

**Performance of domestic and cross-border acquisitions:  
Empirical evidence from Russian acquirers**

*Olivier Bertrand  
Graduate School of Management, St. Petersburg State University  
Volkovsky Per.3,  
199004 St. Petersburg, Russia  
olivier.bertrand@som.pu.ru*

*Marie-Ann Betschinger  
State University – Higher School of Economics  
Pokrovski Bulvar, 11  
109028 Moscow, Russia  
mbetschinger@hse.ru*

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**Abstract**

This paper investigates the impact of acquisitions initiated by Russian firms on their operating performance on the Russian market. We know very little on M&A value generation for emerging market firms. However, M&As can have a major impact not only on the competencies, organization, and performance of acquirers, but also on the competitiveness of countries by reshuffling assets across and within industries and corporate control. In this paper, we distinguish domestic and international acquisitions and discuss their distinctive effects. International acquisitions could have stronger feedback effects on the home country. In general, acquisitions can be associated with synergy gains, internalization advantages, and higher market power, but also new integration and organizational costs, leading to an ambiguous impact on the performance of acquirers. Based on a sample of more than 600 acquirers we show that both domestic and international acquisitions tend to reduce the performance of acquirers compared to non-acquiring firms. Examining how different deal, firm and industry level characteristics moderate the destroying value effects of acquisitions, our results suggest that Russian acquirers suffer from the inability to leverage value due to low M&A experience and capability especially when making international acquisitions.

**Key Words:** M&A, Restructuring, FDI, Emerging Countries, Russia.

## 1. Introduction

Since the beginning of the 20<sup>th</sup> century, several waves of corporate mergers and acquisitions (M&As) have led to substantial industrial restructuring in different parts of the world and have therefore attracted the attention of policy-makers and academic scholars across different disciplines.<sup>1</sup> However, while empirical studies on M&A are quite numerous, the bulk of these studies focus on domestic M&As or those carried out by firms based in developed countries (see e.g., for a survey, Tichy, 2002; Martynova and Renneboog, 2008 or Haleblan *et al.*, 2009). Yet, since the beginning of the 1990s, an increasing share of M&As has taken the form of cross-border acquisitions. Moreover, in recent years, there has been a rapid growth of the market for corporate control in emerging countries such as China, India, and also Russia. Emerging market firms both consolidate at the national scale and acquire firms in advanced and less developed market economies. We, however, still know very little about acquisitions from emerging market firms. This paper contributes to bridge this gap by assessing if and under which conditions domestic and cross-border M&A deals improve the economic performance of Russian firms in their domestic market.

M&As can have a major impact not only on the competencies, organization, and performance of the involved firms, but also on the competitiveness of economies by reshuffling assets across and within industries and corporate control. The major channels through which M&As can increase the performance of acquirers are economies of scale and scope, improved capacity utilization, possibly lower transaction costs as compared to market relationships, or the acquisition and redeployment of new resources and capabilities (e.g., Capron, 1999). A source of value creation for firms also lies in the increased market power that a firm may obtain (e.g., Gugler *et al.*, 2003).<sup>2</sup> Cross-border M&As may have an even larger effect on an economy since the major

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<sup>1</sup> Note that while our data sample includes acquisitions only, we use the terms merger and acquisition indistinctly, as it is usually done in the literature.

<sup>2</sup> When the source of value creation – i.e., higher profitability – only stems from increased power of acquirers (in the product or input market), the value that is created by firms is likely to damage the welfare of the society or other stakeholders. The effects of increased power are however not always very clear in terms of welfare. For instance, in the input market, if more power

reasons for firms to move abroad are to acquire additional resources and skills that are not available on the domestic factor market, increase the efficiency of business operation across and within borders, as well as to find new opportunities for growth – and hence overcome restrictions of the domestic goods market. But when going abroad businesses face a number of challenges that could outweigh the benefits of internationalization and eventually reduce the performance of acquirers. Firms need to learn how to operate in new economic, legal, administrative and cultural environments. Also, they may encounter significant information asymmetries and are more likely to overestimate synergies and overpay for foreign targets than domestic bidders. By extending the boundaries of their firms across borders, they need to master increasing organizational complexity, integrating and coordinating activities among different countries (e.g., Shimizu *et al.*, 2004). Emerging market firms, moreover, often have to deal with reputation problems when investing in the more developed market economies.

In this context, this paper adds to the existing literature by assessing if and under which conditions M&A deals improve the economic performance of Russian firms. We thereby contribute, on the one hand, to the literature on M&A value generation for emerging market firms and, on the other hand, to the current debate on the diversification of the Russian economy which is highly dependent on oil and gas resources. Do M&As enhance the competitiveness of Russian industries, leading in the long run to a more sustainable economic growth in Russia? In particular, do cross-border acquisitions help firms overcome domestic market constraints? For this purpose, we examine whether M&As initiated by Russian firms on their home market or abroad affect their performance in Russia. We evaluate the return on asset as an indicator for performance. For the empirical analysis we use two main databases: Zephyr and Ruslana (Bureau Van Dijk). Zephyr records M&As around the world while Ruslana contains information on the unconsolidated financial statements of firms located in Russia. We apply dynamic GMM

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represents a form of countervailing power to already powerful incumbents, then the private benefits from acquirers may coincide with social gains (see Roller *et al.*, 2000).

estimation – for studies that implement GMM when analyzing M&As, see e.g., Harris and Robinson (2002), Gugler and Yurtoglu (2004), Bertrand and Zuniga (2006) or Hakkala *et al.* (2007) – since the GMM technique corrects for simultaneity, dynamic and firm effects biases.

We find that both domestic and international deals are performance-reducing. This confirms the traditional outcome of the empirical research in the M&A literature, using mainly data of developed market firms. This literature tends to suggest that on average deals are either value destroying or without any impact for the acquiring firms. Nevertheless, deal specificities, acquirer characteristics, and industry context may matter. In the case of cross-border deals with targets located in former Soviet Union countries, the acquisition effect is not significant. This is also the case for cross-border deals within the same industry. Serial acquirers destroy less value in general and larger firm size reduces the negative impact of domestic acquisitions. Deals that take place in more concentrated industries are less value-reducing for acquirers, too. This is also true for domestic acquisitions of firms in high-tech industries. Hence, empirical evidence suggests that low experience and capability in deal selection, structuring and integration lead to a deterioration of the performance of acquirers. Cross-border deals mainly show the same pattern as domestic deals.

In the following we proceed as follows: First, we provide a brief overview of the empirical literature in the field and then turn to theory. In Section 3 we present the empirical sample and econometric set-up before discussing the results. Section 5 concludes.

## **2. Literature Overview and Theoretical Background**

Overall, empirical evidence on performance effects for domestic and cross-border acquirers is mixed. In general the literature concludes that M&As increase the value of target firms, while the outcome is less clear for acquirers: Most studies find that firm value is reduced or that M&As

exert no impact at all leading to a so-called underperformance puzzle (e.g., Agrawal and Jaffe, 2000; Andrade *et al.*, 2001; Moeller *et al.*, 2004). However, more recent studies find positive value effects as a result of a better methodological set-up or focusing on deal factors and characteristics of the involved firms (Dutta and Jog, 2009). The net effect of M&As seems to be insignificant or marginally positive, but, again, the conditions of the deals and characteristics of the merging firms are relevant (Martynova and Rennebog, 2008).

