

**OWNERSHIP AND PERFORMANCE IN THE MARKET FOR CORPORATE  
CONTROL: THE ROLE OF STATE-OWNED ENTERPRISES**

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Working Paper n. 2014-17

DICEMBRE 2014

**u n i m i** UNIVERSITÀ DEGLI STUDI DI MILANO



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**Ownership and performance in the market for corporate control:  
the role of state-owned enterprises**

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**Abstract**

Despite a wave of privatizations in the past three decades, several governments own major corporations in industries such as energy, mining, telecommunications, transport, banking, manufacturing, in emerging economies as well as in some developed ones. Contemporary state-owned enterprises (SOEs) are increasingly active players in the international and domestic markets for corporate control, through mergers and acquisitions. This paper contributes to a new strand of literature on SOEs from the angle of the market for corporate control. Do the SOEs, behave as their private counterparts when purchasing other firms? The standard prediction of the “inefficient management hypothesis” is that firms that perform well will buy firms of inferior managerial quality (Manne, 1965). An alternative prediction is offered more recently by Rhodes-Kropf and Robinson (2008), who suggest that for US listed companies “like buys like”. To test both the alternative views and the research question on how public ownership has an impact on the market for corporate control, we build a new dataset from Zephyr and Orbis, two databases developed by the Bureau Van Dijk since early 2000s. Our sample is composed by 25,332 deals worldwide, of which around 10% are performed by a SOE acquirer. By focusing on the difference of the return on sales between the acquirer and the target firm, and controlling for different factors, we find that the Rhodes-Kropf and Robinson (2008) prediction is more likely for listed companies, but not for the others; SOEs tend to buy “lower” relative to their own performance than private companies do, while their behavior converges towards the private benchmark when the SOEs are listed. We conclude that mergers and acquisitions by SOEs in the years we consider are not as much at variance with the “inefficient market hypothesis” as private firms.

**Keywords:** Mergers and acquisitions, state-owned enterprises, privatization, ROS.

**JEL codes:** L32, L33, G34, H82.

## 1. Introduction

Although the last three decades of privatizations have brought more than one trillion dollars of public assets into private hands (OECD 2003), public enterprises (or State-owned enterprises, SOEs) are still a feature of contemporary economy, notably, in emerging economies such as Brazil, India, Russia and China (Musacchio and Lazzarini 2014), but also in the OECD countries (Christiansen and Kim 2014, OECD 2014, *The Economist* 2012, 2014)<sup>1</sup>. After the Great Recession, shares of equity holdings by some OECD governments increased up to 20% of their GDP, above the OECD average of around 8% (OECD 2010). According to recent estimates by the OECD, SOEs combine value of almost \$2 trillion and employ more than 6 million people (Christiansen 2011) and they are “among the largest and fastest expanding multinational companies. They increasingly compete with private firms for resources, ideas and consumers in both domestic and international markets” (Büge *et al.* 2013). Overall SOEs have increased in number, size, profitability and they have also internationalized through cross-border mergers and acquisitions (OECD 2009, Kowalski *et al.* 2013)<sup>2</sup>.

The revival of public enterprises is rising some concern on efficiency ground. States still own enterprises for strategic purposes (Nicoletti and Scarpetta 2003, World Bank 2006) and they may be using SOEs as a vehicle for pursuing non-commercial and political objectives and this may involve anti-competitive effects and generate economic distortions at a global level<sup>3</sup> (Kowalski *et al.* 2013). Although traditional literature on privatization stresses the SOEs’ inferior economic performance, it shall be noticed that contemporary public enterprises differ with respect to traditional public enterprises in two substantial ways. First, many of them have reformed their legal status. They have been increasingly corporatized, face stricter budget constraints and many of them have been listed on the stock markets, where they manage to attract private equity (Pargendler *et al.* 2013; Christiansen and Kim 2014). Thus they have become mixed enterprises where states ultimately control them, more or less directly, often by minority stakes (Fan *et al.* 2013; Musacchio and Lazzarini 2012). Second, the environment faced by public enterprises has been changing as well. The markets where public enterprises used to hold a monopolistic position have been liberalized (Clifton *et al.* 2011), particularly in the European Union, and opened to international competition, bringing domestic enterprises to compete against foreign firms in a globalized scenario (Khandelwal *et al.* 2013).

In the light of the above mentioned concerns about the SOEs activity, and given the changes in both the internal and external institutions governing contemporary SOEs, it is interesting to discuss whether

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<sup>1</sup> According to the Economist “in China companies in which the state is a majority shareholder account for 60% of stock market capitalisation. In Russia and Brasil companies in which the state has either a majority or a significant minority stake account for 30-40% of capitalisation.” (*The Economist* 2014). In the OECD countries, the role of public enterprises was not negligible in the early 2000’s as State-owned enterprises were representing “up to 40% of value added, around 10% of employment, and even 50% of market capitalization in different OECD countries, and not only in the former socialist countries” (OECD 2005, p. 6).

<sup>2</sup> Kowalski *et al.* (2013) consider only listed companies where the central government owns more than 50% of shares, they find that, out of the top 2000 largest companies reported by Forbes 2000, 204 are state-owned and they jointly cover more than 10% of the overall sales of the Forbes 2000 top companies. They also highlight that the combined value of their sales (\$3.6 trillion in 2011) is equivalent to almost 6% of the world GDP, exceeding the German, French or British GDP, while their aggregate market value (\$ 4.9 trillion) corresponds to 11% of the overall market capitalization of all listed companies (see Christiansen and Kim 2014 for expanding the perspective to SIE).

<sup>3</sup> A new form of State Capitalism is described as a system where “the state is using markets to create wealth that can be directed as political officials see fit. (...) [Where] the ultimate motive is not economic (maximizing growth) but political (maximizing the state’s power and the leadership’s chances of survival) (Bremmer, 2010; p. 4–5). According to the Economist “the government is a bad stock picker, or a bad manager who can’t earn competitive returns on capital, especially in a world of global competition” (*The Economist, Raison d’état*, 28<sup>th</sup> June, 2014). This concern is supported by the empirical evidence that many acquisitions performed by public enterprises have been mainly politically driven to ensure public control over strategic assets (see, for instance, Chernykh 2011 on the Russian case). Kahan and Rock (2011) argue that even in the most market-oriented economies such as the US, the public intervention to bail-out strategic companies has been accompanied by an increasing active role of the government to influence the portfolio companies and to pursue goals different from the maximization of the firm value.

the earlier literature on privatization is still relevant for the contemporary arena where both public and private enterprises compete. We adopt a novel approach to compare public and private enterprises. Our empirical strategy departs from the classic comparison between public and private enterprises in terms of economic performance (particularly we are not focusing on the traditional issue of productivity comparisons). Our approach builds instead on the previous corporate finance literature on the pre-deal performance of companies involved in a merger or acquisition deal (M&A) and extends it to the case of public acquirers. In a well-functioning market for corporate control (MCC), inefficient enterprises are purchased by well-performing ones, which will replace the incompetent management team with a superior team to increase its market value (Manne 1965). This theory has been supported by wide empirical evidence which has found that, on average, acquirers are bigger and perform better than their respective target companies (“high buys low”). This view has been recently put under discussion by Rhodes-Kropf and Robinson (hereafter RKR) (2008) who find that, though target companies are, on average, less performing than acquiring ones, mergers tend to bring together firms with complementary assets and similar performance (“like buys like”).

This corporate finance literature has mainly focused on the usual M&A transaction involving private enterprises on both sides of the deal or without considering the ownership status of each dealer. To the best of our knowledge, no paper has so far investigated whether previous findings still hold when the acquirer is ultimately controlled by a government. Thus, we question whether the activity of public enterprises in the market for acquisitions is consistent with the traditional “inefficient management hypothesis” or, conversely, whether it is detrimental to the functioning of the MCC, limiting its natural disciplinary capacity to correct firms internal inefficiencies.

To address this research question we build a new dataset of M&As from Zephyr and Orbis, two databases managed by the Bureau Van Dijk. The former reports some information on all completed deals that took place worldwide since 2000 while the latter is a global firm-level dataset which reports detailed financial, accounting and corporate information since 2004. By matching Orbis and Zephyr data and information, we select only those M&As where: 1) it is possible to determine the ownership of the acquirer – whether its top shareholder is private or public; and 2) the pre-deal economic performance of both the acquirer and the target company are simultaneously available. By using this selection rule, our sample is composed by 25,332 deals occurred over the period 2005-2012, involving firms of which we observe pre-deal characteristics. Around 10% of these deals (2,488) are performed by a public acquirer (Table 1).

**Tab. 1 - The activity of public acquirers in the MCC**

Year	Total deals	Deals with public acquirer	
	Obs.	Obs.	Percentage
2005	2,266	160	7%
2006	2,671	192	7%
2007	3,222	268	8%
2008	2,390	249	10%
2009	3,150	441	14%
2010	3,553	412	12%
2011	4,034	396	10%
2012	4,046	370	9%
Total	25,332	2,488	10%

Source: own elaboration on Zephyr

Our database includes M&As performed by both listed and unlisted companies. Listed companies are only part of the overall picture, hence stock data do not represent the best indicator for a global

perspective on the MCC. Therefore, we measure the economic performance using accounting-based data and, in particular, we use the return on sales (ROS) as performance indicator<sup>4</sup>. Then, for each deal we compare the ROS of the target with the ROS of its acquirer and we first question whether the traditional “high buys low” proposition is confirmed when looking only at private acquirers whose performance is measured by an account-based indicator rather than a stock market value. We next question whether this finding can be extended also to those M&As where the acquirer is controlled by a public authority. We also test whether the “like buys like” alternative view by RKR (2008) is supported by some new empirical evidence and whether it can be extended to other types of M&As not considered by RKR (for instance cross-border deals, or deals where the acquirer is a public enterprise or an unlisted company). Finally, we analyze how the previous results vary when considering different types of public enterprises (listed vs unlisted, domestic vs internationalized). We might expect that the performance of the public acquirer with respect to its target improves and get closer to the private benchmark as the public enterprise increases its exposition to market incentives. The structure of the paper is the following one. Section 2 reviews some of the early literature related to our topic. Section 3 presents a simple conceptual framework to think on our research question. Section 4 presents the dataset, some stylized facts and descriptive statistics. Section 5 presents our empirical approach. Section 6 discusses the main findings of the paper, while section 7 tests the robustness of our results through alternative specifications of the model. Section 8 concludes.

## 2. Earlier Literature

This paper combines some intuition from two strands of earlier research. While the first has investigated the relation between ownership and performance, the second deals with rationale for M&As and, in particular, with the pre-deal characteristics of the acquirer and target companies.

A traditional strand of literature has emphasized the poor economic performance of SOEs with respect to private enterprises (Boardman and Vining 1989, Shirley and Nellis 1991; Megginson *et al.* 1994). The main cause has been traced back to the lack of market incentives, such as soft budget constraints, the absence of any risk of bankruptcy or hostile takeover, or the market structure of legal monopolies where they used to operate (Vickers & Yarrow, 1988; La Porta *et al.* 1998). Some of these features are clearly less relevant to the current conditions, at least in countries where the SOEs have been reformed and markets opened to competition.

Other earlier studies pointed out that the SOEs’ underperformance originates from problems of corporate governance, such as the separation of ownership and control (Lin *et al.* 1998), private rent-seeking behavior on behalf of politicians (Shleifer and Vishny 1994; 1997), and eventually from their different objective function. Public owners may in fact attach a positive value to some social goals, such as the correction of market failures (Atkinson e Stiglitz 1980), equity and redistribution (Boiteux 1956; Bos 1994), or the support of employment (Shleifer 1998).

Privatization has been advocated as means of improving the incentive structure of SOEs and stimulating superior economic performance (Vickers and Yarrow 1988, Peltzman *et al.* 1989, Bortolotti and Siniscalco 2004), though other studies suggest that privatizations have been mainly driven by political rather than economic goal, as they can represent a strategic policy to retain power (Biais and Perotti 2002). The ex-post empirical evidence on the effects of privatization of firms’ performance are not so clear cut. While according to various studies privatization has enhanced the firms’ performance

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<sup>4</sup>The Return on sales (ROS) ratio, also known as operating profit margin, indicates the percentage of revenues deriving from sales that gets back to the company in terms of profits after deducting the costs related to the economic activity. We construct this index as the ratio between the firm’s operating income, measured by the EBIT (Earnings before interest and taxes), and the related operated revenues from sales. ROS is an indicator of the firm profitability and, being a ratio, it is useful to compare companies of different sizes. In a recent survey, 69% of the interviewed marketing managers have confirmed that they find the ROS metric very useful to measure the performance of a firm (Farris *et al.* 2010).

(Dewenter and Malatesta 2001; Megginson and Netter 2001), others find a mixed result for privatization in transition economies: mainly positive in the Central and Eastern Europe, while negative or insignificant in the Commonwealth of Independent States, especially when associated with insider ownership (Megginson 2005; Brown *et al.* 2006; Estrin *et al.* 2009). Other research have some reservations about long-term performance differentials between SOEs and privatized firms, and point to factors other than ownership as drivers of change, including technological and demand shocks, regulation and liberalization (Millward 2005, Willner and Parker 2007, Florio 2004, 2013, Alonso *et al.* 2013). Recently – at least for major public enterprises – there is no more such an evidence of underperformance of major SOEs (Christiansen and Kim, 2014).

Finally, it is worth to mention that, according to some authors, if privatization increases firms' performance, it can harm welfare when it concerns the provision of public goods (Laffont and Tirole 1993, Duggan 2000) while in some cases government-owned firms have managed with success the provision of local public goods (Chen and Qian 1998). This issue is related to the more general question of the role of ownership. Hart *et al.* (1997) apply the insights of the incomplete contract theory to the issue of ownership. When contracting costs are high and hold-up problems may arise, the choice between public and private ownership depends on endogenous objective functions, and the former should prevail when quality in investments plays a crucial role. Besley and Ghatak (2001) focus on the provision of public goods through public-private partnerships and show that, when contracts are incomplete, the net surplus generated by the investments is maximized when ownership stays in the hands of the party with the highest valuation of the project. The issue is further discussed by Hart (2003) who focuses on public ownership and stresses the similarities among the issues of nationalization and vertical integration via M&A. Interestingly, Rhodes-Kropf and Robinson (RKR) (2008) further apply the property right theory of the firm (Hart and Moore 1990, Hart 1995) to the theory of M&As. They argue that mergers allow to avoid hold-up problems and underinvestment that might result when incomplete contracts are in place. Focusing on M&As performed by enterprises listed on the US stock exchanges, RKR (2008) find evidence that M&As mainly bring together firms with a similar performance, which they measure using the market-to-book ratio (M/B). Their interpretation of M&As as a case of *complementarity* among similar firms ("like buys like"<sup>5</sup>) turns the traditional theory of the Market for Corporate Control (MCC) which describes M&As as a case of assets' redeployment: the *substitution* of the inefficient assets management of the acquired company with the superior managerial team of the acquirer company (Manne 1965). According to this established theory, also referred as "inefficient management hypothesis" (IMH) (Mandelker 1974), whenever a firm underperforms – because of internal conflicts among shareholders and managers, or simply because managers are incompetent – it becomes a potential target in the MCC, where well-managed firms compete for the control and management of the corporate resources (Jensen and Ruback, 1983). Thus, in a well-functioning MCC, inefficient and badly managed enterprises are acquired by well-performing ones which will re-organize and manage them to increase their market value. Consistently, several papers have compared the pre-deal performance of respectively the acquirer and the target finding evidence that in the pre-deal period acquirers are more productive, have a higher asset valuation, and perform better than acquired firms (Maksimovic and Phillips 2001, Holmstrom and Kaplan 2001, Jovanovic and Rousseau 2002, Andrade and Stafford 2004). While the above mentioned papers mainly focus on listed companies, other papers analyze the performance of unlisted enterprises by looking at some accounting-based performance indicators. They find consistent evidence that acquirers outperform targets (Mueller 1980, Liu and Qiu 2013).

