

## A SIMPLE POST KEYNESIAN MODEL OF INVESTOR MYOPIA AND ECONOMIC GROWTH

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### Abstract

The paper contains attempt to develop investor myopia theory of economic growth. Investor myopia takes place when agents do not take long-term outcomes of their activity into account. This phenomenon, can, of course, lead to underinvestment. The outcome is negative rates of economic growth. Such negative growth, as it known, had hit Russia, Ukraine and some other transitional economies in the 1990s. Investor myopia can be treated as the long-run phenomenon which is concerned with serious defects of institutional environment. The main practical conclusion is that the State is responsible for overcoming of investor myopia. This phenomenon can be considered as the key to many fundamental economic problems of developing and transitional economies.

**Key words:** Investor Myopia; Economic Growth; Post Keynesian Economics; Institutional Environment; Forward Contracts; Opportunism, the State.

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### 1. Introduction

The idea that economic growth is driven by technical progress does not need any comments. The idea that technical progress is driven by capital accumulation generated by investment spending – which is independent on the savings behavior of households - is also true, according to my opinion. But, unfortunately, it is the main point of only the Post Keynesian approach to analysis of growth in the version of Thomas Palley (1996a, 1996b). He (Palley, 1996a) has created elegant model of growth which takes investment spending as the autonomous factor of both technical progress and growth into account.

But, unfortunately, his model contains a rather poor description of factors influencing on investment. According to this model, investments depend only on the growth of aggregate demand. The other Post Keynesian models emphasize – as the arguments in the investment – or investment-based capital accumulation – function – other macroeconomic variables such as capacity utilization rate, rate of profit, the profit share (Lavoie, 2006, ch. 5), productivity growth (Bhaduri, 2006). I think that there are more important factors influencing on the long-run evolution of investment; at that, as a rule, these factors have no purely macroeconomic nature.

The fundamental idea of this paper is that the very important factor limiting investment is *investor myopia*. This completely unexplored concept means that investors evaluate their performance only over a short-time horizon and therefore refuse to make long-term investment. It leads to investors' rejection of the majority of fixed capital investment projects because such projects can bear (high) return only in long period of time.

It is clear that investor myopia can stop economic growth and generate long economic decline. Therefore the question about factors of diffusion of this myopia among investing agents is the vital one. Why do investors constrain themselves to invest over only short-time period? The main goal of my paper is to give answer to this question and, hence, to approach an understanding of what why “standards of living differ among parts of the world by amounts that almost defy comprehension” (Romer, 1996, p. 1), and, hence, why can the real GDP fall during the long peri-

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ods of time: unfortunately, “fall models”, unlike “growth models”, are complete rarity. The paper will show that the answers depend on inclusion of interactions between different agents and institutional environment which has influence on these interactions.

The structure of the paper is the following. In the beginning, in the Section 1, I will shortly describe the basic content of Palley model. This model will serve as the starting point of the model presented by this paper. Then, in the Section 2, I will give detailed analysis of definition and forms of investor myopia as the very important factor decreasing investment level in the long run. The Section 3 will contain analysis of main formally institutional reason for potential investor myopia diffusion. This reason is the ineffectiveness of contracts enforcement system belonging to the State. The Section 4 will analyze informally institutional causes of investor myopia. These causes are features of agents' behavior; such features contribute to rapid diffusion of investor myopia among them and, according to my opinion, are especially important for both developing countries and countries with transition economies. The simple model of “negative growth” presented in the Section 5 will be constructed with the regard for these formally and informally institutional aspects. The final Section 6 will conclude the paper.

## 2. Palley model as the representative Post Keynesian model of growth induced by investment and technical progress

Strictly speaking, cited work of Palley (1996a) contains not only growth model, but several models. These models differ from each other depending on inclusion or exclusion of some components (excess demand, financial markets etc). I have chosen the model which gives the most essential reflection of basic elements of the Post Keynesian approach to growth modeling. The model includes the following equations (Palley, 1996a, p. 125-128).

