This paper provides a signaling model of endogenous growth in which innate talents and education levels of workers drive the basic scientific knowledge and adoptive knowledge accumulation processes. Whether talented individuals get proper education and are employed in the appropriate technical sectors are determined by the perfectly competitive employers' beliefs about the relationship between talent and education level. Innate talent of a worker is a private knowledge and it is distributed independent of the individual's family background. Education level of workers acts as a signaling device for talents as well as it improves their productivity. The family backgrounds and talents of workers determine their optimal education level, which in turn determines the degree of social mobility. The model generates multiple balanced growth paths which differ in the degree of intergenerational social mobility and growth rate. The paper analyzes policies that generate equilibrium paths with higher social mobility, growth in income and Pareto superior allocations.

Abstract

February 1996

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Intergenerational mobility and long-run growth

Signaling equilibrium, intergenerational mobility and long-run growth
The Basic Model

The rest of the paper is organized as follows:

1. The Basic Model

We begin with a simple overlapping generations model. In each period, individuals choose education levels, and the level that is properly adjusted for quality to signal his talent type. Let $S$ be the random variable denoting the talent type of an individual, which is private information, observed only in different types of jobs. The functioning of these two is also a critical aspect of the efficient organization. The Basic Model

We begin with a simple overlapping generations model. In each period, individuals choose education levels, and the level that is properly adjusted for quality to signal his talent type. Let $S$ be the random variable denoting the talent type of an individual, which is private information, observed only in different types of jobs. The functioning of these two is also a critical aspect of the efficient organization.
We will see later that earnings are functions of something else. More specifically, let \( y \) be the wage profile that the producer announces. Let \( \psi \) be the probability distribution of \( y \) adjusted for all possible contingencies and expected profit maximization with respect to all possible \( y \). Let \( \eta \) be the wage profile that the producer announces.

When \( \eta \) is the skill in the productivity level in period \( t \).

\[
\eta = (\eta)_{1}^{1} + (\eta)_{1}^{1}
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In our model, \( \psi \) is not endogenously determined as follows. As mentioned before, the wage structure in the production process is described by the set of productivity levels. Let \( \psi \) be the set of productivity levels.

Let \( \psi = \psi(\eta) \) for all \( \eta \). The probability mass function of \( \eta \) is denoted as \( f(\eta) \).

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There are other ways in which education of parents can influence the educational achievements of their children. By providing role models, parents can help their children understand the importance of education and the benefits it can bring. Additionally, parents can create a better learning environment at home, which can lead to improved academic performance. Furthermore, parents with more education can have a greater influence on educational attainment, as they are more likely to have the cognitive ability and economic resources to provide their children with the necessary support. This influence can be both direct, through the transmission of educational skills and values, and indirect, through the provision of financial aid and other resources. Overall, the role of parents in shaping educational outcomes is crucial, and policies that support parental involvement and education can have significant benefits for children's academic success.
The equilibrium of growth of our economies.

We will also examine the nature of transitions for steady-state equilibrium distributions. We note that all economies will converge to the stationarity transition matrix, or process that gives rise to the observed equilibrium, and the matrix of transition probabilities, which we define as the observed conditional distribution of transitions between two states of the economy.

For the purpose of studying long-run properties of the system and the economy, we will consider the following transition probabilities:

\[
P_{ij}^{t+1} = \Pr(X_{t+1} = j | X_t = i)
\]

where \(X_t\) is the state of the economy at time \(t\), and \(P\) is the transition matrix. The economy is said to be in steady-state equilibrium if

\[
P_{ij}^{t+1} = P_{ij}
\]

for all \(i, j\). This implies that the economy is in a steady-state equilibrium.

In any given economy, there may exist several Pareto-ranked multiple equilibria. A separating equilibrium is an equilibrium with attracting but not necessarily equal opportunity growth, and all workers of the same talent type get the same education level no matter what their family backgrounds are. A signaling equilibrium is an equilibrium in which the agents of different talent types and economic backgrounds use the same signals, i.e., a signaling equilibrium is a signaling equilibrium where all types of agents conform to the same signaling equilibrium.

It is possible to have different types of signaling equilibria. In the Basic Model, the equilibrium is an equilibrium in which the agents of different talent types and economic backgrounds use the same signals, i.e., a signaling equilibrium.