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<sup>5</sup> High valuation firms tend to buy other high valuation target companies, while "moderate buys moderate" and "low buys low".

What until now has not been tried is to put together the two perspectives: ownership by government of firms, and the market where such control can be challenged by rival private firms, or where the opposite can also happen, i.e. where public enterprises acquire private enterprises. Given the importance and activism of the contemporary SOEs and the reforms they have undergone, it is interesting to understand how they behave in the MCC compared to private enterprises. Thus, we question whether previous evidence holds also when the M&A is performed by a public enterprise. As far as we know, this represents an entirely novel approach to compare the performance among private and public enterprises, which is now possible because not only product markets but also the MCC are open to competition and increasingly globalized.

### 3. Conceptual framework

In this section we build a simple conceptual framework that analyzes whether in the MCC, SOEs behave differently from private firms. We focus particularly on the question whether the target companies differ depending on the ultimate ownership of the acquirer. The model loosely draws on RKR (2008), departing from it in two main directions. First, when considering acquiring firms' optimal choice of targets in the MCC, our model allows for both substitution and complementarity of managerial quality between the acquirer and the target<sup>6</sup>. Indeed, our data do not rule out the substitutability motivation for mergers, especially when the ownership dimension of the acquirer is introduced (see section 4 below), and we need a model that accommodates this observed feature. Second, our model distinguishes firms depending on their ultimate ownership (i.e. private vs government control) as this is the main focus of our research.

In our framework, let  $k_{jf}$  be the stock of capital of type  $j$  of firm  $f$ , where firms are identified by their role in the observed deal. For simplicity capital can be of either one out of two types,  $j = 1,2$ , and a firm involved in a deal can play either the role of the acquirer (A) or of the target (T),  $f=A,T$ . Similarly to RKR, we denote with  $z_f$  the quality of firm  $f$  in any number of firm features: management, technology, knowledge, motivation of employees etc. For simplicity, we will refer below to  $z_f$  as managerial quality and we assume that increase in quality along this dimension must increase the firm's profitability, hence its value. As in RKR, we assume a very simple production function, allowing for a simple closed-form solution, but we augment it by a feature specific to the SOEs. The level of output  $y$  for firm  $f$  owing capital of type  $j$  is:

$$y_{jf} = z_f k_{jf}^{\alpha+\beta} \quad (1)$$

where  $\alpha \in (0,1)$  and  $\beta \geq 0$  is a "non-tradable externality" and is different from zero for public enterprises only. We assume that  $\alpha + \beta < 1$ , which implies decreasing returns to scale. Although  $\beta$  amplifies its social value from owning an asset, the public firm continues to face decreasing marginal returns to the only production factor (i.e. capital) that may include tangible and intangible assets, including human capital. The returns  $\alpha + \beta$  can be interpreted as 'social returns' in terms of combining output and the externality. We interpret  $\beta > 0$  as a proxy for the social value of output, which is

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<sup>6</sup> Complementarity between two firms arises when, intuitively, one firm has specialized equipment but lacks the appropriate qualification of personnel to operate it, while another firm finds itself in a symmetrical situation. Another example is network industries where vertical integration can decrease transaction costs over the use of the infrastructure. RKR extensively discuss the issue of incomplete contracts, whose transaction costs could be reduced by merging the two firms involved. Substitution occurs when a firm has better management than another one for using the same type of assets. This view suggests that when a managerial team has inefficiently assembled capital to produce a given output, the superior rival team can buy these assets by taking over the competitor and imposing its level of efficiency. The greater the wedge between the quality of the two firms, the potential acquirer and the potential target, the larger the benefit from the merger.

related to policy objectives, such as maximization of consumer surplus, equity, employment, support of R&D etc. We do not discuss whether these policy objectives increase or not social welfare somewhat defined by an independent evaluator: we only assume that they are built in the objective function of the SOE's managers. In other words, the managers of public enterprises are assumed to maximize the "social value" of the firm, including the production of the externality.

We now focus on the decision of one firm to acquire another one, when the opportunity arises<sup>7</sup>. A merge occurs between an acquirer ( $f=A$ ) and a target firm ( $f=T$ ).

We assume that  $z_A = f(\gamma)$ , with  $\gamma > 0, \partial z_A / \partial \gamma \leq 0$ . We interpret  $\gamma$  as a distortion term in the managerial quality of public firms compared to private ones (our benchmark case). When the merged firm is privately owned  $\gamma=1$ , and it can differ from one for public firms only, e.g. when the public management is positively or negatively intrinsically motivated because the firm is under the control of the State (see Gronblom and Willner (2014) for a discussion of intrinsic motivation in the context of public ownership of firms). A coefficient  $\gamma < 1$  means that excess managerial effort is available for public as opposed to private firms. Conversely,  $\gamma > 1$  implies that the managerial quality of public firms is lower, with respect to the private benchmark. Whatever the sign and level of the distortion term, the manager of the SOE is instructed by government to maximize the social returns of the firm.

After the merger, the managerial quality parameter of the merged firm,  $M$ , becomes a combination of the quality of the participating firms:  $z_M = z_M(z_A, z_T, \gamma)$ , with  $\frac{\partial z_M}{\partial z_A} > 0, \frac{\partial z_M}{\partial z_T} \geq 0$  and  $\frac{\partial^2 z_M}{\partial z_T^2} \leq 0$ .

Concavity arises because of increasing complexity of managerial integration. We assume that in the new merged firm,  $\frac{\partial z_f}{\partial \gamma} \leq 0$ , for  $f \in \{M, A, T\}$ . The case of  $z_T$  being strictly positively correlated with  $z_M$

corresponds to the "like buys like" case, or complementarity-type of mergers. We define complementarity in managerial quality whenever  $\frac{\partial z_M}{\partial z_T} \rightarrow \frac{\partial z_M}{\partial z_A}$ . We also assume that the managerial quality of the target firm will never be larger than that of the acquiring firm ( $z_A \geq z_T$ )<sup>8</sup>. There are various reasons why the management of a target firm could be complementary to that of the acquiring firms, for instance because they manage different type of capital assets, they have access to different markets, they use different types of skills. Conversely, managerial qualities of acquiring and target firms become substitute if  $z_M$  converges towards  $z_A$ , which implies that  $\frac{\partial z_M}{\partial z_T} \rightarrow 0$ . This stands for the

case of an acquirer purchasing a poorly managed target in the same industry, which is bought only for the increased capital stock (or market share) it provides to the merged firm. This corresponds to the "high buys low" case, or substitute-type of merger (the traditional "inefficient management hypothesis").

Moreover, we assume that the cost for the acquirer of purchasing the target company is proportional to the net present value (NPV) of the target's production ( $z_T k_{jT} e^{-\Delta r}$ ), where  $r$  is an opportunity cost of capital (a real discount rate) and  $\Delta$  is an arbitrary continuous time interval, multiplied by a scalar  $\theta > 1$ , which accounts for the bargaining power of the target firm. The bargaining power of the target company accounts for the future profit extraction by the target when it realizes that the acquirer will increase its post-merger profits thanks to firms' asset complementarity.

<sup>7</sup> We do not specify a stochastic mechanism as in RKR, we just assume that occasionally managers perceive that it is better to acquire other firms and their specific assets than to increase the type of assets they already control.

<sup>8</sup> For instance, the complementarity form used by RKR is  $z_M = z_A * z_T$ . In fact we observe (as RKR do) also deals involving acquirers less performing than targets. This fact may arise for a number of reasons, including superior leverage of a large acquirer, reshuffling of the portfolio of the acquirer for new strategies, etc. We do not consider these cases, which would need a much more complex framework, involving the analysis of the vendor (i.e. the owner of the target).



A value-optimizing acquiring firm, A, with industry specific capital  $i$  will buy a target firm, T, with industry-specific capital of type  $j$ , if the cost of acquiring T is lower than the NPV of the merged firm. We denote with  $W$  this difference:

$$W = [z_M(k_{iA}^{\alpha+\beta} + k_{jT}^{\alpha+\beta})]e^{-\Delta r} - \theta z_T k_{jT}^{\alpha} e^{-\Delta r}, \quad (2)$$

where  $j, i \in \{1,2\}, \beta \geq 0, \theta \geq 0$ .<sup>9</sup>

A marginal increase by  $k_{jT}$  of total assets of the merged firm implies that  $W$  changes as follows:

$$\frac{\partial W}{\partial k_{jT}} = \frac{1}{k_{jT}^{1-\alpha}} [(\alpha + \beta)z_M k_{jT}^{\beta} - \theta \alpha z_T] = 0, \quad (3)$$

This suggests that the return of additional units of capital decreases the larger is the bargaining power of the target firm (embodied in the scalar  $\theta$ ) and the larger it is with  $\gamma$ , if  $\gamma > 1$ . The return to acquiring capital increases for a positive  $\beta$  externality (for state-owned acquirers) and for  $\gamma < 1$  with  $\gamma$ , as  $\frac{\partial z_M}{\partial \gamma} < 0$ . Since we have no a priori as for which is the size of either  $\beta$  or  $\gamma$ , i.e. for the importance of the externality and the managerial distortion in the case of SOEs, it is an empirical matter to check whether the optimal size of the capital of the target firm is, all other things constant, larger for public or for private firms. Similarly, if the acquirer has a choice, it will choose the target firm with the optimal level of management quality, which maximizes the NPV of the merged firm,  $z_T$ . This is obtained as the solution of the first order condition:

$$\frac{\partial W}{\partial z_T} = \frac{\partial z_M}{\partial z_T} (k_{iA}^{\alpha+\beta} + k_{jT}^{\alpha+\beta}) - \theta k_{jT}^{\alpha} = 0 \Leftrightarrow \frac{\partial z_M}{\partial z_T} = \frac{\theta k_{jT}^{\alpha}}{(k_{iA}^{\alpha+\beta} + k_{jT}^{\alpha+\beta})}, \quad (4)$$

Looking at equation (4), the managerial qualities of the merged firms are closer to substitutes ( $\frac{\partial z_M}{\partial z_T} \rightarrow 0$ ) when  $k_{jT}$  is much larger than  $k_{iA}$ . However, it is also interesting to notice what happens to equation (4) with changes in the externality parameters  $\beta$  and in the motivation/effort parameter  $\gamma$ . For a given level of bargaining power  $\theta$  of the target firm, a larger  $\beta$  will reduce  $\partial z_M / \partial z_T$ . In other words, the larger is the return to of the externality  $\beta$ , the more likely it is that managerial complementarity decreases in deals involving a public firm acquiring the control of a private firm. As for the role of  $\gamma$ , one can notice that the right hand of side equation (4) is a positive constant for fixed levels of capital, productivity and bargaining power coefficients and, as  $z_A$  is negatively correlated with  $\gamma$ , this implies that for  $\gamma < 1$ ,  $z_M$  increases and  $z_T$  has to be larger. For  $\gamma > 1$ ,  $z_M$  decreases and for (4) to be satisfied,  $z_T$  has to decrease. This implies that, for any level of  $\gamma$ , if  $\gamma$  increases (i.e. the public management motivation decreases), then the respective managerial qualities of acquiring and target firms are closer to being substitute.

This framework allows us to guess whether public firms behave as private firms when they are listed in stock markets or when they are involved in buying a foreign firm. As financial markets do not give value to social externalities, they might force public enterprises to behave more similarly to private firms, to avoid being taken over. Public firms acquiring the control of a foreign firm might not be motivated by social externality considerations, such as R&D or occupation preservation, because the

<sup>9</sup> We also assume here that the price of the T does not depend on the social externalities. In other words, the MCC doesn't price the externality.

government is more interested in these objectives at domestic level, and this may allow a behavior of SOEs that is then not very different from that of private ones, i.e.  $\gamma \rightarrow 1, \beta \rightarrow 0$ .

As the latter parameter are not easily observed, empirical analysis should discover whether ownership of the acquires matters in the MCC, without strong priors. In the next section we present our strategy to answer the initial research questions.

#### 4. The dataset

We build our dataset of firms' M&As using the Orbis and Zephyr databases, both managed by the Bureau Van Dijk. Zephyr reports completed deals that took place worldwide from 2000. Deals include acquisitions, mergers, demergers, buy-backs, minority stakes, buy-outs, share buy-backs, management buy-in<sup>10</sup>. Orbis is a global firm-level dataset reporting yearly information from accounts data from 2004. Both datasets use the same firm identification code, which is used for exact matching of the two datasets.

In our analysis we disregarded deals before 2004, as we need to control for some key economic variables in the year before the deal. Hence our final sample covers all deals that took place over the period 2005-2012. The key economic variables we consider are total assets (in current Euro) and return on sales (ROS, also known as operating profit margin). ROS is built as the ratio of earnings before interests and taxes (EBIT) over operating revenues. We chose to use the ROS, an accounting-based indicator, as a proxy of the firm performance as we focus our analysis on both listed and non-listed companies. In fact, although the share value or market capitalization indexes such as the market-to-book value would be a more accurate indicator of firms' values, they are at best available only for companies listed on a stock exchange. In terms of the previous discussion ROS acts as a proxy of the unobservable  $z_f$  parameter, as we assume that the performance of the firm is correlated with the effort and quality of its management. We then classified firms as government owned if its top shareholder was the State or directly controlled by a public institution (government, public authority, etc.) in the year before the deal<sup>11</sup>. For all firms involved in deals we also extract information on their country of residence, industry (identified through the proper NACE rev. 2 2-digit code), whether listed or not, and the percentage of shares owned by the top shareholder. Eventually, we disregarded the share buy-back where acquirer and target are represented by the same firm, and we dropped all deals where the key economic variables or the ownership status<sup>12</sup> were missing in either one of the parties involved, reaching a sample of 25,332 deals which took place worldwide over the period 2005-2012. As shown in Table 1, about 10% of all deals were performed by a public acquirer, broadly reflecting the relative weight of SOEs in the economy (see e.g. Kowalski et al 2013). It is also interesting to notice

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<sup>10</sup> We excluded the rumors about potential and not completed deals. Sources come from reports, international financial journals, company press release, electronic publications, company websites, stock exchange information. <https://www.bvdinfo.com/en-gb/products/economic-and-m-a/m-a/zephyr>.

