The calendar regularity of earnings and volatility distribution on the Ukrainian stock market

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Abstract

The theoretical aspects of calendar effects and anomalies on the Ukrainian stock market and the empirical evidences of monthly returns and volatility of PFTS-index are examined. A strong evidence of a calendar effect i.e. December effect on Ukrainian PFTS exchange was found. It can be explained due to the cyclical character of some industries, cyclical shares, calendar character of exchange rate fluctuations and self-fulfilling prophecies of investors.

The development of real sector of economy nowadays depends to a considerable extent on the level of financial system's development, whose effective operation implies its sustainable performance and optimal structure of its components. Stock market as a mechanism of reallocation of savings mainly from households to those institutions and companies who need more funds for financing investment projects or/and current operations is an important part of financial system and a base for better functioning of real economy.

An important aspect of financial management in context of managing financial investment through the mechanism of stock market is not only the construction of optimal diversified portfolio of securities in respect of theirs levels of risk and return in order to minimize idiosyncratic risks, but also the determination of the optimal investment time horizon[1]. Besides that it is a crucial decision to select entry and exit points for equity investments.

The hypothesis of uselessness of historical data for prediction of the future stock movements is based on theoretical assumptions of efficient-market hypothesis in particular on its assumption of *random walk* which states that stock market prices cannot be predicted because they depend to a considerable degree on investors' rational expectations which due to stock market efficiency are determined by stock prices reflecting all available and relevant information[2]. The results of many empirical studies on historical stock market prices performance starting in the 1970s

[1] Hubbard R.G. Money, the Financial System, and the Economy. – Addison-Wesley Publishing Company, 4th ed. – 2002. – P.106.

[2] Bestmann U. Finanzlexikon. – München: Vahlen, 1989. – 2., völlig neubearb. und erw. Aufl. – S.228.

show that there are some calendar regularities of stock market earnings and volatility. Stated differently, there is strong evidence of *calendar effects* i.e. long term empirical regularities of stock prices' return and volatility over some period of time[3]. The results of these studies confirmed the hypothesis of technical analysts who seek to identify price patterns and market trends on financial markets. The possibility of obtaining an additional profit depends on the identification of these effects and their incorporation into the investment strategy. Otherwise stated, the profitability of the shares has seasonal or cyclical character with well-defined calendar regularity of return distribution, which allows increasing the adequacy of forecasting the movement of stock indices.

According to this line of reasoning at least some of the calendar effects are of practical importance for the financial management i.e. "*January effect*", "*day-of-the-week effect*", "*Halloween effect*" etc. The scientific literature describes various others anomalies on the stock market i.e. weather anomalies, lunar phase effect on stock markets, political effects and sports anomalies etc., but the subject of our investigation are the monthly regularities of stock earnings.

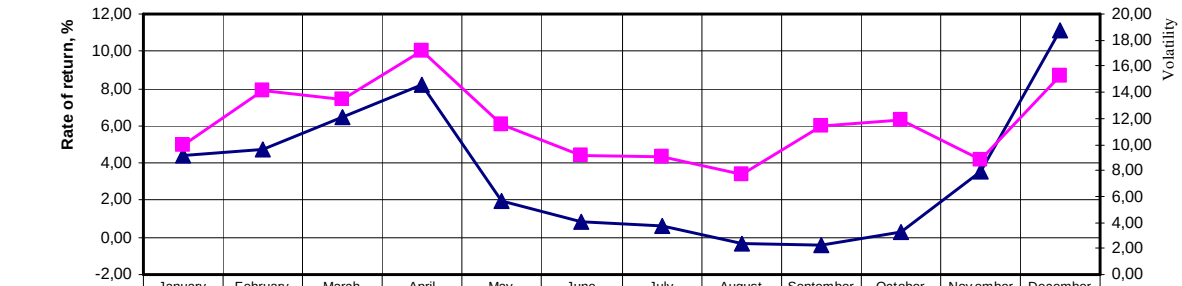
January effect refers to regularity which is based on the observation, that the average returns in January are much higher than returns during other months. Empirical studies on the base of historical data of New York Stock Exchange proved that the average rates of return on the common stocks in January especially those of smaller-capitalization companies are about three percentage points higher than returns during other months.

