Social Status, Education, and Growth

Chaim Fershtman

Tel Aviv University and Tilburg University

Kevin M. Murphy

University of Chicago

Yoram Weiss

Tel Aviv University

This paper investigates the implications of social rewards on the allocation of talent in society and consequently on the process of economic growth. We consider two sources of heterogeneity among workers: nonwage income and innate ability. A greater emphasis on status may induce the "wrong" individuals, that is, those with low ability and high wealth, to acquire schooling, causing workers with high ability and low wealth to leave the growth-enhancing industries. This crowding-out effect, taken alone, discourages growth. Growth may be enhanced by a more egalitarian distribution of wealth, which reduces the demand for status.

I. Introduction

A common feature of recent growth models is the existence of externalities associated with human capital. In choosing their levels of

We would like to thank Gary Becker, John Craig, Robert Fogel, Steve Kaplan, Edi Karni, Robert Lucas, Joel Mokyr, Dale Mortensen, Nancy Stokey, an anonymous referee, and the participants of seminars at Berkeley, Helsinki, Humboldt, Northwestern, Tilburg, and Venezia Universities for helpful comments and suggestions. We acknowledge the financial support of the Israel Foundation Trustees.

[*Journal of Political Economy*, 1996, vol. 104, no. 1]

schooling or occupation, workers ignore the impact of their choice on future generations. Thus, in general, the level of investment in human capital is suboptimal (see Lucas 1988). One possible corrective mechanism is to reward such activities with social status (see Davis and Moore 1945). For instance, scientists and professors often obtain rewards in the form of social esteem in addition to a monetary reward (see Hodge, Siegel, and Rossi 1966; Treiman 1977). One might think, therefore, that societies that have developed such mechanisms will grow faster. However, a special feature of occupational status is its collective nature: all the participants in a group share the occupational status irrespective of their characteristics or actions. Because of the collective nature of occupational status, awarding social status to educated workers may cause a *reduction* in the growth rate, even though schooling generates growth. This may happen because, as status becomes important, workers with high income but low ability are more likely to invest in schooling, crowding out the high-ability, low-income workers.

Social status is not necessarily associated with activities that enhance economic growth. For instance, priests and lawyers often have high social status.[1] However, it is undeniable that workers care about their occupational status. In this paper we *assume* that higher social status is bestowed on occupations that enhance growth. We then investigate the implications of this social reward to the distribution of talents in society. We recognize two sources of heterogeneity among workers: nonwage income and ability. We show that if workers differ only in ability or only in nonwage income, then awarding social status to growth-enhancing occupations will increase the aggregate supply of talent to the growth-enhancing occupations. However, if both types of heterogeneity are present, then a greater emphasis on status may induce the "wrong" individuals—that is, those with low ability and high wealth—to acquire schooling, causing workers with high ability but low wealth to leave. This crowding-out effect, taken alone, discourages growth. The strength of this effect depends on the elasticity of substitution between skilled and unskilled workers. If the elasticity is high, then as more workers acquire schooling, there is only a small change in relative wages and the crowding-out effect is weak. If the

[1] Such is the opinion of Thorstein Veblen, who viewed higher education, especially the "classics," as a form of conspicuous leisure characterized by "aversion to what is merely useful" and "consuming the learner's time and effort in acquiring knowledge which is of no use" (1925, p. 394). The ability and willingness to waste economic resources signal that the individual truly belongs to the leisure class (see Veblen 1925, chap. 14). By this view, education confers status *because* it is of no use. In such a framework, it would come as no surprise that increased demand for status would reduce growth.

elasticity is low, then wages in the high-status occupation may decline to the point at which the aggregate skill of workers in this sector declines, causing the growth rate to decline.

In a culture that emphasizes social status, occupational and educational choices are influenced not only by pecuniary rewards but also by nonmonetary rewards such as social esteem. The relative weight that a person may put on these two rewards is likely to depend on his nonwage income. Consequently, the distribution of wealth in society affects the incentives to seek high-status activities. Assuming that the demand for status increases with wealth, we show that equalization of wealth is likely to lead to a higher growth rate.

This paper builds on our past work. As in Murphy, Shleifer, and Vishny (1991), we recognize that the allocation of ability across occupations influences economic growth. As in Fershtman and Weiss (1993), we recognize that the quest for social status is an important factor in the allocation of workers into occupations. We combine these two ideas and show that, since the demand for status is motivated by considerations that are separate from ability, such as nonwage income, it is quite possible that nonmonetary rewards in the form of occupational status will lead to an inefficient allocation of talent and a lower growth rate.

It is often noted that cultural differences can have important economic consequences. For instance, it has been argued that contempt for the entrepreneur, especially in manufacturing, and the high status of idle gentlemen in nineteenth-century England are the main cause for its economic decline (e.g., Wiener 1981). Part of the controversy concerning this hypothesis (see Perkin 1989) results from the fact that social attitudes are varied and hard to measure. We therefore emphasize occupational status, a variable that has been measured by sociologists, as a key cultural factor. Social rewards and social norms, often emphasized by sociologists, have been neglected by economists. There are, however, some notable exceptions. Arrow (1971) mentions norms as a mode for internalizing externalities (see also Elster [1989] for a critique of this view). The special role of social status in the context of growth has been recognized by Hirsch (1976). He argues that the relative nature of social rewards implies social scarcity (e.g., only one person can be number one), leading to rent seeking, which limits growth. Cole, Mailath, and Postlewaite (1992) argue that social status is used to regulate marriage patterns and therefore affects wealth accumulation and growth.

The linkage between wealth distribution and growth has been the focus of several recent studies. There is some evidence for a positive correlation between equality in income and growth (see, e.g., Persson and Tabellini 1994). Theoretical models attempting to explain this relation are provided by Banerjee and Newman (1993), who link occupational choice to risk aversion, and Galor and Zeira (1993), who discuss the possible relationship between wealth distribution and growth through investment in human capital in the presence of an imperfect credit market. A model that predicts a negative relation between growth and inequality is provided by Murphy et al. (1989), who consider the effects of the distribution of income on the composition of demand and the techniques of production. The introduction of demand for status provides an additional link between inequality and growth that is different from the usual links discussed in the literature. Since status is a normal good, demanded by the rich, a transfer of income to this group raises the demand for status, which may cause a reduction in growth.

II. Framework for Analysis

Consider an overlapping generations model in which each cohort is of size N and lives for two periods. Individuals differ with respect to two characteristics: nonwage income and learning ability. Nonwage income, denoted by y, is derived from ownership claims for the profits of production firms. We let θ denote the individual's share in aggregate profits. We let μ denote the innate learning ability of the individual. The joint distribution of θ and μ in the population is denoted by $F(\mu, \theta)$; the density is denoted by $f(\mu, \theta)$, where $(\mu, \theta) \in \Omega$ and Ω is a compact fixed set of characteristics. We assume that all generations are identical with respect to the distribution of the characteristics listed above.

A. *The Production Technology*

The production process requires two types of workers, skilled and unskilled, who jointly produce a single good. The two types of workers perform different tasks: skilled workers engage in management, and unskilled workers work as laborers. We define an occupation as a combination of job and workers' characteristics and consider two occupations, management and labor, denoted by m and l, respectively. The aggregate level of output depends on the number of workers and managers, their productive capacity as indicated by their human capital, and the level of technological knowledge in society. The aggregate amounts of human capital embodied in laborers and managers in period t are denoted by $H_{t,l}$ and $H_{t,m}$, respectively. Society also possesses a stock of technological knowledge (blueprints), denoted by A_t, that can be viewed as a public good, freely accessible to all members of society. The aggregate production function in this economy is

$$Q_t = Q(H_{t,l}, H_{t,m}, A_t) = A_t^{1-\gamma}[(\beta H_{t,l})^{\rho} + H_{t,m}^{\rho}]^{\gamma/\rho}, \tag{1}$$

where $1 > \rho > -\infty$, $\beta > 0$, and $0 < \gamma < 1$.

