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Competition and Managerial Turnover: Evidence from Russia

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Данная работа изучает как эффективность работы Российских корпораций и конкуренция влияют на смену гендиректоров и их стимулы. Найдено, что балансовая доходность на акционерный капитал увеличивает вероятность увольнения гендиректора. Для выборки из наиболее ликвидных публично торгуемых фирм обнаружено, что доходность акций также играет существенную роль в решении собственников касательно смещения гендиректора. Конкуренция вызывает более интенсивную смену гендиректоров и увеличивает их стимулы работать более усердно, для того чтобы избежать увольнения в выборке из наиболее ликвидных фирм. Более высокий уровень финансового рычага увеличивает вероятность увольнения гендиректора.

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This paper studies how the corporate performance and competition affect CEO turnover and CEO incentives in Russian corporations. It is found that balance return on equity increases the probability of CEO turnover. For the sample of the most liquid publicly traded firms stock return is also demonstrated to play an important role in the decision of owners concerning CEO dismissal. Competition brings about more intensive turnover and sharpens CEO incentives to work hard in order to avoid firing for the sample of the most liquid firms. The higher level of financial leverage increases the probability of CEO turnover.

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1. Introduction.

The efficiency of corporate governance in Russian firms has recently been extensively discussed not only among economists but also in broad business and political quarters. This discussion is mostly induced by increasing understanding of deficiency of existing Russian corporate governance mechanisms both on the part of domestic economic agents and international financial entities insisting on urgent legislative reforms in Russian corporate governance.

This paper is concerned with determining the factors affecting top executive turnover with Russian data. The finding of these factors may provide a deep insight into existing managerial incentives schemes and hereby evaluate the efficiency of the prevailing schemes by considering them from the theoretical point of view and comparing with ones typical for OECD countries.

Despite the obvious importance of this topic there are surprisingly few empirical works shading light on the courses of executive change in Russia. This research may be considered as a continuation of studies carried out by Goltsman (2000) and Muravyev (2001). Both works were aimed to find out the dependence of managerial change on past firm performance measured by nonmarket indicators. In this study we try to elucidate the role of market corporate performance (stock returns) in the decision of owners concerning a probable CEO replacement.

This project pays also special attention to the factor of competition affecting executive change. It is generally assumed that the Russian 1992 liberalization shock that introduced domestic and foreign competitive forces must have led to better corporate performance and less managerial slack as the latter have to work hard to retain their personal benefits of control. Moreover, a more competitive environment should drive bad managers out of the firm because the owners of the firm have more opportunities to evaluate executive work by comparing firm performance

with competitors. This empirical research may help to test whether these considerations are valid for Russian economy.

The paper is organized as follows. Part 2 is devoted to empirical and theoretical background underlying the research. Part 3 accurately formulates the questions and hypothesis we are going to test further. In Part 4 we describe the database and variables we use in our regression models.

Part 5 discusses the results obtained. Part 6 concludes.

2. Theoretical and Empirical Background

The investigation of the courses of managerial change is a growing body of corporate governance literature. One of the pioneering papers (Kaplan, 1994) examines the relationship between top executive turnover and firm performance in the largest Japanese and US companies. The author presents results for four measures of performance: company stock returns, sales growth, change in pretax income as a fraction of total assets and a dummy variable for negative pretax income. It is found that executive turnover in Japan is sensitive only to negative pretax income while in the USA it is sensitive only to stock returns and sales growth. The author suggests that the US owners pay attention to firm stock performance and sales growth while for Japanese owners the key indicator is whether the firm suffers negative pretax income.

Khorana (1996) analyzes the relationship between the performance of open-end mutual fund managers and their subsequent replacement. The results indicate the presence of an inverse relation between the probability of managerial change and past fund performance. This finding is robust to various measures of performance, such as the previous periods' growth rate in a fund's asset base and objectives- and risk-adjusted portfolio returns.

Morck et al. (1989) provides a further insight into the role of corporate board in evaluating the executive performance. The authors examine the sample of 454 of 1980 Fortune 500 firms and use three different measures of performance: Tobin's Q, stock market abnormal returns and employment growth rate. For all performance measures industrywide and firm-specific performance are considered separately. It is found that internally precipitated complete turnover of the top management team is more likely to occur in firms that underperform their industry, but at the same time it is less likely to occur in troubled industries then in healthy ones. According to these findings the authors suggest the following characterization of the board's disciplinary role. The board of directors looks at other firms in the same industry to evaluate the management team's effort and replaces the executives when the firm underperforms its industry. On the other hand, when the whole industry is suffering, the board is reluctant to make these changes.

The influence of past corporate performance as well as ownership structure on managerial turnover with the sample of 217 companies whose annual reports had been collected by FCSM (Information Disclosure Program) is the main point of discussion in Goltsman (2000). Industry-adjusted labor productivity, profitability and sales growth were taken as firm performance measures. As the characteristics of ownership structure the following indicators were taken in consideration: the equity belonging to the state, the equity owned by the management team, the equity of outside blockholders and the average share of blockholders. The regression results show that from the three performance measures only sales growth and profitability have a significant impact on some of the proxies for changes but the signs of coefficients are counterintuitive: the probability of changes increases as the firm performance improves. The suggested interpretation of these results is that dependent variables reflect the changes in ownership structure. As soon as new

owners appear they try to introduce new people in the management team with whom they have personal connections. Another possible explanation not presented in the paper is that partial executive turnover may reflect the natural succession of managers: as a reward for good performance the CEO may be offered a more beneficial job while somebody from the old team could take her place; similarly, a nontop manager may be introduced to the management team for her outstanding performance.

