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Status Aspirations, Wealth Inequality, and Economic Growth

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Abstract

This paper argues that an increase in the inequality of wealth prompts a stronger quest for status that in turn fosters the accumulation of wealth. It proposes a measure for an individual's want of social status. For a given level of a population's wealth, the corresponding aggregate measure of want of social status is shown to be positively related to the Gini coefficient of wealth inequality. Hence, the Gini coefficient and growth are positively correlated, holding the population's wealth constant.

The relationship between inequality in the distribution of wealth and growth is not akin to the causal direct links between technological advancement and growth, or between per worker capital and growth. Thus, there is an understandable need to identify an intervening variable and lay out the associated chain of interactions. This demand has recently been met by several creative suppliers. Zweimüller (2000) introduces the incentive to innovate and the demand for innovation as the intervening variable between wealth inequality and growth. With a hierarchy of wants and wealth concentrated in the hands of a small group of wealthy people, only the members of this group buy the product of the most recent innovator. Consequently, the market for his product is small. A redistribution from the wealthy to the poor that would leave the wealthy rich enough to continue buying the product, but at the same time enable the poor to buy the product, would facilitate a faster increase in the size of the market for the product, increase the profitability of innovations, and foster growth. To Fishman and Simhon (2002) the intervening variable of choice is the division of labor. When increased specialization requires the investment of real resources, borrowing is constrained and capital markets are incomplete, individuals who command little wealth may not be able to invest in specialization. Hence, economies with a highly unequal distribution of wealth may not be able to achieve a division of labor that is conducive to growth. Perhaps the most intriguing of the recent forays is that of Corneo and Jeanne (2001) who single out the quest for social status as the intervening variable between wealth inequality and growth. Succinctly put, their argument is as follows: "By increasing the dispersion of wealth levels, more inequality discourages those who are relatively poor from catching up with the rich in the contest for social status. In turn, this weakens the incentives for the relatively rich to accumulate wealth in order to defend their social status. As a consequence, the status motive inducing people to accumulate wealth is weaker for everyone under a more unequal distribution of wealth. The resulting rate at which aggregate wealth is accumulated is, therefore, slower" (p. 284). The purpose of this paper is to suggest an appealing and alternative measure of social status and to show that the incorporation of this measure might give rise to an outcome that is the opposite of the result eloquently derived by Corneo and Jeanne.

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Corneo and Jeanne's measure of the social status of individual i, whose wealth is w_i, is the fraction of those whose wealth is less than or equal to the wealth of i. If $F(\cdot)$ is the continuous cumulative distribution function of wealth, then, according to Corneo and Jeanne, i's rank in the wealth distribution is given by $F(w_i)$. The intensity of the incentive of i to "respond" to his rank is determined by $F(w_i)$. I find it more convenient to use the index $1 - F(w_i)$, the fraction of those in the population whose wealth is higher than w_i.

Consider a population that consists of two individuals whose wealth levels are $w_1 = 100$ and $w_2 = 100$. In this population, no individual should be expected to act in any way to improve his social status because each and every individual enjoys the highest possible social status: $1 - F(w_i) = 0 \ \forall i$. Suppose, alternatively, that the wealth levels are $w_1 = 100$ and $w_2 = 101$. While individual 2 has the highest possible social status and, as before, should not be expected to act in any way to improve his status, individual 1, with $1 - F(w_1) = \frac{1}{2}$, can secure a status gain if his level of wealth rises to 101. The population-wide incentive to accumulate wealth is higher when the wealth distribution is unequal (100, 101) than when it is equal (100, 100). Consider next a third configuration of incomes: $w_1 = 100$ and $w_2 = 200$. While the rank measure $1 - F(w_i)$ remains unchanged $(1 - F(w_1) = \frac{1}{2}, 1 - F(w_2) = 0)$, it is utterly unlikely that individual 1 will be indifferent between having 100 in a (100, 200) population and having 100 in a (100, 101) population.

The first tentative conclusion is that the crude rank measure $1 - F(w_i)$ is not sufficiently sensitive to all the rank-related information. A properly sensitive measure can be obtained when the proportion of individuals who are wealthier than the individual whose wealth is w, $1 - F(w)$, is weighted (multiplied) by the mean excess wealth of these individuals, $E(x - w|x > w)$, such that a given proportion of wealthier individuals who are little wealthier will confer a weaker sense of social status deprivation, SSD, than the same given proportion of wealthier individuals who are a great deal wealthier.[1] Indeed, since for any finite w, $SSD(w) \equiv [1 - F(w)]E(x - w|x > w) = \int_w^\infty [1 - F(x)]dx \neq 1 - F(w)$,[2] the revised elaborate measure of "want of social status" will be adversely affected not only by a rise in the share of individuals in the population who are wealthier than the reference individual (the individual whose wealth is w), but also by a rise in the level of wealth of any of these individuals.

