

## THE IMPACT OF DATA FREQUENCY ON PERFORMANCE MEASURES

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**Abstract.** We focus on correlation between the estimates of manager's skills to invest and the frequency of measurement results obtained by them, which can lead to distortion of investment decisions. We found that estimates of performance measures depend not only on the frequency of observations, but on its relationship with the frequency of the transactions of the fund.

**Keywords:** market timing; selectivity skills; data frequency.

**JEL classification:** C22; C53; G11; G17; G23.

### 1. Introduction

As a mean to decrease costs of obtaining information about managers skills for investors, who take decisions about allocating their resources, the performance measures are used. However existing measures have some disadvantages (Goetzmann et al., 2000) and not always allow to estimate correctly manager's skills of active management. Moreover, series of researches (Sehgal, Jhanwar, 2008; Chance, Helmer, 2001; Goetzmann et al., 2000; Bollen, Busse, 2001) held during the last decade proved that even if measures of management effectiveness can be applied some misstatements in the estimations may appear because of misuse of these measures (Jiang, 2003).

This work aims to study the influence of the observation frequency on popular performance measures in case of different frequency of making investment decisions. Though the observation frequency and the frequency of taking decisions do not correspond to each other what can distort the estimation of the performance measures of the managers on the financial markets, this problem is not considered properly. There are some researchers on the evaluation of the influence of the observation frequency of the totals, most of which consist of measurement of the efficiency of actually existing funds with help of certain criteria and with different examination frequency.

As an example we can consider the research by Sehgal and Jhanwar (Sehgal, Jhanwar, 2008) who evaluated the most frequently used measures based on monthly and daily data from 59 Indian funds. The results obtained show that the measures of managers' selective ability increase dramatically in case when daily data instead of monthly is used – approximately 28% of the funds under the study are characterized with positive level of Carhart's alpha. Despite that Indian funds have never performed timing ability on monthly data, in case of the daily profitability, 45% of them showed positive level of Treynor–Mazuy measure and 28% of Henriksson and Merton's test. The similar result was described in the work by Chance and Helmer (Chance, Helmer, 2001), who considered the activity of 30 professional fund market timers. And though the sample used didn't allow to extrapolate the results on the mutual funds, they nevertheless can be interpreted as the proof of the hypothesis about instability of performance measures if the frequency of the data is changed.

The first to turn to the problem of the influence of observation frequency and operation performance on the efficiency totals were (Goetzmann et al., 2000), who with a help of computer modeling tried to prove that timing skills of managers who daily make investment decisions will underestimated basing on the monthly data. Note that in the process of modeling they did not used the real data, as their aim was to create timers who take decisions about the choice in their portfolio of 100% weight for risky or riskfree asset. In this respect as an excess profitability for 10 year period (2520 days) the risky asset was performed with i.i.d. random variables characterized with annual average of 10% and standard deviation of 16%, i.e. such parameters are typical for most diversify indices on the American stock market. Moreover to provide correspondence of the results obtained and the peculiarity of the activity of mutual funds prohibition to effectuate short sales was added. The ideal timer was named the manager who is able to predict the sign of excess profitability for riskfree asset without any mistake. As a result 11 groups of imitation managers were modeled (1000 managers each), each of them was characterized by a number of good and bad buys at the end the authors made a conclusion that the tests used do not possess necessary power to identify and estimate timing

abilities if the investment decision is taken more often than the measurement of the results of the fund activity are effectuated.

The problem was further developed in the article by Bollen and Busse (Bollen, Busse, 2001), whose approach to modeling of imitation managers differed. Unlike previous researchers they used real daily and monthly profitability data of 230 mutual funds existing on the USA market. Treynor–Mazuy measure and Henriksson and Merton's test for both periods was carried out. Their results showed that the usage of daily data increases the number of funds possessing timing ability. However, to prove and to check the obtained results, the authors constructed daily timers who did not have timing skills using bootstrap technique. Performance measures of simulated funds showed that the usage of monthly data, unlike daily data, increases dramatically the number of managers who possess timing ability.

Consider that all previous researchers are limited because of the following reasons.

At first, they do not consider the question about influence of exceeding of the observation frequency over the frequency of operation, which appears to be necessary during the estimation of efficiency of mutual funds, as their major part is aimed for conservative investors. Thus the statement that there are managers who rarely take investment decisions and as a consequence the distortion as the one described above appear and provoke the distortion of the investment orienting point on the market.

