SIGNIFICANCE OF THE PORTFOLIO SCOPE FOR IMPROVING THE RESULTS OF THE ACTIVE PORTFOLIO MANAGEMENT– FOLLOWING THE EXAMPLE OF THE EMERGING STOCK MARKETS IN SOUTHEAST ASIA

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Abstract: Active portfolio management is widely used in investment practice with the goal of securing better performance results from the investment process. Active portfolio management has gathered significant attention from both academics and practioners. Our goal is to investigate the class between two competing ideas. On one hand increasing the Breadth of the portfolio we should have bigger diversification effect. On the other hand increasing the number of assets (Breadth) should lead to smaller forecasting ability and therefore lower IC. Presented results show that our first hypothesis is confirmed – increasing the number of assets in the portfolio magnifies the effect of the active management. Additionally we show that when managers increase their Breadth, they increase not only IR, but also manage to decrease σ_{IC} which shows better stability of our forecasting skill through time.

Key words: breadth, strategy risk, alpha, active portfolio management
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Introduction

Active management is a widely used strategy in the investment practice for providing better results from the investment process. That is why the active portfolio management is of great interest as an object of research. Active management is also the object of interest in this article. One element is usually left out of the scope of research within the frames of the active portfolio strategy, namely the portfolio scope. The world of science is focused primarily on the other elements of the active portfolio strategy, namely the active risk and the information coefficient. With reference to this, the purpose of the present study is to analyse the portfolio scope within the framework of the active management and its role in the overall active strategy.

Our aim is to study the clash between two contradictory systems of logic. On the one hand, the increase in the scope of the portfolio should lead to a higher diversification effect. But on the other hand, the inclusion of more assets in the portfolio should result in less safety in forecasting and respectively a lower IC. The main research thesis that we defend is that by increasing the scope of the portfolio the result of the active management is also going up, regardless of the greater number of the assets and the possibility for a higher number of mistakes in the forecasting.

We test our hypothesis for the major markets in Southeast Asia. The results from the testing of our hypothesis categorically support the first line of logic – the increase in the number of assets in the portfolio increases the effect of the active management and do not decrease it. The results also show one additional effect from the increased number of assets in the portfolio not only IR but also σ_{IC} increases, which shows that the greater the portfolio scope is, the greater the reliability of the forecasting models used in the active management is.

1. Theoretical research on the impact of the portfolio scope in the active portfolio management

The active portfolio management continues to be one of the main strategies for conducting an investment policy. Over the last couple of decades there has been a fierce debate about which investment strategy has an advantage over the other – the active portfolio management or the passive management. Even though they both have extremely wide application in the investment practice, we think that the active portfolio management should be viewed as a continuation, a supplement or an improvement of the passive one.

The active portfolio management has been applied continually in the investment practice but its theoretical definition starts with Grinold & Kahn, 2000 – G&K (2000). Actually, prior to G&K (2000) the investment science was focused on the definition of the passive strategy and the end of this stage is marked by the emergence of the Capital Asset Pricing Model (CAPM) and the Arbitrage Pricing Theory (APT) model. The passive portfolio management can be succinctly presented with model (1).

(1) $r_p = r_b \beta_p + \omega_p$,

where

r_p is the return on the portfolio;

r_b is the return on the reference portfolio or factor (benchmark);

β_p is the systematic risk, describing the link between the portfolio return and the benchmark;

ω_p is the idiosyncratic risk like $\overline{\omega}_p = 0$.

According to the logic of the passive management presented in (1), the return on the portfolio depends solely on the benchmark (in case CAPM is applied; if APT is applied, it is possible to use multiple factors and then (1) acquires the following form: $r_p = a + \sum_i^M f_i r_i + \omega_p$ and instead of one factor, i.e. r_b, multiple factors f_i ,influence the portfolio, where the number of factors is M; with CAPM we assume that M=1). Therefore, the only thing the portfolio manager need to do is to choose the systematic risk β_p and the return on the portfolio will be passively dependent on the return on r_b.

