© A.A. PARFENOV

alexander.parfenov@gmail.com

P/E AS AN INDICATIVE MEASURE OF CRISIS PHENOMENA ON THE RUSSIAN STOCK MARKET

ABSTRACT. This article covers the analysis of dynamics of P/E Ratio as an indicator of crisis phenomena in the Russian stock market. This indicator relates to the financial and the real sectors of the economy, and is important to take into account in the observed disparities between these sectors of the economy. It was proven that the P/E indicator takes on the highest meaning during stable periods or while the economy flourishes, and the least when crisis deepens. The leading signal of the P/E indicator was obtained before the appearance of the global financial crisis of 2008-2009. Based on statistical analysis of a historical data span of P/E, indicative levels of crisis and overheating of the economy are calculated. In this work the significance of further investigation of the P/E indicator is shown, as well as levels based on the indicator in the Russian stock market due to the absence of other crises.

KEY WORDS. Crisis, PE ratio, capitalization, profit, Russian stock market, system of indicators.

The Global Financial and Economic Crisis of 2008-2009 and the Debt Crisis in the Euro zone raised questions concerning the base, form of appearance and propagation mechanism of crisis phenomena, and also the problems of identification of risk increase in the economy in order to soften its realization and social-economic results through the development of effective antirecession policy.

However, it is said that basic crisis risks come from the financial sector of the economy, overexpansion of which, against a background of increased imbalance, is one of the reasons for the modern global crisis [1; 6], [2; 44, 45]. The financial market became the main private savings mechanism in the last decades, under conditions of liberalization and globalization of market relations, and began to play the role of a transporter and booster of shocks, a modulator of economic fluctuation and fund bubbles. In F. Modilyani's opinion, bubbles are the results of failure of the market's mechanism [3; 138].

Today, we can note that financial markets don't have such mechanisms of asset price control, which would support the correlation of securities value and real capital profitability and value. This became apparent during the crisis. Such a link between the financial and real sectors of Economics should be taken into account, including the case building of a crisis phenomena indicator system, which can note the increase of macroeconomic risks.

According to analysis, the stock market indicator P/E, calculated as a relationship of total capitalization of national public companies (taking into consideration the conjuncture and risks (characteristic of the financial sector of the economy)) to total net profit (the final result of company business, used to increase current assets, for funds generation and stocks, reinvestment in production (characteristic of the real sector of the economy) meets the criteria.

We have analyzed the dynamic of the P/E indicator of the Russian stock market to identify its indicative characteristics to identify risks of crisis phenomena in the economy.

P/E obtained a wide circulation not only on the macrolevel, but also on a microlevel as an instrument to make investment decisions and put a price on company stocks through a comparative method.

If we conceive the indicator as a formula, according to Gordon's growth model [4; 30], we can identify fundamental factors affecting P/E:

$P(0) / E(0) = DPS(1) / [(ke-g) * E(0)] = E(0) * (1+g) * kd / [(ke-g) * E(0)] = (1+g) * kd / (ke-g)$,

where P — stock price;

DPS — distributed profit per stock;

E(0) — profit per stock during the 0 period;

g — profit growth rate;

ke — required returns for assets;

kd — payout ratio.

So, the following P/E dependencies are clear in national market size:

— payout ratio increase;

— profits increase g (on the microlevel — it explains high P/E for high technology companies and companies of the innovating sector);

— decrease of necessary profit (at lower risk in the economy);

— increase of the spread between ROE and capital dotation costs, so the indicator P/E depends on the operating efficiency of indigenous companies.

The above-mentioned dependencies allow us to establish the reasons which are the basis for the different value of the national stock markets according to the P/E indicator. Thus, the link between P/E coefficient and the real and financial sectors of Economics are clear.

Let us turn to the analysis of the indicator in the Russian stock market. We have used P/E data given by the investment company «Troyka Dialog». They worked with these data in cooperation with the Bloomberg agency. They include information for 171 months over the period from May 1998 till July 2012.

The P/E arithmetical average for the Russian market for the investigated period is 7,99. This value will used to calculate indicative levels of crisis phenomena based on P/E.