<sup>11</sup> This definition of public enterprise diverges from the one used by recent research at the OECD, which consider as state-owned only those enterprises where the State owns more than 50% of the firm (Christianen 2011, Kowalski *et al.* 2013,) but it allows us to bring into our analysis also those contemporary mixed public enterprises that, as described by Musacchio and Lazzarini (2012), are ultimately owned by a public body through a minority share in equity which, nevertheless, can guarantee key decisions, such as the appointment of top management. This is important, as particularly in Western Europe, after privatizations, most public enterprises have adopted this form. More recently an OECD paper by Christiansen and Kim (2014) uses the notion of SIE, State Invested Enterprises when a share of 10% or more is ultimately owned by the State. We do not use such a fixed threshold, that in fact doesn't capture our variable of control (for example when a company is a SIE but with private shareholders with a controlling share of equity).

<sup>12</sup> We made a range of checks to verify the correctness of the ownership information extracted from the top shareholder the year before the deal, including automated checks, randomized individual checks and web searches. Finally we also compared the ownership classification with the lists of public enterprises collected by various sources (OECD 2005, Christianen 2011, Kowalsky *et al.* 2013, Musacchio and Lazzarini 2012, SASAC), correcting the ownership information whenever wrongly identified in the first place by our sources. Overall, we find that 433 firms which are indeed controlled by a public body were wrongly identified as private.

that the share of deals involving a public acquirer was lower than 10% before 2008, it increased to 14% in 2009, after the start of the Great Recession, but returned roughly at pre-crisis levels by 2012. Over half of the deals recorded in our data occurred in Western Europe<sup>13</sup>, 11% in Russia, 8% and 5% in Eastern Europe<sup>14</sup> and the United States (Table 2, first column). Interestingly, Russian and Chinese public firms are relatively more active as acquirers than public firms elsewhere. In particular, about one third of Russian and close to half of Chinese deals involves public firms playing the acquirer role (Table 2, second column). Public acquirers are in particular more active in the energy supply sector, in other services of general interest (SGI)<sup>15</sup> and in mining and quarrying, whereas they are relatively less active, but still important players, in the financial and insurance and in the manufacturing sectors. While no notable difference between private and public firms emerges among listed and unlisted companies, public acquirers seems relatively more active in domestic and private in cross-border deals.

**Table 2 - Distribution of deals by ownership of the acquirer.**

	All deals		Deals with public acquirers	
	Obs	%	Obs	%
<b>Total</b>	25,332	100%	3,043	100%
<b>Country of the Acquirer</b>				
China	343	1%	170	6%
North America	1,447	6%	23	1%
Russia	2,626	10%	994	33%
Middle East	160	1%	22	1%
Western Europe	14,424	57%	1,211	40%
Eastern Europe	1,954	8%	208	7%
Rest of the World	4,378	17%	415	14%
<b>Sector of the Acquirer</b>				
Energy supply	614	2%	489	16%
other SGI	2,721	11%	412	14%
Financial & Insurance	6,432	25%	626	21%
Mining & Quarrying	1,193	5%	272	9%
Manufacturing	7,481	30%	770	25%
other sectors	6,891	27%	474	16%
Unlisted Acquirer	13,429	53%	1,614	53%
listed Acquirer	11,903	47%	1,429	47%
cross-border deal	6,312	25%	586	19%
domestic deal	19,020	75%	2,457	81%

Source: Own elaboration on Zephyr and Orbis

By comparing the ROS of the dealers, Table 3 points out that both private and public acquirers purchase lower performing targets roughly in 60% of the deals. This matches with evidence presented by Andrade, Mitchell, Stafford (2001) and RKR (2008) – where two-thirds of transactions involve acquirer outperforming targets, – and ensures that the sample we use is comparable with previous literature, in spite of the much enlarged geographical perspective of our analysis.

Moreover, Table 3 suggests a first straight check of the “like buys like” hypothesis. RKR focus on listed companies in the US and, after grouping mergers according to the deciles distribution of acquirers and targets, they find that “merger activity seems to cluster down the main diagonal [...], indicating that if anything, although bidders have slightly higher market-to-book ratios than targets, their asset

<sup>13</sup> Western Europe includes the following countries: Austria, Belgium, Cyprus, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Lichtenstein, Luxemburg, Malta, The Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, United Kingdom.

<sup>14</sup> Eastern Europe includes the following countries: Albania, Belarus, Bulgaria, Croatia, Czech Republic, Estonia, Hungary, Latvia, Macedonia, Moldavia, Montenegro, Poland, Romania, Serbia, Slovakia, Slovenia, Ukraine

<sup>15</sup> This definition includes: water; waste; transport; postal activities and telecommunications, corresponding to the sectors 36, 37, 38, 39, 40, 49, 50, 51, 52, 53, 61, 62 and 63 of the NACE rev.2 code.

valuations are generally quite similar” (RKR, p.1176). In our sample, roughly 40% of the transactions involve acquirers and targets whose ROS fall in different sides with respect to their ROS mean. When grouping deals according to the decile distribution of the ROS of the dealers, only 16% of the deals falls within the main diagonal (14% in case of public acquirers)<sup>16</sup>. Since the dispersion around the matrix diagonal is higher compared to RKR (2008), at first sight the “like buys like” evidence is not apparent in our sample.

**Table 3 - Deals distribution according to Acquirer and Target ROS values**

	sample with missing			
	private		Public	
	Obs	%	Obs	%
Deals where Acquirer ROS > Target ROS	13,683	60%	1,586	64%
Deals where Acquirer ROS < Target ROS	9,161	40%	902	36%
<b>Mean</b>				
Both Target and Acquirer ROS above their respective mean	4,989	22%	549	22%
Both Target and Acquirer ROS below their respective mean	8,698	38%	868	35%
Target ROS above its respective mean, Acquirer ROS below its respective mean	5,559	24%	639	26%
Target ROS below its respective mean, Acquirer ROS above its respective mean	3,598	16%	432	17%

Source: own elaboration on Zephyr and Orbis

Table 4 presents some descriptive statistics for our main economic variables, namely the value of total assets and the ROS. It shows that, on average, acquirers are bigger and perform better than their respective targets, irrespectively of their ownership nature. Considering the very large standard deviation of the distribution of both total asset and ROS we also computed the median and the median absolute deviation (MAD), which are robust to outliers and qualitative results remained unchanged. Moreover, as the median is sizably smaller than the mean this suggests that the distribution of both variables presents a long top tail (i.e. is positively skewed). In Table 5 we present both mean and median statistics for the difference of total assets and ROS of acquirers and their respective targets and the ratio of target over acquirers’ assets and ROS. As for assets, it suggests that on average deals with public acquirers involve relatively larger acquirers than targets. As for the ROS, it shows that although on average the performance of the target firm is about half that of the private acquiring firms, it is around one quarter when the acquiring firm is public. These remarks are confirmed also when using the median differences and ratios.

**Table 4. Total Assets and ROS of the dealers. All deals and deals by ownership of the acquirer.**

	Freq	Total asset (in mil €)				ROS			
		Mean	Sd	Median	MAD	Mean	Sd	Median	MAD
<b>All deals</b>									
Acquiror	25,332	5,301.118	20,900.000	167.492	163.848	12.785	22.428	8.630	7.260
Target	25,332	2,061.790	10,500.000	19.777	19.153	6.348	22.533	5.470	6.660
<b>Deals with private acquiror</b>									
Acquiror	22,844	4,536.629	19,100.000	144.700	140.980	12.552	22.192	8.275	6.945
Target	22,844	2,184.584	10,900.000	18.561	17.968	6.409	22.538	5.490	6.665
<b>Deals with public acquiror</b>									
Acquiror	2,488	12,320.406	32,500.000	932.193	925.683	14.924	24.388	11.000	8.000
Target	2,488	934.337	4,601.788	32.397	31.326	5.787	22.487	5.290	6.580

Source: Own elaboration on Zephyr and Orbis

<sup>16</sup> We have not reported the table as this topic does not represent the core of our analysis. Data are available upon request.

**Table 5. Total Assets and ROS of the dealers. All deals and deals by ownership of the acquirer. Difference and ratio**

	ratio					ROS				
	Total asset (in mil €)					ROS				
	Freq	Mean	Sd	Median	MAD	Freq	Mean	Sd	Median	MAD
<b>All deals</b>										
A-T	25,332	3,239.328	18,900.000	125.327	164.039	25,332	6.440	29.070	2.730	10.095
T/A	25,332	20.814	435.775	0.155	0.159	25,125	0.690	37.490	0.431	0.676
<b>Deals with private acquirer</b>										
A-T	22,844	2,352.045	16,614.357	50.665	109.697	22,844	6.140	28.810	2.540	9.915
T/A	22,844	22.796	458.590	0.175	0.169	22,653	0.700	39.400	0.437	0.685
<b>Deals with public acquirer</b>										
A-T	2,488	11,386.069	32,084.863	637.749	662.997	2,488	9.140	31.260	4.580	11.435
T/A	2,488	2.609	46.849	0.070	0.068	2,472	0.630	7.415	0.366	0.598

Source: Own elaboration on Zephyr and Orbis.

Note: A stands for acquirer; T stands for target

The picture slightly changes when we distinguish listed acquirers from unlisted ones. In both cases, acquirers continue to outperform targets. Nevertheless, Table 6 suggest that the spread between the ROS of the acquirer and its respective target depends more on the acquirer’ exposure to the evaluation of the capital markets rather than on its ownership nature of the acquirer. First, the ROS of the target ( $ROS_T$ ) increases when its acquirer is listed; and this holds for both public and private acquirers. In particular, private listed acquirers behave more similarly – in terms of ROS of the purchased target company – to public listed acquirers than to private unlisted ones. Similarly, private unlisted acquirers behave more similarly to public unlisted acquirers than private listed ones. Second, within those mergers performed by a listed company, private and public acquirers show a very similar ROS. Third, when comparing unlisted companies, public acquirers show a higher ROS than private ones. Indeed we observe the following stylized facts:

$$(\Delta ROS|o = p, l = L) < (\Delta ROS|o = g, l = L) < (\Delta ROS|o = p, l = U) < (\Delta ROS|o = g, l = U)$$

where  $\Delta ROS$  stands for the difference of ROS between acquirer and vendor, acquirers’ ownership is either private ( $o = p$ ) or public ( $o = g$ ) and the acquirer is either listed ( $l = L$ ) or unlisted ( $l = U$ ). These data suggest that the complementarity type of M&A tends to prevail when the acquirer – both public and private – is listed, while we observe a departure towards the substitutive type of M&A when the acquirer is unlisted.

**Table 6. ROS of the dealers. All deals and deals by ownership of the acquirer. Difference and ratio for listed and unlisted acquirers**

	Deals where the acquirer is listed					Deals where the acquirer is unlisted				
	ROS					ROS				
	Freq	Mean	Sd	Median	MAD	Freq	Mean	Sd	Median	MAD
<b>All deals</b>										
A-T	11,903	5.025	26.120	2.260	8.400	13,429	7.688	31.410	3.290	11.730
T/A	11,759	0.505	9.871	0.588	0.606	13,366	0.855	50.557	0.293	0.751
<b>Deals with private acquirer</b>										
A-T	10,710	4.947	26.009	2.06	8.4	12,134	7.198	31.040	3.035	11.730
T/A	10,577	0.497	10.328	0.597	0.606	12,076	0.874	53.097	0.299	0.770
<b>Deals with public acquirer</b>										
A-T	1,193	5.729	27.093	3.99	8.4	1,295	12.276	34.364	5.030	11.730
T/A	1,182	0.58	3.855	0.529	0.602	1,290	0.680	9.579	0.239	0.577

Source: own elaboration on Zephyr and Orbis

Note: A stands for acquirer; T stands for target

In case of cross-border deals, public acquirers have, on average, a lower performance and purchase a worse performing target than private firms, although the  $\Delta ROS$  is quite similar among private and public acquiring firms (see tables 10 and 11 reported in Appendix A). When looking at deals where acquirer and target belong to the same country, the ROS of the target is lower than in case of cross-border deals. Thus, when going global, both public and private enterprises purchase a better enterprise compared to the targets purchased domestically. Moreover, private enterprises purchasing domestically show a lower ROS than private performing trans-border deals. These facts suggest that cross-border deals performed by private acquirers are more similar to cross-border deals by public acquirers than domestic deals performed by private ones.

## 5. The Empirical Model

The conceptual framework (section 3) shows the possible directions of the departure from the private benchmark of public ownership in the MCC. In this section we specify our empirical approach to test the previous theoretical results. For testing the correlation between the managerial quality of the target and acquirer firm, we estimated the following multivariate linear regression using ordinary least squares:

$$z_{T_i} = a + X'_i b + cPUB_i + dz_{A_i} + \varepsilon_i, \quad (5)$$

where  $i = 1, \dots, I$  identifies individual deals;  $z_A$  and  $z_T$  stand respectively for the performance of the acquirer and target companies;  $PUB_i$  is a dummy that equals 1 when the acquirer is a public enterprise and zero otherwise, and  $X$  is a matrix including a set of control variables, such as year of the deal, the geographical location, the industry of the acquirer and of the target, and  $\varepsilon_i$  is the error term. In some specifications,  $X_i$  also includes the level of total assets, a dichotomous variable equal to 1 if the acquirer is listed and zero otherwise, the percentage of shares owned by the top shareholder of the acquirer and a dichotomous variable equal to 1 if the dealers operate in the same country and zero otherwise. The scalar  $a$ ,  $c$  and  $d$  and the vector  $b$  include the set of coefficient to be estimated.

Equation (5) allows one to verify whether acquirers outperform targets ( $z_T < z_A$ ) and whether the ROS of the target decreases when the acquirer is public ( $z_T^g < z_T^p$ ). The latter hypothesis is confirmed if  $c < 0$ , and we interpret this case as a marginal departure from the "like buys like" benchmark. A confirmation of the former comes checking whether  $\hat{a} + d\bar{z}_A < \bar{z}_A$ , where hats indicate estimated coefficients and overbar unconditional means, which extends evidence of Table 3 by controlling for a set of other variables ( $X$  and  $PUB$ ).

Then, we estimate equation (5) adding also some interaction terms obtaining:

$$z_{T_i} = a + bX'_i + cPUB_i + dz_{A_i} + ePUB_i \times I_i + \varepsilon_i, \quad (6)$$

where  $e$  is a vector of coefficients to be estimated and  $I$  is a vector of categorical variables defining either the country of the acquirer, its industry or whether it is listed. By interacting the public dummy ( $PUB$ ) with  $I$ , we can test whether the ROS of the targets varies among different public acquirers depending on the geographical location, sector of activity and presence in the stock market of such acquirers.

To verify whether the optimal size of the capital of the target firm increases or decreases when the acquirer is public, we estimate linear regression models similar to (5) and (6), where asset of target is the dependent variable and asset of acquirer is the main control one. In other words, using similar notation as above, we estimate:

$$k_{T_i} = a + bX'_i + cPUB_i + dz_{A_i} + \varepsilon_i, \quad (7)$$

$$k_{T_i} = a + bX'_i + cPUB_i + dk_{A_i} + ePUB_i \times I_i + \varepsilon_i, \quad (8)$$

Equation (7) allows one to assess if the optimal size of the capital of the target firm increases or decreases when the acquirer is public. The former case is verified if  $c > 0$  and, according to our conceptual framework, this suggests that the “non-tradable externality” effect ( $\beta$ ) prevails over the intrinsic motivation effect ( $\gamma$ ) in the public acquirer objective function, while if the opposite occurs when  $c < 0$ . With equation (8) we test whether the average stock of capital of target changes conditional on the specific type of public enterprises.

