shrinks and the wage gap narrows.

4. Cultural Differences

Imagine two societies with different cultures and thus different attitudes towards social status. Suppose that workers in society 2 place a higher weight on social status than workers in society 1. To sharpen the comparison suppose that there are no differences in tastes **within** countries. We can, therefore, describe cultural differences in terms of the preferences of the typical worker in each country. (Recall, however that workers in each country differ in their non–wage income.) Let $U^n(c,s)$ be the utility function of a worker in country n, $n=1,2$, who consumes an amount c of the composite good and an amount s of social status. Then, we may say that social status is more important in country 2 if for all c and s

$$(17) \qquad -\frac{\partial U^2}{\partial s} \Big/ \frac{\partial U^2}{\partial c} > -\frac{\partial U^1}{\partial s} \Big/ \frac{\partial U^1}{\partial c} .$$

That is, to maintain a given utility, workers in society 2 are willing to give up a larger amount of private consumption for a given increase in status. Using this definition for the relative importance of status in different cultures we can prove:

PROPOSITION 6 (Cultural Differences): Suppose that social status is a normal good. Then, in a society where status is relatively more important we have

(*i*) A higher total percentage of educated workers.

(*ii*) A greater output of the skill intensive product.

(*iii*) A higher wage gap between the sectors with low and high skill intensity in production.

(*iv*) A smaller aggregate level of output.

PROOF: Let y_0^i , i=1,2, be the critical initial wealth which would cause the worker in society i to be indifferent between occupations a and b. We want to show that $y_0^1 > y_0^2$. By the definition of y_0^1

$$U^1(y_0^1+w_{1a}^1, s_a^1) = U^1(y_0^1+w_{1b}^1, s_b^1). \tag{18}$$

However, since status is more important in society 2, we must have

$$U^2(y_0^1+w_{1a}^1, s_a^1) < U^2(y_0^1+w_{1b}^1, s_b^1). \tag{19}$$

Let x be a function of y which is defined, implicitly, by:

$$U^2(y+w_{1a}^1+x, s_a^1) = U^2(y+w_{1b}^1, s_b^1). \tag{20}$$

Clearly, for $y = y_0^1$ we have by (19) that $x > 0$. Under normality, it can be shown by a direct calculation (see Weiss [1976]) that $\partial x/\partial y > 0$. Now suppose, contrary to our claim, that $y_0^1 \leq y_0^2$. Then, it follows from normality that since $x(y_0^1) > 0$ it must be that $x(y_0^2) > 0$. Hence,

$$U^2(y_0^2+w_{1a}^1, s_a^1) < U^2(y_0^2+w_{1b}^1, s_b^1). \tag{21}$$

But $y_0^1 \leq y_0^2$ also means that in society 1 more workers will decide to work in occupation b and fewer to work in occupation a than in society 2. Under decreasing returns to scale, this implies that for both skill levels, the wages in sector a are lower (and wages in sector b are higher) in society 2. Since the technologies for each sector are identical in the two countries, the average level of schooling in each sector is the same. However, the average wages in sector a are lower while the average wages in sector b are higher in society 2. Therefore, $s_a^1 > s_a^2$ and $s_b^1 < s_b^2$. As argued above, we also have $w_{1a}^2 < w_{1a}^1$ and $w_{1b}^2 > w_{1b}^1$. Substituting these inequalities into (21) we get

$$U^2(y_0^2+w_{1a}^2, s_a^2) < U^2(y_0^2+w_{1b}^2, s_b^2). \quad (22)$$

But inequality (22) contradicts the definition of y_0^2. Thus the assumption that $y_0^1 \leq y_0^2$ cannot hold and we must have $y_0^1 > y_0^2$.

All the claims in the proposition follow from this inequality. First, $y_0^2 < y_0^1$ implies that in society 2 there is a greater percentage of the population working in sector b. From this it follows, under decreasing returns and constant prices, that the wages in sector a are higher and the wages in sector b are lower in society 2. Since the percentage of educated workers are constant in the two sectors and do not change with the size of the sector (they are determined by the technology and the cost of education) there are more educated workers now in society 2 as the share of sector b in the total work force is higher. Finally, output in society 2 must be lower since there is a larger gap in the wages of the two sectors. □

We would like to emphasize that the difference between the two societies is the benefit of being associated with educated individuals and not the benefit of education per se. Both the educated and the uneducated who work in sector b benefit from the higher proportion of educated personnel in this sector. Nevertheless, the result is that the demand for education is higher in the society gives more importance to education as a determinant of status.