The last element is the idiosyncratic risk and it is assumed to be a random variable with an average of zero. The idiosyncratic risk (*tracking error* – TE) is considered to be a non-systematic risk. If this risk is indeed a random variable, its practical application in the real passive portfolio management leads to two conclusions: a) the portfolio manager is not able to manage this part of the return on the investment and they only have to take this additional non-systematic risk and b) the only way to minimize the non-systematic risk is to diversify away by building a portfolio. After building a portfolio, the negative deviations from zero in the return on some assets (the negative ω_i) will be covered by the positive deviations from zero of the other assets (the positive ω_i).

The subsequent multiple studies prove that ω_p from (1) is not a random variable but is determined by other factors, which are not reflected by (1). Thus, if ω_p tends to zero when there is a greater number of assets in the portfolio, this is not the case with individual assets. For some of the assets the deviation would be positive, for others – negative. And due to the fact that this deviation is not accidental but a result of many factors, the only thing to do is to determine these factors. This would allow the portfolio manager to look for a long-term investment in those assets, for which the deviation is positive, and to look for a short-term investment in those assets for which the deviation is negative. Thus TE from (1) turns into a main goal of the active portfolio management and it is called alpha – (2).

$$(2)\quad \alpha_p = r_p - r_b\beta_p = \omega_p = \sum_{i=1}^{N}\omega_i ,$$

where:

α_p is the alpha of the portfolio.

The high values of the alpha mean that the return on the portfolio is higher than the return on the benchmark, i.e. $r_p - r_b\beta_p > 0$. Naturally, (2) places the alpha of the portfolio as a main criterion for conducting active management. That is why it is extremely important to define what the portfolio alpha depends on in order to help portfolio managers realize such alpha for their investors. The so called Fundamental Law of Active Management is such an attempt for defining the dependencies, determining the α_p. The first version of the Fundamental Law of Active Management could be presented by the original formula of G&K (2000) - (4). Actually, this formula is derived from (3).

(3) $\alpha_p = \omega_p IC\sqrt{N}$

(4) $IR = IC\sqrt{N}$,

where

α_p is the expected alpha of the portfolio;

IC is the information coefficient of the strategy;

N is the scope of the portfolio;

ω_p is the TE of the portfolio;

IR is the information ratio.

Formula (3) presents the main idea of the active portfolio management. Active managers strive to maximize the alpha of the portfolio α_p. According to (3), in order to maximize it, the portfolio manager should manage three elements – the TE of the portfolio ω_p, the information coefficient of the chosen strategy IC and the scope of the portfolio N. The inclusion of TE in (3) is strange but at the same time logical. Practically, in order to obtain a higher alpha the manager has to increase the TE of the portfolio, i.e. to increase its risk. The strangeness of this element is determined by the fact that usually portfolio managers are expected to decrease risk, to optimize it, whereas here with the active management, it turns out that they have to increase this risk. The logic in this strangeness lies in the peculiarity of the alpha as an investment goal. The alpha is the deviation of the managed portfolio return from that on the benchmark return. In order for such a deviation to take place, the portfolio needs to be sufficiently varied, to deviate considerably from the benchmark return. If the portfolio does not have such a quality then its return would be very close to that of the standard and therefore it becomes impossible for the portfolio management to realize a sufficient alpha. In this case the manager would realize only the return on the standard. Hence, the presence of ω_p is logical. The increase in the TE of the portfolio, however, leads to a higher risk for the investor. Therefore, the manager faces a typical optimization task – to increase the return of the investor taking a greater risk. The success in solving this task is achieved only by taking into consideration the impact of both factors – the higher alpha would be achieved at a higher risk, however the growth of the alpha should outweigh the growth of the risk. In order to take into account this peculiarity, G&K (2000) developed the Fundamental Law of Active Management in its standard from – (4).

The second element of (3) is the information coefficient IC. This indicator measures the skill of the selected strategy to ensure active return. The mathematical measurement of IC is through the co-variation between the expected return of a given strategy and the realized return. Naturally, the different strategies have different information value – i.e. different IC. Due to the fact that managers always use those models they know well and are confident with, IC is usually perceived as the skill of the strategy chosen by the manager to realize alpha.

