Growth versus Security Choice and the Generational Difference in Preferences

Wpływ różnic w preferencjach między generacjami na optymalny wybór między wzrostem a konsumpcją

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Abstract

The primary purpose of the paper is to capture in a growth model the conflict of interests between the generation of the young and entrepreneurial on the one hand and the generation of the old and pensioners on the other. The model is applied to assess the size of the gap between optimal economic policies for these two groups. The key role of the time preference rate is shown. The theoretical results obtained are then used to interpret the differences in actual economic policies between Central Europe and China.

Keywords: conflict, generations, growth, preferences

JEL: E21, E60

Streszczenie

Głównym celem artykułu jest analiza w ramach modelu wzrostu gospodarczego konfliktu interesów między generacją ludzi młodych i przedsiębiorczych z jednej strony a generacją ludzi starszych, zwykle rencistów i emerytów z drugiej strony. Przedstawiony model jest użyty do oceny tego, jak duża może być różnica między optymalnymi politykami dotyczącymi stopy inwestycji i tempa wzrostu między tymi dwoma grupami. Pokazana jest zasadnicza rola stopy dyskonta przyszłej konsumpcji. Otrzymane wyniki teoretyczne są następnie użyte do interpretacji różnicy w polityce gospodarczej między Europą Centralną a Chinami.

Słowa kluczowe: konflikt, generacje, wzrost, preferencje

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1. Introduction

The choice of an optimal economic system can be viewed as a question of the preferences of individuals with respect to the income that may need to be forgone in order to enjoy a desirable level of job (income) security. A highly competitive, market-oriented economic system has proved to be more innovative and more efficient, thus also more productive, than any centrally-planned system. Therefore, the expected lifelong income of an individual in a competitive system is higher than would otherwise be. However, the microeconomic fundamentals of such a system rest on the widespread use of strong incentives: both positive (bonuses, promotions, higher status) and negative (loss of income, demotion, loss of job). The result of such an incentive system is the prevalence of high uncertainty with respect to incomes, jobs and social positions.

Within a market-based system we have various regulations, customs and policies which may limit this uncertainty, even though there may be costs of such limitations for the average level of income and its future rate of growth. The demand for security varies among individuals and societies. Therefore, the choice of such regulations and policies is typically dependent on the specific circumstances of a given country. Perhaps the most important of these circumstances is the age distribution of members of a society. Some societies, such as Chinese or Indian, are dominated by the young, poor and unemployed. In those societies the primary concerns are high employment and rapid economic growth. However, the formerly socialist countries in Central and Eastern Europe (CEE) have stable or declining populations dominated by relatively old workers and pensioners. In those countries there is, typically, a sharp clash of interests between the generation of the young and entrepreneurial on the one hand and the generation of the old and the pensioned on the other.

The primary purpose of this paper is to apply a growth model that could capture this conflict and help to assess the size of the gap between optimal policies for these two groups. The model may be used to interpret political election battles in Central Europe and the difference in economic policies between Central Europe and China.

2. The growth model

The transition economies belong to the category of emerging economies, ones in which the primary source of new technology is the technologies that have been accumulated by the developed economies of the world's technology frontier area (TFA). The production relationship that may be assumed to apply worldwide is the standard constant-returns-to-scale production function, in which the index of quality T of the key inputs, capital K and labour L, is labour-augmenting:

$$Y = F(K, TL) \tag{1}$$

where Y is total net output. Crucial now is the assumption concerning the determination of technological changes, that is changes in T. As I argue elsewhere (Gomułka 1990), these changes in the TFA are best explained by the level of the combined research and development (R&D) activity of the entire world economy. Now I use the stylised fact that over a long period of time the K/Y ratios in developed countries have been fairly stable. Taking into account (1), such stability is possible only if T has been changing over time in the same way as the ratio K/L, that is if K/L and T have been proportional each to the other. Thus if the stock of all the technologies present in the TFA is freely available to investors in any emerging economy, which I assume is the case, the choice of a specific T in such an economy would be determined by the parallel choice of K/L, since

$$T = a\frac{K}{L} \tag{2}$$

where a is constant. While technologies of the TFA are themselves free, by (2) an investment in fixed capital would be required to absorb and take advantage of them. Given this technology function, we have that, in the countries outside the TFA:

$$Y = F(K, aK) = F(1, a)\cdot K = A\cdot K \tag{3}$$

where A is another constant. By (3), output is proportional to the stock of physical capital. This is the so-called AK model (Barro, Sala-i-Martin 1995). In this model the standard neoclassical law of declining marginal productivity of capital applies only in the short term. In the long term, technological changes increase the marginal productivity of capital sufficiently to ensure that this productivity is constant.