- (1)  $I = z(g_d)$ ;  $z_{gd} > 0$ , [Investment function]
- (2)  $k^* = I - [d + n + a]k$ , [Capital deepening]
- (3)  $g_y = n + a + s_k k^*/k$ , [Output growth]
- (4)  $a = a(k, I) = a(k, g_d)$ ;  $a_k > 0$ ,  $a_{gd} > 0$ , [Technical progress function]
- (5)  $g^*_d = G(g_y - g_d)$ ;  $G' > 0$ , [Demand growth adjustment]

where  $I$  = gross investment per worker,  $g_d$  = the rate of the aggregate demand (AD) growth,  $k$  = capital-labor ratio;  $k^*$  = the rate of the capital-labor ratio growth;  $d$  = rate of depreciation;  $n$  = rate of population growth;  $a$  = change of labor augmenting technical change;  $g_y$  = rate of the growth of aggregate output;  $s_k$  = capital's share of output;  $g_d$  = the change of the rate of the AD growth.

Equation (1) is the investment function and one of the most important distinctions of the Post Keynesian modeling of growth from neoclassical one. The presence of the investment function which is independent from the savings function implies that thriftiness of households cannot be the source of accumulation of physical (fixed) capital. More concretely, this specification of the investment function means that investment reacts positively on economic expansion. In other words, the growth of AD generates an increase in the investment level.

Equation (2) shows the factors which generate the dynamics of capital-labor ratio, and equation (3) determines how aggregate output grows. Equation (4) is the treatment of endogenous growth idea by means of the Post Keynesian methods. This equation demonstrates that labor augmenting technical progress (which is an intensive factor of growth itself) depends positively upon both capital stock per worker and flow of investment per worker. Finally, equation (5) illustrates dependency of changes in the AD growth on the dynamics of the output growth rate (Palley, 1996a, p. 126).

This system of equations is an example of dynamic process of “cumulative causation” (Setterfield, 2010), which can be potentially unstable. The acceleration of AD growth can generate -

through growing investment - increase of the growth of capital-labor ratio (i. e. capital deepening). The latter, in turn, increases rates of technical change and growth of aggregate output. But then the AD growth will be accelerated more strongly (Palley, 1996a, p. 127). This reasoning suggests that instability can also take the form of *negative growth* of output and technical change. It can be very important for many developing countries and countries with transition economies which during the long periods of time are characterized by decrease in the real GDP (for example, Sierra-Leone, Nicaragua, Haiti, Liberia, Russia, Ukraine, Albania, Romania etc). Naturally, the threat of instability is real when parameters of the above-described functions take on the large values.

My opinion is that in spite of all its merits, this model has one serious demerit. I imply poor specification of the investment function (which itself can be the key to instability). Investment depends upon the many various factors, and the AD growth is hardly the most important one. Here there are two considerations. Firstly, fixed capital investment is concerned with future expected returns, and therefore current macroeconomic dynamics may not play the leading role. This consideration goes back to Keynes (1936). For example, he (Keynes, 1939) criticized the idea of accelerator. Secondly, the AD growth (fall) alone can hardly be the sole cause of long expansion (contraction) of investment activity, which has been, for example, the feature of some transition economies in the 1990s (like Russia, Ukraine etc). It implies that the specification of the investment function needs to be elaborated more deeply. The paper will show that long-run investment dynamics is concerned with special behavioral norms of investors. These norms are determined in the course of interactions between heterogeneous agents who are guided by an institutional environment. All these aspects suggest that there is a necessity to go beyond purely macroeconomic analysis.

### 3. Investor myopia as the main factor limiting fixed capital investment in the long-run

I think that the promising explanation of (negative) long-run investment dynamics can be concerned with *short-termism*, which can be defined as the pessimistic under-weighting of expected future returns and/or the excessive discounting of expected future returns" (Juniper, 2000). It is clear that so defined short-termism leads to refusal from realization of some investment projects. Furthermore, as Juniper (2000) has pointed out, short-termism favors strategies of labor-shedding and asset-stripping instead of strategies of skills formation and asset-renewal (this aspect will be explored below).

Furthermore, short-termism can be represented in more extreme form, although this form is often treated as a something which differs from short-termism itself. I imply *investor myopia* which – as it already was mentioned above - means that *agents evaluate consequences of their decisions only over short-time horizon* (Juniper, 2000; italics added; see also Rozmainsky, 2011b). I believe that investor myopia is both really powerful cause of underinvestment and important determinant of portfolio (and real investment) decisions. Therefore it matters. But investor myopia is not concerned with cyclical fluctuations of macroeconomic activity. This myopia can be treated as the special institutional barrier to economic growth. Unfortunately, there are neither consistent theory of short-termism nor satisfactory analysis of investor myopia (as the most radical and important form of short-termism). The latter is an almost completely unexplored phenomenon.