The third element from (3) is the scope of the portfolio N. According to G&K (2000), this is „number of independent investment decisions that managers make each year”. If only one investment decision is made each year for the portfolio, i.e. if the portfolio is rebalanced, then N would be the number of assets included in the portfolio.

The standard version of the Fundamental Law of Active Management in (4) (and formula (3), which is its explanatory version) describes the investment process in active management. According to the Fundamental Law of Active Management, the high alpha could be achieved only from portfolios with high volatility ω_p, which are managed by managers with high forecasting ability IC and N. In order to achieve a higher information ratio IR (which is a measure of the expected outcome of active management), the manager should increase both his forecasting ability IC and the portfolio scope N. This conclusion completely corresponds to the normal investment logic: a manger with a high forecasting ability should make multiple attempts in order to realize this ability and to create a high alpha. If there is a high forecasting ability but a low scope, the forecasting ability remains unrealized. If there is a low forecasting ability but the scope increases, then the alpha goes up because it is realized by a greater number of bets.

In fact, from the thus presented standard form of the Fundamental Law of Active Management in (4) we can conclude that maybe there is a problem with the measuring of IC although its theoretical nature is absolutely clear. However, this is not the case with N. The G&K's definition (2000) causes a significant ambiguity about the nature of N. According to G&K (2000), the scope is the number of 'bets' managers make for a year. They emphasize that N is a trade-off between the number of assets and the length of the investment horizon. Although they give an example of how N could be increased by switching from more long-term to more short-term strategies, they make an assumption referring to a lack of correlation between the active bets. This assumption is irrelevant to the investment activity. That is the reason why we feel motivated to undertake this research. One of our aims is to study more thoroughly the theoretical essence of the scope so that we can be useful to the portfolio managers when they apply their active strategies.

The standard Fundamental Law of Active Management only marks the beginning of a new direction in this research. G&K (2000) admit that the Fundamental Law of Active Management is not an operating tool which could be applied directly by the investment managers. What the investment practice needs is a real-life tool to assist the managers in their decisions. Therefore, a number of researchers like (Qian & Hua, 2004), (Clarke, de Silva, & Thorley, 2005), (Ding & Martin, 2017) develop further the Fundamental Law of Active Management and offer new versions of it.

Let us focus on one specific feature of the standard Fundamental Law of Active Management. With reference to it G&K (2000) assume that IC is constant. To a certain extent this is understandable – if a manager has certain abilities for forecasting they would apply them constantly and presumably in the same way. The investment reality, however, is different. Actually, a given forecasting model leads to more accurate forecasts over a given period and over other periods the same model leads to less accurate ones. Therefore, there is a variation of IC and it is a source of an additional risk for the investor, who should get involved when determining the expected alpha and the information ratio. Thus, (Ye, 2008) develops e new version of the Fundamental Law of Active Management – (7).

(5) $\alpha_P = \omega_P \mu_{IC} \sqrt{N}$,

(6) $\Omega_P^2 = \omega_P^2 \sigma_{IC}^2 N + \omega_P^2$.

(7) $$IR = \frac{\mu_{IC}}{\sqrt{\frac{1}{N} + \sigma_{IC}^2}}$$

where

μ_{IC} is the average of IC;

Ω_P is the active risk of the portfolio, including the strategic risk;

σ_{IC} is the strategic risk, caused by the variability of IC.

Due to the presence of a strategic risk, Ye (2008) changes the standard formula (3) for the expected alpha of the portfolio and it takes the form of (5). This change is logical – since IC is no longer assumed to be a constant (as G&K (2000) suggest), instead of the constant value of IC its average μ_{IC} should be used. The inclusion of the strategic risk, however, changes the nature of the active risk. Apart from the standard active risk in the form of TE - ω_P, Ye (2008) also includes the variability of the information coefficient, i.e. σ_{IC}. Thus, a new understanding of the active risk is reached. The formula of Ye (2008) for the active risk is presented in (6). When (5) and (6) are combined we get the new version of the Fundamental Law of Active Management (7). Unlike G&K (2000), Ye (2008) does not assume that N is the number of bets, but the number of assets in the portfolio.