The analysis the of P/E indicator dynamic for the Russian market is represented in Figure 1, where periods of crisis phenomena and economic overheating are marked.
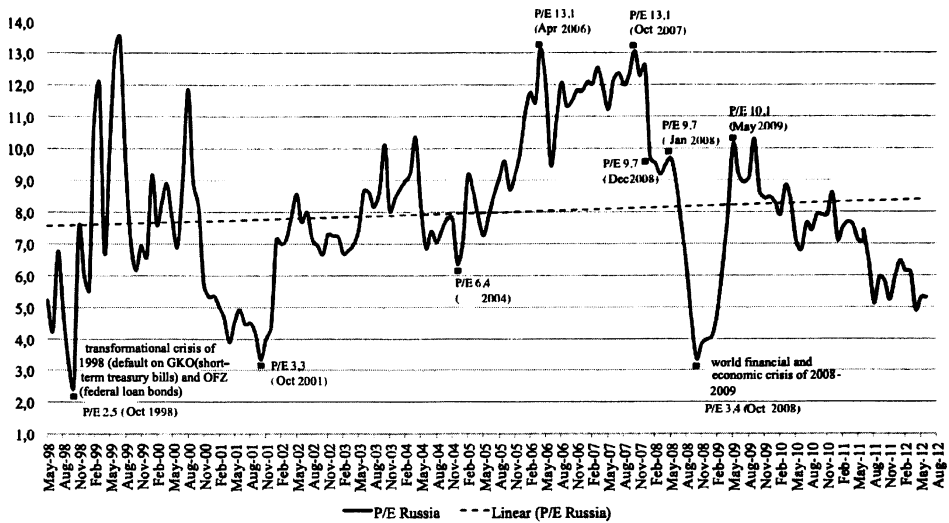
Fig 1. P/E indicator dynamic for Russian market

In Figure 1 it is clear that P/E reaches maximum value outside of crisis periods, whereas the indicator's minimum value is for crisis periods. So in October 1998 after the default, P/E was 2,5 according to internal liabilities, T-bills-federal loan bonds; in October 2001 it was 3,3, and in October 2008 it decreased to 3,4, in the middle of the financial-economic crisis.

Maximum P/E value on the Russian market took place in July 1999 (13,5) and during the period of investment growth, so in 2006-2007 (11-13,1). Net international capital flows were fixed in the country at this particular time (2006: $41.4 billion, in 2007: $81.7 billion, the first half of 2008: $15.7 billion), at a high level of growth of real GDP (8.15% in 2006, 8.54% in 2007) [5]. During this period many economists noted features of the Russian economy's overheating, they admitted high investment activity and rapid expansion of effectual demand. [6; 2].

Let us look at the P/E indicator's behavior in the crisis period. If we consider September 2008 as the beginning of the Global financial-economic crisis, when the bankruptcy of Lehman Brothers in the USA (14th of September) was announced and an all-round sharp fall of stock indexes and decrease of basic national measures started, the P/E indicator was an early signal*. Starting from October 2007 the indicator was being corrected from 13.1 to 12.6 in December 2007. In January 2008 we noticed a sharp fall of the indicator to 9.7 and afterwards was no higher until May 2009. In July 2008 the indicator fell from 9.0 in June to 7.6. During the next three months this fall continued and P/E reached a minimum of 3.4 in October 2008. So we can say that P/E acts as a forward-looking indicator.

---

* In the USA it was dated December 2007 by the Committee on the dating of turning points of the cycle at the National Bureau of Economic Research

Statistical analysis of P/E to establishes indicative limits signaling the appearence of crisis phenomena risks and overheating of the Russian market on the basis of the historical dynamic of the indicator for the period from May 1998 until July 2012.

One of the ways to identify indicative limits may be the separation of the data mass into five equal parts or quintiles [7]. For the Russian market we have the following limits for quintiles: 1st group [2,49 — 6,00]; 2nd group [6,00 — 7,27]; 3d group [7,27 — 8,43]; 4th group [8,43 — 9,72]; 5th group [9,72 — 13,5]. The last group includes historical P/E value: when they are reached the risks of crisis phenomena increase, and overheating of market appears. The low value of the limits of this group is 21,6 % higher than the historical average P/E level — the base to count percentage.