Secondly, just small part of the previous researches consider not only the influence of observation frequency, but also the influence of actual operation performance, which is necessary for understanding if the results obtained are just statistical phenomena or distorts, provoked by the correspondence of above mentioned frequencies; whether it really exist and have economic explanation.

Thirdly, the researchers do not pay much attention to the existence of such correlation in cases of the study of the managers' results, who possess picking ability, which leads to small correspondence between the actual situation and the one modeled within the theoretical researches

And finally, during the experiment the authors usually use a small range of observation frequencies, which as a rule includes only two types (daily and monthly) of data. This approach decreases the significance of the results obtained.

## **2. Methods**

The peculiarity of this work is that the usage of real data for basic hypothesis testing is almost impossible. That can be explained by the fact that for the conducting of the test it necessary to know how often every manager considered takes decisions about the investments. The understanding of the quality of the skills of every manager is also required, because it will allow to form the expectations according to the fair level of his efficiency estimations, significant deviation from which will testify the hypothesis validity. In consequence of this we carried out computer modeling (simulation) of a range of profitability for managers, who according to our assumptions, act either as selectors or as timers.

## **3. Methodology**

### *3.1. Computer Modeling of Managers – Timers*

The fundamental aim of imitation timers is to form profitability that can be obtained by managers in case he performs operation according to given frequency and acts within generally accepted theoretical timer's model. Under timing we understand manager's ability to choose asset class to invest at each (certain) period of time (Christoferson et al., 2009).

As a rule, in researches devoted to estimation of efficiency of active management, it is assumed that a manager chooses between two asset classes: market portfolio and riskfree asset. But in fact the choice of asset can be mere various. For instance, stocks can be divided into «blue-chips» or growth stocks, stocks of companies with low or

high share capitalization. Timing also can be performed at macro level, in this case the choice is made not between class assets but between markets and geographical regions. However the widening of the range of alternatives does not appear necessary circumstance to testify the stated hypothesis, thus the fact that the modeled imitation managers at every period of time take decision to invest in the riskfree asset or market portfolio is enough for the research.

In addition the following restrictions in reference to the circumstances within which the imitation timers take decisions should be accepted.

At first there are no restriction regarding the grade of concentration of fund portfolio.

Secondly, the weight of every asset can vary from 0 to 100% what correspond to the situation when a manager can hold only long positions and short selling is inaccessible for him

Thirdly, the economy does not have tax assessment, expenses of the companies, that conduct management are equal to zero.

Fourthly, there are no restrictions concerning the level of liquidity of the share and extra expenses connected with the process of its reimbursement.

And finally, the fund cannot become bankrupt. And though this assumption may seem strong, there are some evidences that prove a fund can actually attract investors' finances for a quite a long time even if it is not able to outgame the market, by means of concentration on the numeracy of depositors with low demand elasticity (Hu et al., 2009). To put it another way it is assumed that regardless of the results presented the manager can always raise finance.

The process of modeling profitability obtained by simulation managers starts with certain dates, when he (the manager) must perform the shift of weights in the portfolio. To do this examination period is divided into equal parts during which the fund is in the certain position. The number of parts is determined by the number of transactions that should be carried out by the manager. At the beginning of each period the manager chooses the asset class (index or riskfree asset) he is going to invest into 100% of the finance under his charge. At the end of the period the position opened previously closes in case that on the next stage the chosen asset class will be changed.

Such approach presupposes that the operation is recognized as unsuccessful if from the whole variety of alternatives the manager chooses the asset which during the considered period of time realizes the lowest profitability.

The quality of manager's timing ability presupposes probability of performance of successful operation by the manager. In course of examination market behavior of 9 groups of funds is modeled. Each of them is characterized by probability of manager's right decision varying from 0.1 to 0.9 in increments of 0.1. Thus the process of modeling of the assumption quality appears to be repeated examination with spinning of "biased" coin, the probability of each side of which is determined by the probability of successful or unsuccessful operation, however the joint probability of the outcome for every examination equal to one.

This process is repeated many times for 1000 funds, included in every group. After that the modeling process is repeated many times for every group but with another frequency of the operations. The quantity of operation should be carried out by the manager varies from 40 (which corresponds to the annual number of operations) to 5118 (which corresponds to the number everyday deals) with step of 40.