Concerning the ownership variables, they are found to have a significant effect on managerial and board change. The coefficient on the state share is significantly positive in several specifications. The interpretation suggested is that in many companies where the state held a large proportion of shares it introduces its appointees to the board without replacing the incumbent directors. As for the management share it is significant only in one specification where it is positive. This result is difficult to interpret and might point out that the management share is inadequate measure of executive entrenchment because the manager can obtain indirect benefits from control. The share of outside blockholders has a positive effect on managerial turnover while the average blockholder share is found to have a negative influence on management and board changes. The author concludes that these somewhat controversial results may indicate that corporate governance in Russia is far from being perfect.

Muravyev (2001) studies the same issues based on the sample of 437 large and medium size Russian manufacturing enterprises. The author used labor productivity and book return on equity not adjusted to industry means as the measures of firm performance. As in the work by Goltsman (2000) the cases of top executive turnover were not separated according to the future executive's carrier so that the author was not able to distinguish between the cases of firing and voluntary

departures. Nevertheless, a significant negative relationship between past firm performance and managerial turnover has been found.

There is a vast theoretical literature on the relationship between competition and managerial incentives. Most works are based on the concept of X-inefficiency (the difference between maximum technologically possible firm's profit and actual one) first introduced by Leinbenstain (1966) who provides some empirical evidence that the welfare loss because of organizational slack may be larger than welfare loss due to oligopolistic price distortion. This might underpin a common standpoint that monopolization leads to more organizational and therefore managerial slack. The paper, however, does not suggest any theoretical explanation of the result above.

Most theoretical papers studying the relationship between competition and managerial incentives exploit the fact that the greater the number of market participants are involved the more opportunities for comparison of performance arise. Holmstrom (1982) constructs a model of moral hazard where a principal can obtain additional information by observing competitors' performance assuming that all competing firms are subject to correlated productivity shocks. The model leads to ambiguous relationship between the level of competition and managerial effort. In general, it might turn out that it is less costly for the principle to implement low level of managerial effort when more information about the distribution of productivity shocks is available. Hart (1983) proposes a model where competition among firms unambiguously sharpens managerial incentives. He introduces two types of firms facing a common cost shock: entrepreneurial ones and managerial firms (where the principal-agent problem exists). When the number of entrepreneurial firms is increased the industry output goes up and market prices are reduced which, in turn, results in less potential for managerial slack in principal-agent firms. However, this result holds only if a manager's utility function is

drastically responsive to reduction in income below some subsistence level and not sensitive enough to monetary incentives, i.e. the manager does not value additional income from profit increase. Scharfstein (1988) shows that the outcome is reversed if the manager is highly responsive to monetary incentives. In this case more competition brings about less managerial effort.

A somewhat different approach to explanation of competition-incentives relationship is based on the assumption that product market competition may increase the sensitivity of profits to managerial effort. In this case the owners may have a greater incentive to implement high managerial effort if the level of competition goes up. Hermalin (1992) presents a model along these lines which, however, exhibits the ambiguity of the outcome. Martin (1993) constructed a model showing no such ambiguity but in this model increased competition is associated with less managerial effort.

Schmidt (1997) points out to another force that unambiguously raises the managerial incentive, namely, the threat of bankruptcy. An increase in competition provides a direct effect for the manager to spend more effort to avoid the liquidation. Moreover, there is an indirect effect as in this case it is cheaper for the owner to implement a high level of effort. Thus, the threat of liquidation leads to more managerial effort and the cost to implement a high level of effort decreases as competition becomes more intense. However, in the Schmidt's model there is a second effect, which arises when a manager is paid a rent in addition to her reservation utility. Since competition reduces profit it may affect the value of a cost reduction and therefore the benefits of implementation a higher level of effort. As in the models discussed above the sign of this effect is ambiguous. If the value of a cost reduction is reduced with increasing competition the owner is reluctant to

induce a high level of effort. Thus, the total effect is of ambiguous sign and managerial effort may either increase or decrease if there is more competition.

Summing up the theoretical overview of the relationship between competition and managerial incentives we can see that there is no unambiguous answer to this question.

Most works on competition in the context of corporate governance issues study the relationship between competition and firm performance. One of the pioneering investigations is due to Nickell (1996). The author uses the UK panel sample to examine the effect of competition on the firms' output. The following competition measures are exploited: the market share at the firm level, the concentration and import penetration ratios at the industry level, the measure of average rents and a survey-based dummy variable for competition. It is found that the two latter measures do have an impact on the firm performance but the significance of the regression coefficients is not overwhelming.

A detailed research of the effects of competition on corporate performance with Russian data is presented in Brown and Earle (1999). Four classes of competition measures reflecting different aspects of competition are employed. First, national Herfindahl-Hirschman Index (HHI) and two-firm concentration ratio (CR2) are used to reflect the national product market structure. Second, regional HHI and CR2, the index of transportation infrastructure as well as the mixed variables of both national and regional concentration variables are exploited to take into account the geographical differentiation of product market and the possible variations of the scope of markets respectively. Next, labor concentration ratio is exploited to make allowance for possible monopsony power of labor force in the region. Finally, imports penetration ratio is used to estimate the competitive pressure on exporters and domestic firms on the part of foreign competitors. The

regression results indicate that all the competition measures have a significant positive effect on TFP for various specifications.

The analysis of the impact of competition and share of the CEO on the probability of managerial change can be found in Warzynski (2000). The sample tested contained 300 Ukrainian enterprises. Along with Nickell (1996) the author used a survey-based dummy variable of competition equal to 1 if the manager answered that her company had more than five competitors. It is found that the share of manager and the measure of competition have a negative effect on the probability of managerial change although the coefficient corresponding to competition is barely significant.