## 6. Results

The estimate results for equations (5) - (8) are presented in a reduced version in Tables 8 and 9 (extended versions are reported in Appendix A). Results of the regression where the ROS of the target is the dependent variable (Table 8) confirm that for the average private acquirer the traditional “high buys low” proposition is confirmed, as  $\hat{a} + \hat{d}\bar{z}_A < \bar{z}_A$  in all specifications. Conversely, the RKR (2008) prediction is weakened when using a wider dataset which include both listed and unlisted acquirers in a geographically larger context, and when using accounting-based data rather than stock market evaluation.

Estimates presented in Table 8 also confirm that public acquirers outperform their respective targets (i.e. purchase target firms with lower ROS) ( $\hat{a} + \hat{d}\bar{z}_A + \hat{c} < \bar{z}_A$ ). This result holds in all the specifications of the model and, since we control for the level of assets of both acquirer and target companies, we reject a possible claim that it is size-drive. We conclude that the previous “high buys low” finding can be extended to the case of public acquirers. In second place, the consistently negative and significant coefficient of the public dummy ( $\hat{c}$ ) points out that the performance of the target decreases when the acquirer is public. Thus, the substitutability motivation for M&As is stronger for public than for private acquirers.

Columns 3-5 of Table 8 also show that acquirers and targets are more similar in terms of performance – suggesting that the complementary type of M&A prevails – when the acquirer is listed, when firms are located in the different countries, and when dealers are similar in size (the same holds when the acquirer comes from the US, see Table 12 reported in Appendix A). These results are consistent with RKR (2008), who focused on listed companies only in the US stock market. And bring us to conclude that the “like buys like” is an important, but particular finding with respect to our analysis, as it cannot be extended to all the types of deal.

Column 6 of Table 8 shows the interaction between the public dummy and the listed dummy. The positive and significant coefficient of the interacted variable implies that the ROS of the target increases when the public acquirer is listed rather than unlisted. Notably, the spread of performance among the dealers decreases (i.e. the “like buys like” complementary type of M&A prevails) when the acquirer is either private and listed or public and listed, while it increases when the acquirer is unlisted and, particularly, when it is a public unlisted company. Thus, when the public acquirer is listed, its behavior in the MCC converges towards the private benchmark, and this adds evidence to the hypotheses drawn in Section 3 regarding the convergence of social externalities to zero as public enterprises are market oriented and their management is less constrained by political objectives (i.e.  $\beta \rightarrow 0$ ).

Finally, the interactions between the public dummy and the country and sector dummies allow us to assess whether the profitability of the target varies depending on the acquirer’s country of residence

or sector of activity (results are reported in Table 13, Appendix A). Results show that country heterogeneity is important as only some geographical aggregation (namely Russia and Western Europe) are mainly explaining the behavior of public firms (column 2 of Table 13), suggesting that some robustness checks could be advisable. Finally, it shows that ROS of the target decreases when the public acquirer is located in Russia and when it operates in the mining and quarrying sector. The same holds when comparing public and private acquirers. This suggests that the lower performance of targets acquired by public enterprises is mostly driven by those public acquirers which operate in Russia and in the mining sector. Conversely, the target ROS is even higher than the private benchmark when looking at the manufacturing sector. Notice that we find no significant results as for the interaction of the energy sector and other SGI with public acquirers. This allows us to rule out the possibility that the behavior of public acquirers in the MCC deviates from the private benchmark in the network industries, for instance due to regulation or market concentration, i.e. that public enterprises are relatively advantaged by domestic regulators. In other terms, we do not find evidence that the double role of public institutions – regulators and ultimate owner of regulated enterprises – significantly distorts the behavior of public acquirers in the MCC relative to private enterprises.

**Table 8 – ROS of the target and ownership of the acquirer**

Dependent Variable: ROS of the target	(1)	(2)	(3)	(4)	(5)	(6)
	OLS	OLS	OLS	OLS	OLS	OLS
ROS of the Acquirer	0.13*** (0.01)	0.12*** (0.01)	0.12*** (0.01)	0.12*** (0.01)	0.12*** (0.01)	0.12*** (0.01)
Public	-1.96*** (0.49)	-1.24** (0.49)	-1.29*** (0.49)	-1.29*** (0.49)	-1.37*** (0.49)	-2.16*** (0.66)
Asset of the acquirer		-0.01 (0.01)	-0.02** (0.01)	-0.02** (0.01)	-0.02** (0.01)	-0.02** (0.01)
Asset of the target		0.36*** (0.02)	0.36*** (0.02)	0.35*** (0.02)	0.35*** (0.02)	0.35*** (0.02)
Listed acquirer			1.70*** (0.33)	1.59*** (0.33)	2.89*** (0.41)	2.72*** (0.42)
domestic deal				-1.11*** (0.36)	-1.09*** (0.36)	-1.08*** (0.36)
% of shares of Acquirer's top shareholder					0.03*** (0.01)	0.03*** (0.01)
Public*listed dummy						1.68* (0.92)
Constant	6.34*** (0.65)	6.11*** (0.64)	4.57*** (0.71)	5.59*** (0.78)	3.55*** (0.87)	3.65*** (0.87)
Year of the deal	YES	YES	YES	YES	YES	YES
Country of the Acquirer	YES	YES	YES	YES	YES	YES
Sector of the Acquirer	YES	YES	YES	YES	YES	YES
Country of the Target	YES	YES	YES	YES	YES	YES
Sector of the Target	YES	YES	YES	YES	YES	YES
Observations	25,332	25,332	25,332	25,332	25,332	25,332
R-squared	0.080	0.094	0.095	0.095	0.096	0.096

Standard errors in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

When the assets of the target are employed as dependent variable (table 9), previous results are broadly confirmed. Acquirers are bigger in size than their respective targets, and this holds irrespectively on the ownership of the acquirer. Notably, also in this case the spread between the assets of the dealers increases when the acquirer is a public enterprise. Indeed, the coefficient of the “public” dummy is negative and statistically significant in all specifications of the model, confirming that the complementarity motivation for M&A is stronger for private acquirers, while the substitutability type of M&A prevails when the acquirer is public. We also confirm that the dealers are



more similar in terms of assets in case of cross-border deals, while, differently from the previous case, we do not find statistically significant differences among listed and unlisted acquirers. We also notice that the percentage of shares owned by the top shareholder is statistically significant but not different from zero. When looking at the interaction between the public and the listed dummies, results differ from the previous case. While the assets of the target slightly increases when the private acquirer is listed rather than unlisted, the opposite occurs when the acquirer is public. We deduce that, compared to unlisted public acquirers, listed ones tend to purchase smaller companies with a better profitability. We finally highlight that both the countries and the sectors are highly significant and, in particular, results confirm that the assets of the target are lower when the public acquirer is located in Russia and when it operates in the mining sector (see Table 15 in Appendix A).

**Table 9 - Asset of the target and ownership of the acquirer**

Dependent variable: Asset of the target	(1)	(2)	(3)	(4)	(5)	(6)
	OLS	OLS	OLS	OLS	OLS	OLS
Asset of the Acquirer	0.11*** (0.00)	0.11*** (0.00)	0.11*** (0.00)	0.11*** (0.00)	0.11*** (0.00)	0.11*** (0.00)
Public	-2.53*** (0.17)	-2.45*** (0.17)	-2.45*** (0.17)	-2.42*** (0.17)	-2.43*** (0.17)	-1.32*** (0.22)
ROS of the acquirer		0.01*** (0.00)	0.01*** (0.00)	0.01*** (0.00)	0.01*** (0.00)	0.01*** (0.00)
ROS of the target		0.04*** (0.00)	0.04*** (0.00)	0.04*** (0.00)	0.04*** (0.00)	0.04*** (0.00)
Listed acquirer			0.07 (0.11)	-0.16 (0.11)	0.01 (0.14)	0.26* (0.14)
Domestic deals				-2.25*** (0.12)	-2.25*** (0.12)	-2.25*** (0.12)
% of shares of Acquirer's top shareholder					0.00** (0.00)	0.00** (0.00)
Public*listed dummy						-2.36*** (0.31)
Constant	0.24 (0.22)	-0.16 (0.22)	-0.23 (0.24)	1.83*** (0.26)	1.56*** (0.29)	1.42*** (0.29)
Year of the deal	YES	YES	YES	YES	YES	YES
Country of the Acquirer	YES	YES	YES	YES	YES	YES
Sector of the Acquirer	YES	YES	YES	YES	YES	YES
Country of the Target	YES	YES	YES	YES	YES	YES
Sector of the Target	YES	YES	YES	YES	YES	YES
Observations	25,332	25,332	25,332	25,332	25,332	25,332
R-squared	0.508	0.516	0.516	0.522	0.522	0.523

Standard errors in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

To conclude, results of our regression reject the null hypothesis that in general public acquirers behave in the MCC in a significantly different way relative private ones. The general finding of the standard “inefficient management hypothesis” – that is efficient for private acquirers to purchase less performing firms – is also confirmed when the M&A is performed by a public enterprise. Moreover, we find that major differences in the performance of the dealers depends more on their exposure to market incentives rather than on the ownership nature. Public listed enterprises are similar to private listed enterprises, and the same holds when comparing private and public unlisted companies. Similarly, public enterprises that go global through cross-border M&As behave more similarly to internationalized private acquirers than to public and private enterprises which acquire domestically. The RKR (2008) “like buys like” evidence is confirmed when looking at public and private companies which are listed and which internationalize through cross-border deals. Strong differences emerge between public and private when the public acquirer comes from Russia and operates in the mining

sector, while they tend to converge in market-oriented economies, in China, and in the manufacturing, energy and other SGI. We conclude that the increasing M&A activity of public enterprises is not necessarily detrimental to the MCC capacity to correct firms' inefficiencies. M&As performed either by public and private acquirers do not differ in terms of aggregate market efficiency.

## **7. Robustness checks**

We have tested the robustness of our results in four different ways.

First, considering the highly dispersed data and the likelihood that some results could be driven from outliers, we tested the robustness of our results by trimming the distribution of the ratio of target's on acquirer's ROS at the 2-nd and 98-th percentile and the same models as in tables 8 and 10. Results are largely confirmed (see tables 16 and 17 in Appendix B).

Next, we have tested whether our results are confirmed under a different definition of public enterprise. Instead of defining a firm as public if its top shareholder is public, whatever is the share owned, we first define a firm as public if the top shareholder is public and owns either more than 25% of shares or more than 50% of shares. In this former case the number of deals performed by a public enterprise is 1,930 (or 7.6% of total deals), while in the latter case it decreases to 1,490 (5.91% of deals). In both cases, the main results of our analysis are largely confirmed when looking both at the ROS and at the assets of the target (see tables 18-21 in Appendix B).

As third check, given the results presented above, we tested whether results depend only on the inclusion of Russia in the sample. Hence, we dropped all observations regarding Russian acquiring firms. Tables 22 and 23 (Appendix B) broadly confirm previous results, though with a lower level of statistical significance. Interestingly, in this case the listed dummy becomes statistically significant also for the case of assets, implying that the spread in size among the dealers decreases when the acquirer is listed. Finally, given the previous results presented above, we tested whether they depend only on the inclusion the mining sector in the sample. Hence, we dropped all observations regarding deals with acquiring firms operating in the mining sector. Tables 24 and 25 (Appendix B) broadly confirm results, though with a lower level of statistical significance.

## **8. Conclusions**

In this concluding section we briefly discuss how our findings contribute to earlier literature, their possible interpretations for understanding contemporary economies, and some further research and policy implications.

The market for corporate control is an important economic institution. This is best appreciated in a counterfactual world where it would be impossible for investors to target a firm. In such a word, the only way for a firm to grow, whatever its ownership and objectives, is by the direct of acquisition of assets. These assets (or "capital") should be interpreted here in the broadest meaning: tangible, as equipment and buildings; intangibles, as brands, licenses and patents, or skilled human capital; and potential assets as market penetration, knowledge of local contexts, social capital in terms of relations with stakeholders, including government. Private investors owning a firm can instruct the managers to maximize profits and take decisions on the optimal size of capital in this broad sense. However, without a MCC critical growth opportunities would be lost. While it may be relatively easy for the managers to buy standard equipment in the competitive product markets, where such equipment is supplied on a regular basis, for most of the remaining types of assets the product markets are imperfect. Building and facilities are place-based and often unique, patents and other assets deriving from intellectual property may have limited substitute. Skilled labour takes time and an appropriate context to be formed. Moreover, certain assets work well only if combined with others. It is worthless to buy a complex machinery if the firm doesn't have the engineers that know how to operate and

maintain it, and vice versa. Reputation of a firm takes years or decades to be built. Market penetration in certain countries needs a deep knowledge of the context and good relations with the regulators. Thus, acquiring a firm is a way of buying time and of saving on considerable transaction costs. In some cases in fact it is the only way to enter in a new market. In a precise sense the early intuition by Manne and others that the MCC is about managerial efficiency is still valid. Rival managerial teams may considerably decrease the cost of achieving the objectives of the investors through deals with other firms, and the intuition, confirmed by earlier literature, suggests that the MCC is the arena of Darwinian selection of managerial teams.

We enlarge the perspective of this way of thinking about the MCC in two ways. First, we shed some light on the debate about the relative merits of the traditional managerial “substitution” view (the “inefficient management hypothesis”) and the new “complementarity” perspective arising from contractual incompleteness as suggested by RKR (2008). Our empirical analysis shows that – when looking to the global MCC, which includes both listed and non-listed firms, domestic and trans-border deals, variability of control shares by the top shareholders, and different industries, countries and time – the “complementarity” result is replicated as a special, albeit important case, of a wider set of opportunities, which include the traditional management “substitution” mechanism. Complementarity prevails among listed companies, for example, but is weaker among non-listed ones. We come back on this issue later in this section.

Second, and this is the core contribution of our paper, we have questioned whether enterprises ultimately owned by governments and active in the MCC disturb the efficiency of such market. Again a counterfactual history would clarify the importance of the question. If governments are offering special protection to the firms they control, including for example access to credit easier than for their private competitors, or legal franchises, or other privileges, the efficiency of the MCC may be disturbed by weak public managers being able of acquiring the control of better rival teams. This would fundamentally disrupt the efficiency of the MCC. This is the concern of some recent policy literature and of editorials in the media about State Capitalism.

Before going back to our empirical findings and their interpretation, we briefly restate how our conceptual framework takes into account the behavior of public enterprises in the MCC. We suggest that SOEs maximize a social production function that includes an externality. Thus, such firms deploy assets for both producing market goods and non-tradable externalities. The latter “goods” are desired by politicians, and may include “excess” R&D, employment, investment, environmental protection, etc. We do not make any claim about the social welfare impact of such valuation by politicians of the externality. An independent evaluator, with his own social welfare function, may or may not conclude that it is desirable to assign a certain implicit “shadow price” to the externality, beyond the value of the associated production of goods for the market. In this context, the managers appointed by the investors in public enterprises may be more or less “intrinsically” motivated and competent than the managers appointed by the private investors in private firms, our benchmark case.