The essence of investor myopia can be formulated in the following way. This phenomenon can exist whenever decision about purchase of durable asset(s) should be made. And always investor myopia shows itself to be a shift toward assets bearing short-term income across the whole spectrum of durable assets. If liquidity preference, according to quick-witted definition of Dequech (1999a, p. 426), is "an urge for inaction", then investor myopia can be defined as "an urge for action bearing only short-term outcomes".

Furthermore, investor myopia affects not only structure of stock market and choice between asset-renewal and asset-stripping, as Juniper (2000) and other researchers pointed out. In other words, investor myopia is not confined to equity market. In particular, this phenomenon can determine ratios between productive and non-productive activities, between skills formation and skills erosion, between health promotion and health loss, between technical-progress-inducing

industries and other ones, between legal and illegal activities, and so on. Put in more detail, investor myopia can exist in the following spheres of choice (see also Rozmainsky, 2011b).

*The choice between productive and non-productive activities.* In any economy there is some ratio between these types of activity. Other things being equal, productive activities bear income in more distant future than non-productive ones such as trade and speculations, including so-called “financial hoarding” (Binswanger, 1999). For instance, successful speculation can utterly enrich agent for the day unlike any agricultural or industrial production. Here investor myopia has been embodied in the form of shift to trade and speculations. It is clear that such shift seriously distorts a structure of the economy and leads to fall in productivity, technological degradation and also often to fall in the real GDP. It had been a scourge of many former socialist countries in the beginning of their transition to the market economic systems in the turn of the 1990s. Some countries like Bulgaria, Romania, Russia, Ukraine had suffered from this economic disease. The same problems grip some developing countries of Africa and Asia.

*The choice between accumulation of human capital and erosion of skills.* A role of investor myopia (more exactly, a role of short-termism as the excessive discounting of expected future returns) as the barrier to “skills formation” was mentioned in the literature (Juniper, 2000). But this aspect needs to be explored in detail. In order to accumulate human capital people should have long-term horizon planning, because more high skills generate gains only in the distant future. Diffusion of investor myopia among agents can lead to the erosion of skills, when people begin to make occupational choice in favor of activities which do not require high skills. The examples are jobs for common labor and various mediatory activities. Such shifts together with brain drain had contributed to technological degradation in many transitional economies in the 1990-2000s.

*The choice between accumulation of health capital and health loss.* This aspect, unfortunately, is totally ignored in economic analysis. In general, “health can be viewed as a durable capital stock that produces an output of healthy time” (Grossman, 1972, p. 223). In other words, health capital is the factor which increases period of use of human capital. The problem is that health investment can generate significant only in very distant future. Therefore investor myopia destroys inducements to invest in health capital (Rozmainsky, 2011a). Moreover, people characterized by such myopia often make choice which leads to health loss. I imply increasing demand for alcohol and drugs, and also just “unhealthy way of life”. Agents do not believe in (distant) future and not care about their health. As a result, health capital decreases. It adversely affects both life expectancy and economic development. The examples are Russia (Rozmainsky, 2011a), Ukraine and some other transitional countries.

*The choice between technical-progress-inducing industries and other ones.* Broadly speaking, any investments can contribute to technical progress. Such assumption is valid in any very abstract growth model like Palley (1996a) model or the model in the Section 5. But if we make more detailed analysis then the conclusion must be made that some investments foster strongly technical progress, other investments are not. Usually embodiment of technical improvements is not only complex but also lengthy process. Therefore investments concerned with such embodiment bear profit later than other ones. Put differently, expansion of potentially technically-progressive industries is possible only when agents have long-term planning horizon. On the contrary, when agents evaluate their future performance over short-time horizon, such industries cannot develop, and new inventions do not embody. It is the serious issue of many countries with developing and transitional economies.