3. Empirical strategy

Here we precisely formulate the questions and hypotheses we deal with further and emphasize what this work is aimed to contribute in existing empirical literature on managerial incentives.

First, from corporate finance theory we know that the only thing that an owner of a firm is concerned with is the firm's stock return. Thus, it is proposed to use this variable as a measure of corporate performance. The effect of share prices on probable managerial turnover will simultaneously test the efficiency of both Russian stock market and managerial incentive schemes. At the same time it is presumed that stock performance plays an essential role in evaluating managerial performance only for liquid firms while the owners of illiquid firms are more likely to pay attention to nonmarket measures such as profitability and labor productivity. These hypotheses are aimed to be tested further.

Second, it is suggested to find out how the level of competition affects the probability for a manager to be fired. It is presumed that highly regulated monopolies facing no competition are less likely to change an incumbent CEO than

more competitive firms due to more opportunities of managerial entrenchment in the former type of firms.

Third, the determination of relationship between competition and managerial incentives constitutes the most interesting part of this work. Although we have no information about "carrot" monetary incentives like managerial share in the firm's ownership structure or managerial option contracts we can observe "stick" incentives of a threat for the CEO to be kicked out for poor performance. If we take a common assumption that managerial effort and firm performance are positively related we can use the sensitivity of dismissal probability to firm performance as a natural measure of managerial incentives. For example, if competition increases the sensitivity of the probability for a CEO to be fired for poor firm performance we might suggest that competition increases managerial incentives to spend more effort.

Finally, we are going to find out how the level of financial dependence of a firm (financial leverage) affects managerial turnover and managerial incentives. It is assumed that higher leverage showing stronger threat of liquidation increases CEO change and forces a CEO to spend more effort (Schmidt, 1994).

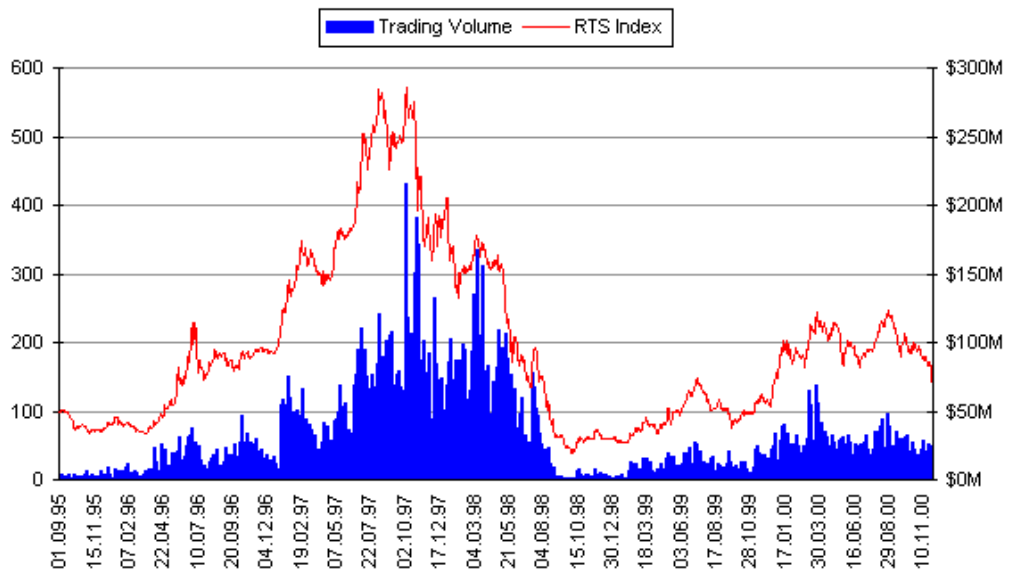
4.The Data

4.1. The Sample and Measures of Performance.

Our sample consists of 159 firms whose shares were traded at the RTS stock exchange during January 1997- August 1998. For each firm we have stock price data for the period in hand. These data are available at the official RTS web site (http://www.rts.ru). We have chosen this time period because it is characterized by intensive trading activity as can be seen from the Fig1 available at the same site. Thus, it might be expected that shares traded during the sample period are liquid

enough to estimate the value of the firms adequately. So, as we have already mentioned, we might hope to use a return on shares as a measure of firm performance.

Fig1. RTS Index Behavior.



The industrial composition of our sample is represented in Table 1 (see Appendix). If we believe that Morck et al. (1986) story works for our sample, i.e. owners do estimate executive performance by comparing a firm performance with competitors counterparts, we should expect the firms market returns to be correlated within corresponding industries. Thus, we have estimated a regression

$$RET_{it} = CONST + \beta_1 RET\_RTS_i + \beta_2 RET\_IND_{it}, \qquad (1)$$

over all firms i in an industry and all the time period we consider (time index t). Here RET_RTS_i is a return on RTS index which might be thought as a market portfolio return and RET_IND_{it} is a return on capitalization of all firms in the given industry except firm i. The results of (1) are represented in Table 2. We see that RET_IND_{it} is insignificant for all industries but chemical one and coefficient β_1 is

close to 1. This means that firms in their industries do not go along in the stock market and firm returns behavior is mostly explained by the overall market portfolio return. Thus, we have decided to use an individual firm share return adjusted to RTS index as a measure of firm market performance (hereafter denoted by *r*). More precisely, we used a commulative stock return over the period of a year preceding a managerial change or an AGM of shareholders in the first half of 1998 in case the change did not take place. To make allowance for the reaction of the stock market at rumors about a possible CEO change before the actual date of the change we used a date of a month preceding the change or the AGM as an upper bound for the time period for which we computed the excess commulative return. Considering share prices return we have encountered with the cases of small additional issues (defined as those that increased the total number of shares not greater than 1.5 times) and splits (that increased the number of shares greater than 1.5 times). So, we have introduced dummy variables *emission* and *split* to control for such cases.