Both the interaction of the different objectives and of the different managerial effort of the public enterprises relative to private enterprises, suggest that in the MCC public enterprises may act differently from their private rivals, depending on two core parameters, which cannot be directly observed: the political importance of the externalities in the social production function (our  $\beta$  added to the usual  $\alpha$  in a simple production function), and the deviation of public management type from the benchmark (our  $\gamma$ ).

In this frame, the behavior of the SOEs in the MCC may be very different or very close to the one by private firms, depending on such parameters, and our empirical findings shed light on the situation.

There are three core results. The first one is that the SOEs in general behave as predicted by the “inefficient management hypothesis”, i.e. more profitable firms (in terms of ROS) tend to acquire less

performing targets. Thus, if the MCC is efficient because of the usual argument for the private firms, it is efficient also on the public enterprises side. We do not find evidence that the share of deals where the acquirer is less performing than the target is larger when the acquirer is a SOE.

Second, we also find some evidence that there is however a specificity of the SOEs as acquirer in such market, as the spread between their performance and the one by the target is larger than for private acquirer. In other words, SOE buy relatively “lower”. The result is confirmed both by our baseline models, and by models with interaction terms that discriminate between types of SOE according to industries and countries. The result is also very robust, when for example we eliminate Russia, or the mining sector from the sample.

We interpret this finding in our conceptual framework as an “excess” inclination of SOEs to acquire assets because of their unobserved political objectives and managerial characteristics. However, we also find that the behavior of SOEs reverts to the average private firm when they are listed companies, with a government top shareholder with a relatively smaller stake, and when acquiring assets abroad. This result is an indirect proof of the interpretation of the first and second results. Contemporary governments instruct the managers to earn profits for the investors, but also additional political objectives, which are more important in the domestic context, as there the politicians’ constituency is. When the role of private investors and international markets is stronger, the managers of SOEs are more aligned with their private counterparts.

These findings have some possible policy implications. The fact that contemporary SOE do not disrupt the MCC is good news and should suggest that concerns about State Capitalism should not be exaggerated, particularly in the international arena. One may however interpret profitability in terms of ROS as an indication of market power, as Christiansen and Kim (2014) suggest. We cannot exclude this, but we do not find evidence that in regulated industries there substantial differences between private and public firms, thus both may enjoy rents and protection from the regulators. Further inquiry is needed on this point, possibly industry by industry and country by country. As most of the major global public enterprises are Chinese, the evidence we have on deals by Chinese firm are to be studied in detail (they however seem different from the ones by Russian firms, so that probably at this level of analysis one needs to make some distinctions about the context).

Further inquiry is also needed to understand the rationales of the deviation of SOE from the behavior of private firms in the domestic MCC. The fact that SOEs there buy relatively “lower” is desirable or not from a social welfare perspective? The traditional “inefficient management hypothesis” would suggest that the “lower” a firm buys, the better for social welfare. The alternative “complementarity” view suggests otherwise. Our empirical analysis cannot go from the micro-data to the aggregate efficiency effects, and it would be interesting to study in future this issue.

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## Appendix A

**Table 10. ROS of the dealers. All deals and deals by ownership of the acquirer.**

	Domestic deal					Cross-border deals				
	ROS					ROS				
	Freq	Mean	Sd	Median	MAD	Freq	Mean	Sd	Median	MAD
<b>All deals</b>										
Acquiror	19.020	11,753	22,936	7,845	6,728	6.312	15,894	20,513	11,000	7,875
Target	19.020	5,429	22,339	4,990	6,346	6.312	9,117	22,888	7,130	7,589
<b>Deals with private acquiror</b>										
Acquiror	17.052	11,346	22,513	7,370	6,540	5.792	16,102	20,822	11,000	8,000
Target	17.052	5,448	22,387	4,980	6,360	5.792	9,238	22,743	7,230	7,505
<b>Deals with public acquiror</b>										
Acquiror	1.968	15,278	26,065	11,000	8,360	520	13,583	16,522	11,485	6,485
Target	1968	5,263	21,923	5,120	6,220	520,000	7,772	24,426	5,815	8,525

Source: own elaboration on Zephyr and Orbis

**Table 11. ROS of the dealers. All deals and deals by ownership of the acquirer. Difference and ratio for domestic and cross-border deals**

	Domestic deal					Cross-border deals				
	ROS					ROS				
	Freq	Mean	Sd	Median	MAD	Freq	Mean	Sd	Median	MAD
<b>All deals</b>										
A-T	19,020	6.324	29.666	2.810	10.560	6,312	6.777	27.213	2.545	8.580
T/A	18,841	0.674	37.657	0.388	0.691	6,284	0.744	36.981	0.565	0.658
<b>Deals with private acquirer</b>										
A-T	17,052	5.898	29.345	2.600	10.560	5,792	6.864	27.173	2.330	8.580
T/A	16,883	0.679	39.682	0.396	0.703	5,770	0.753	38.585	0.573	0.664
<b>Deals with public acquirer</b>										
A-T	1,968	10.015	32.086	4.660	10.560	520	5.811	27.671	4.370	8.580
T/A	1,958	0.629	8.217	0.339	0.587	514	0.643	2.687	0.497	0.596

Source: own elaboration on Zephyr and Orbis



**Table 12. ROS of the target and ownership of the acquirer – extended version**

Dependent Variable: ROS of the target	(1)	(2)	(3)	(4)	(5)
	OLS	OLS	OLS	OLS	OLS
ROS of the Acquirer	0.13*** (0.01)	0.12*** (0.01)	0.12*** (0.01)	0.12*** (0.01)	0.12*** (0.01)
Public	-1.96*** (0.49)	-1.24** (0.49)	-1.29*** (0.49)	-1.29*** (0.49)	-1.37*** (0.49)
Acquirer country: China	-5.57*** (2.02)	-2.79 (2.01)	-2.63 (2.01)	-2.24 (2.02)	-2.33 (2.02)
Acquirer country: United States	-1.83** (0.90)	2.52*** (0.92)	2.35** (0.92)	1.73* (0.94)	1.83* (0.94)
Acquirer country: Russia	-6.30** (2.56)	-2.89 (2.55)	-2.30 (2.55)	-3.17 (2.56)	-3.61 (2.56)
Acquirer country: Middle East	0.00 (2.58)	4.01 (2.57)	3.79 (2.57)	3.26 (2.57)	2.76 (2.57)
Acquirer country: Western Europe	-4.78*** (0.65)	-0.03 (0.69)	0.69 (0.71)	0.54 (0.71)	0.18 (0.71)
Acquirer country: Eastern Europe	-6.92*** (1.11)	-2.34** (1.13)	-1.38 (1.14)	-0.72 (1.16)	-1.09 (1.16)
Acquirer sector: Energy supply	2.87*** (1.10)	2.05* (1.09)	1.82* (1.09)	1.80* (1.09)	1.61 (1.09)
Acquirer sector: other SGI	0.75 (0.56)	0.86 (0.56)	0.62 (0.56)	0.59 (0.56)	0.62 (0.56)
Acquirer sector: Financial & Insurance	-0.67 (0.41)	-1.08*** (0.41)	-0.80* (0.41)	-0.81** (0.41)	-0.85** (0.41)
Acquirer sector: Mining & Quarrying	8.20*** (0.85)	2.77*** (0.89)	2.59*** (0.89)	2.47*** (0.89)	2.35*** (0.89)
Acquirer sector: Manufacturing	0.22 (0.41)	0.18 (0.40)	-0.04 (0.40)	-0.10 (0.40)	-0.14 (0.40)
Target country: China	4.41*** (0.98)	3.96*** (0.97)	4.02*** (0.97)	4.01*** (0.97)	3.97*** (0.97)
Target country: United States	0.42 (0.49)	0.17 (0.48)	0.22 (0.48)	0.22 (0.48)	0.22 (0.48)
Target country: Russia	15.47*** (0.62)	15.55*** (0.61)	15.42*** (0.61)	15.48*** (0.61)	15.51*** (0.61)
Target country: Middle East	4.54*** (0.73)	1.00 (0.75)	1.02 (0.74)	0.91 (0.75)	0.97 (0.75)
Target country: Western Europe	-0.47 (0.36)	-0.68* (0.36)	-0.60* (0.36)	-0.63* (0.36)	-0.56 (0.36)
Target country: Eastern Europe	6.08*** (1.85)	3.69** (1.84)	3.82** (1.84)	3.53* (1.84)	3.29* (1.84)
Target sector: Energy supply	-5.38*** (1.13)	-8.39*** (1.13)	-8.40*** (1.13)	-7.83*** (1.15)	-7.74*** (1.15)
Target sector: Other SGI	2.17 (2.58)	0.09 (2.56)	0.56 (2.56)	1.61 (2.59)	1.79 (2.59)
Target sector: Financial & Insurance	-0.04 (2.92)	-3.01 (2.90)	-3.10 (2.90)	-2.61 (2.90)	-2.47 (2.90)
Target sector: Mining & Quarrying	0.42 (0.64)	-3.84*** (0.67)	-3.67*** (0.67)	-3.63*** (0.67)	-3.54*** (0.67)
Target sector: Manufacturing & Construction	0.84 (1.00)	-2.82*** (1.01)	-2.86*** (1.01)	-3.48*** (1.03)	-3.45*** (1.03)
Asset of the acquirer		-0.01 (0.01)	-0.02** (0.01)	-0.02** (0.01)	-0.02** (0.01)
Asset of the target		0.36*** (0.02)	0.36*** (0.02)	0.35*** (0.02)	0.35*** (0.02)
Listed acquirer			1.70*** (0.33)	1.59*** (0.33)	2.89*** (0.41)
domestic deal				-1.11*** (0.36)	-1.09*** (0.36)
% of shares of Acquirer's top shareholder					0.03*** (0.01)
Constant	6.34*** (0.65)	6.11*** (0.64)	4.57*** (0.71)	5.59*** (0.78)	3.55*** (0.87)
Yearly dummy	YES	YES	YES	YES	YES
Observations	25,332	25,332	25,332	25,332	25,332
R-squared	0.080	0.094	0.095	0.095	0.096

Standard errors in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

**Table 13. ROS of the target and ownership of the acquirer with interactions – extended version**

Dependent Variable: ROS of the target	(1) OLS	(2) OLS	(3) OLS
ROS of the Acquirer	0.12*** (0.01)	0.12*** (0.01)	0.12*** (0.01)
Public	-2.16*** (0.66)	0.72 (1.24)	-1.70 (1.15)
Acquirer country: China	-2.53 (2.02)	-3.59 (2.30)	-2.87 (2.03)
Acquirer country: United States	1.88** (0.94)	1.92** (0.95)	2.06** (0.94)
Acquirer country: Russia	-3.66 (2.56)	-2.89 (2.58)	-3.16 (2.57)
Acquirer country: Middle East	2.68 (2.57)	2.21 (2.72)	2.80 (2.57)
Acquirer country: Western Europe	0.11 (0.71)	0.39 (0.72)	0.39 (0.71)
Acquirer country: Eastern Europe	-1.16 (1.16)	-1.02 (1.18)	-0.93 (1.16)
Acquirer sector: Energy supply	1.55 (1.09)	1.82* (1.09)	2.31 (1.52)
Acquirer sector: other SGI	0.62 (0.56)	0.59 (0.56)	0.49 (0.58)
Acquirer sector: Financial & Insurance	-0.85** (0.41)	-0.85** (0.41)	-0.73* (0.43)
Acquirer sector: Mining & Quarrying	2.31*** (0.89)	2.64*** (0.90)	4.00*** (1.02)
Acquirer sector: Manufacturing & Construction	-0.14 (0.40)	-0.16 (0.41)	-0.36 (0.42)
Target country: China	3.33* (1.84)	3.41* (1.84)	3.29* (1.84)
Target country: United States	-7.72*** (1.15)	-7.77*** (1.15)	-7.96*** (1.15)
Target country: Russia	1.86 (2.59)	1.77 (2.59)	1.55 (2.59)
Target country: Middle East	-2.43 (2.90)	-2.21 (2.92)	-2.65 (2.90)
Target country: Western Europe	-3.51*** (0.67)	-3.53*** (0.67)	-3.64*** (0.67)
Target country: Eastern Europe	-3.45*** (1.03)	-3.40*** (1.03)	-3.56*** (1.03)
Target sector: Energy supply	4.02*** (0.97)	4.07*** (0.97)	4.50*** (0.98)
Target sector: Other SGI	0.22 (0.48)	0.19 (0.48)	0.16 (0.48)
Target sector: Financial & Insurance	15.49*** (0.61)	15.50*** (0.61)	15.44*** (0.61)
Target sector: Mining & Quarrying	0.99 (0.75)	0.91 (0.75)	0.68 (0.75)
Target sector: Manufacturing & Construction	-0.56 (0.36)	-0.57 (0.36)	-0.58 (0.36)
Asset of the acquirer	-0.02** (0.01)	-0.02** (0.01)	-0.01 (0.01)
Asset of the target	0.35*** (0.02)	0.35*** (0.02)	0.33*** (0.02)
Listed acquirer	2.72*** (0.42)	2.94*** (0.41)	2.93*** (0.41)
domestic deal	-1.08*** (0.36)	-1.05*** (0.36)	-1.01*** (0.36)
% of shares of Acquirer's top shareholder	0.03*** (0.01)	0.03*** (0.01)	0.03*** (0.01)
Public*listed dummy	1.68* (0.92)		
Public*China		0.99 (2.65)	
Public*United States		8.28 (5.71)	
Public*Russia		-4.28*** (1.58)	
Public*Middle East		2.46 (5.32)	
Public*Western Europe		-2.35* (1.41)	
Public*Eastern Europe		-1.50 (2.05)	
Public*Energy supply			-1.46 (2.12)
Public*other SGI			1.46 (1.67)
Public*Financial & Insurance			-1.05 (1.50)
Public*Mining & Quarrying			-5.47*** (2.08)
Public*Manufacturing & Construction			3.17** (1.47)
Constant	3.65*** (0.87)	3.27*** (0.88)	3.37*** (0.87)
Year	YES	YES	YES
Observations	25,332	25,332	25,332
R-squared	0.096	0.097	0.097

Standard errors in parentheses \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

