# НОВЫЕ ИССЛЕДОВАНИЯ

## Going Public: Empirical Study of Motives and Efficiency of IPO in CIS

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*The article presents the results of empirical analysis of IPO's efficiency for companies from Russia and other emerging markets. At first we examine the structure of the issues and the motives for going public. We analyze the interrelations between the motives and the influence of IPO on the operating results of the firms after IPO. In contrast to most empirical papers we find no significant decrease in operating measurers of efficiency after IPOs in Russia and Kazakhstan.*

*JEL: G32*

*Key words: initial public offering, emerging markets, performance*

### 1. Introduction

It is well recognized that empirical research on IPOs has been attracting financial economists for many years. The papers can be grouped under different broad headings. First, many papers documented that IPO are underpriced. The researchers study the dynamics of underpricing and measure underpricing discount which became a type of stylized fact in finance. Second, there is great amount of literature on theoretical explanations for the underpricing starting with asymmetry of information, control argument, the importance of institutional framework within which the IPO are made and finally - behavioral models. Third, empirical IPO literature provides some evidence on controversial results of IPOs from the point of the change in firm's efficiency. The researchers found the decrease in operating results after the IPO measured by earnings per share (EPS), price – to- earnings (P/E), market –to- book ratio [Jain & Kini, 1994]. Fourth, there is large body of evidence supporting the view that IPO is not in every case related to the need for outside finance. Considering the motives the scholars discuss the investment programs, the industry trends along with the need for financing [Pagano, Panetta, Zingales, 1998]. Others find that the ownership structure of the offer should be related to the motives of the primary owners of the firm [Kim & Weisbach, 2005]. If the issue is structured in a way that the new shares are offered, then the motivation is based on funds raising. On the contrary, if primary shares of existing shareholders make the solid proportion or even the majority of the issue, then the investors are seeking for the increase in liquidity or diversification of their risks. The authors provide evidence of the motive to sell the business after IPO is completed [Huygbegaert & Hulle, 2006]. The probability of the shift in corporate control is higher for the firms with the primary shares dominating the structure of the issue as compared to the IPOs with majority of new shares sold out to the public. The structure of the issue reflects or even provokes the principal-agent conflicts and they in their turn impact operating performance. The alternative argument is based on the risk profile of the company going public. The researchers find that the firms undergoing IPOs are less risky and therefore less

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profitable [Eckbo & Norli, 2000].Finally, there many papers focused on the timing of IPOs which can be theoretically modeled [Benninga, Helmantel & Sarig, 2005] or empirically derived from the data collected in different countries, industries and for different periods. The majority of papers are focused on the developed capital markets. However, the IPO segment made of the companies from emerging markets recently demonstrated significant growth. Despite the growing volume of IPOs among the companies in emerging markets and in particular in CIS very little empirical study on these data exists. Some papers contribute to the literature on IPO by comparative studies of these transactions in developed and emerging markets from the point of risk analysis. Bruner et al find that IPOs of the firms from developing countries offered at the stock exchanges in the USA do not show higher level of risk [Bruner, Chaplinsky, Ramchand, 2006]. The authors explain their findings by firm-specific characters (large - scale firms) related to the industry profiles (traditional technologies). The residual part of the papers on emerging markets IPOs provide some evidence on underpricing as compared to the IPO's discounts for developed countries' firms [Ivashkovskaya, Kharlamov, 2008].

The residual text of the article is organized as follows. The next section describes the research models on post IPO operating efficiency in relation to the motives of this transactions. Section 3 provides the analysis of the sample for Russia and other CIS. We present our research models, the hypotheses and tests in the section 4 and the section 5 concludes.

## 2. IPO's Efficiency: Research Models

Is IPO efficient for all companies? To get the answer the researcher should at first understand the motives for going public. It is not possible to get the motives directly from the data, that's why the existing papers which consider the link between operating efficiency and the motives is based upon the comparative analysis of efficiency measurers before and after IPO. Below we summarize the approaches and develop our own research model.

The papers of this type demonstrate the reduction in operating efficiency measurers during several years after IPO [Jain and Kini, 1994], [Mikkelson et al. 1997], [Loughran and Ritter, 1997]. The authors found different theoretical reasoning for these results and they can be classified in the following way. The first hypothesis is based on agency explanation. It states that the decrease in management motivation is due to the reduction of the managerial share in the ownership structure and therefore the conflict of interest between agents and owners. The second point of view relies on unreasonable market expectations about the future company's results when investors and management base their forecasts on the high-level last historical results. This explanation is close to the "window dressing" argument when management heavily applies to accounting techniques to improve the financial reports. Finally the researchers point out the window of opportunity argument: companies go into IPO only at the times of favorable trends in their product markets. Thus, when IPO is closed they are involved into unfavorable processes and terms of competition.

The typical research model can be illustrated by the paper written by Jain and Kini [Jain and Kini, 1994] who used 682 IPOs through 1976 – 1988 гг. Their sample was based on Investment Dealers Digest's Five-year Directory of Corporate Financing. Several criteria were applied to get the final sample. They used the IPO with the offer price more than $5 per share, issued capital more than $1,5 mln. The reverse leverage buyouts (LBO), the business unit's issues and REIT's issues were dropped from the final sample. To measure operating efficiency they used operating return on assets (formula 1) and cash flow return on assets (formula 2)

$$(1)\ ROA_{operating} = \frac{EBITDA}{TA}$$

$$(2)\ ROA_{cashflow} = \frac{OI - capex}{TA}$$

Where:

EBITDA – earnings before interest, depreciation and tax
*TA* - total assets
*OI* - operating income
*capex* -capital expenditure

The change in the operating performance was examined by two sets of measurers. At first profits after IPO were measured by the difference in median values of operating income (not mean values) for the year t (the year of the IPO) and the value for the year t-1 (the year prior to the IPO). The second step was to analyze industry-adjusted measurers. The authors adjusted the change in profits to the industry data using market comparables which have been found among public peer companies. The median value for public peer was subtracted from the median of operating income for the IPO-company. The median levels of operating return on assets for the IPO firms decline over time, while the corresponding levels for their industry counterparts decline by a lesser amount. The same approach was applied to net changes in sales revenues and capital expenditure. They found that just after the IPO the operating efficiency decreased compared to their industry counterparts and the results were statistically significant. The industry adjusted data did not change the overall conclusion. The net changes in sales revenues and capital expenditure and asset turnovers changes were used to find out possible explanation of this negative dynamics. They showed that after IPO companies increased sales revenues, capital expenditures, and therefore the decrease in profitability can not be explained by the absence of growth opportunities. To study the agency argument the main sample was divided into two sub-samples : one with the old shareholders holding the proportion of shares above the median in the sample ("the high-ownership group") and the other one, on the contrary – with the proportion below the median for sample ("the low-ownership group"). The company from the first sub-sample outperformed the companies from the second sub-sample. Thus, the results proved the argument of agency conflicts' influence on the operating performance when the structure of ownership changes.