In economics the literature on cross-border M&As is still in its infant stage; they largely remain under-explored compared to domestic M&As. Nevertheless, existing empirical results tend to show that in cross-border deals targets seem to benefit to a larger degree than in domestic deals (e.g., Harris and Ravenscraft, 1991), while, again, findings on acquirers are mixed (e.g., Moeller and Schlingemann, 2005). Gugler *et al.* (2003) conclude that the long-term profitability of the combined entities for both domestic and cross-border deals increase, while sales decrease. They argue that firms enhance their market power, but have no efficiency improvements through both domestic and cross-border M&A deals. Morck and Yeung (1992) as well as Chari *et al.* (2010) highlight that acquirers only experience a rise in post-merger performance in cross-border transactions if they have intangible asset firm-based advantages that can be exploited abroad. This would suggest that acquisitions by emerging market firms – firms which are often interested in gaining such an advantage through acquisitions abroad instead of exploiting existing ones – would be unlikely to increase their post-merger performance. Also, positive returns for acquirers from developed markets have been linked to gains from improving the corporate governance system of the target in countries with a worse shareholder protection environment. Acquiring control can help them overcome problems of incomplete contracting (Chari *et al.*, 2010). This would imply that acquirers from emerging markets, most often based in weak corporate governance environments, should have difficulties in creating value through M&As in particular in developed markets.

However, this outcome is not confirmed in the few empirical studies that focus on emerging market acquirers' performance analysis. For instance, Chernykh *et al.* (2010) show that the abnormal return for targets acquired by emerging market firms is on average positive, the magnitude more than doubling when the target is from a developed market. Moreover, emerging market acquirers also experience significant positive announcement returns when the target is established in a developed market. When the target is located outside these markets, the effect is however no longer given. Furthermore, Aybar and Ficici (2009) find for their sample of 422 emerging market firm acquisitions that the market reaction to acquisitions of targets in developed markets is positive, while it is negative to acquisitions in other emerging market countries.

Most of the previously cited studies use short term cumulative abnormal or buy-and-hold abnormal returns as a measure for deal performance. Nevertheless, in the case of emerging market firms, only few firms are listed or, if listed, their stock is not necessarily liquidly traded. To overcome this problem, one can rely – as it will be done in our study – on accounting data-based performance measures such as profitability (e.g., Ravenscraft and Scherer, 1987; Healy *et al.*, 1992), productivity (e.g., Lichtenberg and Siegel, 1987; Mc Guckin *et al.*, 1995; Bertrand and Zitouna, 2008) or innovation indicators (Bertrand and Zuniga, 2006; Bertrand, 2009). But in the emerging market context, collecting comprehensive accounting data is also difficult making the use of profitability as a measure of value creation the only feasible solution.<sup>3</sup> Profitability can be captured using cash flow-based or earnings-based measures. Studies using the former have identified positive returns, while the latter negative ones (e.g., Rennebog and Martynova, 2008; Ravenscraft and Scherer, 1987, 1989). Until now, to our knowledge, there is no study that uses accounting measures for measuring the impact of M&As on firm performance for emerging market firms.

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<sup>3</sup> We do not use sales-based measures since sales could be loosely related to value creation. An increase in sales does not necessarily reflect a rise in firm efficiency nor is a decrease necessarily linked to a decline, for instance sales can be reduced for anti-competitive reasons. Hence, sales can reflect the maximization of managers' rather than shareholders' utility.

Related literatures look either at the effects of the foreign direct investment (FDI) activities of firms on the home market (see e.g., Barba Navaretti *et al.*, 2010) or at the distinctive effects of FDI entry modes – i.e., acquisitions versus Greenfield investments (e.g., Nocke and Yeaple, 2007, 2008; Bertrand *et al.*, 2008). There is however also a lack of studies on these issues. For Russian firms, while there is some anecdotal evidence on the internationalization of Russian firms (e.g., Bulatov, 1998; the Skolkovo Survey on Russian multinationals in 2007), there is very little study investigating econometrically FDI activity for the Russian economy (Kalotay and Sulstarova, 2010).

This paper adds to the growing literature on M&As from emerging market firms and internationalization patterns by comparing domestic with cross-border activities and using operating performance as a return measure. Moreover, it is the first empirical study focusing on Russian M&As and adds quantitative insights to the discussion of internationalization activities of Russian firms.

From a strict theoretical point of view, the effects of M&As are ambiguous. There are two main categories of effects that are at play and are likely to affect the performance of acquirers. First, acquirers can increase their market power and capture more consumer surplus by setting higher prices and lowering the quantity sold in the product market. They can also strengthen their bargaining power towards suppliers in the input markets or benefit from vertical foreclosure (see e.g., Roller *et al.*, 2000). Second, M&As can enhance the efficiency of acquirers in different ways. Acquirers can reap economies of scale and scope, get learning economies, improve capacity utilization, lower transaction costs as compared to market relationships (Coase, 1937), or/and the acquisition of new resources and capabilities (e.g., Capron, 1999) depending on the type of acquisitions (i.e., horizontal, vertical or conglomeral).

Negative influences on profitability can occur when acquisitions are carried out solely for the purpose of increasing market power – under certain circumstances (see e.g., Salant et al., 1983) – or building an empire when internal funds exceed those needed for the investment required for positive net present value projects. Here, free cash flows become a source of value reducing acquisitions (Jensen, 1986). Also, since the human capital of managers is bound to the firm, risk-averse managers can decide to diversify firm activities via an acquisition to reduce firm risk independent of the price paid (Amihud and Lev, 1981). Furthermore, management could be hesitant to distribute cash to shareholders and prefer making investments in form of acquisitions where managers overpay but reduce the likelihood of their own replacement (Shleifer and Vishny, 1989). Finally, M&As could engender (unexpected) post-acquisition organizational and integration costs. Organizational integration of business units may impede the generation of efficiency gains (Caves, 1989). It may also affect current business activities of the firm. For instance, it may divert the attention and efforts of managers, as well as financial resources, from innovation. In the long run, the growing size of the company could be accompanied by larger bureaucracy costs (Hannan and Freeman, 1984).

Comparing the effects of domestic and cross-border M&As is not straightforward and leads to ambiguous conclusions, too. Cross-border M&As could produce larger positive efficiency effects since the major reasons for firms to move abroad are to acquire additional resources and skills that are not available on the domestic factor market, increase the efficiency of business operation across and within borders, as well as find new opportunities for growth – and hence overcome restrictions of the domestic goods market (see for instance, Shimizu *et al.*, 2004). But when going abroad businesses face a number of challenges that could outweigh the benefits of internationalization and eventually reduce the performance of acquirers. Firms need to learn how to operate in new economic, legal, administrative and cultural environments. Also, they may

encounter significant information asymmetries and are more likely to overestimate synergies and overpay for foreign targets than domestic bidders. By extending the boundaries of their firms across borders, they need to master increasing organizational complexity, integrating and coordinating activities among different countries. Emerging market firms, moreover, often have to deal with reputation and legitimacy problems when investing in more developed market economies. Finally, market power implication is also mixed. On the one hand, international M&As could create weaker unilateral anticompetitive effects in the product market. The geographic distance between merging partners could reduce their pre-acquisition competitive rivalry and thereby market power motives. On the other hand, cross-border M&A may be more conducive to collusion than domestic M&A. They might facilitate collusive pricing behavior across markets by increasing multi-market contacts among firms (Bernheim and Whinston, 1990).

Overall, theoretic considerations provide no clear indication on the direction in which domestic and cross-border acquisitions will affect a firm's profitability. Firm, deal and industry characteristics are of importance for deal performance. In this paper, we investigate whether the performance of M&As differ across Russian acquirer characteristics. Firm heterogeneity may reflect differences in resources and capabilities that may influence the extent of gains as well as the ability to exploit them (Laamanen and Keil, 2008). For example, firms that have larger resources that can be invested in the market for corporate control may possess a higher capability to select more appropriate target firms, to structure and implement sophisticated deals, but also find larger and less costly financing opportunities. Also, firms can learn from domestic deals and use the knowledge in the cross-border case or apply resources acquired in the domestic context to international acquisitions. Hence, domestic and international deals can complement each other in a firm's acquisition portfolio, an aspect which is insufficiently explored in the literature. There could also be some disparities in the performance of acquirers across industries. For instance,

acquisitions that take place in concentrated industries can help firms to raise significantly their market power. Also, based on transaction cost theory the need for internalizing transactions within one firm could be larger in high-tech and knowledge intensive industries due to higher asset specificity and the inability to carry out these transactions at arm's length (Morck and Yeung, 1992). Hence, in these industries there could be relatively larger potential to reduce transaction costs and hence increase profitability.