**Table 14. Assets of the target and ownership of the acquirer – extended version**

Dependent variable: Asset of the target	(1)	(2)	(3)	(4)	(5)
	OLS	OLS	OLS	OLS	OLS
Asset of the Acquirer	0.11*** (0.00)	0.11*** (0.00)	0.11*** (0.00)	0.11*** (0.00)	0.11*** (0.00)
Public	-2.53*** (0.17)	-2.45*** (0.17)	-2.45*** (0.17)	-2.42*** (0.17)	-2.43*** (0.17)
Acquirer country: China	-6.91*** (0.69)	-6.67*** (0.68)	-6.66*** (0.68)	-5.77*** (0.68)	-5.78*** (0.68)
Acquirer country: United States	-12.34*** (0.31)	-12.26*** (0.30)	-12.27*** (0.30)	-13.35*** (0.31)	-13.33*** (0.31)
Acquirer country: Russia	-9.60*** (0.87)	-9.35*** (0.86)	-9.32*** (0.86)	-10.96*** (0.86)	-11.02*** (0.86)
Acquirer country: Middle East	-10.14*** (0.88)	-10.35*** (0.87)	-10.36*** (0.87)	-11.30*** (0.87)	-11.36*** (0.87)
Acquirer country: Western Europe	-12.43*** (0.22)	-12.19*** (0.22)	-12.17*** (0.23)	-12.31*** (0.23)	-12.36*** (0.23)
Acquirer country: Eastern Europe	-11.35*** (0.38)	-11.05*** (0.38)	-11.01*** (0.38)	-9.54*** (0.39)	-9.59*** (0.39)
Acquirer sector: Energy supply	1.91*** (0.37)	1.78*** (0.37)	1.77*** (0.37)	1.72*** (0.37)	1.69*** (0.37)
Acquirer sector: other SGI	-0.31* (0.19)	-0.36* (0.19)	-0.37* (0.19)	-0.42** (0.19)	-0.41** (0.19)
Acquirer sector: Financial & Insurance	1.59*** (0.14)	1.42*** (0.14)	1.43*** (0.14)	1.38*** (0.14)	1.37*** (0.14)
Acquirer sector: Mining & Quarrying	13.39*** (0.29)	12.86*** (0.29)	12.85*** (0.29)	12.44*** (0.29)	12.42*** (0.29)
Acquirer sector: Manufacturing & Construction	0.20 (0.14)	0.18 (0.14)	0.17 (0.14)	0.04 (0.14)	0.03 (0.14)
Target country: China	6.47*** (0.63)	6.19*** (0.62)	6.19*** (0.62)	5.51*** (0.62)	5.48*** (0.62)
Target country: United States	8.46*** (0.38)	8.70*** (0.38)	8.69*** (0.38)	9.73*** (0.38)	9.74*** (0.38)
Target country: Russia	6.61*** (0.88)	6.49*** (0.87)	6.51*** (0.87)	8.54*** (0.87)	8.56*** (0.87)
Target country: Middle East	7.82*** (0.99)	7.83*** (0.99)	7.83*** (0.99)	8.70*** (0.98)	8.72*** (0.98)
Target country: Western Europe	11.42*** (0.22)	11.40*** (0.22)	11.40*** (0.22)	11.35*** (0.22)	11.36*** (0.22)
Target country: Eastern Europe	9.41*** (0.34)	9.39*** (0.34)	9.39*** (0.34)	8.00*** (0.35)	8.00*** (0.35)
Target sector: Energy supply	0.88*** (0.33)	0.60* (0.33)	0.60* (0.33)	0.58* (0.33)	0.58* (0.33)
Target sector: Other SGI	0.57*** (0.17)	0.52*** (0.16)	0.52*** (0.16)	0.53*** (0.16)	0.53*** (0.16)
Target sector: Financial & Insurance	-0.23 (0.21)	-0.89*** (0.21)	-0.90*** (0.21)	-0.75*** (0.21)	-0.75*** (0.21)
Target sector: Mining & Quarrying	9.34*** (0.25)	9.11*** (0.25)	9.11*** (0.25)	8.76*** (0.25)	8.77*** (0.25)
Target sector: Manufacturing & Construction	0.44*** (0.12)	0.45*** (0.12)	0.45*** (0.12)	0.38*** (0.12)	0.39*** (0.12)
ROS of the acquirer		0.01*** (0.00)	0.01*** (0.00)	0.01*** (0.00)	0.01*** (0.00)
ROS of the target		0.04*** (0.00)	0.04*** (0.00)	0.04*** (0.00)	0.04*** (0.00)
Listed acquirer			0.07 (0.11)	-0.16 (0.11)	0.01 (0.14)
Domestic deals				-2.25*** (0.12)	-2.25*** (0.12)
% of shares of Acquirer's top shareholder					0.00** (0.00)
Constant	0.24 (0.22)	-0.16 (0.22)	-0.23 (0.24)	1.83*** (0.26)	1.56*** (0.29)
Year	YES	YES	YES	YES	YES
Observations	25,332	25,332	25,332	25,332	25,332
R-squared	0.508	0.516	0.516	0.522	0.522

Standard errors in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

**Table 15. Assets of the target and ownership of the acquirer with interactions – extended version**

Dependent variable: Asset of the target	(1) OLS	(2) OLS	(3) OLS
Asset of the Acquirer	0.11*** (0.00)	0.11*** (0.00)	0.12*** (0.00)
Public	-1.32*** (0.22)	-5.39*** (0.42)	0.46 (0.38)
Acquirer country: China	-5.48*** (0.68)	-6.92*** (0.78)	-5.12*** (0.66)
Acquirer country: United States	-13.38*** (0.31)	-13.49*** (0.31)	-11.88*** (0.30)
Acquirer country: Russia	-10.93*** (0.86)	-10.79*** (0.87)	-8.66*** (0.84)
Acquirer country: Middle East	-11.22*** (0.87)	-12.30*** (0.91)	-10.27*** (0.84)
Acquirer country: Western Europe	-12.23*** (0.23)	-12.64*** (0.23)	-10.83*** (0.22)
Acquirer country: Eastern Europe	-9.47*** (0.39)	-9.88*** (0.39)	-8.27*** (0.38)
Acquirer sector: Energy supply	1.78*** (0.37)	1.58*** (0.37)	-0.30 (0.50)
Acquirer sector: other SGI	-0.42** (0.19)	-0.47** (0.19)	-0.34* (0.19)
Acquirer sector: Financial & Insurance	1.37*** (0.14)	1.30*** (0.14)	1.42*** (0.14)
Acquirer sector: Mining & Quarrying	12.45*** (0.29)	12.52*** (0.29)	18.12*** (0.31)
Acquirer sector: Manufacturing & Construction	0.04 (0.14)	0.01 (0.14)	0.10 (0.14)
Target country: China	5.42*** (0.62)	5.61*** (0.62)	4.77*** (0.60)
Target country: United States	9.69*** (0.38)	9.67*** (0.38)	8.44*** (0.37)
Target country: Russia	8.44*** (0.87)	8.52*** (0.87)	7.02*** (0.85)
Target country: Middle East	8.64*** (0.98)	9.03*** (0.98)	7.78*** (0.95)
Target country: Western Europe	11.30*** (0.22)	11.27*** (0.22)	10.09*** (0.21)
Target country: Eastern Europe	7.98*** (0.34)	7.87*** (0.34)	7.00*** (0.33)
Target sector: Energy supply	0.51 (0.33)	0.58* (0.33)	2.19*** (0.32)
Target sector: Other SGI	0.53*** (0.16)	0.46*** (0.16)	0.28* (0.16)
Target sector: Financial & Insurance	-0.72*** (0.21)	-0.71*** (0.21)	-0.76*** (0.20)
Target sector: Mining & Quarrying	8.73*** (0.25)	8.69*** (0.25)	7.08*** (0.24)
Target sector: Manufacturing & Construction	0.39*** (0.12)	0.38*** (0.12)	0.26** (0.12)
ROS of the acquirer	0.01*** (0.00)	0.01*** (0.00)	0.01*** (0.00)
ROS of the target	0.04*** (0.00)	0.04*** (0.00)	0.04*** (0.00)
Listed acquirer	0.26* (0.14)	-0.00 (0.14)	0.21 (0.14)
domestic Deal	-2.25*** (0.12)	-2.22*** (0.12)	-1.88*** (0.12)
% of shares of Acquirer's top shareholder	0.00** (0.00)	0.00*** (0.00)	0.01*** (0.00)
Public*listed dummy	-2.36*** (0.31)		
Public*China		4.73*** (0.89)	
Public*United States		4.84** (1.92)	
Public*Russia		1.14** (0.53)	
Public*Middle East		7.32*** (1.79)	
Public*Western Europe		4.30*** (0.47)	
Public*Eastern Europe		4.29*** (0.69)	
Public*Energy supply			-1.46** (0.69)
Public*other SGI			-0.93* (0.55)
Public*Financial & Insurance			-2.03*** (0.49)
Public*Mining & Quarrying			-24.87*** (0.66)
Public*Manufacturing & Construction			-0.98** (0.48)
Constant	1.42*** (0.29)	1.82*** (0.30)	0.73** (0.29)
Observations	25,332	25,332	25,332
R-squared	0.523	0.525	0.553

Standard errors in parentheses  
\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

## Appendix B - Robustness check

**Table 16. ROS of the target, after trimming at the 2-nd and 98-th percentiles**

Dependent Variable: ROS of the target	(1)	(2)	(3)	(4)	(5)
	OLS	OLS	OLS	OLS	OLS
ROS of the Acquirer	0.14*** (0.01)	0.13*** (0.01)	0.13*** (0.01)	0.13*** (0.01)	0.13*** (0.01)
Public	-1.50*** (0.50)	-1.00** (0.50)	-1.04** (0.50)	-1.05** (0.50)	-1.11** (0.50)
Acquirer country: China	-5.97*** (2.03)	-3.09 (2.02)	-2.94 (2.02)	-2.63 (2.03)	-2.70 (2.02)
Acquirer country: United States	-1.87** (0.92)	2.23** (0.94)	2.00** (0.94)	1.52 (0.96)	1.61* (0.96)
Acquirer country: Russia	-6.61** (2.62)	-3.47 (2.61)	-2.80 (2.61)	-3.48 (2.63)	-3.90 (2.63)
Acquirer country: Middle East	0.08 (2.61)	4.07 (2.60)	3.81 (2.60)	3.40 (2.60)	2.92 (2.60)
Acquirer country: Western Europe	-5.14*** (0.66)	-0.46 (0.70)	0.37 (0.72)	0.26 (0.72)	-0.06 (0.72)
Acquirer country: Eastern Europe	-7.03*** (1.14)	-2.40** (1.16)	-1.30 (1.17)	-0.76 (1.19)	-1.09 (1.19)
Acquirer sector: Energy supply	2.39** (1.13)	1.65 (1.13)	1.41 (1.13)	1.40 (1.13)	1.21 (1.13)
Acquirer sector: other SGI	0.87 (0.57)	0.95* (0.56)	0.66 (0.57)	0.65 (0.57)	0.67 (0.57)
Acquirer sector: Financial & Insurance	-1.12*** (0.42)	-1.40*** (0.42)	-1.11*** (0.42)	-1.12*** (0.42)	-1.15*** (0.42)
Acquirer sector: Mining & Quarrying	9.02*** (0.87)	3.39*** (0.92)	3.19*** (0.92)	3.09*** (0.92)	3.00*** (0.92)
Acquirer sector: Manufacturing & Construction	0.33 (0.41)	0.29 (0.41)	0.04 (0.41)	-0.01 (0.41)	-0.05 (0.41)
Target country: China	6.27*** (1.86)	3.85** (1.85)	4.03** (1.85)	3.79** (1.86)	3.55* (1.86)
Target country: United States	-5.00*** (1.14)	-7.90*** (1.14)	-7.87*** (1.14)	-7.43*** (1.16)	-7.35*** (1.16)
Target country: Russia	2.69 (2.65)	0.82 (2.63)	1.39 (2.63)	2.21 (2.65)	2.38 (2.65)
Target country: Middle East	0.10 (2.93)	-2.89 (2.91)	-2.97 (2.91)	-2.61 (2.91)	-2.46 (2.91)
Target country: Western Europe	0.87 (0.65)	-3.31*** (0.69)	-3.10*** (0.69)	-3.08*** (0.69)	-3.00*** (0.69)
Target country: Eastern Europe	0.93 (1.03)	-2.78*** (1.05)	-2.80*** (1.05)	-3.32*** (1.07)	-3.30*** (1.07)
Target sector: Energy supply	4.54*** (1.03)	3.96*** (1.02)	3.98*** (1.02)	3.97*** (1.02)	3.95*** (1.02)
Target sector: Other SGI	0.37 (0.49)	0.14 (0.49)	0.20 (0.49)	0.20 (0.49)	0.20 (0.49)
Target sector: Financial & Insurance	15.29*** (0.62)	15.39*** (0.62)	15.22*** (0.62)	15.28*** (0.62)	15.32*** (0.62)
Target sector: Mining & Quarrying	4.06*** (0.74)	0.74 (0.76)	0.76 (0.76)	0.67 (0.76)	0.72 (0.76)
Target sector: Manufacturing & Construction	-0.69* (0.37)	-0.89** (0.37)	-0.82** (0.37)	-0.84** (0.37)	-0.77** (0.37)
Asset of the acquirer		0.00 (0.01)	-0.00 (0.01)	-0.01 (0.01)	-0.01 (0.01)
Asset of the target		0.33*** (0.02)	0.33*** (0.02)	0.33*** (0.02)	0.33*** (0.02)
Listed acquirer			1.98*** (0.33)	1.89*** (0.34)	3.11*** (0.42)
domestic deal				-0.88** (0.37)	-0.86** (0.37)
% of shares of Acquirer's top shareholder					0.03*** (0.01)
Constant	6.32*** (0.65)	6.05*** (0.65)	4.28*** (0.72)	5.08*** (0.79)	3.17*** (0.88)
Year	YES	YES	YES	YES	YES
Observations	24,316	24,316	24,316	24,316	24,316
R-squared	0.086	0.098	0.100	0.100	0.101