### *3.2. Methods of Computer Modeling of Managers - Pickers*

Simulation of managers- selectors is carried out by different rules. The main purpose is to form return series that could be obtained by manager if he formed his portfolio by stock selecting from 20 shares. In this case the process is still restricted by probability of manager's performance of successful operation and by frequency of his taking investment decisions.

The general suppositions remain unchanged comparing with the process of timers' modeling. Differential peculiarity of the process is the fact that in course of modeling of pickers' behavior the notion of bad (unsuccessful) deal

is slightly changed. If in previous cases this operation appeared as an investment into an asset that will realize the lowest profitability from two possible options, here the variety of available investment aims widened and such comparison appeared to be needless, because it became difficult to define the border between operation qualities. As a result during the process of the simulation of selectors it is assumed that that the deal is considered to be successful if it can realize positive profitability with allowance for adjustment for commission expenses.

On the whole the process of taking decision by an imitation manager is not changed a lot comparing with the case of timing managers. At first the whole examination period is divided in equal periods during which the fund portfolio remains unchanged and the duration of each depends on the frequency of taking investment decisions. Accordingly, at the beginning of each period the manager should take a decision about which assets should be included in the portfolio and their weight.

The definition of the number of stocks, chosen as objects for the investment, during each period is carried out by means of 20 examinations with spinning of “biased” coin. If the stocks are characterized with positive profitability then the successful deal is the one of buying them, and unsuccessful – of abstinence from this, and vice versa in case of asset cost decrease. In this case the weight of every stock depends on number of the selected stocks  $N$  and defined as  $1/N$ . As a result for each period we obtain profitability of equally weighted portfolio from the stocks chosen by the manager. Managers’ abilities in this case are registered on the run from 10% of probability of right assumption to 90% in increments of 10%. This process is repeated for 1000 funds in order to provide the necessary number of objects for consideration. Moreover, second stimulation of the process is additionally conducted for every frequency of taking the decision, that varies from 40 operations (annually taken decision) to 5198 (every day decision).

### *3.3. Data*

To test the hypothesis data for 20 real stocks and Dow Jones Industrial Average index were used. As opposed to artificially simulated market portfolio with constant annual mean and standard deviation, used in the study by (Goetzmann et al., 2000), the real data usage takes in account nonsationary process of market income generation, thus increasing practical significance of obtained conclusions. To model artificial manager-timers we used data about tender closure price by DJIA index. This information is available on YAHOO!Finance1 site and covers time period from January 2nd, 1970 to April 4th, 2011 (10418 observations). Data about monthly return of USA one-year treasury bills were used as risk-free income rate. The U.S. Securities and Exchange Commission Database of treasury bills2 (data from 2008 up to date) and The National Bureau of Economic Research Macrohistory Database (data from the beginning of 1970 till the end of 2008)3 were used as a source of information about the treasury bills. To test pickers’ abilities the YAHOO!Finance data about corrected daily closure prices for stocks of the largest American companies from different economical areas, each of them has been a part of Dow Jones index since 1970 till today, were used. Ordinary shares of the following companies were used for analysis of assets: Procter and Gamble (PG), General Electric (GE), Alcoa Inc. (AA), Boeing Company (BA), Exxon Mobil Corporation (XOM), McDonald’s Corporation (MCD), E.I. du Pont de Nemours and Com (DD), Caterpillar Inc. (CAT), Walt Disney Company (DIS), Chevron Corporation (CVX), IBM, Hewlett-Packard Company (HPQ), Coca-Cola Company (KO), Johnson & Johnson (JNJ), United Technologies Corporation (UTX), Merck & Company Inc. (MRK), 3M Company (MMM), Goodyear Tire & Rubber Co. (GT), Honeywell International Inc. (HON), Eastman Kodak Company (EK). The observation period begins in January 2nd, 1970 and ends in April 4th, 2011.

### *3.4. Benchmark*

The application of such market indices as S&P 500, DJIA, NASDAQ CI, etc. as a benchmark for investment is the most common/popular. This approach of benchmarking is characterized by high level of market coverage without sufficient costs. However parameters of such portfolio might be not satisfactory to the stock strategy. The process of benchmark construction via artificial portfolio simulation appears to be the most correct approach from the theoretical standpoint. Furthermore, the simulation process can be realized by variety of ways. First of all, the formation of benchmark portfolio via multiple repeats of a random process of operation execution, similar to those used by man-

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<sup>1</sup><http://www.finance.yahoo.com/>.