To test the timing and window-dressing hypotheses the researchers usually apply the market-to-book (M/B) and price-to earnings ( P/E) ratios as the measurers for performance. The market-to-book ratio is based on equity capitalization and book value of debt compared to the total of book values of debt and equity. The ratios are examined through 5 years after IPO. The decrease in M/B, P/E and earnings per share (EPS) within 5-year period became the typical result. In addition to these indicators Jain and Kini also showed that the results hold after adjustments to the industry have been introduced. [Jain and Kini, 1994]

The similar results were obtained for the sample of Japanese companies for 5-year period after IPO [D.Yan, J.Cai, 2003]. The authors also show that the decrease in operating performance measured by operating income to total assets, cash flow return to total assets and operating income growth rate can not be explained by the reduced market opportunities. To test the hypothesis of the unfavorable shifts in managerial stakes Yan and Cai introduced different techniques. The equation 3 below describes the regression analysis for the dependent variables represented by operating efficiency measurers:

( 3)

$$Y = a + b * shares\ offered + c * \sec ondary\ sale\ of\ shares +$$
$$+ d * post - issue\ directors'\ owership\ stakes + e * change\ in\ directors'\ owhership\ stakes +$$
$$+ f * total\ assets\ growth + \ln(MCap\ IPO)$$

Compared to the results for American companies [Jain and Kini, 1994] the negative change in operating efficiency for the Japanese sample could not be explained by the shift in the managerial shareholdings because the regression coefficients were insignificant. Finally, Yan and Cai explained the decrease in operating efficiency by overoptimistic expectations of management and investors.

**Motives of IPO**

An unusual approach to consider motives of IPO and consequent decline in operating efficiency was introduced by Kim and Weisbach (2005). The authors try to analyze real IPO motives via offering structure. Their sample included 16958 companies from 38 countries. Presented research methodology happened to be very promising and showed that offering structure can help discover true motives of companies involved into IPO. If a company issues new shares when going public, it is able to increase the equity capital, raise new funds and change capital structure. If existing shares of so-called "old" shareholders are used the total number of shares doesn't change. In this case it can be assumed that existing shareholder wish to diversify and increase liquidity of their investments. It will mean that the true motive for IPO is not related to raising capital for investments and business improvements.

In order to discover relationship between corporate performance measures (total assets, inventories, fixed assets, capital expenditures, R&D expenses, cash, debt financing, etc.) and offering structure, two equations are constructed:

(4) $$Y = \beta_1 \times \ln\left[\left(\frac{primary\,capital}{Totala\,assets_0}\right)+1\right] + \beta_2 \times \ln\left[\left(\frac{\sec ondary\,capital}{Total\,assets_0}\right)+1\right] + \beta_3 \times \ln[Total\,assets_0] + FE + \varepsilon$$

$$Y = \gamma_1 \times \left(\frac{shares\,allocated\ in\,IPO}{all\,shares}\right) + \gamma_2 \times \ln\left(\frac{Attracted\,capital}{Total\,assets_0}\right) + \gamma_3 \times \ln[Total\,assets_0] + FE + \xi$$

where FE – dummy variables for years, countries and industries.

The authors show that IPOs are usually followed by growth in investments, debt repayment, increase in cash and further public offerings of equity. The results indicate that newly attracted equity capital is allocated to R&D activities, capital expenditure and short term debt repayment. In case of "old shareholder's" share offerings a company doesn't attract any new capital since shareholders use IPO as means to fix their profits, increase liquidity or merely diversify.

Huygbegaert and Hulle (2006) use a similar to Kim and Weisbach (2005) but independent approach. They try to discover true IPO motives for Belgium companies. They built a model where percentages of primary("new") and secondary("old") offering volumes were explained by a number of variables:

(5) $$Y_{1,2} = a + b * Market - to - Book + c * ROA + d * Leverage + e * \frac{bank\,loans}{total\,debt} + f * age +$$

$$+ j * \%\,of\ blockholders + k * market\,return +$$

$$+ l * relative\,volume\,offered + FE$$

where

$$Y_1 = \frac{primary\,shares}{N\,of\ shares\,before\ IPO}$$

$$Y_2 = \frac{\sec ondary\,shares}{N\,of\ shares\,before\,IPO}$$

FE – dummy for daughter companies.

Regressions gave the following results:

- Percentage of primary shares is higher when a company needs additional capital to finance its growth, repay the debt or try to catch the market in overheated conditions. Young growing companies use primary shares more frequently.
- Analysis of secondary ("old") shares shows that diversification is not the primary motive of shareholders. Owners of large mature companies sell their stock more frequently than shareholders of riskier small companies.

The authors conclude that IPO is commonly a preparation for future sale of their investment. Research results indicate that liquidity increase motive limits management incentives to finance growth with capital raised thru IPO . Companies come to an IPO with small percentage of secondary shares offered. Large companies usually offer existing shares on IPO and "market timing" motive may be very important for describing their behavior. If market is overheated and

characterized by a wave of high prices the percentage of "old" shares is relatively large within the structure of the issue.

**Operating performance after IPO on emerging markets**

There is not much research on emerging markets of the interested topic. As an example Limpaphayom and Ngamwutikul (2004) consider dynamics of corporate operating efficiency after secondary equity offerings (SEO) at Thailand stock exchange. The authors show that most of companies experience a decline in operating efficiency. Moreover, these are negative correlation between the percentage of shares kept by existing shareholders and dynamics of operating performance. This picture supports signaling hypothesis: if existing shareholders exit a company a downturn in business performance should be expected in the nearest future.

The authors test the following hypotheses:

1. Thai companies going for SEOs are supposed to experience a decline in their operating efficiency.
2. Companies with more concentrated ownership structure are supposed to experience relatively a greater decline in operating efficiency.

To test the hypotheses authors build the following model:

(6) $P_j = \alpha + \beta_1 OWN_j + \beta_2 PROCEED_j + \beta_3 SIZE_j + \beta_4 INVEST_j + \beta_5 GROWTH_j + \varepsilon_j$

where:

$P_j$ - percentage change of performance measures;

$OWN_j$ - percentage of existing before offering shareholders;

$PROCEED_j$ - attracted capital/capital before offering

$SIZE_j$ - ln (assets)

$INVEST_j$ - changes in investments from year -1 to year +3

$GROWTH_j$ - growth of performance measures in a 2 year period prior to offering.

The results of the research contradict existing findings on developed markets. For example the percentage owned by insiders has negative influence on operating performance. It is possible that generated cash flow is used not for business development but to satisfy insider interests. Discovered contradictions can potentially be explained by high asymmetry of information on Thailand capital market.