In addition to these different dimensions that are likely to moderate the performance of acquisitions, there are some particularities that are related to the Russian context: the relevance of the state as a corporate owner – state-ownership plays an important role in Russia–, the use of acquisitions as internal restructuring devices for both private and state-owned firms<sup>4</sup>, the large importance of the natural resource sector in the Russian economy, and in the case of cross-border deals the similarities between Russia and other Commonwealth of Independent States (CIS) members due to their common Soviet Union history. Russian is still widely spoken in these countries and formal and informal institutions are similar. Hence, the additional problems posed by cross-border deals in terms of larger information asymmetries and increased complexities as compared to domestic deals can be expected to be of lower relevance here. Nevertheless, firm complementarities might also be lower making the total effect ambiguous – possibly moving deal effects closer to the effects of domestic M&As.

### **3. Empirical Set-Up**

#### **3.1. Sample**

For the empirical analysis we use two main databases called Zephir and Ruslana that are both provided by Bureau Van Dijk. Zephir records M&As around the world. It relies on several different sources, including stock exchange commissions, trade publications, law firms, surveys

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<sup>4</sup> Internal restructurings are defined as those cases when subsidiaries of a firm take over other subsidiaries of the same firm or the Russian State transfers ownership of one state-owned entity to another state-owned entity.

of investment banks, and so forth. Using Zephyr, we identify Russian firms that have acquired target firms at home and abroad. Ruslana contains information on the unconsolidated financial statements of the universe of firms located in Russia in the primary commodity, manufacturing and service industries. Thus, Ruslana provides us also with a group of non-acquiring firms to which we compare the performance of acquirers.

We select a sample of acquiring and non-acquiring medium- and large-sized firms from Ruslana. We observe their performance for the period 1999-2008. We omit micro- and small-sized firms due to problems in the reliability of accounting data and acquisition reporting.<sup>5</sup> Using the official EU definition we hence only include firms that have at least 10 million Euros of turnover. Our final sample that has exhaustive information on the explanatory variables available consists of 2051 firms. Moreover, we omit acquisitions prior to 1997 due to data limitations. In general, prior to 2000 acquisitions have been relatively infrequent and of very weak intensity. We limit our analysis to acquisitions where more than 50% of the equity of a target firm is acquired in order to ensure that the acquirer could actually influence the target firm's strategic decisions. Mergers are excluded from the analysis since they induce an immediate positive change in the financial statements items of the legal entity into which the company is merged – even if no merger gains were realized. This would hence distort our results.<sup>6</sup> Note that the number of deals identified as mergers is pretty low, as usually found. For instance, mergers represented less than 3% of M&As (in number) during the 1990's wave of M&As (UNCTAD, 2000).

We traced the acquisition behavior of more than 600 acquirers. Over time, the number of acquirers and acquisitions has grown. While there is an annual average of 18 deals over the

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<sup>5</sup> For instance, it is a well known fact that inter-regional acquisitions of small firms in Russia may occur for tax exemption purposes: An acquirer in a different region is paid for buying a firm which has run a large amount of transactions for its owner, with a minimum of taxes paid. Difficulties in the inter-regional exchange of tax documentation and the fact that Russian tax authorities focus on firms with a larger turnover when detecting tax evasion make this possible.

<sup>6</sup> If two companies merged into a new entity, the data for the old entity would be discontinued and analysis would no longer be possible. Adding the financial results for the years before the merger for the entities that merge in the dataset is also not feasible since we include cross-border targets for which the relevant information is missing or difficult to accumulate due to differences in accounting systems.

period 2000-2002 and of 108 from 2003-2006, the total number of deals in our sample increases to an annual average of 324 in 2007-2008 (appendix 1). With the advent of the financial crisis in the years 2007 and 2008, bankruptcies and forced sales have increased the market for corporate control. Also, during this time period a rise of internal restructuring within corporate groups or state-run entities has taken place: On average 33% of the acquisitions were part of these restructurings during the two years while it was an annual average of 6% in the years before. Internal restructurings are defined as those cases where subsidiaries of a firm take over other subsidiaries of the same firm (see for instance the case of the firm Sistema; Source: Sistema annual report 2009 and 2010) or the Russian state transfers' ownership of one state-owned entity to another state-owned entity.

On average 31% of all acquisitions are of horizontal nature (at a 4-digit industry level; NACE Revision 1.1). The crisis years 2007 and 2008 show a trend towards non-horizontal takeovers (from an annual average of 35% 2000-2006 to 16% 2007-08). About 45% of all deals take place within high-tech industries. Around 12% of the deals involve acquirers from the natural resource industry. Here, the share has a downward moving trend: While 29% of the deals had a natural resource acquirer in 2000, this was only the case for 9% of the deals in 2008. The trend is not limited to the crisis years.

Overall, multiple acquisitions are an important phenomenon on the Russian market for corporate control. Of the 609 acquirers, 200 have acquired at least two firms, while 53 have acquired at least four firms. Some of the firms have up to 38, or in one case even 50 acquisitions (Gazprom) over the studied period. Also within one year the share of multiple acquirers in the overall number of acquirers is substantial. While it had been quite low with an annual 24% over the years 2000-2002, it increased to an annual average of 66% starting from 2003. In these time periods the annual number of acquirers with at least four acquisitions rose from about 4% to 8%

(appendix 1). This indicates that once a Russian firm decides to acquire, many of them decide to run acquisition programs.

Cross-border acquisitions by Russian firms are still quite infrequent. In total, 120 cross-border acquisitions satisfy the selection criteria, carried out by 92 firms. The share of cross-border acquisitions in the total number of acquisitions is hence on average 11%. However, in 2004, 2007, and 2008 the share dropped to 9.5 and 8 % respectively, while the low rate in 2008 is mainly due to the strong rise of domestic acquisitions – and not to a drop in the number of cross-border acquisitions. The yearly maximum of 31 acquisitions was achieved in 2006. Of these, a substantial share of targets is located within countries that formerly were part of the Soviet Union. Over the period 2001-2006 on average 61% of the targets were placed in these countries; in the period 2007-2008 the share has decreased to an annual 27%.

### **3.2. Econometric Methodology and Model**

Since a large share of Russian acquirers has carried out multiple acquisitions, some of them even within the same year, and since we only have yearly performance data, propensity matching combined with a difference-in-difference estimation is not feasible. Researchers often decide to drop serial acquirers to overcome this problem. But omitting these firms would lead to a substantial bias in the data analysis (e.g., Ahuja and Katila, 2001) – especially in our case. We therefore select a panel design where industry, firm and acquisition characteristics are modeled as time-varying influences on performance. Since this research design includes both firms that are active in acquisitions and those that are inactive, we can control for factors influencing both the performance of acquiring firms and non-acquiring firms and then isolate the effect of the acquisition strategy. Also, we thereby overcome the limits of, for instance, propensity matching, where the selection of an appropriate control group is based on observable characteristics only (the so-called assumption of conditional independence).