The result that an increase in demand for social status reduces output summarizes the basic trade off between social status and economic performance. However, it requires some further clarification. If output is defined broadly to include the imputed value that workers put on the acquisition of status then cultures which put more emphasis on social status cannot be strictly considered less productive. We shall argue in a subsequent section that the reduction in output may have a deterrent effect on growth and thus, in the long run, on the welfare of future generations.

Cultural differences may also result in differences in **unemployment**. So far, we assumed that no impediments for market clearing exist. However, in some cases, entry into the high status occupations is blocked (e.g the cast system in old India) or requires a substantial waiting period (e.g government jobs in modern India). Observers have been struck by the high rates of unemployment among the highly educated in India. (In Western countries the pattern is typically reversed, unemployment is high among the less educated.)[3] A common explanation is that "Self defeating search for status drive Indian

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[3]A national survey by the Department of Statistics of the Government of India, reports the following unemployment rates among males, aged 5 years and above :

Education Level	Unemployment Rate (Percents)
Up to Primary	1.02
Middle	3.99
Secondary	9.80
Graduate and above	17.55

Source: Sarvekshana [October 1986, Table 9.1]

In the U.S the corresponding figures for males, years 1980–1985, are:

Years of Schooling	nemployment Rate (Percents)
8–11	10.27
12	7.45

(24) $$q_a = (n_{ha}^{\alpha} \, n_{la}^{1-\alpha})^{\eta} \, L^{1-\eta}$$

(25) $$q_b = (n_{hb}^{\beta} \, n_{lb}^{1-\beta})^{\eta} \, K^{1-\eta}$$

where, L is fixed capital (land) and K is augmentable capital (machines). One may think of sector a as "agriculture" and of sector b as "industry". The main difference between the two capital goods is that K, in addition to being useful in production, can be converted into consumption on a one to one basis. (Conversely, consumption can be converted into K on a one to one basis.) Land is useful in production but cannot be converted directly into consumption. Its amount is, assumed to be fixed. We set $1 > \beta > \alpha > 0$ and $1 > \eta > 0$. Note that $\beta > \alpha$ implies that (9) holds and sector b has the a higher skill intensity. The Cobb –Douglas technology satisfies restrictions (7) and (8) which guarantee that all inputs are essentials and that both sectors produce positive quantities. Without loss of generality, we set the size of each successive cohort to be 1 so that all inputs and outputs are normalized by the fixed size of the entering cohort.

The individual's utility function is specified as

(26) $$u_j = s_j^{\delta} c_1^{\gamma} c_2^{1-\gamma}, \qquad j = a,b,$$

where c_i are the consumption levels in period i of the individuals life, i = 1,2. The parameter γ measures the individual's time preference and the parameter δ measures the intensity of preference for social status. The specification (26) incorporates the fact that in steady state workers do not change occupations. For simplicity, we ignore variations in status over life time and assume that each worker consumes, throughout his life, the social status that the occupation had in the first period of his life. Note that (26) also implies that social status is a normal good.

The social status function (3) is simplified to a linear form

(27) $$s_j = \omega \, \overline{w}_j + \chi \, \overline{h}_j, \quad j = a,b.$$

The parameters ω and χ measure the relative importance of schooling and wages as determinants of social status. Recall that $\overline{w}_j = e_j w_{hj} + (1-e_j) w_{lj}$ and $\overline{h}_j = e_j t_h + (1-e_j) t_l$, where, $e_j = n_{hj}/(n_{hj}+n_{lj})$ is the proportion of educated workers employed in sector j and t_i is the duration of schooling associated with level of skill i, for j=a,b and i=l,h. We simplify further by assuming that every entrant is born with one unit of human capital which he can further augment by spending the first period of his life in school. Thus $t_h = 2$ and $t_l = 1$. Hence, the average level of schooling, $\overline{h}_j$, is simply e_j+1.

Non–wage income y is generated in the model from the proceeds of land. Each generation has the same amount of land. Land can be rented but cannot be sold or bought (see Drazen –Eckstein [1988]). It is transferred from one generation to the next and its distribution remains constant over time. For simplicity we shall assume a uniform distribution of land among the population in the interval [0,L]. Thus L/2 is the (per capita) average of land holding and, since in each period there are two individuals alive (per entrant), the aggregate existing stock (per entrant) is L. The distribution of non–wage income which is induced by the distribution of land depends on its rental value. Under the Cobb–Douglas specification y will be distributed uniformly over $[0,(1-\eta)q_a]$.

