

AN EMPIRICAL STUDY OF THE IMPACTS OF MARKET CAPITALIZATION UPON THE LONG-TERM PERFORMANCE OF THE RUSSIAN IPO

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ABSTRACT

This research paper aimed at analyzing the long-run performance of Russian Initial Public Offerings (IPOs). Long-term performance after 5 years was determined by noting the degree to which stocks under study had under-or over-performed. The sample consists of monthly data regarding IPOs within the Russian Federation from 2007 to 2011 and was gathered from a range of published sources. It was found that there was long-term over-performance within the sample studied. Additionally, it was found that the causative factor responsible for the biggest impact on Russian IPOs observed was market capitalization.

Keywords: IPOs, Russian IPOs, Financial Management, Stock market, Investments.

JEL Classification: D53, E22, E44, F30, F38, G01, G15, G24, G34

INTRODUCTION:

A great deal of research has shown that on the average, Initial Public Offerings have significant and positive initial excess returns. Until recently, most of the existing research on the Russian IPO was focused on the setting of the offer prices. Fundraising through IPOs help to obtain the assets necessary to expand. Especially those assets which it cannot buy through the use of its own existing finances as well as those for which it considers to be uneconomical to obtain using credit facilities.

There are many articles and research devoted to the problems of IPOs in Russia, and they include the first monographs of some Russian authors, but at the same time the research area bordering around the investigation of the long-term aftermarket performance of Russian IPOs is still in the initial stage of its theoretical development. The long-term performance of IPOs is an important return indicator for investors during their investment processes.

The aim of this article is to examine the long-term aftermarket performance of Russian IPOs in order to evaluate the effectiveness of initial IPO allocations and aftermarket long-term performance as well as to develop recommendations for the development of the Russian stock market and its economy as a whole. The practical significance of this work is that findings will go a long way in helping to develop the scientific basis and provide practical recommendations to industry players to enable them ensure the enhancement of the capacity and the effectiveness of long-term aftermarket performance of Russian IPOs.

The Russian stock market is still very young. Its birth or better said its revival was at the beginning of the 90s. It currently belongs to the category of emerging markets which is characterized by high yield and high risk securities. Development of the Russian stock market is a necessary condition for competitiveness and successful participation in the global competition for investor money in the international financial market.

By studying the long-term performance of Russian IPOs, this paper makes several contributions to literature. First, it documents the long-term aftermarket performance of Russian IPOs. Second, it compares the merits of initial market adjusted returns, market capitalization, capital turnover, earnings growth rate, earnings before interest and tax, ratio of long-term investments to total assets, and offers size hypothesis of long-run aftermarket performance. Finally, it was found that the greatest impact on the Russian IPOs was made by the Market Capitalization variable.

This paper is organized as follows: section 2 discusses the literature review of the long-term aftermarket performance of IPOs. Section 3 presents data, methodology and hypotheses of the expected performance of the Russian IPOs under study. Section 4 reports the results and finally, section 5 concludes the paper.

In the methodology and data collection section, the following variables used to estimate the long-term aftermarket performance are conceptually described here: LO represents the log of offer size—that is the offer size of the variable; LT is the ratio of long-term investments to total assets; EGA represents earnings growth rates based on net income values; EBITG is the growth rate in earnings before interest rate and tax; IMAR represents initial market return growth rate; LMC is the log of market capitalization. It is a measure of the firm's intrinsic value and finally, LCT represents the log of capital turnover. All the above mentioned variables affect the long-term performance either positively or negatively.

LITERATURE REVIEW:

There has been a great number of studies examining the performance of IPOs over the last decade. Stigler (1964) analyzed the long-run performance of IPOs and discovered that it was lower than the ones indicated in the industry benchmark indices. Ibbotson and Jaffe (1975) on the other hand, applied RATS model in trying to understand the phenomenon and they stated that no abnormal return was recorded.