Having examined existing research it can be concluded that methodology doesn't change a lot: operating efficiency is approximated by ROE, ROA and operating cash flow return. To analyze dynamics authors usually seek for statistical significance of performance measure changes and convergence to industry averages. To analyze Russian and some other emerging market's IPOs we will use the same approach.

However we used a well established research methodology the empirical results were different from expected ones. To take a deeper look at the problem we tried to discover determinants of Russian IPOs and used an approach offered by Huyghebaert and Hulle (2006). Then offering structure was used to build a link between motives of IPO and the results of the offerings. We used a simplified methodology of Kim and Weisbach (2005).

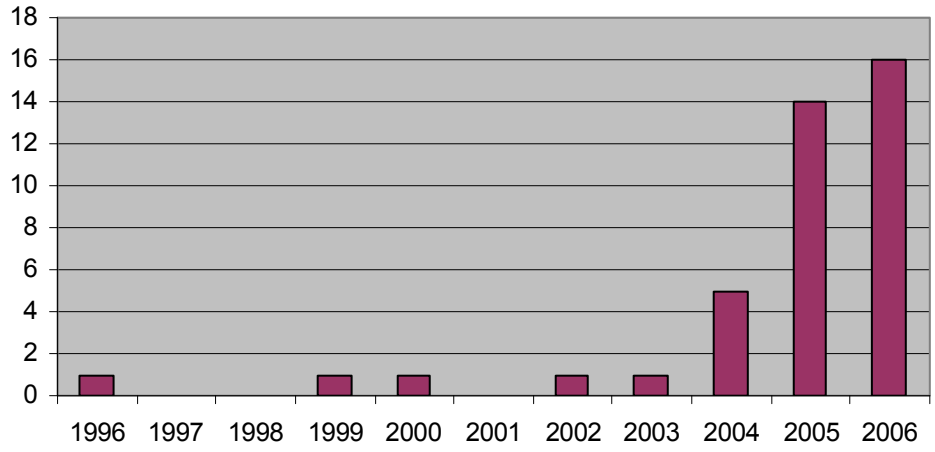
## 3. Data Description

For the purpose of research we collected the data on characteristics and operating results of companies which succeeded IPO in Russia, Ukraine and Kazakhstan during the period from 1996 to 2006. We used public sources (company websites) and special financial databases (Reuters, Thompson and Bloomberg). For each company in our sample we gathered financial information for one year prior to IPO and three years after it. Therefore, each company should be described using 4

year period. We excluded companies which went though IPO process in 2007 because they lacked financial data. Several companies were from the sample because of null “total assets” or “sales” figures. We didn’t include financial companies in the sample because of substantial differences in reporting standards. Companies that didn’t have financial reports 1 year prior to IPO also were not considered.

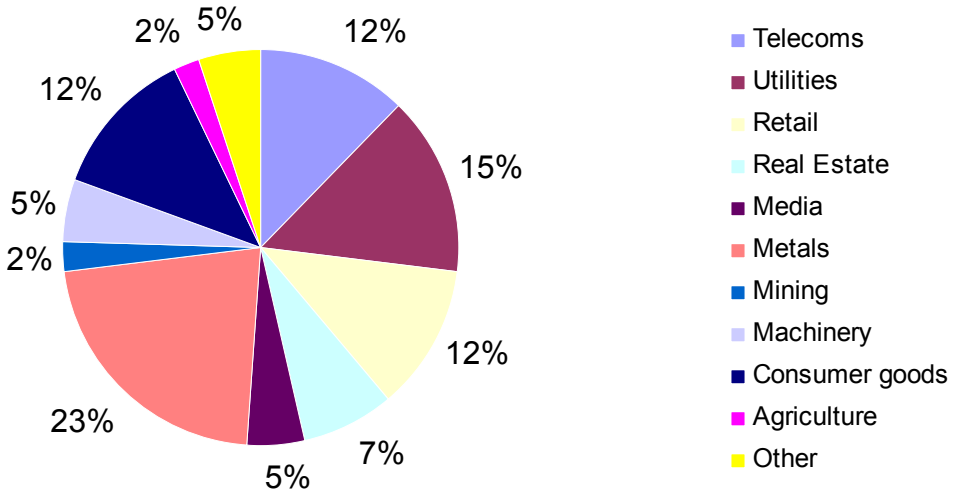
Annual distribution of companies is represented in Figure 1. As it can be seen from the diagram the biggest number of IPOs happened in the period from 2004 to 2006 which was supported by good market conditions.

**Figure 1. Yearly distribution of IPOs**




Most of IPOs were from machinery, media, retail, telecommunications and consumer goods industries.

**Figure 2. IPO industry structure**




Main characteristics of the sample are presented in the table 1 below.

**Table 1.**

**Aggregated characteristics of IPO in the sample**

| | Mean | Median | Min | Max |
|---|---|---|---|---|
| Price offered (USD) | 14.57 | 18.86 | 0.09 | 215.90 |
| Total attracted capital, mln.USD | 659.78 | 229 | 8 | 10700 |
| Number of initial shares/total number before offering | 15% | 15% | 0% | 39% |
| Number of secondary shares/total number before offering | 9% | 6% | 0% | 50% |
| Offered % of capital | 24% | 22% | 7% | 52% |

Table 2 offers basic statistics of financial measurers of companies at the moment of IPO.

**Table 2.**

**Company financial data mln. USD**

| | Mean | Median | Min | Max |
|---|---|---|---|---|
| | | | | |
| Total assets | 4204.69 | 420.51 | 1.60 | 82409.00 |
| Equity | 1979.28 | 149.20 | -9.29 | 44936.00 |
| Liabilities | 2174.66 | 295.60 | 0.46 | 37473.00 |
| Long term debt | 824.65 | 61.88 | 0.18 | 13232.00 |
| Bank debt | 738.24 | 37.19 | 0.00 | 13232.00 |
| Debt mix | 0.26 | 0.22 | 0.00 | 1.71 |
| Leverage (Debt/total assets) | 0.55 | 0.55 | 0.17 | 1.02 |
| Effective interest rate | 85.12 | 13.51 | 0.00 | 1600.00 |
| Sales | 2274.95 | 532.60 | 0.00 | 24615.00 |
| Operating profit | 553.46 | 32.38 | -19.52 | 6913.00 |
| Net Income | 422.41 | 29.90 | -33.64 | 5694.00 |
| ROA | 9% | 9% | -26% | 34% |
| ROI | 56% | 18% | -36% | 1644% |
| Operational return | 13% | 13% | -40% | 44% |
| Capital expenditures | 347.1 | 47.70833 | 1.15 | 5424 |
| Cash | 235.9 | 10.36 | 0.22 | 3003 |
| Inventories | 240.9 | 62.17 | 0.21 | 1725.53 |
| Debt reduction | 198.2 | 7.1 | 0 | 1829 |

Table 3 indicated the dynamics of selected operating parameters of sample companies. Year 1 is named to be the IPO year. Year 0 is the year before IPO and Years 2 and 3 are years after IPO.