We can now define $I_j(y)$, the lifetime income of a person with non wage income y who is working in occupation j

(28) $$I_j(y) = (w_{lj} + y)R = w_{hj}/(1+r) + yR,$$

where, $R = (1+(1/1+r))$. Observe that in (28) we make use of the equilibrium condition (11) which states that workers within the same sector but with different schooling earn the same discounted lifetime wage income. Since we assume that life consists of two periods one of which can be devoted to schooling condition (11) assumes the form

$$\frac{w_{ah}}{w_{a\ell}} = \frac{w_{bh}}{w_{b\ell}} = 2 + r. \tag{29}$$

Given the utility function (26), the optimally chosen consumption levels are proportional to the entrant's life–time income. Specifically,

$$c_{1j}(y) = \gamma I_j(y), \tag{30}$$

$$c_{2j}(y) = (1+r)(1-\gamma)I_j(y), \tag{31}$$

where, $c_{kj}(y)$ is the consumption in period k and occupation j for a worker with non wage income y. Consequently, the utility level in occupation j is proportional to $s_j^{\delta} I_j$. Hence, a worker with non–wage income y, will choose occupation a only if

$$s_a^{\delta} I_a(y) \geq s_b^{\delta} I_b(y). \tag{32}$$

The critical value of y, y_0, where a worker is indifferent between the two sectors solve (32) as an equality. All workers with y exceeding y_0 will choose sector b. We denote by m_j the share of new entrants, in each cohort, choosing occupation j. Since y is distributed uniformly on $[0,\bar{y}]$ where, $\bar{y} = (1-\eta)q_a$, we must have $m_a = y_0/\bar{y}$ and $m_b = 1-y_0/\bar{y}$.

As we have already stated, the single output of the economy can be either consumed or used as capital by firms in sector b. The only group who is willing to give up some consumption good are young individuals in the first period of their life, who choose **not** to acquire schooling and may wish to transfer consumption to their second period in life. On these resources, firms must compete with young workers who acquire schooling and need to finance their consumption.

The equilibrium in the capital market requires that:

$$(33)\qquad (m_{la}/m_a)\int_0^{y_0}(y+w_{la})(1-\gamma R)h(y)dy + (m_{lb}/m_b)\int_{y_0}^{\bar{y}}(y+w_{lb})(1-\gamma R)h(y)dy$$

$$= (m_{ha}/m_a)\int_0^{y_0}(y(\gamma R-1)+\gamma w_{ha}/(1+r))h(y)dy +$$

$$+ (m_{hb}/m_b)\int_{y_0}^{\bar{y}}(y(\gamma R-1)+\gamma w_{hb}/(1+r))h(y)dy + K$$

where, m_{ij} represents the share of the new cohort choosing level of schooling i in occupation j, i=l,h, j=a,b and $m_j = m_{1j} + m_{2j}$. The density of y is denoted by h(y). Under the uniform distribution $h(y) = 1/\bar{y}$ where $\bar{y} = (1-\eta)q_a$. On the left of equation (33) we have the aggregate supply of credit by workers not going to school while on the right we have the demand by workers going to school and by firms. Equation (33) can be rearranged to yield the usual saving equals investment requirement. Saving in this model is the first period income minus the first period consumption of all types of workers, while investment is the amount of the consumption good used in production.

Observe that (33) cannot be satisfied with a positive K unless $1-\gamma R > 0$ or $(2\gamma-1)/(1-\gamma) < r$. A sufficient condition for the existence of a solution is $\gamma < 1/2$. In other words, a well functioning capital market will exist only if the young workers who choose not to go to school can be induced to save. Their savings will always be positive if they have negative time preference, that is, if $\gamma < 1/2$. Otherwise, the interest rate must be sufficiently high to compensate them for their impatience.