Besides, we use two other measures of firm performance. The first one is the return on equity or profitability defined as the ratio of book net profit by firm's market capitalization (*npr*), adjusted to mean profitability across the industry. This measure is semi-book and semi-market. All book values have been extracted from GNOZIS and ALBA databases. Although a firm's market capitalization is unlikely to be a correct measure of the firm's value for illiquid firms *npr* is presumed to be more accurate measure of performance for illiquid firms than stock returns since the latter are, in fact, defined as a change in capitalization. Finally, we employ labor productivity measure (*lpr*) defined as a logarithm of the ratio of sales divided by employment adjusted to the mean logarithm of this ratio across the 5-digit (according to Russian OKONKh) industry. This measure reflects technical

efficiency of a firm and may potentially turn out to be important for very illiquid firms. The correlation among different measures of firm performance is represented in Table 3. The table also contains gross profitability (*gpr*) and non adjusted to industry net profitability (*nanpr*). We see that correlation coefficients among *npr*, *gpr* and *nanpr* are close to *1*, which indicates that, first, there is little difference whether to use pretax or after tax income in our regressions and, second, an individual firm profitability does not correlate with average industry profitability so that there is little opportunity to compare firm profitability with competitors' counterparts. Thus, we can use only *npr* as a measure of profitability as *gpr* and *nanpr* contribute nothing new in our story.

4.2. CEO Turnover.

The sample described above contains only those stock emitters for which we managed to determine whether the CEO (general director) was changed during the sample period. This information has been obtained from the AK&M news database. The CEO turnover is found in 28 firms out of 159. Furthermore, we have investigated all cases of CEO change in detail in order to trace out the future CEO's carrier. On the basis of these findings we distinguish among three possible cases: 'up' if a CEO got a better position after her dismissal (e.g. a CEO position in a larger company), 'same' if a manager got a comparably equally beneficial position and 'down' if a CEO got a worse position. The 'same' cases include ones where a CEO became a president of the board of directors in her company or got a top executive but not chief position in a larger firm. For most 'down' cases a CEO has not appeared in news anymore after her dismissal. In accordance with this classification we have introduced several dummy variables for turnover cases defined in Table 4.

Introduced in such a way these variables might seem to be defined arbitrary. To make sure that they have some sense we computed t-tests for correlation between them and firms market returns. The results represented in the Table 5 show that the mere fact of turnover (dummy 'turn') and 'down' turnovers do not correlate with firm performance. At the same time it is interesting to note that 'same' turnovers significantly correlate with firm performance occurring more frequently in firms with worse market performance. This result might point out a 'golden parachute' effect. If a CEO is highly entrenched it may be difficult for the owners of a firm to change her without providing the CEO with some compensation such as presidential position in the board of directors of the firm. Thus, it might be expected that both 'down' and 'same' turnovers are associated with poor CEO performance so that we will use the 'down_same' dummy as an indicator of involuntary CEO departure. Finally, we see that 'up' changes occur more frequently in firms that performed well compared with the market, which might be interpreted directly as a reward to a CEO for her high effort.

4.3. Competition and Firm-Specific Measures.

Approximately half of our sample (83 firms) consists of regulated monopolies (telecom and energo firms) that are faced no competition. Thus, we have introduced a dummy variable *reg* equal to *1* for these companies. By construction this variable reflects both competition level and industrial specificity of regulated monopolies. In addition we use import penetration ratio *imp.* We have no information about the value of import penetration ratio for transportation firms, so wherever we run regressions with *imp* and *comp* (see further) we omit these firms. We have also tried to use other competition measures such as concentration ratios and Herfindahl-Hirschman indexes but the most significant results have been obtained with import penetration ratio. Besides, we defined a dummy variable *comp*

for 47 most competitive firms (according to import penetration), i.e. for the most competitive half of the subsample of unregulated firms. From Table 6 we see that all competition measures are highly correlated with each other so that we will use only one of them in further regressions to avoid multicollinearity.

We have introduced two measures of liquidity: *sh_liq*, defined as the ratio of firm's shares traded during a day to the total number of firm's shares averaged over the sample time and *day_liq* equal to the logarithm of the total number of days the firm's shares were traded. It may be seen from Table 6 that the two measures are of firm liquidity are strongly correlated, which supports the consistency of considering these measures.

Further we controlled for the firm size defined as a logarithm of sales in 1997 (variable *size*).

Finally, we defined the measure of financial leverage *lev* equal to the ratio of a short-term book debt to assets where the assets are defined as the firm's market capitalization plus the short-term book debt. Thus, like net profitability the measure of leverage is also constructed as semi-book and semi-market variable. For the sake of demonstrative strength the variable *mlev* equal to the maximum value of *lev* minus *lev* was also introduced in the further analysis. Besides *lev* we have constructed a fully book measure of leverage *blev* defined as the book short-term debt divided by book assets. Since both measures of leverage are strongly correlated (Table 6) we used only *lev* in our regressions.