Standard errors in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

**Table 17. Asset of the target, after trimming at the 2-nd and 98-th percentiles**

Dependent variable: asset of the target	(1) OLS	(2) OLS	(3) OLS	(4) OLS	(5) OLS
Asset of the Acquirer	0.17*** (0.00)	0.17*** (0.00)	0.17*** (0.00)	0.16*** (0.00)	0.16*** (0.00)
Public	-2.36*** (0.17)	-2.30*** (0.17)	-2.30*** (0.17)	-2.28*** (0.17)	-2.29*** (0.17)
Acquirer country: China	-6.92*** (0.68)	-6.69*** (0.67)	-6.69*** (0.67)	-5.96*** (0.67)	-5.97*** (0.67)
Acquirer country: United States	-11.75*** (0.30)	-11.69*** (0.30)	-11.69*** (0.30)	-12.61*** (0.31)	-12.60*** (0.31)
Acquirer country: Russia	-8.92*** (0.87)	-8.69*** (0.87)	-8.69*** (0.87)	-10.09*** (0.87)	-10.14*** (0.87)
Acquirer country: Middle East	-9.72*** (0.87)	-9.97*** (0.86)	-9.97*** (0.86)	-10.75*** (0.86)	-10.81*** (0.86)
Acquirer country: Western Europe	-12.10*** (0.22)	-11.88*** (0.22)	-11.88*** (0.23)	-12.00*** (0.23)	-12.04*** (0.23)
Acquirer country: Eastern Europe	-11.06*** (0.38)	-10.80*** (0.38)	-10.80*** (0.38)	-9.55*** (0.39)	-9.59*** (0.39)
Acquirer sector: Energy supply	1.40*** (0.38)	1.28*** (0.37)	1.28*** (0.37)	1.26*** (0.37)	1.23*** (0.37)
Acquirer sector: other SGI	-0.28 (0.19)	-0.32* (0.19)	-0.32* (0.19)	-0.36* (0.19)	-0.36* (0.19)
Acquirer sector: Financial & Insurance	1.45*** (0.14)	1.27*** (0.14)	1.27*** (0.14)	1.24*** (0.14)	1.24*** (0.14)
Acquirer sector: Mining & Quarrying	13.04*** (0.30)	12.54*** (0.29)	12.54*** (0.30)	12.20*** (0.29)	12.19*** (0.29)
Acquirer sector: Manufacturing & Construction	0.15 (0.14)	0.12 (0.13)	0.12 (0.14)	0.01 (0.14)	0.01 (0.14)
Target country: China	6.81*** (0.62)	6.54*** (0.61)	6.54*** (0.62)	5.97*** (0.61)	5.94*** (0.61)
Target country: United States	8.10*** (0.38)	8.31*** (0.38)	8.31*** (0.38)	9.18*** (0.38)	9.19*** (0.38)
Target country: Russia	6.55*** (0.88)	6.44*** (0.87)	6.44*** (0.87)	8.13*** (0.88)	8.16*** (0.88)
Target country: Middle East	7.73*** (0.97)	7.75*** (0.97)	7.75*** (0.97)	8.45*** (0.96)	8.47*** (0.96)
Target country: Western Europe	11.41*** (0.22)	11.38*** (0.22)	11.38*** (0.22)	11.33*** (0.22)	11.33*** (0.22)
Target country: Eastern Europe	9.58*** (0.34)	9.56*** (0.34)	9.56*** (0.34)	8.36*** (0.35)	8.36*** (0.35)
Target sector: Energy supply	0.82** (0.34)	0.58* (0.34)	0.58* (0.34)	0.56* (0.34)	0.56* (0.34)
Target sector: Other SGI	0.41** (0.16)	0.37** (0.16)	0.36** (0.16)	0.36** (0.16)	0.36** (0.16)
Target sector: Financial & Insurance	-0.34 (0.21)	-0.93*** (0.21)	-0.93*** (0.21)	-0.80*** (0.21)	-0.79*** (0.21)
Target sector: Mining & Quarrying	8.52*** (0.25)	8.32*** (0.25)	8.32*** (0.25)	8.04*** (0.25)	8.05*** (0.25)
Target sector: Manufacturing & Construction	0.34*** (0.12)	0.36*** (0.12)	0.36*** (0.12)	0.31** (0.12)	0.31*** (0.12)
ROS of the acquirer		0.01*** (0.00)	0.01*** (0.00)	0.01*** (0.00)	0.01*** (0.00)
ROS of the target		0.04*** (0.00)	0.04*** (0.00)	0.04*** (0.00)	0.04*** (0.00)
Listed acquirer			-0.01 (0.11)	-0.20* (0.11)	-0.04 (0.14)
Domestic deals				-1.89*** (0.12)	-1.89*** (0.12)
% of shares of Acquirer's top shareholder					0.00* (0.00)
Constant	-0.11 (0.22)	-0.49** (0.22)	-0.48** (0.24)	1.26*** (0.26)	1.01*** (0.29)
Observations	24,316	24,316	24,316	24,316	24,316
R-squared	0.550	0.557	0.557	0.561	0.561

Standard errors in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

**Table 18. ROS of the target, with public firm if top shareholder is public and with at least 25% of total shares**

Dependent Variable: ROS of the target	(1) OLS	(2) OLS	(3) OLS	(4) OLS	(5) OLS
ROS of the Acquirer	0.13*** (0.01)	0.12*** (0.01)	0.12*** (0.01)	0.12*** (0.01)	0.12*** (0.01)
Public	-1.98*** (0.56)	-1.27** (0.56)	-1.16** (0.56)	-1.15** (0.56)	-1.55*** (0.56)
Acquirer country: China	-5.78*** (2.02)	-2.91 (2.01)	-2.81 (2.01)	-2.41 (2.02)	-2.45 (2.01)
Acquirer country: United States	-1.78** (0.90)	2.56*** (0.92)	2.40*** (0.92)	1.79* (0.94)	1.87** (0.94)
Acquirer country: Russia	-6.29** (2.56)	-2.88 (2.55)	-2.33 (2.55)	-3.19 (2.56)	-3.62 (2.56)
Acquirer country: Middle East	-0.01 (2.58)	4.01 (2.57)	3.78 (2.57)	3.25 (2.57)	2.76 (2.57)
Acquirer country: Western Europe	-4.77*** (0.65)	-0.01 (0.69)	0.68 (0.71)	0.53 (0.71)	0.17 (0.71)
Acquirer country: Eastern Europe	-6.92*** (1.11)	-2.34** (1.13)	-1.40 (1.14)	-0.75 (1.16)	-1.14 (1.16)
Acquirer sector: Energy supply	2.79** (1.10)	2.00* (1.09)	1.72 (1.09)	1.70 (1.09)	1.61 (1.09)
Acquirer sector: other SGI	0.73 (0.56)	0.86 (0.56)	0.61 (0.56)	0.58 (0.56)	0.63 (0.56)
Acquirer sector: Financial & Insurance	-0.66 (0.41)	-1.07*** (0.41)	-0.81** (0.41)	-0.83** (0.41)	-0.86** (0.41)
Acquirer sector: Mining & Quarrying	8.15*** (0.85)	2.74*** (0.89)	2.54*** (0.89)	2.42*** (0.89)	2.34*** (0.89)
Acquirer sector: Manufacturing & Construction	0.21 (0.41)	0.17 (0.40)	-0.04 (0.40)	-0.11 (0.40)	-0.15 (0.40)
Target country: China	6.13*** (1.85)	3.72** (1.84)	3.84** (1.84)	3.54* (1.84)	3.31* (1.84)
Target country: United States	-5.36*** (1.13)	-8.39*** (1.13)	-8.39*** (1.13)	-7.83*** (1.15)	-7.73*** (1.15)
Target country: Russia	2.23 (2.58)	0.12 (2.56)	0.58 (2.57)	1.62 (2.59)	1.82 (2.59)
Target country: Middle East	0.00 (2.92)	-2.99 (2.90)	-3.07 (2.90)	-2.59 (2.90)	-2.44 (2.90)
Target country: Western Europe	0.46 (0.64)	-3.82*** (0.67)	-3.66*** (0.67)	-3.61*** (0.67)	-3.52*** (0.67)
Target country: Eastern Europe	0.87 (1.00)	-2.80*** (1.01)	-2.85*** (1.01)	-3.47*** (1.03)	-3.42*** (1.03)
Target sector: Energy supply	4.38*** (0.98)	3.95*** (0.97)	3.98*** (0.97)	3.97*** (0.97)	3.98*** (0.97)
Target sector: Other SGI	0.41 (0.49)	0.16 (0.48)	0.21 (0.48)	0.22 (0.48)	0.22 (0.48)
Target sector: Financial & Insurance	15.44*** (0.62)	15.53*** (0.61)	15.41*** (0.61)	15.47*** (0.61)	15.50*** (0.61)
Target sector: Mining & Quarrying	4.57*** (0.73)	1.01 (0.75)	1.04 (0.74)	0.93 (0.75)	0.99 (0.75)
Target sector: Manufacturing & Construction	-0.48 (0.36)	-0.68* (0.36)	-0.61* (0.36)	-0.64* (0.36)	-0.57 (0.36)
Asset of the acquirer		-0.01 (0.01)	-0.02** (0.01)	-0.02** (0.01)	-0.02** (0.01)
Asset of the target		0.36*** (0.02)	0.36*** (0.02)	0.35*** (0.02)	0.35*** (0.02)
Listed acquirer			1.66*** (0.33)	1.55*** (0.33)	2.90*** (0.41)
domestic deal				-1.11*** (0.36)	-1.08*** (0.36)
% of shares of Acquirer's top shareholder					0.03*** (0.01)
Constant	6.28*** (0.65)	6.07*** (0.64)	4.58*** (0.71)	5.59*** (0.78)	3.45*** (0.87)
Year	YES	YES	YES	YES	YES
Observations	25,332	25,332	25,332	25,332	25,332
R-squared	0.080	0.094	0.095	0.095	0.096

Standard errors in parentheses  
\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

**Table 19. Asset of the target, with public firm if top shareholder is public and with at least 25% of total shares**

Dependent variable: asset of the target	(1) OLS	(2) OLS	(3) OLS	(4) OLS	(5) OLS
Asset of the Acquirer	0.11*** (0.00)	0.11*** (0.00)	0.11*** (0.00)	0.11*** (0.00)	0.11*** (0.00)
Public	-2.53*** (0.17)	-2.45*** (0.17)	-2.45*** (0.17)	-2.42*** (0.17)	-2.43*** (0.17)
Acquirer country: China	-6.91*** (0.69)	-6.67*** (0.68)	-6.66*** (0.68)	-5.77*** (0.68)	-5.78*** (0.68)
Acquirer country: United States	-12.34*** (0.31)	-12.26*** (0.30)	-12.27*** (0.30)	-13.35*** (0.31)	-13.33*** (0.31)
Acquirer country: Russia	-9.60*** (0.87)	-9.35*** (0.86)	-9.32*** (0.86)	-10.96*** (0.86)	-11.02*** (0.86)
Acquirer country: Middle East	-10.14*** (0.88)	-10.35*** (0.87)	-10.36*** (0.87)	-11.30*** (0.87)	-11.36*** (0.87)
Acquirer country: Western Europe	-12.43*** (0.22)	-12.19*** (0.22)	-12.17*** (0.23)	-12.31*** (0.23)	-12.36*** (0.23)
Acquirer country: Eastern Europe	-11.35*** (0.38)	-11.05*** (0.38)	-11.01*** (0.38)	-9.54*** (0.39)	-9.59*** (0.39)
Acquirer sector: Energy supply	1.91*** (0.37)	1.78*** (0.37)	1.77*** (0.37)	1.72*** (0.37)	1.69*** (0.37)
Acquirer sector: other SGI	-0.31* (0.19)	-0.36* (0.19)	-0.37* (0.19)	-0.42** (0.19)	-0.41** (0.19)
Acquirer sector: Financial & Insurance	1.59*** (0.14)	1.42*** (0.14)	1.43*** (0.14)	1.38*** (0.14)	1.37*** (0.14)
Acquirer sector: Mining & Quarrying	13.39*** (0.29)	12.86*** (0.29)	12.85*** (0.29)	12.44*** (0.29)	12.42*** (0.29)
Acquirer sector: Manufacturing & Construction	0.20 (0.14)	0.18 (0.14)	0.17 (0.14)	0.04 (0.14)	0.03 (0.14)
Target country: China	6.47*** (0.63)	6.19*** (0.62)	6.19*** (0.62)	5.51*** (0.62)	5.48*** (0.62)
Target country: United States	8.46*** (0.38)	8.70*** (0.38)	8.69*** (0.38)	9.73*** (0.38)	9.74*** (0.38)
Target country: Russia	6.61*** (0.88)	6.49*** (0.87)	6.51*** (0.87)	8.54*** (0.87)	8.56*** (0.87)
Target country: Middle East	7.82*** (0.99)	7.83*** (0.99)	7.83*** (0.99)	8.70*** (0.98)	8.72*** (0.98)
Target country: Western Europe	11.42*** (0.22)	11.40*** (0.22)	11.40*** (0.22)	11.35*** (0.22)	11.36*** (0.22)
Target country: Eastern Europe	9.41*** (0.34)	9.39*** (0.34)	9.39*** (0.34)	8.00*** (0.35)	8.00*** (0.35)
Target sector: Energy supply	0.88*** (0.33)	0.60* (0.33)	0.60* (0.33)	0.58* (0.33)	0.58* (0.33)
Target sector: Other SGI	0.57*** (0.17)	0.52*** (0.16)	0.52*** (0.16)	0.53*** (0.16)	0.53*** (0.16)
Target sector: Financial & Insurance	-0.23 (0.21)	-0.89*** (0.21)	-0.90*** (0.21)	-0.75*** (0.21)	-0.75*** (0.21)
Target sector: Mining & Quarrying	9.34*** (0.25)	9.11*** (0.25)	9.11*** (0.25)	8.76*** (0.25)	8.77*** (0.25)
Target sector: Manufacturing & Construction	0.44*** (0.12)	0.45*** (0.12)	0.45*** (0.12)	0.38*** (0.12)	0.39*** (0.12)
ROS of the acquirer		0.01*** (0.00)	0.01*** (0.00)	0.01*** (0.00)	0.01*** (0.00)
ROS of the target		0.04*** (0.00)	0.04*** (0.00)	0.04*** (0.00)	0.04*** (0.00)
Listed acquirer			0.07 (0.11)	-0.16 (0.11)	0.01 (0.14)
Domestic deals				-2.25*** (0.12)	-2.25*** (0.12)
% of shares of Acquirer's top shareholder					0.00** (0.00)
Constant	0.24 (0.22)	-0.16 (0.22)	-0.23 (0.24)	1.83*** (0.26)	1.56*** (0.29)
Year	YES	YES	YES	YES	YES
Observations	25,332	25,332	25,332	25,332	25,332
R-squared	0.508	0.516	0.516	0.522	0.522

