INCOME INEQUALITY, SOCIAL STATUS AND GROWTH

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ABSTRACT

The demand for status provides an important link between inequality and economic growth. We demonstrate that status impatience and current economic status jointly determine the household level of time preference, savings rates, and future economic status. This paper additionally illustrates the relationship between rising stock prices, assets, and income distribution using an endogenous growth model with social status impatience and endogenous time preference. The model yields that distribution is exclusively determined by the pattern of status impatience across households.

INTRODUCTION

Does growth create more or less equality and do unequal societies grow more or less slowly than equal ones? Economists have pondered this question since Adam Smith. In the 1950s, Kuznets (1955) suggested that in developing countries, growth initially increases the gap between the rich and the poor, but eventually as economies become richer the gap would close.

Any attempt to explain cross-country differences in growth must look at economic incentives. The standard approach consists of specifying preferences for the agents and deriving the growth path implied by optimizing behavior on the part of agents. Typically, a representative agent model is studied in which the agent's decision consists of choosing the entire time path of consumption and labor effort. Differences across countries are explained by the differences in their physical or human endowment. These attempts have not been completely successful since there is a large residual that cannot be explained by such differences.

Many social scientists are troubled by the extent to which economists ignore individuals' relative position in society i.e. status.[1] Some economists are sympathetic to the concern that models that omit such factors may abstract from important determinants of economic behavior. The reluctance to include relative position in society and status in models stem in large part from a belief that if one is allowed to put status into agents' utility functions, then it is possible to explain anything. It is assumed that an agent's utility is affected by non-market decisions as well as by the goods and services he acquires in the market and directly consumes. We interpret an agent's status as a ranking device that determines how well he or she fares with respect to the allocation of non-market goods.[2]

In the standard consumption-savings model, the agent's incentive to save (invest) stems from the increased future consumption that would result. Though this is possibly the most important incentive to save, there is also an alternative reason.

The rich care about increasing their net worth because their utility depends on both the absolute level of their wealth and relative wealth. Taking account of this additional incentive to save qualitatively changes the nature of optimizing behavior in a growth model. In this paper, we present the outline of a model in which people care about their relative position in society as well as their level of wealth.

In particular, we study the relationship between income distribution and growth via the stock market variable, i.e., (1) what are the effects of the concentration of income and stock prices on economic growth and (2) what are the determinants of long run distribution of income and wealth. We try to explain the relationship between rising stock prices and asset and income distribution using an endogenous growth model with social status impatience and endogenous time preferences.

Social inequality is reflected in the economic world as well. Higher income groups tend to consume more status oriented non-market goods. Thus, we additionally examine how the across-household pattern of impatience or intertemporal tastes regarding economic status affects the distribution of wealth and the rate of economic growth.

PAST LITERATURE

In the 1950s, economic growth was hypothesized to be a function of the savings rate to the capital-output ratio. The higher the saving rate, the higher is the rate of output growth. As a result, income inequality was thought to promote growth because of the high marginal propensity to save of the rich. Later growth models recognized the role of technical progress while still taking variables such as the saving rate, technology, population growth, and the depreciation rate as exogenous. More recent growth models endogenized many of these variables to better explain economic growth.

These "endogenous growth" models, consider the effects of human capital as well as income inequality to provide a more complete view of economic growth. However, they fail to explain the determinants of inequality or the role of social status in the growth process. The demand for status provides a link between inequality and growth, which is quite different from the usual links discussed in the literature. Since the rich demand status, a transfer of income to this group raises the demand for status, which may cause a reduction in growth.

Income and wealth inequality in the United States has increased sharply since 1950. Over fifty percent of total family income and ninety percent of total household wealth is concentrated in the top quintile of households. From 1970 to 2000, the gini coefficient increased by nearly one third, from 0.353 to 0.460. Over this same period, the Dow Jones Industrial Average increased more than ten fold from 838.92 to 10786.85.