*The choice between legal and illegal activities.* The existence of more or less significant illegal sector in all developed, transitional and developing economies is at present time not secret for economists. But causes of agents’ choice of illegal business, determinants of dynamics and structure of this sector, and also consequences of its expansion are up to now not satisfactorily explored. It is serious lacuna in modern economics. It seems to me that one of the most promising modes to fill it is use of concept of investor myopia. The point is that activity within the framework of illegal sector is almost always short-term (Oleynik, 2000, ch. 6). The point is that illegal business implies activity under conditions of high likelihood of applying legal sanctions by

the State. Therefore participants of illegal sector are guided by only short-term outcomes. It means that when some agent tries to choose between legal and illegal activities, if his (or her) behavior is characterized by investor myopia, then he (or she) will make decision in favor of “shadow economy”. That is why rapid growth of illegal sector in almost all countries with transition economies (especially in Bulgaria, Russia, Ukraine) should not be surprising.

These are main forms of “embodiment” of investor myopia. In short, entrepreneurs with investor myopia aspire to make money (a) by means of trade or various (stock, forex, real estate) speculation, (b) in the industries bearing quick income, or (c) within the framework of illegal sector. Workers (employees) with investor myopia do not accumulate their human capital and rush for unskilled occupations, including activity within the framework of three just mentioned “spheres”. The consequences regarding shareholders and other participants of financial markets were already explored (Dickerson et al, 1995; Juniper, 2000), and I will not touch upon this issue. The above analysis shows that *investor myopia changes fundamental decisions determining a structure of the economy and also dynamics of capital stock and its technological structure. It is clear that investor myopia can have enormous influence on economic growth, structural dynamics and technical progress. But what factors generate investor myopia itself?*

The point is that investor myopia is a *behavioral norm*, because often it is a long-run principle of human behavior. Therefore it can be treated as an *institutional phenomenon*. It means that investor myopia problem exceeds the limits of purely macroeconomic analysis. In order to fully comprehend this problem it is necessary to take institutional factors into account. As an *institutional phenomenon* and *behavioral norm*, investor myopia should be considered in connection with main elements of institutional environment. I suppose that this phenomenon is determined by some important both formal and informal institutions. So theory of investor myopia becomes new addition to the analysis of institutional boundaries to economic growth (North, 1990).

Below I start with the main formally institutional cause of investor myopia.

#### **4. The main formally institutional cause of investor myopia**

The importance of institutions, as is well known, is to reduce degree of uncertainty. This statement is shared not only by the Post Keynesians (Davidson, 1972, 1988, 1991; Dequech, 2000), but also by the New Institutionalists (North, 1990; 1991, 1995; Eggertsson, 1990). This goal can be attained by both types of institutions. I mean formal and informal “rules of games”.

*The most important formal institution which decreases uncertainty is the law of contracts.* The point is that legal forward contracts make possible to assure many future outcomes and flows and, thereby, reduce degree of uncertainty. Such contracts give entrepreneurs possibility to determine at least level of future cost. Without it any long-term economic activity makes no sense. That is why some *Post-Keynesians consider legal forward contracts as the most fundamental institution of market “monetary” economy* (Davidson, 1972, 1988, 1991; Carvalho, 1992; Rozmainsky, 2011b). In particular, only forward contracts make investments with long gestation period possible. This feature as a rule characterizes fixed capital investments, including investments embodying technical progress.

But forward contracts must be legally enforceable. Only in such case this institution will be really able to reduce uncertainty and to create foundations for any long-term economic activity, including fixed capital investment. Such legal enforcement is provided by the State. The absence of the State protection of forward contracts in the form of legal enforcement creates broad possibilities for various violations of contractual obligations.

Broadly speaking, absolute absence of any legal enforcement of contracts means that explicit money forward contracts system cannot function. But enforcement is ordinal phenomenon. It can have different degrees. Thus, *degree of uncertainty surrounding economic agents is a positive function of degree of legal contracts enforcement provided by the State*. So, bad performance of the State in this sphere can increase degree of uncertainty (Rozmainsky, 2011b).

It is clear that the most of fixed capital investment cannot be realized without complex forward contracts. The low degree of legal enforcement of contracts, other things being equal, de-

creases general amount of forward contracts; hence, it lead to agents' refusal from some long gestation period real investment projects.