Firms maximize profits taking wages as given. We let $w_{t,m}$ and $w_{t,l}$ be the period t wage per unit of human capital of managers and laborers, respectively. The price of output is normalized to one. The aggregate profits are allocated to the workers according to a predetermined distribution of ownership. Thus the nonwage income of an individual who owns the share θ of aggregate profits is $y_t(\theta) = \theta(1 - \gamma)Q_t$. Because individuals' nonwage income must sum up to aggregate profits, the average share must equal $1/2N$.

B. The Learning Technology

A person born in period t can become a manager in period $t + 1$ by spending the first period of his life in school. Alternatively, he can work for two periods as a laborer. We denote by $\Omega_{t,l}$ and $\Omega_{t,m}$ the subsets of Ω that induce choices of work and schooling, respectively, by members of the cohort entering at period t. Let $h_{t,l}^{o}$ and $h_{t,l}^{y}$ denote the productive capacity (human capital) of an old and young laborer, respectively, in period t. Similarly, let $h_{t,m}^{o}(\mu)$ be the productive capacity of a manager with ability μ. We assume that ability matters only for workers who engage in the skilled job.

Workers can acquire skills either by learning on the job or by learning in school. The purpose of training is to embody the existing technological knowledge into workers. On the job, workers obtain immediate access to the available technology, yielding $h_{t,l}^{o} = h_{t,l}^{y} = A_t$. Schooling raises the capacity of workers to absorb and apply technological knowledge. An individual with ability μ who learns in school in period t will have in the subsequent period an amount of human capital given by $h_{t+1,m}^{o}(\mu) = \mu A_{t+1}$, where $\mu > 1$.

Each person who goes to school at time t also produces $a_t(\mu)$ units of new knowledge, which he cannot appropriate. We assume that $a_t(\mu) = aA_t\mu$, where a is a fixed parameter. Thus learning in school is viewed as a joint production process in which students learn and create new knowledge.

The aggregate amount of human capital embodied in laborers is obtained by integrating the human capital of all the laborers at period t (i.e., $H_{t,l} = A_tNL_t$, where NL_t is the size of occupation l at period t, consisting of young workers who choose to become laborers in period t and older workers who made this choice in period $t - 1$. Similarly, the aggregate amount of human capital embodied in managers is

$H_{t,m} = A_t NM_t$, where NM_t is the aggregate ability of entrants who chose to acquire schooling in period $t - 1$ and are working as managers in period t. Using these expressions of the aggregate human capital, one can see that the aggregate output, Q_t, depends only on the stock of technological knowledge and the distribution of ability in the two occupations.

The growth rate in the stock of knowledge is obtained by aggregating the production of new knowledge over all workers who acquire schooling:

$$g_t = \frac{A_t}{A_{t-1}} - 1 = aN \int\int_{\Omega_{t-1,m}} \mu f(\mu, \theta)\, d\mu\, d\theta = aNM_t. \quad (2)$$

C. Social Status

Sociologists have established that the social status of an occupation depends mainly on the *average* schooling and *average* wages of its members (see Duncan 1961; Weber 1978). Of the two occupational characteristics, education appears to be the more important determinant of social status (see Featherman and Stevens 1982). To simplify our analysis, we assume that the social status of each of the two occupations increases with the average human capital of its members relative to the average human capital in the other occupation. Let $s_{t,l}$ and $s_{t,m}$ denote the social status of laborers and managers, respectively. Then

$$s_{t,m} = \left(\frac{H_{t,m}}{N_{t,m}} \Big/ A_t\right)^{\delta} = \left[\frac{\int\int_{\Omega_{t-1,m}} \mu f(\mu, \theta)\, d\mu\, d\theta}{\int\int_{\Omega_{t-1,m}} f(\mu, \theta)\, d\mu\, d\theta}\right]^{\delta}, \quad (3)$$

where $N_{t,m}$ is the number of managers at period t. Note that by definition $s_{t,l} = 1/s_{t,m}$. Thus the ranking of the two occupations by status is fully determined by the *average* ability of managers. The parameter δ, $\delta \geq 0$, is a shift parameter indicating cultural differences in attitudes toward schooling (human capital) as a source of social status.

Social status is gained by association with a particular group, in this case a particular occupation, and *all* members share the same status irrespective of their ability and nonwage income. The collective good aspect of occupational status is the main driving force of our analysis and requires some clarification. Generally, a person's esteem throughout society can depend on his own deeds or talents. However, except for exceptional cases, the specific merits of each individual are hard to verify. Schooling and occupation are easily recognized signals for individual accomplishments.[2] Our presumption is that, in the absence of other information, the best available predictor of a person's "worth" is the average value of his group (see Marshall 1977, chap. 8).

Since social status depends on the *relative* amount of human capital, it is impossible to increase the status of one occupation without reducing the status of the other. The *ranking* of the two occupations by status is invariant over time (see Weiss and Fershtman 1992). However, social status is endogenously determined in our model and might change over time depending on the ability of the workers that choose to acquire education.

D. *Consumers*

Individuals in this model are assumed to be forward looking. The individuals' occupation choices are based on their expectations regarding next-period social status, wages, and profits. Lifetime utility depends on the individual's consumption levels in the two periods of his life and on his occupational status. For simplicity, we assume that status is generated only from work in the second period of life, after training has been completed. Preferences of each entering cohort are the same and are represented by the utility function $u_i = (c_i^y)^\alpha (c_i^o)^{1-\alpha} s_i^o$, where c_i^y and c_i^o are the consumption levels of an entrant at the first and second periods of his life, respectively, and s_i^o is the occupational status enjoyed in the second period of life. We assume a perfect capital market and denote the interest by r.

Under the described preferences, the indirect utility functions of a person with characteristics (μ, θ) entering occupations m and l, respectively, are

$$u_{t,m}(\mu, \theta) = s_{t+1,m}\left[y_t(\theta) + \frac{y_{t+1}(\theta)}{1+r} + \frac{w_{t+1,m}\mu A_{t+1}}{1+r}\right]\lambda \tag{4}$$

and

$$u_{t,l}(\mu, \theta) = s_{t+1,l}\left[y_t(\theta) + \frac{y_{t+1}(\theta)}{1+r} + w_{t,l}A_t + w_{t+1,l}\frac{A_{t+1}}{1+r}\right]\lambda, \tag{5}$$

where $\lambda = \alpha^\alpha(1-\alpha)^{1-\alpha}(1+r)^{1-\alpha}$.

We can now characterize the subsets $\Omega_{t,l}$ and $\Omega_{t,m}$, which determine the partition of the entering cohort into managers and laborers. By

[2] Bernheim (1994) considers a model in which status depends on public perception about an individual's predisposition. Letting the individual's actions signal his predisposition, he shows that when status is sufficiently important, individuals conform to a single behavior.

definition, $\Omega_{t,l} = \{(\mu, \theta) | u_{t,l}(\mu, \theta) > u_{t,m}(\mu, \theta)\}$, and $\Omega_{t,m}$ is the complement of $\Omega_{t,l}$ in Ω. With equations (4) and (5), the boundary between the two subsets $\Omega_{t,l}$ and $\Omega_{t,m}$, denoted by $\mu_t(\theta)$, is a straight line with a *negative* slope (see fig. 1). This reflects two main features of the model: (i) Individuals with high learning ability are more inclined to acquire schooling and become managers, since the return for their investment is higher. (ii) Individuals with high nonwage income are more inclined to become managers, since their demand for status is higher.

