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FORMATION OF ECONOMIC BUBBLES: CAUSES AND POSSIBLE PREVENTIONS

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Abstract. The article deals with economic bubbles and analyses causes, means of prevention and results of economic bubbles. The exact cause of economic bubbles has been analyzed by many economists. The article discusses with different theories explaining the causes of bubbles formation and presents the possibilities to apply Logistic function for prediction of bubbles enabling to take preventive measures against bubbles creation. Some economists think that bubbles are related to inflation and therefore believe that the factors causing inflation could also be the same factors that cause bubbles to occur. Other economists think that there is a basic fundamental value to every asset and the bubbles represent an increase or rise over that fundamental value. There are also chaotic theories regarding the formation of bubbles. These theories argue that bubbles come from certain critical states on the market that originate from the communication of economic players. The aim of the article is to present a new theory explaining formation of economic bubbles based on Logistic growth models encountering the limited (financial, natural, physical, human etc.) capital resources.

Keywords: economic bubbles, limited resources, logistic function.

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1. Introduction

There are debates among economists about the limits of growth, economic cycles and formation of economic bubbles. Environmental and sustainability requirements put limits on economic growth (Štreimikiene, Esekina 2008; Grundey 2008). Economic cycles are being

treated as inevitable in economic growth (Miliauskas, Grebliauskas 2007), but there are tools to minimize negative impacts of these cycles (Platje 2008). Economic bubbles also command enormous attention, yet there is little consensus about their causes and identification of the main characteristics allowing to prevent the bust or not allow to feed the bubble further taking the preventive measures (Bolton *et al.* 2006; Caballero, Hammour 2002). An economic bubble is the commonly used term for an economic cycle that is characterized by a rapid expansion followed by a contraction, often times in a dramatic fashion. While some bubbles happen naturally as a part of the economic cycle, some also occur as a result of investor exuberance and serve as correctives. These typically happen in securities, stock markets, real estate and various other business sectors because of certain changes in the way some key players conduct business. Bubbles that happen in equities markets and economies tend to cause resources to be transferred to areas of fast growth. At the end of the cycle of a bubble, the resources are then moved again, causing prices to suddenly deflate. Therefore the main problem is the causes of economic bubbles and the specific characteristics allowing to define the bubble. In US during the greatest booms in 1920 and 1990 scientists were explaining them as driven by technological change and new economic era forthcoming because of innovations in high technologies. The idea of technological age played the key role in the mind of the 1990s' bull market (Eatwell 2004; White 2006). The rapid changes in computer/information technology and biotechnology were heralded as placing the economy of a higher trajectory. It was expected that technology would have an even greater impact on productivity growth. However, the following burst revealed that the boom was not caused by productivity increase because of a technological change.

Recent results in various markets indicate that economic tools and financial and monetary policies are still not able to deal with such 'bubbles' before they burst and cause damaging effects in financial and social sectors, as was the case with South-east Asia in 1997 (Froot and Obstfeld 1991; Hommes *et al.* 2005). The same experiment recurred in Latin American countries in the 1990s. Some analysts believe that failure to deal decisively with the emergence and development of 'economic bubbles' on capital and real estate markets is attributed to certain interests in finance and business milieus that profit from such 'bubbles'. This is why banking finance continues without sufficient control, thus contributing to inflating such 'bubbles'. Regarding evidence of this, there is argument over a statement made by former chairman of the Federal Reserve of the US, Alan Greenspan that it is difficult to predict the formation of a bubble in order to deal with it before it bursts. However, there are indicators through which the development of a bubble can be monitored so that its monetary or financial effects can be curbed by economic policies.

The aim of this article is to analyze the types of economic bubbles, the reasons of their creation and to identify the main characteristics or symptoms indicating the bubble in its earlier stage. For identification of the main features, allowing to forecast and prevent a bubble, the Logistic growth models will be used (Girdzijauskas 2002, 2008). The main tasks:

- To define types of economic bubbles and their relations.
- To analyze the main causes of economic bubbles, based on scientific literature.
- To use logistic curve for explanation of economic bubbles.

– To propose the main characteristics for bubble prediction allowing to prevent the burst or to mitigate it negative impact.

