

Master's Thesis in Finance and Economics
Stockholm School of Economics

INVESTING IN AN EMERGING MARKET

- Systematic risk and fund performance in the Russian stock market in 2001-2006

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ABSTRACT

In this paper, we study systematic risk factors that influence returns in the Russian stock market and investigate how Swedish Russia and Eastern Europe funds have performed and managed their portfolio holdings in an emerging market environment. We find that the Russian stock markets exposure to systematic risk in other emerging markets is high and significant. Commodity risk and global currency risk are also important, although subjects to strong time variation, which persists cross sectors. Swedish Russia and Eastern Europe funds manage these risk factors by reducing their overall portfolio holdings' exposure to the systematic market risk. This enables them to overperform the market index and generate positive excess returns, mainly through long-term strategic investment decisions.

Keywords: Emerging markets, systematic market risk, Russian stock market, Russia funds, Eastern Europe funds, fund performance and evaluation

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TABLE OF CONTENTS

1	Introduction	3
2	Previous findings	5
3	Analytical foundation.....	7
3.1	International investors in an emerging market	7
3.2	The systematic market risk.....	8
3.3	Fund performance evaluation.....	10
3.4	Evaluation of tactical and strategic decision.....	11
3.5	Reward to volatility	13
4	Description of data.....	13
4.1	Data sample	13
4.1.1	General presentation of the funds	13
4.1.2	Sector allocation.....	15
4.2	Collection and processing of data.....	18
4.2.1	Data collection	18
4.2.2	Data processing	19
4.3	Tests of the data set properties.....	19
5	Empirical evidence, analysis and discussion	20
5.1	Russian stock market's exposure to global equity risk.....	20
5.2	The systematic risk factors.....	23
5.2.1	Russian market's exposure to systematic risk factors.....	24
5.2.2	Russian sector markets' exposure to systematic risk factors	25
5.2.3	Country risk in Russia	27
5.2.4	The funds' exposure to systematic risk factors	28
5.3	Performance evaluation of Russia and Eastern Europe funds	31
5.3.1	Generation of excess returns.....	31
5.3.2	Excess returns from long-term investment decisions	33
5.3.3	Excess returns from short-term investment decisions.....	35
5.3.4	Sector portfolio analysis.....	36
5.3.5	Risk-adjusted performance evaluation	41
6	Concluding remarks	42
7	References	45
8	Appendices A-F.....	48

October. This is one of the peculiarly dangerous months to speculate in stocks. The others are July, January, September, April, November, May, March, June, December, August, and February.

Mark Twain.

1 Introduction

It is no longer only in the developed world that market economy is flourishing. With the fall of the Berlin wall, trade liberalization and decreasing protectionism, emerging markets have opened up to international investors. They offer new alluring investment opportunities with potentially high returns, but very often in a highly unstable economic environment. This idea is well-captured by a definition of an emerging market as “a country where politics matter as much as economics to the markets”¹. And speculative foreign investors are not helping, in fact they are said to further induce volatility to emerging markets. The systematic market risk is not only high but also subject to time variation that international investors are not used to dealing with. However if the correlation between the world equity market and the emerging equity market is low, then the emerging market could provide the international investor with an additional benefit in form of a portfolio diversification opportunity. Therefore the first purpose of this thesis is *to provide insight into the systematic risk factors in an emerging market*. Facing an investment decision, the international investor will also be interested in learning how to manage a portfolio of emerging market holdings. This takes us to the second purpose, which is *to shed light on how large institutional investors are managing the challenges presented to them by an emerging market environment and how they have performed in the market in the past*.

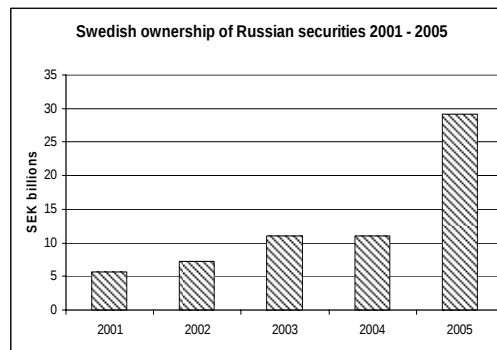
An emerging market of interest to international investors was not hard to find. Russia was a natural choice for several reasons. First, it is the largest emerging market in the world with a market capitalization of 966.2 billion USD in the end of 2006². Second, its geographical proximity makes it of special interest to Swedish investors whose ownership of Russian securities has been increasing sharply during the first half of this decade, from 5.7 billion SEK in 2001 to 29.2 billion by 2005³.

¹ Ian Bremmer: “Managing risk in an unstable world”, Harvard Business Review 2005, Online version

² FINAM investment company, <http://fin-rus.com>, 2007-08-02

³ Riksbanken, http://www.riksbank.se/pagefolders/28059/svenskt_portfoljinnehav_2005.pdf, 2007-08-05

Figure 1 – Swedish ownership of Russian securities 2001 – 2005



Source: Riksbanken

Third, there are many institutional investors in Sweden that manage holdings in Russia. As Swedish mutual equity funds investing in Russia have reported impressive returns in the Russian stock market, the interest in the market has been increasing among private and institutional investors. Furthermore, it is a common perception that the Russian stock market provides some level of diversification opportunities due to the oil and gas sector that dominates the market. *Therefore to fulfill the purpose we have chosen to study the systematic risk factors influencing returns in the Russian stock market and then move on to investigate how the Swedish Russia and Eastern Europe funds have managed these risks and how they have performed in the market in the past.* Our observation period is 2001 – 2006 and we will broaden the scope to cover the sector portfolios of the funds.

There are some previous studies that address stock market returns in Russia and in other similar markets. The relation between stock returns and economic risk factors in Central and Eastern European countries is studied by Mateus (2004) whereas Lucey and Voronkova (2004) focus on the relation between the Russian and the Central and Eastern European equity markets. Both Anatolyev (2005) and Gorieav and Zabotkin (2006) choose the risk factors as their approach in explaining Russian stock market returns, however they do not cover the exposure of portfolios to the systematic risk factors as we do here. As far as we know, there are only a limited number of previous studies on quantitative risk and performance evaluation conducted regarding the mutual equity funds' performance in an emerging market like Russia. Most fund performance evaluation studies are conducted on established markets and find active fund management to generate none or small positive excess returns. We want to contribute to the debate on fund performance by investigating whether the funds are able to generated excess returns in an emerging market. We also want to contribute to the discussion on systematic risk factors in the Russian equity market, which is of great relevance to international investors.

We find that the Russian stock markets exposure to systematic risk in other emerging markets is high and significant. Commodity risk and global currency risk are also important, although subjects to strong time variation, which persists cross sectors. Swedish Russia and Eastern Europe funds manage these risk factors by reducing their overall portfolio holdings' exposure to the systematic market risk. This enables them to over perform the market index and generate positive excess returns, mainly through long-term strategic investment decisions.

The thesis proceeds as follows. In chapter 2 we start by discussing some previous empirical findings on topics related to Russian equity returns and fund performance. Then we move on to present the analytical foundation in chapter 3 with the theories and models that form the basis for analysis in this study. A description of the funds and the data set is given in chapter 4, where we also address the process of data collection and handling. Chapter 5 focuses on the results of the statistical analysis and presents the most important empirical findings. Finally, concluding remarks are given with some suggestions for further research.

2 Previous findings

The predictability of stock returns has long been debated by researchers. Mateus (2004) has contributed to this debate by studying the predictability of local stock returns during the turbulent period of 1997-2002 in Central and Eastern European countries and found it to be high and variant. He finds no clear contemporaneous relation between stock returns and macroeconomic variables to be valid for the whole region other than some level of partial market integration with the world markets. Global instrumental variables such as interest rates, the world excess return, exchange and inflation rates, had higher predictive power for stock returns in Bulgaria, Cyprus, Estonia, Lithuania, Romania and Hungary, and local instruments were more important in the Czech Republic, Latvia, Poland and Slovenia. For most countries, predictability could not be explained by time variation in economic risk premiums, but by local information, market inefficiency and/or investor irrationality. That is, the variation between emerging markets can be great and the time variation significant in considering the macroeconomic risk factors driving emerging equity prices. Anatolyev (2005) studied co-movements of Russian and world stock markets finding this same pattern of time variation. As he investigated the impact of various local and global macroeconomic and financial variables on the Russian stock market returns in 1995-2004, there was substantial evidence found of structural instability in Russian equity market, that are not related to

one-time events, such as the financial crisis in 1998. The influence of oil prices and foreign exchange rates had diminished, while the influence of global market factors such as US stock prices and international and domestic interest rates had increased in the later part of the observation period. To what degree then has the country risk, both political and economic, dominated as a risk factor and how has the industry and firm-specific risks developed during the past decade? Some evidence, like the above, indicates the diminishing importance of country risk as a driving force behind Russian equity prices. Anatolyev (2005) has also tracked indicators of integration of the Russian stock market with world financial markets. However, he has not found any clear positive trend in the degree of integration of the Russian stock market with other stock markets. Still, the spillovers coming from other stock markets to the Russian market have increased while spillovers to the opposite direction have diminished. This result is in line with the findings of Lucey and Voronkova (2004) who focused on the relationship between Russian and CEE equity markets. According to their results, Russian market shows significantly more evidence of integration with developed markets which is logical considering the extent of interdependencies between the US and European markets with respect to Russian and CEE equity markets.

Still, industry-specific risk factors are important for Russian stock prices. According to Gorjaev and Zabolkin (2006) a considerable proportion of the cross-sectional variance in individual stock returns is due to the variance in returns between the sectors in the economy. They also interpret this as an indication of increasing industry and firm-specific risks and diminishing importance of country risks. Among studies of individual stocks, Gorjaev (2004) however does find significant premiums for country risk, in addition to corporate governance, size and currency risks. The role of importance of picking stocks in Russia might still be even more important than initially though. Namely, Gorjaev and Zabolkin (2006) found the annual returns of the middle 80% of the stocks in their sample to vary by 150% or more, which they interpreted as a clear indication of the importance of firm-specific risk. If this was true, then Russia funds could in fact outperform the market index with superior stock picking ability. But as most research suggests, this is not often the case.

Starting with Jensen (1968), many studies support the view that an average mutual fund is not able to generate excess return over any benchmark index. Also Chen, Jegadeesh and Wermers (2000) studied the stockholdings and trades of mutual funds and found no evidence of such stock picking ability. What they did find however, was that the stocks purchased by funds had significantly higher returns than stocks they sold. This indicates a positive relation between fund performance and active fund management. In deed, Dahlqvist, Engström and Söderlind (2000) conclude when

studying Swedish mutual funds that they find increasing trading activity to generate returns. What about funds that are specialized, or have knowledge of a particular market? This could be the case of fund managers in Russia funds, with long experience from both the country and the stock market. Grinblatt and Titman (1989), who were among the first to base fund performance analysis on portfolio holdings did find that superior performance might exist among aggressive-growth funds, growth funds and funds with the smallest net asset values. Apparently these funds were also aware of their picking ability, since they had the highest management fees leaving the investors unable to benefit from these stock-picking abilities. In 1993, Grinblatt and Titman conducted another study to evaluate the performance of funds, this time with a method that did not require the use of benchmark. Again, they found evidence indicating that the aggressive-growth funds' performance was superior not only one specific year but persistently. Some findings from Wermers (2000) also indicate some stock-picking ability by mutual funds, as they outperformed the market by 1.3% per year in this study. However, since most performance evaluation studies are conducted on established stock markets and not in emerging markets such as Russia, the validity of these results to the Russian stock market is difficult to evaluate.

3 Analytical foundation

3.1 International investors in an emerging market

Foreign investors in emerging markets are seen by some as villains and by others as saints. They are saints in the sense that they enhance the development of financial markets and efficient capital allocation in the country. In deed, one impact of market liberalization is a reduction in the cost of capital (Bekaert and Harvey, 2000) and it is also found that the industrial sectors of emerging countries that are relatively more in need of external finance develop disproportionately faster (Rajan and Zingales, 1998). So by providing capital, foreign investors are making a good deed and contributing to economic growth. But others disagree. They don't argue that foreign investors are villains since they provide a capital inflow to the country, but because their speculative actions instabilize the economy. This critique is motivated by research indicating that speculation induces excess volatility to emerging markets and makes them more risky, even if this negative could be over-weighted by other welfare gains (Newbery, 1987 and Ross, 1989).

Whether foreign investors are villains or saints, the matter of the fact is that they are very much present in emerging markets not only to speculate to make high returns,

but to enjoy portfolio diversification benefits. Namely, the emerging market's low correlation with developed countries' equity markets reduces the unconditional portfolio risk of a world investor (Harvey, 1995). This low correlation is also the reason why standard global asset pricing models where complete integration of capital markets is assumed fail to explain the cross section of average returns in emerging markets. As Bekaert and Harvey (2000) point out, as time goes by and the financial markets continue developing, the correlation with world market returns usually increases either because the discount rate becomes global or cash flows become more correlated. Whether this is the case for the Russian stock market is of interest for all foreign investors looking for diversification opportunities in the market.

3.2 The systematic market risk

To investigate the systematic risk in the Russian stock market relative to that of the world market and emerging markets, we will start by applying the world CAPM as formulated by Gorjaev and Zabotkin (2006) to the Russian stock market and seven sectors during the observation period 2001-2006⁴. The model is the following:

$$R_t - R_{ft} = \alpha + \beta(R_{Mt} - R_{ft}) + \varepsilon_t$$

where

- R_t RTS return as the Russian market index⁵
 sector indices: DS Oil & gas, DS Basic materials, DS Consumer goods,
 DS Consumer service, DS Telecom, DS Utilities and DS Financials
- R_{Mt} MSCI World as the world market index
 MSCI Emerging markets as the emerging market index
- R_{ft} 30 days Moscow InterBank Offered Rate (MIBOR) as the risk-free rate
- ε_t the error term

In this world CAPM the exposure of the Russian stock market and sectors to systematic market risk is measured by the beta coefficient. If the beta coefficient is close to one, the exposure to systematic risk with respect to the world market or emerging markets is strong. This implies a higher level of market integration, whereas a beta coefficient close to zero would indicate lower exposure to systematic risk and therefore a lower level of market integration.

⁴ The calculation is made on an annual basis. See Appendix B for definitions of sectors.

⁵ The MSCI Russia index and the Datastream Russia index are both highly correlated with the RTS index, 0,968 and 0,942 respectively.

But most likely applying the world CAPM will not provide us enough information to understand the systematic risk in an emerging market like Russia. It is a well-known fact that the pace of change in Russian financial markets, institutional framework and macroeconomic environment during the years following the market liberalization has been tremendous. As the industrial structures have developed, it can be expected that the exposure to systematic risk and weights in RTS of individual companies have shifted. Since the RTS exposure to systematic risk is constructed as the weighted average of the companies included in the index, it is natural for there to be time variation in the exposure to systematic risk. In order for us to be able to capture this time variation and what induces it, a conditional asset pricing model by Gorjaev and Zabolkin (2006) is applied to the Russian stock market and seven sectors during the observation period 2001-2006. Since we are interested not only to understand the exposure to systematic risk in the Russian market but also how the Russia funds manage the challenge of an emerging market environment, we will use the model to take a close look at the systematic risk exposure of the individual funds as well. The conditional asset pricing model is the following:⁶

$$R_t - R_{ft} = \alpha + \beta_1(R_{Mt} - R_{ft}) + \beta_2\Delta\ln(Oil_t) + \beta_3\Delta\ln(LIBOR_t) + \beta_4\Delta\ln(RUB/USD_t) + \beta_5\Delta\ln(USD/EUR_t) + \varepsilon_t$$

Where⁰

- R_t RTS return as the Russian market index
sector indices: DS Oil & gas, DS Basic materials, DS Consumer goods,
DS Consumer service, DS Telecom, DS Utilities and DS Financials
return of the fund
- R_{Mt} MSCI Emerging markets as the market index
- R_{ft} 30 days MIBOR as the risk-free rate⁷

And the weekly log-returns for the risk factors are the following:

- $\Delta\ln(Oil_t)$ London Brent Crude Oil Index as the oil price
- $\Delta\ln(LIBOR_t)$ one-year London InterBank Offered Rate (LIBOR)

⁶ Gorjaev and Zabolkin (2006) apply the multi-factor in the following form:

$R_t - R_{ft} = \alpha + \beta_1(R_{Mt} - R_{ft}) + \beta_2\Delta\ln(Oil_t) + \beta_3\Delta\ln(LIBOR_t) + \beta_4\Delta\ln(RUB/USD_t) + \beta_5\Delta\ln(USD/EUR_t) + \beta_6\Delta\ln(Liquidity_t) + \varepsilon_t$
An additional parameter is used, namely domestic (money market) liquidity, to measure the effect of the banking system's excess cash reserves on the stock market. This parameter was excluded from this study due to poor data availability and the evidence showing this variable to have only limited influence.

⁷ Even if returns are calculated by using weekly data for returns, a 30 days MIBOR is applied by Gorjaev and Zabolkin (2006).

$\Delta \ln(RUB/USD_t)$	exchange rate Russian rouble to US dollar
$\Delta \ln(USD/EUR_t)$	exchange rate US dollar to euro
ε_t	the error term

In this conditional asset pricing model, the systematic risk of the Russian market is extended to depend not only on the development of world markets, like in the previous model, but on the market's exposure to several risk factors. The level of exposure to each risk factor is measured by the beta coefficient. The beta for MSCI Emerging Markets (EM) index indicates the exposure to global equity risk like in the world CAPM model above. The beta coefficient for oil indicates the exposure to the risk related to changing oil prices, and it is used here as a proxy for commodity risk. The one year LIBOR is a proxy for global interest rate risk and finally, the beta coefficients of exchange rate changes RUB/USD and USD/EUR capture the exposure to currency risk, both local and global.

By this way investigating the importance of these central risk factors to Russian stock returns, we hope to gain a better understanding of what the systematic risk in the market consists of. We can see if there is time variation in the exposure to these risk factors and if there are differences between sectors in this respect. But the international investor is interested in at least three more things. First, when aiming to build a diversified portfolio, the investor will want to know, not only the country risk, but also the risk exposure profile of the individual funds. Knowledge of this will be provided by the conditional asset pricing model above. Second, the investor will want to know how the funds have performance in the past. Here it is of interest to look at the returns, of course, but also the funds' relative performance as the investor will make an investment decision between the funds. The third and final aspect is to reflect on risk-adjusting these returns. In an emerging market characterized by high volatility, the risk-return trade-off is a particular concern. Investors are very keen to know what fund is performing best given the level of systematic risk. We will also try to answer this question as we move along.

3.3 Fund performance evaluation

The fund performance evaluation will be conducted by using three different measures. The first measure is Jensen's alpha, the most widely used measure in the financial literature. It aims to isolate the excess return that is generated if a fund manager has some extraordinary ability to forecast security prices. The asset pricing model by Jensen (1968) is the following:

$$R_{it} - R_{ft} = \alpha_i + \beta_{i0}(R_{bt} - R_{ft}) + \varepsilon_{it}$$

where

R_{it}	return of the fund i at time t
R_{bt}	RTS return as the Russian market benchmark index
R_{ft}	1-day Moscow InterBank Offered Rate (MIBOR) as the risk-free rate
α_i	intercept of the equation, here called Jensen's alpha
ε_{it}	the error term

It is the intercept α_i that represents the average incremental rate of return on the portfolio per unit time which is solely due to manager's ability to forecast future security prices. If the intercept is positive, the portfolio manager possesses some level of forecasting ability. If the manager is not doing as well as a random selection buy and hold policy, the intercept will be negative. This model also provides us with additional information regarding the fund's exposure to systematic risk in the market, which is measured by the beta coefficient. It is of particular interest here to see how the fund managers alter their exposure to systematic risk, especially considering the time varying nature of the risk factors discussed above.

3.4 Evaluation of tactical and strategic decision

The other two measures that we want to apply in the performance evaluation of Russia funds are interrelated. Namely, the fund manager's performance can be evaluated by decomposing it into strategic and tactical decisions. In these models, the performance of strategic and tactical decisions captures a fund manager's ability to make investment decisions in the long-term and short-term, respectively. In this study the strategic performance is measured by the performance of a passive replicating portfolio that runs for a year consisting of the stock holdings as they were in the beginning of each year⁸. The evaluation model for strategic performance by Engström (2004) is the following:

$$R_{Rit} - R_{ft} = \alpha_{Si} + \beta_{Si}(R_{bt} - R_{ft}) + \varepsilon_{Sit}$$

where

R_{Rit}	return of the replicating strategic portfolio of fund i at time t
R_{bt}	RTS return as the Russian market benchmark index

⁸ In our study replicating, passive and strategic portfolio refer to this same portfolio held by each fund at the beginning of each year

R_{ft} 1-day Moscow InterBank Offered Rate (MIBOR) as the risk-free rate

α_{Si} intercept of the equation, here called strategic alpha

ε_{Sit} the error term

The strategic performance is measured by the intercept α_{Si} that represents the average incremental rate of return on the portfolio per unit time which is solely due to manager's ability to forecast future security prices in strategic portfolios. If the portfolio manager has the ability to forecast security prices in a holding period of one year, the intercept will be positive. If the manager is not doing as well as a random selection buy and hold policy for the corresponding holding period, the intercept will be negative instead. In other words, by applying this model we will have a better idea of the fund manager's ability to strategically pick the best stocks. In addition, the beta coefficient will tell us about the strategic portfolio's exposure to systematic risk in the market.

As mentioned above, the performance of tactical decisions focuses on a fund manager's ability to make short-term investment decisions. The way a fund manager alters the strategic portfolio during the year will be referred to as tactical decisions and they are measured by evaluating the fund's return of the quarterly replicating portfolios. The evaluation model for tactical performance by Engström (2004) is the following:

$$R_{it} - R_{Rit} = \alpha_{Ti} + \beta_{Ti}(R_{bt} - R_{ft}) + \varepsilon_{Tit}$$

where

R_{it} return of the fund i at time t

R_{Rit} return of the replicating tactical portfolio of fund i at time t

R_{bt} RTS return as the Russian market benchmark index

R_{ft} 1-day Moscow InterBank Offered Rate (MIBOR) as the risk-free rate

α_{Ti} intercept of the equation, here called tactical alpha

ε_{Tit} the error term

Here the tactical portfolio's intercept α_{Ti} represents the average incremental rate of return on the portfolio per unit time in excess of that of the strategic portfolio. This excess return is solely due to the fund manager's ability to forecast security prices in the short-term, here during a holding period of 3-months. If the portfolio manager is able to generate excess return with tactical decisions during the year, the intercept will be positive. In contrast, if the manager's tactical decisions are reducing the portfolio return with respect to the replicated strategic portfolio, the intercept will be negative.