5. Results

As we have already seen from Table 5 the past market stock return does not affect a subsequent CEO's 'down or same' replacement. Table 7 shows how this type of replacement depends on the other two measures of firm performance. It might be seen that labor productivity is also not related with managerial turnover

while net profitability shows strong influence on top executive firing. In fact, CEO changes occurred more frequently in firms that performed poorly. T-tests represented in Table 7 also show that the lower level of competition significantly reduces the probability of CEO replacement. As for the influence of financial leverage on managerial dismissal, the corresponding t-test shows that the higher level of leverage significantly raises the probability of CEO replacement. Table 8 contains probit regressions that are supposed to check these results for robustness. We see that in all regressions the higher level of competition unambiguously leads to greater probability of CEO turnover and higher profitability significantly decreases this probability. The market stock returns are significant only in one regression out of three, higher stock returns corresponding to less probability of CEO dismissal. As for labor productivity, it turns out to be insignificant in all regressions. The financial leverage positively effects the CEO turnover although this result is undoubtedly significant in three regressions (containing labor productivity) out of nine. Concerning the effect of competition on managerial incentives we have found no significant coefficients corresponding to cross terms of performance and level of competition , which assumes no relationship between competition and the sensitivity of executive replacement to firm performance. Finally, the coefficient on the cross term of performance and leverage appeared to be significant only in one regression where it is positive. This implies that higher financial leverage reduces the probability of CEO dismissal whose firm performed poorly.

To find out how the conclusions about the relationship between firm performance and subsequent managerial replacement depend on the industrial structure of our sample we have separately estimated regressions for the subsamples of 83 regulated monopolies and the others 76 unregulated firms. The

results can be found in Tables 9,10. We see that CEO turnover in both regulated and unregulated firms negatively and significantly depends on firm profitability, while other performance measures do not affect managerial replacement. As in the case of the full sample the higher level of competition faced by unregulated firms undoubtedly increases managerial turnover. However, we have not found any significant relationship between competition and the sensitivity of CEO firing for poor firm performance. As for the influence of the level financial dependence, it can be seen that the higher level of leverage leads to more intensive turnover and less probability of CEO firing in firms performing poorly in accordance with the similar results for the full sample. However, the corresponding coefficients are not significant in all specifications.

The sample of all the firms exhibits no relationship between CEO turnover and corporate market performance. Thus, we have decided to choose a subsample of the most liquid firms to test for market performance significance. First, we have noted that for the most liquid firms market performance plays a significant role. To check the robustness of this result we have constructed two subsamles of most liquid 43 firms sorted by two liquidity measures we have: *sh_liq* and *day_liq*. The number 43 have been determined such that for larger samples we have lost the significance by one of the two liqudity measures (*day_liq*). At the same time for all subsamples consisting of less than 43 firms we observed significant negative relationship between stock returns and 'down or same' CEO replacement. The lower bound of liquidity measures in the subsamples constructed in such a way corresponds to 0.04% of shares traded during a day and 160 days the shares were traded at the stock market (out of 504 trading days in the period we study). Table 11 contains the industrial structure and the types of turnover cases for both subsamples as well as t-statistics aimed to exhibit the influence of stock market

returns and the level of competition on CEO change. It can be readily seen that stock returns are negatively related to the 'down or same' change while the fact of turnover itself is hardly significant in one subsample and insignificant in the other. We also see that the level of competition does not effect the change.

Table 12 provides some regressions aimed to check the robustness of the results above. To make the results more demonstrative we defined the variable *mimp* equal to maximum value of *imp* in the sample minus *imp*. Thus, *mimp* is actually a measure of monopolization. In some regressions the competition turns out to be significant but the sign of the influence of the level of competetition on the probaility of CEO replacement is different in various specifications. Thus, this result does not seem to be robust especially if we recall that the level of competition is not correlated with managerial change (Table11). Then, we see that stock returns and profitability significantly lead to more intensive managerial change, while labor productivity does not. Furthermore, the regressions show that the cross terms of *r* and *mimp* is positive implying that the higher level of competition leads to more sensitivity of dismissal probability to poor firm performance. This result is also supported by the fact that the cross term *npr_mimp* is positive and significant in the regression corresponding to the sample constructed by *sh_liq* although it is insignificant in the other one. As for the effect of leverage on managerial replacement it can be seen that higher level of leverage leads to more intensive CEO firing and less sensitivity of the firing for poor firm performance measured by net profitability, although the latter result does not hold when the firm performance is measured by stock market returns.

Tables 13 representing the results of regressions for the other 116 illiquid firms implies that market stock return does not affect CEO turnover although profitability still plays an important role in the decision of owners concerning the

turnover. Besides, we have observed no significant relationship between competition and the sensitivity of the turnover to performance (cross terms *r_imp*, *r_reg*, *npr_imp* and *npr_reg*). At the same time the higher level of competition itself brings about more managerial change what we observed for the sample of all firms. The level of financial dependence does not effect managerial replacement in all specifications but in two regressions we may observe that the cross term *r_mlev* is significant and negative that points out that the sensitivity of CEO firing for poor firm performance is reduced as the level of leverage is increased, which coincides with the similar result obtained for the liquid firms. However, in this case this result does not seem to be convincing enough because the stock returns *r* itself plays no role in the evaluating of firm performance.

We also estimated similar regressions for the sample of unregulated firms to support the robustness of the results obtained. We have chosen 33 most liquid firm sample following the approach described above (Table 14). Similar to the conclusions derived for all liquid firms above we can see from Table 14 that the fact of turnover is not related with market performance while the probability of 'down or same' CEO dismissal is negatively affected by market performance. As for the influence of competition, the corresponding t-tests show that the level of competition does not affect CEO firing. These results are supported by probit regressions presented in Table 15. Besides, there is some evidence that higher competition leads to more probable replacement of managers whose firms performed poorer although this result is not robust with respect to including additional variables in the regressions. Nevertheless, the lost of significance is not surprising provided that we have very few observations. The samples of the other illiquid firms exhibit negative relationship between competition and the sensitivity of CEO firing to poor market performance although the significance of the

relationship is not robust with respect to including other variables. However, this conclusion is unlikely to be sound because the CEO turnover is determined by net profitability rather than market performance in the samples of illiquid firms. The significant positive coefficient on *npr_mimp* and significant negative coefficient on *npr* in the sample of illiquid by *sh_liq* firms also underpins the assumption that competition increases managerial incentives rather than decreases them.