2. Economic bubbles and their development sources

An economic bubble (sometimes referred to as a "speculative bubble", "market bubble", "price bubble", "financial bubble", or "speculative mania") is "trade in high volumes at prices that are considerably at variance from intrinsic values" (Garber 1990; Levine, Zajac 2007). The intrinsic value is a theoretical calculation that aims at reflecting the fair value by taking into account hypotheses of future returns and risks. The cause of bubbles remains a challenge to economic theory. The main idea behind the creation of economic bubbles is a weak financial policy and excessive monetary liquidity in the financial system (Topol 1991). When interest rates are going down, investors tend to avoid putting their capital into savings accounts. Instead, investors tend to lever their capital by borrowing from banks and invest the leveraged capital in financial assets such as equities and real estate.

There are few main types of economic bubbles: stock market bubble, real estate bubble and bubbles on other markets, including precious metals, energy resources and other goods. The classical example was the Dutch tulip mania in 1634–37 markets. All these bubbles are interrelated and can migrate from one market to another. During the age of globalization the economic bubbles are migrating from one country to another.

The stock market bubbles formed in the financial markets are a term that applies to a self propagating rise or increase in the share prices of stocks in a particular industry or sector. A bubble happens when speculators notice a swift rise in value of stocks and then decide to buy more of the same stocks as a way of anticipating further rises rather than because the shares have been undervalued. This buying spree results in many companies' shares becoming grossly overvalued creating a widening discrepancy between the share price and the actual value of the stocks (Lei *et al.* 2001). When the bubble bursts, the share prices will fall very swiftly and dramatically, with the falling prices trying to seek the fundamental value of the stocks. This can actually result in many companies going out of business. One of the biggest stock market bubbles happened during the dotcom boom of the late 1990s and early 2000 in USA (Cochrane 2002).

A real estate bubble happens when the prices of housing rise at a rapid pace. On a regular market, prices would rise along with the rate of inflation or the increase in average incomes. When the prices are already too high, the bubble would burst and housing prices would come tumbling down. This would consequently result in the housing market collapse. This would often be followed by a recession in the area. This is different from a real estate boom in that the cycle must usually run its course and a marker correction happens at a more gradual pace with prices eventually settling down to more realistic levels.

The exact cause of economic bubbles has been disputed by many economists. Some experts think that bubbles are related to inflation and therefore believe that the factors causeing inflation could also be the same factors that cause bubbles to occur. However, the booms and bust of 1920 and 1990 in USA stock markets unemployment was low with stable prices in 1920 and very low inflation in the nineties (White 2006). Other experts are of the opinion

that there is a basic fundamental value to every asset and the bubbles represent an increase or rise over that fundamental value. This rising movement must eventually return to that fundamental value, which is its natural state (Smith *et al.* 1988).

There are also other theories regarding the formation of bubbles. They maintain that bubbles come from certain critical states in the market that originate from the communication of economic players. Other scientists see bubbles as a necessary effect of unreasonably valuing assets based solely on their returns in the recent past without really thinking from a macro perspective or regard for economic fundamentals. There are also economists, who think that bubble is an imbalance in the way, people perceive opportunities, because they try to chase the prices of assets instead of making purchases based on the intrinsic value of the assets (this could also be called a speculator's mentality). Some also maintain that bubbles are a manifestation of the basic tenet that a market is very efficient in long terms, but not very efficient in a short one.

While it is not clear what causes bubbles, there is evidence to suggest that they are not caused by bounded rationality or assumptions about the irrationality of others, as assumed by greater fool's theory. It has also been shown that bubbles appear even when market participants are well-capable of pricing assets. Further, it has been shown that bubbles appear even when speculation is not possible or when over-confidence is absent. Popular but recently discredited by empirical research greater fools theory portrays bubbles as driven by the behaviour of a perennially optimistic market participants (the fools), who buy overvalued assets in anticipation to sell them to other rapacious speculators (the greater fools) at a much higher price.

Short-term economic bubbles (less than 10 years), which should be viewed as mistakes or artificial situations, tend to result in a natural correction of the economic imbalance. Less is known about long-term bubbles which could prove to be much more devastating to an economy. These bubbles could result from a systematic misperception of the value of certain goods and services as well as long-term manipulation of financial records and lending practices by powerful governments and corporations. Rather than ushering in a recession, the correction of a long-term bubble has the potential of marking the beginning of a long depression.