E. The Market-Clearing Conditions

There are three markets in the model. In the labor market, workers exchange the services of their human capital for wages. In the product market, consumers use their wage and nonwage income to buy the numeraire good. There is also a credit market, but we make the simplifying assumption that the credit market need not clear locally and all agents can borrow at an internationally set interest rate, which we take to be zero. Given the interest rate, the market clearing can be described only in terms of the labor market (the product market will clear automatically if the labor market clears). Note that we do not have a separate market for schooling or on-the-job training. The simplifying assumption is that no marketable goods are used in the learning process.

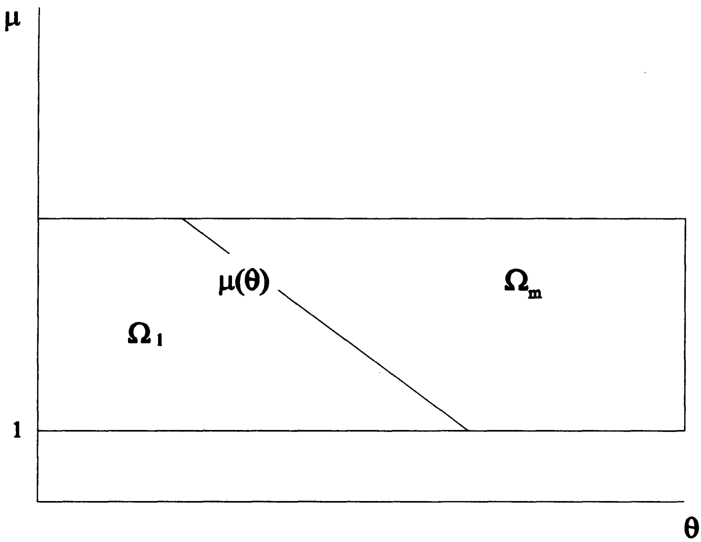

FIG. 1

We define a *perfect-foresight equilibrium* as a sequence $\{(\Omega_{t,l}, \Omega_{t,m}), (w_{t,l}, w_{t,m}), (s_{t,l}, s_{t,h}), g_t\}_{t=1,\ldots,\infty}$, such that, for every t, markets clear and the wages, status, and the growth rate that individuals anticipate are in fact realized.

F. Steady Growth Equilibrium

We define a steady growth equilibrium (SGE) $\{(\Omega_l^*, \Omega_m^*), (w_l^*, w_h^*), (s_h^*, s_l^*), g^*\}$ as a stationary perfect-foresight equilibrium, that is, an equilibrium in which the partition of the labor force is stationary and the growth rate is constant. Our analysis in this paper is restricted to the steady-state equilibrium.

As equation (2) indicates, the steady-state growth rate, g, is uniquely determined by the partition $\{\Omega_l, \Omega_m\}$, which specifies the characteristics of entrants who choose to become laborers and managers. However, the partition itself depends on the growth rate g, which affects lifetime income conditional on ability and occupational choice. We are thus looking for a fixed point of this mapping.

For a given rate of growth, g, and with $r = 0$, the boundary between the two regions Ω_l and Ω_m is the line $\mu(\theta)$ given by

$$\mu(\theta) = \frac{s_l w_l - (s_m - s_l)y(\theta)}{s_m w_m}\Gamma(g), \tag{6}$$

where $\Gamma(g) = (2 + g)/(1 + g)$. All individuals with (μ, θ) such that $\mu \geq \mu(\theta)$ work in the high-skill, high-status occupation, whereas all individuals with (μ, θ) such that $\mu < \mu(\theta)$ work as unskilled workers. The wages, the status levels, and the aggregate profits, which shift the boundary $\mu(\theta)$, are determined endogenously. We can thus establish the location of the boundary $\mu(\theta)$ for any given g and calculate the implied aggregate ability of managers, denoted by $NM(g)$. An SGE is characterized by the requirement $g = aNM(g)$. That is, a constant growth rate is sustainable if the aggregate ability of managers will generate the same growth rate that new entrants anticipate on making their educational and occupational choices.[3]

A basic feature of our model is that an increase in the growth rate g induces the entry of qualified workers into schooling and management; therefore, $aNM(g)$ is an increasing function of g. This is to be expected because an entrant who invests in schooling sacrifices wages in the first period of his life in exchange for higher wages in the subsequent period, and a higher growth rate raises the returns from

[3] The existence of an SGE is guaranteed by the assumptions that $aNM(0) > 0$ and that $aNM(g)$ is bounded from above.

schooling in proportion to the worker's innate ability. Because of the positive feedback between the growth rate and the number of workers choosing the growth-inducing occupation, the model may yield a multiplicity of SGEs. In this paper, however, we assume that $aNM(g)$ has a slope that is less than one (see fig. 2), implying a unique steady state.[4] A sufficient condition for uniqueness is that an increase in the expected growth rate of Δ causes an increase in actual growth of less than Δ (see the Appendix). Since we shall be performing comparative statics exercises, we further assume that the steady state is locally stable or is a saddle steady state. That is, given initial conditions in the neighborhood of the steady state, there is a perfect-foresight equilibrium path that converges to the steady state.[5] In the Appendix we present an analysis of a special case of our model and indicate the conditions that guarantee that the steady-state equilibrium is a saddle point.

III. Social Status and Growth

In this section we analyze the impact of differences in culture on the distribution of talents in society and the steady-state growth rate. In our model, culture is summarized by the parameter δ, which indicates the importance of differences in human capital as sources of social status. One would expect that societies that award higher status to growth-enhancing activities would grow faster. Growth, however, depends not only on the number of workers who choose the growth-enhancing activities but also on their quality. The question, then, is whether or not the high-ability workers are attracted to the growth-enhancing activity when its status rises.

A talented worker may withdraw from school, despite the increased status of this activity, if the relative wages of managers decline or if aggregate profits decline, and therefore, his demand for status diminishes. We thus need to trace the effects of cultural change in a general equilibrium context in which other variables influencing the

[4] Although we believe that multiplicity is generic in this type of model, we assume uniqueness to bypass some difficulties in comparative statics analysis in the presence of multiple steady states. In particular, given initial conditions, there may be different perfect-foresight equilibrium paths, each converging to a different steady state (see Galor 1992). In this case, one cannot perform meaningful comparative statics even locally.

[5] Even if the steady state is unique and locally stable, there may be indeterminacy of the perfect-foresight equilibrium, due to the presence of too many stable roots. This implies that, given initial conditions, there may be more than one path converging to the steady state. In this case, some form of coordination is required to pick a particular path that converges to the steady state. In a steady state that is a saddle point, the perfect-foresight equilibrium path is uniquely determined (see Kehoe and Levine 1990; Galor 1992; Azariadis 1993, chap. 28).