According to Wolff (2003), the combination of relatively slow inflation, rapidly rising stock prices relative to housing prices, and rising income inequality have led to a sharp rise in wealth inequality in the U.S. The top ten percent of the households account for approximately ninety percent of the outstanding stock shares in 2003. A rise in the distribution of wealth in favor of the upper classes will drive up stock prices. Hence the relationship between income inequality, wealth distribution, and stock markets, may have serious consequences on economic growth.

In a capitalist economy, stock market performance serves as a barometer of market psychology or confidence. It also influences the overall performance of the financial sector of an economy and acts as an important input in the aggregate production process. Given an economy consisting of households with different time preferences, an increase in economic inequality will be associated with an increase in the demand for stocks, because the rich would have a higher propensity to accumulate assets than the poor. Therefore, redistribution towards greater inequality will result in a higher aggregate demand for stocks and a higher stock price. Hence, studying the relationship between inequality in wealth distribution and its consequences on the stock market and growth is the main purpose of this paper.

Earlier studies on income distribution and growth in the endogenous growth literature explored four main channels. First, the "fiscal policy approach" where Alesina and Rodrik (1994), Bertola (1993), Persson and Tabellini (1994), Moraga and Vidal (2004) and others studied how income distribution affects growth via its effects on government expenditure and taxation. Second, the "sociopolitical instability" approach where Alesina and Perotti (1994), Venieris and Gupta (1982, 1986), and Barro (2000) find that in more unequal societies individuals are more prone to engage in rent-seeking activities or other manifestations of sociopolitical instability, such as protests and coups. They show this via channels of political representation. A third view, the "borrowing constraint and investment in education," approach of Galor and Zeira (1993) and Cardak (2004), finds that if wealth is distributed more equally, more individuals are able to invest in human capital, and consequently growth is higher. Alternately, Becker, Murphy and Tamura's (1990) "joint education/fertility decision" approach demonstrates that at sufficiently high levels of human capital, an increase in human capital leads to less fertility and higher investment in human capital, which in turn leads to higher growth.

The relationship between social status and economic behavior is a question that has concerned institutional and mainstream economists alike over the last century as evidenced in the work of Veblen (1899), Duesenberry (1949), Frank (1985), Basmann et. al. (1988), Cole et. al (1992). More recently, in Fershtman et al. (1996), Burgstaller and Karayalcin (1996), Veeramacheneni and Vogel (2002) and Hopkins and Kornienko (2004), high relative wealth is examined as an end in itself, or in other words, the object of economic pursuit by households. They find that high relative wealth relates positively with the consumption of status oriented non-market goods.

THE MODEL[3]

From the time of Veblen (1899), economists have studied how one's relative economic standing affects the economic behavior and social status. They analyzed how high relative wealth can become an object of economic pursuit by households. High relative wealth relates positively with consumption of status oriented non-market goods. We show that high relative wealth has implications for the theories of both endogenous time preferences and endogenous growth. Our analysis demonstrates how status impatience and current economic status jointly determine at the household level time preference, savings and future economic status, and at the economy level, average time preference, stock prices, growth and wealth distribution, using a reduced form felicity function in absolute and relative consumption of market goods.

This model differs from the others by analyzing (i) how the distribution of impatience levels with respect to status (relative consumption) affects the distribution

of steady state assets, incomes and consumption and (ii) to look at the affects of changes in relative levels of status impatience on the stock prices. Therefore from (i) and (ii) we can derive the correlation between stock prices, incomes and asset distribution. The analysis of the stock market is undertaken in the presence of adjustment costs to investment. The model yields a well-defined and non-degenerate distribution of wealth (thus, of income and consumption), because time preference as opposed to status impatience is endogenous. Distribution is exclusively determined by the pattern of status impatience across households. It will, in particular, remain unaffected by a rearrangement of initial endowments.

We find a solution to the above puzzle that is additionally compatible for conditions of unbounded growth with recursive time preferences. The solution does not require abandonning constant returns to scale, i.e. the AK- model, and is free of the drawbacks of (asymptotic) time-preference fixity. The solution itself arises as a consequence of endogenous growth within a framework in which time preference rates are fixed but unequal. In such a world the aggregate long-run consumption share of all agents but the most patient will go to zero.