We apply GMM estimation when analyzing M&As (like e.g., Harris and Robinson, 2002; Gugler and Yurtoglu, 2004; Bertrand and Zuniga, 2006 or Hakkala *et al.*, 2007). GMM techniques correct for simultaneity and firm effects biases. Also, profitability measures are at least partially persistent over time (e.g., Mueller, 1990) which leads to the need for accounting for a lagged dependent variable. In the case of OLS this would give rise to a dynamic panel bias. To account for unobserved heterogeneity in GMM estimations Anderson and Hsiao (1982) introduced a GMM estimator for first-differenced data proposing twice-lagged differences or levels, while Arellano and Bond (1991) defined additional orthogonality conditions to increase the efficiency of the estimators. Arellano and Bover (1995) and Blundell and Bond (1998) developed a system estimator adding the dependent variables in levels to the transformed dataset, differencing the instruments to make them exogenous to fixed effects. Since our data fulfills the necessary conditions – a large number of firms and a relatively short time series (Roodman, 2006) – we apply the system GMM estimator in our analysis. We only instrument the lagged dependent variable and the M&A variables. Instrumenting the other explanatory variables is not possible since the use of internal lagged instruments has been shown to lead to the problem of instrument proliferation, which may easily lead to incorrect inference (Roodman, 2009). The standard errors are reported with the Windmeijer correction (Windmeijer, 2005) without which standard errors would be downward biased. Finally, we apply different standard tests to evaluate the relevance of the GMM model. For each regression we compute the Hansen test for over-identifying restrictions, and the Arellano and Bond (1991) tests for first- and second-order serial autocorrelation. The Hansen test, the results of which are reported near the bottom of each table, validates the adequacy of our instruments in the system GMM estimation. As required, the Arellano and Bond test for first-order serial autocorrelation is significant; the test for second-order autocorrelation is rejected. Overall, these various tests confirm that the GMM method is

the appropriate econometric specification. Note that in appendix 3, as robustness checks we present results using panel least squares regressions. Our major findings are confirmed.

As previously explained, due to data limitations, we restrict our performance analysis to a profitability measure, return on assets, where return is measured as the earnings before interest and taxes (EBIT) normalized with the amount of total assets of a firm. ROA is probably the most commonly used profitability measure in economics or management studies. Excluding depreciation and amortization leads to the problem of comparability across firms due to possible differences in the application of accounting methods. However, due to the unavailability of this information for a large sample of firms, we assume that all firms face similar incentives, and hence bias.

We assume that  $\Pi_{it} = f(X_{it}, A_{it}, I_{jt}, T_t)$  where  $\Pi_{it}$  is the profitability of firm  $i$  at time  $t$ ,  $X_{it}$  is a vector of firm determinants of performance,  $I_{jt}$  refers to the vector of variables for industry  $j$ ,  $A_{it}$  represents a vector of count variables to measure the contemporaneous and lagged effects of the acquisition(s) of firm  $i$  in year  $t$ , and  $T_t$  corresponds to a vector of year dummies to control for macroeconomic shocks common to each time period. Note that all our monetary data are expressed in US dollars in constant value of 2000.

As firm specific control variables ( $X_{it}$ ) we first include the lagged dependent variable to account for dynamic effects in performance. A current realization of the dependent variable could be influenced positively by previous ones.

We also use the following variables: The size of a firm – measured as the natural logarithm of the firm – is used as a proxy of a firm's resources and capabilities. We expect a positive

relationship with the profitability variable. A firm's resources and capabilities include financial and non-financial resources such as knowledge, ties to business partners or political counterparts which should increase profitability. Larger firms can also benefit from larger scope and scale economies. On a cautionary note, larger firm size has also been argued to be detrimental to firm performance due to increased organizational complexities or for instance administrative and hierarchy costs (Hannan and Freeman, 1984).

The solvency ratio, measured as the ratio of the sum of current and non-current liabilities to a firm's total assets, measures the ability of a firm to meet its long term obligations and to externally finance firm activities. A high solvency ratio can indicate missing free cash-flow to finance firm activities to improve firm performance and difficulty to attract additional equity. Also, a rising debt ratio infers higher payments to service debt, thereby reducing firm profitability. Hence, a high leverage of a firm (solvability ratio) should lead to less profitable operations.

In robustness checks we include a measure for the liquidity of the firm, constructed as the ratio of the difference between current assets and inventories to current liabilities. Due to outliers we trim the measure at both ends cutting off the largest and smallest two percent and transform it with a natural logarithm. It measures a firm's ability to meet its short term obligations. Therefore, a positive sign is expected. But the availability of free resources in the firm can also indicate unused cash which can be spent on projects in favor of managers (such as empire building, or risk reduction) instead of shareholders and firm performance. This would imply a negative relationship with performance.

Also, we include the market share of a firm (at a 4 industry digit; NACE Revision 1.1) in a robustness check. Due to the high correlation with industry concentration we do not include the

measure in the base set-up. Market share could be associated with higher market power in the product market as well as higher bargaining power in the input market.

As previously mentioned, given the importance of the state in Russia, we control for state-ownership. State-ownership can lead to lower performance due to lower internal efficiency incentives, stronger organizational rigidities or non-profit maximizing behavior. A company is considered as a state-owned company if more than 50% of equity are held by 1) state departments or agencies, 2) federal and regional governments, 3) state-owned enterprises (such as Gazprom or Rosneft). A variable is assigned the value one if it is state-owned; otherwise it takes on the value zero. For classification, we use Ruslana data in 2010 as a source of information. If the stake of the state is close to 50%, a target's ownership structure is checked with the help of Interfax Spark which provides quarterly reports of Russian companies. In disputable cases, Spark is the preferred data source. 21% of sample firms are hence classified as state-owned, while this share amounts to 29% for acquirers.

At the industry level ( $I_{jt}$ ) we include a vector of industry (non-time varying) dummies for each industry  $j$  (at a 2 industry digit; NACE Revision 1.1) in order to control for permanent unobserved differences across industries (e.g., industry regulation, technological spillovers). This includes, among others, a dummy for the natural resource industry. We also use the Herfindahl-Hirschmann index as a measure of industry concentration. The firms' market shares (at a 4 industry digit; NACE Revision 1.1) are squared and then summed up across industries. The relationship between profitability and concentration is however unclear. Larger industry concentration could be more conducive to anti-competitive behavior (such as abuse of dominance or collusive practices) and thereby associated with higher profit. Higher profit in more concentrated industries could also result from the superior efficiency of incumbent firms in these industries as explained by Demsetz's seminal work (1973). On the other hand, if

concentration goes with less competition, firms could have less incentive to enhance their efficiency and upgrade their capabilities, thereby reducing their profitability in the long run (Porter, 1990).

We also take into account the nature of the industry. We include a dummy variable that takes the value one if the industry is a high-tech, high medium-tech, or knowledge intensive service industry, and otherwise zero. The high-tech nature of industries is based on the sectoral classification of the European Statistical office (Eurostat) using the NACE industry classification.<sup>7</sup>

Depending on the model the vector  $A_{it}$  includes one or more count variables to capture the effects of M&A deals. Since the post-merger reorganization process may take time and the impact on firm performance may be observed only a few years after the acquisition, each M&A count variable cumulates the number of acquisitions of a firm  $i$  in year  $t$  and the three preceding years. We do not include the size of the individual transactions in the measure as information on deal value is lacking for more than half of the total operations. In some model specifications  $A_{it}$  includes a variable that counts the number of deals in general, in others two count variables are included, separating the number of domestic and cross-border operations. Cross-border deals are further distinguished into those deals with targets in the former and non-former URSS countries. Following the same logic, we also separate M&As into horizontal and non-horizontal ones. Deals are classified as horizontal if they occur in the same four digit industry (NACE Rev. 1.1).

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<sup>7</sup> According to Eurostat (2009): Knowledge intensive industries are water transport, air transport, publishing activities, motion picture, video and television program production, sound recording and music publishing activities, programming and broadcasting activities, telecommunications, computer programming, consultancy and related activities, information service activities, financial and insurance activities, legal and accounting activities, activities of head offices; management consultancy activities, architectural and engineering activities; technical testing and analysis, scientific research and development, advertising and market research, other professional, scientific and technical activities, veterinary activities, employment activities, security and investigation activities, public administration and defense, compulsory social security, education, human health and social work activities, arts, entertainment and recreation. High tech manufacturing industries are the manufacture of basic pharmaceutical products and pharmaceutical preparations and the manufacture of computer, electronic and optical products. The so called medium-high-technology industries are the manufacture of chemicals and chemical products, and the manufacture of electrical equipment, machinery and equipment n.e.c., the manufacture of motor vehicles, trailers and semi-trailers and of other transport equipment. ([http://epp.eurostat.ec.europa.eu/cache/ITY\\_SDDS/Annexes/htec\\_esms\\_an3.pdf](http://epp.eurostat.ec.europa.eu/cache/ITY_SDDS/Annexes/htec_esms_an3.pdf))

In a separate model all those domestic and cross-border deals that can be classified as internal transactions are omitted from the count variables. As explained before, internal transactions are those transactions where the target was prior to the transaction already controlled by the acquirer. Also, all deals are considered as internal when the target was founded less than a month before the acquisition transaction.