3.5 Reward to volatility

The international investor would naturally prefer a fund with high short-term stock picking ability, something that would be particularly valuable in an emerging market with high volatility. It is the high volatility that induces the risk-return trade-off to the market and makes the investor keen to know what fund is the best performer relative to its systematic risk. To investigate just that we apply a reward-to-volatility measure, the Treynor ratio, which measures the fund returns that are earned in a market in excess to what could have been earned on a riskless investment per unit of market risk. The reward-to-volatility measure by Treynor (1965) is the following:

$$T = \frac{R_{it} - R_{ft}}{\beta_{i0}}$$

where

- R_{it} average return of the fund i at time t
 R_{ft} 1-day Moscow InterBank Offered Rate (MIBOR) as the risk-free rate
 β_{i0} the fund's exposure to systematic market risk

The fund that has the highest Treynor ratio is the fund that has generated most return per unit of risk. We can therefore use this measure to rank the performance of the funds relative to their risk-return trade-off.

On the basis of this overall analytical foundation, we believe to be able to provide the international investor with insight into the two important issues discussed in this paper. First, how to approach the issues of portfolio diversification by knowing more about the risk factors influencing the systematic risk and second, how the funds are really managing the challenges presented to them by an emerging financial market.

4 Description of data

4.1 Data sample

4.1.1 General presentation of the funds

Currently there are six Russia funds and five Eastern Europe funds registered in Sweden that manage portfolios of Russian securities. Five of the six Russia funds have been launched almost ten years ago, between October 1997 and May 1998. The newest Russia fund registered in Sweden, Gustavia Greater Russia Small / Mid Cap fund, was launched in December 2005. Funds investing in Eastern Europe have existed somewhat

longer than the Russia funds. Four out of the five funds were established between January 1996 and January 1997. The newest Eastern Europe fund, East Capital Östeuropa, was started in March 2002. For the Eastern Europe funds, we have constructed their portfolios so that they only consist of holdings in the Russian stock market. From now on we refer to the Russia portfolios of the Eastern Europe funds when we talk about Eastern Europe funds.

Since the purpose of this study is to examine exposure to systematic risk factors in the Russian market in addition to the funds' performance, we wanted to choose a time period where fluctuations in risk factors could be detected. Knowing that many economic cycles last from two to three years, we decided to cover a time period of two full economic cycles, that is six years, which led to the observation period 2001-2006. Since Gustavia Greater Russia and East Capital Östeuropa have been launched after 2001 they were excluded from the sample. Consequently, the Russia funds included in this study are ABN Amro Russia, ABN Amro Ryssland, East Capital Ryssland, HQ Ryssland and Swedbank Robur Ryssland and the Eastern Europe funds are Handelsbanken Östeuropa, Nordea Östeuropa, SEB Östeuropa and Swedbank Robur Östeuropa. In the figures below, the managed assets of each of these funds are presented.

Figure 2 – Assets under management of Russia funds

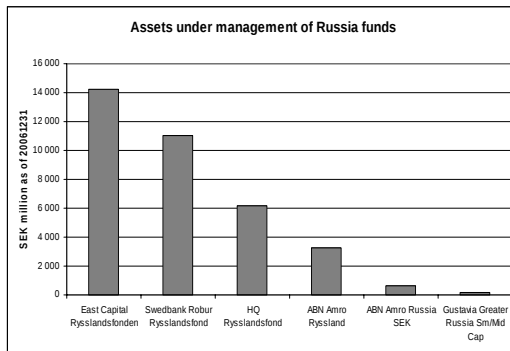
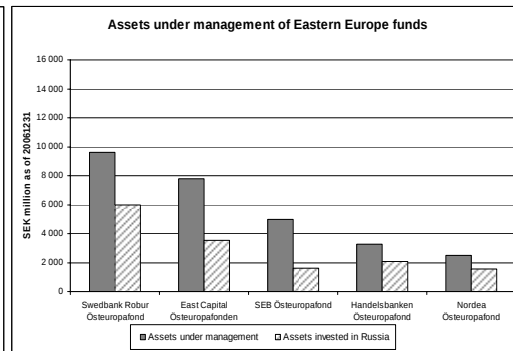


Figure 3 – Assets of Eastern Europe funds



East Capital Ryssland is by far the largest Russia fund in Sweden with a total amount of over 14 billion SEK in assets under management⁹. The other fund that has over 10 billion SEK under management is Swedbank Robur Ryssland. Funds investing in Eastern Europe are on average smaller than those investing in Russia, especially if considering their Russia holdings only, as we have done here. They also differ somewhat in the percentage invested in Russia.¹⁰ Handelsbanken Östeuropa, Nordea Östeuropa and Swedbank Robur Östeuropa have just over 60% of their funds invested in Russia. In other words, they run portfolios of Russian securities that are sometimes as large as a Russia fund and therefore interesting for this study. For example, the amount of assets

⁹ The assets under management are as of 20061231 and collected from Finansinspektionen

¹⁰ A table on the starting dates, assets under management and allocations to Russian stocks of the Eastern Europe funds can be found in Appendix A

that Swedbank Robur Östeuropa invests in Russia (5.97 billion SEK) is almost as large as the HQ Ryssland (6.18 billion SEK). Altogether in 2006 Swedish Russia and Eastern Europe funds invested 50.2 billion SEK in Russia. The nine funds that we have included in this study manage a total of 46.5 billion SEK of the 50.2 billion, that is, they cover 92.6% of the holdings.

To give an idea of the large returns that the funds have generated during the period 2001-2006, the aggregate returns are plotted in the graphs below. The RTS index has risen with almost 1200% and five of the funds, four Russia and one Eastern Europe fund, have generated a higher return than the market index.

Figure 4 - Returns of the Russia funds 2001 - 2006

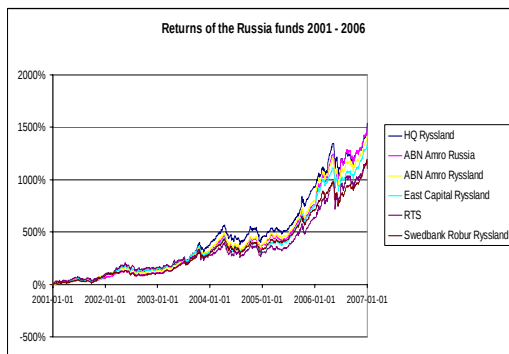
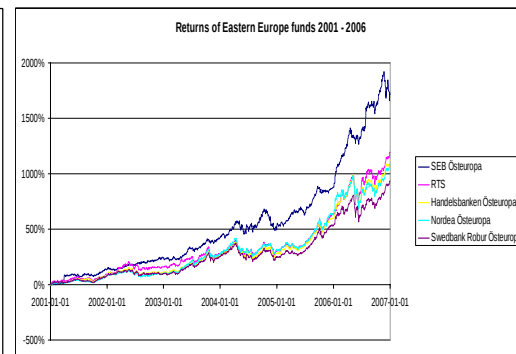


Figure 5 - Returns of Eastern Europe Funds 2001 - 2006



4.1.2 Sector allocation

As we also want to look at the funds' performance on a sector basis, we have constructed seven sector portfolios for each of the funds. The funds differ somewhat in their allocations to different sectors. However, some clear common patterns can be found. The oil and gas sector is by far the most important sector for all Russia funds. For all funds the weight of their oil and gas sector portfolio is higher in the first two years than in the last four. East Capital Ryssland had initially a share of 65% in oil and gas sector, but the sector weight of the portfolio has been decreasing continuously and it was 35% in 2006. Swedbank Robur Ryssland has had the lowest share invested in oil and gas sector, an average of 35% during 2001-2006. The oil and gas sector is followed by utilities and telecom sectors in size. For all the funds the weight of utilities sector was decreasing during the observation period whereas the share invested in telecom was more stable. It is interesting to note that Swedbank Robur Ryssland had a larger share invested in telecom than oil in 2001. This is the only year that any fund has not had the oil sector as the largest sector. We can also observe that the weight of consumer goods and services sectors are very low for all the Russia funds during the entire observation period. Further, there are no large fluctuations in the percentage invested in basic materials except for Swedbank Robur Ryssland where the weight increases to almost 25% during

the last year. Another common characteristic is that weight of the financials sector gradually increases. The increase is the strongest for East Capital Ryssland where this sector counts for over 20% of portfolio holdings in 2006.

Figure 6 – Asset allocation of ABN Amro Russia

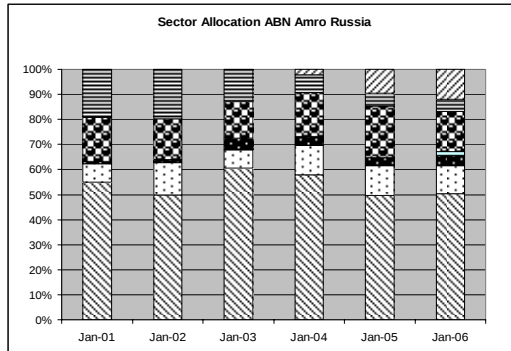


Figure 7 – Asset allocation of ABN Amro Ryssland

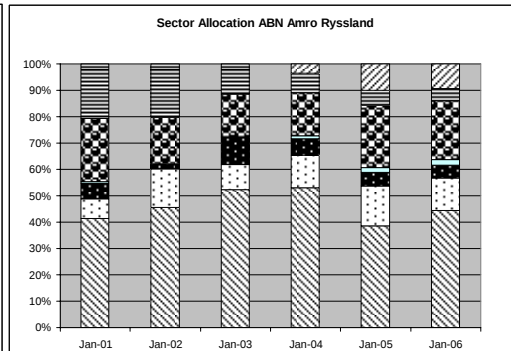


Figure 8 – Asset allocation of East Capital Ryssland

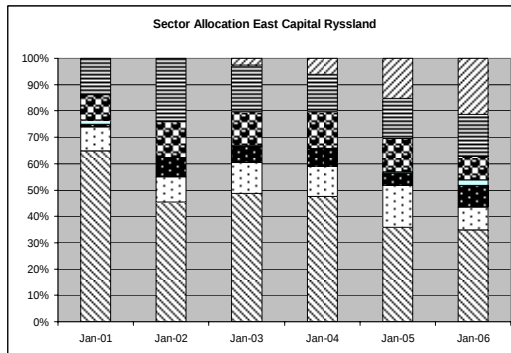


Figure 9 – Asset allocation of HQ Ryssland

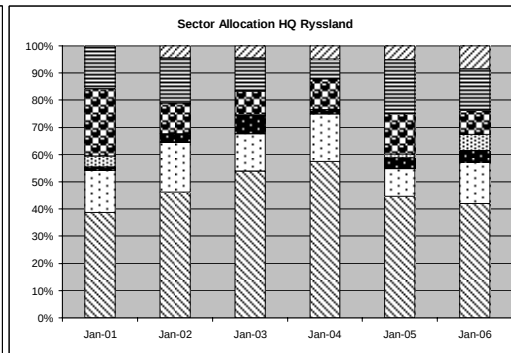
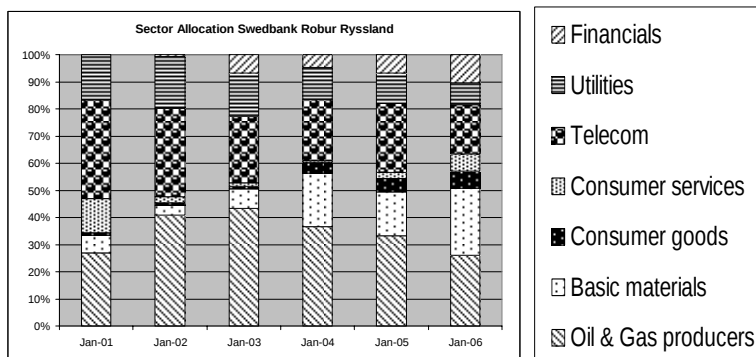


Figure 10 – Asset allocation of Swedbank Robur Ryssland



With respect to sector weights, the patterns are quite similar for the Russia portfolios of the Eastern Europe funds. However, the importance of oil and gas producers is even more accentuated. All four funds have on average around 60% of the assets allocated to this sector. SEB Östeuropa has 78% invested in oil sector during 2005 which is by far the highest weight in this sector of all the nine funds included in the study. The importance of utilities sector diminishes dramatically for all the Eastern

Europe funds during the observation period. Consumer goods and services are once again the least important sectors for all the funds. Another similar pattern is that the weight of financials sector starts to increase towards the end of the observation period.

Figure 11 – Asset allocation of Handelsbanken Östeuropa Figure 12 – Asset allocation of Nordea Östeuropa

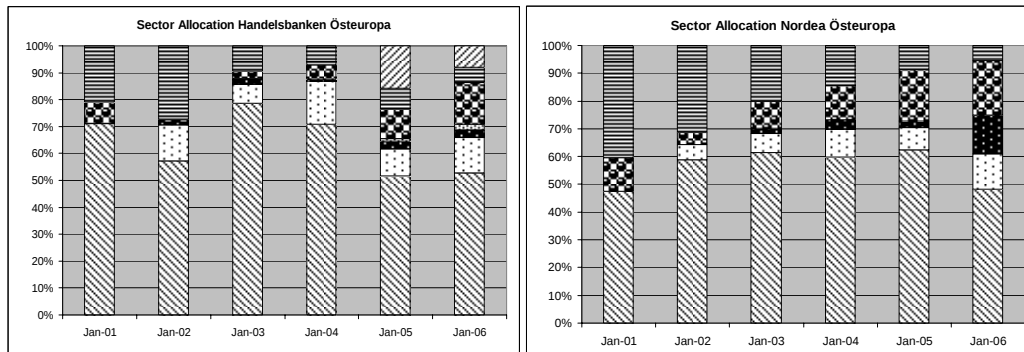
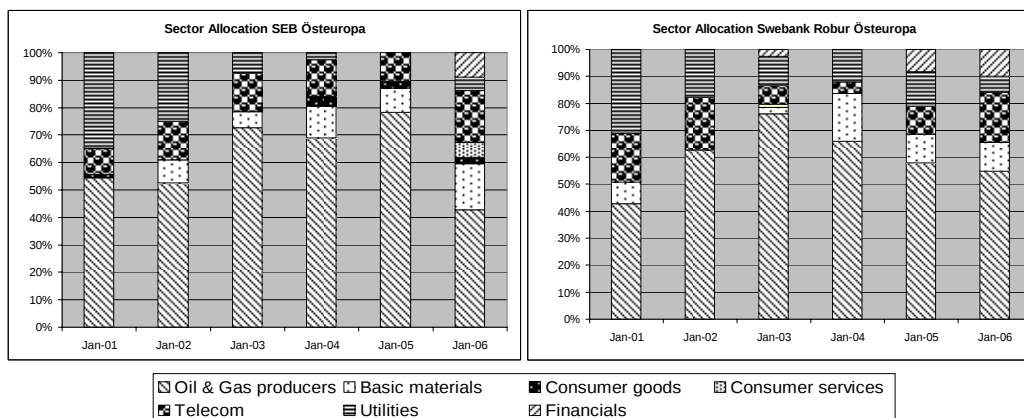


Figure 13 – Asset allocation of SEB Östeuropa

Figure 14 – Asset allocation of Swedbank Robur Östeuropa



Even though the sector allocation patterns are quite similar between the funds there are large differences in the amount of stocks the funds include in their portfolios. East Capital Ryssland has on average 131 different securities in their portfolio every quarter. This is almost twice as much as for Swedbank Robur Ryssland which on average has the second highest number of stocks. SEB Östeuropa represents the other extreme with only 13 different Russian stocks each quarter. It is therefore not surprising that the Russia funds on average have 30 more securities in their portfolio than the Eastern Europe funds.

Figure 15 – Average number of stocks per quarter of Russia and Eastern Europe funds

Average Number of Stocks per Quarter			
Russia Funds		Eastern Europe Funds	
East Capital Ryssland	131	Robur Östeuropa	55
Robur Ryssland	67	Nordea Östeuropa	41
ABN Amro Ryssland	53	Handelsbanken Östeuropa	33
HQ Ryssland	40	SEB Östeuropa	13
ABN Amro Russia SEK	39		
AVERAGE	66	AVERAGE	36

4.2 Collection and processing of data

4.2.1 Data collection

The first step in the process of gathering the data for this study was to request quarterly holdings of the funds from Finansinspektionen¹¹. The study covers nine funds for six years, that is a data for a total of 54 quarters' holdings was requested. There were some gaps concerning East Capital Ryssland, HQ Ryssland and ABN Amro Russia in the data that we received from Finansinspektionen. We requested the missing quarterly data on fund holdings from the fund management companies. East Capital failed to deliver quarterly holdings for its fund for eight quarters, HQ Ryssland for two quarters and ABN Amro Russia for two quarters. Since data was not missing for the first or third quarters of any of the funds, we could despite this apply all the models to all the funds.

The next step was to collect data of the daily prices for all the stocks from Thomson Financial's application Datastream. In total there were approximately 540 different stocks included in the data sample. To eliminate the errors caused by fluctuating exchange rates, all the stock prices were chosen in, or converted to, US Dollars¹². As emerging markets largely differ from more mature markets in terms of volatility, we decided to use daily data in order to capture the volatility of the market. Some of the volatility might have disappeared if weekly or monthly data had been used. However, the risk of using daily data is that the closing prices of the stocks are from different times of a day, which could reduce the significance of the alpha coefficients. On the other hand, one specialty of the Russian market is that not all stocks are very liquid, which resulted in heavy fluctuations for some specific days in some of the stock prices. Since this was not that common nor did such stepwise price development appear for any of the larger holdings, we found the error in the analysis not to be significant. However, due to some practical reasons, such as changes in the quoted stocks due to IPOs and holding of unquoted stocks, the data of all stock prices was not available through Datastream. We chose to tackle this issue by using two approaches. In cases where stock prices had been reported to Finansinspektionen, we used quarterly linear estimations. In those cases where not enough stock prices were available for linear estimation, we estimated the stock return for that specific quarter to have corresponded to the RTS index return. The data that was required for commodity prices, interest rates and other systematic risk factors was also retrieved from Datastream.

¹¹ Finansinspektionen (FI) is the Swedish Financial Supervisory Authority, see www.fi.se

¹² Most Russian stocks are traded in US Dollars

4.2.2 Data processing

The Russia portfolios of the Eastern Europe funds were constructed by selecting all the Russian securities from their portfolios. A Russian security was defined as a stock which is listed in a Russian stock exchange, equity of a firm operating mainly in the Russian market or a security also included in a Russia fund's holdings. After the construction of the Eastern Europe funds' Russia portfolios, we started processing the data. The first step in the calculation of the returns of the portfolios was to compute the daily returns of all stocks. After this, we value-weighted the holdings at the beginning of each of the 54 quarters for all 9 funds. We then multiplied the returns of the individual stocks with their respective weights for every trading day in the sample period.

When calculating Jensen's and tactical alphas, we chose to tackle the lack of data for the quarters mentioned earlier by dropping out the holdings in that period¹³. In the construction of the strategic portfolios we used the weights that had been reported to Finansinspektionen on the last day of the preceding year to replicate the portfolio over the one year period. This data was available for all funds over the whole observation period. Further, we decided to conduct fund performance evaluation by excluding management fees since we wanted primarily to evaluate the fund managers' skills in investing to the Russian stock market.

Like mentioned above, we have used quarterly data on the portfolio holdings of the funds. Therefore, the complete dataset for our research comprises of approximately 810 000 data points for the different stocks (6 years * 250 trading days * 540 stocks), 216 specifications of quarterly holdings (6 years * 9 funds * 4 quarterly holdings), 1 512 specifications of quarterly holdings of the sector portfolios and 13 500 data points from the market indices (RTS, MSCI World and MSCI Emerging Markets), MIBOR for two term lengths (1 day and 30 days MIBOR), seven sector indices and five macroeconomic parameters. The statistical analysis in this study consists of 592 linear regressions.

4.3 Tests of the data set properties¹⁴

To identify whether there are any potential problems related to our data sample, we have first identified and excluded a small number of outliers in the sample and then conducted several tests for data set properties. Using ordinary least square (OLS) estimates, it is important to test that no problems occur due to violating basic OLS assumptions. For the regressions with one explanatory variable we have tested the assumption that the error term is normally distributed. The results are satisfactory and

¹³ For example, the Jensen's alphas for East Capital 2002-2004 are based on their portfolio's performance in quarters 1 (from January to March) and 3 (from July to September) only.

¹⁴ See Appendix F for test results

we conclude that the error terms seem to be normally distributed. Further, when considering the validity of our results all the alphas and betas have been tested by using a t-test and the explanatory power of the regressions. Also the size of the residuals and intercepts have been considered.

For the regressions with several explanatory variables more properties have been tested. Heteroscedasticity has been analyzed by plotting the unstandardized residuals against the predicted values for each regression. As none of the plots show signs of heteroscedasticity we conclude that the dataset is not plagued by heteroscedasticity. Multicollinearity has been examined by analyzing the pair-wise correlations of the explanatory variables. As we do not observe any correlation values above 0.8 or several values over 0.5 in the same regression we conclude that multicollinearity is not a problem in our dataset. We have further tested the dataset for autocorrelation by plotting the residuals against the lagged residuals and we can conclude that the dataset is free from autocorrelation. We have even conducted F-tests in order to examine whether the beta coefficients are different from zero. We reject the null hypotheses and conclude that the beta coefficients are different from zero. Finally the normality assumption has been tested by comparing the distribution of the error terms to a normality curve. Again, all the error terms seem to be normally distributed. To conclude, we find that none of the OLS assumptions have systematically been violated, and we don't have any reason to expect the results of the statistical analysis to be invalid.