**Table 3.**

**Dynamics of operating results**

| | Year 0 | Year 1 | Year 2 | Year 3 | Growth 0-1 | Growth 0-2 | Growth 0-3 |
|---|---|---|---|---|---|---|---|
| | Median | Median | Median | Median | Median | Median | Median |
| | mln.USD | | | | | | |
| Assets | 420.51 | 873.8809 | 1319.155 | 1564.24 | 66.99% | 143.40% | 188.49% |
| Inventories | 52.135 | 70.265 | 90.129 | 193.8509 | 38.78% | 104.91% | -2.30% |
| Capex | 39.24917 | 47.34982 | 106.76 | 289.0204 | 46.46% | 160.21% | -15.76% |
| Acquisitions | 2.14 | 30.735 | 24.3 | 23.45572 | 164.66% | 146.78% | 212.82% |
| Cash | 10.36 | 66.91851 | 82.31 | 75.43268 | 209.40% | 207.35% | 129.70% |
| Debt refinancing | 15.375 | 30.276 | 31.12664 | 102.35 | 47.07% | 70.43% | 156.09% |

## 4. The Model, Hypotheses and Tests

Empirical research is divided into three stages. At first we analyze dynamics of operating results. As it can be seen our patterns don't follow overall usual trends from developed and emerging markets. We can suggest that Russian companies follow a negative trend in their operating results during the first years after IPO. It is probable that such difference can be explained by peculiarities of Russian IPO market. The major assumption here is that Russian companies more frequently use attracted capital to finance their growth. To analyze Russian IPO motives we will try to examine a model where structure of IPO (percentage of initial and secondary capital) is explained by financial and operating results in one year prior to IPO. Such financial data could be used to assess companies' needs which are supposed to be reflected in the structure of offering.

Having learned the motives of initial or secondary offerings we could examine the relationships of IPO determinants and dynamics of financial performance in the years following the deal.

### 4.1. The research model of operating performance after IPO

There are 2 main hypotheses in our research:

1. Corporate operating efficiency decline after IPO.
2. Decline in operating efficiency is explained by a decrease of percentage of equity held by existing "old" stockholders.

To check the first hypothesis about decline on operating efficiency after IPO the following parameters were analyzed in dynamics:

- ROA. Return on assets. It is usually assessed as EBITDA/Total Assets or Net Earnings/ Total Assets. However in this research we use Net Income/Total Assets.
- Operating return is defined in accordance with Jain and Kini (1994) as operating profit/Total Assets.
- ROI. Return on investment is approximated as Net income divided by sum of Equity and Debt capital. This measure is very close to ROA but still has to be accounted for in Russian environment.
- Operating Cash Flow/Assets. This measure was used in Jain and Kini (1994) and is calculated as (Operating profit - Capex) devided by Assets.

The variables for the sample are presented in the table 4. From the table 4 we can see that the only measure that decreases after IPO over the period of study is ROI. Other measurers of performance show diverse patterns.