In some model specification the deal variables are constructed to reflect the acquisition policy of a firm. If a firm acquires only one target within the four years time period, it is considered as a single acquirer. In the opposite, if a firm takes possession of more than one target it is considered as a serial acquirer. We also analyze the distinction between single vs. serial acquirers using a higher threshold (more or less than 4 acquisitions; Laamanen and Keil, 2008).

#### **4. Results and Discussions**

Appendix 2 provides descriptive statistics of the variables included in the regressions and cross-correlations. We have not found evidence of multicollinearity. Table 1 provides the main results.

**\*\*\* INSERT Table 1 about Here \*\*\***

The control variables mostly follow the expectations: The lagged dependent variable and firm size increase the return on assets, while the solvency ratio and state ownership decrease profitability. Therefore, larger resources and capabilities of a firm increase performance while a higher solvency ratio indicates financial problems and thereby a lower profitability. The negative impact of state control can be due to missing incentives or to the fact that state-owned firms per se follow other objectives than profit maximization. In terms of economic magnitude past profitability has by far the most significant impact: A one standard deviation increase leads to a rise of profitability by 0.06, while for firm size this only amounts to an increase by 0.015, the solvency ratio to -0.03 and state ownership to -0.014.

All other control variables (liquidity, industry concentration and market share) are insignificant. Hence, for industry concentration and market share the positive and negative effects linked to increased market power seem to make the overall impact turn zero. In the case of liquidity the effects linked to the availability of extra-financial resources which can be used for both firm as well as managerial purposes cancel out.

More importantly in our study, the count variables measuring the number of acquisitions that a firm has carried out in year  $t$  and the three preceding years are significant in all specifications and exert a negative impact. This is true when using the general measure or when separating all deals into domestic and cross-border operations. Completing one acquisition will decrease firm profitability by -0.005, a domestic deal by -0.003 and the international deal by -0.006. But the difference between domestic and cross-border deals is not statistically significant (Wald test). In terms of economic magnitude the effect is quite low: A rise by one standard deviation of M&A will decrease profitability by -0.006 – a much lower impact than all of the other significant control variables.

The negative influence of acquisitions can be the result of low firm-level acquisition experience and capability – as well as the existence of a less sophisticated and developed market for corporate control in Russia – leading to a failure to either acquire the right targets, or, when the right targets are acquired, to exploit and achieve synergy gains. It could also be explained by the fact that the major motivation of the deal is not to improve firm performance. This can be the case when acquisitions are driven by anti-competition and rent-seeking purposes when satisfying managerial objectives such as risk reduction or empire building.

The question arises if all deals are negative for firm performance or if there are certain deal, firm or industry characteristics that moderate the effect. Table 2 presents the results on deal

characteristics. Column 1 distinguishes the findings of cross-border deals based on the target country. In particular, CIS targets are distinguished from non-CIS targets. Former Soviet-Union countries are expected to be closer to Russia in many dimensions – institutionally and geographically – making transactions less complex than cross-border deals into other parts of the world. However, due to the similarities between Russia and CIS countries in terms of factor endowment and institutions, they might also offer lower gains. The results show that cross-border deals in CIS countries exert indeed no longer a negative impact while the rest of the cross-border deals still do. Institutional knowledge as well as cultural and geographical proximity seem to help firms to overcome M&A deficiencies. However, these deals also do not increase performance possibly due to the absence of strong complementarities.

**\*\*\* INSERT Table 2 about Here \*\*\***

Columns 2 and 3 turn to the relevance of the industry relatedness between acquirers and targets distinguishing horizontal from non-horizontal deals for all acquisitions, and domestic and cross-border acquisitions separately. Using the M&A count variable including all acquisitions both horizontal and non-horizontal deals have a negative influence. However, when distinguishing domestic and cross-border deals, effects change. For cross-border deals, horizontal acquisitions do not decrease performance, while they still have a negative effect for domestic transactions. The additional complexities in the international context seem to be less relevant if firms act within the same industry possibly due to better knowledge of targets and the industry environment. Cross-border deals, as opposed to domestic deals, can also offer higher synergy gains due to higher complementarities of resources and capabilities across countries and larger potential of redeployment within the same industry, making the overall negative effect for international transactions disappear. However, the effect is now only insignificant – hence, these deals also do not create value.

One Russian particularity are the relatively large number of acquisitions carried out for restructuring purposes, therefore raising the issue if negative results are driven by unsuccessful attempts to restructure. Columns 4 and 5 omit these transactions from the regressions. However, the negative effects persist. Hence, only the destination country and industry relatedness are deal-level moderating factors for deal performance.

Tables 3 and 4 display empirical findings related to firm specificities. Tables 3 and 4 focus on the role of the acquisition policy of a firm and on general firm characteristics respectively. In terms of the acquisition policy of a firm we distinguish serial from single acquirers. We use two different definitions of serial acquisitions: If a firm has acquired more than one firm in year  $t$  and the preceding three years (columns 1 and 2), or if it has acquired more than three firms during this time period (columns 3 and 4). Moreover, we consider the possible complementarity effects between domestic and international deals (column 5).

**\*\*\* INSERT Table 3 about Here \*\*\***

**\*\*\* INSERT Table 4 about Here \*\*\***

Overall, when serial acquirers are defined as those firms that made at least two transactions, the impact of deals carried out by single acquirers and serial acquirers is statistically not different from each other (column 1). However, if separating them into domestic and cross-border deals (column 2), serial acquirers decrease significantly less value in their deals than single acquirers for both types of transactions.

When taking the more than three deals definition of serial acquisition, serial acquirers decrease statistically significantly less value when using the count variable including both domestic and cross-border transactions (column 3). In this case the effect is driven by domestic deals. In the case of cross border deals, no significant difference can be identified. However, this non-significant difference may be caused by the very limited number of firms doing more than three

deals abroad over the four year period. Overall, the experience gained through acquisition programs or the complementarities of resources and capabilities of the target firms that compose the acquisition portfolio make these transactions at least partially worth the effort: Although the effect is not positive or even insignificant, the negative effect is at least reduced.

Considering the complementarities between domestic and international acquisitions (column 5), the two count variables of domestic and cross-border deals are interacted and included in the estimations. This term, the second derivative, is positive and statistically significant: Hence, an additional domestic deal that a company has in its acquisition program positively moderates the impact that a cross-border deal has on the firm performance (and reciprocally). Therefore, a serial acquirer that has both domestic and cross-border deals in its portfolio can positively influence the performance of a cross-border deal with its stock of domestic deals. This indicates that a firm's acquisition capability can be increased via some economies-of-scale and experience effects. The effect may also arise due to some complementarities of domestic and international resources and capabilities. However, this can also indicate a self-selection problem: Firms with higher acquisition capability do both domestic and cross-border deals.

Table 4 summarizes the results for general firm characteristics as moderating factors of deal performance. With increasing size of a firm, the profitability of a firm gained through a M&A deal increases (column 1). This effect is driven by domestic deals (column 2). The interaction with cross-border deals is not significant. Hence, resources and capabilities of Russian firms help to improve the performance of domestic deals, but do not achieve this in the international context. Possibly this indicates a lack of quality and quantity of resources and capabilities. One could also argue that firm size reflects a higher ability to exercise market power at the detriment of consumers in the domestic market or to obtain more favorable access to both private and political networks at home.