5 Empirical evidence, analysis and discussion

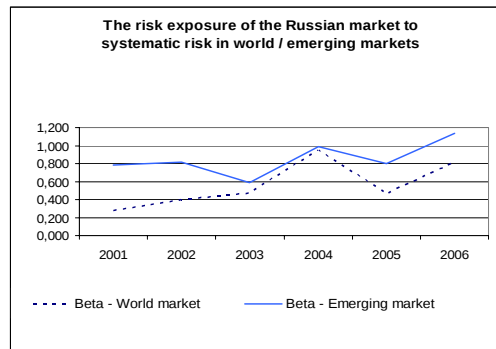
5.1 Russian stock market's exposure to global equity risk

The international investor is looking to make high returns in an emerging market in change for the high risk and volatility. But there it a second important aspect to investing in an emerging market, namely the potential portfolio diversification benefits. A low correlation between the emerging and developed countries' equity markets could reduce the unconditional portfolio risk of a world investor. Whether this is the case for the Russian stock market is of interest for all foreign investors looking for diversification opportunities in the market.

We used the world CAPM to investigate the systematic risk in the Russian stock market relative to that of the world market and emerging markets. The results of the statistical analysis indicate that the exposure to systematic risk with respect to both markets is strong and significant. The annual beta coefficients also show that the level of exposure to equity market risk is time varying in both cases, but that the overall trend is

increasing, especially in the case of the world market. Still, it is notable that the exposure to systematic risk in the emerging markets is consistently higher than that in the world market. In addition, all the beta coefficients for emerging markets are significant at the 5% level, whereas the beta coefficients for world markets are significant at the 5% level only in 2002, 2004 and 2006¹⁵.

Figure 16 – Exposure of Russian stock market to systematic risk



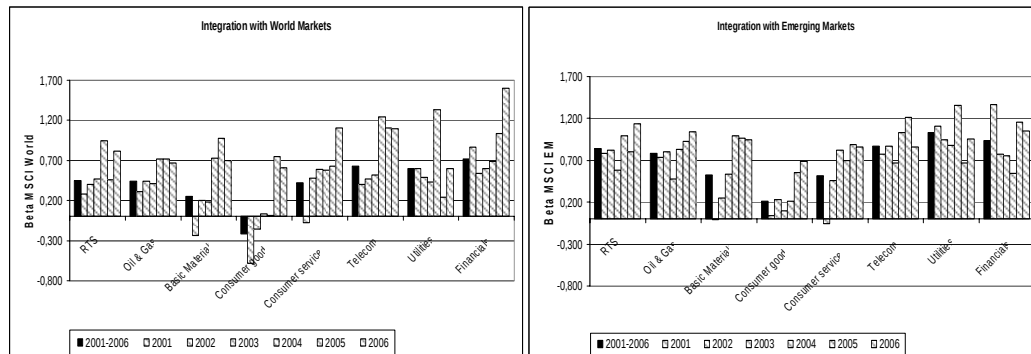
All three findings are in line with results from previous research, where the time variation in the exposure to market risk has been clearly stated (Anatolyev, 2005). This even applies to the Russian stock market's exposure being higher to systematic risk in emerging markets than in world market (Goriaev and Zabotkin, 2006). As Bekaert and Harvey (2000) point out, we also expected to see the level of exposure to world market's systematic risk to increase as time goes by and the financial markets continue developing.

To further investigate the Russian market's exposure to systematic risk, we conducted the same statistical analysis for seven sectors in the economy. These sectors are oil and gas, basic materials, consumer goods, consumer services, telecommunication, utilities and financials. The results here indicate that the exposure to systematic risk with respect to emerging markets was higher than that to the world market for all sectors. There are a few exceptions to this overall perception, mainly telecommunication and financials sectors where the beta coefficients in 2004 and 2006 for world market exceeded the beta coefficients for emerging markets¹⁶. The sectors with the highest exposure to emerging markets systematic risk are utilities, financials and telecommunications sectors followed by oil and gas and basic materials. If looking at the level of exposure for world market the ranking between the sectors is approximately the same. An important difference, however, is observed in the R^2 . The R^2 for the emerging market beta coefficients are clearly higher for all sectors.

¹⁵ See Appendix C for complete results for linear regressions

¹⁶ These beta coefficients are significant at the 5% level. See Appendix C for complete results

Figure 17 – Integration of Russian sector markets with world market and emerging markets, respectively



The results also show that there is time variation in the level of risk exposure and that the volatility persists cross sectors. The risk exposure to emerging markets systematic risk appears to be somewhat less volatile than the risk exposure to systematic risk in the world market. It is also interesting to observe the development in the risk between 2004 and 2006. There is a higher increase in the beta coefficients for world market than for emerging markets with respect to all sectors. This is the same result as for the overall market where we observed an increasing trend in risk exposure to the systematic risk in world market. The sectors where this trend seems to be the strongest are telecommunication and financials. For commodity sectors oil and gas and basic materials the risk exposure to systematic risk in the emerging markets is still larger than that for world market, but even here the gap is getting smaller.

In the world CAPM, a market's high exposure to systematic risk indicates a high level of market integration. The results above all speak for a higher degree of integration between the Russian market and emerging markets than between Russian market and the world market, even if we can see that the later is increasing towards the end of the observation period. What this means for the international investor hoping to diversify portfolio holdings is that there is some degree of diversification benefits to be captured by investing in the Russian stock market, even if the benefit can be diminishing.

There is one major concern in drawing conclusions from the world CAPM, which is important to address, namely that the explanatory power for the model remains low even if it does generate statistically significant beta coefficients¹⁷. The model fails to explain more than 27% of the variation in Russian stock market at large, even if the R^2 are increasing somewhat towards the end of the period. For the sector markets the explanatory power of the model differs between the markets. For consumer goods and services sectors, the R^2 is less than 11% for all years whereas for a sector like utilities, the R^2 is more than 11% for all years and as high as 39% in 2006. It is not surprising that the

¹⁷ See Appendix C for all regression results.

world CAPM could not provide us enough information to understand the systematic risk in an emerging market like Russia. To capture more of the time variation and what induces systematic risk to the Russian stock market, we have applied a conditional asset pricing model including additional local and global risk factors again to the market and to the seven sectors it consists of.

5.2 The systematic risk factors

In the conditional asset pricing model, the systematic risk of the Russian market is extended to depend not only on the risk exposure to the global equity risk, like in the world CAPM, but on the market's exposure to several other risk factors. In addition to the emerging markets equity risk, here the exposure to commodity risk, global interest rate risk and local and global currency risks are included. But before analyzing the Russian market's exposure to these systematic risk factors, the overall development of the variables is of interest. The average development during the sample period can be seen in the table below, where the average annual change and standard deviation for the regression variables during the observation period 2001-2006 are reported¹⁸.

Figure 18 - Descriptive statistics for the risk factors

RISK FACTORS	MEAN	ST.DEV.
MSCI World	4,26%	14,42%
MSCI Emerging market	16,71%	16,02%
OIL	15,57%	33,53%
LIBOR	-0,64%	25,75%
RUB/USD	-1,00%	3,13%
USD/EUR	5,71%	9,03%

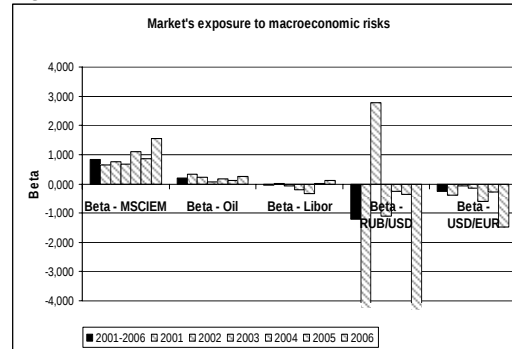
The first observation that can be made is the strong growth in the emerging markets relative to that in the world market (16,71% and 4,26% respectively with almost equal standard deviations). It is not surprising that the average increase in oil price of 15,57% is almost at the same level, as we would assume the bull markets in emerging economies to be strongly influenced by changes in commodity prices. Some level of bear market conditions have emerged at the same time in developed economies. This can be seen in the declining interest rates and depreciation of the US dollar against Euro, on average 5,71% annually. In Russia, the nominal exchange rate of rouble to US dollar stopped rising, which translates to a modest annual change of -1,00% in the exchange rate.

¹⁸ Average annual changes of the log-returns calculated on weekly data

5.2.1 Russian market's exposure to systematic risk factors

The international investor would clearly have been better off with a higher exposure to some risk factors than others during 2001-2006. But what was the overall systematic risk profile of the Russian market? The results of the statistical analysis indicate that the exposure to most risk factors was volatile during the observation period, but less so if disregarding the fluctuations in beta coefficients for local currency risk. The sign of risk exposure to the exchange rate rouble to US dollar varies from negative to positive which can be interpreted as tendency towards insignificance of this particular risk factor. This result is in line with previous findings by Anatolyev (2005). One reason behind this could be the use of US dollar as a hard currency in the Russian stock market which decreases the risk related to Russian rouble. This could also explain why the depreciation of the US dollar to Euro would have a negative effect on Russian market returns.

Figure 19 – Russian market's exposure to the risk factors



Contrary to what was expected, the results also indicate that the level of risk exposure to global interest rate risk has been close to zero. With many international investors present in the market and the growth in the overall inflow of capital to Russia from abroad, we would have expected the exposure to global interest rate risk to be higher. Still the most surprising results is the Russian market's low exposure to commodity risk. Gorjaev and Zabotkin (2006) arrive to the same conclusion in their quantitative research, but found this to be a misleading result. We do too, mainly for two reasons. First, as the development of commodity prices is commonly perceived of having central importance for the overall economic development in Russia, international investors may perceive this risk factor to affect all markets, especially emerging markets, which is why the risk is absorbed here by the global equity risk. The second reason is the time window of one week that is used in the linear regressions here. We believe that the investors' expectations about the long-term commodity price levels are a more relevant

factor in determining stock returns than short-term fluctuations. In consequence, the market's true risk exposure to commodity risk is not detected by this model.

All together, we find that the additional risk factors, the local and the global, make a contribution to explaining the systematic risk in the Russian market. This is indicated by the consistent increase in R^2 reaching 55% in 2006¹⁹. The same applies to the statistical analysis of the sector markets. For all sectors, the explanatory power of the model increases in comparison to the world CAPM model with the addition of the local and global risk factors. The time variation trend is similar as well, that is, the R^2 increases towards the end of the observation period. It takes on the highest values for all sectors in 2006, being 53% for the oil and gas sector, 43% for basic materials sector and 41% for both consumer goods and telecommunications. The explanatory power of the multi-factor model remains relatively low for the remaining three sectors, namely consumer services, utilities and financials. We will make some comments related to these sectors, but first present our empirical finding concerning the consumer goods and telecommunication sectors as well as both of the commodity markets.

5.2.2 Russian sector markets' exposure to systematic risk factors

The results of the statistical analysis indicate that in the consumer goods market, the risk exposure to equity market risk is relatively smaller than for other sectors, whereas the exposure to currency risk is larger. This can be understood if considering the strong influence of local demand on a sector such as consumer goods. One rationale behind the higher exposure to the rouble to US dollar exchange rate risk could be the relevance of export and import prices to demand. Indirectly the same applies to the US dollar to Euro exchange rate. The exposure to global exchange rate risk is most likely related to the extensive use of the US dollar as hard currency in the Russian market. As the US dollar depreciates the purchasing power of the hard currency decreases relative to important import markets, such as the Euro area. In the telecommunication sector we can also note exposure to global currency risk. We saw in the world CAPM model that telecommunication sector's level of integration with world markets has been clearly increasing in 2004-2006, which is why this result is not surprising. In the future we could even see an increasing exposure to global currency risk, as the important local factor, the level of infrastructure in the country, becomes less of a risk and more of a fact. Import

¹⁹ See Appendix D for complete results for linear regressions

and export prices are also important in the telecommunication sector, since much of technology in the sector is protected by patents and exclusive production rights.

Figure 20 – Consumer goods’ exposure to risks factors

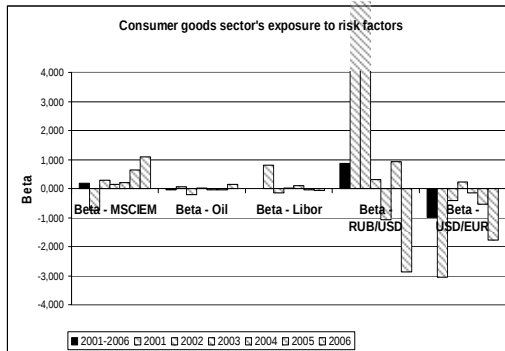
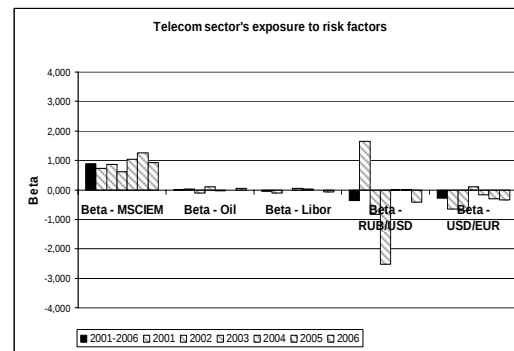


Figure 21 – Telecommunication’s exposure to risk factors



Moving on to the results of the statistical analysing concerning commodity markets, we want to start by the most interesting finding, which is the persistence of low exposure to commodity risk. The results for the whole market were similar, as discussed in the previous section. The results here not only go against the common perception, but against common sense. We think that the two explanations we presented for the whole market are valid even here. That is, that the global equity risk absorbs large parts of commodity risk and that the one week time window is not long enough to capture investors’ expectations in the market, which are long-term. The exposure to currency risk is also to be noted in the commodity markets. Even if there are fluctuations, we still think that the level of exposure to currency risk is higher in commodity markets than in most other markets²⁰. The large exporting companies that dominate the sectors are likely to benefit from the appreciation of the local currency or euro against the US dollar.

Figure 22 – Oil and gas exposure to risks factors

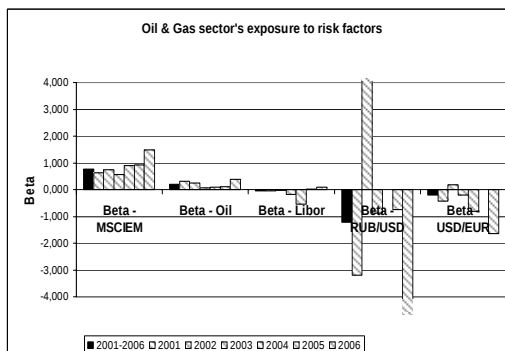
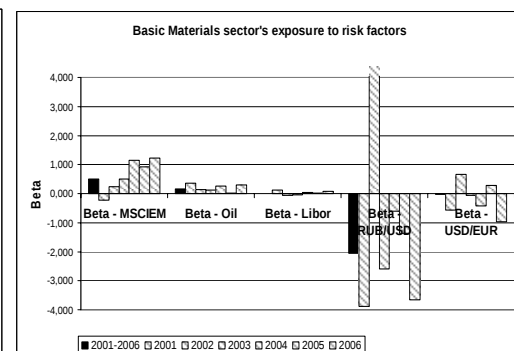


Figure 23 – Basic materials exposure to risks factors



²⁰ Note that none of the positive values for beta coefficients are significant at the 5% level. See Appendix D for complete results for linear regressions.

For the remaining three sectors, consumer services, utilities and financials, the model fails to explain much of the systematic risk factors²¹. In the case of consumer services' sector, the reason behind the low explanatory power is most likely the importance of local demand. In the utilities sector, the market is still very much regulated and it is probable that the government interference induces additional risk factors to the market. The financials' sector's risk profile is more of a puzzle. The level of market integration with world markets has increased in the sector as we saw before, and we expected the exposure to currency risks to be significant. One reason could be that the market is still young and the government has only started to deal with corporate governance and other issues that are relatively more important for financial institutions than for other markets. Having said that, we want to discuss some important additional risk factors that are more difficult if not impossible to quantify. These are the political and economic events that effect investors' perception of the country risk in Russia. We believe that it is partially due to the importance of this country risk that the explanatory power of the model above remains lower than could have been expected.

5.2.3 Country risk in Russia

According to Gorjaev and Zabolkin (2006), the two most probable factors in the country risk in Russia are political risk and corporate governance. Some indication of the market dynamics with respect to investors' perception of country risk is provided by the figure below, where the development of the RTS index is plotted together with the timeline for major events in Russia.

Figure 24 – The dynamics of the RTS index and major political and economic events in Russia 1995-2005



²¹ See Appendix D for the figures with the sectors' exposure to risk factors

The most important political events have been the presidential elections. For example, the re-election of Boris Yeltsin in 1996 was followed by a tripling in the RTS index as investors were reinforced in their believe in future democracy and market economy. Another example is a geopolitical event in November 2001, the Bush-Putin Summit, where Russia expressed its' support and alliance to the U.S. in the "war on terror". This was followed by a strong growth and in the next two and a half years the RTS index grew with 300%. This does not provide any evidence of causality of course, but as we said before, in an emerging market political events are most likely influencing investors' perception of the market development prospects to larger extent than in developed countries.

The second major factor is the economic events in Russia. The most significant so far has been the financial crisis which interrupted the expansion of the financial markets in August 1998. The government defaulted on debt and devalued the rouble leaving the market to experience significant contraction and volatility. The development since then has been better in this respect, for example the tightened monetary and fiscal policies have helped the government to increase investors' confidence in future macroeconomic stability. Also economic events related to corporate governance have been a concern for international investors. In the 90s the minority shareholders' rights were abused in a series of scandals related to the oligarchs as they were extracting large amounts of cash from their companies. Since then, incentives for corporate governance have been improved through legislative changes like the minority shareholder protection by the 2002 law of joint stock companies. The Yukos affair was also seen as a signal of tougher government attitude towards the business community. The examples could be many more, but the point is this: Events such as these will most likely continue to affect the market's perception of country risk and are therefore important factors for any investor to consider.

5.2.4 The funds' exposure to systematic risk factors

So far we have analysed the market and its sectors' exposure to systematic risk factors. In this study, the investor has the investment option between nine Russia funds and is of course interested in knowing the individual funds exposure to the systematic risk factors. To investigate this, we have applied the conditional asset pricing model to the individual funds and will analyse the funds' risk exposure one risk factor at a time. Time variation is found to be characteristic even here. The R^2 take on values between 10% and 59% if disregarding SEB Östeuropa with consistently low R^2 . Overall, the explanatory power of the model is greater for the three remaining Eastern Europe funds

than for the Russia funds, but for all funds, the R^2 increases towards the end of the observation period²².

We start with the funds' exposure to global equity risk. The statistical analysis reveals that the beta coefficients are significant for most funds in all periods, with the exception of SEB Östeuropa, where the level of risk exposure is clearly lower. We can also observe an increasing trend in the exposure to global equity risk for all funds towards the end of the observation period. This is the same trend that appeared for the market and the sector markets before and it is the strongest for Eastern Europe funds, namely Handelsbanken Östeuropa, Nordea Östeuropa and Swedbank Östeuropa.

Figure 25 - The funds' exposure to global equity risk

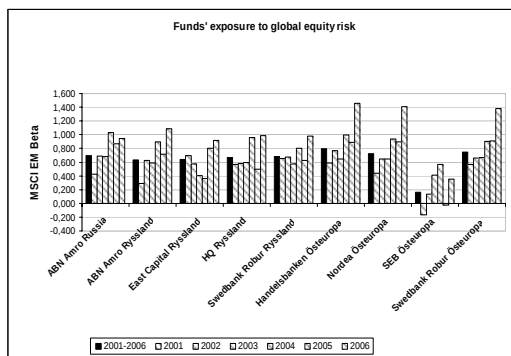
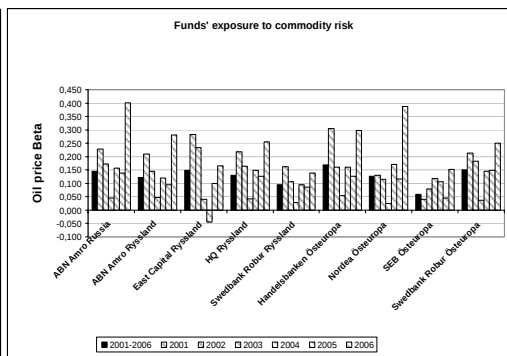


Figure 26 - The funds' exposure to commodity risk



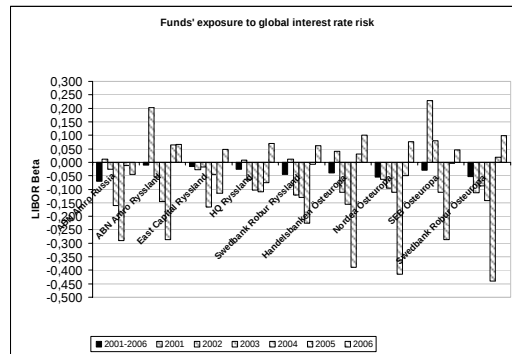
The time variation for the fund's exposure to commodity risk exhibits a more irregular pattern. The exposure is higher both in the beginning and end of the observation period, and decreases in the middle with the exception of, again, SEB Östeuropa. Another important observation is that the exposure to commodity risk is small²³. Where 0,4 is one of the lowest notations for beta coefficients for global equity risk, it is the maximum among the beta coefficients for the commodity risk. In 2006, the risk exposure to commodity risk is highest for ABN AMRO Russia and Nordea Östeuropa and the lowest for Swedbank Robur Ryssland and SEB Östeuropa.

The funds' risk exposure to global interest rate risk is also time-varying and highest in the middle of the observation period 2002-2004. The global interest rates were at that time decreasing, which would have reduced the risk free rate of return and the investor's required return on capital. The time variation is particularly large in the Eastern Europe funds that also have the highest exposures. East Capital Ryssland and HQ Ryssland are the funds with the lowest levels of global interest rate risk exposure.

²² See Appendix D for complete results for linear regressions.

²³ Note that the scales are different

Figure 27 – The funds' exposure to global interest rate risk



The final risk factors are the local and global currency risks. For the global currency risk the results of the statistical analysis are straightforward. The risk exposures between funds are almost equal except for SEB Östeuropa, where the currency risk exhibits a deviating pattern²⁴. The risk exposure to local currency risk fluctuates more. If we eliminate the results for 2002, a pattern appears where the risk exposure is the highest in 2001 and 2006 and very low from 2003 to 2005. In 2001 Handelsbanken Östeuropa and in 2006 Swedbank Robur Ryssland have the largest risk exposures.