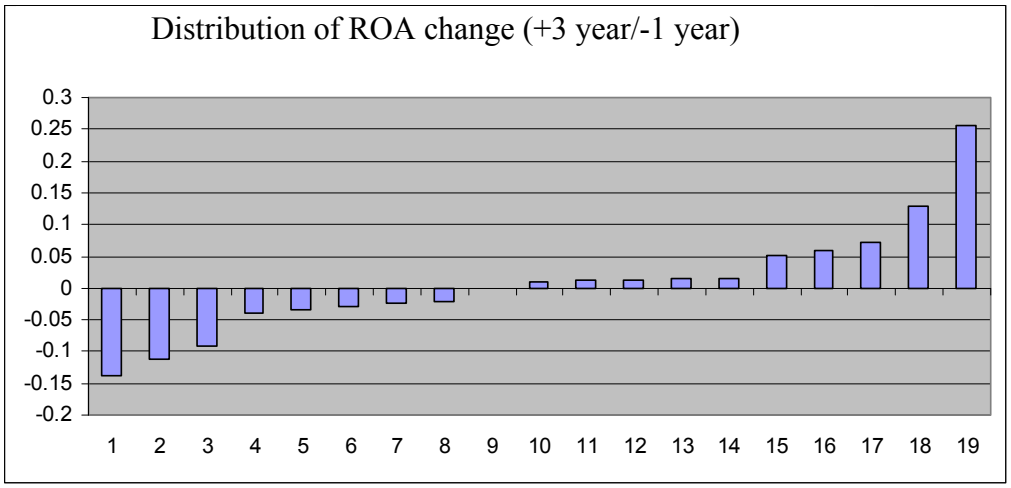
**Table 4.**

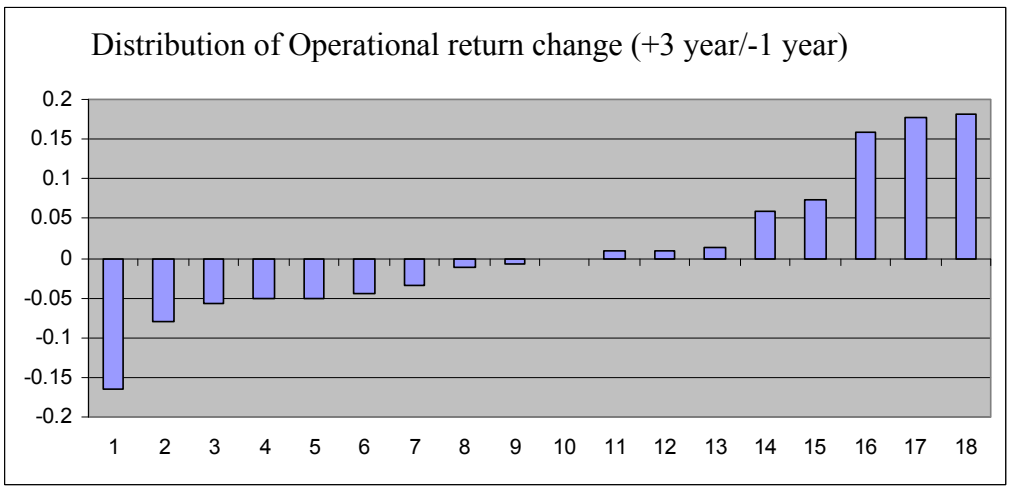
**Dynamics of efficiency measures**

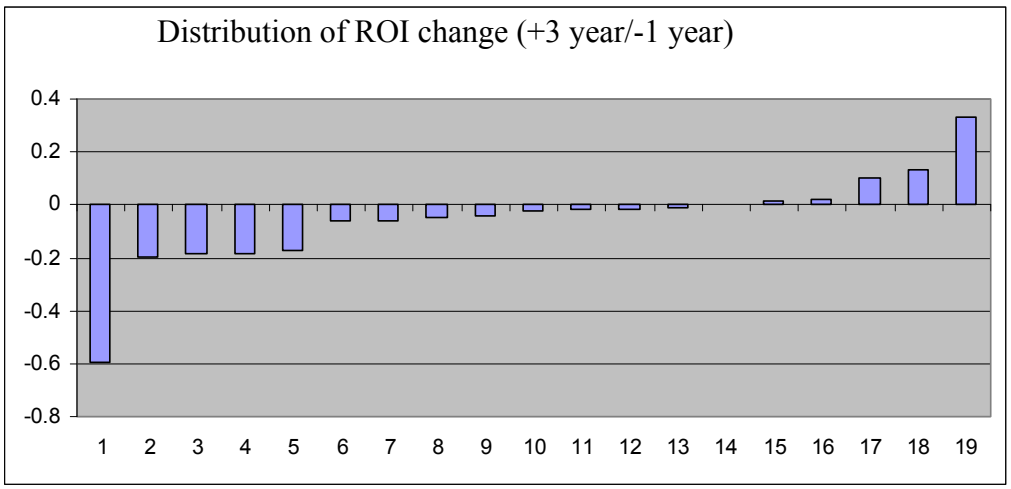
| | Year 0 | Year 1 | Year 2 | Year 3 | Growth 0-1 | Growth 0-2 | Growth 0-3 |
|---|---|---|---|---|---|---|---|
| | Median | Median | Median | Median | Median | Median | Median |
| ROA | 8.9% | 9.1% | 9.5% | 6.5% | -0.3% | 1.7% | 0.9% |
| Operating return | 13.4% | 14.8% | 17.6% | 9.7% | 0.1% | 0.3% | -0.5% |
| ROI | 18.1% | 11.8% | 14.1% | 9.7% | -3.1% | -2.5% | -2.3% |
| Operating Cash Flow/Assets | 3.5% | 2.2% | 1.8% | -1.7% | -1.2% | -1.6% | 0.6% |
| | Mean | Mean | Mean | Mean | Mean | Mean | Mean |
| ROA | 8.7% | 9.7% | 9.2% | 8.2% | 1.1% | 0.8% | 0.8% |
| Operating return | 12.9% | 13.6% | 16.3% | 12.1% | 0.7% | 3.8% | 1.0% |
| ROI | 14.6% | 11.9% | 10.0% | 9.7% | -2.1% | -3.8% | -5.4% |
| Operating Cash Flow/Assets | 2.1% | 1.7% | 3.0% | -1.3% | -0.4% | 1.3% | 0.3% |

Let's look at Figure 3 which shows distribution of increase in performance for companies in the sample. To calculate growth we use absolute change of the parameter in the whole history period (Year 3 – Year 0).

**Figure 3. Distribution of changes in performance measurers (ROA, Operating return, ROI, OPCF/TA) for the period of Year 3 – Year 0.**





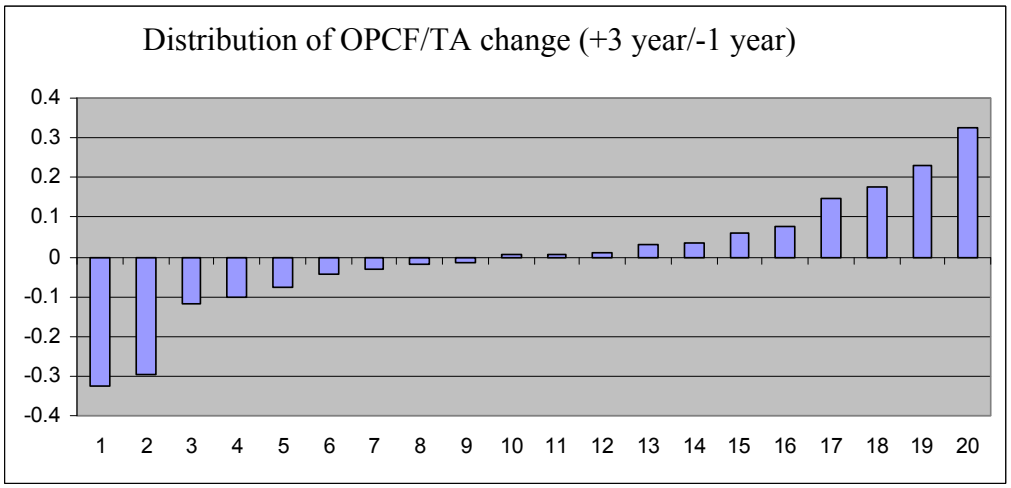
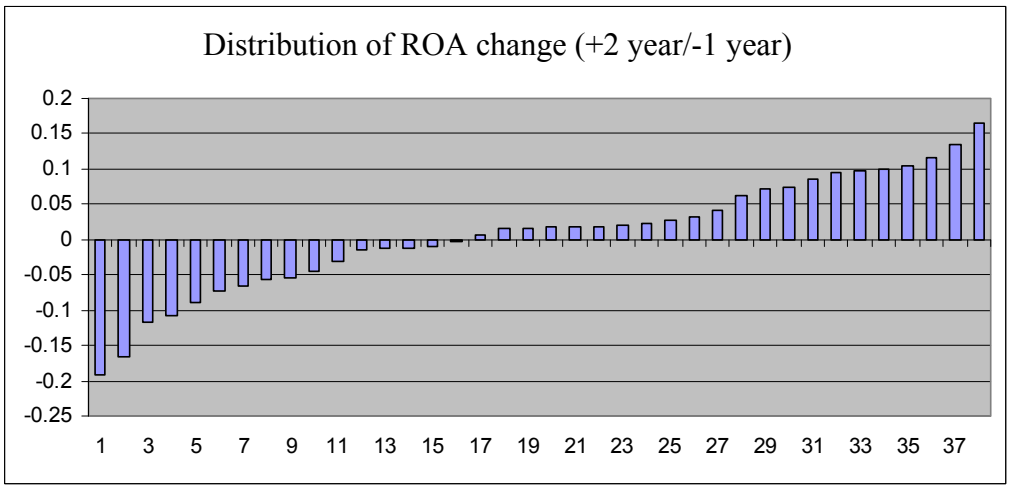
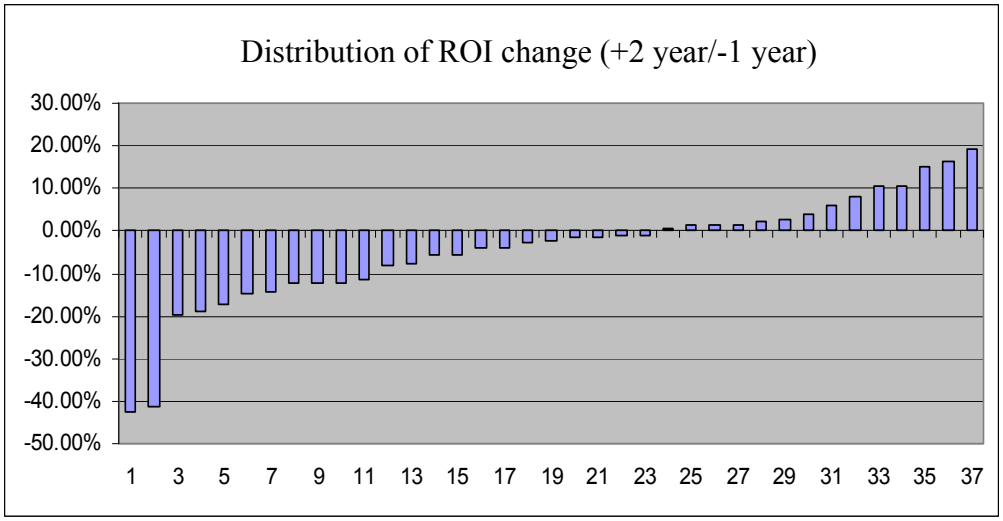
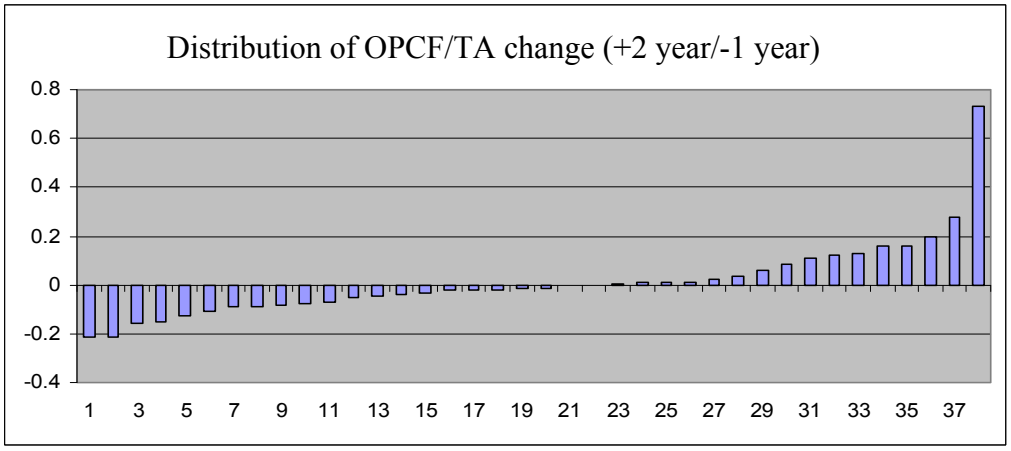




