Social status, compulsory education, and growth

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ABSTRACT

In the long run, if agents pay more attention to social status, the time allocated to higher education and economic growth both increase. However, if the education provided by the government is less efficient than that provided by the private sector, a longer period of compulsory education not only decreases the time allocated to higher education, but also reduces the total time spent in education. Therefore, economic growth declines because of the greater amount of inefficient education provided by the government.

1. Introduction

Undoubtedly, education (the accumulation of human capital) is very important for a country to enhance economic growth. Public education, especially at the primary and high school levels, enjoys wide political support in many countries. Some studies even highlight the potential benefits of government intervention in the form of delivering more human capital accumulation or increasing equality. However, these are essentially arguments for the public financing of education; that is, the government does not necessarily provide education directly.

In most developed and developing countries, governments not only provide schooling, but also compel the citizenry to receive education as so-called compulsory education. In most Western countries, Japan, and China, governments oblige their citizens to receive at least 9 years of compulsory education. In Taiwan, citizens must receive 12 years of compulsory education.[1] In recent decades, more and more countries have increased the years of compulsory education. For example, the duration of compulsory education in Taiwan was increased from 9 years to 12 years in 2014. Murtin and Viarengo (2011, Table 1) illustrated the extension of compulsory schooling in 15 Western European countries over the period 1950–2000.

Those living in a country with compulsory education will be educated for at least the mandatory number of years stipulated by the government. However, the evidence shows that people usually pursue education that exceeds the length of compulsory education (see (OECD, 2014)). This means that compulsory education encourages people to develop social status norms related to their education level. Therefore, compulsory education contributes to growth, not only

through delivering human capital accumulation, but also by forming social status norms. The latter stimulate people to pursue higher education, which facilitates their further accumulation of human capital and so increases economic growth. However, these advantages do not necessarily imply that governments need to increase the duration of compulsory education continuously.

In this paper, we set up a two-sector endogenous growth model in which households pursue social status that is based on the agent's relative education level. The purpose of this paper is to investigate the connection between social status, compulsory education, and economic growth. We are particularly interested in the impact of an excessively long period of compulsory education on economic growth especially when the education provided by the government is less efficient than that provided by the private sector. In addition, we also check the effects of the government's educational subsidies, the cost of education for compulsory or higher education, and the intensity of the agent's preference for social status.

The structure of the paper is as follows. In Section 2, we discuss the related literature. In Section 3, we construct a benchmark model and analyze the individual's optimization. In Section 4, we analyze the comparative statics and provide numerical exercises. In Section 5, we consider some robustness checks concerning different social status, dissimilar educational efficiencies, and various educational costs. We also extend the model to include a labor−leisure trade-off in agents' preferences and symmetrical technologies in both production sectors. Finally, we offer some concluding remarks in Section 6.

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[1] It is worth noting that while the government provides most schools for compulsory education, not all institutions are public schools. In this paper, to simplify the analysis, we assume that all compulsory instruction schools are provided by the government.

2. Literature review

Much of the literature investigates the effect of public education on growth. For example, Glomm and Ravikumar (1992) set up an overlapping generations (hereafter, OG) model with public and private education, and human capital investment through formal schooling is the engine of growth. They found that public education reduces income inequality more quickly than private education, whereas private education yields higher per capita income. Glomm and Ravikumar (1997) considered infrastructure and public education in an OG model and investigated the effects of those expenditures on long-run growth. Glomm and Ravikumar (1998) extended Lucas (1990) model to include government educational spending. They found that the growth effects of changes in capital income tax rates are still negligible as those in Lucas (1990), and simultaneous changes in taxes and spending on education have modest effects on growth.

Besides, Blankenau and Simpson (2004) constructed an OG growth model with private and public investment in human capital accumulation and found that the response of growth to public education expenditures depends on the level of government spending, the tax structure and the parameters of production technologies. Blankenau et al. (2007) developed an OG growth model with public education and found no significant growth effects of public education expenditures when crowding-out effects are not properly taken into consideration. Blankenau and Camera (2009) used a two-period-lived model with heterogeneous skilled labor, and obtained that increased tuition subsidies may increase school enrolment but lower the incentives for student achievement, hence the skill level. In addition, Dissou et al. (2016) developed a multisector endogenous growth model and considered several fiscal instruments to finance the increase in government spending. They found that the non-distortionary financing method provides the highest increase in output.