Liquidity does not moderate the effects of acquisitions (column 3 and 4). Though the main effect is now significant, the interaction between liquidity and MA is not: Hence, larger free cash flows are not linked to value destroying mergers. Although state ownership has a negative influence on firm performance per se, it does not seem to influence deal performance (column 5 and 6). However, we should note that we do not classify ownership at the date of the transaction, but use the current ownership pattern due to data availability. Nevertheless, this indicates that nationalization deals have been neither value generating, nor value destroying. Hence, only a firm's resources and capabilities, in particular the acquisition capability, matter for deal performance.

Table 5 also provides evidence for the importance of the industry context. Here, industry concentration positively moderates profitability effects of acquisitions (columns 1 and 2). This shows that a rise in market power may be a major source of value creation for firms for both purely domestic and cross-border deals. But this could also indicate that the value that is created by acquirers in these industries can damage the welfare of the society or other stakeholders. However, if, for instance, in the input market, more power represents a form of countervailing power to already powerful incumbents, then the private benefits from acquirers may coincide with social gains (see Roller et al., 2000).

Furthermore, firm profitability is increased in deals done in high-tech and in knowledge intensive industries (column 3). This can be attributed either to the fact that in these industries firms have higher capabilities per se, or that acquisitions indeed promise higher transaction cost reductions and performance gains in these industries featuring higher asset specificity. However, the effect is only linked to national deals (column 4). In cross-border deals the high-tech nature of the industry is of no relevance. Hence, possibly higher acquisition capabilities of high-tech

firms are only restricted to the Russian market. This also suggests that Russian high-tech firms do not leverage sufficient resources and capabilities from international targets. As said before, this can be explained by larger institutional differences, complexities in coordination and control. Furthermore, Russian firms in high-tech industries are often not competitive on the international scale. They may possess low absorptive capacities for detecting, integrating and exploiting new knowledge and technology.

Deals in the natural resource intensive industry are not worse or better than deals in the other industries (columns 5 and 6). The significant negative sign in the case of the cross-border deals has to be considered with caution: There are only six cross-border deals in this industry type.

**\*\*\* INSERT Table 5 about Here \*\*\***

In conclusion, we find in this study that the negative effect of domestic and international acquisitions is moderated by some deal, firm and industry characteristics. The negative deal performance does not seem to be driven by factors linked to agency problems in terms of free cash flow, but rather by a lack of experience or resources, and possibly other rent-seeking and anti-competition motives. Although different moderating factors have been identified they are not strong enough to render deals performance-enhancing.

## **5. Conclusion**

This paper adds new empirical evidence to the existing literature on M&As. We first examine whether M&As initiated by Russian firms on their home market or abroad affect their operating performance. We still know very little on M&A value generation for emerging market firms. We also contribute to the literature by comparing the effect of domestic and international M&As, which is seldom done, and examining the feedback effect of international acquisitions in the home market. Finally, we go a step further and explore the role of different moderating factors at the deal, firm and industry level.

Like the major part of the literature in financial economics and industrial organization, we find rather negative effects associated with acquisitions. However, we show that firm resources are of relevance and can be leveraged in domestic deals to improve the impact of acquisitions, but not in international deals. Furthermore, our findings suggest that emerging market firms suffer from the inability to leverage value due to low M&A experience and capabilities, especially when making international acquisitions. Interestingly, we find a positive interaction between domestic and cross-border deals in acquisition programs.

Our study therefore provides new evidence that can help guide managers in their M&A strategy making, by highlighting the challenges but also opportunities brought by M&A deals. It should also be of interest to policy-makers in the field of industrial and competition policy in Russia. M&As can restructure more quickly and deeply national industries than entry and exit processes (Geroski, 1992).<sup>8</sup> Their impact on industries and their competitiveness can be substantial. Our findings tend to stress that Russian firms are still in the process of learning and gaining experience and one can expect that in the future, with the stock of the latter growing, deals can turn to become beneficial for firms. Also, the institutional Russian market of corporate control is still under-developed and of a relatively poor level of sophistication. With policy reforms and a more mature market, the Russian economy could expect stronger benefit in terms of competitiveness, growth and wealth creation from M&As.

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<sup>8</sup> To illustrate it, for instance, during the formation of the European single market between 1985 and 1995, “. . . *the restructuring appears to have taken place mostly through the capital market via mergers and acquisitions, with a more limited role for entry, exit and the internal growth or decline of existing firms*” (European Commission, 1996).

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**Table 1: Main effects of acquisitions**

	(1)	(2)	(3)	(4)	(5)	(6)
Return on Asset t-1	0.491*** (0.0220)	0.495*** (0.0214)	0.499*** (0.0211)	0.498*** (0.0207)	0.498*** (0.0205)	0.499*** (0.0207)
(Log) Size	0.00975*** (0.000929)	0.00932*** (0.000948)	0.0104*** (0.00105)	0.00960** *	0.0101*** (0.00134)	0.0105*** (0.00139)
Solvency Ratio	-0.119*** (0.0185)	-0.121*** (0.0152)	-0.101*** (0.0220)	-0.113*** (0.0171)	-0.102*** (0.0185)	-0.115*** (0.0167)
Herfindahl-Hirschmann Index	-0.0112 (0.0542)	-0.0140 (0.0381)	0.000564 (0.0539)	-0.00768 (0.0296)	-0.00702 (0.0204)	-0.0250 (0.0206)
Number of Domestic M&As		- 0.00297*** (0.00114)		- 0.00246** (0.00120)		- -0.00229* (0.00124)
Number of Cross-border M&As		- -0.00628* (0.00361)		- 0.00833** (0.00383)		- 0.00779** (0.00394)
Number of M&As	- 0.00452*** (0.00132)		- 0.00458*** (0.00135)		- 0.00462*** (0.00136)	
(Log) Liquidity Ratio			0.00689 (0.00433)	0.00452 (0.00406)	0.00685 (0.00421)	0.00503 (0.00406)
State-Owned Company			-0.0278** (0.0113)	-0.0212* (0.0108)	-0.0277** (0.0114)	-0.0243** (0.0110)
Market Share					0.0129 (0.0318)	-0.0227 (0.0305)
Constant	0.0244 (0.0736)	0.0276 (0.0531)	0.0291 (0.0704)	0.0346 (0.0408)	0.0310 (0.0511)	-0.0176 (0.0521)
Observations	13815	13815	13331	13331	13331	13331
Number of firms	2051	2051	2045	2045	2045	2045
Number of instruments	142	178	144	180	145	181
p-value of Hansen statistic	0.457	0.793	0.412	0.777	0.435	0.776
p-value AR1	0	0	0	0	0	0
p-value AR2	0.979	0.956	0.966	0.984	0.970	0.988

Notes: The dependent variable is EBIT normalized with total assets. Results reported in this table have been obtained using system GMM estimations using the two-step estimation including the Windmeijer correction to the reported standard errors. The lagged dependent variable and the M&A variables are instrumented. Year and industry dummies are not reported, they are however jointly significant in all of the models. A group is defined as one firm over time. AR1 and AR2 report the p-values of the tests for first-order and second-order serial correlation in the first-differenced residuals. The hansen statistic reports the p-value of the Hansen test of over-identifying restrictions. Data is for 2000- 2008. \*,\*\*,\*\*\* indicates significance at the 10%, 5%, and 1% level, respectively. Robust standard errors are in parentheses.