Figure 28 – The funds' exposure to local currency risk

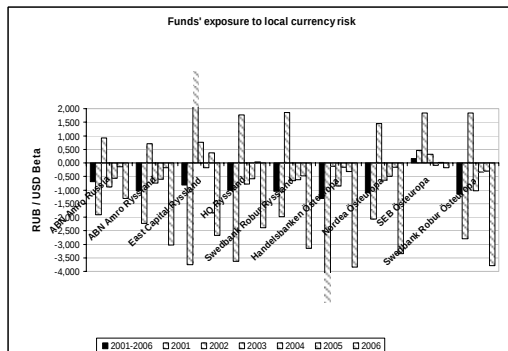
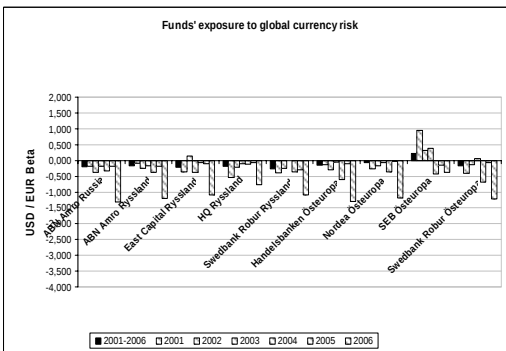


Figure 29 – The funds' exposure to global currency risk



Many of the beta coefficients are not significant at the 5% level, which of course decreases the reliability of the relative risk exposures. But we do believe that an investor aware of current portfolio's exposure to different risk factors that are analyzed here with respect to the market, its sectors and funds, can make an investment decision that brings along some diversification benefits. But the risk profiling of funds is only a small part in the investment decision. The investor will also want to know how the funds have performance in the past in terms of returns and with respect to the market. Before the final investment decision, the risk-return trade-off needs to be considered as well. We now move on to the performance evaluation of the funds.

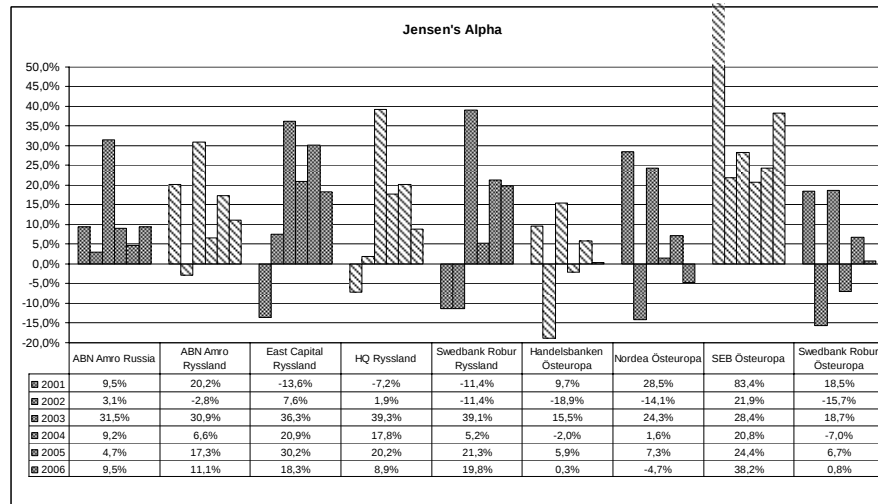
²⁴ The signs of the beta coefficients in 2001 to 2003 are positive for SEB Östeuropa but not significant at the 5% level.

5.3 Performance evaluation of Russia and Eastern Europe funds

5.3.1 Generation of excess returns

The funds' performance evaluation is conducted by using three different measures. The first measure is Jensen's alpha which captures the excess return of a portfolio with respect to the market index. The other two measures, strategic and tactical alphas, aim to detect whether the excess return is generated through long-term strategic or short-term tactical investment decisions. Results from the statistical analysis where Jensen's alphas were calculated on an annual basis indicates that the Russia and Eastern Europe funds are often able to generate positive and economically significant Jensen's alphas. Here we want to note that the time variation in the funds excess returns is high and that there are large fluctuations in the alphas across time and funds. The largest positive alpha, 83,4%, is generated by SEB Östeuropa in 2001 and the largest negative alpha, -18,9%, by Handelsbanken Östeuropa in 2002. However, neither of these extreme values is statistically significant. SEB Östeuropa stands out as the fund that is more persistent in its performance than other funds since all of its alphas are above 20%. All the other funds seem to have larger fluctuations in their performance.

Figure 30 – Jensen's Alphas of for funds

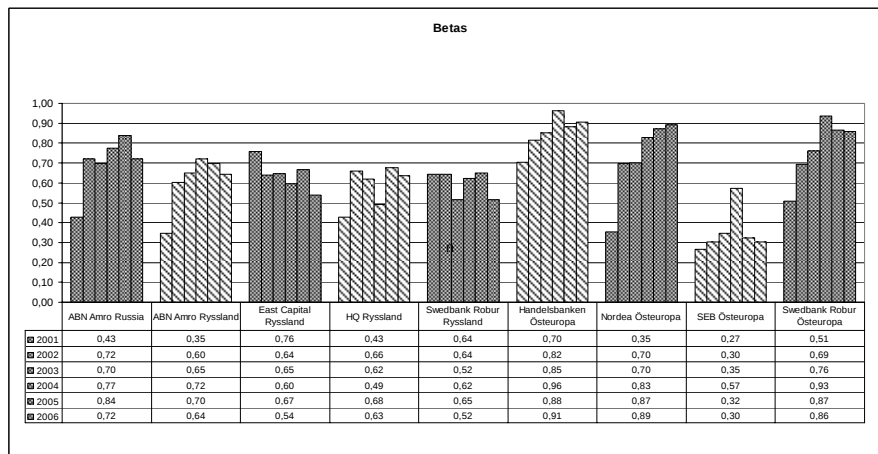


A more detailed analysis of the development of the alphas shows that there are some differences between the Russia and Eastern Europe funds. One such difference is the clear pattern that the Russia funds follow. Namely, there are no negative alphas after the first two years, during which all funds generate their lowest alphas. Further, only one of the results during the first two years, ABN Amro Ryssland in 2001, is statistically significant. 2003 sticks out as the year when all Russia funds generate their highest

alphas. HQ Ryssland has the highest value of 39,3% whereas ABN Amro Ryssland is the Russia fund with the lowest alpha, 30,9%. All results for 2003 are statistically significant at one percent level. After 2003 the alphas remain positive for all Russia funds. Further, eight of the alphas during 2004 - 2006 are statistically significant. We want to note that during the whole observation period no Russia fund is able to constantly outperform the others. East Capital Ryssland has the highest alpha during three years out of six, HQ Ryssland, Swedbank Robur and ABN Amro Ryssland during one year. ABN Amro Russia is the only fund that does not generate the highest alpha in any of the years. The results for the Eastern Europe funds differ from the above. Overall, the results indicate that Eastern Europe funds generate consistently lower alphas than Russia funds and there are less statistically significant alphas. There is more time variation in the excess returns, as the Eastern Europe funds have negative alphas also during the last three years which is not the case for the Russia funds. However, there is one exception to this overall perception, namely SEB Östeuropa that consistently generates the highest alphas in the entire observation period.

Based on these results, it is reasonable to conclude that the funds included in this study are often able to generate large positive and significant alphas. The most striking observation is the magnitude of the excess returns. This result does not, however, come as a surprise given that some of the funds have had much higher aggregate returns during the observation period than the RTS index. However, our results contradict the general perception that actively managed mutual funds would not be able to generate positive excess returns. Therefore, the question that we would like to answer to is how the funds in our study generate these large positive excess returns. We start by examining the beta loadings of the funds which are illustrated in the figure below.

Figure 31 – Betas of the Funds



The most notable observation we can make looking at the beta values is that none of them are over one during the observation period. In other words, the funds' exposure to systematic risk is lower than the market's. As mentioned in chapter four, four of the five Russia funds and one of the Eastern Europe funds generated higher aggregate return than the market during the observation period. As these returns were generated with a lower than one beta, it is not surprising that the alphas are high given the fact that the funds that outperformed the RTS index did it in some cases with good margin. Therefore it would be reasonable to draw the conclusion that the funds in our sample are in most cases able to generate higher returns than the market with lower risk which results in large positive excess returns. SEB Östeuropa stands out once again with significantly lower beta values than other funds. Further, as SEB Östeuropa also had the highest aggregate return during the whole observation period it seems natural that the alphas generated by this fund are by far the highest. However, SEB Östeuropa seems to be an exception among the Eastern Europe funds that otherwise have generally higher beta loadings than their Russia counterparts. This leads us to conclude that the combination of higher returns and lower betas of the Russia funds compared to the Eastern Europe funds is most likely the explanation behind their higher excess returns. In other words, we suspect that the Russia funds possess a superior stock picking ability, which in their overall portfolio can be observed in holdings of stocks that have lower exposure to systematic market risk, but still succeed in generation equal to market returns.

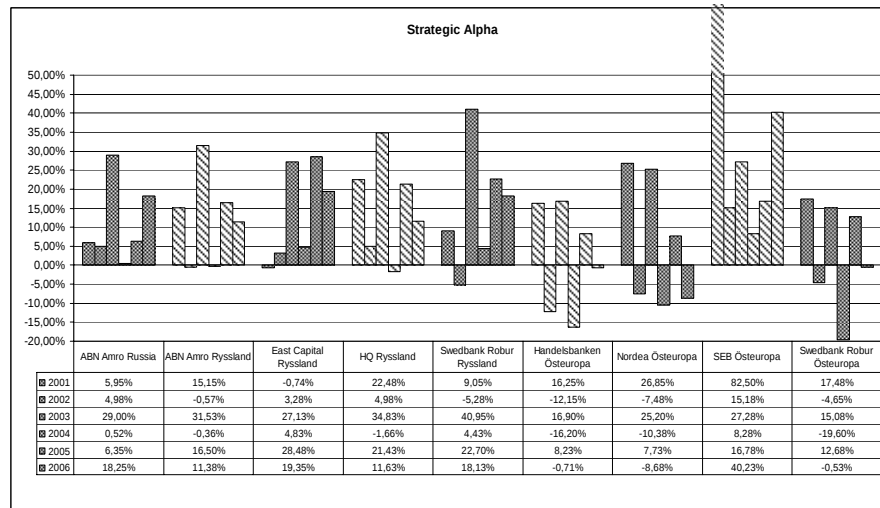
Still, the high alphas raise the question whether the choice of the benchmark index is suitable. The RTS index consists of only 50 stocks, which can be seen as a fairly limited number of securities and therefore the index might not be a perfect proxy for the market return. However, the funds included in this study possess on average just over 50 stocks per quarter which partly justifies the use of the RTS index as a proxy. Further, given the high correlation between RTS and the other Russian market indices, even if we had chosen another benchmark for this study, we would have expected similar results even then.

5.3.2 Excess returns from long-term investment decisions

Now that we know that the large positive excess returns are mainly generated through low beta, we would like to know whether it is the long-term or the short-term stock selection decisions that lead to these positive excess returns. The way to do this is by decomposing the fund performance into strategic, or long-term, and tactical, or short-term, decisions. With respect to these measures, our statistical analysis shows that the

managers of Russia and Eastern Europe funds are in most cases able to create the positive alphas through their strategic choice of securities. Again there are some differences between the two groups of funds.

Figure 32 - Strategic Alphas of the funds

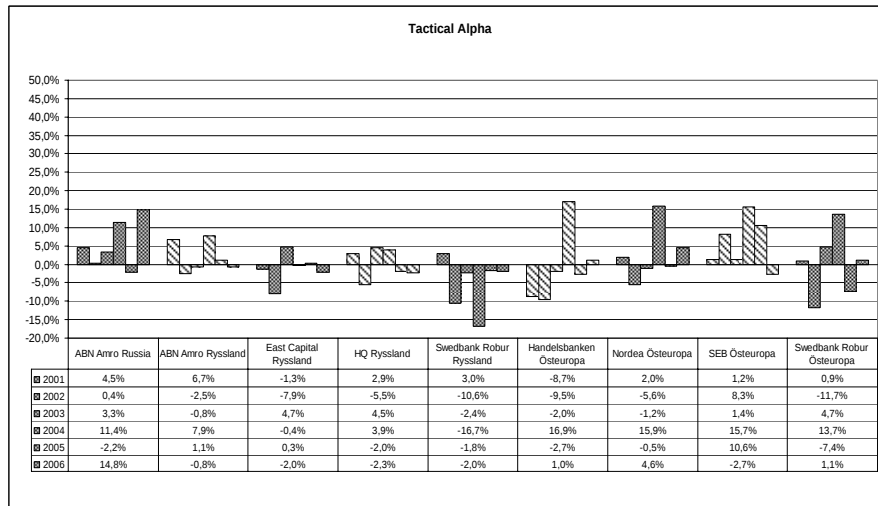


For the Russia funds there are only five negative strategic alphas during the entire observation period and none of them are economically significant. Of 30 observations in total, 13 are significant and no Russia fund sticks out as having consistently generated largest alphas. However, East Capital Ryssland does generate the highest strategic alphas in the last three years of the observation period. This could indicate that the fund is somewhat better in its strategic investment decisions than the remaining Russia funds. We also want to note that the two funds with highest strategic alphas in 2001, HQ Ryssland and ABN Amro Ryssland, have the lowest alphas in 2006. These results are also consistent with the Jensen's alpha analysis. There we saw that the Russia funds generated their largest excess returns in 2003, and here the same applies to strategic excess returns in 2003. All but one Russia fund generate their largest strategic alphas in 2003, all significant at one percent level. The pattern for the strategic alphas of the Eastern Europe funds is also similar to the Jensen's alphas. Even here SEB Östeuropa generates the highest strategic alphas all through the observation period. What we find interesting here is that the Eastern Europe funds clearly have more negative strategic alphas than the Russia funds. In 2002 and 2004 three out of the four funds have negative strategic alphas. Further, there are fewer significant observations than for the Russia funds.

5.3.3 Excess returns from short-term investment decisions

The picture is much more diffuse for all funds when it comes to the short-term investment decisions measured by tactical alphas. This time just over half of the alphas are positive, indicating that the funds are unable to create value through short term trading. It can also be noted that there are no funds that would have performed clearly better with respect to tactical decisions than other funds.

Figure 33 - Tactical Alphas of the funds



Of Russia funds, ABN Amro Russia has the highest tactical alphas in three periods and is the only Russia fund with only one negative alpha. Swedbank Robur Ryssland is the fund with the lowest alphas during three out of the six years. Similarly we can see that the pattern for tactical alphas for Eastern Europe funds is different from the Jensen's and strategic alphas. Even though SEB Östeuropa is the only fund with just one negative tactical alpha it does not stand out as the fund with the highest alphas throughout the observation period. This would indicate that SEB Östeuropa generates its superior Jensen's alphas mostly through strategic investment decisions. We also want to point out that this time there is no clear difference between Russia and Eastern Europe funds. There are only ten negative alphas for Eastern Europe funds, compared to 16 for the Russia funds, indicating that Eastern Europe funds could in fact be able to create more value through short term trading than Russia funds. However, only one of the observations is statistically significant which leaves the matter inconclusive.

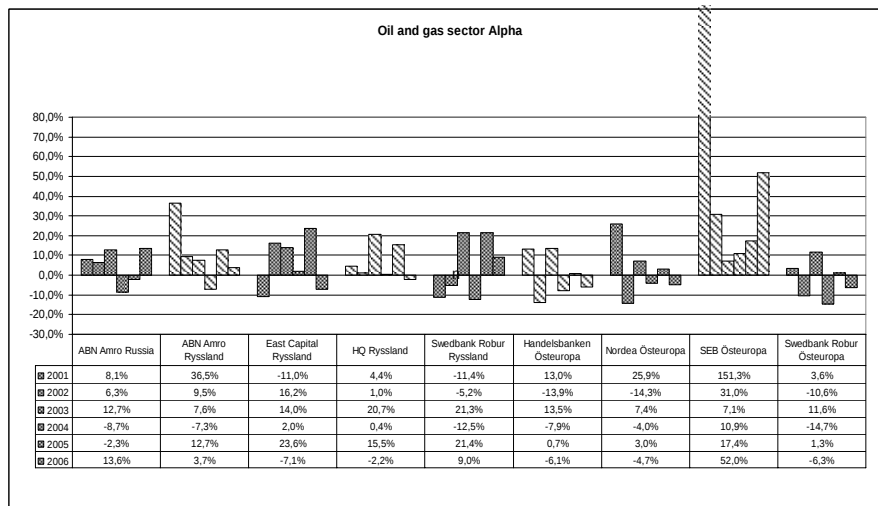
There are some arguments that could explain the relatively low tactical alphas compared to Jensen's alphas. The Russian stock exchange is still quite small, meaning that most stocks are extensively followed by analysts. Also a particularity of an emerging market like Russia is the high transaction costs compared to more mature stock markets. This is why short-term investment decisions and trading activity may become costly. On

the other hand, there are also arguments that could explain high tactical alphas. The capitalization of an average Swedish Russia fund is quite small meaning that the fund would probably not correct the mispricing itself if it would sell or buy over- or undervalued securities. Also the number of stocks held by the funds is quite moderate. This could indicate that the fund managers would be able to evaluate themselves if mispricing occurred in the market.

5.3.4 Sector portfolio analysis

The previous analysis has shown that the positive excess returns are mainly generated through long-term strategic decisions. Now we want to add another perspective to the discussion and analyse in which sectors the positive Jensen's alphas are generated. In order to do this, we have performed the analysis for the sector portfolios of all funds. The results of the statistical analysis indicate the following. First of all, alphas in the oil and gas sector are relatively small compared to the overall Jensen's alphas, indicating that the funds would not generate their overall excess returns in this sector. We find this to be an important result, since oil and gas sector is the most important sector for all funds. The only fund that stands out here is SEB Östeuropafond since it has only positive alphas in the observation period. We observe the highest alpha for the whole sector in SEB Östeuropa in 2001. We also find that 17 of oil and gas sector's alphas are negative, which is the highest amount of negative alphas among all the sectors. As only one of the alphas in this sector is statistically significant it is hard to draw any definitive conclusions on the funds ability to generate excess returns in the oil and gas sector.

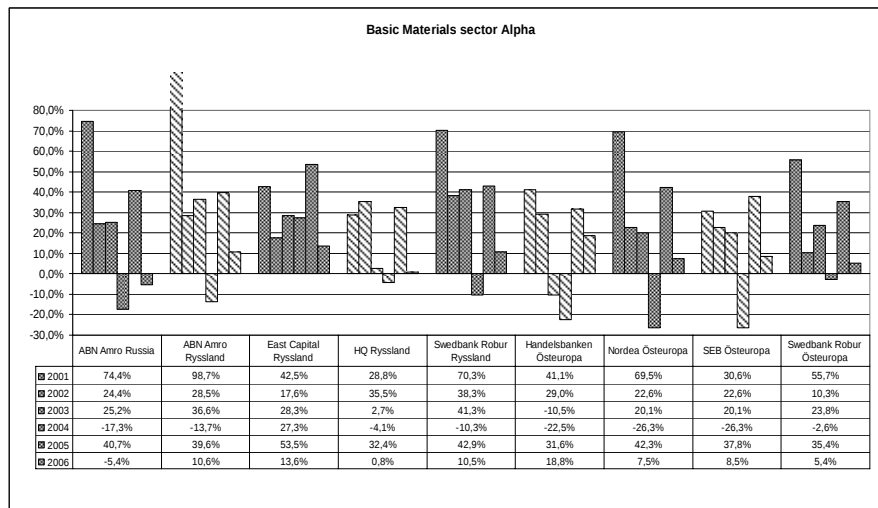
Figure 34 - Oil & gas alphas of the funds



As the oil sector is the dominant one in the Russian market it would be reasonable to assume that it is closely observed by international analysts and therefore the stocks rarely would be mispriced. Thus, we don't find these results surprising. As all the funds have large weights in this sector, the relatively poor performance has a negative impact on the overall alpha of the funds.

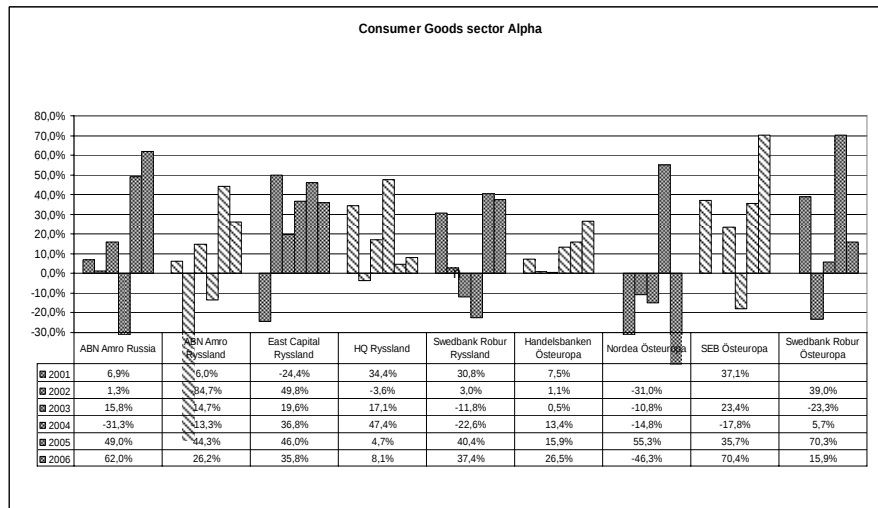
The picture looks much different for the portfolios of stocks in basic materials. This time the alphas are larger and more often positive. Most of the negative alphas that we observe are generated in 2004. It is interesting to note that here SEB Östeuropa does not stand out of the other funds at all. East Capital Russia stands out by being the only one without any negative alpha values. Further, it generates the highest alpha values in 2004 and 2005. This time there are 13 significant alphas of which all are positive indicating some ability to generate positive excess returns in this sector.