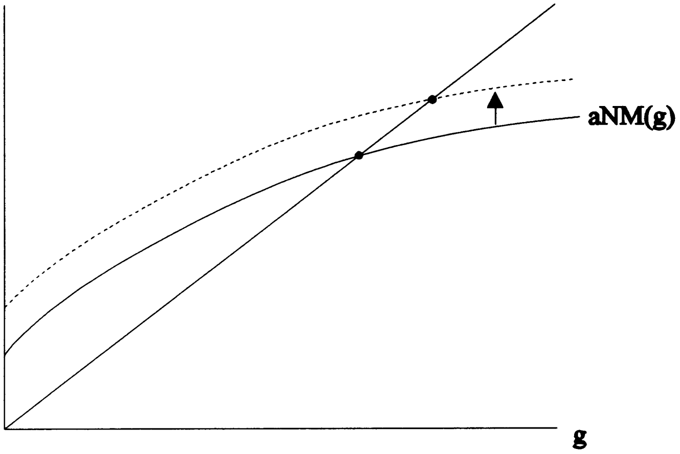

FIG. 2

schooling decision, such as status, wages, and nonwage incomes, are allowed to adjust. We distinguish three aspects of the adjustment process following a cultural change. The first is the impact on the number of entrants who acquire schooling, the second is the impact on the quality of the added workers, and the third is the impact on the difference in quality between those who join and those who leave the high-status occupation.

A. *The Expansion Effect*

The most direct effect of an increased emphasis on social status is an increase in the number of entrants who join the high-status occupations. If the quality of managers remains the same, such an increase implies an increase in the aggregate ability of managers. Consequently, the steady-state growth rate increases. To illustrate circumstances in which only the expansion effect is present, consider the special case in which workers have equal ability, $\mu = \mu^0$, and differ only in their nonwage income. In this case the propensity of a new entrant to acquire schooling and then enter management depends only on his nonwage income, which in turn depends on his share in aggregate profits, θ.

PROPOSITION 1. Consider an economy in which workers vary only by their nonwage income. Then an infinitesimal increase in the emphasis on social status (i.e., a "small" increase in δ) will raise the steady-state number of managers, reduce their relative wage, and increase the steady-state growth rate.

Proof. Since status is a normal good, there is a critical value, θ_0, such that all individuals with θ exceeding θ_0 choose the high-status occupation. The proof proceeds now in two steps. We first prove that, given δ, $NM(g)$ is an increasing function of g. We then show that, for any given g, an increase in δ shifts the function $NM(g)$ up, yielding a higher steady-state growth rate.

i) We want to show that, for any given δ, an increase in g causes θ_0 to decline. Assume, to the contrary, that θ_0 increases. This means that in the steady state there will be fewer managers, and therefore, w_m rises and w_l declines. If an entrant is induced to acquire schooling, the change in output is given by $2Q_1 - \mu^0 Q_2$, where Q_i denotes the partial derivative of Q with respect to its ith argument (i.e., the marginal product). Since, in equilibrium, the lifetime wages of laborers must exceed the lifetime wages of managers, we have $2w_l > \mu^0 w_m$. By profit maximization, we also have $Q_1 = w_1$ and $Q_2 = w_2$. Therefore, shifting workers away from management causes output to increase, and by (2), aggregate profits must also increase. Since status is a normal good and profits have increased, and since w_m has risen but w_l has declined, no worker would willingly switch from management to labor. We thus obtain a contradiction, proving that θ_0 must decline. Hence, $M(g)$ is an increasing function of g.

ii) We want to show that, when g is held fixed, an increase in δ causes θ_0 to decline. When wages and profits are held constant, δ and g have the *same* initial impact, an increased preference for m relative to l indicated by a reduction in θ_0. The indirect effects on wages and profits following this initial impact are also the same in both cases. Thus the proof is similar to that of part i. Q.E.D.

The extent to which changes in the demand for status affect the equilibrium depends on the elasticity of substitution between managers and laborers, captured here by the parameter $\sigma = 1/(\rho - 1)$. If the elasticity is low, the increased demand for status will be partially offset by the reduction in the wages of managers relative to those of workers. In the case of fixed proportions, $\rho = -\infty$, relative wages will change without any change in the number of entrants who acquire schooling.

B. The Dilution Effect

When more entrants are induced to acquire schooling, the added students are likely to be of lower quality and the average quality of managers may therefore decline. To illustrate this effect, consider the case in which workers differ in their ability but all have the same nonwage income. Since workers with higher μ get a higher return for their investment in schooling, there is a critical value of learning ability, μ_0, such that only individuals with ability exceeding μ_0 choose the high-status occupation. Observe that an increase in μ_0 is associated with an increase in the number of laborers and a reduction in the number of managers. In addition, an increase in μ_0 is associated with an increase in the average ability of managers and a reduction in their aggregate ability.

PROPOSITION 2. Consider an economy in which workers vary only by their ability. Then an infinitesimal increase in the emphasis on social status (i.e., a "small" increase in δ) will increase the steady-state number of managers and reduce their average quality and relative wage. However, the aggregate ability of managers and the growth rate will rise.

Proof. The proof is similar to that of proposition 1 and follows the same steps. We first show that an increase in g reduces μ_0, implying that $M(g)$ is an increasing function. We then show that an increase in δ also reduces μ_0, causing $M(g)$ to shift up. There are two minor differences in the proof. The effect of an increase in μ_0 on aggregate output is given by $2Q_1 - \mu_0 Q_2$ multiplied by the density at μ_0. By assumption, the marginal worker is indifferent between the two sectors. Hence, we must have $2w_l > \mu_0 w_m$. By profit maximization, $Q_1 = w_1$ and $Q_2 = w_2$. Therefore, as in the case in which all workers have the same ability, shifting workers away from management must increase output and aggregate profits. In contrast to the previous case, the assumed increase in μ_0 implies that the average ability of managers rises, and by (3), their relative status increases. This, however, only reinforces the contradiction derived in proposition 2. Q.E.D.

C. *The Crowding-out Effect*

We shall now discuss in detail the case in which workers vary both in their learning ability and in their nonwage income. The main new feature is that increased entry measured in the *number* of workers choosing a particular occupation does not necessarily imply an increase in the amount of human capital supplied to this occupation, since workers with low ability but high nonwage income may replace workers with high ability and low nonwage income. To give the maximum scope for this crowding-out effect and to simplify the analysis, we shall analyze here only the case of fixed proportions in which $Q_t = A_t^{1-\gamma}(\min[\beta L_t, M_t])^\gamma$. As noted above, the expansion and dilution effects do not exist under the fixed proportion technology.

Under the assumed technology, the following two conditions must be satisfied in a stationary equilibrium: (i) $\beta L = M$, which restates that firms demand managers and laborers in fixed proportion, and (ii) $\gamma M^{\gamma-1} = (w_l/\beta) + w_m$, which requires that the marginal product of a laborer-manager bundle equals the joint wage costs. Recall that the supply conditions dictate that L is twice the area on the left side of $\mu(\theta)$, whereas M is the area above this line, weighted by μ. Conditions i and ii restrict the possible equilibrium shifts of the line $\mu(\theta)$. Given condition $\beta L = M$, any shift of the line to the right or to the left cannot be an equilibrium shift since it will imply an imbalance between the two types of workers. Thus a shift that maintains equilibrium in the labor market must be either a right rotation (clockwise) or a left rotation of the line $\mu(\theta)$.

LEMMA 1. A right (clockwise) rotation of the line $\mu(\theta)$ implies that L and M decrease, whereas a left rotation implies that L and M increase.

Proof. We shall prove the lemma for a right rotation. The proof for the case of a left rotation is identical. In figure 3 we describe a right rotation of the line $\mu(\theta)$. As a result of such a rotation, workers with high ability (i.e., high μ) move from the high-skill occupation to the low-skill occupation (area A in the figure) and workers with low ability move to the high-skill occupation (area B in fig. 3). In equilibrium, $M = \beta L$. It is therefore sufficient to show that L decreases. Assume, in contradiction, that L increases (or stays the same) in such a case in which A is greater than or equal to B. But now we can see that condition $\beta L = M$ is violated. Not only are the workers in area A who leave the high-skill occupation more numerous than the workers in B who join the high-skill occupation, but they also have higher ability. Hence, M must decline. From this contradiction we can conclude that a right rotation implies a decrease in both L and M. Q.E.D.