Moreover, some studies mentioned that public education contributes to growth not only by building human capital but also by instilling common norms that increase social cohesion. For example, Gradstein (2000) built a model whereby the household has a two-period life horizon and found that the system of public education is likely to generate a more rapid accumulation of human capital, to bolster economic growth, and to constitute a preferred choice for the majority of voters. Gradstein and Justman (2000) used a two-period economy with different social groups to compare the results under private and public schooling systems, and tried to explain why education is commonly publicly administered and financed. Fukumura (2017) set up a model utilizing the keeping up with the Joneses effect regarding schooling decisions and obtained multiple equilibria, which can explain the difference between the two groups of countries.

However, the above-mentioned papers focused on the effect of public education, and did not consider the impact of enhancing the duration of compulsory education. Furthermore, in this paper, we find that if agents are concerned with the social status whereby their relative education level is a marker of social status, they will accumulate greater human capital, i.e., pursue higher education, and thus the growth rate of the economy rises. This result is consistent with the case where individuals are identical in Fershtman et al. (1996).[2] However, longer compulsory education may have a negative effect on economic growth when the education provided by the government is less efficient than that provided by the private sector.

Other related papers like Basu and Bhattarai (2012) who examined the effects of public educational spending on the long-run growth rate and the returns to schooling, predicted that a greater government involvement in education will lower schooling efforts and economic

growth. Different from their model in which public spending, as externalities, directly improves the productivity of schooling efforts, in this paper, we assume that government spending has no spillover effect; and our results can support their prediction. Moreover, Tournemaine and Tsoukis (2015) set up an endogenous growth model with heterogenous status-motivation individuals who decide whether to attend a publicly funded education regime or a privately funded one, and obtained an inverted-U shaped relationship between growth and the size of the public education sector. In a departure from Tournemaine and Tsoukis (2015) who focus on the same level of education but with different funding, we use the setting of the representative agent, and focus on the effects of compulsory education and its related social status on higher education (different level of education) and growth.

In addition, the evidence we mentioned in Introduction shows that compulsory education encourages people to develop social status norms related to their education level, while existing studies have not considered that directly. For example, social status is based on the agent's relative human capital level in Fershtman et al. (1996), and is based on the agent's relative consumption level in Tournemaine and Tsoukis (2015). Fershtman et al. (1996) further mentioned that education appears to be the more important determinant of social status. Therefore, in this paper, we set that social status is directly based on the agent's relative education level.

It is worth noting that achieving some kind of social status stands for one's relative position in society. When social status are prioritized, the agent's decisions are not made through market, as in Cole et al. (1992), who used higher income to represent higher status.[3] Such situations are similar to those where externalities exist in agents' preferences. Akerlof (1980), Cole et al. (1992) and Fukumura (2017) revealed that models including social customs or nonmarket decisions may inherently have multiple equilibria. However, in our paper, we prove that a unique equilibrium exists in the long run.

3. The model

This section builds the basic analytical framework. This framework draws on the Lucas (1988) two-sector endogenous growth model extended to include social status which is based on the agent's relative education level. People who spend more time on education will have a higher academic degree. When most people in the economy have a higher degree of education, firms will hire highly educated workers even if such high degree is not necessary to the position. In addition, people will pursue higher degree when high educational background is a common social phenomenon. As a result, the relative education level appears to represent social status.

The representative agent is endowed with one unit of time. At an instant in time, a fraction e of the agent's time is spent in education and the remaining fraction $1 - e$ is devoted to working. The total time in education e includes the time allocated to compulsory education (e_c), which is provided by the government and is mandatory, and the time allocated to higher or noncompulsory education (e_h), which is decided by the agent. Thus, $e = e_c + e_h$. An agent's lifetime utility is as follows:

$$U = \int_{t=0}^{\infty} u\left(c, \frac{e}{\bar{e}}\right) \exp(-\rho t)dt, \tag{1}$$

where $u(c, \frac{e}{\bar{e}}) = \ln(c) + \chi \frac{(e/\bar{e})^{1-\gamma}}{1-\gamma}$, c is consumption, and $\rho > 0$ is the time preference rate.

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[2] If individuals differ with respect to both their wealth and learning ability, Fershtman et al. (1996) found that the status motive may induce an inefficient allocation of talent and may have the opposite effect on economic growth.

[3] The discussion about social status and economic performance can be found in Fershtman and Weiss (1993) and Weiss and Fershtman (1998). Applications concerning social status include those relating to endogenous fertility ((Palivos, 2001) and (Munshi and Myaux, 2006), money as a medium of exchange (Araujo, 2004), the spillover effects of human capital (de la Croix, 2001), and inequality ((Corneo and Jeanne, 1999) and (Kawamoto, 2009)), among others.