When it comes to preventing economic bubbles that have an effect on international finance (those that can affect a country's economy), a classical solution is always propagated by experts. This is the idea of having an international lender of last resort who will lend money or resources, when no one else will and will also alleviate the situation with its moves, thus preventing people and various monetary institutions from panicking and suddenly unloading their investments (Smith *et al.* 1988).

Definitely new bubbles will emerge in the future, but they should be under international and domestic control, and their negative impacts can be reduced to a minimum. World economists learned this lesson and developed many efficient financial tools over the last 70 years. Such an analysis implies a mixture of "economic bubbles" and "business cycles". The development of economic policies (as well as financial and monetary tools) since the Great Recession in 1929, succeeded in reducing sharp fluctuations in 'business cycles' owing to Keynes' theories through demand management policies. Discussion of short cycles of economic

recession has become possible, away from falling into the cycle of lengthy deep depression. However, this development in 'business cycles' has nothing to do with the emergence of "economic bubbles" on capital and real estate markets the way we witnessed in developing European countries and Japan (in the 1980s), the US and East Asian countries (in the 1990s), and finally in Arab Gulf countries. Such frequent 'bubbles' are difficult to control, whether at the domestic or regional level.

3. The logistic models and their application in economic growth theory

In contemporary economics and specifically in investment science (excluding rare exceptions) it is postulated that economic growth is unlimited. While actually each growth sooner or later is finishing. It is being observed in the Nature. Models analyzing growth of populations in biology are created more than one hundred years ago. Cyclic development of economy in regions and the states confirms that economic growth is limited. Recently created and developed theory of logistic management of capital in Vilnius University fits well for description of economic growth limits and the causes of economic bubbles creation and provides with good tools – logistic growth models for formalization of these processes (Girdzijauskas, Streimikienė 2008).

Analyzing the growth of the capital usually means that there is a particular investment capacity (range) of the limited size which this capital can occupy. Invested capital usually fills only a part of this capacity. We define it as investment coverage. Residual free part of capacity is intended for capital growth and is defined as resources of growth. Capacity of investments can be on occasion equal to capacity of the whole economy (Sterman 2000).

$$\text{Investment capacity} = \text{investment coverage} + \text{resources of growth}$$

The relation between variables of logistic model is schematically shown in Fig. 1.

The investment capacity is limited and with increasing investment coverage the growth resources are diminishing. Therefore investment capacity limits the growth of investments.

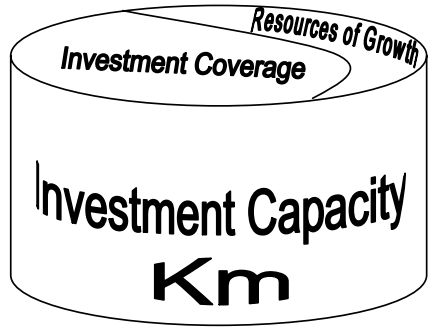

Fig. 1. The relation between variables of logistic model

When investments are approaching the capacity limits, the economic bubbles start to burst.

Therefore the bubble is formed when investment coverage increases in the fixed investment capacity and thus resources of growth decrease. In this situation the efficiency of investments, or the logistic internal rate of return, increases very sharply. Such a behaviour of the system causes the formation of the *bubble* effect.

As we know, the bubble can create crises (to increase inflation, etc.) in the whole economy, in which a certain capital is integrated. It is necessary to emphasize, that not inflation causes the bubble creation, but, on the contrary, the forming bubble increases inflationary processes.

The created logistic theory of capital management shows, how it is possible to avoid the phenomena of an overheated economy or how to mitigate its negative consequences. For this purpose it is necessary to enlarge capacity of the capital. Seeking to avoid the price bubbles, the investment capacity can be extended by extensive way through globalization and entering new markets, or through intensive way – implementation of innovations and technological progress. It is understandable that the second way is more prospective.

The fund of the Heritage of the USA informs, that for the last 5 years GDP of the Europe has grown all only by 3.9% annually. At the same time the GDP in Southeast Asia and area of Oceania, where economic tigers China and India dominate, grew more quickly 7.6%. The world GDP for last 5 years has grown considerably too and reached 6.1%.

Witnessing a continuously decreasing growth of GDP in EU, it is possible to assume, that it occurs under a logistic law: investment coverage approximates to the margin, and resources of growth are exhausted. There were attempts in EU to intensify the economy (accepting innovative strategy of Lisbon), but it has not given appropriate results. Then more straight way – a variant of globalization has been applied: borders of EU have been expanded and in this way the investment capacity has been enlarged.