We close the model by using the maximum profit conditions which equate factor prices to marginal products. For the Cobb Douglas technology the demand functions can be expressed in terms of expenditure shares:

$$
\begin{aligned}
&rK = (1-\eta)q_b. \\
&w_{ha}n_{ha} = \eta\alpha q_a. \\
(34)\qquad &w_{la}n_{la} = (1-\alpha)\eta q_a. \\
&w_{hb}n_{hb} = \eta\beta q_b. \\
&w_{lb}n_{lb} = (1-\beta)\eta q_b. \; .
\end{aligned}
$$

We can solve for the equilibrium numerically. The results of some simulations are presented in Table 1. The benchmark set of parameters implies that about half of the entrants choose each sector (m_a=.504, m_b=.496). However, since sector b is more skill intensive (α=1/3, β=2/3), there is a larger proportion of skilled workers in occupation b (e_a=.169, e_b=.449). Hence, occupation b has a higher status (s_a=.562, s_b=.770). To compensate for this difference in status, occupation a has to pay wages which are higher by 50 percent (w_{la}=.316, w_{lb}=.210). The equilibrium interest rate, at the benchmark, is r=.456. The implied compensating wage differential by skill levels is 2.456 (w_{ha}/w_{la}=.774/.316=w_{hb}/w_{lb}=.516/.210=2.456).

Three experiments are conducted around this benchmark. The first examines the effects of changes in the preference for status, δ; the second examines the effects of increase in the weight given to education in the status equation, χ/ω, and the third examines the effects of changes in endowments, captured here by the amount of land, L. These experiments are designed to trace the main routes by which status can affect the equilibrium allocation of workers and the equilibrium wage structure.

(i) The results of an increase in the demand for status are presented in the first panel of Table 1, where δ increases from 0 to 1/2 to 1, all other parameter remaining at their benchmark level. As can be seen, as society becomes more status oriented, workers move to the high status sector (see column 1). This sectorial shift has strong influence on the capital market. Since there are more workers who wish to invest in schooling there is an increase in the demand for credit. This in turn raises the interest rates and reduces the amount of capital used in the production (see columns 5 and 6). It turns out that the reduction in capital in sector b offsets the impact of the increase in the number of workers and output declines. Output in sector a declines due to the loss of workers. Hence total output declines (see column 2, 3 and 4).

Wages also adjust to the sectorial shift, wages in sector b decline while wages in sector a rise (see columns 9 to 12). The increase in the interest rate slightly reduces the proportion of educated workers in both sectors (see columns 13 and 14). If this reduction would be sharper, then the average wage in sector a could decline. However, in our simulations, the average wages imitate the adjustments in the individual wages, decline in sector b and increase in sector a (see columns 15 and 16). Increase in the demand for status raises the inequality in wages throughout the economy. Wage differences across sectors and across schooling levels increase. The first effect is due to the increased compensation for undesirable work while the latter is a direct outcome of the increase in the interest rate, which implies that the compensation for investment in schooling must increase.

The sectorial shift towards sector b tends to reduce non wage income originating in the fixed factor (land) in sector a. This is reflected in the reduction in $\bar{y}$, showing that the distribution of y shifts to the right. Note that the non wage income of the marginal worker, y_0, and the life–time incomes that he attains in sectors a and b, I_a and I_b respectively, all decline as status becomes more important (see columns 8, 19 and 20.) This shows that the sectorial shifts are performed by the relatively well to do entrants who move to occupation b. This is also reflected in the increased gap between the life time utility of the marginal workers and the average utility in society (compare columns 21 and 22.)

The extreme case in which $\delta=0$ is of special interest since it represents a culture with no preference for status. As seen, in this case wages are equalized across sectors and output attains its highest level.

(ii) The results of the second experiment which gives more weight to the educational component in the status function are presented in the second panel of Table 1. As seen, the pattern of the results is identical to the patterns in the first panel. That is, the skill intensive occupation can become more attractive either because status is more important or because education becomes a more important component of status. In both cases the results are the same.

The extreme case in which $\chi=0$ is again of special interest since it represents a culture which cares only about money and not about schooling directly. Nevertheless, as explained in remark 1, occupation b has the higher status (see columns 17 and 18). This is because education is costly to produce and the skill intensive sector will have the higher mean wage.