Figure 35 - Basic Materials alphas of the funds



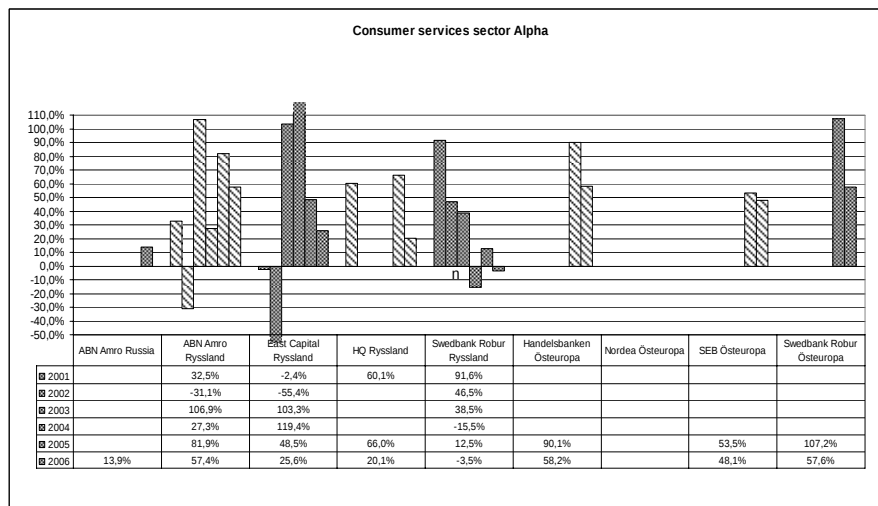
The picture is a bit more diffuse for the consumer goods sector. Here the Jensen's alphas are somewhat smaller than for basic materials sector. We do want to note that Russia funds appear to create more often positive alphas than Eastern Europe funds. During the last two years when most alphas are statistically significant there are only positive alphas generated by the Russia funds whereas the Eastern Europe funds' alphas are decreasing. We interpret this as giving indication of Russia funds ability to create excess return in the consumer goods sector.

Figure 36 - Consumer Goods alphas of the funds



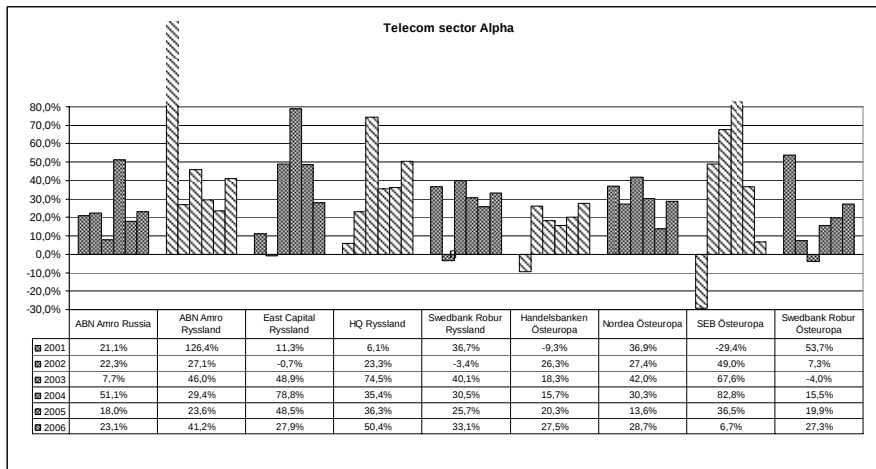
Consumer services is the sector with least investments from both group of funds during the six-year period. Eastern Europe funds started to invest in this sector first in 2005 whereas most Russia funds had invested in this sector already in 2001. It is worth noting that of all the sector alphas the highest values are generated in consumer services sector. East Capital Ryssland and ABN Amro Ryssland seem to be the funds that are able to generate the highest alphas in this sector. Swedbank Robur Ryssland's excess returns clearly have a decreasing trend whereas HQ Ryssland only has invested in this sector during three years and with mixed results. Eastern Europe funds seem to be able to generate positive excess returns in this sector as five out of six alphas that they generate are statistically significant and none of them is negative.

Figure 37 - Consumer Services alphas of the funds



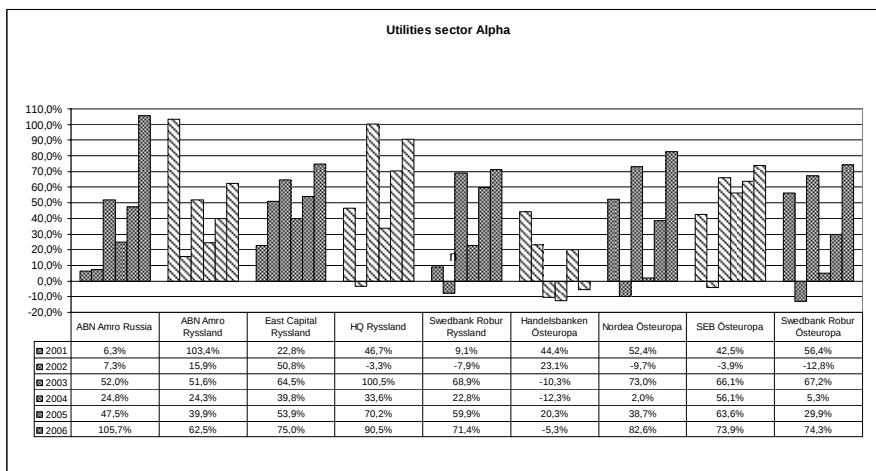
In the telecom sector the funds clearly generate a large number of positive alphas. There are only five negative alphas for the entire period and none of these are statistically significant. During the last three years most of the alphas generated by the Russia funds are significant which would indicate some ability to generate excess returns in this sector. Generally the Eastern Europe funds generate somewhat lower alphas than the Russia funds but the differences in excess returns are relatively small.

Figure 38 – Telecom alphas of the funds



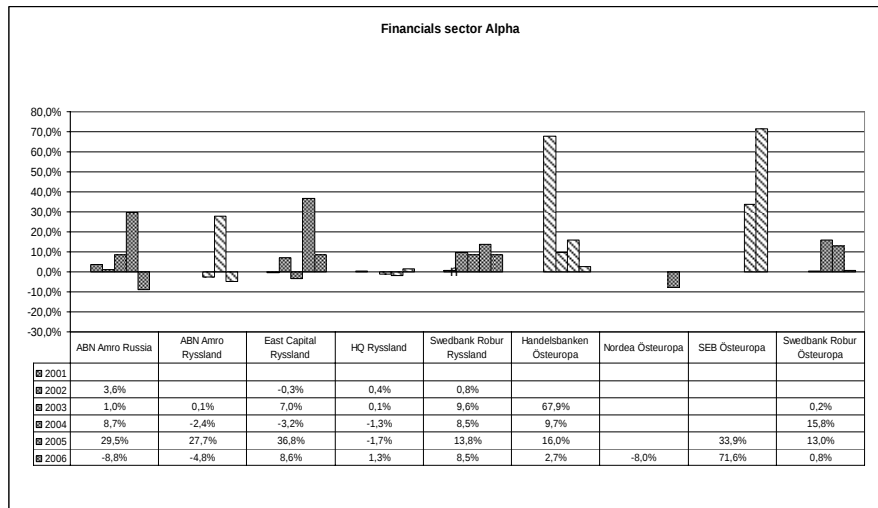
The picture is quite similar for the alphas generated in the utilities sector. Again we observe a large number of positive alphas. Altogether there are 25 statistically significant alphas, which is the highest number of all the sectors. SEB Östeuropa has five significant positive alphas, East Capital, Nordea Östeuropa and Handelsbanken Östeuropa four. Further ABN Amro Ryssland and HQ Ryssland both have three significant positive alphas, and overall it seems as the funds have ability to generate excess returns in the utilities sector.

Figure 39 - Utilities alphas of the funds



The financials sector might be the least mature sector in the Russian market given the financial crisis of 1998. This is reflected in the fact that the Russia funds started to invest in this sector first in 2002 and the Eastern Europe funds in 2003. All the Russia funds generate similar alphas during the observation period with the exception of HQ Ryssland that misses the 2005 increase. It is interesting to note that East Capital Ryssland has the highest alphas during the last two years when it also has the highest weight of all funds in this sector. For the Eastern Europe funds it is hard to draw any conclusion given the small number of alphas of which none is significant.

Figure 40 - Financials alphas of the funds



Generally one could say that the excess returns generated in the sectors are very high compared to what one would expect in more mature markets. Also it is worth noting that excess returns in the dominant oil sector remained relatively low compared to the overall excess returns and the excess returns generated in the other sectors. This would indicate that the funds in this study would have ability to select stocks from smaller sectors where mispricing could exist more often than in the oil sector dominated by large companies. In other markets, growth potential might be great for smaller firms instead. We can think of two reasons for this. First, local demand and domestic markets are growing, creating business opportunities in many sectors of the economy. Second, as FINAM²⁵ points out, there is a large number of undiscovered 2nd and 3rd tier stocks still in the Russian market representing apparent future investment opportunities for investors²⁶.

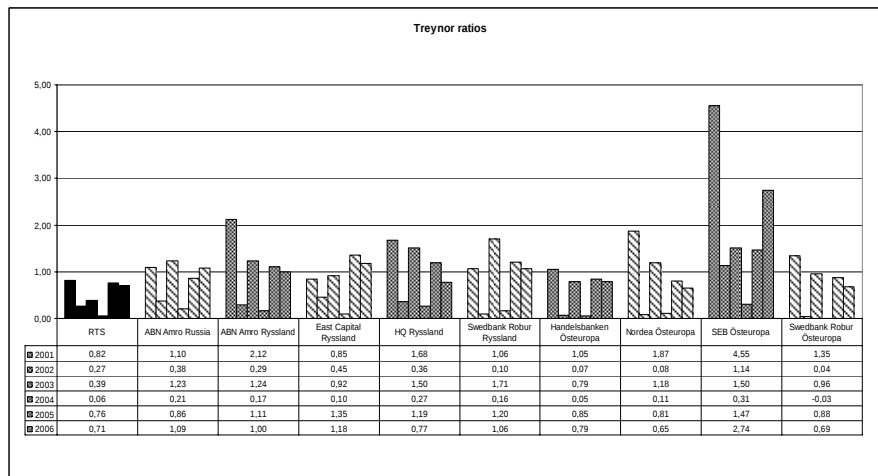
²⁵ FINAM investment company, <http://fin-rus.com/quotes/stockmarket/default.asp>, 2007-08-02

²⁶ There is a large group of stable, prosperous companies qualified as "illiquid stocks" where large stockholders prefer to sacrifice liquidity of their holdings in return for limited transparency and tight control. Current stock market growth and growing demand for transparency gives them incentives for realizing the benefits of their investments' liquidity, thus increasing liquidity of many stocks (FINAM).

5.3.5 Risk-adjusted performance evaluation

Now that we know more about the time variation to systematic risk in the funds, we want to add a risk-to-volatility measure, the Treynor ratio, to the discussion. It measures the fund returns that are earned in a market in excess to what could have been earned on a riskless investment per unit of market risk. Computing this kind of risk-adjusted performance measure provides the investor additional information on the relative risk-return trade-off of the funds. The results from the calculation are illustrated in the graph below.

Figure 41 - Treynor measures of the funds



The first observation we make here is that most of the funds generate higher returns per unit of risk than the market. This is in line with our previous results which indicate that the Russia and Eastern Europe funds are in fact able to create better returns than the index when adjusted for risk. SEB Östeuropa stands out as the fund that constantly generates the highest returns per unit of risk. The difference is particularly striking in the beginning and end of the observation period. We observe the largest difference between the funds and the index in 2003, when all funds generate a clearly higher return per unit of risk than the market. Further, all the funds seem to follow a similar pattern where the Treynor measure for 2002 and 2004 are clearly lower than for other years. The only year when all the Russia funds are not above RTS is in 2002. It is in this same year that Swedbank Robur Ryssland is the only fund with lower Treynor measure than the market. Another interesting observation is that there is no Russia fund that would constantly generate the highest Treynor measure. The picture is somewhat different for the Eastern Europe funds with the exception of SEB Östeuropa. In three years out of the six all Eastern Europe funds are able to generate higher Treynor measures than the RTS index. Since there were five such years for Russia funds, we interpret this as a slight indication of Russia funds ability to generate better risk-adjusted

returns than the Eastern Europe funds in the Russian stock market. To conclude, most funds succeed in generating more return per unit of risk than the market, which is in line with our results concerning excess returns of the funds. We were also able to discover that these excess returns are mainly generated through long-term strategic decisions. Further, we found that the funds perform relatively poorly in the dominant oil sector. After studying the funds excess returns in other sector markets, we found that the funds in fact do generate their excess returns from the smaller sectors.

6 Concluding remarks

The purpose of this study was twofold. Our first aim was to investigate the systematic risk of an emerging market like Russia and what induces it. The second was to provide insight into how Russia funds are managing their risk exposure in an emerging market environment, being new to an emerging market environment, and to conduct a performance evaluation in order to assess the funds performance with respect to their risk profile.

We started by looking at the market's exposure to systematic risk in emerging markets and in the world market, and found it to be time varying, but strong and significant with respect to both. Still, the exposure to systematic risk in the emerging markets was consistently higher, even if there are some indications that the level of integration with world markets was increasing. The time variation and volatility in the risk exposures persisted cross sectors, and were the highest for utilities, financials and telecommunication, followed by oil and gas and basic materials. This led us to conclude that there are some diversification benefits to be made by investing in the Russian stock market, even if these benefits can be diminishing.

To capture some of the time variation and what induces the systematic risk in more detail, additional risk factors were included in the analysis. Here we found results indicating that in contrary to common perception, the exposure to commodity risk was relatively low in the Russian market. However, we want to emphasize that this is likely not the case, but that the global equity risk absorbs large parts of commodity risk and that the one week time window used in this study is not long enough to capture investors' expectations in the commodity markets, which are long-term. Another interesting result was the lower than expected exposure to global interest rate risk. With many international investors present in the market and the growth in the overall inflow of capital to Russia from abroad, we would have expected the exposure to global interest rate risk to be higher. Finally, the results indicated that the exposure to local currency risk is more volatile and inconsistent than the exposure to global currency risk. We don't

find this surprising considering the extensive use of the US dollar as hard currency in the Russian stock market.

The exposure to these systematic risk factors varies somewhat between sectors, which is natural considering their nature. Some are very sensitive to changes in local demand, like consumer goods and services sectors, whereas other sectors are more sensitive to country infrastructure, like telecommunication, or regulatory shifts, like utilities' sector. It was the sector analysis, where the explanatory power of these systematic risk factors remained very low that revealed just how important political and economic events can be in forming investors' perception of country risk. Two important issues were addressed, namely the country risk related to political event and corporate governance. Even if any causality is hard to establish, it seems fair to remind the investor of the relative importance of these risk factors in an emerging market like Russia.

Finally, we investigated the exposure of each fund to these systematic risk factors. There were in deed variation between the funds' risk profiles, particularly with respect to commodity risk and global interest rate risk. Of course what risk profile is optimal depends on the investor's current portfolio holdings. Keeping this in mind, these observations led us to conclude that an investor that is aware of exposure to systematic risk factors in the market, its sectors and funds, can make an investment decision that brings along some diversification benefits. But the risk profiling is only a part of the investment decision. The investor will also want to know how the funds have performed in the past in terms of returns and with respect to the market.

Therefore we went on by conducting a performance evaluation for the funds. We found that Russia funds are often able to generate large positive Jensen's alphas, which indicate excess returns with respect to the market return. All the funds in the sample had lower betas than one and since many of the funds in addition generated higher returns than the index they also generated positive excess returns. Some differences in excess returns can be observed between the funds however. SEB Östeuropa clearly generates the highest excess returns of all the funds, and overall it seems as Russia funds are able to generate statistically significant excess returns more often than Eastern Europe funds. As we looked closer at these excess returns, we found that they are mainly generated through long-term strategic decisions. Even in this respect, the evidence revealed the Russia funds' performance to be superior to that of the Eastern Europe funds. Most of the tactical alphas, that indicate short-term stock picking ability, were relatively low when compared to the overall excess returns. This led us to conclude that it is in fact the long-term investment decisions through which the funds' excess returns are generated.

We then conducted the same performance evaluation on the funds' sector portfolios and found strong variation in the funds' performance between sectors. In the

dominant oil sector the funds are performing relatively weakly compared to other sectors. The only fund standing out here is SEB Östeuropa which would indicate that it generates its superior overall alpha in the oil sector. The performance of the funds has been relatively weakest in the financials sectors where the lowest alphas were detected. We were also able to find evidence indicating that both Russia and Eastern Europe funds generate positive excess returns mainly in basic materials, telecommunication and utilities sectors.

Finally, we wanted to consider the risk-return trade-off of the funds and found some interesting results. Here SEB Östeuropa stood out with the highest returns per unit of risk. Other than that, the Eastern Europe funds did not perform as strongly as the Russia funds. Among them, it was East Capital Ryssland that was responsible for the highest risk-adjusted performance, but all funds had higher returns per unit of risk than the RTS index in five years out of six. All together the evidence pointed to the direction that one of the major concerns for the funds is in fact market volatility and that they have successfully reduced their exposure to systematic market risk.

The results we obtained reveal more interesting research areas in emerging markets. One is to further develop the conditional asset pricing model that is capturing the systematic risk factors. As we reached explanatory powers of around 50% for the regressions, we were attempted to add in proxies for more unquantifiable risk factors, such as political risk that we discussed above. Also, the result that indicated an increasing level of integration with world markets in the past years would be interesting to investigate further. We wonder if it is really driven by true market integration with increased factor mobility and interdependencies, or factors that are more related to investors' current perceptions of the markets. Thirdly, we were somewhat surprised by the finding that a foreign institutional investor was able to generate such high excess returns quite consistently many year in a row in an emerging market. This left us wondering whether the performance was superior to the local mutual funds. This would be an interesting field for further research. Finally, we think that we should be careful in generalizing the results from Russia to other emerging markets as they are in different phases of development and differ in many other aspects as well. Therefore the persistency of these results would be interesting to investigate. Are the foreign institutional investor excess returns large and positive also in other emerging markets, such as China, India, Africa or Latin America?

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8 Appendices A-F

Appendix A. Information on Russia and Eastern Europe funds

Name of the fund	Starting date	Assets under management mSEK (20061231)	Percentage invested in Russia
Russia funds			
ABN Amro Russia SEK	1998-03-09	639,0	
ABN Amro Ryssland	1998-04-23	3260,3	
East Capital Ryssland	1998-05-18	14206,2	
Gustavia Greater Russia Sm/Mid Cap	2005-12-02	160,5	
HQ Ryssland	1997-10-27	6180,2	
Swedbank Robur Ryssland	1998-03-23	11000,5	
Eastern Europe funds			
East Capital Östeuropafonden	2002-03-18	7773,4	45,3%
Handelsbanken Östeuropafond	1996-06-12	3280,8	63,3%
Nordea Östeuropafond	1996	2504,9	61,2%
SEB Östeuropafond	1997	5007,8	32,6%
Swedbank Robur Östeuropafond	1996-12-03	9604,7	62,2%

Appendix B. Composition of DS Sector Indices

DS Oil & Gas	DS Consumer Services
DS Oil & Gas Prod	DS Retail
DS Explore & Prdn	DS Fd & Drug Rtl
DS Int Oil & Gas	DS Fd Rtl & W
DS Oil / Eq Svs / Dst	DS Travel & Leis
DS Pipelines	DS Airlines
DS Basic Materials	DS Telecom
DS Chemicals	DS Fxd Line T/Cm
DS Commodity Chem	DS Mobile T/Cm
DS Basic Resource	DS Utilities
DS Industrial Met	DS Electricity
DS Nonferrous Met	
DS Steel	DS Financials
DS Mining	DS Banks
DS Gold Mining	DS Financial Svs
DS Consumer Goods	
DS Auto & Parts	
DS Automobiles	
DS Food & Bev	
DS Beverages	
DS Brewers	
DS Food Producers	
DS Food Products	

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Appendix C. Results of World CAPM regressions