<sup>2</sup><http://www.sec.gov/>

<sup>3</sup><http://www.nber.org/macroyhistory/>

ager, seems to be well-founded. This approach allows to obtain a result typical to a situation, when a stock strategy is realized by manager without any skills.

There are two types of artificially created benchmarks used in this study in accordance with a group of managers. For results of manager-timers the mean result of a process, where the choice of assets type is determined randomly, will be a benchmark. The investment benchmark in this case actually will be an average stock-timer, the probability of the correct forecast is for which is 0.5 In case of manager-pickers the benchmark is formed from the randomly chosen in each period stock. This kind of approach allows the correspondence between risk levels and benchmark portfolio, and also to take in account the operation execution frequency influence on final results of manager activity.

#### 4. Results

The study intends the regression construction on the basis of time series; thus it is necessary to conduct a number of additional statistical tests. In accordance with obtained results, not a one of used temporal series of income can be described by normal distribution. The Dickey-Fuller test was used to test a presence of unit root. We operate with income series, which are differences of price series. The unit root test did not show its existence for all assets, which is evidence (with high probability) of absence of distortions that could be caused by non-stationery of data.

##### 4.1. Characteristics of Artificial Managers

We suppose that ability level of manager is determined by probability of his execution of successful deal. This kind of approach is more flexible in comparison with prognosis of quantity of successful deal; moreover it allows creation of necessary number of stocks needed to create a sample of wanted size. The similar determination of manager's abilities was used in the previous works (Goetzmann, Peles, 1997; Jiang, 2003). Characteristics of distribution of successful deals share for different stocks, obtained by modeling, are presented in Table 1.

probability of suc- cessful deal	timers					pickers					
	mean	median	max	min	st.dev.	mean	median	max	min	st.dev.	mean
0.9	0.899	0.900	0.948	0.841	0.017	0.899	0.899	0.899	0.925	0.887	0.006
0.8	0.800	0.799	0.847	0.747	0.018	0.800	0.799	0.800	0.823	0.771	0.009
0.7	0.700	0.700	0.758	0.640	0.020	0.700	0.699	0.699	0.734	0.666	0.008
0.6	0.600	0.601	0.669	0.565	0.022	0.600	0.599	0.600	0.631	0.567	0.011
0.5	0.500	0.501	0.559	0.476	0.022	0.500	0.498	0.500	0.529	0.468	0.010
0.4	0.399	0.399	0.463	0.369	0.021	0.399	0.400	0.400	0.434	0.360	0.007
0.3	0.299	0.300	0.375	0.265	0.020	0.299	0.300	0.300	0.331	0.270	0.010
0.2	0.199	0.200	0.273	0.149	0.018	0.199	0.200	0.200	0.227	0.175	0.009
0.1	0.099	0.100	0.159	0.048	0.017	0.099	0.100	0.100	0.126	0.080	0.006

Table 1. Parameters of the successful deals share distribution

These data shows that proposed approach managers' ability determination is justified in case of both pickers and timers. The mean and median values for samples with different probabilities of successful deal execution proves this. Nevertheless, the minimal and maximal values for timers still show that though target ratios of deal quantities are preserved sometimes there are cases of significant deviations. However it is important to note that these deviations in all cases do not exceed the step parameter chosen, thus our way of simulation is acceptable.

Nevertheless this approach for determination of successful and unsuccessful deals share has one grave shortcoming, which has a potential to bring false conclusions: the model does not take in account the deal results, that is aforementioned results characterize only the quantity of correct deal but not their quality. However, our test assumes estimation averaging in given groups, thus distortion can occur only in case when quantity of such managers is large enough.

Data about parameters of daily return distribution for different stock groups, each executing an operation once per month, year and day correspondingly are presented in Table 2.