Aggarwal and Rivoli (1990) further analyzed 1598 IPO stocks which went public from 1977 to 1987. Findings showed that abnormal returns on these stocks were persistent for the first three days and kept on for the first 100 days after the IPOs were issued. Specifically, they found that there were -13.73

abnormal returns when the holding period was 250 days. Ritter (1991) also analyzed 1526 IPOs which went public during 1975-1984. The BHAR (buy and hold returns) and CAR (Cumulative abnormal returns) for these IPOs were calculated and then they were compared with those of companies which do not issue IPOs. It was concluded that these IPOs were highly underpriced for the first two months and after this initial period they started having negative abnormal returns. Additionally, CAR decreases after some time meaning that the general performance of the portfolio is below the benchmark. Ritter (1991) analyzed different variables such as initial return, size of the issuance, year of issuance and age of the company; in order to find out if there was a negative relationship between initial performance and the other variables. It was stated by him that those firms which had high initial abnormal returns were more inclined to have bad aftermarket performance. This tendency became more evident for smaller issues than bigger ones. It was also described by the authors as a signal of the overreaction theory. Levis (1993) had also analyzed 712 stocks that went public in London Stock Exchange. He found that there was underperformance connected with overreaction by the investors.

Aggarwal, Leal and Leonardo (1993) considered the long-run performance of IPOs in three different countries such as Brazil, Chile and Mexico. It was found that the long-run abnormal returns were negative for all three countries. It was found that the long-run underperformance level was similar to those noted by Aggarwal and Rivoli (1990), Ritter (1991) and Levis (1993). Keloharju (1993) also discovered during their study of Finnish IPOs that there was a three year negative abnormal return for the Finnish IPOs.

Ljungqvist (1997) analyzed German IPOs and found three year abnormal negative return as well. Gompers and Lerner (2003) analyzed 3661 IPOs and concluded that there was underperformance and even the buy and hold abnormal returns (BHAR) results were not statistically significant. Also their findings show that the intercepts of Fama French and CAPM were insignificantly different from zero.

Loughran and Ritter (1995) analyzed 4753 IPOs which went public between 1970 till 1990. They discovered that there was 5% annual return recorded. They noted that there was constant underperformance in each of the 5 years the IPOs were studied.

DATA COLLECTION:

The sample chosen for this research consists of 20 companies; some of them went public starting from 1996. Since the field of Russian IPO research is a comparatively young one; in order to measure the companies' long-term performance, 5 year data sets were included in the study sample to be examined, starting from 2007 and ending in 2011.

The data for this article were collected from Russian Trading System and Moscow Interbank Currency Exchange stock exchange websites to calculate the cumulative abnormal returns (CAR) and the buy and hold abnormal returns (BHAR), and this was done by retrieving the IPO-initiating companies' historical stock prices monthly from the Russian Trading System (RTS) index and the Moscow Interbank Currency Exchange (MICEX) index; both hosted on the Moscow exchange. For some of the companies, the data were collected manually on a monthly basis. For some variables used in the regression analysis, the balance sheets and income statements of each company were considered.

METHODOLOGY :

It is important to measure under pricing of IPOs before the long-term performance.

The initial return on IPOs is calculated for under pricing with the help of Market Adjusted Model.

$$UNP = 100 \left\{ \left[\frac{1 + R_{i,1}}{1 + R_{m,1}} \right] - 1 \right\} \quad (1)$$

$$R_{i,1} = \frac{P_{i,1} - P_{i,0}}{P_{i,0}} \quad \text{and} \quad R_{m,1} = \frac{I_{m,1} - I_{m,0}}{I_{m,0}}$$

where $P_{i,1}$ is the price of stock "i" at the close of the first trading day, $P_{i,0}$ is the offer price and $R_{i,1}$ is the total first day return (raw return) on the stock "i". $I_{m,1}$ is the market index value at the close of the

first trading and $I_{m,0}$ is the market index value on the offer day of the appropriate stock, while $R_{m,1}$ is the first day's equivalent market return. RTS and MICEX indexes are used as benchmark. The same methodology was employed by Aggarwal, Leal and Herandez (1993).