According to equation (7), the manager can achieve a high information ratio, i.e. a high result of the active portfolio by observing three factors, i.e. the increase in μ_{IC}, the decrease in σ_{IC} and the increase in N. This conclusion appears to be similar to the conclusion from the standard

Fundamental Law of Active Management (4). However, formula (7) in fact causes a major contradiction, which is the object of this research. If the scope of the portfolio N increases, this would mean that the manager should include more assets in the portfolio. On the other hand, the inclusion of more assets would mean a decrease in the forecasting ability of the manager. This is so because the manager should include less familiar assets and hence the correlation between the realized and predicted returns would reduce, i.e. this would result in a reduction in IC. It is particularly due to the presence of this contradiction that we would like to check its validity in this research.

2. Methodology for studying the scope impact

In order to check the impact of the scope on IR and the strategic risk, we check the application of active investment strategies on the capital markets in Southeast Asia. The markets included in the research are Indonesia, Thailand, the Philippines, Malaysia and Vietnam. The active investment strategies are created on the basis of a scoring by 5 popular investment factors, namely the net margin (Margin), the return on equity (ROE), the state equalized value (SEV), the assets turnover and yield. We use monthly data for the period from February 2007 to October 2017, which provide us with 117 empirical observations. Companies with missing data for this period have been taken out of the sample. The final number of companies in the investment world is 1200.

Given that we assume the number of assets included in the portfolio to be the scope, the impact test involves increasing the number of assets in a portfolio as well as taking into account the change in the indicators we are interested in. The first step is ranking the 1200 shares according to their market capitalization. In the first portfolio we include the 100 shares with the greatest capitalization and optimize them according to the 5 alpha factors. Then we increase the scope of the portfolio by including the next 100 shares according to their market capitalization and perform this operation until we reach 1100. In the end we obtain 11 portfolios with increasing scope for each of the 5 factors or 55 portfolios in total with which we monitor the impact of the scope IR and the strategic risk. It is necessary to clarify that by using the market capitalization as a sign of widening the scope, we get a study of how the alpha factors are presented within the context of the size premium. However, the obtained results should be objective because the aim is to assess the effect of the higher scope rather than the overall performance of the portfolios.

Each of the 55 portfolios undergoes a unified construction process. The first step is to calculate the historical alpha yield. In this approach we use a single-factor model and the factor is the representation of the factor model over the relevant period. In order to make the calculation easier, we use a matrix model for the linear regressions. We present the market model from formula (1) in the following way by using the matrix model for the portfolios (8):

(8) $\mathbf{R} = \mathbf{X\Gamma'} + \mathbf{E}$,

where:

$\mathbf{R}$ is N by T matrix with the logarithmic returns of the shares in the portfolio;

$\mathbf{X}$ is 1 by T matrix with the return of the market portfolio;

$\mathbf{\Gamma'}$ is a vector with the individual exposures of each share β_i against the benchmark;

$\mathbf{E}$ is the matrix with the errors r_{it}.

The method of least squares in a matrix form renders the following solution against vector $\mathbf{\Gamma'}$ (9):

(9) $\hat{\mathbf{\Gamma}}' = (\mathbf{X'X}) + \mathbf{X'R}$,

Actually the historical alphas are the elements of the matrix $\mathbf{E}$ from the single-factor model. The next step is to calculate the individual additional risk or the so called tracking error. Although there are complex factor models for calculating the tracking error, a simplified approach is taken in this case by applying a model of conditional volatility. The chosen model is the standard GARCH (1,1), which is shown in (10):

(10) $\tilde{\sigma}_{i,t}^2 = \omega_i + \alpha_i . r_{i,t-1}^2 + \beta_i . \sigma_{i,t-1}^2$,

where:

$\tilde{\sigma}^2_{i,t}$ the calculated conditional tracking error of asset *i* over period *t*;

$\omega_i, \alpha_i, \beta_i$ are the parameters of the GARCH model;

$\sigma^2_{i,t-1}$ is the lagging conditional tracking error of asset *i*;

$r^2_{i,t-1}$ is the lagging historical alpha.