Concerning the effect of financial dependence, we see that the level of leverage positively affects the probability of CEO dismissal although the corresponding coefficient is significant only in one specification. The influence of the level of leverage on the sensitivity of CEO firing for poor performance is insignificant in the sample of liquid firms and of ambiguous sign for illiquid firms (the coefficient on *npr_mlev* is positive in the sample constructed by *sh_liq* while *r_lev* is positive in the other one). Presuming that net profitability is more dependable measure of performance for illiquid firms, which is supported by the significance of *npr*, it might be assumed that the higher level of leverage sharpens managerial incentives for illiquid firms.

6. Concluding Remarks.

Here we summarize the obtained results. First, it can be concluded that past firm profitability defined as a book return on market equity plays an important role in owners of unregulated firms' decision of CEO replacement while labor productivity is never taken into account in this decision. At the same time the dismissal of top managers of regulated firms is not affected by firm performance.

Second, we have found out that returns on firm's shares are important for the decision of CEO replacement only for the most liquid (approximately 40) firms traded in the Russian stock market. Thus, it might be concluded that market

corporate governance mechanisms typical for OECD countries do work in Russia but only for very small number of the most liquid firms.

Third, we have shown that more competitive environment leads to more intensive managerial change. In fact, we have seen that the managers of regulated monopolies are less likely to be fired and the dismissal probability of the managers of competitive firms increases as the level of competition rises.

Fourth, it was demonstrated that the sensitivity of managerial replacement to poor firm performance goes up with increasing competition for most liquid firms and is not affected by competition level for illiquid firms. This might imply that for liquid companies competition increases managerial incentives to spend more effort in order to avoid the threat to be fired.

Next, we have seen that the level of financial leverage raises the probability of CEO dismissal. Since higher leverage increases the probability of firm bankruptcy this result may be easily interpreted by presumption that either the value of leverage is considered as an important factor in evaluating managerial performance on the part of owners or the bondholders of a firm have efficient mechanisms to intervene in managerial replacement decisions.

Finally, we have found some evidence that the higher level of financial leverage weakens managerial incentives rather than sharpens them. This result is somewhat counterintuitive and rather difficult to interpret. At the same time, this is the least reliable result we have got because it is insignificant in many specifications and even reversed in one of them.

7. References

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8. Appendix.

Table1. The Industrial Structure of Full Sample.

INDUSTRY	# FIRMS
Energo	33
Telecom	50
Oil and gas production	20
Ferrous metallurgy	10
Nonferrous metallurgy	6
Chemical industry	5
Machine production	17
Transport	8
Others	7
TOTAL	159

Table 2. Stock returns correlation within industries.

INDUSTRY	CONST	β_1	β_2
Energo	.025 (1.84)	1.546*** (7.84)	-.069 (-0.47)
Oil and gas production	.038 (1.31)	.938** (4.94)	.265 (1.75)
Ferrous metallurgy	.116 (2.68)	1.593** (6.08)	.109 (1.10)
Nonferrous metallurgy	.016 (.39)	.987* (3.76)	-.005 (-.04)
Chemical industry	.013 (.38)	.590* (2.73)	.575* (6.62)
Machine production	.097 (3.28)	1.533*** (8.26)	.031 (.57)
Telecom	.132 (1.30)	1.228 (1.43)	.167 (.19)
Transport	.032 (.89)	.809** (3.95)	-.034 (-.026)

Table 3. Performance Measures

	r	Npr	gpr	nanpr	lpr
r	1.000				
npr	-0.130	1.000			
gpr	-0.203**	0.824**	1.000		
nanpr	-0.176**	0.965**	0.836**	1.000	
lpr	-0.017	0.071	0.430**	0.026**	1.000

Table 4. Turnover Dummies. Full Sample.

Dummy	Meaning	# Observations
Turn	Fact of turnover	28
Up	CEO got better position	5
Same	CEO got similar position	7
Down	CEO got worse position	16
up_same	Up+same	12
Down_same	down+same	23

Note: *-significance at 10% level, **- significance at 5% level , ***-significance at 1% level

Table 5. T-statistics. Full Sample

	Turn=1	Turn=0
#obs	28	131
Mean r	.074	-.18
Std. Dev.	1.2	.96

P>|t| =0.227

	Down=1	Down=0
#obs	16	143
Mean r	-.170	.178
Std. Dev.	1.02	1.00

P>|t| =0.19

	Same=1	Same=0
#obs	7	152
Mean r	-.86	-.10
Std. Dev.	1.00	.99

P>|t| =0.05*

	Down_same=1	Down_same=0
#obs	23	136
Mean r	-.138	-.135
Std. Dev.	1.11	.99

P>|t| =0.98

	Up=1	Up=0
#obs	5	154
Mean r	1.05	-.17
Std. Dev.	1.24	.98

P>|t| = 0.007***

	Up_same=1	Up_same=0
#obs	12	147
Mean r	-.065	-.14
Std. Dev.	1.45	.97

P>|t| = 0.80

Table 6. Competition and Firm-Specific Variables

	day_liq	sh_liq	lev	Blev	size	imp	reg	comp
day_liq	1.000							
sh_liq	.780**	1.000						
lev	.141	0.140	1.000					
blev	0.234**	0.205**	0.519**	1.000				
size	0.425**	0.301**	0.233**	0.357**	1.000			
imp	0.155	0.153**	0.004	0.172**	0.196**	1.000		
reg	-0.065	-0.192**	-0.108	-0.235**	-0.169**	-0.645**	1.000	
comp	0.111	0.135	0.025	0.211**	0.162**	0.867**	-0.667**	1.000