Single-factor regressions		2001-2006	t	2001	t	2002	t	2003	t	2004	t	2005	t	2006	t
RTS - MSCI World	Alpha	0.009	0.000	0.013	0.058	0.009	0.142	0.007	0.210	0.000	0.970	0.012	0.004	0.008	0.222
	Beta - World market	0.447	0.000	0.279	0.263	0.404	0.073	0.474	0.129	0.945	0.024	0.464	0.158	0.820	0.083
	R2	0.044		0.025		0.062		0.045		0.098		0.039		0.059	
RTS - MSCI EM	Alpha	0.006	0.004	0.011	0.061	0.009	0.127	0.005	0.338	0.000	0.936	0.008	0.039	0.006	0.334
	Beta - Emerging market	0.845	0.000	0.784	0.000	0.818	0.001	0.586	0.036	0.991	0.000	0.804	0.002	1.136	0.000
	R2	0.196		0.221		0.204		0.085		0.222		0.184		0.267	
Oil & Gas - MSCI World	Alpha	0.009	0.000	0.012	0.042	0.011	0.097	0.006	0.328	0.003	0.671	0.013	0.004	0.008	0.278
	Beta - World market	0.442	0.000	0.315	0.160	0.440	0.064	0.414	0.219	0.722	0.099	0.719	0.047	0.672	0.186
	R2	0.041		0.039		0.066		0.030		0.054		0.076		0.035	
Oil & Gas - MSCI EM	Alpha	0.007	0.002	0.011	0.047	0.010	0.093	0.005	0.441	0.002	0.694	0.009	0.036	0.005	0.418
	Beta - Emerging market	0.782	0.000	0.735	0.000	0.805	0.002	0.474	0.117	0.832	0.005	0.926	0.001	1.040	0.001
	R2	0.158		0.239		0.178		0.048		0.147		0.196		0.197	
Basic Materials - MSCI World	Alpha	0.005	0.052	0.003	0.785	-0.006	0.298	0.020	0.001	0.001	0.930	0.004	0.440	0.006	0.340
	Beta - World market	0.253	0.069	-0.233	0.524	0.199	0.362	0.184	0.570	0.732	0.112	0.975	0.024	0.700	0.143
	R2	0.011		0.008		0.016		0.007		0.050		0.098		0.042	
Basic Materials - MSCI EM	Alpha	0.004	0.147	0.004	0.715	-0.007	0.260	0.017	0.005	0.000	0.984	0.000	0.966	0.004	0.476
	Beta - Emerging market	0.527	0.000	-0.011	0.974	0.095	0.303	0.532	0.064	0.993	0.001	0.965	0.005	0.943	0.002
	R2	0.056		0.000		0.021		0.067		0.189		0.149		0.182	
Consumer goods - MSCI World	Alpha	0.014	0.002	0.051	0.044	0.006	0.388	-0.001	0.862	0.003	0.453	0.010	0.011	0.007	0.153
	Beta - World market	-0.216	0.332	-0.584	0.526	-0.153	0.519	0.035	0.836	0.014	0.955	0.745	0.017	0.606	0.076
	R2	0.003		0.008		0.008		0.001		0.000		0.108		0.061	
Consumer goods - MSCI EM	Alpha	0.013	0.004	0.053	0.035	0.007	0.309	-0.001	0.737	0.002	0.525	0.008	0.050	0.006	0.201
	Beta - Emerging market	0.213	0.287	0.041	0.962	0.235	0.974	0.101	0.502	0.212	0.220	0.556	0.028	0.692	0.001
	R2	0.004		0.000		0.016		0.009		0.030		0.093		0.190	
Consumer services - MSCI World	Alpha	0.006	0.014	0.013	0.121	-0.006	0.294	0.009	0.101	0.009	0.587	0.005	0.154	0.005	0.512
	Beta - World market	0.418	0.002	-0.073	0.794	0.482	0.025	0.588	0.058	0.576	0.151	0.630	0.222	1.103	0.045
	R2	0.032		0.001		0.095		0.070		0.041		0.030		0.078	
Consumer services - MSCI EM	Alpha	0.005	0.048	0.012	0.109	-0.007	0.207	0.007	0.228	0.008	0.152	0.001	0.831	0.005	0.538
	Beta - Emerging market	0.517	0.000	-0.052	0.844	0.456	0.058	0.821	0.003	0.700	0.011	0.893	0.028	0.858	0.016
	R2	0.060													
Telecom - MSCI World	Alpha	0.005	0.022	0.001	0.790	0.004	0.450	0.011	0.037	-0.003	0.560	0.005	0.329	0.004	0.252
	Beta - World market	0.630	0.000	0.400	0.040	0.470	0.020	0.519	0.064	1.247	0.000	1.109	0.011	1.098	0.000
	R2	0.116		0.082		0.102		0.067		0.228		0.121		0.273	
Telecom - MSCI EM	Alpha	0.002	0.205	0.001	0.875	-0.003	0.477	0.009	0.083	0.000	0.587	0.000	0.970	0.004	0.258
	Beta - Emerging market	0.873	0.000	0.771	0.000	0.866	0.000	0.672	0.007	1.031	0.000	1.210	0.000	0.856	0.000
	R2	0.275		0.340		0.281		0.137		0.323		0.224		0.392	
Utilities - MSCI World	Alpha	0.009	0.004	0.015	0.064	0.000	0.945	0.014	0.096	0.002	0.822	0.006	0.235	0.014	0.094
	Beta - World market	0.602	0.000	0.598	0.046	0.494	0.064	0.435	0.334	1.328	0.011	0.244	0.579	0.599	0.320
	R2	0.050		0.077		0.066		0.019		0.121		0.006		0.020	
Utilities - MSCI EM	Alpha	0.006	0.038	0.012	0.087	-0.001	0.863	0.010	0.216	0.001	0.831	0.003	0.565	0.012	0.138
	Beta - Emerging market	1.036	0.000	1.111	0.000	0.947	0.001	0.880	0.027	1.359	0.000	0.671	0.053	0.959	0.012
	R2	0.181		0.289		0.196		0.263		0.073		0.120		0.160	
Financials - MSCI World	Alpha	0.016	0.000	0.027	0.007	0.021	0.011	0.004	0.545	0.011	0.084	0.018	0.000	0.014	0.053
	Beta - World market	0.722	0.000	0.864	0.021	0.543	0.073	0.596	0.067	0.690	0.114	1.035	0.009	1.598	0.002
	R2	0.074		0.102		0.062		0.065		0.049		0.129		0.174	
Financials - MSCI EM	Alpha	0.014	0.000	0.023	0.010	0.020	0.013	0.001	0.820	0.012	0.073	0.014	0.004	0.014	0.048
	Beta - Emerging market	0.936	0.000	1.370	0.000	0.771	0.021	0.756	0.009	0.543	0.073	1.153	0.000	1.048	0.002
	R2	0.154		0.287		0.100		0.128		0.063		0.249		0.177	

Appendix D. Results of conditional asset pricing model regressions

Multi-factor regressions		2001-2006		t	2001	t	2002	t	2003	t	2004	t	2005	t	2006	t
RTS	Alpha	0.006	0.006	0.018	0.004	0.004	0.574	0.004	0.526	0.000	0.940	0.006	0.119	-0.001	0.775	0.000
	Beta - MSCIEM	0.832	0.000	0.657	0.003	0.760	0.002	0.675	0.035	1.090	0.000	0.867	0.001	1.553	0.000	0.000
	Beta - Oil	0.196	0.000	0.342	0.001	0.228	0.113	0.074	0.495	0.184	0.100	0.131	0.149	0.243	0.117	0.000
	Beta - Libor	-0.036	0.559	0.002	0.993	-0.064	0.651	-0.193	0.269	-0.326	0.108	0.005	0.981	0.111	0.267	0.000
	Beta - RUB/USD	-1.202	0.014	-4.206	0.029	2.776	0.392	-3.109	0.458	-0.265	0.808	-0.357	0.645	-4.281	0.009	0.000
	Beta - USD/EUR	-0.253	0.139	-0.383	0.296	-0.059	0.914	-0.140	0.753	-0.599	0.241	-0.281	0.365	-1.472	0.028	0.000
	R2	0.263		0.441		0.250		0.132		0.313		0.236		0.551		0.000
Oil & Gas	Alpha	0.006	0.004	0.018	0.004	0.004	0.656	0.004	0.567	0.000	0.940	0.006	0.119	-0.001	0.775	0.000
	Beta - MSCIEM	0.772	0.000	0.622	0.001	0.735	0.005	0.551	0.114	0.892	0.003	0.930	0.002	1.473	0.000	0.000
	Beta - Oil	0.194	0.000	0.319	0.001	0.243	0.112	0.076	0.526	0.089	0.458	0.112	0.265	0.388	0.024	0.000
	Beta - Libor	-0.041	0.523	-0.042	0.782	-0.023	0.880	-0.190	0.324	-0.550	0.042	0.030	0.880	0.063	0.450	0.000
	Beta - RUB/USD	-1.217	0.018	-3.186	0.030	2.126	0.233	-3.098	0.468	-0.645	0.649	-0.381	0.649	-4.281	0.009	0.000
	Beta - USD/EUR	-0.193	0.287	-0.436	0.182	0.176	0.764	-0.206	0.674	-0.905	0.147	-0.004	0.991	-1.643	0.025	0.000
	R2	0.220		0.464		0.236		0.086		0.245		0.235		0.528		0.000
Basic Materials	Alpha	0.003	0.244	0.011	0.334	-0.015	0.053	0.014	0.039	-0.002	0.725	0.002	0.718	-0.002	0.717	0.000
	Beta - MSCIEM	0.510	0.000	-0.225	0.557	0.248	0.326	0.503	0.117	1.143	0.000	0.921	0.011	1.234	0.000	0.000
	Beta - Oil	0.170	0.003	0.365	0.049	0.143	0.341	0.113	0.307	0.271	0.031	0.026	0.835	0.308	0.081	0.000
	Beta - Libor	0.009	0.911	0.129	0.697	-0.059	0.691	-0.044	0.802	0.038	0.887	0.012	0.967	0.086	0.449	0.000
	Beta - RUB/USD	-2.046	0.001	-3.882	0.264	4.387	0.201	-2.590	0.092	-0.611	0.612	-1.370	0.200	-3.651	0.003	0.000
	Beta - USD/EUR	-0.013	0.953	-0.566	0.401	0.664	0.254	-0.070	0.877	-0.415	0.461	0.383	0.503	-0.965	0.199	0.000
	R2	0.119		0.120		0.096		0.147		0.286		0.198		0.426		0.000
Consumer goods	Alpha	0.014	0.001	0.041	0.138	0.001	0.852	-0.002	0.648	0.001	0.714	0.005	0.184	0.003	0.532	0.000
	Beta - MSCIEM	0.194	0.337	-0.749	0.440	0.279	0.280	0.142	0.417	0.196	0.278	0.639	0.014	1.083	0.000	0.000
	Beta - Oil	-0.050	0.600	0.056	0.904	-0.205	0.184	0.016	0.782	-0.041	0.583	-0.032	0.717	0.138	0.276	0.000
	Beta - Libor	0.007	0.955	0.813	0.333	-0.147	0.340	0.014	0.885	0.093	0.571	-0.047	0.821	-0.066	0.423	0.000
	Beta - RUB/USD	0.872	0.396	9.367	0.286	7.788	0.029	3.306	0.712	-1.080	0.142	0.936	0.226	-2.871	0.002	0.000
	Beta - USD/EUR	-0.999	0.006	-3.042	0.078	-0.421	0.479	0.226	0.363	-0.145	0.670	-0.535	0.085	-1.763	0.002	0.000
	R2	0.035		0.114		0.195		0.034		0.093		0.304		0.414		0.000
Consumer services	Alpha	0.005	0.057	0.005	0.530	-0.006	0.389	0.003	0.617	0.000	0.139	-0.002	0.803	0.000	0.981	0.000
	Beta - MSCIEM	0.520	0.000	-0.284	0.322	0.416	0.090	0.892	0.004	0.686	0.018	0.963	0.027	0.875	0.032	0.000
	Beta - Oil	0.077	0.171	0.189	0.170	0.257	0.079	0.881	0.045	-0.104	0.372	0.067	0.054	0.113	0.639	0.000
	Beta - Libor	-0.045	0.554	-0.161	0.517	-0.183	0.207	-0.060	0.720	-0.104	0.686	-0.028	0.717	0.138	0.276	0.000
	Beta - RUB/USD	-1.223	0.014	-4.681	0.033	2.765	0.377	-3.156	0.477	-0.259	0.785	-0.358	0.645	-4.281	0.009	0.000
	Beta - USD/EUR	-0.133	0.953	-0.486	0.336	-0.175	0.204	-0.275	0.520	-0.125	0.815	-0.066	0.365	-0.490	0.666	0.000
	R2	0.068		0.151		0.165		0.207		0.149		0.345		0.414		0.000
Telecom	Alpha	0.002	0.170	-0.004	0.393	0.007	0.223	0.005	0.371	-0.002	0.667	-0.001	0.698	0.004	0.318	0.000
	Beta - MSCIEM	0.000	0.578	0.000	0.000	0.065	0.000	0.023	0.000	0.000	1.240	0.000	0.000	0.000	0.000	0.000
	Beta - Oil	0.006	0.871	0.034	0.669	-0.108	0.375	0.009	0.288	-0.023	0.807	-0.010	0.696	0.004	0.658	0.000
	Beta - Libor	-0.040	0.447	-0.115	0.430	-0.015	0.901	0.039	0.790	-0.031	0.884	-0.007	0.881	-0.005	0.360	0.000
	Beta - RUB/USD	-0.364	0.362	1.639	0.283	-0.822	0.765	-2.526	0.051	-0.007	0.994	-0.008	0.994	-0.412	0.577	0.000
	Beta - USD/EUR	-0.282	0.055	-0.645	0.033	-1.706	0.136	-0.107	0.778	-0.308	0.703	-0.447	0.344	-0.477	0.344	0.000
	R2	0.285		0.426		0.332		0.227		0.378		0.328		0.701		0.000
Utilities	Alpha	0.006	0.037	0.020	0.011	-0.001	0.890	0.006	0.515	0.005	0.460	0.004	0.446	0.007	0.432	0.000
	Beta - MSCIEM	0.009	1.012	0.012	0.019	0.000	0.000	0.007	0.007	0.000	0.639	0.000	1.437	0.000	0.937	0.000
	Beta - Oil	-0.022	0.708	-0.176	0.172	0.004	0.981	-0.043	0.777	-0.013	0.924	-0.116	0.368	-0.307	0.233	0.000
	Beta - Libor	-0.066	0.411	0.146	0.530	-0.114	0.538	-0.043	0.872	-0.338	0.262	0.070	0.815	0.104	0.527	0.000
	Beta - RUB/USD	-1.370	0.035	-4.768	0.053	-1.117	0.775	-1.182	0.572	-0.679	0.609	-1.280	0.251	-3.735	0.032	0.000
	Beta - USD/EUR	-0.274	0.228	-0.109	0.816	0.295	0.657	-0.206	0.664	-0.545	0.016	-0.206	0.647	-1.378	0.016	0.000
	R2	0.196		0.384		0.216		0.105		0.356		0.113		0.238		0.000
Financials	Alpha	0.000	0.000	0.021	0.043	0.009	0.314	-0.002	0.757	0.011	0.124	0.012	0.015	0.013	0.004	0.000
	Beta - MSCIEM	0.926	0.000	1.399	0.000	0.592	0.067	0.838	0.012	0.557	0.083	1.276	0.000	1.191	0.004	0.000
	Beta - Oil	0.083	0.164	0.016	0.927	0.002	0.127	0.002	0.634	0.002	0.927	0.017	0.074	0.000	0.898	0.000
	Beta - Libor	-0.106	0.841	-0.172	0.581	-0.029	0.880	-0.082	0.648	-0.332	0.254	-0.347	0.170	-0.079	0.591	0.000
	Beta - RUB/USD	0.899	0.026	0.518	0.873	11.100	0.103	-1.512	0.328	0.442	0.731	0.332	0.720	0.233	0.220	0.000
	Beta - USD/EUR	-0.286	0.169	-0.338	0.593	0.262	0.217	0.011	0.563	-0.583	0.561	-0.281	0.970	-1.187	0.010	0.000
	R2	0.069		0.218		0.262		0.217		0.331		0.332		0.378		0.000

Investing in an emerging market
Kristian Elonen (19577) & Saara Hollmén (19855)

Multi-factor regressions		2001-2006	t	2001	t	2002	t	2003	t	2004	t	2005	t	2006	t
ABNAMRO Russia	Alpha	0.006	0.001	0.012	0.013	0.006	0.293	0.008	0.143	0.001	0.879	0.008	0.142	0.005	0.482
	Beta - MSCIEI	0.696	0.000	0.427	0.014	0.686	0.001	0.681	0.009	1.034	0.000	0.868	0.001	0.947	0.078
	Beta - Oil	0.145	0.000	0.229	0.006	0.173	0.124	0.046	0.596	0.157	0.136	0.138	0.115	0.401	0.022
	Beta - Libor	-0.071	0.168	0.012	0.936	-0.025	0.821	-0.180	0.256	-0.291	0.212	-0.013	0.949	-0.044	0.662
	Beta - RUB/USD	-0.685	0.110	-1.920	0.208	0.916	0.717	-0.881	0.463	-0.570	0.579	-0.147	0.844	-1.303	0.258
	Beta - USD/EUR	-0.205	0.155	-0.547	-0.383	0.375	-0.189	0.598	-0.333	0.488	-0.181	0.544	-0.132	0.187	
	R2	0.248		0.327		0.306		0.183		0.316		0.251		0.357	
		0.007	0.000	0.017	0.000	0.004	0.005	0.008	0.084	0.002	0.825	0.008	0.025	0.002	0.674
ABNAMRO Ryssland	Alpha	0.659	0.000	0.290	0.056	0.627	0.154	0.587	0.012	0.894	0.000	0.715	0.001	1.089	0.000
	Beta - MSCIEI	0.121	0.000	0.210	0.005	0.145	0.098	0.048	0.543	0.120	0.227	0.095	0.186	0.280	0.018
	Beta - Oil	-0.010	0.825	0.203	0.119	-0.055	0.097	-0.146	0.247	-0.287	0.192	0.064	0.700	0.066	0.380
	Beta - Libor	-1.032	0.005	-2.235	0.100	0.709	2.224	-0.741	0.491	-0.593	0.540	-0.178	0.773	-3.033	0.000
	Beta - RUB/USD	-0.161	0.215	-0.088	0.735	-0.249	0.378	-0.173	0.591	-0.372	0.412	-0.177	0.471	-1.208	0.017
	Beta - USD/EUR	0.252		0.352		0.300		0.174		0.284		0.253		0.545	
	R2	0.008	0.000	0.014	0.042	0.000	1.000	0.010	0.071	0.010	0.061	0.009	0.014	0.003	0.377
		0.638	0.000	0.695	0.015	0.574	0.069	0.485	0.290	0.362	0.111	0.801	0.001	0.920	0.000
East Capital	Alpha	0.148	0.001	0.283	0.055	0.233	0.271	0.041	0.688	-0.044	0.735	0.100	0.268	0.166	0.083
	Beta - MSCIEI	-0.015	0.749	-0.027	0.908	-0.018	0.890	-0.166	0.253	-0.045	0.788	-0.115	0.489	0.048	0.434
	Beta - Oil	-0.815	0.052	-3.759	0.107	3.370	0.305	0.769	0.652	-0.169	0.857	0.370	0.566	-2.672	0.000
	Beta - Libor	-0.215	0.144	-0.365	0.362	0.147	0.803	-0.378	0.403	-0.062	0.886	-0.097	0.707	-1.084	0.000
	Beta - RUB/USD	0.279		0.389		0.363		0.157		0.124		0.295		0.529	
	Beta - USD/EUR	0.007	0.000	0.014	0.010	0.004	0.478	0.009	0.073	0.003	0.597	0.008	0.058	0.000	0.941
	R2	0.665	0.000	0.565	0.012	0.580	0.002	0.597	0.011	0.959	0.000	0.496	0.005	0.889	0.000
		0.130	0.001	0.218	0.071	0.164	0.125	0.042	0.592	0.148	0.313	0.126	0.181	0.256	0.020
HQ	Alpha	-0.025	0.596	0.009	0.963	-0.063	0.548	-0.103	0.415	-0.109	0.591	-0.076	0.726	0.069	0.325
	Beta - MSCIEI	-0.016	0.011	-3.632	0.051	1.767	0.464	-0.776	0.474	-0.578	0.614	0.036	0.964	-2.394	0.002
	Beta - Oil	-0.186	0.165	-0.537	0.094	-0.216	0.598	-0.096	0.766	-0.113	0.796	-0.069	0.828	-0.764	0.100
	Beta - Libor	0.269		0.432		0.297		0.170		0.281		0.102		0.536	
	Beta - RUB/USD	0.006	0.000	0.014	0.008	0.002	0.707	0.008	0.054	0.000	0.970	0.008	0.025	0.001	0.799
	Beta - USD/EUR	0.679	0.000	0.651	0.001	0.675	0.000	0.572	0.006	0.803	0.000	0.628	0.004	0.978	0.000
	R2	0.095	0.004	0.162	0.060	0.107	0.272	0.029	0.679	0.094	0.299	0.086	0.251	0.138	0.138
		0.045	0.303	0.011	0.941	-0.122	0.209	-0.130	0.248	-0.225	0.256	-0.007	0.966	0.961	0.311
Swedbank Ryssland	Alpha	-1.048	0.003	-1.975	0.222	1.856	0.401	-0.653	0.496	-0.619	0.479	-0.482	0.453	-3.156	0.000
	Beta - MSCIEI	-0.257	0.038	-0.388	0.218	-0.256	0.496	0.001	0.996	-0.362	0.376	-0.292	0.256	-1.083	0.008
	Beta - Oil	0.284		0.389		0.320		0.175		0.275		0.201		0.585	
	Beta - Libor														
	Beta - RUB/USD														
	Beta - USD/EUR														
	R2														

Multi-factor regressions		2001-2006	t	2001	t	2002	t	2003	t	2004	t	2005	t	2006	t
Handelsbanken Östeuropa	Alpha	0.006	0.000	0.020	0.002	0.004	0.533	0.006	0.350	0.000	0.990	0.007	0.999	0.000	0.944
	Beta - MSCIEI	0.798	0.000	0.590	0.008	0.764	0.001	0.647	0.033	0.993	0.001	0.888	0.001	1.460	0.000
	Beta - Oil	0.169	0.000	0.305	0.004	0.161	0.218	0.054	0.599	0.160	0.178	0.127	0.138	0.297	0.042
	Beta - Libor	-0.039	0.510	0.041	0.824	-0.111	0.391	-0.156	0.345	-0.399	0.140	0.031	0.874	0.011	0.282
	Beta - RUB/USD	-1.304	0.006	-5.136	0.010	-0.118	0.968	-0.942	0.851	-0.168	0.880	-0.318	0.665	-3.835	0.000
	Beta - USD/EUR	-0.159	0.340	-0.141	0.707	-0.298	0.555	-0.047	0.911	-0.596	0.272	-0.104	0.723	-1.294	0.039
	R2	0.250		0.389		0.257		0.119		0.262		0.270		0.565	
		0.006	0.003	0.013	0.005	0.002	0.712	0.008	0.188	0.000	0.867	0.008	0.088	-0.001	0.816
Nordea Östeuropa	Alpha	0.726	0.007	0.440	0.007	0.643	0.001	0.645	0.022	0.939	0.007	0.887	0.001	1.405	0.000
	Beta - MSCIEI	0.126	0.002	0.130	0.084	0.115	0.288	0.026	0.785	0.170	0.147	0.116	0.211	0.388	0.006
	Beta - Oil	-0.055	0.308	-0.063	0.640	-0.096	0.377	-0.111	0.467	-0.415	0.111	-0.050	0.817	0.077	0.044
	Beta - Libor	-1.089	0.012	-2.069	0.147	-1.444	0.567	-0.947	0.621	-0.468	0.665	-0.168	0.635	-3.463	0.001
	Beta - RUB/USD	-0.076	0.618	-0.263	0.340	-0.162	0.699	-0.068	0.862	-0.359	0.501	-0.204	0.940	-1.182	0.053
	Beta - USD/EUR	0.234		0.282		0.255		0.130		0.268		0.231		0.572	
	R2	0.009	0.001	0.015	0.169	0.008	0.055	0.005	0.234	0.003	0.660	0.009	0.035	0.011	0.035
		0.163	0.198	0.163	0.761	0.163	0.087	0.163	0.061	0.028	0.916	0.008	0.351	0.174	0.000
SEB Östeuropa	Alpha	0.059	0.309	0.040	0.874	0.080	0.586	0.119	0.095	0.107	0.368	0.045	0.614	0.153	0.322
	Beta - MSCIEI	-0.029	0.704	-0.228	0.623	0.080	0.439	-0.111	0.327	-0.287	0.278	-0.003	0.989	0.046	0.650
	Beta - Oil	0.161	0.795	0.468	0.923	1.832	0.555	0.323	0.739	-0.092	0.937	0.018	0.881	-0.183	0.861
	Beta - Libor	0.220	0.953	0.314	0.917	0.317	0.994	-0.429	0.196	-0.154	0.615	-0.975	0.576	-0.975	0.576
	Beta - RUB/USD	0.014		0.026		0.087		0.157		0.118		0.012		0.072	
	Beta - USD/EUR	0.005	0.008	0.014	0.013	0.001	0.882	0.006	0.337	-0.001	0.902	0.006	0.105	-0.001	0.761
	R2	0.746	0.000	0.570	0.005	0.659	0.001	0.667	0.022	0.902	0.003	0.910	0.000	1.382	0.000
		0.151	0.000	0.213	0.025	0.182	0.109	0.007	0.702	0.148	0.222	0.148	0.072	0.251	0.060
Swedbank Östeuropa	Alpha	-0.053	0.340	-0.113	0.502	-0.088	0.429	-0.142	0.369	-0.440	0.098	0.019	0.921	0.098	0.259
	Beta - MSCIEI	-1.154	0.009	-2.801	0.115	1.837	0.471	-1.019	0.450	-0.333	0.775	-0.307	0.660	-3.786	0.000
	Beta - Oil	-0.166	0.286	-0.405	0.240	-0.141	0.745	0.062	0.877	-0.679	0.215	-0.075	0.786	-1.215	0.035
	Beta - Libor	0.245		0.332		0.277		0.131		0.242		0.207		0.578	
	Beta - RUB/USD														
	Beta - USD/EUR														
	R2														