**Table 2: The role of deal-level characteristics**

	(1)	(2)	(3)	(4)	(5)
Return on Asset t-1	0.499*** (0.0220)	0.502*** (0.0224)	0.499*** (0.0214)	0.498*** (0.0219)	0.500*** (0.0216)
(Log) Size	0.0095*** (0.000925)	0.0099*** (0.000931)	0.0098*** (0.000975)	0.0095*** (0.000932)	0.0092*** (0.000950)
Solvency Ratio	-0.112*** (0.0173)	-0.118*** (0.0162)	-0.118*** (0.0158)	-0.115*** (0.0183)	-0.120*** (0.0155)
Herfindahl-Hirschmann Index	-0.0193 (0.0404)	-0.0479 (0.0345)	-0.0427 (0.0297)	-0.0123 (0.0536)	-0.0152 (0.0405)
Number of Domestic M&As	-0.00260** (0.00114)				
Number of Cross-border M&As in Non-Former URSS Countries	-0.0102** (0.00422)				
Number of Cross-border M&As in Former URSS Countries	-0.00388 (0.00454)				
Number of Non-Horizontal M&As		-0.0043*** (0.00127)			
Number of Horizontal M&As		-0.00454** (0.00228)			
Number of Domestic Non-Horizontal M&As			-0.0040*** (0.00131)		
Number of Domestic Horizontal M&As			-0.00400* (0.00241)		
Number of Cross-border Horizontal M&As			-0.000773 (0.00510)		
Number of Cross-border Non-Horizontal M&As			-0.00860** (0.00346)		
Number of M&As (no internal transaction)				-0.0053*** (0.00158)	
Number of Domestic M&As (no internal transaction)					-0.00371** (0.00146)
Number of Cross-border M&As (no internal transaction)					-0.00592* (0.00345)
Constant	0.0140 (0.0546)	-0.0343 (0.0479)	-0.0304 (0.0421)	0.0290 (0.0727)	0.0285 (0.0558)
Observations	13815	13815	13815	13815	13815
Number of codefirm	2051	2051	2051	2051	2051
Number of instruments	212	178	235	142	178
p-value of Hansan statistic	0.987	0.206	0.854	0.417	0.769
p-value AR1	0	0	0	0	0
p-value AR2	0.924	0.914	0.932	0.943	0.935

Notes: See table 1.

**Table 3: The role of firm-level characteristics (a)**

	(1)	(2)	(3)	(4)	(5)
	Serial Acquiror (>=2)	Serial Acquiror (>=2)	Serial Acquiror (>=4)	Serial Acquiror (>=4)	
Return on Asset t-1	0.504*** (0.0217)	0.515*** (0.0215)	0.491*** (0.0211)	0.489*** (0.0207)	0.507*** (0.0204)
(Log) Size	0.0103*** (0.000935)	0.0103*** (0.000978)	0.00971*** (0.000919)	0.0101*** (0.000920)	0.00979*** (0.000939)
Solvency Ratio	-0.104*** (0.0140)	-0.0980*** (0.0134)	-0.114*** (0.0148)	-0.118*** (0.0138)	-0.114*** (0.0137)
Herfindahl-Hirschmann Index	0.000199 (0.0273)	0.00433 (0.0346)	0.0117 (0.0293)	-0.0257 (0.0282)	-0.0218 (0.0261)
Serial Acquiror (>=2 or >=4): Number of M&As	- 0.00490*** (0.00109)		- 0.00358*** (0.00111)		
Single Acquiror (=1 or <4): Number of M&As					
Serial Acquiror (>=2 or >=4): Number of Domestic M&As		- 0.00382*** (0.00103)		- 0.00225*** (0.000868)	
Single Acquiror (=1 or <4): Number of Domestic M&As					
Serial Acquiror (>=2 or >=4): Number of Cross-border M&As					
Single Acquiror (=1 or <4): Number. of Cross-border M&As					
Number of Domestic M&As					- 0.00567*** (0.00119)
Number of Cross-border M&As					-0.0143*** (0.00375)
Number of Domestic M&As * Number of Cross-border M&As					0.00162*** (0.000410)
Constant	0.0244 (0.0398)	0.0248 (0.0510)	0.0583 (0.0400)	0.00636 (0.0412)	0.00960 (0.0395)
Observations	13815	13815	13815	13815	13815
Number of firms	2051	2051	2051	2051	2051
Number of instruments	178	238	171	208	208
p-value of Hansen statistic	0.719	0.997	0.738	0.910	0.973
p-value AR1	0	0	0	0	0
p-value AR2	0.901	0.836	0.979	0.976	0.898

Notes: See table 1.

**Table 4: The role of firm-level characteristics (b)**

	(1)	(2)	(3)	(4)	(5)	(6)
Return on Asset t-1	0.490*** (0.0213)	0.508*** (0.0192)	0.502*** (0.0198)	0.507*** (0.0207)	0.488*** (0.0209)	0.486*** (0.0207)
(Log) Size	0.0098*** (0.000887)	0.0105*** (0.000920)	0.0104*** (0.000998)	0.0097*** (0.00101)	0.0108*** (0.00101)	0.0103*** (0.000980)
Solvency Ratio	-0.119*** (0.0132)	-0.107*** (0.0104)	-0.100*** (0.0146)	-0.102*** (0.0142)	-0.119*** (0.0145)	-0.113*** (0.0118)
Herfindahl-Hirschmann Index	-0.0148 (0.0221)	-0.0171 (0.0206)	-0.0479 (0.0294)	-0.0369 (0.0225)	-0.0444 (0.0451)	-0.0261 (0.0286)
Number of Domestic M&As		-0.021*** (0.00608)		-0.0027** (0.00114)		-0.004*** (0.00139)
Number of Cross-border M&As		-0.00169 (0.0254)		-0.0090** (0.00447)		-0.0085** (0.00403)
(Log) Size * Number of Domestic M&As		0.0012*** (0.000406)				
(Log) Size * Number of Cross-border M&As		-0.000411 (0.00178)				
Number of M&As	-0.020*** (0.00437)		-0.004*** (0.000933)		-0.005*** (0.00137)	
(Log) Size * Number of M&As	0.0011*** (0.000277)					
(Log) Liquidity Ratio			0.00801** (0.00402)	0.00777** (0.00324)		
(Log) Liquidity Ratio * Number of M&As			0.000796 (0.000933)			
(Log) Liquidity Ratio * Number of Domestic M&As				0.000612 (0.00107)		
(Log) Liquidity Ratio * Number of Cross-border M&As				-0.00170 (0.00581)		
State-Owned Company					-0.0210** (0.00857)	-0.0150 (0.00950)
State-Owned Company * Number of M&As					0.000730 (0.00247)	
State-Owned Company * Number of Domestic M&As						-0.000440 (0.00247)
State-Owned Company * Number of Cross-border M&As						0.00717 (0.0111)
Constant	0.0211 (0.0338)	-0.000188 (0.0298)	-0.0385 (0.0446)	-0.0151 (0.0327)	-0.0352 (0.0620)	-0.0107 (0.0399)
Observations	13815	13815	13331	13331	13815	13815
Number of firms	2051	2051	2045	2045	2051	2051
Number of instruments	178	250	179	251	179	232
p-value of Hansen statistic	0.624	0.956	0.578	0.992	0.286	0.766
p-value AR1	0	0	0	0	0	0
p-value AR2	0.973	0.873	0.969	0.947	0.982	0.983

Notes: See table 1.