**Figure 4. Distribution of changes in performance measurers (ROA, Operating return, ROI, OPCF/TA) for the period: Year 2 – Year 0**






Having analyzed the figures we can conclude that in most cases distributions are symmetric. This result doesn't allow us to expect statistically significant differences in medians. However, ROI indicated the highest deviation from the median. Therefore ROI changes could be significant. To analyze statistically the hypothesis of equality of medians of operating performance measures before IPO and after IPO we used the Mann-Whitney U test. This test is usually applied to compare medians of two distributions X and Y which are not normal. (Lack of normality in distribution doesn't allow us to use t-test).

Having examined the medians of measures for pre-IPO (Year 0) and after-IPO (Year 2) periods using Mann-Whitney criteria it can be concluded that differences are not significant even at 10% level (Table 5).

**Table 5.**

**Mann-Whitney U test of median equality for Year 0 and Year 2**

| | ROA | Operating return | ROI | OPCF/TA |
|---|---|---|---|---|
| MW U criteria = | 700.5 | 661.5 | 870.5 | 757.5 |
| Expected value = | 760.5 | 760.5 | 760.5 | 760.5 |
| Standard deviation = | 100.0662 | 100.0662 | 100.0662 | 100.0662 |
| Z-statistic = | -0.5996 | -0.98934 | 1.099272 | -0.02998 |
| P = | 0.548771 | 0.322494 | 0.271649 | 0.976083 |
| Result: | **Not signficant** | **Not signficant** | **Not signficant** | **Not signficant** |

However, when we take Year 3 instead of Year 2 we observe statistically significant (at 10% level) difference in medians of ROA (Table 6).

**Table 6.**

**Mann-Whitney U test of median equality for Year 0 and Year 3**

| | ROA | Operating return | ROI | OPCF/TA |
|---|---|---|---|---|
| MW U criteria = | 392 | 439 | 468 | 465 |
| Expected value = | 370.5 | 370.5 | 370.5 | 390 |
| Strandard deviation = | 60.35934 | 60.35934 | 60.35934 | 62.44998 |
| Z-statistic = | 0.3562 | 1.13487 | 1.615326 | 1.200961 |
| P = | 0.72 | 0.23 | 0.10 | 0.23 |
| Result: | **Not signficant** | **Not signficant** | **Significant at 10%** | **Not signficant** |

Therefore we conclude that Russian "after IPO" company performance is not the same as of western developed markets. Decline in performance after IPO is less evident in Russia.

During the first after-IPO years companies show significant growth of their businesses. Major indicators of business activity such as sales, capital expenditure and net income grow. Besides net income growth rates also increase year by year. Growth rates of assets and capital expenditures decrease but are still positive (Table 7).

**Table 7.**

**Growth in Sales, Capex, Net Income and Cash**

| Growth rate in | Years 0-1 | Years 1-2 | Years 2-3 |
|---|---|---|---|
| Sales | 24.25% | 38.04% | 29.91% |
| Capex | 34.64% | 52.71% | 24.22% |
| Net Income | 18.65% | 33.31% | 33.08% |
| Assets | 66.99% | 38.83% | 29.35% |
| Cash | 209.40% | -2.68% | -6.29% |

It is possible that Russian companies undergo the IPO to raise used new capital to invest in highly profitable projects. Explanation of such an unexpected behavior of operating performance indicators can be based on specific features of Russian IPOs. As previous research on IPO in developed market show the fund raising motive can not be considered the prevailing one. The firms from developed capital market more often proceed to IPOs bearing in mind increase in liquidity, decrease in financial leverage and diversification of original owner's holdings. Our research shows that in transition Russian environment the companies mostly rely on fund raising argument when going public.

The second hypothesis about relationship between the share of ownership and performance indicators will be tested in the third part of our empirical research.