Appendix E. Results of the alpha regressions

ABN Amro Russia	2001	t	2002	t	2003	t	2004	t	2005	t	2006	t
Jensen's alpha	0.095250	0.390	0.030500	0.730	0.315000	0.002	0.091500	0.395	0.047250	0.471	0.094500	0.353
Jensen's beta	0.426217	0.000	0.721043	0.000	0.698090	0.000	0.772836	0.000	0.839261	0.000	0.721747	0.000
Jensen's R2	0.655		0.862		0.830		0.820		0.876		0.891	
Strategic alpha	0.059500	0.588	0.049750	0.645	0.290000	0.002	0.005238	0.968	0.063500	0.403	0.182500	0.161
Strategic beta	0.468852	0.000	0.643478	0.000	0.717945	0.000	0.808240	0.000	0.833916	0.000	0.649776	0.000
Strategic R2	0.701		0.770		0.851		0.773		0.839		0.700	
Tactical alpha - Annual	0.044250	0.439	0.003557	0.966	0.033000	0.262	0.113500	0.102	-0.025500	0.354	0.147750	0.441
Tactical beta - Annual	-0.071994	0.000	0.108239	0.000	-0.021986	0.000	-0.038303	0.007	0.005234	0.531	0.188189	0.000
Tactical R2	0.172		0.169		0.077		0.039		0.002		0.188	
Q2 Tactical alpha	0.114750	0.018	-0.005562	0.96	0.035750	0.167	0.030000	0.383	0.000535	0.970	N/A	N/A
Q2 beta	-0.054357	0.000	0.087976	0.000	-0.024088	0.000	0.030204	0.000	-0.008338	0.134	N/A	N/A
Q2 R2	0.325		0.258		0.214		0.338		0.038		N/A	N/A
Q3 Tactical alpha	-0.052250	0.529	0.111750	0.455	0.035000	0.374	0.068750	0.107	-0.016380	0.549	0.147750	0.441
Q3 beta	-0.044599	0.012	0.143017	0.000	-0.005456	0.545	-0.103586	0.000	-0.004681	0.571	0.188189	0.000
Q3 R2	0.098		0.275		0.006		0.585		0.005		0.188	
Q4 Tactical alpha	0.150750	0.285	-0.084000	0.592	0.022189	0.762	0.294250	0.120	-0.046250	0.544	N/A	N/A
Q4 beta	-0.118154	0.000	0.055755	0.295	-0.028883	0.010	-0.095751	0.016	0.017330	0.369	N/A	N/A
Q4 R2	0.250		0.019		0.104		0.092		0.013		N/A	N/A

Investing in an emerging market
Kristian Elonen (19577) & Saara Hollmén (19855)

East Capital Ryssland	2001	t	2002	t	2003	t	2004	t	2005	t	2006	t
Jensen's alpha	-0,135750	0,487	0,075750	0,562	0,363000	0,000	0,209250	0,075	0,301750	0,000	0,183000	0,001
Jensen's beta	0,758944	0,000	0,639759	0,000	0,646944	0,000	0,597341	0,000	0,665210	0,000	0,539606	0,000
Jensen's R2	0,727		0,843		0,837		0,734		0,907		0,898	
Strategic alpha	-0,007364	0,967	0,032750	0,762	0,271250	0,000	0,048250	0,596	0,284750	0,000	0,193500	0,006
Strategic beta	0,814440	0,000	0,686861	0,000	0,610515	0,000	0,000193	0,000	0,632647	0,000	0,588785	0,000
Strategic R2	0,733		0,795		0,880		0,823		0,891		0,870	
Tactical alpha - Annual	-0,013207	0,825	-0,079250	0,533	0,047000	0,512	-0,003638	0,949	0,003215	0,939	-0,020251	0,704
Tactical beta - Annual	-0,066062	0,000	-0,111887	0,000	0,035441	0,034	-0,100488	0,000	-0,004506	0,702	-0,061387	0,000
Tactical R2	0,181		0,242		0,068		0,425		0,001		0,138	
Q2 alpha	0,123750	0,050	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0,027000	0,725
Q2 beta	-0,170356	0,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	-0,051004	0,000
Q2 R2	0,734		N/A		N/A		N/A		N/A		0,273	
Q3 alpha	0,005340	0,942	-0,079250	0,533	0,047000	0,512	-0,003638	0,949	-0,058250	0,151	-0,030500	0,732
Q3 beta	0,005471	0,719	-0,111887	0,000	0,035441	0,034	-0,100488	0,000	0,033903	0,009	-0,080884	0,000
Q3 R2	0,002		0,242		0,068		0,425		0,103		0,188	
Q4 alpha	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0,022656	0,759	-0,040750	0,730
Q4 beta	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	-0,025643	0,171	-0,084164	0,064
Q4 R2	N/A		N/A		N/A		N/A		0,030		0,055	

HQ Ryssland	2001	t	2002	t	2003	t	2004	t	2005	t	2006	t
Jensen's alpha	-0,071500	0,571	0,018670	0,840	0,392750	0,000	0,178000	0,141	0,202250	0,040	0,089000	0,331
Jensen's beta	0,428700	0,000	0,660194	0,000	0,619779	0,000	0,491943	0,000	0,675831	0,000	0,634923	0,000
Jensen's R2	0,598		0,830		0,816		0,594		0,679		0,818	
Strategic alpha	0,224750	0,025	0,049750	0,620	0,348250	0,000	-0,016596	0,895	0,214250	0,000	0,116250	0,034
Strategic beta	0,490876	0,000	0,661235	0,000	0,599033	0,000	0,750353	0,000	0,692863	0,000	0,667102	0,000
Strategic R2	0,757		0,806		0,838		0,758		0,890		0,933	
Tactical alpha - Annual	0,028500	0,743	-0,055250	0,389	0,045000	0,313	0,039000	0,563	-0,019504	0,645	-0,023271	0,656
Tactical beta - Annual	0,145163	0,000	-0,004108	0,770	0,024013	0,006	-0,047477	0,001	-0,050665	0,000	-0,030524	0,007
Tactical R2	0,333		0,000		0,041		0,094		0,080		0,039	
Q2 alpha	0,044750	0,603	-0,021872	0,675	-0,014711	0,427	-0,000566	0,992	-0,036000	0,059	-0,033250	0,687
Q2 beta	0,034333	0,085	-0,012357	0,214	-0,017156	0,000	0,001195	0,893	0,003961	0,576	-0,036801	0,003
Q2 R2	0,053		0,030		0,204		0,000		0,006		0,144	
Q3 alpha	0,164750	0,194	0,028250	0,801	0,101500	0,250	0,138250	0,167	0,017454	0,814	-0,023937	0,747
Q3 beta	0,229376	0,000	0,002230	0,919	0,079532	0,000	-0,157240	0,000	-0,015142	0,515	-0,000544	0,778
Q3 R2	0,550		0,000		0,197		0,369		0,007		0,001	
Q4 alpha	N/A	N/A	-0,179000	0,214	0,053750	0,529	N/A	N/A	-0,086000	0,362	0,001225	0,992
Q4 beta	N/A	N/A	0,005714	0,906	0,013322	0,299	N/A	N/A	-0,098272	0,000	-0,048000	0,280
Q4 R2	N/A		0,000		0,018		N/A		0,221		0,019	

Swedbank Robur Ryssland	2001	t	2002	t	2003	t	2004	t	2005	t	2006	t
Jensen's alpha	-0,113500	0,214	-0,113500	0,214	0,391250	0,000	0,052000	0,636	0,213000	0,006	0,197750	0,002
Jensen's beta	0,643264	0,000	0,643264	0,000	0,516152	0,000	0,622358	0,000	0,648450	0,000	0,515806	0,000
Jensen's R2	0,826		0,826		0,771		0,739		0,756		0,865	
Strategic alpha	0,090500	0,536	-0,052750	0,645	0,409500	0,000	0,044250	0,710	0,227000	0,014	0,181250	0,007
Strategic beta	0,612085	0,000	0,719766	0,000	0,503228	0,000	0,604044	0,000	0,666013	0,000	0,529198	0,000
Strategic R2	0,697		0,792		0,762		0,694		0,701		0,853	
Tactical alpha - Annual	0,030000	0,773	-0,106250	0,241	-0,023663	0,662	-0,166919	0,721	-0,017767	0,567	-0,019571	0,524
Tactical beta - Annual	-0,005861	0,785	-0,107201	0,000	0,014211	0,177	-0,020758	0,029	-0,020231	0,031	-0,014282	0,029
Tactical R2	0,000		0,142		0,010		0,026		0,025		0,026	
Q2 alpha	0,234750	0,047	-0,019972	0,821	-0,021135	0,858	0,017239	0,756	-0,037250	0,481	0,068250	0,233
Q2 beta	-0,445530	0,094	-0,035895	0,036	0,041147	0,164	0,045240	0,000	0,011384	0,566	-0,010082	0,227
Q2 R2	0,051		0,082		0,035		0,307		0,006		0,026	
Q3 alpha	-0,111750	0,511	-0,172750	0,395	-0,040250	0,486	-0,047000	0,347	-0,005420	0,919	-0,802500	0,117
Q3 beta	0,045156	0,204	-0,151444	0,000	0,048697	0,000	0,040640	0,002	-0,009678	0,560	-0,030519	0,024
Q3 R2	0,025		0,187		0,175		0,135		0,005		0,079	
Q4 alpha	0,112250	0,632	-0,101500	0,418	-0,021135	0,858	0,083500	0,469	-0,026750	0,638	0,076750	0,147
Q4 beta	-0,040829	0,366	-0,168310	0,000	0,041147	0,164	-0,027714	0,248	-0,040847	0,006	-0,012314	0,536
Q4 R2	0,014		0,215		0,035		0,022		0,119		0,006	

Handelsbanken Östeuropa	2001	t	2002	t	2003	t	2004	t	2005	t	2006	t
Jensen's alpha	0,096500	0,574	-0,188750	0,114	0,154750	0,081	-0,020195	0,853	0,059000	0,379	0,003483	0,949
Jensen's beta	0,703199	0,000	0,815751	0,000	0,852936	0,000	0,962592	0,000	0,881384	0,000	0,906753	0,000
Jensen's R2	0,681		0,818		0,899		0,873		0,885		0,963	
Strategic alpha	0,162500	0,329	-0,121500	0,46	0,169000	0,065	-0,162000	0,315	0,082250	0,357	-0,007148	0,911
Strategic beta	0,715427	0,000	0,836621	0,000	0,802780	0,000	1,005630	0,000	0,924128	0,000	0,929528	0,000
Strategic R2	0,702		0,713		0,882		0,775		0,826		0,952	
Tactical alpha - Annual	-0,087250	0,511	-0,095000	0,479	-0,019704	0,717	0,169250	0,129	-0,027250	0,693	0,010228	0,791
Tactical beta - Annual	-0,021457	0,434	-0,030236	0,305	0,055316	0,000	-0,046169	0,041	-0,051328	0,013	-0,028336	0,001
Tactical R2	0,003		0,006		0,131		0,022		0,033		0,061	
Q2 alpha	0,222000	0,183	0,124500	0,407	0,068000	0,411	-0,006654	0,891	0,045000	0,293	0,014500	0,870
Q2 beta	-0,155161	0,000	-0,071202	0,015	-0,081748	0,000	0,023626	0,004	0,015851	0,325	-0,050639	0,000
Q2 R2	0,243		0,109		0,226		0,136		0,018		0,216	
Q3 alpha	-0,229000	0,346	-0,072250	0,804	-0,032500	0,728	0,110500	0,338	0,029000	0,744	-0,035500	0,532
Q3 beta	0,031771	0,529	-0,013066	0,818	0,105782	0,000	-0,087352	0,005	-0,054317	0,053	0,017101	0,249
Q3 R2	0,006		0,001		0,278		0,119		0,057		0,021	
Q4 alpha	-0,233250	0,371	-0,336750	0,113	0,026500	0,737	0,440500	0,145	-0,151500	0,391	0,029250	0,538
Q4 beta	0,068209	0,172	0,040678	0,569	0,076512	0,000	-0,123699	0,051	-0,079396	0,077	0,009350	0,602
Q4 R2	0,031		0,006		0,413		0,062		0,050		0,004	

Investing in an emerging market
Kristian Elonen (19577) & Saara Hollmén (19855)

Nordea Östeuropa	2001	t	2002	t	2003	t	2004	t	2005	t	2006	t
Jensen's alpha	0,285000	0,029	-0,140750	0,293	0,243000	0,038	0,015529	0,932	0,072500	0,668	-0,047000	0,644
Jensen's beta	0,353145	0,000	0,695766	0,000	0,699462	0,000	0,828147	0,000	0,871604	0,000	0,890948	0,000
Jensen's R2	0,484		0,722		0,776		0,646		0,541		0,877	
Strategic alpha	0,268500	0,085	-0,074750	0,609	0,252000	0,027	-0,103750	0,587	0,077250	0,705	-0,086750	0,443
Strategic beta	0,379385	0,000	0,610590	0,000	0,703041	0,000	0,820141	0,000	0,883275	0,000	0,922702	0,000
Strategic R2	0,431		0,626		0,788		0,618		0,454		0,860	
Tactical alpha - Annual	0,020153	0,831	-0,056000	0,587	-0,011571	0,698	0,158500	0,166	-0,005365	0,919	0,046000	0,258
Tactical beta - Annual	-0,044371	0,024	0,117575	0,000	-0,003902	0,500	0,010971	0,635	-0,014033	0,378	-0,039358	0,000
Tactical R2	0,028		0,132		0,002		0,001		0,004		0,102	
Q2 alpha	0,064000	0,445	0,099250	0,458	-0,012200	0,802	0,091750	0,305	0,017144	0,536	-0,030500	0,629
Q2 beta	-0,012068	0,525	-0,000624	0,980	-0,000301	0,980	0,114701	0,000	0,002032	0,845	-0,057119	0,000
Q2 R2	0,008		0,000		0,000		0,524		0,001		0,411	
Q3 alpha	-0,031250	0,847	-0,069250	0,716	0,048500	0,206	0,068000	0,185	0,016376	0,667	0,034250	0,639
Q3 beta	-0,031450	0,352	0,184909	0,000	-0,011088	0,209	-0,034419	0,011	-0,019852	0,099	0,009259	0,626
Q3 R2	0,014		0,280		0,025		0,096		0,042		0,004	
Q4 alpha	0,067750	0,759	-0,204500	0,236	-0,075000	0,262	0,376000	0,230	-0,042500	0,776	0,129500	0,071
Q4 beta	-0,082098	0,054	0,240472	0,000	-0,002523	0,801	-0,111012	0,090	-0,017896	0,635	-0,038595	0,153
Q4 R2	0,061		0,229		0,001		0,047		0,004		0,033	

SEB Östeuropa	2001	t	2002	t	2003	t	2004	t	2005	t	2006	t
Jensen's alpha	0,834250	0,329	0,218750	0,203	0,283750	0,102	0,208000	0,419	0,244250	0,069	0,382250	0,03
Jensen's beta	0,266221	0,088	0,301951	0,000	0,347320	0,000	0,572983	0,000	0,323046	0,000	0,301479	0,000
Jensen's R2	0,012		0,229		0,279		0,305		0,205		0,214	
Strategic alpha	0,825000	0,335	0,151750	0,368	0,272750	0,140	0,082750	0,759	0,167750	0,265	0,402250	0,017
Strategic beta	0,265061	0,089	0,315568	0,000	0,325429	0,000	0,591761	0,000	0,430592	0,000	0,312186	0,000
Strategic R2	0,012		0,252		0,230		0,298		0,267		0,242	
Tactical alpha - Annual	0,012338	0,858	0,082500	0,176	0,013693	0,881	0,156750	0,144	0,105750	0,056	-0,026750	0,751
Tactical beta - Annual	0,002079	0,884	-0,017851	0,181	0,024039	0,177	-0,019096	0,377	-0,130721	0,000	-0,013511	0,453
Tactical R2	0,000		0,010		0,010		0,004		0,254		0,003	
Q2 alpha	-0,032250	0,716	0,013507	0,875	0,243500	0,317	0,072000	0,384	-0,017450	0,825	-0,179250	0,276
Q2 beta	-0,040687	0,047	-0,020707	0,207	-0,070182	0,246	0,081451	0,000	-0,124104	0,000	-0,011133	0,641
Q2 R2	0,071		0,030		0,024		0,393		0,243		0,004	
Q3 alpha	0,136750	0,075	0,159000	0,036	0,024637	0,654	0,114250	0,020	0,219000	0,025	0,016053	0,879
Q3 beta	-0,031631	0,049	-0,029196	0,052	0,010495	0,407	-0,034926	0,007	-0,130413	0,000	0,058162	0,038
Q3 R2	0,060		0,058		0,011		0,109		0,229		0,067	
Q4 alpha	-0,165000	0,330	0,041500	0,775	-0,107750	0,484	0,324000	0,262	0,101500	0,361	0,195500	0,226
Q4 beta	0,073692	0,025	0,031658	0,519	0,056394	0,017	-0,158246	0,010	-0,141706	0,000	-0,198342	0,002
Q4 R2	0,082		0,007		0,091		0,105		0,298		0,150	

Swedbank Robur Östeuropa	2001	t	2002	t	2003	t	2004	t	2005	t	2006	t
Jensen's alpha	0,184750	0,266	-0,157000	0,356	0,187250	0,125	-0,069500	0,560	0,067000	0,244	0,007713	0,908
Jensen's beta	0,506762	0,000	0,694100	0,000	0,760406	0,000	0,934707	0,000	0,865023	0,000	0,859963	0,000
Jensen's R2	0,542		0,616		0,790		0,845		0,910		0,939	
Strategic alpha	0,174750	0,304	-0,046500	0,813	0,150750	0,259	-0,196000	0,250	0,126750	0,215	-0,005264	0,942
Strategic beta	0,583813	0,000	0,618254	0,000	0,751483	0,000	1,011745	0,000	0,907047	0,000	0,896496	0,000
Strategic R2	0,600		0,487		0,753		0,757		0,777		0,935	
Tactical alpha - Annual	0,008827	0,928	-0,117250	0,452	0,047000	0,610	0,136500	0,214	-0,074000	0,495	0,011250	0,734
Tactical beta - Annual	-0,130695	0,000	0,103814	0,003	0,018000	0,587	-0,084863	0,000	-0,050045	0,126	-0,045478	0,000
Tactical R2	0,188		0,050		0,002		0,074		0,013		0,186	
Q2 alpha	0,054000	0,500	0,277500	0,299	0,130500	0,265	0,005616	0,931	-0,002137	0,970	-0,027750	0,426
Q2 beta	-0,074972	0,000	0,000683	0,892	-0,086127	0,004	0,034981	0,002	0,006377	0,764	-0,058948	0,000
Q2 R2	0,243		0,000		0,140		0,163		0,002		0,709	
Q3 alpha	-0,103500	0,489	-0,057750	0,835	0,178250	0,062	0,171500	0,212	-0,084500	0,372	0,014733	0,796
Q3 beta	-0,073699	0,020	0,171419	0,002	-0,070103	0,002	-0,270279	0,000	-0,009082	0,759	0,018440	0,217
Q3 R2	0,083		0,135		0,142		0,479		0,001		0,024	
Q4 alpha	0,221000	0,341	-0,544750	0,032	-0,033750	0,878	0,362250	0,160	-0,178750	0,551	0,086250	0,171
Q4 beta	-0,232959	0,000	0,177229	0,039	0,074645	0,027	-0,136109	0,013	-0,098154	0,197	-0,106746	0,000
Q4 R2	0,323		0,071		0,079		0,099		0,027		0,251	

Appendix F. Tests of data set properties

In this chapter we are going to conduct tests on the dataset about the central OLS assumptions. We check for the occurrence of autocorrelation, multicollinearity and heteroscedasticity. Additionally we test whether the residuals follow a normal distribution. Below we perform tests for all the central regressions in our study.

Autocorrelation

Autocorrelation means that the error term at time t , is correlated with the error term at another point of time, $t-k$. We have decided to analyze the occurrence of autocorrelation by plotting the residuals of the regressions against time. Clearly, as none of the plots are showing any signs of autocorrelation we conclude that the dataset is not plagued by autocorrelation.