We may now proceed further by assuming that households maximise their total future utility – properly discounted and related to consumption. To simplify, people are assumed to live forever, so they maximise

$$U = \int_0^{+\infty} u(c(t))e^{-(\rho - n)t}dt \tag{4}$$

In (4) above and (5) below, k is the K/L ratio, n is the growth rate of labour L, w is the wage rate, r is the net profit rate, $u(c)$ is the utility flow and ρ is the time preference rate.

The choice of per capita consumption c is subject to the budget constraint:

$$c + \dot{k} = w + rk - nk \tag{5}$$

where $\dot{k} = \frac{dk}{dt}$

In (5), $\dot{k}+nk$ is the investment expenditure per worker, and therefore the difference between total income $w+rk$ and that investment expenditure is the income left to finance consumption, c. Euler's 1st order maximisation condition implies that:

$$r = \rho + \Theta \frac{\dot{c}}{c} \qquad (6)$$

where $\Theta = -\frac{u''c}{u'}$, so it is the elasticity of the marginal utility u'. Following Barro and Sala-i-Martin (1995), let us consider a utility function for which Θ is a constant, a number between zero and one. This function has the form:

$$u(c) = \frac{c^{1-\Theta} - 1}{1-\Theta} \qquad (7)$$

We may note that if Θ is zero, then $u(c) = c-1$, so welfare is proportional to consumption and marginal utility u' is constant. If $\Theta = 1$, then $u(c) = \ln c$, so in this case the marginal utility u' is inversely related to c.

We assume further that firms select k so as to maximise profits, or the difference between output AK and the sum $rK+wL+\delta K$, where δ is the depreciation rate. The 1st order maximisation condition implies that:

$$r = A - \delta \qquad (8)$$

Combining (6) and (8) gives us the growth rate of consumption along the optimal path:

$$\frac{\dot{c}}{c} = \frac{A - \rho - \delta}{\Theta} \qquad (9)$$

Along such a path the growth rate $\frac{\dot{c}}{c}$ is thus constant. Therefore the growth rate of the *k-ratio* must be the same constant. Hence:

$$\frac{\dot{k}}{k} = \frac{A - \rho - \delta}{\Theta} \qquad (10)$$

Now we can deduce the optimal saving rate in such an economy. Note that gross investment is $\dot{K}+\delta K$. Threfore the ratio of that investment to total output, equal to AK, must be the optimal savings rate, to be denoted by s. Hence:

$$s = \frac{\dot{K} + \delta K}{AK} = \frac{\dot{k}/k + n + \delta}{A} \qquad (11)$$

By substituting (10) into (11), we obtain that:

$$s = \frac{1}{A}\left(\frac{A - \rho - \delta}{\Theta} + n + \delta\right) \qquad (12)$$

3. Two distinct types of individuals

Recent parliamentary elections in Poland, former Czechoslovakia, Hungary and the Baltic Republics have become battlegrounds between those who emphasise solidarity and security, and those who place more emphasis on reforms and policies needed to promote employment and growth. To the first group belong, above all, pensioners whilst the second group includes the young generation, typically well educated and often unemployed, as well as entrepreneurs of all ages. I shall denote these two groups with letters ***P*** (pensioner) and ***Y*** (young). Group ***P*** is interested less in long term growth and, instead, wants higher social transfers and greater public spending on health. Group ***Y*** wishes to promote growth as a way to secure employment and long-term income. Individuals of group ***Y*** want more investment in physical and human capital as well as lower taxes on labour and profits.

In the model presented above we have two parameters to express individual preferences: Θ – the elasticity of marginal utility and ρ – the time preferences rate. My key assumption is that the values of those two parameters differ between these two groups. The difference is likely to be particularly strong with respect to the time preference rate. This rate should be expected to be relatively high for type ***P*** individuals and low for type ***Y*** individuals. This difference would reflect the concern of ***P*** individuals with consumption over short period of time, so they would discount heavily the consumption in the more distant future. On the other hand, ***Y*** individuals also value the more distant consumption. Many of these individuals are typically well-off, or expect to be so. Hence, for them the marginal utility of consumption should be low compared to the average utility, in other words fall with rising consumption. Individuals of the ***P*** type may be assumed to have relatively low income, so for them the marginal utility might be almost as high as the average utility, in other words should be almost unchanged with rising consumption. Although we have no precise estimates of Θ and ρ for these two groups, the two situations worth comparing are the following:

- *Situation I*, in which Θ and ρ are the same for those two groups and
- *Situation II*, in which Θ is the same for groups ***P*** and ***Y***, while ρ is high for group ***P*** and low for group ***Y***.