Under the fixed proportion technology, L and M must move to-

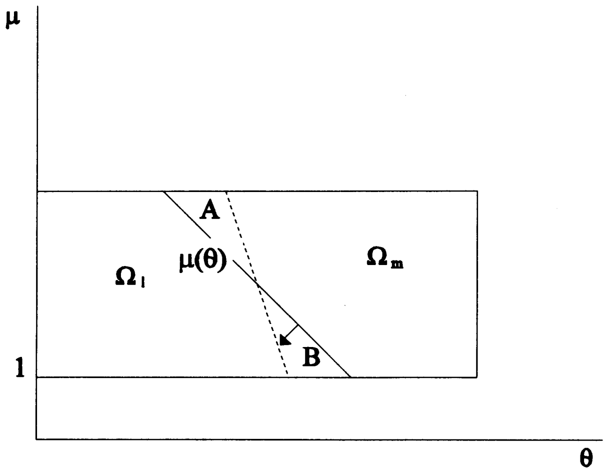

FIG. 3

gether. In addition, several other variables of interest move together with L. Profits increase in L and wages decline with L. Since M increases with L whereas the number of managers must decline, the average ability of managers and their relative status must increase in L. Finally, since a change in L must be associated with a rotation, there is an individual who continues to be indifferent between the two occupations. But if the status of management goes up with L as well as the demand for status (because of an increase in nonwage income), such a person exists only because the relative wages of management decline. The assumption of fixed proportions between managers and workers is thus seen to provide an enormous simplification, allowing us to trace out quite easily all the repercussions of a change in the underlying economic or cultural circumstances.

PROPOSITION 3. Consider an economy in which workers vary both by ability and by their nonwage income and in which management and labor (measured in efficiency units) are demanded in a fixed proportion. Then an infinitesimal increase in the emphasis on social status will increase the steady-state number of managers but *reduce* their aggregate ability and the steady-state growth rate.

Proof. The proof follows the same steps as in propositions 1 and 2. In part i we show that $NM(g)$ is an increasing function. In part ii we show that an increase in δ causes $NM(g)$ to shift down, yielding a lower steady-state growth rate.

i) We want to show that an increase in g causes M to increase. Assume, in contradiction, that M decreases. Because of the assumption of fixed proportions, L also decreases, and by lemma 1, there must be a right rotation of the line $\mu(\theta)$. The reduction in L and M implies that $(w_l/\beta) + w_m$ increases whereas output and profits decrease. The decrease in the aggregate quality M accompanied by an increase in the number of managers as L decreases implies that average ability declines, and thus s_m must go down. Since there is a right rotation, the line $\mu(\theta)$ becomes steeper. The slope of $\mu(\theta)$ is given by

$$\mu'(\theta) = -\frac{(s_m - s_l)\pi}{w_m s_m}\Gamma(g), \tag{7}$$

where $\pi = (1 - \gamma)M$. Clearly, $\Gamma(g)$, given by (6), is a decreasing function of g. Thus for $\mu(\theta)$ to become steeper, w_m must decrease. Since $(w_l/\beta) + w_m$ increases as L decreases, w_l must increase.

We can now establish a contradiction. Consider the intersection of the $\mu(\theta)$ line with the $\mu = 0$ line, which is at $\theta = s_l w_l/(s_m - s_l)\pi$. (Although we assume that all individuals have ability exceeding one, we can make such a hypothetical exercise since $\mu(\theta)$ is a straight line.) Now, since we have a right rotation, this intersection point must move to the left. But this contradicts the analysis above, which indicates that w_l increases whereas s_m and π decrease, implying that the intersection point moves to the right.

ii) We want to prove that an increase in δ causes a reduction in L and M. Assume in contradiction that an increase in δ leads to an increase in L and M. Such a change implies that π increases and $(w_l/\beta) + w_m$ decreases. From lemma 1 we obtain that as L increases, we have a left rotation of the $\mu(\theta)$ line. Such a left rotation implies also that able workers join the high-skill occupation and workers with low μ leave it. Such a change contributes even further to the increase in the status of managers, and thus s_m must increase relative to s_l. Since there is a left rotation of $\mu(\theta)$, the slope of this line decreases. From (7), since both π and $(s_m - s_l)/s_m$ have increased, w_m must increase for the slope to decrease. Now notice that since $(w_l/\beta) + w_m$ decreases, w_l must decrease. Given these changes, it is impossible that there will be individuals who choose to move from the high-skill occupation to the low-skill occupation. The wage of the low-skill occupation decreases whereas both the wage and the status of the high-skill occupation increase. Since π also goes up, the nonwage income of all individuals increases, implying that individuals put an even larger emphasis on status. Thus such a left rotation is impossible. Given this contradiction, we conclude that an increase in δ implies that, for a fixed g, the equilibrium size of the unskilled occupation (i.e., L) decreases, and since $\beta L = M$, the aggregate ability of managers, M, must also decrease. Note, however, that the reduction in L implies that the *number* of managers rises. Q.E.D.

The stark contrast from the two previous cases can be traced to the following features. When workers differ in two characteristics, ability and nonwage income, which influence their occupational choice, it is not true anymore that only high-ability workers take schooling and become managers. Similarly, it is not the case that only high-income workers choose the high-status occupation. Instead, workers with high income and low ability together with workers of high ability and low income are present in the high-status occupation. In proposition 3 we have shown that as the status of schooling and management rises, high-ability, low-income individuals leave the managerial occupation and are replaced by low-ability, high-income individuals.

In the general case, where no restrictions on the distribution or on the technology are imposed, there will be a mixture of the three effects we illustrated. That is, as occupational status becomes more important, a larger number of workers will be induced to acquire schooling and then work as managers. The new managers will generally be of lower quality, and in particular, high-ability, low-income workers will be replaced by low-ability, high-income managers. The net impact of these contrasting effects on output and growth is in general not clear.

IV. Externalities and Social Status

As shown in the previous section, the effectiveness of social status as a corrective mechanism is limited by the collective nature of social status, which may lead to crowding out. Another consequence of the collective feature of occupational status is that the allocation of talent in equilibrium is *inefficient.*

To illustrate the inefficiency of equilibrium, consider subsets of Ω_l and Ω_m, denoted by A and B, respectively, such that the elements in the two sets are arbitrarily close to boundary $\mu(\theta)$. That is, we consider only individuals who are at the margin of indifference. Suppose that all members of A have higher ability (and thus lower wealth) than all members of B. Now, suppose that, for a particular cohort, we exchange these two groups, moving members of A into school and moving members of B into the labor force. If A and B are equal in size, such an exchange has no effect on L but (starting in the subsequent period) M will increase. Because of the fixed proportions technology, current output will remain the same as in the initial equilibrium. However, the growth in knowledge and the status of managers will increase. This means that all subsequent generations, and all the "stayers" in the current generation, gain from the switch. If the difference in ability between the two groups is sufficiently large, these gains will be substantial. By construction, the "movers" in A and B have only a "small" loss in utility. It is therefore possible to compensate the movers and increase the lifetime utility of all members of society, including subsequent generations.

The inefficiency arises because entrants do not take into account the benefits (losses) to other workers resulting from their occupational choices. This inefficiency can be avoided if one could confer social status directly to individuals. In practice, status is based on group characteristics because of informational constraints. There are, however, several complementary mechanisms that may mitigate the collective good aspect of social status.