Figure 1, 2 and 3. Autocorrelation in multifactor regression for RTS, oil & gas sector and basic materials sector

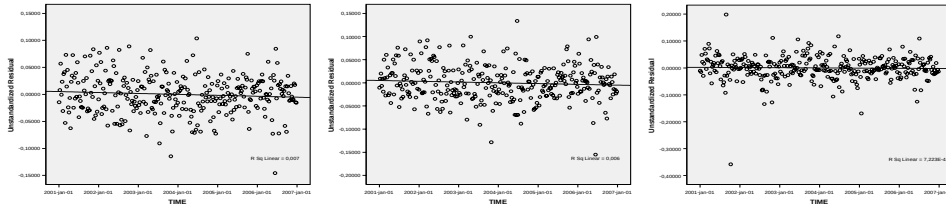


Figure 4, 5 and 6. Autocorrelation in multifactor regression for consumer goods sector, consumer services sector and telecom sector

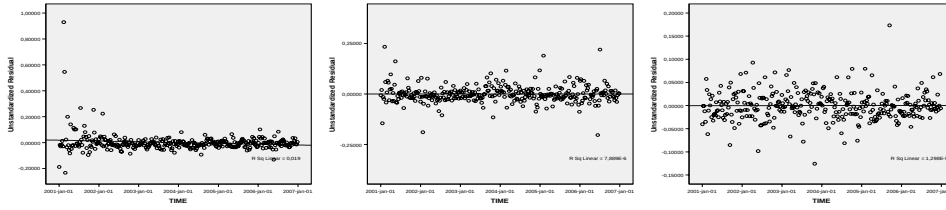


Figure 7, 8 and 9. Autocorrelation in multifactor regression for utilities sector, financials sector and ABN AMRO Russia

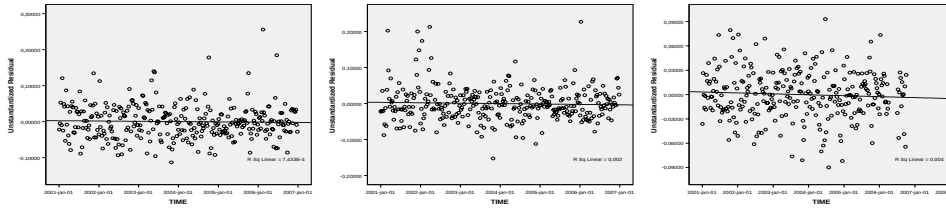


Figure 10, 11 and 12. Autocorrelation in multifactor regression for ABN AMRO Ryssland, East Capital Ryssland and HQ Ryssland

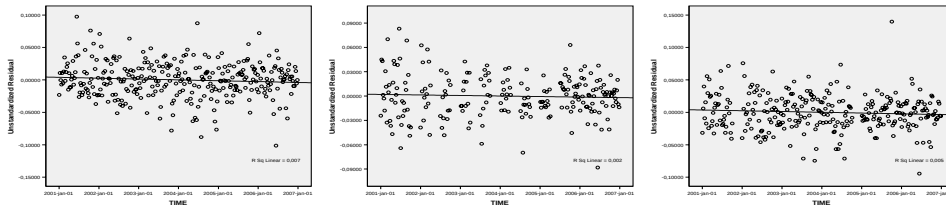


Figure 13, 14 and 15. Autocorrelation in multifactor regression for Swedbank Robur Ryssland, Handelsbanken Östeuropa and Nordea Östeuropa

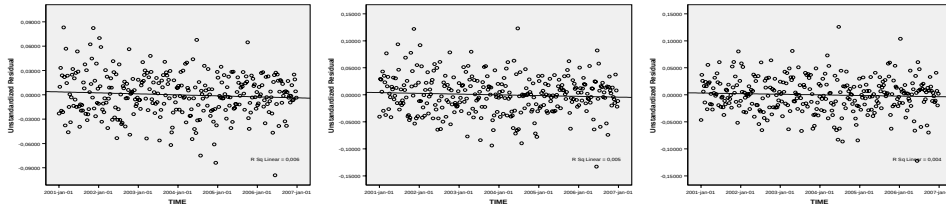
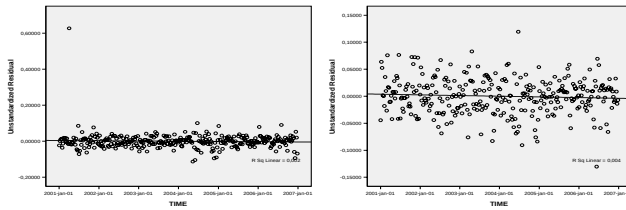


Figure 16 and 17. Autocorrelation in multifactor regression for SEB Östeuropa and Swedbank Robur Östeuropa



Heteroscedasticity

Heteroscedasticity occurs when the variance of the error term is not constant. We have decided to analyze the occurrence of heteroscedasticity by plotting the unstandardized residuals against the predicted values. Clearly, as none of the plots show signs of heteroscedasticity we conclude that the dataset is not plagued by heteroscedasticity.

Figure 18, 19 and 20. Heteroscedasticity in multi-factor regression for RTS, oil & gas sector and basic materials sector

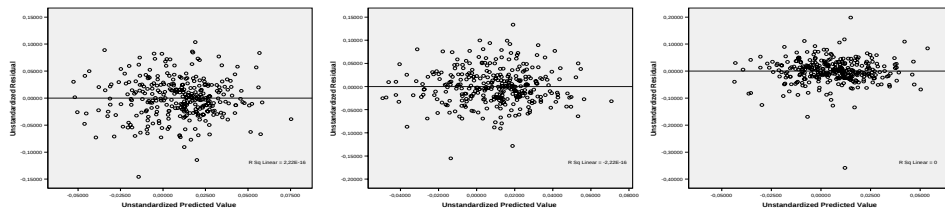


Figure 21, 22 and 23. Heteroscedasticity in multi-factor regression for consumer goods sector, consumer services sector and telecom sector

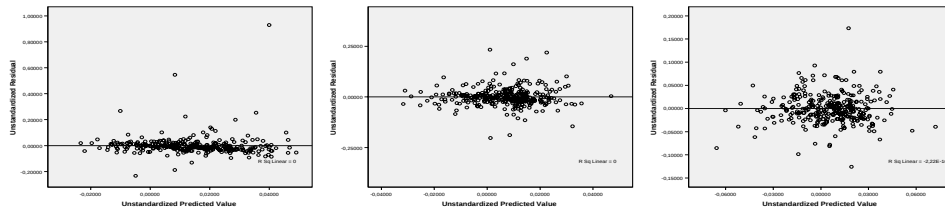


Figure 24, 25 and 26. Heteroscedasticity in multi-factor regression for utilities sector, financials sector and ABN AMRO Russia

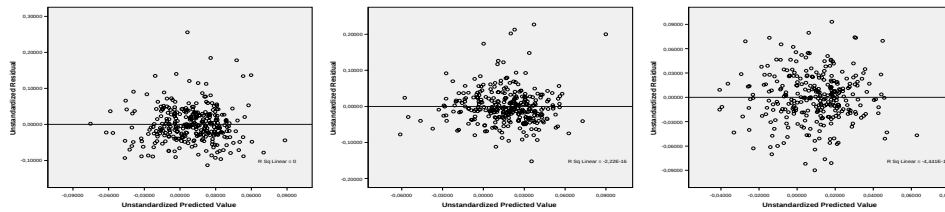


Figure 27, 28 and 29. Heteroscedasticity in multi-factor regression for ABN AMRO Ryssland, East Capital Ryssland and HQ Ryssland

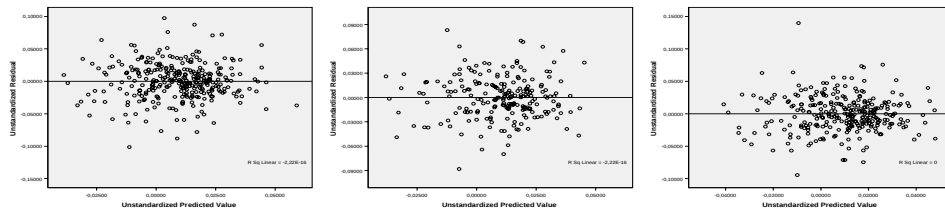


Figure 30, 31 and 32. Heteroscedasticity in multi-factor regression for Swedbank Robur Ryssland, Handelsbanken Östeuropa and Nordea Östeuropa

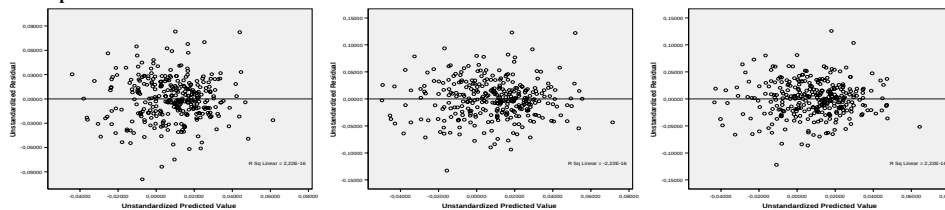
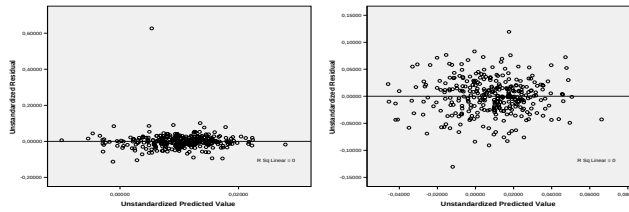


Figure 33 and 34. Heteroscedasticity in multi-factor regression for SEB Östeuropa and Swedbankj Robur Östeuropa



Multicollinearity

Multicollinearity occurs when two or more explanatory variables are linearly correlated. This would make it hard to evaluate the effect of each of the variables on the dependent variable. We analyze multicollinearity by looking at the pair-wise correlations of the explanatory variables. This analysis is the same for all the multi-factor regressions, only the dependent variable changes. Therefore the correlations between the explanatory variables are the same as in the table below for all the multi-factor regressions. As none of the correlations is above 0.8 nor several correlations are above 0.5 we conclude that multicollinearity is not a problem in the dataset.

Figure 35. Multicollinearity test: pair-wise correlations for RTS

		Correlations					
		RTSRETURN	MSCIEM	LNOILPRICE	LNLIBOR	LNEXCHANGERUBUSD	LNEXCHANGEUSDEUR
Pearson Correlation	RTSRETURN	1,000	,442	,240	,068	-,127	-,063
	MSCIEM	,442	1,000	,045	,182	,003	-,038
	LNOILPRICE	,240	,045	1,000	-,015	-,072	,042
	LNLIBOR	,068	,182	-,015	1,000	-,067	-,186
	LNEXCHANGERUBUSD	-,127	,003	-,072	-,067	1,000	-,107
	LNEXCHANGEUSDEUR	-,063	-,038	,042	-,186	-,107	1,000
Sig. (1-tailed)	RTSRETURN	.	,000	,000	,117	,012	,133
	MSCIEM	,000	.	,212	,001	,476	,253
	LNOILPRICE	,000	,212	.	,398	,102	,228
	LNLIBOR	,117	,001	,398	.	,120	,000
	LNEXCHANGERUBUSD	,012	,476	,102	,120	.	,029
	LNEXCHANGEUSDEUR	,133	,253	,228	,000	,029	.
N	RTSRETURN	313	313	313	313	313	313
	MSCIEM	313	313	313	313	313	313
	LNOILPRICE	313	313	313	313	313	313
	LNLIBOR	313	313	313	313	313	313
	LNEXCHANGERUBUSD	313	313	313	313	313	313
	LNEXCHANGEUSDEUR	313	313	313	313	313	313

The normality assumption

To assure that error term in the regressions is normally distributed we have plotted the error terms against the normality curve. As all the residuals seem to be normally distributed we do not perform additional tests to test the normality assumption.

Figure 36, 37 and 38. Histogram for residuals in multifactor regression for RTS, oil & gas sector and basic materials sector

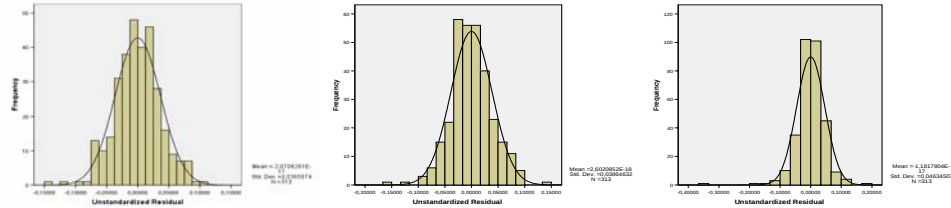


Figure 39, 40 and 41. Histogram for residuals in multifactor regression for consumer goods sector, consumer services sector and telecom sector

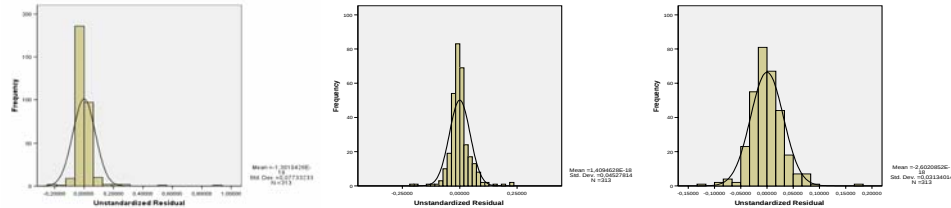


Figure 42, 43 and 44. Histogram for residuals in multifactor regression for utilities sector, financials sector and ABN AMRO Russia

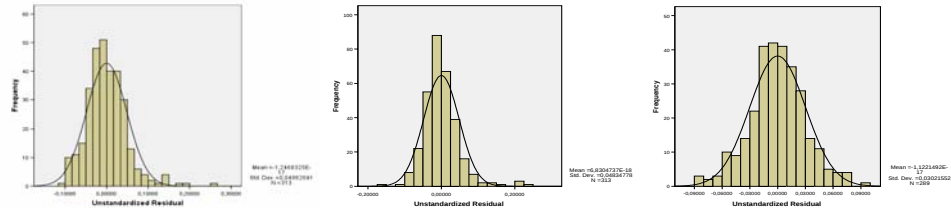


Figure 45, 46 and 47. Histogram for residuals in multifactor regression for ABN AMRO Ryssland, East Capital Ryssland and HQ Ryssland

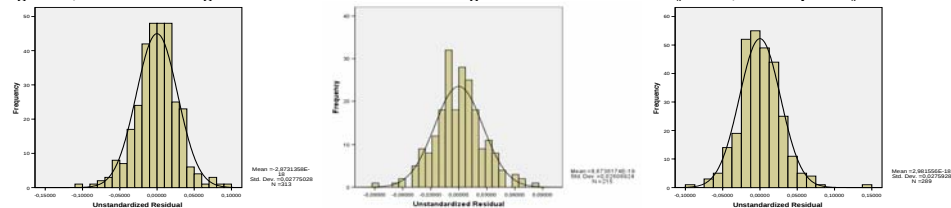


Figure 48, 49 and 50. Histogram for residuals in multifactor regression for Swedbank Robur Ryssland, Handelsbanken Östeuropa and Nordea Östeuropa

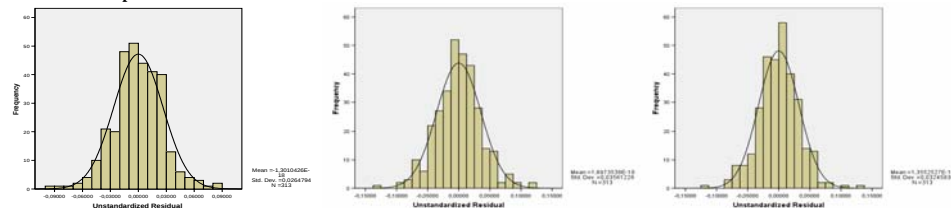


Figure 51 and 52. Histogram for residuals in multifactor regression for SEB Östeuropa and Swedbank Robur Östeuropa

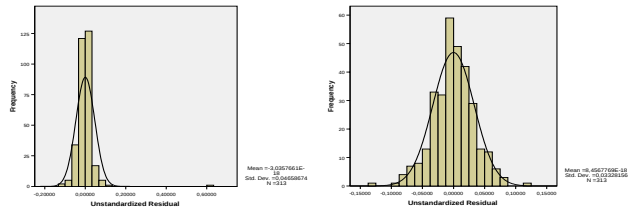


Figure 53, 54 and 55. Histogram for residuals in single factor regression for ABN Amro Ryssland, East Capital Ryssland and HQ Ryssland

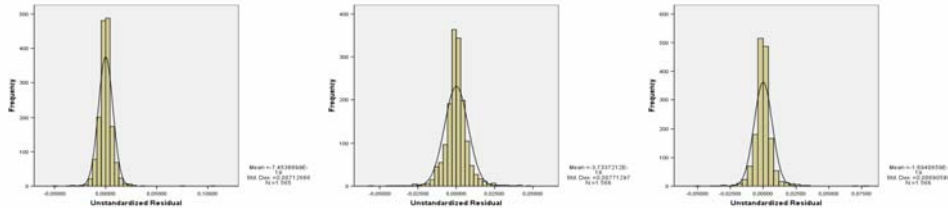


Figure 56, 57 and 58. Histogram for residuals in single factor regression for Swedbank Robur Ryssland, Handelsbanken Östeuropa and Nordea Östeuropa

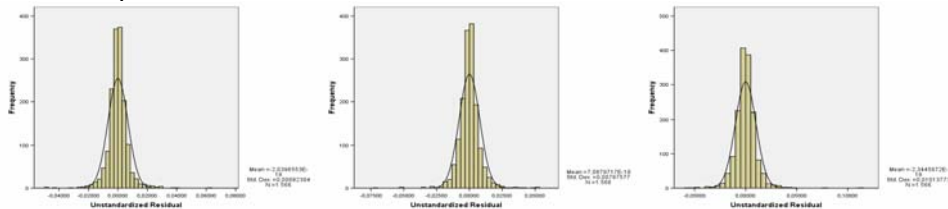


Figure 59, 60 and 61. Histogram for residuals in single factor regression for Swedbank Robur Östeuropa, SEB Östeuropa and ABN Amro Russia

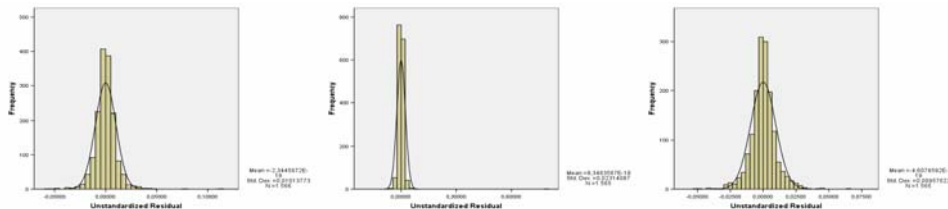


Figure 62, 63 and 64. Histogram for residuals in single factor regression for RTS, oil and gas sector and basic materials sector with MSCI World as explanatory variable

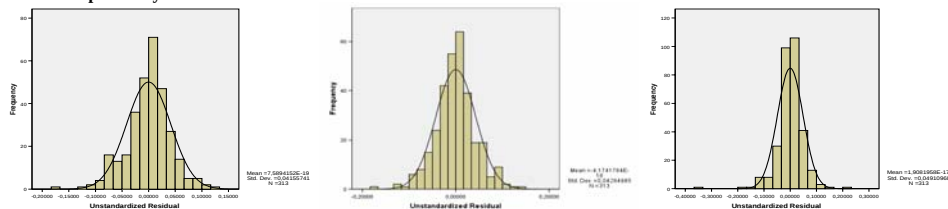


Figure 65, 66 and 67. Histogram for residuals in single factor regression for consumer goods sector, consumer services sector and telecom sector with MSCI World as explanatory variable

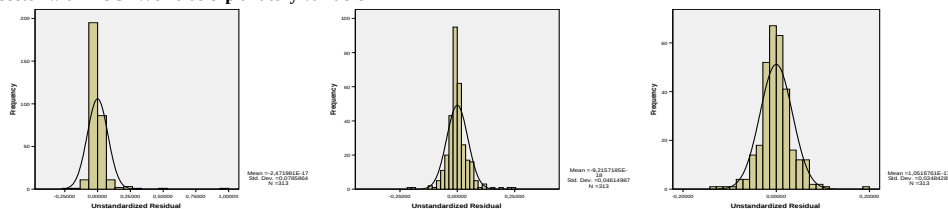


Figure 68 and 69. Histogram for residuals in single factor regression for utilities sector and financials sector with MSCI World as explanatory variable

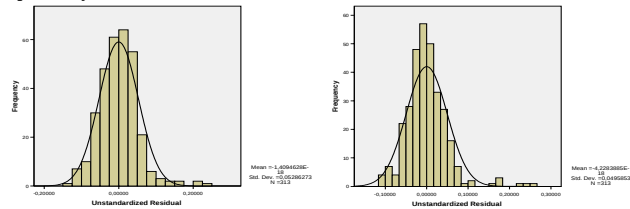


Figure 70, 71 and 72. Histogram for residuals in single factor regression for RTS, oil and gas sector and basic materials sector with MSCI EM as explanatory variable

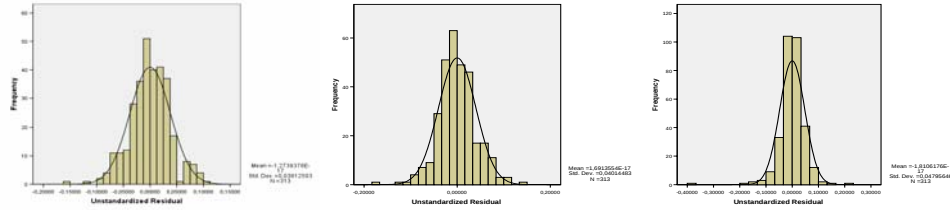


Figure 73, 74 and 75. Histogram for residuals in single factor regression for consumer goods sector, consumer services sector and telecom sector with MSCI EM as explanatory variable

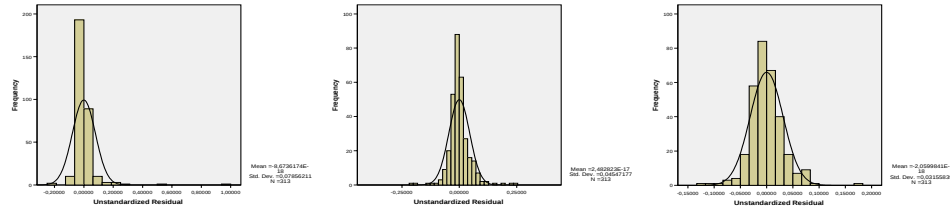


Figure 76, 77 and 78. Histogram for residuals in single factor regression for utilities sector and financials sector with MSCI EM as explanatory variable