Given the elaborate measure of lack of social status, SSD, do individuals who are—in terms of this measure—more deprived, more strongly inclined to exert effort in order to accumulate wealth? A comparison of 100 with 200 brings about greater dismay than a comparison of 100 with 101, which in turn invites and induces a greater effort to reduce the associated social status deprivation. On the other hand, 100 compared to 101 requires a smaller effort to erase the felt social deprivation than 100 compared to 200, perhaps rendering the exertion of the requisite effort more likely. Corneo and Jeanne are of the opinion that it is more likely that effort will be spent in the (100, 101) case than in the (100, 200) case, which prompts them to conjecture that increased inequality is detrimental to wealth accumulation. Yet, as long as the set of the two individuals constitutes the reference group for each of the two individuals, effort exertion will increase in the level of social status deprivation of the lower-wealth individual. Given the tension between two perspectives that are logically appealing yet competing, consulting evidence that bears on the issue could be of help. Three pieces of evidence come readily to mind. They originate in a study of migration in response to relative deprivation, in a case study of the effort exerted by Japanese fishermen, and in an analysis of the structure of performance incentives in career games and other contests. As it turns out, these three studies suggest that effort is *rising* in the level of status deprivation rather than declining.

A study of the migration response to relative deprivation by Mexican households, where relative deprivation is measured exactly as SSD, except that income replaces wealth, reveals that when "absolute income is controlled for, relatively deprived households are more likely to engage in international migration than are households more favourably situated in their village's income distribution" (Stark, 1993, p. 160). The evidence is *not* that households that are more relatively deprived are more likely to migrate. Rather, the more relatively deprived households are more likely to have a household member migrating, while the household itself remains at the village of origin which, in turn, continues to constitute the household's reference group. The purpose of migration from a household is to reduce the relative deprivation sensed by the household *at origin*. A comparison of three groups of Japanese fishermen (Gaspart and Seki, 2003) suggests that a larger within-groups heterogeneity (in terms of fish-catching performance) results in the lower-performing members of the group exerting more fishing effort. An analysis of the pay structure in corporations and of the prize structure in sport tournaments suggests that in order to preserve performance incentives, rewards are raised as rungs are stepped up. Stark (1990, p. 216) argues that "the intensity of effort to move up depends positively on how much relative deprivation there is to be gotten rid of. As one climbs the ladder, the proportion of those whose rank is higher declines. To counter the erosion of relative deprivation, it is therefore necessary to *increase* the second term; that is, the mean excess income, hence top prizes, must increase." Stark shows that the salary structure of executives, the variation across salary structures, the structure of prize money by rank in golf tournaments, as well as other architectures of pay and rewards, share the feature of "elevating the top prizes [so as to lengthen] the ladder for higher-ranking contestants" (Rosen 1986, p. 713). That higher-ranked positions are rewarded by a higher pay because such positions entail rising levels of responsibility is not the issue. Rather, the question that the analysis has sought to address is why is it that the payment *increments* rise as one climbs the ladder?

It is possible to sum up the individual wants of social status in order to obtain an aggregate measure of the population-wide want of social status, TSSD. It is further possible to show that this measure is *positively* related to the Gini coefficient of inequality of the distribution of wealth, G.[3] Specifically, it is shown in appendix 2 that $(\Sigma_{i=1}^{n} w_i) \cdot G = TSSD$, where w_i is the level of wealth of i, $i = 1, \dots, n$. We next present an example that illustrates our main idea in a setting in which there are three (rather than two) individuals, and wherein the total level of wealth is held constant. Consider the following three configurations of income:

$$P_1 = \left(\tfrac{1}{10}, \tfrac{45}{100}, \tfrac{45}{100}\right);$$

$$P_2 = \left(\tfrac{1}{10}, \tfrac{4}{10}, \tfrac{5}{10}\right);$$

$$P_3 = \left(\tfrac{1}{10}, \tfrac{3}{10}, \tfrac{6}{10}\right).$$

Since $\Sigma_{i=1}^{3} w_i = 1 \forall P_i$, we have that $G = TSSD = \frac{7}{30}$ for P_1; $G = TSSD = \frac{8}{30}$ for P_2; and $G = TSSD = \frac{10}{30}$ for P_3. In all three configurations, the individual with wealth $\frac{1}{10}$ is equally relatively deprived and, hence, will exert the same level of effort. But the Gini coefficient is not equal across all configurations. As constructed, there is a higher Gini coefficient in P_3 than in P_2 and, indeed, a higher relative deprivation for the second individual in P_3 than in P_2—hence a stronger inclination by him to exert effort. Thus, we infer that a higher Gini coefficient is associated with a stronger inclination to exert effort in order to accumulate wealth for the population as a whole, even though the higher TSSD does not arise from a higher SSD for all the individuals concerned. Since a higher TSSD reflects a stronger intensity of the motive to accumulate wealth for a given level of a population's wealth, it follows that the Gini coefficient and growth will be positively correlated, holding the population's wealth constant. Corneo and Jeanne point to a negative correlation. Presumably further reflection and additional study of how the preference for improved social status and economic growth interact are warranted.

Appendix 1

We provide a proof that social status deprivation, SSD, can be written either as $\int_w^\infty [1 - F(x)]dx$ or as $[1 - F(w)] \cdot \mathrm{E}(x - w|x > w)$.

From integration by parts we obtain that

$$\int_w^\infty [1-F(x)]dx = [1-F(x)]x\Big|_w^\infty + \int_w^\infty xf(x)dx.$$

Since, as shown below,

$$\lim_{x\to\infty}[1-F(x)]x = 0 \text{ and since } f(x|x>w) = \frac{1}{1-F(w)}f(x),$$

it follows that

$$\begin{aligned}\int_w^\infty [1-F(x)]dx &= -[1-F(w)]w + [1-F(w)]\int_w^\infty xf(x|x>w)dx \\ &= [1-F(w)]\cdot[E(x|x>w)-w] \\ &= [1-F(w)]\cdot E(x-w|x>w).\end{aligned}$$

In order to show that $\lim_{x\to\infty}[1-F(x)]x = 0$, we note that

$$1-F(x) = P(X \geq x) \leq P(|X| \geq x) \leq \frac{VarX}{x^2},$$

where the last inequality is Chebyshev's inequality. Upon multiplying the end sides by x and taking limits we obtain that for a finite variance:

$$0 \leq \lim_{x\to\infty} x[1-F(x)] \leq \lim_{x\to\infty}\frac{VarX}{x} = 0. \qquad \square$$

Appendix 2

We provide a proof that the aggregate, population-wide want of social status, TSSD, is equal to the population's wealth times the Gini coefficient of inequality of the distribution of wealth. We refer to the discrete case.

Let the levels of wealth of the n individuals who constitute the population be ordered:

$$W = \{w_1 \leq w_2 \leq \ldots \leq w_n\}.$$

Define the want of social status of an individual whose wealth level is w_i, $i = 1, 2, \ldots, n-1$ as

$$SSD(w_i) = \frac{1}{n} \sum_{j=i+1}^{n} (w_j - w_i)$$

where it is understood that $SSD(w_n) = 0$.

Therefore, the aggregate want of social status is

$$TSSD = \frac{1}{n} \sum_{i=1}^{n-1} \sum_{j=i+1}^{n} (w_j - w_i).$$

The Gini coefficient is defined as

$$G = \frac{\frac{1}{2n^2} \sum_{i=1}^{n} \sum_{j=1}^{n} |w_i - w_j|}{\overline{w}}$$

where $\overline{w} = \frac{1}{n} \sum_{i=1}^{n} w_i$.

Since

$$\sum_{i=1}^{n} \sum_{j=1}^{n} |w_i - w_j| = 2 \sum_{i=1}^{n-1} \sum_{j=i+1}^{n} (w_j - w_i),$$

it follows that

$$\overline{w} G = \frac{1}{2n^2} 2 \sum_{i=1}^{n-1} \sum_{j=i+1}^{n} (w_j - w_i)$$
$$= \frac{1}{n^2} \sum_{i=1}^{n-1} \sum_{j=i+1}^{n} (w_j - w_i),$$

or that

$$\left(\sum_{i=1}^{n} w_i \right) G = \frac{1}{n} \sum_{i=1}^{n-1} \sum_{j=i+1}^{n} (w_j - w_i) = TSSD. \qquad \square$$

When the wealth levels are 100 and 101, $G = \frac{1}{402}$ and $TSSD = \frac{1}{2}$, whereas when the wealth levels are 100 and 200, $G = \frac{1}{6}$ and $TSSD = 50$. A higher G is associated with a higher $TSSD$.

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Notes

1. This measure is extricated from a large body of work by social psychologists, especially Runciman (1966). Based on that work, a set of axioms was formulated and several propositions were stated and proved, yielding the exhibited formula of SSD. For a detailed exposition see Stark (1993).
2. The proof is in appendix 1.
3. The derivations are in appendix 2.