The USA also has applied both ways of investment capacity enlargement: not only successfully developed an innovative (technological) range, but also extended the markets through globalization processes. There are not many world areas where the USA do not have economic interests. Further discussion of two simplified types of models for economic growth will be discussed: the exponential model (the compound interest) and the logistic model (the limited growth).

Most frequently, in the cases when various financial problems occur in relation to payments or cash rate at the given moment of time, or when it is urgent to model the capital price, investments or any other cash flows, the present or future value of capital is calculated. As a rule, such calculations are based on the so-called formula of compound interest (Bodie *et al.* 2001). Consider:

$$K = K_0 \cdot r^t \,. \tag{1}$$

Here K_0 presents capital value; K expresses the future capital value or the capital value at the t moment of time; r describes the coefficient of accumulation rate; ($r = 1+ i$; here i is interests rate) and t is accumulation duration expressed in time units fixed in interest rate. Sometimes Eq. (1) is called an exponential function of capital accumulation.

Traditionally, Eq. (1) is used to calculate the growth of capital (population, product). However, many calculations may be performed only until the capital growth is not restricted by external factors (Merkevičius *et al.* 2006).

Capital cannot increase at an equal rate endlessly, the more so if the system is completely or partially closed. When growing in such a system, the capital exhausts the limited resources in its environment. In other words, it enters into self-competition which diminishes its growth – the system gets "satiated".

It is assumed that in the given environment, capital may increase up to a certain limit (in the given environment, only a particular amount of capital not larger than the determined one may be invested). The maximum rate of growth is K_m. Then the interval of the capital alteration, or growth (relatively, it may be considered as an area, or space of growth) is as follows: $K_0 \le K \le K_m$.

The growth of capital will be described by the logistic function of growth (Girdzijauskas 2002). Consider:

$$K = \frac{K_m \cdot K_0 \cdot r^t}{K_m + K_0 \cdot \left(r^t - 1\right)}. \tag{2}$$

Here K_0 – the present capital value; r defines the accumulation rate coefficient t – the time expressed in the same units as the time estimated in the interest rate of growth (in most cases, it points to the whole periods of the interest rate re-calculation).

It should be noted that if the maximum value of the product K_m increases and approaches infinity $\left(K_m \to \infty\right)$, i. e. if for Eq. (2) the limit $\lim\limits_{x\to\infty} K$ will be calculated, then, as it might have been expected, formula 2 will turn into an ordinary rule of compound interest (1). Then, the formula of compound interest (1) will make a separate case of the logistic accumulation function (2), when the maximum capital rate K_m is extremely high.

Based on studies of logistic growth models (Girdzijauskas 2002), we will provide our own explanations of stock markets bubbles creation. During analysis of capital price, investments or other money flows usually the present value or future value of the capital is being calculated. The present logistic value can be expressed by the following equation (Girdzijauskas 2002; Girdzijauskas *et al.* 2007):

$$K_0 = \frac{K_m \cdot K}{K + (K_m - K) \cdot r^t}. \tag{3}$$

Here K_0 – present value of the capital, K – value of the capital at the time moment t, r – rate of growth accumulation with interest rate i, t – time of the accumulation in time units, fixed in interest rate. Actually, the described expression is the formula of logistic discount.

In the economic theory, special attention is paid to limit capital growth (the capital growth rate). This is because it is necessary to find a suitable explanation for the mechanism causing the law of diminishing limit products. It goes without saying, that this cannot be done using only the rule of compound interest; however, it is not difficult, if we apply the logistic function of the future value of capital.

First, the capital growth rate is determined when the capital resources are infinitely large, that is, the capital growth rate is examined using the compound interest model. By differentiating the function compound interest (1), we have the expression of the capital growth rate:

$$\frac{dK}{dt} = K_0 \ln r \cdot r^t \cdot \tag{4}$$

The capital growth rate as well as future value of capital is exponential increasing function. This means that, while capital increase is unrestricted by resources (while growth is determined by the rule of compound interest), the capital growth rate increases. This can be seen in Fig. 2.