To determine the long-term aftermarket performance of IPOs, the sample is constructed as follows. The sample includes monthly data of placed IPOs of companies within the Russian Federation from 2007 to 2011. The sample period ends at 2011 so that we have sufficient data to measure long-term aftermarket performance. There are two measures of the long-run performance introduced by Ritter (1991) and Levis (1993) such as cumulative abnormal returns (CARs) and buy and hold abnormal return (BHAR). It was found by the researchers that every method has its advantages. It was stated by Lyon, Barber and Tsai (1999) that CAR are less skewed and statistically less problematic. Barber and Lyon (1997) and Kothari and Warner (1997) argue that BHAR represents a better method. Barber and Lyon (1997) also state that BHAR could be more advantageous to use than CAR based on conceptual grounds, and it would be more preferable for the long-term investors to receive long-term returns by summing up short term returns. We estimate 5 year abnormal return after an IPO, using the BHAR model. Thus in the regression model BHAR was regressed versus the other dependent variables.

The buy-and-hold abnormal return (BHAR) is the difference between the holding-period returns of stock "i" and the market return showed in the equation below:

$$BHAR_{i,T} = \left[\prod_{t=1}^T (1+r_i) \right] - \left[\prod_{t=1}^T (1+r_{mt}) \right] \quad (2)$$

The mean BHAR over a period T is:

$$\overline{BHAR}_T = \frac{1}{n} \sum_{t=1}^n BHAR_{i,T} \quad (3)$$

Critical values for the test statistic are obtained from the classical t-test statistic.

The monthly return to both the company r_{it} and the market over the five year period after IPO were measured. The market benchmark return is r_{mt} which is a return to MICEX and RTS stock exchange indexes. The buy-and-hold abnormal return (BHAR) is the difference of the holding period return of stock "i" and the market return. To test the significance of post IPO performance we employ panel data on 20 Russian companies and regress their 5 year BHAR, after which Ordinary Least Square regression model was used:

$$BHAR_5 = \alpha_0 + \alpha_1 IMAR + \alpha_2 LO + \alpha_3 LT + \alpha_4 EGA + \alpha_5 EBITG + \alpha_6 LMC + \alpha_7 LCT \quad (4)$$

where IMAR is market adjusted abnormal returns. LO is log of offer size as it is the offer size of the variable. It is the net value measured as the number of offered shares multiplied by the offering price by taking the natural log; LT is ratio of long-term investments to total assets; EGA is earnings growth rate based on net income values; EBITG is growth rate in earnings before interest rate and tax; IMAR is initial market return growth rate; LMC is log of market capitalization, it is a measure of the firm's intrinsic value. It is the market capitalization of the issuing firm and is obtained at the listed stock by taking natural logs while LCT is the log of capital turnover. The aforementioned variables generate either positive or negative influence on the long-term performance.

HYPOTHESES:

In this article, offering size is used as the variable to measure the supply of a certain stock. The offer size of IPOs is another factor included due to the large size of the offer; it indicates that the firm is more established and less risky by Carter et al (1998). If the offer size is a measure of a reduced risk

then it should be positively related to the long-run performance.

In their study of the relationship between initial returns and long-run performance of IPOs, Aggarwal and Rivoli (1990) postulate that the abnormal initial returns earned by IPO investors are the result of a temporary overvaluation by the investors during the early trading because the aftermarket is not immediately efficient in valuing newly issued shares. This is consistent with the fads explanation documented by Ritter (1991), which finds that firms with high adjusted initial returns have the worst aftermarket performance. There is the overall outperformance of the Russian stock market and possible price manipulation by institutional investors; it is believed that the prices of IPOs with lower initial returns have more potential to increase in the long-run. Therefore, it is expected that the lower the initial return at issuing, the better the long-run returns will be.

We also included earnings before interest rate and tax variable as another factor to observe the explanatory power of cash flow growth. However, Graham et al. (2005) report “financial officers view earnings, not cash flow, as the most important metric reported to the outsiders”. Following Graham’s et al. (2005) report it is expected that cash flows will not have any effect on long-term aftermarket performance. To check the possibility of the firm manipulating real activities; the LT variable was included. LT is the ratio of the firm’s long-term investments to their total assets at listing. It is expected that the firm’s real activities manipulation should be positively related to the long-term performance.