In endogenous growth, fixed but unequal time preference rates entail an increasingly unbalanced distribution of consumption, notwithstanding the fact that the level of consumption is continuously increasing for each agent. Therefore to prevent distributive degeneracy, an agent's rate of time preference must be made responsive to their consumption status and not the level of their consumption, that is, the level of his or her consumption relative to aggregate consumption. In particular, the time preference has to increase as an agent's perceived share in aggregate consumption increases, whatever happens to the level of individual consumption, for reasons of stability.

To express these ideas we adopt a model with a single-good system with linear technology. The economy is populated by two groups of intertemporal utility-maximizing households, who differ in their exogenous status impatience, yet whose time preference is status conscious and tends to equalize overtime, making possible a well-defined steady state with endogenous growth.

Consider a closed economy that produces a single output using a single reproducible input with uniform technology and stocks.

$$Q(t) = a^{-1}X(t) \qquad (1)$$

Where an asterisk denotes the second agent, t-time, Q is the aggregate flow of output, X is the aggregate input stocks accumulated from past output, and 'a' is the fixed input-output coefficient. Though physically homogenous, input stocks are immobile once installed and the only way to move them is to transform them back into output through a costly process of disinvestment or through depreciation. These equity claims are costless when traded in a stock market. The two groups of infinitely lived capitalists are equity holding non-working dynastic households.

Consumption status or relative consumption c, is defined as

$$c(t) = C(t)/C^{a}(t) \qquad (2)$$

Where C(t) is consumption at time t by the representative group one capitalist, given that he perceives across group aggregate consumption to be $C^{a}(t)$. Since the overall number of capitalists is fixed (at two), aggregate consumption C^{a} and per-capita consumption $C^{a}/2$ move proportionately and will be interchangeable.

The agents under consideration maximize lifetime utility, which is the discounted sum of instantaneous felicities. An increase in felicity has two possible sources. It may be due to a rise in consumption status c at a given level of consumption C, or it may result from growth in C at given c, that depends on the shift parameter ω, which measures the degree of the household's impatience. Following Epstein and Hynes (1983), ω represents the status impatience parameter. The model's critical behavioral assumption is that the two groups of households are indistinguishable except for the degree of their status impatience,

$$\omega < \omega^* \tag{8}$$

Where ω is an exogenous impatience parameter and an asterisk refers to the second group. Group-one capitalists thus are less impatient about enjoying high current, as opposed to high future consumption status than their group-two counterparts.

Under decentralized optimization the economy converges to a steady state. In steady state the more patient agent will have higher levels of consumption and higher wealth. The impatience parameters ω, ω^* determine the long run distribution of income and wealth. In an intertemporal model, two agent model, any agent who is patient saves more today and therefore can have greater consumption in the second period.

Since $\omega < \omega^*$, the first agent who is more patient saves more, therefore his steady state consumption $\bar{c}$, wealth $\bar{f}$ and stock prices $\bar{q}$ increase. This widens the inequality. Likewise, the second agent who is more impatient will have a lower steady state consumption $\bar{c}^*$ and wealth $\bar{f}^*$. Hence, lower demand reduces the steady state stock prices $\bar{q}$. This, in turn, widens the inequality further as depicted in the figure below. If we look at a situation where the second agent who is impatient becomes patient, he saves more. Thus leading to a situation where steady state stock prices $\bar{q}$ rise, therefore implying a reduction in inequality.

Since $\omega < \omega^*$, if $\omega\downarrow \rightarrow \bar{c}\uparrow, \bar{f}\uparrow \rightarrow \bar{q}\uparrow$, the more patient agent saves more widening the inequality, and the stock prices $\bar{q}\uparrow$. If $\omega^*\uparrow \rightarrow \bar{c}^*, \bar{f}^*\downarrow \rightarrow \bar{q}\downarrow$ where as $\bar{c}, \bar{f}\uparrow$ therefore wealth inequality increases further. But if $\omega^*\downarrow \rightarrow \bar{q}\uparrow$ but this leads to a reduction in inequality because the second agent also saves. a^{-1} is the productivity parameter, therefore if $a\downarrow \rightarrow q\uparrow$.