In our context an equilibrium will lead to maximum growth if

\[
S^* \in \arg \max_{S \in \mathcal{S}} \sum_{t=0}^{\infty} \gamma^t \mathbb{E}[R(S_t)|S = S^*]
\]

for all \(S \in \mathcal{S}\). In the described distribution, where the subject is placed above

\[
\mathbb{E}[R(S_t)|S = S^*] = \frac{1}{|\mathcal{S}|} \sum_{S \in \mathcal{S}} \Pr(S_t = S|S = S^*) \mathbb{E}[R(S)|S = S^*]
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\]
Assume that the cost function is given by
\[ (z, \tau') \theta > (1, \tau') \theta > d + 1 > (z, 0) \theta > (0, 0) \theta. \]

If we consider the map \( f \) that is defined as follows:
\[ f(z) = \begin{cases} \tau I & z = \tau \theta, \\ \tau I - s & z = \tau \theta - s, \\ 0 & z = 0, \\ I & z = I. \end{cases} \]

The following result holds:
\[ f(z) = \begin{cases} \tau I & z = \tau \theta, \\ \tau I - s & z = \tau \theta - s, \\ 0 & z = 0, \\ I & z = I. \end{cases} \]

For the existence of the above solution, the employer announces
\[ \{ s = \tau I \} \text{ for all } \tau \in A \text{ if } s \in \tau \theta. \]

3. First example

In this paper we will study the signaling model with two types of equilibrium, namely equal opportunity separating and growth enhancing separating. According to (4), given the above wage schedule, the equilibrium is:
\[ \{ s = \tau I \} \text{ for all } \tau \in A \text{ if } s \in \tau \theta. \]

For the existence of \( s \), any fixed point of the map \( f \) has the property that we consider below.

In the following we will consider the case where there exists a unique equilibrium, and for each of the economies considered in this paper we will study the signaling model with two types of equilibrium, namely equal opportunity separating and growth enhancing separating. According to (4), given the above wage schedule, the equilibrium is:
\[ \{ s = \tau I \} \text{ for all } \tau \in A \text{ if } s \in \tau \theta. \]
Another Example with more signals

Let the cost of education be as follows:

\[
\begin{align*}
\zeta &= 1 = \hat{s} j \\
\zeta &= \hat{s} j + \frac{1-\hat{s}_{d}}{1-\hat{s}_{d}} \zeta = \hat{s} j + \frac{1-\hat{s}_{d}}{1-\hat{s}_{d}} \zeta
\end{align*}
\]

where \( \hat{s} \) is the price of education and \( \hat{s} < \hat{s} \) is the education level of the worker.

Suppose the product satisfies the following preferences for labor:

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\text{otherwise}
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school investment decision. Adult children of talent type education.

Parents do not observe the talent type of their child when making the pre

abilities or according to their family backgrounds reflecting the cost of
teaching attainment of individuals in a society is according to their innate
determination of education according to their occupations and important empirical issue in this connection is to examine if observed edu

function is given by

net important for growth. An

rate. The distribution of education levels according to talents and the

of a child of talent type signal the population may not be the most effective way of raising the growth

It is clear from our analysis that increasing average education level of

that will allow the economy to move from a low level equilibrium to an

ployer's self-fulfilling expectations raises important empirical questions/n3a

bution will depend on the initial distribution

riority will depend on the initial distribution

satisfies the condition that e

s

5. Parental altruism, mobility, and growth

We can incorporate this aspect by assuming that the cost of producing

as mentioned earlier, pre-school parental investment may be an impo-

how to verify whether an economy is stuck with a low level equilibrium

thus mobility will be reduced and so will be the economic growth. This has

of the poorer family backgrounds will not invest in higher education/n2c and

We can show that even when the cost of education does not vary with

4/n28 and /n28/1/0/n29 respectively. We have not explored those possibilities here.

rather empirical questions.

We can show that even when the cost of education is the same for all children, the transition matrix associated with the

hours. While the economic growth is possible to have

there is now some mobility. The economic transition to a unique stationary

3. Parental altruism, mobility and growth

important policy implications

We have explored these possibilities here.

We have not explored the initial distribution in the problem complex

long-run growth, the long-run transition distribution, support of the pro

4. Policies and conclusions


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there is no policy that may be effective against

have been similar to results on the propensity to give.

preferences.

holds and the matrix of transition probabilities are given in equations (4) and (10), respectively.

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where the transition matrix associated with the

dependent on the initial distribution of the outcomes of the transition matrix, and the induced observed conditional dis-

important to note that different models, when female background (such as using the

distribution will depend on the initial distribution and the transition probabilities are given in equations (4) and (10), respectively.

was examined in our model, it is consistent from an empirical point of view that women are more likely to have lower

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rather empirical questions.
Policies and conclusions

If the source of lower social mobility is due to higher cost of education faced by children of poorer family background, subsidizing higher education uniformly to children of all family backgrounds is not necessarily going to be effective in inducing the talented children from poorer family background to opt for higher education. The effective policy is rather to identify the talented individuals from all social backgrounds and give enough subsidies to the ones from the poorer family background so that they get higher education and work in the appropriate sectors.

Since educating the talented children of poorer families may require substantial subsidies, it may not be possible to raise that money by taxing the parents of less talented children; however, by borrowing from international markets and paying it back in the next period, the whole society may have a Pareto superior even Pareto optimal allocation of resources and higher growth rates.

Our analysis has the following implication for the proposed policy to allow children to borrow for college education. This will be effective only to the students on the margin who have enough pre-school investments so that the rate of return from college is higher than the interest rate for the loans. For those with poorer family backgrounds, they would need loans at lower interest rates, or their parents should be given real subsidies for education in terms of lower social mobility due to higher cost of education.

References


Policies and conclusions