A person may care more about the opinions of people close to him than about his standing in society at large. If status depends on *within-group* comparisons, then workers of low ability but high wealth may prefer to become laborers, lest their low ability be recognized. This type of self-selection mitigates the crowding-out effect.[6]

[6] The differing implications of the quest for local and global status for the sorting of workers into firms have been analyzed by Frank (1985).

Members of each status group have an interest in regulating quality so as to prevent the dilution effects and the ensuing reduction in status. The history of the professions provides ample evidence for attempts by professional associations to obtain licensing powers and require educational qualifications (see, e.g., McClelland 1991). The existence of group externalities, created by occupational status, may explain why professional associations use schooling requirements, rather than fees, to regulate entry (see Weiss 1985). However, the profession will not choose the *socially* efficient levels of entry and schooling, unless it fully internalizes the impact of schooling on growth.[7]

Another mechanism that may reduce the importance of the crowding-out effect is a positive correlation between nonwage income and ability. In the extreme case in which wealth and ability are perfectly correlated in the population, there is no crowding-out effect since the model is reduced to the one-variable case discussed in Section II. A positive correlation between ability and wealth arises naturally if one considers the dynamics of wealth accumulation. In our model we assume that a person cannot augment or detract from his inherited wealth (e.g., wealth consists of land that cannot be sold but can be rented out). In general, since the more able managers have higher wages, we expect them to bequest more assets to their descendants. These dynamics may give rise to a "Buddenbrook effect," whereby the first generation works in a low-status but high-paying occupation and accumulates wealth, causing the subsequent generations to switch to a high-status, low-wage occupation (see Rubinstein 1987, chap. 3).

V. Wealth Distribution and Growth

In our previous work (Fershtman and Weiss 1993), we have argued that if workers care about status, then new relationships between *economic* variables arise that would not be present under a different social environment. We now wish to illustrate this general point by considering the relationship between the distribution of wealth and growth.

Our basic presumption is that the weight that workers give to nonmonetary rewards such as social status, as compared with monetary

[7] In the second edition of "The Division of Labor in Society," Emile Durkheim expresses this dilemma very clearly, addressing the role of occupational groups: "A moral or juridical regulation expresses, then, social needs that society alone can feel; it rests in a state of opinion, and all opinion is a collective thing, produced by collective elaboration. . . . An occupational activity can be efficaciously regulated only by a group intimate enough with it to know its functioning, feel all its needs, and able to follow all their variations" (1947, p. 5).

rewards in the form of wages, is influenced by their wealth. Our assumptions about consumers' preferences imply that social status is a normal good; that is, as workers become wealthier, they put more emphasis on social status. This assumption creates a link between changes in the wealth distribution and occupational choice that can strongly influence economic growth. In order to illustrate these effects, we assume that workers are uniformly distributed over $[\mu_a, \mu_b] \times [\theta_a, \theta_b]$. We shall then perform a "stretching" with respect to wealth such that workers are uniformly distributed over $[\mu_a, \mu_b] \times [\theta_a - \epsilon, \theta_b + \epsilon]$. We denote the original distribution by $f(\mu, \theta)$ and the stretched distribution by $f_\epsilon(\mu, \theta)$. As in Section II*C*, we assume that the technology requires a fixed proportion of laborers and managers. We shall investigate the effect of increasing wealth inequality (defined as a stretching) on the equilibrium steady-state growth rate.

An increase in inequality raises (reduces) the number of workers above (below) any specified θ, if θ is above (below) the mean $1/2N$. Therefore, if only the relatively wealthy choose to become managers, an increase in inequality will increase their number and raise the demand for status. To make our framework more realistic, we shall consider only the case in which the majority of the workers with the lowest ability, μ_a, work as laborers.[8]

PROPOSITION 4. Consider an economy in which laborers are the majority of workers and management and labor (measured in efficiency units) are demanded in a fixed proportion. Then a higher inequality in the distribution of wealth (defined as a stretching) results in a *lower* steady-state equilibrium growth rate. In the new steady state, the average quality and the social status of managers are lower.

Proof. We shall show that an increase in the wealth variability implies a downward shift of $NM(g)$, yielding an SGE at a lower g. We thus hold g constant and analyze the effect of the stretching on the aggregate ability of workers who acquire schooling and go to management. Let $\mu(\theta)$ be the critical line for the original distribution $f(\mu, \theta)$. We define now the line $m_\epsilon(\theta)$ with respect to the distribution $f_\epsilon(\mu, \theta)$ such that the line $m_\epsilon(\theta)$ implies the same L and M as before the stretching, that is, as defined by the line $\mu(\theta)$, with respect to the distribution $f(\mu, \theta)$. These two lines are depicted in figure 4. Since more than one-half of the workers with the lowest ability, μ_a, are laborers, for low values of μ, the line $m_\epsilon(\theta)$ must be on the right side of the line $\mu(\theta)$ and $\mu'(\theta) > m'_\epsilon(\theta)$. Consequently, there is a worker with characteristics in between the two lines (point j in fig. 4) who

[8] For convenience we make the assumption directly on the equilibrium allocation of workers. We can guarantee that the equilibrium is characterized by such a property by assuming that β is not too large.

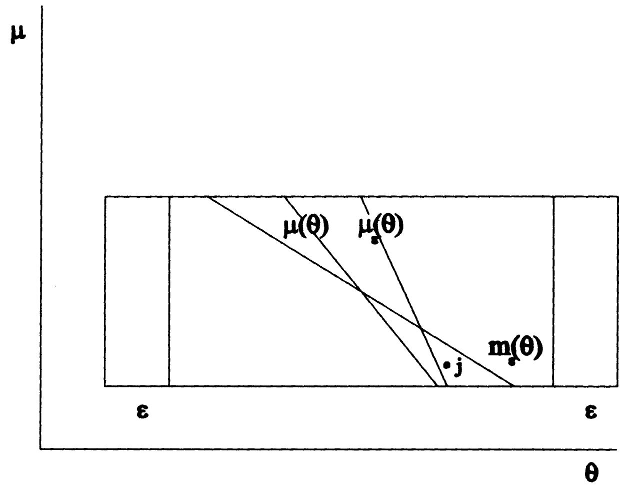

FIG. 4

chose the managerial occupation prior to the stretching and after the stretching switched to the labor occupation.

The line $m_\epsilon(\theta)$ in figure 4 satisfies only one of the equilibrium conditions with respect to the distribution $f_\epsilon(\mu, \theta)$. The integral on the left side times 2β is equal to the integral on the right side weighted by μ. This line, however, does not necessarily reflect the workers' optimal occupational choices. Consider a worker of type j in figure 4. With the original distribution, he optimally chose to work in the managerial sector. After the stretching, he is on the left side of $m_\epsilon(\theta)$, implying that he became a laborer. The definition of the line $m_\epsilon(\theta)$ implies that L and M are unchanged, and thus the partition $m_\epsilon(\theta)$ yields the same status, output, and profits as the equilibrium values prior to the stretching. However, although the same L and M imply that $(w_l/\beta) + w_m$ is unchanged, relative wages might be changed. Thus, for a type j worker to optimally switch from management to labor, w_m must decline and w_l must increase. This, however, yields a contradiction since, by equation (7), such a change implies that the equilibrium partition line becomes steeper, whereas we know that $\mu(\theta)$ is steeper than $m_\epsilon(\theta)$. Thus the line $m_\epsilon(\theta)$ is not the equilibrium partition.