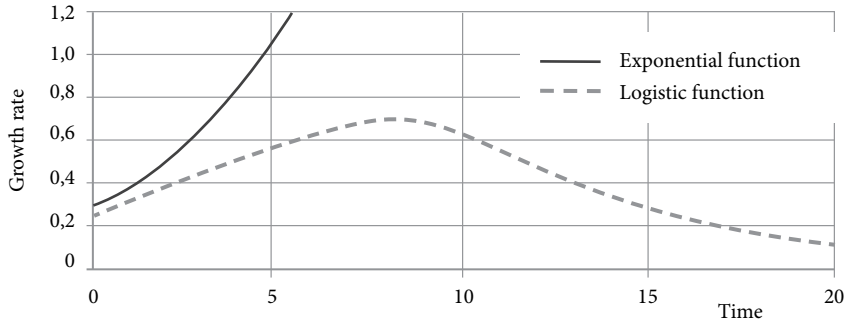

Fig. 2. Capital growth rate, calculated by 2 different functions. Interest rate 30%

By differentiating the logistic function of capital accumulation (2), we find a different expression of the capital growth rate, dK/dt .

$$\frac{dK}{dt} = K_0 \ln r \left(\frac{r^t}{1+S_0\left(r^t-1\right)} - \left(\frac{r^t}{1+S_0\left(r^t-1\right)} \right)^2 S_0 \right). \tag{5}$$

Here S_0 is the initial saturation coefficient. We divide the numerator and denominator on the right side of equation (2) by K_m and write fraction $\frac{K_0}{K_m}$ as S_0 ($\frac{K_0}{K_m} = S_0, 0 \le S_0 \le 1$) (Girdzijauskas 2008).

Analysis of function (5) shows that the capital growth rate is not constant. At first the rate increases, but, upon reaching the maximum value, it begins to decrease and with time approaches zero.

Fig. 3 shows some graphs of the capital growth rate for different interest rates. In addition, here $S_0 = 0.1$ and $K_0 = 1$. Taking into consideration the fact that $1 + i = r$, it may be noticed that the growth rate in the early stages, when the values of interest rate i are larger, is faster and reaches larger values than later on.

This decrease in the capital growth rate is important not only from a theoretical, but also from a practical perspective. Fast capital growth at the beginning of investment is not a guarantee that the investments efficiency, even with limited resources, will remain constant forever. Quite a number of business practices encountered this effect, when working within

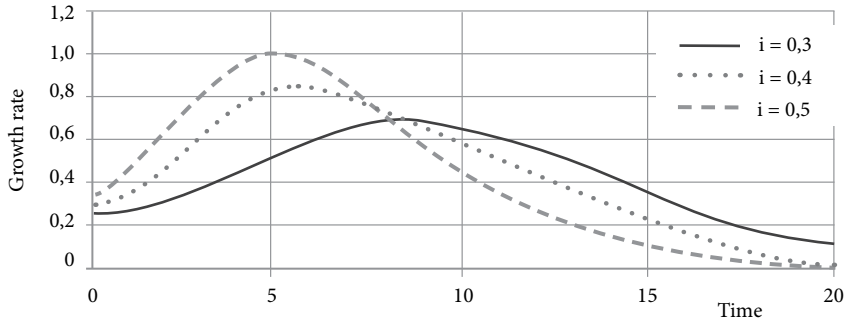

Fig. 3. Capital growth rate for different interest rates

the conditions of the newly formed Lithuanian market. At the beginning, while the market was not influenced by limited resources, the capital growth rate of investment was faster. Later, with the appearance of competition, together with the saturation effect, the rate of growth began slowing noticeably. This slowing was more pronounced for those whose investments were most effective at the beginning. Many businessmen were unable to appropriately evaluate the changing situation and believed that the cause of slowing was political (the government's failure to create suitable conditions for business) rather than economic.

Logistic model demonstrates the economic growth under constraints. The pressure of constraints starts after reaching the peak of the diagram representing growth rate (called marginal growth rate) and going down what shows the slowing down rate of economic growth and approaching an economic crisis. To solve this problem can help only the rapid progress in science and technologies, allowing to pass on a new stage of economic development, to implement the new more clean, efficient and resource saving technologies.

Further the possibilities of application of logistic accumulation model are in estimation of return of investments. As it is generally known, the internal rate of return points to the return to investments is not dependent on the market rate of return. IRR it is defined not only on the basis of absolute value of money, but also in dependence of this value on time. By discounting the cash flows it is possible to eliminate the influence of the time on these flows.

The method of the internal rate return is one of the most important methods for the estimation of the investment projects.