Indicative limits of the indicator can be defined by statistical analysis of percent ranges (percentiles) of historical P/E values (pic. 2). The analysis shows that we may speak about realization risks of crisis values and overheating of the market if the indicator is 80 percentiles and higher.
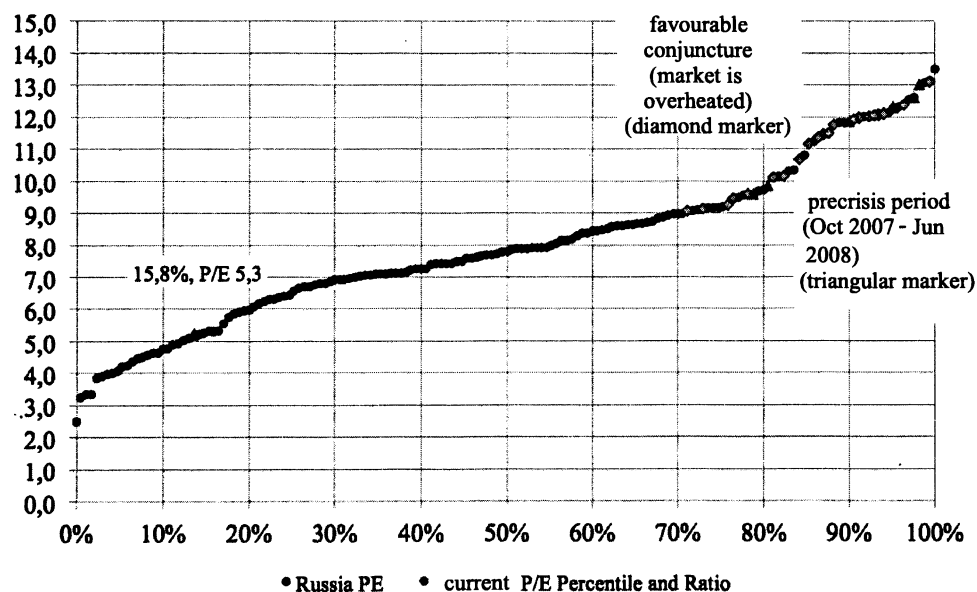
Pic.2. P/E indicator for the Russian market in percentiles for the period
May 1998 — June 2012.

P/E value during the period of July 2012 is 15.8% percentile, so evidence of low macroeconomic risks.

The analysis lets us define indicative levels of crisis phenomena and Russian market overheating on the basis of the P/E indicator, as shown in Table 1.

Table 1

Indicative levels of crisis phenomena and overheating of economics, defined on the basis of P/E indicator

№	Indicator	Period	Indicative level	Notice
1	P/E	a month	≥ arithmetic mean value P/E + 21,6%	arithmetic mean value changes through time
2	P/E (according to percentile)	a month	≥ 80%	-

So, the research into P/E in the Russian stock market shows the practical value of this analytical tool binding the financial and real sectors of the economy, using its indicative characteristics to measure macroeconomic risks in the economy.

Furthermore, the need to continue testing the P/E indicator appeared, to obtain indicative levels on the basis of the indicator in the Russian economy characterized by a short time interval to analyze and measure the risks of the realization of crisis phenomena and the absence of similar fixed events (crises) in the past.

<div align="center">REFERENCES</div>

1. Olsevich Y.Y. Methodological foundation of modern theories of financial markets (scientific paper). M.: Institute of Economics of Russian Academy of Science, 2009.6 p.

2. Dilnot, Cl. The Triumph — and costs — of greed (Part I) // Real-world economics review. 2009. № 49 (March 12). 44-45 pp.

3. What the economists think about: Talks with Nobel laureates/ Under the editorship of P.Samuelson and U. Barnett; Transl from Engl. M.: Moscow management school «Skolkovo»: Alpina Business Books, 2009. 138 p.

4. Pratt, S.P., Grabowski, R.J. Cost of Capital: Applications and Examples (Fourth Edition). John Wiley & Sons, 2010. 30 p.

5. National accounts, prices // Federal State Statistics Service of Russian Federation. URL: http://www.gks.ru/wps/wcm/connect/rosstat/rosstatsite/main/account/

6. The report about Russian Economics.// World Bank. June 2008. №16. 2 c. URL: http://siteresources.worldbank.org/intrussianfederation/Resources /rer16_rus.pdf

7. Short D. Is the Stock Market Cheap? // Advisor Perspectives. URL: http://www.advisorperspectives.com/dshort/updates/PE-Ratios-and-Market-Valuation.php