### 4.2. The Structure of IPOs

Structure of offering can tell a lot about true motives of company and investors. We examine the following hypothesis:

1. Financing constraints. Financing constraints should have a positive relation with the percentage of initially offered stock because capital is allocated to finance projects and growth. Financing constraints are more influential with young companies with high growth rates which have limitations in issuing debt. Therefore, we expect the following:

- Size is negatively related to percentage of initially offered stock
- Age – negative relationship
- Market-to-book – positive relationship, since it indicates firm's growth opportunities.

- Leverage – positive relationship. The higher the leverage is, the less opportunities a firm has to issue new debt.
- ROA – negative relationship. The higher the firm's ability to generate financial resources internally is, the less the need for outside financing is.

The problem of getting over with financing constraints should not be related to the structure of SEO.

2. Increase bargaining power in negotiations with banks. High financial leverage can push the firm to increase equity capital because this change in leverage can help in negotiating interest rates with banks. We expect that there is a positive relationship between the level of bank loans and percentage of equity initially offered. To approximate the level of bank loans we use such financial ratio as bank loans divided by total debt. We assume that there should be no relation between the proportion of bank loans in total debt and seasoned (secondary) offering (SEO).

3. Using windows of opportunities (market timing).

It is logical to assume that managers would try to catch the best timing to get the highest price (market timing). Therefore we expect to have a positive relationship between the characteristics of window of opportunities and both primary offering and secondary offering during in IPO.

Window of opportunities is approximated by the following variables:

- Market return in the year of IPO. The higher the return is the greater investor's optimism should exist. Therefore the managers should expect the higher probability to get good prices in offerings.
- Market-to-book. High M/B ratios indicate not only good growth opportunities of a company but also promising expectation in the whole industry or even economy.
- Number of offerings in a year considered.

4. Monitoring and Control. This determinant can't be assessed using structure of offering.

5. Need for liquidity increase. Information on offering structure only can't be used to examine this very motive.

6. Diversification of investor portfolio. The need for diversification usually leads to restructuring of investor portfolio and possibly to a sale of shares. It is easier to sell stock of a publicly traded company than of a closely held firm. Therefore the need for diversification is usually related and followed up by a sale of stock. The younger and smaller the company is the higher the risks of investments in its equity are. High leverage also leads to increase in required return on equity capital. If we assume that diversification motive is valid in IPO decision making for our sample, managers of the deal has to try to catch the market in overheated conditions. However, it should be noted that increase of firm's profitability should discourage an investor to sell its stock. Therefore, we expect to see the following relationships:

- Size is negatively related to the percentage of SEO shares.
- Market-to-Book is positively related to the percentage of equity offered in SEO.
- Leverage is positively related to the percentage of old shareholders.
- ROA is negatively related to the percentage of old shareholders.

7. An investor's wish to sell all his/her shares will be approximated in the same way as diversification motive.

Let us construct the following equations to explain percentages of initial and secondary equity offerings:

(7)

$$PercentageOfIPO = a + b * Market - to - Book + c * ROA + d * Leverage + c * \frac{bank\ loans}{total\ debt} +$$

$$+ d * Market\,\mathrm{Re}turn + e * \mathrm{Re}lative Volume Of\ Offerings +$$

$$+ f * firm\ size + FE$$

$$(8)\ Percentage\,Of\ SEO = a + b * Market - to - Book + c * ROA + d * Leverage + c * \frac{bank\ loans}{\text{total debt}} +$$
$$+ d * Market\,\text{Re}turn + e * \text{Re}lative\,Volume\,Of\ Offerings +$$
$$+ f * firm\,size + FE$$

The variables are the following:

- Market-to-Book = Market cap of Equity/Book Equity. This variable approximates firm's growth opportunities. The higher the indicator is the better expectation investor have about future firm's growth. However, high M/B can indicate an overheated market. This is a signal for the company to catch the "window of opportunities" and receive higher than fair prices for its equity. Offering of equity would than indicate not the need for an inflow of capital but a try to use good market conditions. Therefore, high M/B may indicate two cases: a need for new capital to finance growth or a wish of existing shareholders to issue new equity to catch high market prices.
- ROA= Net Income/Assets. High ROA means may indicate that a firm generates high cash flows and therefore there is less need for outside financing. We expect that ROA will be negatively related to the percentage of initially equity offered.
- Leverage = Debt/Assets. High leverage usually indicates that opportunities of new debt issue are limited and internal resources depleted. New capital can be attracted only via equity offering. Therefore we expect that high leverage would lead to a relatively higher percentage of initial equity offered. This should result in decrease of leverage.
- Bank loans/Total debt. The higher the indicator is the more company depends on bank decisions. To increase the bargaining power a company should offer equity to the market and the dependence on banks is expected to decrease.
- Market Return. The higher the overall market return in the year of IPO is the higher the probability that a company used a motive to catch the market and receive additional value. In this research we use return of the basic IPO market. For example, if an offering was made at London Stock Exchange, than we use return of FTSE All Share Index to approximate market conditions. For Russian market RTS index was used (AIM – FTSE AIM Index, New York Stock Exchange – DJIA, Nasdaq – Nasdaq index). For Astarta Holding Company we used Polish Traded Index.
- Volume of IPO = number of offerings in a given year / total number of offerings. High relative volume of offerings can indicate a situation when a company tried to use a "window of opportunities" and catch good prices.
- Size = Ln (Assets). The larger the firm is the better opportunities it has to attract new capital. Therefore we can expect a negative relation of size to the percentage of initial equity offered. Small companies with high growth are considered to be relatively riskier and their shareholder may wish to diversify risks (sell shares in IPO and invest in different assets). We expect that size will be positively related to the percentage of secondary equity offered.
- Percentages of initial and secondary equity offered are defined as follows:
- Percentage of initial equity offered = number of shares sold in IPO /number of shares before IPO
- Percentage of secondary equity offered = number of shares sold by existing shareholders/number of shares before offering

The results of the tests are summarized in the table 8.

**Table 8.**

**Regression results for percentages of initial and secondary equity offered**

| | Primary portion | | Secondary portion | |
|---|---|---|---|---|
| Variable | Coefficient | p-value | Coefficient | p-value |
| Const | 0.333 | 0.0006 | -0.003 | 0.977 |
| M-t-B | -0.010 | 0.268 | 0.011 | 0.239 |
| ROA Pre IPO | -0.275 | 0.137 | -0.006 | 0.881 |
| Leverage | 0.000 | 0.938 | -0.006 | 0.853 |
| Size | -0.023** | 0.040 | 0.002 | 0.179 |
| Debt mix | 0.056 | 0.393 | -0.010 | 0.281 |
| Market return | -0.055 | 0.478 | 0.111 | 0.451 |
| Volume of IPO | 0.011 | 0.943 | 0.119 | 0.974 |

**Significant at 5% level

As can be mentioned the only statistically significant variable happened to be SIZE in the regression for initial offering. The smaller the firm is the greater the need for financing it faces is and the higher the percentage of initial equity offered will be.