With a by now familiar argument, the SGE with respect to the distribution $f_\epsilon(\mu, \theta)$ is a rotation of the line $m_\epsilon(\theta)$. We now argue that it must be a right rotation. Assume, in contradiction, that there is a left rotation of $m_\epsilon(\theta)$. A left rotation implies an even lower w_l, a higher w_m, higher profits, and a higher status for managers. All these changes make the managerial occupation more attractive to all types of workers. Yet a left rotation implies that we can still find a type j worker who switched from a managerial position to a laborer position, contradicting the incentives above. Thus the equilibrium partition with respect to the distribution $f_\epsilon(\mu, \theta)$, denoted as $\mu_\epsilon(\theta)$, must be a right rotation of $m_\epsilon(\theta)$. From lemma 1, this implies a crowding-out effect that causes a downward shift of $NM(g)$ and a lower equilibrium growth rate. Q.E.D.

The introduction of demand for status provides an additional link between inequality and growth that is different from the usual links discussed in the literature. Typically, this literature emphasizes two types of causal relationships. In one type, inequality of wealth together with an imperfect capital market can reduce investment in human capital (see Galor and Zeira 1993). In the other, redistributive taxation can reduce saving (see Arrow [1979] for an early discussion). Our model suggests an additional effect: equality may enhance growth by reducing the demand for status of the wealthy. Without doubt, there is a strong connection among these different considerations. In particular, borrowing constraints and demand for status imply the same sort of selection into management. Entrants with high wealth but low ability may become managers, simply because of their better access to borrowing. If, in addition, there is a higher demand for status by the wealthy, this tendency will only become stronger.

VI. Concluding Remarks

It is widely held that the quality of the labor force and its allocation among alternative uses play a key role in the process of economic growth (see Lucas 1993). However, this "engine of growth" relies heavily on the occupational and educational choices made by workers in the society. If workers do not have the right incentives, growth may not be forthcoming. Past literature focused mainly on the pecuniary incentives of workers and on the extent to which the returns from investment in human capital can be appropriated (see Lucas 1988, 1993; Becker, Murphy, and Tamura 1990; Becker and Murphy 1992). This paper builds on the assumption that humans are "social animals" and examines the implications of the pursuit of social status in addition to pecuniary rewards. We find that the quest for occupational status may be counterproductive, inducing an inefficient allocation of talent. This result derives from three basic but plausible assumptions: (i) entry into occupations is unrestricted, (ii) the status of an occupation depends on the average characteristics of its members, and (iii) wealthy individuals are more willing to sacrifice wages in favor of status. Under these assumptions, the demand for status induces people of low ability but high wealth to acquire schooling.

While we emphasized the impact of these considerations on the allocation of talent and growth, similar results apply in other cases. If society awards status and honor to its military class, the end outcome may be that "fat" wealthy generals will replace the more courageous ones. Similarly, when members of the clergy have high esteem, they may be, on the average, less virtuous or learned. In all these examples, such outcomes arise only if the crowding-out effect dominates. If the expansion effect dominates, increased status will serve its functional role and raise the level of activities that are socially desirable. However, the inefficiency in the allocation of talent persists.

Members of professional associations often complain about the low social status of their occupation (see, e.g., Haber [1991, chap. 9] and Gispen [1990] on engineers in the United States and Germany in the late nineteenth century). Recently, this complaint has been voiced concerning the impact of feminization on the status of the teaching profession. In most cases, requests to raise occupational status are thinly disguised requests for restricted entry, via academization, and a wage raise. However, to the extent that social evaluations concerning the social contribution of an occupation can be influenced, the likely outcome of increased status is to reduce wages and to induce entry of low-ability workers.

Appendix

The purpose of this Appendix is to present sufficient conditions for uniqueness, local stability, and saddle stability of the steady state. We shall consider, for simplicity, the special case in which all individuals have the same nonwage income but vary according to their ability. Let μ_t denote the ability level such that all entrants at time t who have higher ability choose optimally to become managers.

The basic equations that describe the equilibrium can be written as

$$g_{t+1} = G(\mu_t) \tag{A1}$$

and

$$\mu_t = H(\mu^e_{t+1}, \mu_{t-1}, g^e_{t+1}). \tag{A2}$$

Equation (A1) reproduces the growth equation (2) in the text, implying a negative relationship between the growth rate and μ_t. Equation (A2) is implied by the equalization of the lifetime utility in the two sectors for the marginal worker. Recall that the expected lifetime earning of a new entrant depends on current and future wages, which in turn depend on $(\mu^e_{t+1}, \mu_{t-1}, g^e_{t+1})$. Our model suggests that $H_1 < 0$, $H_2 < 0$, and $H_3 < 0$. We further assume that the impact of changes in expected growth, g^e_{t+1}, on actual growth, g_{t+1}, is less than unity, with μ^e_{t+1} and μ_{t-1} held constant. That is, $G'(\mu_t)H_3 < 1$.

In a perfect-foresight equilibrium, we have $\mu^e_{t+1} = \mu_{t+1}$ and $g^e_{t+1} = g_{t+1}$. Assuming perfect foresight and using (A1) to eliminate g_{t+1} and μ_{t-1}, one can rewrite (A2) as

$$\mu_{t+1} = F(\mu_t, g_t), \tag{A3}$$

where $F_1 = [1 - G'(\mu_t)H_3]/H_1 < 0$ and $F_2 = -H_2/G'(\mu_t)H_1 > 0$.

The dynamics of the system (A1) and (A3) are described in a phase diagram (fig. A1). The arrows of motion point toward the unique steady state, suggesting stability. However, because of the discrete dynamics and the possibility of overshooting, the system is not necessarily stable and further conditions are required to guarantee stability.

Let (g, μ) be an SGE satisfying $g = G(\mu)$ and $\mu = F(\mu, g)$. Consider the linear approximation of equations (A1) and (A3) and examine the roots of the characteristic equation. If the system has real roots, they must satisfy $\lambda_1\lambda_2 = -F_2G' > 0$ and $\lambda_1 + \lambda_2 = F_1 < 0$. Thus λ_1 and λ_2 are both negative, indicating oscillatory behavior around the steady state. More specifically, we have the following classification: If $1 + F_1 - F_2G' < 0$, one root is above -1 and the other below -1, indicating a saddle point. If $1 + F_1 - F_2G' > 0$ and $F_1 > -2$, then both roots exceed -1 and the solution is locally stable. If $1 + F_1 - F_2G' > 0$ and $F_1 < -2$, the solution is unstable.

We can now clarify the role of the assumption that $G'(\mu_t)H_3$ is less than unity. This assumption, which constrains the impact of expected growth on realized growth, is sufficient to guarantee that the function $aNM(g) = G[H(G^{-1}(g), G^{-1}(g), g)]$, drawn in figure 2, has a slope that is less than one, and therefore, the steady state is unique. However, it is not sufficient to pin down the dynamic path starting from a given initial condition, μ_{t-1}. It is easy to verify that all three cases discussed above (i.e., saddle, local stability, and local instability) are compatible with the assumption that $G'(\mu_t)H_3 < 1$. Thus

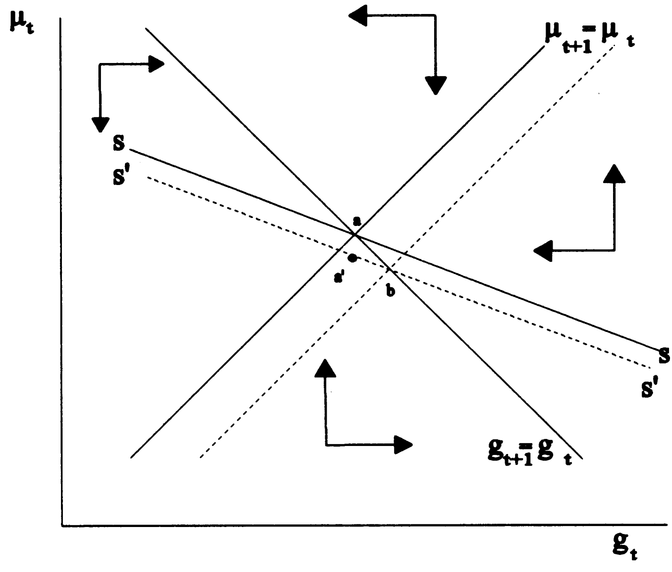

FIG. A1

meaningful comparative statics require some stronger assumptions that guarantee that changes in parameters, such as taste for status, not only shift the steady-state value but also move the economy to the new steady state.