Table 7. T-statistics. Full Sample

	Down_same=1	Down_same=0
#obs	19	126
Mean npr	-.012	.002
Std. Dev.	.03	.01

P>|t| =0.0000***

	Down_same=1	Down_same=0
#obs	19	116
Mean lpr	.094	.121
Std. Dev.	1.23	.83

P>|t| =0.902

	Down_same=1	Down_same=0
#obs	23	136
Mean Reg	.26	.56
Std. Dev.	.49	.49

P>|t| =0.0065***

	Down_same=1	Down_same=0
#obs	20	130
Mean Comp	.40	.18
Std. Dev.	.50	.38

P>|t| =0.029**

	Down_same=1	Down_same=0
#obs	21	131
Mean Imp	.45	.18
Std. Dev.	.37	.31

P>|t| =0.0005***

	Down_same=1	Down_same=0
#obs	23	130
Mean lev	.506	.372
Std. Dev.	.28	.27

P>|t| = 0.03**

Table 8. Probit Regressions. Full Sample.

down_same			
imp	.164**		
reg		-.094*	
comp			.162***
mlev	-.109	-.136	-.107
npr	-.241**	-.140**	-.223*
npr_imp	.055		
npr_reg		-.139	
npr_comp			.096
npr_mlev	.324	.080	.135
day_liq	.041*	.048**	.043**
Size	-.002	-.012	-.011
Split	.128	0.418	.121
emission	---	---	---
# obs	136	142	136
prob>chi2	.0005	0.0003	0.0000

down_same			
imp	.232***		
Reg		-.169***	
Comp			.228***
Lev	.169	.168	.164
R	-.076*	-.066	-.068
r_imp	-.002		
r_reg		-.039	
r_comp			.014
r_lev	.150*	.134	.099
sh_liq	.012	.015	.014
Size	-.004	-.002	-.001
Split	-.019	-.025	-.031
emission	.000	.012	-.013
# obs	147	153	147
Prob>chi2	.045	.077	.024

down_same			
Imp	.223***		
Reg		-.157**	
Comp			.218***
Lev	.229*	.204*	.201*
Lpr	-.112	.026	-.052
lpr_imp	.116		
lpr_reg		-.034	
lpr_comp			.065
lpr_lev	.108	-.170	-.025
sh_liq	.017	.017	.016
Size	.000	.003	.003
Split	---	---	---
Emission	.012	.013	-.006
# obs	123	129	127
prob>chi2	.089	.071	.013

Table 9. Probit Regressions. Regulated monopolies.

down_same			
lev	.052	.036	.138
npr	-.750**		
r		.002	
lpr			-.005
npr_lev	.923**		
R_lev		-.088	
lpr_lev			.044
sh_liq	.010	.020	.005
size	.000	-.002	-.011
split	---	---	---
emission	---	---	---
# obs	82	82	69
prob>chi2	.15	.37	.36

Table 10.Probit Regressions. Unregulated Firms.

Down_same			
imp	.444***	.344**	.325*
Lev		.037**	.371
mlev	-.098		
npr	-.649**		
R		-.108	
Lpr			-.293
npr_imp	.068		
r_imp		-.083	
lpr_im			.208
npr_mlev	1.56		
r_lev		.334*	
lpr_lev			.326
day_liq	.001	.021	.006
size	-.019	-.030	.002
split	.197	.023	---
emission	---	.280	.578
# obs	54	65	58
prob>chi2	.056	.15	.30

Table 11.Liquid Firms Sample.

INDUSTRY	#FIRMS, sh_liq	# FIRMS, day_liq
Energo	12	15
Telecom	7	9
Oil and gas production	9	9
Ferrous metallurgy	3	1
Nonferrous metallurgy	3	2
Chemical industry	0	0
Machine production	6	5
Transport	0	1
Others	3	1
TOTAL	43	43

Dummy	Meaning	#Obs, sh_liq	#Obs, day_liq
Turn	Fact of turnover	8	10
Up	CEO got better position	2	2
Same	CEO got similar position	4	3
Down	CEO got worse position	2	5
Up_same	Up+Same	6	5
Down_same	Down+Same	6	8

sh_liq

	turn=1	turn=0
#obs	8	35
Mean r	-.401	.122
Std. Dev.	1.34	.51

P>|t| = 0.07**

day_liq

	turn=1	turn=0
#obs	10	33
Mean r	-.061	.098
Std. Dev.	.90	.47

P>|t| =0.45

	Down_same=1	Down_same=0
#obs	6	37
Mean r	-.797	.158
Std. Dev.	1.19	.56

P>|t| = 0.0025***

	Down_same=1	Down_same=0
#obs	8	35
Mean r	-.360	.158
Std. Dev.	.67	.54

P>|t| = 0.023**

	Down_same=1	Down_same=0
#obs	6	37
Mean imp	.463	.258
Std. Dev.	.48	.35

P>|t| = 0.22

	Down_same=1	Down_same=0
#obs	8	34
Mean imp	.266	.270
Std. Dev.	.40	.39

P>|t| = 0.98

Table 12. Probit Regressions. Liquid Firms Sample.