In order to analyze the calendar regularities of the monthly return and volatility distribution on the Ukrainian stock market we compared their arithmetic means during given month, considering data for the period 2002-2010, using the percentage increase or decrease of stock index over time from its starting value as a measure of rate of return and its standard deviation as a measure of volatility.

As Figure 1 confirms there is a strong evidence of a calendar effect i.e. December effect on the Ukrainian PFTS exchange. The profitability of PFTS

[3] Steiner M., Bruns Ch. Wertpapiermanagement. – 4., überarbeitete und ergänzte Aufl. – Stuttgart: Schäfer-Poeschel, 1995. – S.41.

exchange grows gradually during the January-April, than falls fluctuating around the trend level with rapid increase starting from October until December, reaching its maximal value 11.3 percent. As depicted visually in Figure 1 the same trend though less clear is seen for volatility performance over the year. The following graph demonstrates an extremely strong correlation between the two variables; the correlation coefficient takes values 0.76 which indicates a strong positive correlation.



	January	February	March	April	May	June	July	August	September	October	November	December
Rate of return	4,37	4,73	6,43	8,17	1,96	0,82	0,61	-0,32	-0,38	0,30	3,54	11,13
Volatility	9,89	14,13	13,50	17,15	11,48	9,18	9,08	7,67	11,46	11,91	8,77	15,24

Figure 1. **Average rate of return and volatility of PFTS-Index**
(Source: PFTS, own calculations)

The reasons for this trend are numerous, but the most important among them are probably the cyclical character of some industries and respectively cyclical character of their profit distribution; the phenomenon of cyclical shares i.e. shares which performance depends on the state of the national economy or on the profit fluctuation due to bad conjuncture, adverse exchange movements or unfavorable weather conditions[4]; self-fulfilling prophecies of investors i.e. predictions that causes itself to become true due to investors' belief, experience and their analysis of historical data on realized rates of return during the former periods; calendar character of exchange rate fluctuations determined the demand of foreign investors for shares which are traded on the Ukrainian stock market (the mechanism of direct influence). Companies' payment schedule for loans denominated in foreign currencies exerts an indirect impact on the dynamics of the stock market performance; self-fulfilling prophecies of investors i.e. predictions that causes itself to become true due to investors' belief, experience and their analysis of historical data on realized rates of return during the former periods.

[4] Merk G. Begriffserläuterungen aus der Finanzwelt. – S.20. // www.uni-siegen.de.

The long-debated among economists question of usefulness of historical data for prediction of the future stock movements is still open but many contemporary studies confirms that there is a strong empirical evidence of calendar regularities of shares' earning and volatility distribution over some period of times and this evidence however is contrary to the theoretical assumptions of efficient-market hypothesis. We think that the historical information plays an important role in determination of investors' rational expectations that is why it is worth to analyze it along with cyclical character of some industries, cyclical shares, calendar character of exchange rate fluctuation and self-fulfilling prophecies of investors by comparing an investment alternatives.

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1. Hubbard R.G. Money, the Financial System, and the Economy. – Addison-Wesley Publishing Company, 4th ed. – 2002. – P.640.

2. Bestmann U. Finanzlexikon. – München: Vahlen, 1989. – 2., völlig neubearb. und erw. Aufl. – S.315.

3. Merk G. Begriffserläuterungen aus der Finanzwelt. – S.945. // www.uni-siegen.de.

4. Steiner M., Bruns Ch. Wertpapiermanagement. – 4., überarbeitete und ergänzte Aufl. – Stuttgart: Schäfer-Poeschel, 1995. – S.510.

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