For secondary offerings all variables don't show statistical significance. However, change of model specification permits to get a new significant variable –number of offerings. Relative number of offerings are positively related to the percentage of secondary equity offering. Therefore we can conclude that overheated market pushes companies are more active in their offering activities which allows them to catch the market and exploit higher prices.

**Table 9.**

**Regression results for percentages of initial and secondary equity offered (model specification was changed)**

| ***Percentage of secondary equity offering*** | | |
|---|---|---|
| | Coefficient | p-value |
| Const | 0 | - |
| **M-t-B** | 0.007 | 0.334 |
| **Market return** | 0.094 | 0.149 |
| **Relative number of offerings** | **0.164*** | 0.063 |

*Significant at 10% level

To finalize we can conclude that structure of equity offering can explain at least two major motives of issuing firms: initial offering is explained by the lack of resources to finance future growth and secondary offering is mostly explained by popularity of the deal and a wish to catch favorable pricing trends in the market. It is worth mentioning that IPOs might be explained by motives that can hardly be included in the model (liquidity increase, reputation support, owner's wish to sell all its stock in the company after the offering). Our results in general coincide with the survey by Deloitte and Touche by distributing questionnaires among top managers of Russian companies preparing for an offering[3]

**Relationship between operating performance after offerings and their motives**

As it was stated earlier the motives of the IPO define offering structure:

- Initial equity offering is explained by a need to finance future growth.

[3] Deloitte Touche "IPO in Russa and CIS: expectation and perspectives". 2007г. http://www.deloitte.com/dtt/cda/doc/content/ru_Survey310308.pdf

- Secondary offering is motivated by investors' wish to catch the market, exploit attractive high asset prices and cash in previous investments. Such behavior can be explained by a need to secure capital that was accumulated in the 1990s.
- A need to strengthen reputation can positively be related to initial and secondary offerings.

We will take a look at operating performance during 3 year period after offering. To evaluate possible relationships we will examine regressions of operating performance indicators explained by offering structure in each of the years. The following models are considered:

$$(9)\ Y = \beta_1 \times \ln\left[\left(\frac{primary\_capital}{total\_assets_0}\right)+1\right] + \beta_2 \times \ln\left[\left(\frac{\sec ondary\_capital}{total\_assets_0}\right)+1\right] + FE + \varepsilon,$$

The Variables are the following:

Y is defined as changes in efficiency measures ( ROA, ROI, operating cash flow return) during the period of three years after offering:

- Y = ln( kn-k0), where
- kn – ROA, ROI, operating return in year n
- k0 – ROA, ROI, operating return in year 0
- n= 1, 2, 3
- year 0 - a year prior to offering.

$\left(\frac{primary\_capital}{total\_assets_0}\right)$ - Volume of initial offering /Assets in Year 0. Volume is divided by assets to normalize the measure and account for the firm's size.

$\left(\frac{\sec ondary\_capital}{total\_assets_0}\right)$ - Volume of secondary offering /Assets in Year 0..

Use of natural logarithm (Ln) allows us to compare offerings of different sizes and stabilize dispersion. Coefficients in this type of regression represent the elasticity.

The results are provided in the table 10.

**Table 10.**

**Regression results for operating results dynamics after offerings**

| Metric | 0 to +1 year | | | | 0 to +2 year | | | | 0 to +3 year | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Primary capital/total assets | | Secondary capital/total assets | | Primary capital/total assets | | Secondary capital/total assets | | Primary capital/total assets | | Secondary capital/total assets | |
| | Coef | p-value | Coef | p-value | Coef | p-value | Coef | p-value | Coef | p-value | Coef | p-value |
| ROA | 0 | 0.738 | -0.095* | 0.091 | -0.03 | 0.26 | -0.04 | 0.277 | 0.07 | 0.257 | -0.09 | 0.227 |
| ROI | -0.11 | 0.36 | -0.11 | 0.473 | -0.22** | 0.004 | 0.12 | 0.224 | -0.22 | 0.221 | 0.24 | 0.338 |
| Operating return | 0.05 | 0.238 | -0.11* | 0.064 | 0.07 | -0.043 | -0.05 | -0.192 | 0.11 | 0.249 | 0.13 | 0.324 |

*Significant at 10% level

** Significant at 5% level

Initial and Secondary equity offerings have a negative influence on firm's operating results in the first and second years after offering. The hypothesis about relationship between change of

ownership structure and operating performance is accepted. Influence of secondary offering can be explained in two ways:

1. Decrease of percentage held by old shareholders may have negative influence on management effort levels. Usually, old shareholders have greater number of ways to control management activities. Discovered relationship indicates that agency conflict has tightened.
2. Old shareholders are better informed about business opportunities and they may expect, for example, a decline in operating performance. In such a situation they cash in their profits until performance indicates a decline.

## 5. Conclusion

Investors' expectations about operating performance after equity offerings usually don't realize in western developed markets. Most of empirical research indicates a significant decline of corporate operating efficiency during the years following offerings. Being very popular in Russia offerings have to be examined to find similar or different trends.

In this paper we have tried to discover dynamics of operating performance to carry out empirical research. The results show that firms' operating results don't show a decline. This can be considered as a good characteristic of Russian offerings market.

There are several potential explanations for differences in trends in Russian and global offerings markets. From one side there are non-company factors such as Russian economy growth which motivates growth in many companies including non-efficient. From the other side the differences can be explained by a better utilization of capital in Russia (Russian companies are in a greater need for capital to finance growth in comparison to western companies). Young growing Russian market uses equity offering more frequently to finance corporate growth. To examine discovered differences in operating performance we develop research of offering motives and their influence on performance indicators.

To determine the relationships between offering motives and operating measures we conducted an additional study of motives and offerings structure. It can be concluded that initial equity offering is usually explained by a great need for new capital. Secondary offerings are usually used to increase liquidity, diversify and potentially sell all the holdings. It should be mentioned that secondary offerings are motivated by a wish to catch "window of opportunities".

The third part of research was devoted to examination of a relationship between operating performance and offering motives. The results show that in certain cases we see a decline in operating efficiency which follows secondary offering. We can conclude that secondary offering is sometimes motivated by negative expectation of existing shareholders about future company performance. This explanation is consistent with overall signaling and agency theories in relation to equity offerings: investor's exit or decrease of holdings is an indication of some performance decline.

All the results can be considered to be preliminary for the Russian market. The number of companies which use equity offerings is still very small in number. The results should be reassessed when new companies experienced an offering in 2007 will have longer history of operating performance.

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