Liquid by *sh_liq*

down_same				
Mimp	.005***		-.064**	
Reg		-.012		-.074
Lev	.003**	.076	.051	.049
Npr			-.434**	-.799*
R	-.012***	-.146***		
npr_mimp			.131**	
r_mimp	.013***			
npr_reg				.101
r_reg		.094		
npr_lev			.586**	.882
r_lev	.002	.098		
day_liq	.005**	.094**	.081**	.157**
Size	-.001***	-.014*	-.012	-.019*
Split	---	---	---	---
Emission	-.004***	-.032	---	---
# obs	42	42	38	38
prob>chi2	.0000	.0038	.05	.10

Liquid by *day_liq*

down_same				
mimp	.369*		-.179	
reg		-.037		-.048
lev	.283*	.354*	.391	.299
npr			-2.66**	-2.34**
r	-.459**	-.204		
npr_mimp			.444	
r_mimp	.665***			
npr_reg				.248
r_reg		.166		
npr_lev			2.43*	2.38**
r_lev	-.309	-.169		
sh_liq	.005	-.012	-.011	-.020
size	-.027	-.0327	-.017	-.010
split	---	---	---	---
emission	---	---	---	---
# obs	39	40	38	39
prob>chi2	.018	.15	.03	.02

Table 13. Probit Regressions. Illiquid Firms Sample.

Illiquid by *sh_liq*

down_same				
imp	.252***		.170**	
reg		-.235***		-.120**
mlev	-.098	.122	-.069	-.131
npr			-.277**	-.170*
r	.010	-.037		
npr_imp			.117	
r_imp	.166			
npr_reg				-.277
r_reg		-.105		
npr_mlev			.389	.136
r_mlev	-.167			
day_liq	.058**	.068***	.044*	.049**
size	-.001	-.013	-.002	-.008
split	.162	.068	.217	.186
emission	.077	.053	---	---
# obs	105	111	98	104

Illiquid by *day_liq*

down_same				
imp	.272***		.182***	
reg		-.246***		-.153***
mlev	.039	-.002	.069	-.009
npr			-.098	-.101**
r	.033	.082		
npr_imp			-.001	
r_imp	.081			
npr_reg				-.317
r_reg		-.034		
npr_mlev			.226	.099
r_mlev	-.110*	-.130*		
sh_liq	.008	-.002	.005	-.006
size	.008	-.004	.003	-.003
split	.283	.082	.322*	.176
emission	.157	.163	---	---
# obs	108	113	98	103

prob>chi2	.0056	.0008	.0074	.0047

prob>chi2	.0015	.01	.0000	.0000

Table 14. Liquid Unregulated Firms.

INDUSTRY	#FIRMS, sh_liq	# FIRMS, day_liq
Oil and gas production	10	12
Ferrous metallurgy	4	5
Nonferrous metallurgy	3	2
Chemical industry	0	1
Machine production	9	9
Transport	2	1
Others	5	3
TOTAL	33	33

Dummy	Meaning	#Obs, sh_liq	#Obs, day_liq
Turn	Fact of turnover	8	9
Up	CEO got better position	2	3
Same	CEO got similar position	3	3
Down	CEO got worse position	3	3
Up_same	Up+Same	5	6
Down_same	Down+Same	6	6

sh_liq

	Turn=1	Turn=0
#obs	8	25
Mean r	-.333	-.014
Std. Dev.	1.36	.76

P>|t| = 0.07**

day_liq

	turn=1	turn=0
#obs	9	24
Mean r	.005	.052
Std. Dev.	.92	.53

P>|t| =0.45

	Down_same=1	Down_same=0
#obs	6	27
Mean r	-.763	.057
Std. Dev.	1.22	.80

P>|t| = 0.0025***

	Down_same=1	Down_same=0
#obs	6	27
Mean r	-.405	.139
Std. Dev.	.71	.60

P>|t| = 0.023**

	Down_same=1	Down_same=0
#obs	5	26
Mean imp	.604	.426
Std. Dev.	.41	.36

P>|t| = 0.22

	Down_same=1	Down_same=0
#obs	6	26
Mean imp	.593	.474
Std. Dev.	.37	.38

P>|t| = 0.98

Table 15. Probit Regressions. Liquid and Illiquid Unregulated Firms.

Liquid by *sh_liq*

down_same			
Mimp	.283	…	…
Imp			
Lev		…	
Mlev			
r	-.439***	…	
npr			…
r_mimp	.729	…	
npr_imp			…
r_lev		…	
npr_mlev			
sh_liq	.004	…	
size	-.014	…	…
split	---	…	…
emission	---	…	…
# obs	31	29	26
prob>chi2	.0006	.00000	.0000

Liquid by *day_liq*

down_same				
mimp	.001	-.196		
Imp			.303*	.429**
lev		.593**		
mlev				-.199
R	-.412**	-.425**		
npr			-.569***	-.798*
R_mimp	.591**	.197		
npr_imp			.438	.312
R_lev		.518		
npr_mlev				1.33
sh_liq	-.022	-.066	-.066	-.221**
size	-.021	-.011	.003	.009
split	---	---	---	---
emission	---	---	---	---
# obs	32	29	30	27
prob>chi2	.05	.11	.03	.17

Note: the 2nd and 3rd regressions failed due to multicollinearity

Illiquid by *sh_liq*

down_same			
mimp	-.556**	-.628**	-.883***
lev		.332	
mlev			.110
r	.219	-.088	
npr			-.858**
r_mimp	-.416*	-.147	
npr_mimp			1.28*
r_lev		.324	
npr_mlev			2.47*
sh_liq	.133	.197	.131
size	-.011	-.038	-.009
split	.654*	.810**	---
emission	.440	.540	---
# obs	37	36	30
prob>chi2	.28	.24	.02

Illiquid by *day_liq*

down_same			
mimp	-.598**	-.490**	-.498**
lev		.047	
mlev			.092
r	.173	.003	
npr			-.448*
r_mimp	-.308*	-.188	
npr_mimp			.448
r_lev		.292*	
npr_mlev			.868
day_liq	.122	.133	.021
size	.014	-.005	-.021
split	.283	.321	.543
emission	.512	.468	---
# obs	36	36	27
prob>chi2	.16	.06	0.08

Note: --- dropped