The earnings growth rate after issue is the next factor, viewing growth rate as the most important metric, according to Graham et al. (2005), the higher the earnings’ growth rate the better the long-term performance. It was expected that there would be positive relation between earnings growth rate and the long-term performance. The next variable included is the market capitalization; it is a measure of the firm’s intrinsic value. Assuming that the higher the intrinsic value the better the long-term performance, we expect to find a positive relationship between market capitalization and IPOs long-term performance. The next factor used in the regression model is capital turnover. Assuming that capital turnover generally corresponds to high profit margins, it would be expected that the high ratio of capital turnover indicates that the company uses its’ capital well meaning that it should be positively related to the long-term performance of the IPOs.

Following the above discussion, the following hypotheses were raised:

Hypothesis 1:

H_0 : There is no relationship between the offering size of IPOs and the five year market adjusted returns.

H_1 : There is a positive relationship between the offering size of IPOs and the five year market adjusted returns.

Hypothesis 2:

H_0 : There is no relationship between the market-adjusted initial returns and the five-year market-adjusted returns of IPOs.

H_1 : There is a negative relationship between the market-adjusted initial returns and the five-year market-adjusted returns of IPOs.

Hypothesis 3:

H_0 : There is no relationship between the earnings before interest and tax and the five-year market-adjusted returns of IPOs.

H_1 : There is a negative relationship between the earnings before interest and tax and the five-year market-adjusted returns of IPOs.

Hypothesis 4:

H_0 : There is no relationship between long-term investments to total assets ratio and the five-year market-adjusted returns of IPOs.

H_1 : There is a positive relationship between long-term investments to total assets ratio and the five-year market-adjusted returns of IPOs.

Hypothesis 5:

H_0 : There is no relationship between the earnings growth rate and the five-year market-adjusted returns of IPOs.

H_1 : There is a positive relationship between the earnings growth rate and the five-year market-adjusted returns of IPOs.

Hypothesis 6:

H_0 : There is no relationship between the market capitalization and the five-year market-adjusted returns of IPOs.

H_1 : There is a positive relationship between the market capitalization and the five-year market-adjusted returns of IPOs.

Hypothesis 7:

H_0 : There is no relationship between the capital turnover and the five-year market-adjusted returns of IPOs.

H_1 : There is a positive relationship between the capital turnover and the five-year market-adjusted returns of IPOs.

LONG-TERM PERFORMANCE OF IPOs AND ITS DETERMINANTS:

Long-term performance of the Russian IPOs can be observed by testing BHAR in Table 1:

Table 1 The Average Buy-and-Hold Abnormal Returns (BHARs) of IPOs listed from 2007 to 2011

Month	Sample Size	BHAR mean	t statistic
3	20	-0.00281126	-0.1089723
6	20	-0.00850408	-0.1787034
9	20	-0.06873856	-0.9656884
12	20	0.31092066	2.7474473*
15	20	0.15282808	1.2668154
18	20	0.31065406	1.7290272**
21	20	0.37094545	3.795329*
24	20	0.14036526	2.8207835*
27	20	0.0507599	0.8440508
30	20	0.1433403	1.8849578**
33	20	0.13804034	1.2055583
36	20	0.17028008	1.1764213
39	20	0.30511144	1.5334066
42	20	0.1175587	0.8427775
45	20	0.33264896	1.5678508
48	20	0.38893001	1.5354628
51	20	0.31702586	1.3565472
54	20	0.26507772	1.1419359
57	20	0.11126154	0.6344497
60	20	1.188420763	6.11*

Notes: * Estimate significant at 1 percent level. ** Estimate significant at 5 percent level. This table provides the long-run performance of the Russian IPOs measured by BHAR.

For IPOs listed in Russia from 2007 to 2011, the average BHAR is 6.8% (BHAR is not significant). Starting from the 12th month with certain interruptions it is significant in the 60th month and positive in the 12th month. The average BHAR is 31% and t-statistic 2.74. BHAR for IPOs listed in each month shows that the long-run performance is significantly positive for IPOs from the 12th month with

interruptions on the 60th month as well. On the 60th month it is positive and it is 118% for BHAR and statistically significant at 1%. It shows that the total sample's significant outperformance starts from the 12th month and continues (with the interruptions) up to five years after the listing.