The most convenient assumption is the one that leads to a saddle, that is, $1 + F_1 - F_2G' < 0$ or, equivalently, $1 - G'H_3 > -H_1 - H_2$. This assumption not only guarantees a unique steady state but also implies that, starting at a given initial condition, there is a unique perfect-foresight equilibrium path. This path (obtained by setting the weight of the unstable root to zero) is indicated by the line *ss* in figure A1. In this case, the dynamic adjustment is quite simple to describe. An increase in the demand for status shifts the locus $\mu_{t+1} = \mu_t$ to the right. Associated with the new steady state, there is a lower unique path that converges to it, indicated by $s's'$. Thus the economy will first jump to a lower μ, indicating that more entrants choose a career in management and then oscillate around the new steady state, approaching it asymptotically.

References

Arrow, Kenneth J. "Political and Economic Evaluation of Social Effects and Externalities." In *Frontiers of Quantitative Economics,* edited by Michael D. Intriligator. Amsterdam: North-Holland, 1971.

———. "The Trade-off between Growth and Equity." In *Theory for Economic Efficiency: Essays in Honor of Abba P. Lerner,* edited by Harry I. Greenfield et al. Cambridge, Mass.: MIT Press, 1979.

Azariadis, Costas. *Intertemporal Macroeconomics.* Oxford: Blackwell, 1993.

Banerjee, Abhijit V., and Newman, Andrew F. "Occupational Choice and the Process of Development." *J.P.E.* 101 (April 1993): 274–98.

Becker, Gary S., and Murphy, Kevin M. "The Division of Labor, Coordination Costs, and Knowledge." *Q.J.E.* 107 (November 1992): 1137–60.

Becker, Gary S.; Murphy, Kevin M.; and Tamura, Robert. "Human Capital, Fertility, and Economic Growth." *J.P.E.* 98, no. 5, pt. 2 (October 1990): S12–S37.

Bernheim, B. Douglas. "A Theory of Conformity." *J.P.E.* 102 (October 1994): 841–77.

Cole, Harold L.; Mailath, George J.; and Postlewaite, Andrew. "Social Norms, Savings Behavior, and Growth." *J.P.E.* 100 (December 1992): 1092–1125.

Davis, Kingsley, and Moore, Wilbert E. "Some Principles of Stratification." *American Sociological Rev.* 10 (April 1945): 242–49.

Duncan, Otis Dudley. "A Socioeconomic Index for All Occupations." In *Occupations and Social Status,* edited by Albert J. Reiss et al. New York: Free Press, 1961.

Durkheim, Emile. *The Division of Labor in Society.* 2d ed. Glencoe, Ill.: Free Press, 1947.

Elster, Jon. "Social Norms and Economic Theory." *J. Econ. Perspectives* 3 (Fall 1989): 99–117.

Featherman, David L., and Stevens, Gillian. "A Revised Socioeconomic Index of Occupational Status: Application in Analysis of Sex Differences in Attainment." In *Social Structure and Behavior: Essays in Honor of William Hamilton Sewell,* edited by Robert M. Hauser et al. New York: Academic Press, 1982.

Fershtman, Chaim, and Weiss, Yoram. "Social Status, Culture and Economic Performance." *Econ. J.* 103 (July 1993): 946–59.

Frank, Robert H. *Choosing the Right Pond: Human Behavior and the Quest for Status*. Oxford: Oxford Univ. Press, 1985.

Galor, Oded. "A Two-Sector Overlapping-Generations Model: A Global Characterization of the Dynamical System." *Econometrica* 60 (November 1992): 1351–86.

Galor, Oded, and Zeira, Joseph. "Income Distribution and Macroeconomics." *Rev. Econ. Studies* 60 (January 1993): 35–52.

Gispen, Kees. "Engineers in Wilhelmian Germany: Professionalization, Deprofessionalization and the Development of Nonacademic Technical Education." In *German Professions, 1850–1950*, edited by Geoffrey Cocks and Konard H. Jarausch. Oxford: Oxford Univ. Press, 1990.

Haber, Samuel. *The Quest for Authority and Honor in the American Professions, 1750–1900*. Chicago: Univ. Chicago Press, 1991.

Hirsch, Fred. *Social Limits to Growth*. Cambridge, Mass.: Harvard Univ. Press, 1976.

Hodge, Robert W.; Siegel, Paul M.; and Rossi, Peter H. "Occupational Prestige in the United States: 1925–1963." In *Class, Status, and Power: Social Stratification in Comparative Perspective*, 2d ed., edited by Reinhard Bendix and Seymour Martin Lipset. New York: Free Press of Glencoe, 1966.

Kehoe, Timothy J., and Levine, David K. "The Economics of Indeterminacy in Overlapping Generations Models." *J. Public Econ*. 42 (July 1990): 219–43.

Lucas, Robert E., Jr. "On the Mechanics of Economic Development." *J. Monetary Econ*. 22 (July 1988): 3–42.

———. "Making a Miracle." *Econometrica* 61 (March 1993): 251–72.

McClelland, Charls. *The German Experience of Professionalization*. Cambridge: Cambridge Univ. Press, 1991.

Marshall, Thomas Humphrey. *Class, Citizenship, and Social Development: Essays*. Chicago: Univ. Chicago Press, 1977.

Murphy, Kevin M.; Shleifer, Andrei; and Vishny, Robert W. "Income Distribution, Market Size, and Industrialization." *Q.J.E*. 104 (August 1989): 537–64.

———. "The Allocation of Talent: Implications for Growth." *Q.J.E*. 106 (May 1991): 503–30.

Perkin, Harold J. *The Rise of Professional Society: England since 1880*. London: Routledge, 1989.

Persson, Torsten, and Tabellini, Guido. "Is Inequality Harmful for Growth?" *A.E.R*. 84 (June 1994): 600–621.

Rubinstein, William D. *Elites and the Wealthy in Modern British History: Essays in Social and Economic History*. Sussex: Harvester, 1987.

Treiman, Donald J. *Occupational Prestige in Comparative Perspective*. New York: Academic Press, 1977.

Veblen, Thorstein. *The Theory of the Leisure Class: An Economic Study of Institutions*. London: Allen and Unwin, 1925.

Weber, Max. *Economy and Society: An Outline of Interpretive Sociology*. Berkeley: Univ. California Press, 1978.

Weiss, Yoram. "The Effect of Labor Unions on Investment in Training: A Dynamic Model." *J.P.E*. 93 (October 1985): 994–1007.

Weiss, Yoram, and Fershtman, Chaim. "On the Stability of Occupational Rankings." *Rationality and Society* 4 (April 1992): 221–33.

Wiener, Martin J. *English Culture and the Decline of the Industrial Spirit, 1850–1980*. Cambridge: Cambridge Univ. Press, 1981.