It is also clear that all these aspects are relevant to investor myopia problem. The great difficulties concerned with legal forward contracting impede to assure future costs and other important economic variables. Therefore evaluation of too distant performance becomes senseless. Hence investor myopia takes place. Agents begin to confine themselves only to short-term planning horizon. Only improvement of performance of the State in this sphere is able to solve investor myopia problem. It means that the more role of long gestation period investment in the economy, the better legal enforcement must be. Bad enforcement leads to adverse changes in both volume and structure of real investment and also to technological degradation. Here there is very important institutional barrier to economic growth. But this cause of investor myopia is not only. In order to understand deeply the process of *diffusion* of this myopia, one needs to turn to analysis of informally institutional reasons for investor myopia.

### 5. The basic informally institutional causes of investor myopia

I mean by "informal institutions" here "a style of relations" between agents and their "behavioral patterns". The former is determined mainly by the "degree of pursuit of self-interest" by separate agents. The high degree of such pursuit means *opportunism* (Williamson, 1985; Dunn, 2000). The phenomenon was extensively analyzed by Williamson and some other New Institutionalists. But this analysis had almost exclusively microeconomic character. However, opportunism should be considered also as an important factor influencing long-run macroeconomic variables.

The point is that opportunism always means low degree of mutual trust between agents. Each agent has low propensity to form any links with other agents. Therefore quantity of contracts in a society with high opportunism is less than quantity of ones in a society with low opportunism or without it. It is clear that diffusion of opportunism negatively affects both investment activity and inducement to work and to innovate. Needless to say, any complex and lengthy economic activity implies both links with different sides and confidence in predictability (and honesty) of their actions.

*Increase in the degree of opportunism can be described through tools of standard macroeconomic analysis as a leftward shift in the aggregate supply curve*, because this phenomenon acts as a strong disincentive to work, to invest, to innovate, etc. Producers will supply the same amount of real output only for higher prices. Here we can see that *opportunism is both high institutional barrier to growth and cause of cost inflation*. For example, accelerated inflation in all transition economies in the beginning of the 1990s can be explained, in particular, as an effect of increased degree of opportunism.

For our analysis it is important that *increasing opportunism narrows planning horizon*. If agents do not trust each other they will not put into practice of any lengthy (and complex) activities. Increased opportunism instills psychology of participants of illegal sector in "ordinary" people. They begin to strive for short-term gains. The calculations of long-term outcomes become an exception. (Rozmainsky, 2011b)

So absence or low degree of opportunism is not less important condition for high level of real investment than legal enforcement of forward contracts. Although, broadly speaking, high opportunism can be an effect of failure of the State as "a legal protector" of contracts. The point is that inability or reluctance of the State to enforce legally contracts induce people to behave in an opportunistic manner.

Here it should be noted, that diffusion of opportunism is not dependent entirely on contracts enforcement issue. The other important cause of such diffusion has roots in a sphere of moral norms. If people cease to follow moral norms or if these norms themselves degrade, that diffusion of opportunism is inevitable. All these aspects took place in the beginning of the transition of the former planned economies to the market system at the turn of the 1990s. The destruction of communistic ideology together with bad performance of the State as the "contracts protector" had led to diffusion of opportunism through imitation. It means that people took over investor myopia view. Here it is necessary to note that for the sake of simplicity, in the course of further

analysis, I will treat opportunism as a “variable” determined exclusively by ineffectiveness of contracts enforcement system, in spite of importance of moral norms as an autonomous factor.

It is the first possible cause of diffusion of investor myopia among agents (and this cause has become the reality in the 1990s in many transition economies). The other cause of it is concerned with special behavioral patterns of agents who live in the countries with no traditions of market economy. The matter concerns such behavioral pattern of people of various non-market (or not purely market) economies as *rationality aversion*: I believe that in the transition economies agents as a rule may not make fully rational choice at all.

The point is that the rational behavior implies “calculatedness” (Leibenstein, 1976, p. 72 – 82), i. e. detailed personal account of current and future benefits and costs which are concerned with the decision-making. Only politically, socially and psychologically independent people with deliberate objectives, personal responsibility and care for own material welfare will make rational decision in their economic life. That is why rationality is not universal feature of human behavior; it should be treated as the behavioral norm can be formed by religious, cultural and social factors. The most famous illustration of last sentence is Weber (1965) conception of the Protestant ethic influence on rise of capitalism. Western capitalistic society itself compels people to be rational, as it implicitly follows from the famous work of Leibenstein (1976, ch. 5). As Kregel (1995, p. 168) pointed out, “an economy based on exchange for private gain in the form of learned behavior, a particular form of human culture which cannot be expected to resurface unaided which more than 75 years in the Soviet Union, and over 40 in most of Eastern Europe have been spent trying to form ‘New Socialist Man’”.