A project's internal rate of return is such a value of the discount coefficient with the presence of which the present values of the supposed payout and income become equal (Obi 1998).

Let's analyze a particular example for investigating the price bubble mechanism. The investment project is carried out within the period of 5 years. At the beginning of the first year one relative monetary unit is invested. Then for 5 years respectively 0.9; 0.8; 0.7; 0.6 and 0.5 of the relative monetary unit are annually invested. The income of the project is obtained with the first year and each coming year is equal to one relative monetary unit. Let's calculate the project's internal rate of return. Cash flows are presented in Table 1.

Table 1. Cash flows in project management

Year	Cash flows at the end of the year (in relative monetary units)		
	Expenses	Income	Total flow
0	–1	0	–1
1	–0.9	1	0.1
2	–0.8	1	0.2
3	–0.7	1	0.3
4	–0.6	1	0.4
5	–0.5	1	0.5
Total:	–4.5	5	0.5

Analyzing the project, the main thing is total cash flow. Here the income part is the growing sequence, and the total sum is positive and equals 0.5 of the relative monetary unit.

For instance, with the use of the financial function IRR in the Microsoft Excel, no complication will be met during calculating the internal rate of return. Thus, the IRR of the discussed project will make IRR ≈ 0.12.

Analogical logistic internal rate of return is different from the calculated one and depends on the size of capital resources. It is calculated for everyone particular limited capital based on the equation (Girdzijauskas 2008):

$$LIRR = \sum_{j=1}^{5} \frac{K_m \cdot K_j}{K_j + (K_m - K_j) \cdot r^j} - 1 \cdot \tag{6}$$

Here LIRR is logistic internal rate of return; K_j – member j of money flow, r – rate of growth with interest rate i (j – is the time of accumulation expressed in time units, which are fixed in interest rate i; $j = \overline{1,5}$).

The dependence of logistic internal rate of return on the quantity of limited capital (i.e. on the rate of capital resources) is presented in Fig. 4.

In the discussed example, the decrease of the limited capital corresponds to the growth of the system's saturation. The diagram shows that, when saturation is low (i.e. the limiting capital is approximately 10 times higher than the largest member of the flow), the logistic internal rate of return will exceed an ordinary internal rate of return no more than by 10%. With the growth of saturation, the LIRR increases. The growth is especially intensive, when saturation approaches the limit of 50% (i.e. when the largest member has outgrown twice). When the limit is exceeded, the logistic internal rate of return increases several times. The increase of the internal rate of return is the prediction of the bubble forming.

Based on this formula, we can identify that when the internal rate of return approximates to the margin of growing resource, the rate of increase of internal rate of return is very high. Such a high rate of increase of return was the main characteristic of stock price bubbles manifested in 1920 and 1990. The capital growth cannot be exponential in the system of limited resources and the law of diminishing returns backs this statement, therefore the price bubbles can be predicted and mitigated by applying analysis based on logistic growth models. In this case a very important issue is the identification of capital or other resource limits. The application of logistic growth models for economic bubbles analysis needs to be

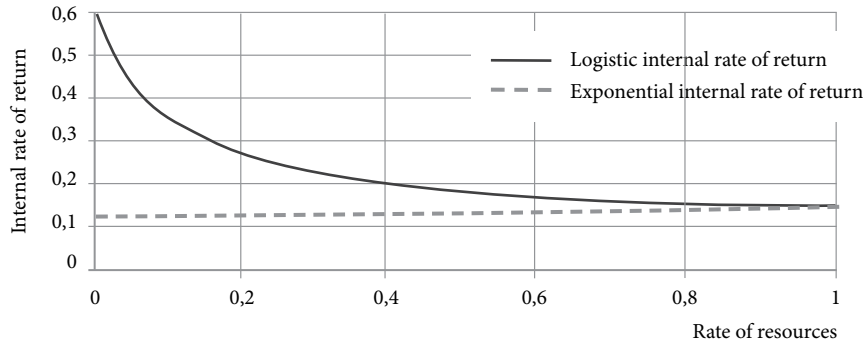

Fig. 4. Dependence of the internal rate of return on the rate of resources

explored seeking further to develop an effective tool for the prediction and monitoring of stock and other markets. However, use of logistic models for capital growth analysis allows define the main causes feeding the bubbles. The main cause is the limited resources or complete usage of factors of economic growth. The law of diminishing returns shows that a new stage of technological progress is necessary to continue the economic growth under limited capital and human resources. The new stage of technological progress allows to overcome the law of diminishing returns. The role of the government is to support research and development and to increase competitiveness of economy by promoting research, innovations and technological progress in the country.