RESULTS:

ORDINARY LEAST SQUARE REGRESSION: BHAR DEPENDENT VARIABLE:

Table 2 illustrates the relationship between the dependent and independent variables. In Table 2 it can be seen that LMC has the greatest impact on BHAR, the coefficient is significant and positively related; meaning that the higher the market capitalization the higher the long-term aftermarket performance. Thus, Hypothesis 6 can be rejected. However, EBITG (earnings before interest and tax), LCT (capital turnover) are negatively related to the dependant variable BHAR. Where EBITG is significant at 5% level, LCT is significant at 1% level. R square is 0.87 which means it explains greater part of the example.

Positive coefficient of offer size (LO) implies that the larger the offers size the better the long-run performance. It coincides with the previous findings of a positive relationship between the offer size and the long-term IPO performance (Cartel et al. 1998). However, offers size coefficient is not significant implying that firms' size does not have significant influence on the long-term IPO performance. Thus, Hypothesis 1 can be rejected.

EBITG is negatively related to the long-term aftermarket performance implying that the lower the cash flows the higher the long-term aftermarket performance concurring with the expectations and thus, Hypothesis 3 can be rejected. However, according to the results, the higher the capital turnover the lower the long-term aftermarket performance, these results do not coincide or concur with the previously set hypothesis, meaning that Hypothesis 7 cannot be rejected. It was expected to have a negative coefficient on IMAR, however after being tested it shows that for Russian IPOs it is positively related to the long-run performance. Also, IMAR is the measure of over-optimism; it implies in our regression model that the higher the initial return, the higher the long-run performance of IPOs; in this case Hypothesis 2 cannot be rejected.

LT on the other hand, is positively related and significant at 5% level meaning that the firms engage in earnings manipulations; it concurs with the previously stated hypothesis, so Hypothesis 4 can be rejected.

The positive coefficient for EGA is consistent with the existing research linking post IPO performance to operating performance (Chan et al. (2004)), meaning that the higher the earnings growth rate the higher the long-term aftermarket performance; thus, Hypothesis 5 can be rejected,

Table 2 Long-run performance of the Russian IPOs using BHAR versus other variables

Variable	Coefficient	Std. Error	t-Statistic	Prob.
EBITG	-0.012422	0.006406	-1.939016	0.0528
EGA	0.002533	0.001062	2.384423	0.0173
IMAR	0.003047	0.000147	20.73426	0.0000
LCT	-0.029148	0.009489	-3.071850	0.0022
LMC	0.551543	0.026719	20.64261	0.0000
LO	0.005179	0.012081	0.428697	0.6682
LT	0.412386	0.148106	2.784390	0.0055
Effects Specification				
Cross-section fixed (dummy variables)				
Period fixed (dummy variables)				
R-squared	0.874218	Mean dependent var		0.211424
Adjusted R-squared	0.864620	S.D. dependent var		0.689462

Note: *Estimate significance at 10% level

**Estimate significance at 5% level

***Estimate significance at 1% level

The regression uses 1200 observations of the firms listing on RTS, MICEX, LSE and NYSE stock exchanges between 2007 and 2011 years. The dependant variable (BHAR) is measured over 5 years

after listing. The independent variables include: (LO) Log of offer size it is the offer size of the variable. It is the net measured as number of offering shares multiplied by the offering price by taking the natural log; (LT) ratio of long-term investments to total assets; (EGA) earnings growth rate based on Net income values; (EBITG) growth rate in earnings before interest rate and tax; (IMAR) initial market return growth rate; (LMC)

Granger Causality Test:

In its simplest form, this method of studying show how reliably the change in a variable X is able to predict a change in Y and is also known as a Granger causality test (Granger 1969).