In other words, the planned economy is the system which very strongly affects behavioral norms and features of its participants. The planned economy implies both political and social dependency of people and low level of personal responsibility. Many social-and-economic relations have been based on the State paternalism (Kornai, 1980). In the planned economies people usually had shifted the burden of individual decision-making responsibility to somebody’s shoulders. As a rule, this “somebody” is the State or an enterprise of the State. The level of wage, consumption bundle and other important objects of economic choice had been determined by the State in exchange for guaranteeing of staple economic goods and social maintenance. People had been insured against starvation, homelessness, bankruptcy, misery, unemployment. Their personal efforts could not both make them bankrupt or unemployed and allow them to enrich. Needless to say, planned economy had led to very high degree of psychological personal dependence of people and their very low propensity to innovate in any spheres of economic life. Non-rational behavior of participants of the planned economy is a natural consequence of fundamental properties of such system (although, on the other hand, rise of this system itself can be treated as an effect of religious, cultural and social factors preventing rationality)

To overcome behavioral norms is time-consuming process (Sapir, 1999, p. 4). Therefore, for example, in the beginning of transition agents do not behave (fully) in the rational manner, because they have no appropriate habit!

It leads to the very high degree of consensus of opinion in the various markets for durable assets and to the phenomenon which was called by J. M. Keynes (1936) “conventional judgement” (see also Raines and Leathers, 2000; detailed analysis of different definitions of “conventions” is contained in Dequech, 1999b) and by Parenteau (1999) “herding”. Each agent tries to follow the behavior of others and refuses from individual independent weighing of benefits and costs of own choice. So, high *rationality aversion* generates high *propensity to herd*, and the latter favors quick diffusion of other behavioral norms. One of such norms is already familiar investor myopia.

*In short, diffusion of opportunism and high propensity to herd (caused by rationality aversion) can lead to very significant investor myopia which generates refusal to invest in physical capital and technical progress. The non-productive assets become rather more popular.*

### 6. The simple model of investor myopia and “negative growth”

This process of *negative growth* can be presented in the form of the simple model. Its first three equations are taken from the growth model of Palley (1996a) with addition of time period index  $t$ :

$$(6) k^*_{t+1} = I_t - (d + n + a_t)k_t, \quad [\text{Capital deepening}]$$

$$(7) g_{yt} = n + a_t + s_k k^*_{t+1}/k_t, \quad [\text{Output growth}]$$

$$(8) a_t = a(k_t, I_t); a'(k), a'(I) > 0. \\ [\text{Technical progress function}]$$

The investment function is specified in the following way.

$$(9) I_t = I(M_t - S_{mt}M_t); I' > 0; 0 \leq S_m \leq 1, \quad [\text{Investment function}]$$

where  $M$  = money supply;  $S_m$  = the share of money supply which contains in the hands of agents whose behavior is characterized by investor myopia. Such agents do not invest (in the fixed capital), unlike agents with “normal-termism”, i. e. without investor myopia. The total money supply has distributed among agents belonging to these two different types of investors.

$$(10) M_t = L_{mt}M_t + S_{mt}M_t; 0 \leq L_m \leq 1, \quad [\text{Distribution of money supply}]$$

where  $L_m$  = the share of money supply which contains in the hands of agents with “normal-termism”. It is clear that if money stock has distributed among investors not strongly unequally, that volume of investment depends negatively upon quantity of agents suffering from investor myopia. It leads to the question about factors determining quantity of such agents and change of this quantity. It is necessary to specify function which governs dynamics of  $S_m$ . The above reasoning suggests that first of all  $S_m$  should depend on such non-quantifiable parameters as a *ineffectiveness of contracts enforcement generating high propensity to behave in an opportunistic manner and a degree of rationality aversion generating high propensity to herd*. Besides, the analyzed variable can be concerned with changes in the real GDP (growth rates) and also with expected changes of prices of non-productive assets which are the object of demand of agents suffering from investor myopia. The examples of such assets are means of financial hoarding, Old Masters, and also capital used in the framework of illegal activity. I offer to formalize these aspects in the following way:

$$(11) S^*_{mt} = S_{mo}F(\text{HERD}_t) + \eta \text{ENF}_t - \sigma g_{yt} + \mu(P_{et} - P_t); \eta, \sigma, \mu, F' > 0, \\ [\text{Dynamics of share of myopic investors}]$$

where  $S_{mo} = S_m$  in the some “initial” time period,  $\text{HERD}$  = parameter of the propensity to herd,  $F(\text{HERD})$  = functional dependence upon this parameter,  $\text{ENF}$  = parameter of ineffectiveness of the State system of contracts enforcement,  $P$  = the price of non-productive assets which are attractive for agents suffering from investor myopia,  $P_e$  = the expected price of such assets,  $\eta, \sigma, \mu$  = coefficients. The equation (11) is the key one in this model.

The first term in the right side of (11) implies that dynamics of  $S_m$  depends upon some initial share of “short-sighted” investors and agents propensity to herd. The more both these parameters are, the more  $S_m$  will grow. In other words, when the quantity of “short-sighted” investors is large, and each agent tries to follow the behavior of the other agents, then total quantity of investors “infected” by myopia can very quickly increase to the bound. On the other hand, when initial quantity of myopic investors is small, or propensity to herd is low, then increase of analyzed variable cannot be very great.

The second term reflects an influence of formally institutional sphere. It hardly needs to be commented; here it is necessary to note only that ENF is not inevitably exogenous parameter. It can become endogenous through inclusion of very rapid institutional shifts (the examples are the transition from the planned economy to the market one or some systemic transformations in the “underdeveloped” economies), which weaken the State as the “contracts protector”:

$$(12) \text{ ENF}_t = \text{ENF}(\text{INST.SHIFTS}_{t-n}); \text{ ENF}' > 0,$$

[Contracts enforcement ineffectiveness “function”]

where  $t-n$  implies that (adverse) institutional shifts decrease effectiveness of contracts enforcement system with some time lag.

The third term in the right side of (11) means that *negative growth* makes people less confident in the long-term future. Agents become more and more oriented themselves to the short-term outcomes. The last term is a reflection of very familiar “speculative bubbles” phenomenon. The dynamics of demand for non-productive assets - which are attractive for myopic investors - can be characterized by properties of standard speculative bubbles. Here the question about factors of price expectations emerges. According to the Post Keynesian tradition, any expectations can be hardly described by one simple algebraic formula. But it does not mean that expectations can be only exogenous. The general specification of non-productive assets price expectations is here the following:

$$(13) \text{ P}_{et} = \text{P}_e(g_{yt}, \text{HERD}_t, \text{SS}_t); \text{ P}_e'(g_{yt}) < 0; \text{ P}_e'(\text{HERD}), \text{ P}_e'(\text{SS}) > 0,$$

[Non-productive assets price expectations function]

where  $\text{SS}$  is the volume of purchases of non-productive assets. When demand for speculative assets (it should be noted that short-term, “myopic”, income has very often speculative nature) increases, and this increase is accelerated through phenomenon of high propensity to herd, then jumps of expected prices are inevitable. On the other hand, long negative dynamics of the real GDP can depress expected price of any assets.

The purchases of “myopic” assets, in turn, are determined in the following way which does not require explanations:

$$(14) \text{ SS}_t = \text{SS}(\text{P}_{et} - \text{P}_t, \text{S}_{mt}\text{M}_t); \text{ SS}'(\text{P}_{et} - \text{P}_t), \text{ SS}'(\text{S}_{mt}\text{M}_t) > 0.$$

[Purchases of non-productive assets function]

Finally, money supply should not be treated as an exogenous variable. According to the Post Keynesian tradition, it can be specified as a variable depending on real activity:

$$(15) \text{ M}^*_t = \text{M}(g_{yt}); \text{ M}' > 0.$$

[Money supply function]

More concrete specification of this function depends upon the type of endogeneity (Pollin, 1994): if endogeneity is accommodative (structural), then dependence of money supply growth upon the real GDP growth will be high (low).