After the expected tracking errors have been calculated with the help of the model for conditional volatility, the next step is standardization of the alpha factors and the historical alphas. One of the characteristics of the historical alphas, calculated with a single-factor model, is the fact that their individual time arithmetic mean is equal to 0. Thus, in order to standardize the historical alphas we only have to divide each alpha by the respective expected tracking error $\tilde{\sigma}^2_{i,t}$, as shown in (11)

$$(11)\quad \tilde{r}_{i,t} = \frac{r_{i,t}}{\sqrt{\tilde{\sigma}^2_{i,t}}}$$

where:

$\tilde{r}_{i,t}$ is the standardized historical alpha for asset i over period *t*;

$r_{i,t}$ is thehistorical alpha for asset i over period t;

$\tilde{\sigma}^2_{i,t}$ is the expected conditional tracking error of asset i over period *t*.

On the other hand, each of the alpha factors is standardized to have a spatial average of 0 and spatial dispersion of 1 over each given period t. For this problem we use the most simplified method for standardization (12)

$$(12)\quad \tilde{f}_i = \frac{f_i - \bar{f}}{\sigma_f},$$

where:

$\tilde{f}_i$ is the normalized and standardized alpha factor;

f_i is the initial ranking of the shares on the basis of the factor;

$\bar{f}_i$ is the spatial mean of the initial ranks;

σ_f is the dispersion of the initial ranks.

The result from (12) is that for each period t the alpha factors have a spatial average of 0 and spatial dispersion of 1. The next step is to apply a spatial regression between the standardized historical alphas and alpha factors. The model used is shown in (13)

(13) $\tilde{r}_{i,t} = \gamma_t . \tilde{f}_{i,t-1} + \varepsilon_{i,t}$,

where:

$\tilde{r}_{i,t}$ is the standardized historical alpha of share i over period t;

γ_t is the spatial parameter $\approx corr(\tilde{r}_{i,t}, \tilde{f}_{i,t-1})$

$\tilde{f}_{i,t-1}$ is thenormalized alpha factor of asset i for period *t*-1;

$\varepsilon_{i,t}$ is the regression error;

In fact, the regression parameter γ_t is the information coefficient (IC) and is approximately equal to the correlation between the realized historical alphas and the estimated ones according to the factor. The calculation of the information coefficient is an integral part because the expectations for its future yield are formed on the basis of its estimated value. The vector with expected alphas is calculated in the following way (14):

(14) $E(\boldsymbol{\alpha}_{i,t+1}) = \boldsymbol{\Lambda}_{i,t} . \mu_{IC} . \mathbf{F}_{i,t}$,

where:

$E(\boldsymbol{\alpha}_{i,t+1})$ is the vector with expected alphas for each asset i for the period t+1;

$\boldsymbol{\Lambda}_{i,t}$ is the diagonal matrix with elements the conditional tracking errors $\sqrt{\tilde{\sigma}^2_{i,t}}$;

μ_{IC} is the expected value of *IC*;

$\mathbf{F}_{i,t}$ is the vector with normalized and standardized values of the alpha factor for each asset *i* for the period *t+1*.