The Granger causality test has been refined over the years. In its original form, running simple regressions on lagged variables, then testing for the statistical significance of the tests established causality was the norm. Subsequent use of this methodology led to some strange results. For example, one such study found that changes in auto sales granger-cause test results causes changes in interest rates on treasury bills. (Gujarati, 1995)

The validity of utilizing Granger causality test in panel data is evidenced in numerous studies – Marvell and Moody (1996), Berk et al (1979), Coupet (2003), and Erdil, Yetliner and Hakan (2004), to name a few. Additionally, “recent theoretical developments in Granger causality methods have made tests using relatively short time periods possible through the use of panel data.” (Hoffman, Ging, Ramasami, and Yeung, n.d.,) Not only is panel data acceptable in Granger causality test, one could argue it enhances the analysis.

Granger Causality test ran with 2 lags for the sample. The results of this test are shown in Table 4.

Table 4 shows that there are statistically significant relationships. The test suggests rejecting the following hypotheses:

LMC does not Granger Cause BHAR

BHAR does not Granger Cause LMC

IMAR does not Granger Cause BHAR

It could be stated that while rejecting the aforementioned hypotheses we can state that there is a bilateral causation between BHAR and LMC where LMC Granger causes BHAR and BHAR Granger causes LMC; and also, IMAR Granger causes BHAR. The causality is significant for three hypotheses. This finding shows that long-term performance affects market capitalization and vice versa, as well as meaning that initial market adjusted returns affect the long-term performance.

Table 3: Granger Causality Test: causality between BHAR and the other variables

Null Hypothesis:	Obs	F-Statistic	Prob.
EBITG does not Granger Cause BHAR	1160	0.82201	0.4398
BHAR does not Granger Cause EBITG		0.46685	0.6271
EGA does not Granger Cause BHAR	1160	1.02730	0.3583
BHAR does not Granger Cause EGA		1.38117	0.2517
IMAR does not Granger Cause BHAR	1160	2.73747	0.0652
BHAR does not Granger Cause IMAR		366.660	5E-124
LCT does not Granger Cause BHAR	1160	0.39741	0.6721
BHAR does not Granger Cause LCT		0.28672	0.7508
LMC does not Granger Cause BHAR	1160	7.56223	0.0005
BHAR does not Granger Cause LMC		4.30490	0.0137
LO does not Granger Cause BHAR	1160	2.16086	0.1157
BHAR does not Granger Cause LO		0.71747	0.4882
LT does not Granger Cause BHAR	1160	0.42649	0.6529
BHAR does not Granger Cause LT		0.68512	0.5042

Note: * Estimate significance if p-value is less than 0.10

* Estimate significance if p-value is less than 0.05

* Estimate significance if p-value is less than 0.01

CONCLUSION:

The aim of this research is to find if the companies that went public have positive or negative long-term performance. It could be seen from the results that the Russian IPO companies have positive performance or so called long-run outperformance.

The long-run performance of the Russian IPOs was studied on the sample of 20 companies starting from 2007 to 2011 years.

Analysis of the five year BHAR for IPOs listed in each month showed that the long-run performance was significantly positive for IPOs from the 12th month up to the 60th month. On the 60th month BHAR was positive and statistically significant at 1%. This analysis shows that there is no long-run underperformance in the case of the Russian IPOs, on the contrary it was observed that there is a long-run outperformance of the Russian IPOs.

There is a bilateral causation between BHAR and LMC where LMC Granger causes BHAR and BHAR Granger causes LMC. This finding shows that the long-term performance recorded affects market capitalization and vice versa; as well as meaning that initial market adjusted returns affects long-term performance.

It is believed that these results would be useful for current and future investors and this research will contribute to providing potential investors with enough information to make their investment decisions and will increase their knowledge about the performance of companies which go public. This will help them to make proper decisions and investments. Meanwhile, it will help to increase the confidence level of the investors. Therefore it would lead to the possible result that more investors will be interested in investing in the Russian capital market.

As a recommendation for further studies it would be a great contribution to the literature if future research would focus on the relationship between quality underwriters' and IPOs long-term performance. It would be important to find if higher underwriter quality would predict better long-run performance. It would also help the top level managers and company owners, shareholders and underwriters to make better judgments and decisions on the role of underwriters in times of IPO placements.

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