Also, we can infer that if the productivity parameter a^{-1} decreases, the steady state stock prices $\bar{q}$ increases. From figure below we notice that the difference between a^{-1} and M is the growth rate. For an impatient agent the growth rate of the economy reduces to a^{-1} and L. The growth rate falls because it is an increasing function of the difference between a^{-1} and the time preference.

Table-1

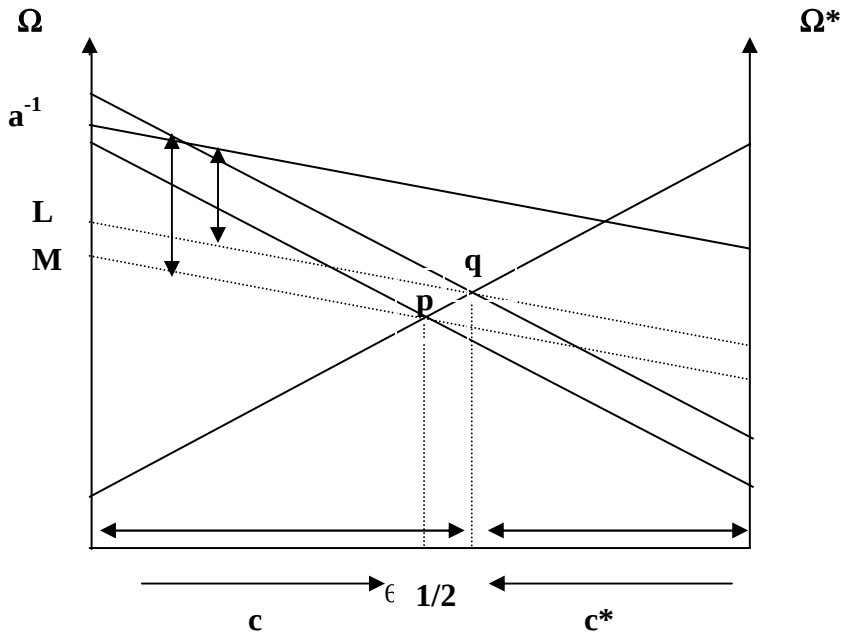
Symbols and Definitions

Symbols	Definition
c	Consumption status or relative consumption
Q	Aggregate flow of output
X	Aggregate input stocks accumulated from past output
a	Fixed input-output coefficient
C(t)	Consumption at time t
$C^a(t)$	Aggregate consumption
ω	Exogenous impatience parameter
$\bar{c}$	Steady state consumption
$\bar{f}$	Steady state wealth
$\bar{q}$	Steady state stock price
a^{-1}	Productivity parameter
L	Growth rate of the impatient agent
M	Growth rate of the patient agent

CONCLUSION

In this paper we endogenize growth by looking at agents with different degrees of exogenous status impatience and corresponding endogenous time preference rates that depend on an agent's current and expected social status. The resultant model has yielded a theory of the long run distribution of wealth, in which the later depends on the across household patterns of status impatience exclusively. The more patient agent saves more widening the inequality, and the stock prices $\bar{q}\uparrow$, therefore, leading to further increases in inequality.

Impatience, Inequality and Growth in Steady State $\omega < \omega^*$



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ENDNOTES

[1] In discussing the Industrial Revolution, Mokyr (1985) outlines a view of status that is close to ours. When describing Perkin's (1969) analysis of the Industrial Revolution, Mokyr writes that "status means here not only political influence and indirect control over the lives of one's neighbors, but also to which houses one was invited, what partners were eligible for one's children to marry, which rank one could attain in the army (by purchase), where one lived, and how one's children were educated (p.18).

[2] The caste system in India is an example of agent's status ranking mechanism.

[3]Please contact the authors for a detailed enunciation of the model.