Probability of successful deal	Annual trading		Monthly trading		Daily trading	
	mean, %	st.dev., %	mean, %	st.dev., %	mean, %	st.dev., %
	<i>timers</i>					
0.9	0.046	0.062	0.087	0.063	0.105	0.050
0.8	0.037	0.071	0.076	0.065	0.097	0.060
0.7	0.034	0.057	0.055	0.064	0.066	0.050
0.6	0.024	0.079	0.034	0.068	0.037	0.061
0.5	0.021	0.082	0.022	0.080	0.020	0.065
0.4	0.018	0.082	0.013	0.078	-0.0003	0.067
0.3	0.015	0.077	-0.0005	0.074	-0.0194	0.070
0.2	-0.0005	0.084	-0.0156	0.085	-0.0392	0.070
0.1	-0.0009	0.087	-0.0345	0.084	-0.0667	0.070
	<i>pickers</i>					
0.9	0.0281	0.0019	0.0544	0.0018	0.0657	0.0015
0.8	0.0154	0.0021	0.0287	0.0019	0.0372	0.0018
0.7	0.0078	0.0017	0.0128	0.0020	0.0156	0.0015
0.6	0.0033	0.0023	0.0050	0.0020	0.0053	0.0018
0.5	0.0018	0.0024	0.0019	0.0024	0.0018	0.0020
0.4	-0.0058	0.0025	-0.0041	0.0236	0.0001	0.0200
0.3	-0.0064	0.0023	-0.0046	0.0262	-0.0084	0.0210
0.2	-0.0073	0.0025	-0.0065	0.0259	-0.0170	0.0210
0.1	-0.0113	0.0028	-0.0130	0.0278	-0.0260	0.0230

Table 2. Parameters of daily return distribution

The difference between results of pickers and timers is apparent. For example, on average timer will have bigger gain than picker. It is explained that in chosen model the first group of managers has picks only between two groups of stocks, but selectors must include in their portfolio all stocks, which accordingly to their expectations will show positive income. As a result, pickers compile more diversified portfolios, that is clearly shown by reduced value of daily income standard deviation. Thus used procedures of computer modeling allowed creation of the stock groups with typical features.

Also it is important to note that quantity of stock operation executions has significant impact on the final results of managers' activity. The more often manager makes an investment decision, the more stock income depends on management quality.

#### 4.2. Results of Performance measures Estimation

After the return series of profitability characterizing the abilities of imitation managers were obtained it is necessary to estimate the performance measures for every observation frequency considered during the research. For this purpose four basic measures were chosen. Firstly, simple one factor measures such as Sharpe ratio and Treynor ratio were used. These indexes or their variations are the most widely used in practice as they are easily applied. At the same time the estimation of two parametrical attribution measures was carried out: the first of them was Jensen's alpha that was applied to estimate picking quality. This measure is often used as a basis for many other parametrical measures, including such as Fama-French measure and Carhart's alpha, thus the results obtained for Jensen's alpha can be used for further estimations. To estimate managers' timing ability Treynor-Mazuy gamma was applied. The choice of this parameter was stipulated by the fact that the major part of researchers in the field concentrated on the study of macropredictive ability of managers used exactly this parameter, which makes the comparison of our results and the ones obtained earlier possible.

After the estimations for each of the funds were made their average was calculated for the further analysis of the indexes qualities. Correlation between estimations and the given parameters for the groups of managers presented in the Table 3.

Measures	pickers		timers	
	Trading frequency	probability of successful deal	Trading frequency	probability of successful deal
Jensen's alpha	0.9090	0.9437	-0.0340	0.9446
Jensen's Beta	0.4435	0.7574	-0.5858	-0.4713
Alpha T – M	0.8978	0.9438	-0.2124	0.8133
Beta T – M	0.2391	-0.0040	0.4814	0.8235
Gamma T – M	0.2589	-0.0040	0.4468	0.8144
Sharp's ratio	0.0467	0.4750	0.0026	0.0728
Treynor's ratio	0.1016	-0.0261	0.0369	0.0790

**Table 3.** The correlation between characteristics of the managers and performance measures.

The estimations of the measures under the consideration obtained for imitation markets when the observation frequency coincide with the frequency of actually taken decisions are presented in the Table 4.