The vector with the expected alphas is one of the two necessary components for optimization and finding the optimum weights. The second component is the risk matrix. There are different models and approaches for the expected total active risk. In this work from the very beginning we adopted the model of Ye (formula) for finding the IR coefficient. In this way it would be a product of equation 6 for the matrix of the total active risk. When we have the two components for optimization, we solve the following optimization equation (15):

$$
\begin{aligned}
&\max \rightarrow \mathbf{\Delta w'\,\alpha} \\
&\sqrt{\mathbf{\Delta w'\,\Omega\Delta w}} = 5\% \\
(15)\ s.t.\ &\mathbf{\Delta w'1} = 0 \\
&\mathbf{\Delta w'\,\Gamma} = 0 \\
&-10\% \le \mathbf{\Delta w} \le 30\%
\end{aligned}
$$

After we apply the optimization mechanism we can get the necessary coefficients for IR and the strategic risk. By repeating this procedure for each of the 55 portfolios we are able to analyse the impact of the increasing scope on the expectations from the actively managed portfolios.

3. Empirical evidence of the role of the portfolio scope in the active portfolio management

First of all, in the empirical part of the study, we need to prove the positive relationship between the scope of the portfolio and IR. By applying the described methodology for testing of the dependency, we get the results shown in table 1:

Table 1
Changes in IR of the active portfolio due to changes on the number of assets in it

IR	Margin	ROE	SEV	Turnover	Yield
100	0.621	0.636	0.653	0.008	0.752
200	0.687	0.679	0.705	0.007	0.930
300	0.695	0.726	0.702	0.000	1.049
400	0.696	0.763	0.763	0.001	1.033
500	0.715	0.766	0.741	-0.002	1.062
600	0.750	0.785	0.745	-0.003	1.053
700	0.766	0.822	0.780	0.002	1.076
800	0.761	0.833	0.783	-0.007	1.057
900	0.782	0.836	0.797	-0.001	1.048
1000	0.785	0.858	0.812	-0.001	1.067
1100	0.781	0.858	0.811	0.001	1.095

Table 1 confirms the original hypothesis that with the increase in the N in the portfolios, the positive effect of the active portfolio management increases too. This is natural because this dependency could be caused by the specific manifestation of the portfolio diversification effect but also by other factors. For all factors a clear trend towards increase in IR is observed. This means that with the increase of the number of assets the active yield per unit of active risk taken increases. Only for the Turnover factor we do not see such a dependency. The reason is that only this factor has a low absolute value of IR. As we can see the growth is not proportional, therefore it is due to a variety of reasons. The aim of this research is to check the impact of the scope on the other indicators in the active portfolio management. Table 2 shows the ratio between the risk from the tracking error against the total active risk of an increase in assets:

Table 2
Changes in TE of the active portfolio due to changes in the number of its assets

Lambda/TR	Margin	ROE	SEV	Turnover	Yield
100	54.4%	50.6%	56.0%	57.6%	55.8%
200	51.7%	48.0%	50.5%	51.5%	51.8%
300	48.3%	42.3%	45.7%	46.9%	46.8%
400	44.8%	38.4%	38.4%	44.8%	42.3%
500	48.7%	36.0%	41.6%	44.2%	40.3%
600	47.9%	35.2%	39.4%	43.4%	37.2%
700	45.6%	34.4%	37.3%	40.7%	34.2%
800	44.2%	33.0%	34.9%	38.9%	31.8%
900	44.0%	31.9%	33.9%	38.2%	30.3%
1000	43.3%	32.1%	32.4%	36.8%	29.8%
1100	41.5%	31.0%	31.8%	36.6%	29.7%

Table 2 also confirms the result from the expected theory. As a result of the increase in the number of assets, the diversification effect should increase. This dependency is very clearly presented in Table 2 for each of the studied factors. For some factors the decrease is bigger (for Yield and SEV), for others – smaller (for Margin), but the dependency remains. The difference should be explained with the different correlation of the assets for the different factors, which changes the strength of the diversification effect.