**Table 5: The role of industry-level characteristics**

	(1)	(2)	(3)	(4)	(5)	(6)
Return on Asset t-1	0.491*** (0.0200)	0.503*** (0.0213)	0.491*** (0.0220)	0.507*** (0.0203)	0.496*** (0.0222)	0.491*** (0.0217)
(Log) Size	0.0102*** (0.00101)	0.0105*** (0.000960)	0.0102*** (0.000939)	0.0102*** (0.000934)	0.0101*** (0.000963)	0.0097*** (0.000940)
Solvency Ratio	-0.114*** (0.0135)	-0.102*** (0.0128)	-0.113*** (0.0155)	-0.100*** (0.0129)	-0.112*** (0.0183)	-0.121*** (0.0149)
Herfindahl-Hirschmann Index	-0.0217* (0.0123)	-0.0179 (0.0123)	-0.0854* (0.0519)	-0.0308 (0.0261)	-0.0222 (0.0702)	-0.0401 (0.0482)
Number of Domestic M&As		-0.005*** (0.00159)		-0.007*** (0.00223)		-0.003*** (0.00115)
Number of Cross-border M&As		-0.00121 (0.00460)		-0.00483 (0.00571)		-0.00478 (0.00384)
Herfindahl-Hirschmann Index * Number of Domestic M&As		0.0065*** (0.00251)				
Herfindahl-Hirschmann Index * Number of Cross-border M&As		-0.0214* (0.0123)				
Number of M&As	-0.005*** (0.00161)		-0.007*** (0.00193)		-0.005*** (0.00136)	
Herfindahl-Hirschmann Index * Number of M&As	0.00373* (0.00210)					
High-Tech Industry			-0.0507 (0.0747)	-1.235*** (0.405)		
High-Tech Industry * Number of M&As			0.00390** (0.00198)			
High-Tech Industry * Number of Domestic M&As				0.00511** (0.00232)		
High-Tech Industry * Number of Cross-border M&As				-0.00277 (0.00698)		
Natural Resource Industry					-0.0151 (0.0306)	-0.0139 (0.0258)
Natural Resource Industry* Number of M&As					-0.000873 (0.00407)	
Natural Resource Industry* Number of Domestic M&As						0.00251 (0.00355)
Natural Resource Industry* Number of Cross-border M&As						-0.044*** (0.0168)
Constant	0.00617 (0.0251)	0.00172 (0.0255)	0.0772 (0.0653)	0.0356 (0.0388)	0.00413 (0.0765)	-0.00476 (0.0546)
Observations	13815	13815	13815	13815	13726	13726
Number of firms	2051	2051	2051	2051	2036	2036
Number of instruments	178	250	178	243	179	223
p-value of Hansen statistic	0.340	0.985	0.270	0.973	0.704	0.987
p-value AR1	0	0	0	0	0	0
p-value AR2	0.946	0.884	0.951	0.867	0.875	0.914

Notes: See table 1.

## Appendix 1: Descriptive Statistics

### Panel a. Single vs. Multiple Acquirers

	Companies without acquisitions	Single Acquirers	Serial Acquirers $\geq 2$	<i>No of deals</i>	Serial Acquirers $\geq 4$	<i>No of deals</i>
2000	1250	8	3	6	0	0
2001	1364	13	2	6	1	4
2002	1506	18	1	4	1	4
2003	1537	29	11	39	3	20
2004	1513	49	21	54	3	14
2005	1542	36	22	73	7	36
2006	1521	53	35	101	8	38
2007	1522	112	52	228	13	136
2008	1451	91	53	217	17	135

### Panel b. Deal characteristics

	Total	Domestic deals	Cross-border deals	Targets in CIS outside Russia	Horizontal deals	Without Internal Transactions	High-Tech Industry	Natural Resources Industry
2000	14	13	1	0	3	13	5	4
2001	19	17	2	2	5	19	12	0
2002	22	16	6	3	11	22	9	5
2003	68	56	12	6	34	62	31	11
2004	103	94	9	6	27	84	55	11
2005	109	93	16	7	39	102	50	12
2006	154	123	31	18	51	148	74	14
2007	340	323	17	6	61	248	162	13
2008	308	282	26	5	46	188	87	25

Notes: Panel a shows the number of firms without acquisitions in the sample, the number of single acquiring firms, the number of serial acquiring firms with at least two ( $\geq 2$ ) and four ( $\geq 4$ ) deals, and the total number of deals these serial acquirers concluded. Panel b shows the total number of deals and the number of domestic and cross-border deals per year. The other columns enumerate the total number of deals with targets in the Commonwealth of Independent States (CIS - outside Russia), that take place within the same four digit industry (NACE classification), that are not part of corporate group or state ownership restructuring, where the acquirer is in a high-tech or knowledge intensive industry and where the acquirer is a natural resource firm.

**Appendix 2: Summary Statistics & Correlations**

	Mean	S.D.	Min	Max	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
(1) Number of M&As	0.209	1.259	0	49	1											
(2) Number of Domestic M&As	0.184	1.133	0	46	0.981	1										
(3) Number of Cross-border M&As	0.026	0.266	0	8	0.556	0.383	1									
(4) Return on Asset t-1	0.128	0.124	-0.081	0.589	0.016	0.011	0.028	1								
(5) (Log) Size	10.38	1.476	-4.916	17.3	0.269	0.258	0.175	0.116	1							
(6) (Log) Liquidity Ratio	-0.126	0.639	-1.619	2.013	0.083	0.080	0.052	0.208	0.106	1						
(7) Solvency Ratio	0.597	0.281	0	1	-0.053	-0.053	-0.027	0.366	-0.083	-0.434	1					
(8) Market Share Herfindahl-Hirschmann Index	0.059	0.143	0	1	0.194	0.179	0.153	0.059	0.295	0.049	-0.089	1				
(9) State-Owned Company	0.092	0.166	0	1	0.132	0.127	0.084	0.056	0.165	0.079	-0.122	0.639	1			
(11) Knowledge-Intensive or High-Tech Industry	0.215	0.411	0	1	0.033	0.037	-0.003	0.096	0.117	0.038	-0.162	0.014	0.067	1		
(11) High-Tech Industry	0.432	0.495	0	1	0.012	0.009	0.016	0.049	-0.075	-0.001	0.255	-0.098	0.019	-0.024	1	
(12) Natural Resource Industry	0.061	0.238	0	1	0.019	0.021	0.0004	0.116	0.175	0.074	-0.150	0.015	0.062	0.042	-0.221	1

### Appendix 3: Panel least squares regressions

	(1)	(2)	(3)	(4)	(5)	(6)
Return on Asset t-1	0.270*** (0.00836)	0.270*** (0.00836)	0.252*** (0.00854)	0.252*** (0.00854)	0.251*** (0.00855)	0.251*** (0.00855)
(Log) Size	0.0158*** (0.000840)	0.0158*** (0.000840)	0.0156*** (0.000888)	0.0156*** (0.000888)	0.0149*** (0.000971)	0.0149*** (0.000971)
Solvency Ratio	-0.137*** (0.00541)	-0.137*** (0.00541)	-0.136*** (0.00621)	-0.136*** (0.00621)	-0.136*** (0.00621)	-0.136*** (0.00621)
Herfindahl-Hirschmann Index	-0.0240** (0.0121)	-0.0242** (0.0121)	-0.0251** (0.0124)	-0.0253** (0.0124)	-0.0313** (0.0129)	-0.0316** (0.0129)
Number of Domestic M&As		-0.00173** (0.000874)		-0.00172** (0.000872)		-0.00172** (0.000872)
Number of Cross-border M&As		-0.00731* (0.00420)		-0.00768* (0.00423)		-0.00771* (0.00423)
Number of M&As	-0.00220*** (0.000787)		-0.00222*** (0.000785)		-0.00222*** (0.000785)	
(Log) Liquidity Ratio			0.00931*** (0.00186)	0.00926*** (0.00186)	0.00925*** (0.00186)	0.00920*** (0.00186)
Market Share					0.0427* (0.0224)	0.0428* (0.0224)
Constant	0.00105 (0.00931)	0.000947 (0.00931)	0.0450*** (0.00943)	0.0448*** (0.00943)	0.0504*** (0.00986)	0.0503*** (0.00986)
Observations	13815	13815	13331	13331	13331	13331
R-squared	0.194	0.194	0.192	0.192	0.192	0.193
Number of firms	2051	2051	2045	2045	2045	2045

Notes: The dependent variable is EBIT normalized with total assets. Results reported in this table have been obtained using panel least squares estimation including fixed effects. A group is defined as a firm over time. Serial correlation and heteroscedasticity is controlled for within each group using robust standard errors. Year dummies are not reported, they are however jointly significant in all of the models. A group is defined as one firm over time. Data is for 2000- 2008. \*, \*\*, \*\*\* indicates significance at the 10%, 5%, and 1% level, respectively. Robust standard errors are in parentheses.