The presented model makes possible to emphasize macrodynamics which is concerned with interactions between different agents characterized by different “termisms”. Because of weakening of the State (which can be induced by deep institutional transformations, as the equation (12) shows), bullish markets for non-productive assets sentiments or current slump investors become more myopic. This tendency can be intensified when investors averse to “calculatedness” and are characterized by high propensity to herd. All these considerations are reflected in the key equation (11). At that, *optimistic non-productive assets price expectations, purchases of such assets, high propensity to herd, diffusion of investor myopia and negative dynamics of the real GDP interact*, as the equations (13) and (14) demonstrate.

The diffusion of investor myopia, in turn, generates fixed capital investment decrease (9). Such decrease leads to fall in the capital-labor ratio (6), technical regress (8) and *negative growth* itself (7). Here, of course, it should not forget also about the interactions between (6), (7) and (8), i. e. between capital-labor ratio, dynamics of the real GDP and parameter of technical change. The likelihood of emergence of the process of *negative growth* depends upon the likelihood of institutional shifts generating decrease in the degree of effectiveness of contracts enforcement system. The intensity of this process is determined by the character of interactions between heterogeneous agents: the more agents follow each other and imitate myopic behavior, the quicker quantity of myopic investors goes up and the quicker investment and the real GDP fall. The rapid monetary contraction in the course of *negative growth* (15) – which takes place especially when money supply endogeneity has accommodative forms – contributes to such adverse dynamics (9). This process can be hindered due to the collapses of some markets for non-productive assets; such collapses may be treated as the natural consequences of recent euphoria or fall in the real GDP (13).

### 7. The conclusive comments

The phenomena of long decreases of fixed capital investment and the real GDP have been the reality of many countries with developing and transition economies (for example, in Russia during the 1990s the real GDP has fallen more than twice; and the level of real fixed capital investment in the 1999 was equal approximately to 20 per cent of the 1990 level). Unfortunately, these phenomena hitherto were not explained by any mainstream growth models.

The present paper offers simple Post Keynesian growth model which explains long *negative growth*. There are three keys to explanation: account of inability or reluctance of the State to enforce legal forward contracts; speculative bubbles in the markets for non-productive assets; and high propensity to herd which generates rapid imitation of (adverse for the real economy) behavioral norms. In the center of these three aspects there is such “adverse” behavioral norm as investor myopia. This norm implies that investors evaluate their performance only over a short-time horizon and therefore refuse to make long-term investment. It leads to investors rejection of the majority of fixed capital investment projects because such projects can bear (high) return only in the long period of time. The lengthy fall in the real GDP is both an inevitable consequence and a cause of further diffusion of investor myopia.

The model makes possible to make sentences about modes of both prevention of and struggle with described process of *negative growth*. The prevention is concerned, first of all, with high effectiveness of the contracts enforcement system. Besides, such prevention can be treated as the negative function of “attractiveness” of various markets for non-productive assets. So here the State can play enormous role not only as the “contracts protector”, but also as the “agent” which controls and restricts markets for those non-productive assets which can displace (different elements of) fixed capital as the object of investment (these considerations suggest that not only money itself can “crowd out” physical investment, as Keynes (1936, ch. 17) and some Post Keynesians (Davidson, 1969) believed).

The struggle is concerned, of course, to a considerable extent, with government investments which encourage both technical progress and economic growth. But the other “line” of such struggle should regard for creation of barriers to the diffusion of investor myopia. These barriers are effective when agents are not characterized by high propensity both to follow and to cheat each other, that is, by both high propensities to herd and to behave in an opportunistic manner. The former is determined by the degree of rationality aversion, the latter by effectiveness of contracts enforcement system and moral norms. That is why the degree of rationality of agents and its honesty are very important. But it is also sphere of an activity of the State. It must increase both rationality and honesty of its residents. On the contrary, if the State prevents rational and honest behavior – for example, by means of inconsistent and contradictory legislation (Lah and Sušjan, 1999, p. 592), that makes detailed economic calculations and responsibility, unlike cheating, senseless – then *negative growth* can be intensified. Here it is clear that the role of interac-

tions between different heterogeneous agents can be very important in the process of (positive and especially negative) growth.

All these considerations suggest that sustainable and high positive economic growth can be hardly take place irrespective of the prudential policy of the State.

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