Next, we examine the impact of the increasing number of assets on the information factor. The results are shown in Table 3:

Table 3
Changes in IC of the active portfolio due to changes in the number of its assets

IC	Margin	ROE	SEV	Turnover	Yield
100	0.0149	0.0086	0.0368	-0.0039	0.0931
200	0.0243	0.0288	0.0381	-0.0013	0.1076
300	0.0320	0.0412	0.0413	0.0002	0.1158
400	0.0006	0.0396	0.0396	0.0006	0.1080
500	0.0293	0.0393	0.0417	0.0004	0.1051
600	0.0288	0.0411	0.0441	0.0028	0.1062
700	0.0313	0.0454	0.0450	0.0034	0.1111
800	0.0311	0.0443	0.0457	0.0038	0.1108
900	0.0313	0.0441	0.0468	0.0040	0.1083
1000	0.0314	0.0444	0.0480	0.0044	0.1063
1100	0.0319	0.0437	0.0488	0.0058	0.1040

Table 3 presents the results for the average value IC - μ_{IC} of the 11 portfolios that are studied. In a sense the end results are surprising. According to the logic of the active management, the portfolio manager focuses on those assets which have the highest forecasting ability. Therefore the natural result of the active management is an investment policy which focuses on those assets whose IC is high. Our research shows, however, that such a policy is wrong. In fact, the greater number of assets leads to a more accurate use of the forecasting method and therefore, to more accurate forecasts. That is due to the fact that, according to Table 3, the greater number of assets in the portfolio leads to a greater forecasting ability of each of the 5 single-factor models that are studied. The correlation between the expected yield and the realized yield (presented by IC) increases with the number of assets in the portfolio. Apparently, the financial markets in Southeast Asia confirm the rule that as the aggregate increases the quality of the factor models also goes up.

Lastly, we look at the impact of the growing scope on the strategic risk, measured by the standard deviation of the information coefficient. The results are shown in Table 4:

Table 4
Changes in the active portfolio due to changes in the number of its assets

std(IC)	Margin	ROE	SEV	Turnover	Yield
100	0.154	0.170	0.148	0.142	0.149
200	0.117	0.129	0.121	0.118	0.117
300	0.105	0.124	0.112	0.109	0.109
400	0.100	0.120	0.120	0.100	0.107
500	0.080	0.116	0.098	0.091	0.102
600	0.075	0.109	0.095	0.085	0.102
700	0.074	0.103	0.094	0.085	0.104
800	0.072	0.101	0.095	0.084	0.105
900	0.068	0.099	0.092	0.081	0.105
1000	0.066	0.093	0.092	0.080	0.101
1100	0.066	0.093	0.090	0.077	0.097

Another conclusion of this study is the importance of σ_{IC} for the profile IR. The results for the companies in Southeast Asia in Table 4 show that the increase in the number of assets on the portfolio leads to a considerable decrease in the standard deviation of IC. Therefore, the forecasting models become not only more accurate but also – more stable. Managers could be more confident about their forecasting models over the next period. This in turn leads to an increase in IR of the portfolio.

Conclusion

In this research we present the position of the portfolio scope within the frames of the active portfolio management. We consistently look at the development of the theory of active management by starting with the Fundamental Law of Active Management. We point out some of its weaknesses and follow the development of the Fundamental Law of Active Management, described by Ye (2008). In this version of the model of active management the role of the scope of the portfolio is of great importance – the increase in the scope should also lead to an increase in IR of the portfolio. Our main hypothesis is based on the logic of the Ye's model (2008) – the increase in the number of assets in the active portfolio should also lead to an increase in the results of the active management.

We test our hypothesis with some sufficiently developed markets that are also famous for their volatility – the major emerging markets of Southeast Asia. We simulate portfolios with a constantly increasing number of assets and examine the impact of the increasing scope on the main indicators of the active - IR, TE, IC and σ_{IC}. As expected, the increase in N leads to a lower active risk TE and a better information ratio IR. To a certain extent the results for the other two indicators are surprising. It is traditionally assumed that the greater number of assets could lead to deterioration in the quality of the forecasting models. However, the results show the opposite dependency. The greater number of assets in the portfolios leads not only to a more accurate use of the forecasting model and therefore, to more accurate forecasts, i.e. a higher information coefficient IC, but in addition to that, the models yield more stable results, i.e. σ_{IC}. Consequently, our recommendation to those applying active portfolio management is to increase the scope of the portfolio instead of using their forecasting abilities only on a limited number of assets.

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