Measures	probability of successful deal for annual trading			probability of successful deal for monthly trading			probability of successful deal for daily trading		
	0.1	0.5	0.9	0.1	0.5	0.9	0.1	0.5	0.9
	<i>timers</i>								
Jensen's alpha	-0.0054	-0.0013	0.0013	-0.0119	-0.0054	0.0029	-0.0049	0.0014	0.0052
Jensen's Beta	1.322	1.213	0.243	0.7624	0.4565	0.0211	0.897	0.6622	0.3088
Alpha T – M	0.0134	0.0013	0.0002	-0.0107	-0.0076	0.0014	-0.0259	-0.0015	0.0010
Beta T – M	-54.48	9.58	9.42	-6.23	13.28	20.82	-13.57	13.69	23.75
Gamma T – M	-35.68	3.10	5.00	-4.82	10.30	9.44	-8.47	12.37	16.49
Sharp's ratio	-0.043	-0.158	0.468	0.428	0.397	0.42	0.181	-0.06	0.178
Treynor's ratio	-0.00013	0.0013	0.0166	0.0109	0.247	-0.063	-0.00008	-0.0002	-0.0003
<i>pickers</i>									
Jensen's alpha	-0.019	-0.0089	0.0175	-0.0237	-0.0104	0.0112	-0.013	-0.0014	0.0343
Jensen's Beta	2.457	2.894	2.926	2.473	2.937	2.971	2.649	3.166	3.273
Alpha T – M	-0.0179	-0.009	0.0198	-0.1383	-0.0047	0.233	-0.0123	0.0003	0.0336
Beta T – M	-9.59	1.064	-18.21	-16.73	-56.82	-25.12	-3.87	-2.38	4.31
Gamma T – M	-4.96	1.385	-14.89	-12.66	-28.53	-14.73	-0.1532	0.215	5.09
Sharp's ratio	0.474	0.527	0.158	-0.144	-0.174	0.429	-0.176	0.176	0.177
Treynor's ratio	0.0006	0.0008	0.0007	-0.0005	-0.0006	0.0005	0.00001	0.00004	0.0002

**Table 4.** Estimations of performance measures

From the efficiency estimations obtained for different groups of managers the following conclusions can be made. At first the correlation between the most frequently used parameters such as Sharpe and Treynor ratio showed that the change in the number of operations leads not only to the change in the return but also to the variations of the standard deviation and of the portfolio beta. As a result these measures depends more on the variable, i.e. the spread of the surplus profitability obtained with the growth of the deal quality is not big enough to speak about the restricted opportunities of the given indexes for adequate description of the imitation managers' abilities. Special attention should be paid the fact that for pickers the coefficients considered are a bit higher than for timers, which proves the conclusion about the significance of the standard deviation in course of the estimation of the measures

According to the results received Treynor–Mazuy and Jensen's alphas appear to be the most suitable measures to estimate pickers' abilities. At the same time both indexes highly depend on the frequency of operation performance as well as on the quality of managers' skills. However the interconnection elicited for pickers is absent for managers- timers. Though this can be explained with the fact that application of Jensen's alpha presupposes beta constancy, i.e. the absence of timing ability. Interconnection between coefficients of Treynor–Mazuy model and the probability of the right assumption is rather tight, which shows the ability of this measure to partial estimation of managers' skills, however it is important of note that Treynor–Mazuy model not only estimates but also divides skills according to attribution (alpha picking, beta and gamma – different types of timing). To evaluate how properly the model singled out the attributions in condition of the given preconditions appears to be impossible.

## 5. Conclusion

Actual research is based on the computer modeling of behavior of the managers with presupposed skills. Such approach is determined by the difficulty to obtain the information about the frequency of fund operation performance and about quality of managers' skills. At the same we model the behavior of both timers and pickers. Return of funds that take decisions with different frequency (from daily to annually taken decisions) are considered. As the fundamental measures for analysis Jansen's alpha, Treynor–Mazuy alpha and gamma were chosen.

The conclusions obtained are quite ambiguous. On the one hand, it was revealed that the dependence on the observation frequency exists. But nevertheless, at the same time we can make conclusion that the quality of this dependence is determined by managers' abilities to make predictions of a high quality. Consequently, from the point of practical importance the results appear to be interesting but lead to a deadlock, creating logically closed cycle – to acknowledge the level of managers' skills it is necessary to possess the estimations of the certain measures and vice versa. However there is a fair number of alternative indexes, applied for analysis of efficiency of portfolio management, qualities of which was not considered within this work. It is also important to understand the results of the research are not universal and cannot be extrapolated without necessary corrections made.

The conclusion that a part of the results of previous researches are quite incorrect and need further consideration was made. However for the case analyzed dependence between estimation of the efficiency of measures and the number of observation exists, but it is a bit of a different kind than in other researches and depends on the quality and type of the skills of the managers estimated.

The very fact that the dependence existence was confirmed indicates that the further consideration of economic groundings of toughening of legislative demands to funds to disclose information. In particular, we speak about introduction of the rules according to which the disclosure of the information about the frequency of performance of the operation is obligatory in order to decrease distortion of investment orienting points on the stock markets.

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