(iii)The results of the third experiment which simulates the effects of changes in the endowment of land are presented in the last panel of Table 1. As L increases from 2 to 3 to 4 each new entrant has a larger source of non–wage income. In the partial equilibrium model of the previous section an increase in wealth raises the demand for status and therefore causes a sectorial shift towards sector b. Here, this effect is offset by the increased productivity of labor in sector a and the net outcome is a mild increase in the proportion choosing a (see column 1). However, the effects of wealth on wage differences which is predicted by the partial equilibrium model is maintained. As the demand for status increases, sector a has to pay a larger compensating wage difference. (The difference between columns 12 an 10 increase from .089 to .106 to .118. The same pattern is reproduced in comparing columns 12 and 10.) In the absence of demand for status (i.e $\delta=0$) wages in both sectors would increase with L by the same amount. Not surprisingly, the increase in wealth raises output and utility. The latter effect is captured both in the where, q_t is the current level of aggregate output and ξ is a parameter representing the rate of learning–by–doing in the economy. The simulations in section 5 were carried out for the special case in which $\xi = 0$ when the economy is stationary. We now repeat these calculations for the case in which $\xi > 0$ and the economy grows.

The steady state rate of the economy is given by

$$(36) \qquad g = T_{t+1}/T_t - 1 = \xi((n_{ha}^{\alpha}\, n_{la}^{1-\alpha})^{\eta}\, L^{1-\eta} + (n_{hb}^{\beta}\, n_{lb}^{1-\beta})^{\eta}\, K^{1-\eta}\,.$$

Thus the (steady state) rate of growth is endogenously determined by the (steady state) allocation of workers into the two sectors and the (steady state) level of capital. (Recall that the quantity of land, L, is a constant.) While the level of inputs in the steady state is constant, wages income and utility all grow at the same rate g. The rate of growth g enters into the calculations of expected life time earnings and affects individual choices of occupation, level of schooling and savings. This yields a system of simultaneous equations which can be solved by numerical methods.

Our main interest is in the effects of the demand for status on the steady state growth rate and the main variables associated with it. In Table 2 we present the results of such simulations. As seen, an increase in the demand for status reduces the rate of growth in the economy. The result that an increase in demand for social status reduces growth captures the notion that societies can become "soft" or "lethargic" if their culture puts emphasis on status symbols rather than on "productive" activities (see Baumol [1990] for a related discussion.)

An increase in the fixed endowment of land leads to increase in the growth rate. This is a familiar implication of models with endogenous growth which incorporate dynamic increasing returns see Lucas [1988]. Thus large economies tend to grow faster . We have wondered whether the positive income effects on the demand for status and the implied negative effects on growth would be sufficient to overturn this result. In our simulations, including a large number of non reported attempts, the answer appears to be that increasing returns dominate income effects.

Concluding Remarks

It is quite common to attribute differences in individual performance to heterogeneity in tastes and abilities. Our claim is that heterogeneity among societies plays a similar role in determining their economic development. We do not wish to imply that personal or national characteristics alone provide an "explanation" to differences in economic performance (e.g that slow growth is caused by national laziness). Rather, cultural differences act as intervening factors that together with economic incentives produce observable outcomes. In this paper we have chosen to focus on the social status of occupations, a factor which has been extensively discussed in the sociological literature. we have shown that different attitudes towards social status affect the equilibrium outcome for some key economic variables such as wages output and growth. But we also recognize that economic activity has cultural implications. Specifically, the status of different occupations depend on the, economically motivated, occupational and educational choices of the individuals in society. As we have tried to illustrate in this paper, this structure of feedbacks calls for the combined analysis of economic and sociological factors within a general equilibrium framework. We believe that this approach will provide a much better understanding of the economic performance and evolution of culture in societies.

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TABLE 2: ENDOGENOUS GROWTH UNDER DIFFERENT PARAMETER CONFIGURATIONS

	m_a	q_2/q	e_a	e_b	r	g
Effect of increase in demand for status						
$\delta=0$	.585	.585	.200	.500	.390	.390
$\delta = 1/2^*$	.498	.587	.194	.491	.451	.354
$\delta = 1$	.457	.588	.192	.487	.481	.336
Effect of increase in the weight of education in the status function						
$\chi = 0 \quad \omega = 1$	.557	.587	.198	.497	.409	.379
$\chi = 1 \quad \omega = 1^*$	.498	.587	.194	.491	.451	.354
$\chi = 1 \quad \omega = 0$	.372	.591	.163	.438	.560	.211
Effects of increase in initial land endowments						
L = 2	.489	.589	.184	.475	.529	.264
L = 3*	.498	.587	.194	.491	.451	.354
L = 4	.503	.586	.201	.502	.404	.435

Benchmark parameters: $\alpha = 1/3$; $\beta = 2/3$; $\gamma = 1/5$; $\eta = 1/3$; $\omega < 1$; $\gamma = 1$; $\delta = 1/2$; $\xi = .2$; L = 3