Some scientists argue that economic bubbles are caused by inflation and that bubbles are also caused by the inflation. We propose conversely, – the forming bubble increases inflationary processes. In any case, all proposed indicators are related and sometimes it is difficult to define, which indicator is the cause and which is a consequence.

The main features for predicting economic bubbles, based on Logistic growth models (according to interpretation of important logistic functions, such as logistic function of growth (2) and logistic present value (3)), are:

1. High and increasing growth rates in economy (GDP, very high financial indicators of companies).
2. The low interest rates and increased periods of loans causing huge debts in households sector.
3. The complete usage of growth factors (lack of innovations and technological progress) and stagnation in financial expansion.
4. Psychological pressures on demand and limited supply.

These features are applicable to general economy, separate markets and companies and they allow to distinguish between efficient functioning of economy, sector/firm and approaching the bubble formation.

5. Conclusions

The method of the logistic investment management allows for a new treatment of the investment assessment and description of the reasons for the possible unsuccessful investment realization. The estimation of the degree of market saturation allows for a more accurate calculation of the rate of return.

The exponential growth models fit well enough for modelling in the near future. Such models absolutely mismatch for modelling long-term economic processes, because they do not evaluate limitation of growth resources, while the influence of them in the long time is essential. The logistic model of growth estimates limitation of resources of growth and has not this weakness. Modelling the economic process by evaluating limited resources of the growth gives essentially new results:

1. The cash flows can form clear bubbles.
2. Bubble is formed when investment coverage increases in the fixed investment capacity and thus resources of growth decrease with efficiency of investments rising sharply.
3. The analysis of the increasing internal rate of return in the cash flows shows, that for prediction of a bubble formation the limited resources can be used. The example shows that, when resources of growth are approaching the margin, the internal rate of return of investments increases very obviously.
4. Economic bubbles influence not only local, but global economic crises as well. The prevention of a bubble formation is an increase of investment capacity. And this can be done in two ways: occupying new markets or applying research and development for creating new technologies. Though in the long-term perspective any new market or new technology would cause another bubble to grow, there are no other ways for economy to develop just through the cyclic process; however, the early prediction of bubbles formation would allow to prevent burst of the bubble and hard landing of the economy.
5. Many important issues of the economic theory dealing with labour and capital marginal effects can be formalized by applying logistic growth functions, though currently these laws are being described just quantitatively. The logistic capital management theory allows a more explicit and exact evaluation of some financial operations and to reduce the probability of erroneous decisions and enables to improve the management of money flows and more exact evaluation of investment projects.
6. The application of logistic growth models for economic bubbles analysis needs to be explored further seeking to develop effective tools for predicting these bubbles, monitoring of stock and other markets.

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EKONOMINIŲ BURBULŲ SUSIDARYMAS IR GALIMYBĖS JŲ IŠVENGTI

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Santrauka

Nagrinėjami ekonominiai burbulai bei supažindinama su jų susidarymo priežastimis, galimais jų prognozavimo metodais ir išvengimo galimybėmis. Juos analizuoja daugelis ekonomistų, tačiau nėra vieningo sutarimo dėl šių burbulų susidarymo priežasčių. Straipsnyje aptariamos įvairios jų susidarymo teorijos. Ekonominiai burbulai susidaro akcijų, nekilnojamojo turto, žaliavų ir kitose rinkose. Straipsnio tikslas – supažindinti su nauja logistinio augimo teorija ir pritaikyti logistinius modelius ekonominių burbulų analizei bei prognozei, todėl straipsnyje tie burbulai analizuojami pritaikant logistinio augimo koncepciją. Siekiama parodyti, kaip jie susidaro išsenkant augimo ištekliams ir priartėjus prie prisotinimo fazės, po kurios prasideda staigus nuosmukis. Taigi remiantis logistinio augimo dėsniais, detaliai išnagrinėtais straipsnyje, galima prognozuoti ekonominių burbulų susidarymą, o kartu ir valdyti šį procesą.

Reikšminiai žodžiai: ekonominiai burbulai, riboti ištekliai, logistinė funkcija.

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