4. Implications for optimal growth strategies

Let us derive implications for savings and growth of these differences in preferences as between groups ***P*** and ***Y*** in situation II, which may be considered to be much closer to reality than situation I in the present circumstances of Central and Eastern Europe (CEE). The implications for growth and savings are tightly linked, since:

$$\frac{\dot{Y}}{Y} = \frac{\dot{K}}{K} = \frac{sY - \delta K}{K} = \frac{sAK}{K} - \delta = As - \delta \qquad (13)$$

Thus the growth rate of output on the long-term optimal path is, in this model, strictly proportional to the optimal savings rate. In view of (12), we have that:

$$\frac{\dot{Y}}{Y} = \frac{A-\rho-\delta}{\Theta} + n \qquad (14)$$

where the first term on the right hand side is the growth rate of output per worker, to be denoted by $g_{Y/L}$. Let s^P and $g^P_{Y/L}$ be respectively the optimal savings rate and the optimal per capita growth rate from the point of view of ***P*** individuals, and let s^Y and $g^Y_{Y/L}$ be the corresponding rates for *Y* individuals. We can now derive the differences between s^Y and s^P, and between $g^Y_{Y/L}$ and $g^P_{Y/L}$, namely:

$$s^Y - s^P = \frac{\rho^P - \rho^Y}{A\Theta} \qquad (15)$$

and

$$g^Y_{Y/L} - g^P_{Y/L} = \frac{\rho^P - \rho^Y}{\Theta} \qquad (16)$$

It is instructive to give the parameters in (15) and (16) specific values, so that the difference in policy preferences between groups ***P*** and ***Y*** can be seen more clearly. Since Θ is between 0 and 1, let it be equal to ½. The coefficient *A* is the inverse of the capital/output ratio. For the countries of CEE, *A* may be taken to be $^1/_3$. Hence:

$$s^Y - s^P = 6\left(\rho^P - \rho^Y\right) \qquad (17)$$

and

$$g^Y_{Y/L} - g^P_{Y/L} = 2\left(\rho^P - \rho^Y\right) \qquad (18)$$

A key role of the difference between time preference rates is thus revealed. To specify further, let this difference equal to (a) 2%, (b) 5% and (c) 10%. Even in the case of a very moderate difference (a), there would be a significant difference in the optimal growth strategy between groups ***Y*** and ***P***. In the possibly more realistic case (b), this difference would become quite large. It is therefore not surprising that election debates are, in CEE, so confrontational.

Earlier in the paper I mentioned that the elasticity of the marginal utility, denoted above by Θ, may be lower for ***P*** individuals than for ***Y*** individuals. If this were the case, the ***P*** group would value investment in future consumption a little more. The intergenerational gap between economic policies would then be somewhat reduced. However, people of these two groups should not be expected to differ much in respect of their utility functions. One can even take the view that there are no significant differences in Θ between individuals.

5. China versus CEE

The model above may be used to explain large differences in national savings and growth rate of output between China and most CEE countries. In China (and in some of the other countries of South-East Asia), the proportion of young people in total population is much higher than in CEE countries. Moreover, the solidarity and security syndromes in China may be not as highly developed as in Europe. Consequently, the growth strategies chosen in China reflect mainly the preferences of ***Y***-type individuals, whilst in Poland, and most of the CEE countries, they reflect to a much greater extent the preferences of ***P***-type individuals. In particular, if there is a labour reserve, as in China, conditions (13) and (14) imply that the strategy with a higher *s* is also capable of increasing the growth rate of employment.

6. Long-term risks

In an economy dominated by ***P***-type individuals, macroeconomic policy would promote large social transfers and large public expenditures on consumption-related services, such as health and housing. This in turn would require the imposition on workers and firms of adequately large taxes. Such a policy would limit the long-term growth of per capita consumption. As a result, ***Y***-type individuals would in such an economy be faced with the prospect of a permanently and significantly lower income than their own optimal policy would secure. In addition, in the medium term, a disproportionately large proportion of them would be unemployed. The response to this prospect of some, perhaps many, of those individuals might be to emigrate to the richer member countries of the European Union. A large emigration from Poland to the UK and Ireland since 2004 is such a response. This emigration, in turn, would lower the standard of living of future pensioners. Thus the current generation of ***P*** individuals, by insisting on their short-term interests, could be acting against the interests of all in the long term.

Optimal economic policy of a nation is one that takes into account the interests not only of those individuals who vote, but also those who do not vote yet – and to some extent, the interests of the unborn. This may be recognised by many ***P***-type individuals, and certainly should be recognised by political leaders. The policy actually chosen is, as a result, a weighted combination of the two optimal policies discussed above, in which the weights reflect the strategic intergenerational compromise.

References

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