Standard errors in parentheses  
 \*\*\* p<0.01, \*\* p<0.05, \* p<0.1



**Table 20. ROS of the target, with public firm if top shareholder is public and with at least 50% of total shares**

Dependent Variable: ROS of the target	(1) OLS	(2) OLS	(3) OLS	(4) OLS	(5) OLS
ROS of the Acquirer	0.13*** (0.01)	0.12*** (0.01)	0.12*** (0.01)	0.12*** (0.01)	0.12*** (0.01)
Public	-2.41*** (0.62)	-1.72*** (0.62)	-1.42** (0.62)	-1.42** (0.62)	-2.06*** (0.63)
Acquirer country: China	-5.89*** (2.02)	-2.96 (2.01)	-2.87 (2.01)	-2.47 (2.01)	-2.51 (2.01)
Acquirer country: United States	-1.78** (0.90)	2.56*** (0.92)	2.41*** (0.92)	1.80* (0.94)	1.89** (0.94)
Acquirer country: Russia	-6.32** (2.56)	-2.87 (2.55)	-2.35 (2.55)	-3.22 (2.56)	-3.66 (2.56)
Acquirer country: Middle East	-0.05 (2.58)	3.99 (2.57)	3.77 (2.57)	3.24 (2.57)	2.72 (2.57)
Acquirer country: Western Europe	-4.77*** (0.65)	-0.01 (0.69)	0.66 (0.71)	0.51 (0.71)	0.12 (0.71)
Acquirer country: Eastern Europe	-6.88*** (1.11)	-2.31** (1.13)	-1.40 (1.14)	-0.75 (1.16)	-1.16 (1.16)
Acquirer sector: Energy supply	2.79** (1.09)	2.06* (1.09)	1.73 (1.09)	1.71 (1.09)	1.67 (1.09)
Acquirer sector: other SGI	0.73 (0.56)	0.87 (0.56)	0.62 (0.56)	0.59 (0.56)	0.65 (0.56)
Acquirer sector: Financial & Insurance	-0.67 (0.41)	-1.08*** (0.41)	-0.83** (0.41)	-0.84** (0.41)	-0.88** (0.41)
Acquirer sector: Mining & Quarrying	8.11*** (0.84)	2.73*** (0.89)	2.52*** (0.89)	2.40*** (0.89)	2.33*** (0.89)
Acquirer sector: Manufacturing & Construction	0.20 (0.41)	0.17 (0.40)	-0.04 (0.40)	-0.10 (0.40)	-0.14 (0.40)
Target country: China	6.20*** (1.85)	3.77** (1.84)	3.88** (1.84)	3.58* (1.84)	3.35* (1.84)
Target country: United States	-5.35*** (1.13)	-8.39*** (1.13)	-8.39*** (1.13)	-7.82*** (1.15)	-7.72*** (1.15)
Target country: Russia	2.30 (2.58)	0.17 (2.56)	0.60 (2.57)	1.65 (2.59)	1.87 (2.59)
Target country: Middle East	0.02 (2.92)	-2.98 (2.90)	-3.06 (2.90)	-2.58 (2.90)	-2.42 (2.90)
Target country: Western Europe	0.47 (0.64)	-3.81*** (0.67)	-3.66*** (0.67)	-3.61*** (0.67)	-3.51*** (0.67)
Target country: Eastern Europe	0.84 (1.00)	-2.82*** (1.01)	-2.87*** (1.01)	-3.49*** (1.03)	-3.45*** (1.03)
Target sector: Energy supply	4.43*** (0.98)	4.01*** (0.97)	4.01*** (0.97)	4.00*** (0.97)	4.03*** (0.97)
Target sector: Other SGI	0.40 (0.49)	0.16 (0.48)	0.20 (0.48)	0.21 (0.48)	0.21 (0.48)
Target sector: Financial & Insurance	15.44*** (0.62)	15.52*** (0.61)	15.41*** (0.61)	15.47*** (0.61)	15.50*** (0.61)
Target sector: Mining & Quarrying	4.57*** (0.73)	1.01 (0.75)	1.04 (0.74)	0.93 (0.75)	0.98 (0.75)
Target sector: Manufacturing & Construction	-0.48 (0.36)	-0.69* (0.36)	-0.61* (0.36)	-0.64* (0.36)	-0.57 (0.36)
Asset of the acquirer		-0.01 (0.01)	-0.02** (0.01)	-0.02** (0.01)	-0.02** (0.01)
Asset of the target		0.36*** (0.02)	0.36*** (0.02)	0.35*** (0.02)	0.35*** (0.02)
Listed acquirer			1.61*** (0.33)	1.50*** (0.34)	2.89*** (0.41)
domestic deal				-1.11*** (0.36)	-1.09*** (0.36)
% of shares of Acquirer's top shareholder					0.03*** (0.01)
Constant	6.25*** (0.65)	6.06*** (0.64)	4.61*** (0.71)	5.62*** (0.78)	3.41*** (0.87)
Year	YES	YES	YES	YES	YES
Observations	25,332	25,332	25,332	25,332	25,332
R-squared	0.080	0.094	0.095	0.095	0.096

Standard errors in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

**Table 21. Asset of the target, with public firm if top shareholder is public and with at least 50% of total shares**

Dependent variable: Asset of the target	(1) OLS	(2) OLS	(3) OLS	(4) OLS	(5) OLS
Asset of the Acquirer	0.11*** (0.00)	0.11*** (0.00)	0.11*** (0.00)	0.11*** (0.00)	0.11*** (0.00)
Public	-2.35*** (0.21)	-2.28*** (0.21)	-2.29*** (0.21)	-2.26*** (0.21)	-2.40*** (0.21)
Acquirer country: China	-7.46*** (0.69)	-7.20*** (0.68)	-7.20*** (0.68)	-6.30*** (0.68)	-6.30*** (0.68)
Acquirer country: United States	-12.26*** (0.31)	-12.19*** (0.30)	-12.18*** (0.30)	-13.26*** (0.31)	-13.24*** (0.31)
Acquirer country: Russia	-9.73*** (0.87)	-9.47*** (0.87)	-9.49*** (0.87)	-11.13*** (0.87)	-11.22*** (0.87)
Acquirer country: Middle East	-10.26*** (0.88)	-10.47*** (0.87)	-10.45*** (0.87)	-11.40*** (0.87)	-11.50*** (0.87)
Acquirer country: Western Europe	-12.47*** (0.22)	-12.22*** (0.22)	-12.26*** (0.23)	-12.41*** (0.23)	-12.48*** (0.23)
Acquirer country: Eastern Europe	-11.34*** (0.38)	-11.05*** (0.38)	-11.09*** (0.38)	-9.62*** (0.39)	-9.70*** (0.39)
Acquirer sector: Energy supply	1.58*** (0.37)	1.46*** (0.37)	1.48*** (0.37)	1.43*** (0.37)	1.42*** (0.37)
Acquirer sector: other SGI	-0.38** (0.19)	-0.42** (0.19)	-0.40** (0.19)	-0.45** (0.19)	-0.44** (0.19)
Acquirer sector: Financial & Insurance	1.57*** (0.14)	1.39*** (0.14)	1.37*** (0.14)	1.32*** (0.14)	1.32*** (0.14)
Acquirer sector: Mining & Quarrying	13.25*** (0.29)	12.71*** (0.29)	12.72*** (0.29)	12.31*** (0.29)	12.29*** (0.29)
Acquirer sector: Manufacturing & Construction	0.18 (0.14)	0.15 (0.14)	0.17 (0.14)	0.04 (0.14)	0.03 (0.14)
Target country: China	6.59*** (0.63)	6.30*** (0.62)	6.30*** (0.62)	5.61*** (0.62)	5.56*** (0.62)
Target country: United States	8.50*** (0.38)	8.74*** (0.38)	8.74*** (0.38)	9.77*** (0.38)	9.78*** (0.38)
Target country: Russia	6.75*** (0.88)	6.63*** (0.87)	6.61*** (0.87)	8.64*** (0.87)	8.68*** (0.87)
Target country: Middle East	7.91*** (1.00)	7.92*** (0.99)	7.93*** (0.99)	8.80*** (0.98)	8.83*** (0.98)
Target country: Western Europe	11.50*** (0.22)	11.48*** (0.22)	11.47*** (0.22)	11.41*** (0.22)	11.43*** (0.22)
Target country: Eastern Europe	9.42*** (0.34)	9.40*** (0.34)	9.40*** (0.34)	8.01*** (0.35)	8.01*** (0.35)
Target sector: Energy supply	0.82** (0.33)	0.53 (0.33)	0.53 (0.33)	0.51 (0.33)	0.52 (0.33)
Target sector: Other SGI	0.55*** (0.17)	0.50*** (0.16)	0.50*** (0.16)	0.50*** (0.16)	0.50*** (0.16)
Target sector: Financial & Insurance	-0.25 (0.21)	-0.92*** (0.21)	-0.91*** (0.21)	-0.77*** (0.21)	-0.76*** (0.21)
Target sector: Mining & Quarrying	9.43*** (0.25)	9.19*** (0.25)	9.19*** (0.25)	8.84*** (0.25)	8.85*** (0.25)
Target sector: Manufacturing & Construction	0.42*** (0.12)	0.43*** (0.12)	0.43*** (0.12)	0.36*** (0.12)	0.38*** (0.12)
ROS of the acquirer		0.01*** (0.00)	0.01*** (0.00)	0.01*** (0.00)	0.01*** (0.00)
ROS of the target		0.04*** (0.00)	0.04*** (0.00)	0.04*** (0.00)	0.04*** (0.00)
Listed acquirer			-0.08 (0.11)	-0.31*** (0.11)	-0.02 (0.14)
Domestic deals				-2.26*** (0.12)	-2.25*** (0.12)
% of shares of Acquirer's top shareholder					0.01*** (0.00)
Constant	0.16 (0.22)	-0.25 (0.22)	-0.18 (0.24)	1.89*** (0.27)	1.42*** (0.30)
Year	YES	YES	YES	YES	YES
Observations	25,332	25,332	25,332	25,332	25,332
R-squared	0.506	0.514	0.514	0.520	0.521

Standard errors in parentheses  
 \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

**Table 22. ROS of the target, after dropping Russia**

Dependent Variable: ROS of the target	(1)	(2)	(3)	(4)	(5)
	OLS	OLS	OLS	OLS	OLS
ROS of the Acquirer	0.14*** (0.01)	0.13*** (0.01)	0.13*** (0.01)	0.13*** (0.01)	0.13*** (0.01)
Public	-1.47*** (0.57)	-0.99* (0.57)	-1.06* (0.57)	-1.07* (0.57)	-1.08* (0.57)
Acquirer country: China	-5.36*** (2.05)	-2.80 (2.04)	-2.67 (2.04)	-2.27 (2.04)	-2.41 (2.04)
Acquirer country: United States	-0.94 (0.92)	2.80*** (0.93)	2.66*** (0.93)	2.04** (0.96)	2.17** (0.96)
Acquirer country: Middle East	0.48 (2.61)	3.97 (2.59)	3.81 (2.59)	3.27 (2.60)	2.75 (2.60)
Acquirer country: Western Europe	-3.82*** (0.68)	0.23 (0.71)	0.79 (0.72)	0.61 (0.73)	0.29 (0.73)
Acquirer country: Eastern Europe	-5.92*** (1.13)	-2.01* (1.14)	-1.26 (1.16)	-0.64 (1.18)	-0.99 (1.18)
Acquirer sector: Energy supply	3.33** (1.34)	3.02** (1.33)	2.93** (1.33)	2.96** (1.33)	2.81** (1.33)
Acquirer sector: other SGI	0.43 (0.59)	0.49 (0.59)	0.35 (0.59)	0.31 (0.59)	0.33 (0.59)
Acquirer sector: Financial & Insurance	-1.02** (0.44)	-1.44*** (0.43)	-1.20*** (0.44)	-1.22*** (0.44)	-1.30*** (0.44)
Acquirer sector: Mining & Quarrying	11.26*** (0.99)	3.87*** (1.06)	3.87*** (1.06)	3.64*** (1.07)	3.70*** (1.07)
Acquirer sector: Manufacturing & Construction	0.08 (0.44)	-0.00 (0.43)	-0.14 (0.44)	-0.22 (0.44)	-0.29 (0.44)
Target country: China	5.88*** (1.87)	3.64** (1.86)	3.75** (1.86)	3.45* (1.86)	3.21* (1.86)
Target country: United States	-6.27*** (1.15)	-8.79*** (1.15)	-8.80*** (1.15)	-8.22*** (1.16)	-8.16*** (1.16)
Target country: Middle East	-0.42 (2.95)	-3.03 (2.93)	-3.10 (2.93)	-2.61 (2.94)	-2.46 (2.93)
Target country: Western Europe	-0.48 (0.66)	-4.15*** (0.69)	-4.03*** (0.69)	-3.98*** (0.69)	-3.90*** (0.69)
Target country: Eastern Europe	-0.10 (1.02)	-3.22*** (1.03)	-3.26*** (1.03)	-3.87*** (1.05)	-3.85*** (1.05)
Target sector: Energy supply	7.63*** (1.20)	6.54*** (1.20)	6.55*** (1.20)	6.51*** (1.20)	6.40*** (1.20)
Target sector: Other SGI	0.00 (0.51)	-0.17 (0.51)	-0.13 (0.51)	-0.12 (0.51)	-0.12 (0.51)
Target sector: Financial & Insurance	16.34*** (0.66)	16.48*** (0.66)	16.36*** (0.66)	16.44*** (0.66)	16.49*** (0.66)
Target sector: Mining & Quarrying	3.52*** (0.79)	0.47 (0.81)	0.46 (0.81)	0.36 (0.81)	0.40 (0.81)
Target sector: Manufacturing & Construction	-0.69* (0.39)	-0.82** (0.39)	-0.77** (0.39)	-0.80** (0.39)	-0.72* (0.39)
Asset of the acquirer		-0.01 (0.01)	-0.01* (0.01)	-0.02* (0.01)	-0.02* (0.01)
Asset of the target		0.35*** (0.02)	0.34*** (0.02)	0.34*** (0.02)	0.34*** (0.02)
Listed acquirer			1.30*** (0.35)	1.17*** (0.36)	2.65*** (0.45)
domestic deal				-1.11*** (0.37)	-1.07*** (0.37)
% of shares of Acquirer's top shareholder					0.03*** (0.01)
Constant	6.41*** (0.67)	6.35*** (0.67)	5.15*** (0.74)	6.19*** (0.82)	3.92*** (0.92)
Year	YES	YES	YES	YES	YES
Observations	22,706	22,706	22,706	22,706	22,706
R-squared	0.089	0.103	0.103	0.103	0.105

Standard errors in parentheses  
 \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

**Table 23. Assets of the target, after dropping Russia**

Dependent variable: Asset of the target	(1)	(2)	(3)	(4)	(5)
	OLS	OLS	OLS	OLS	OLS
Asset of the Acquirer	0.13*** (0.00)	0.13*** (0.00)	0.12*** (0.00)	0.12*** (0.00)	0.12*** (0.00)
Public	-2.04*** (0.19)	-1.94*** (0.19)	-1.96*** (0.19)	-1.96*** (0.19)	-1.96*** (0.19)
Acquirer country: China	-6.33*** (0.69)	-6.11*** (0.69)	-6.07*** (0.69)	-5.44*** (0.69)	-5.47*** (0.69)
Acquirer country: United States	-10.94*** (0.31)	-10.88*** (0.31)	-10.92*** (0.31)	-11.74*** (0.31)	-11.70*** (0.31)
Acquirer country: Middle East	-8.73*** (0.88)	-9.02*** (0.87)	-9.07*** (0.87)	-9.79*** (0.87)	-9.92*** (0.87)
Acquirer country: Western Europe	-10.68*** (0.23)	-10.44*** (0.23)	-10.26*** (0.23)	-10.44*** (0.23)	-10.52*** (0.23)
Acquirer country: Eastern Europe	-9.59*** (0.38)	-9.31*** (0.38)	-9.07*** (0.39)	-8.08*** (0.39)	-8.16*** (0.39)
Acquirer sector: Energy supply	0.00 (0.45)	-0.30 (0.45)	-0.32 (0.45)	-0.28 (0.45)	-0.32 (0.45)
Acquirer sector: other SGI	-0.14 (0.20)	-0.16 (0.20)	-0.20 (0.20)	-0.25 (0.20)	-0.24 (0.20)
Acquirer sector: Financial & Insurance	1.83*** (0.14)	1.56*** (0.15)	1.64*** (0.15)	1.60*** (0.15)	1.57*** (0.15)
Acquirer sector: Mining & Quarrying	19.47*** (0.34)	18.80*** (0.34)	18.79*** (0.34)	18.32*** (0.34)	18.32*** (0.34)
Acquirer sector: Manufacturing & Construction	0.36** (0.15)	0.35** (0.15)	0.30** (0.15)	0.19 (0.15)	0.17 (0.15)
Target country: China	6.21*** (0.63)	5.92*** (0.63)	5.95*** (0.63)	5.47*** (0.62)	5.40*** (0.62)
Target country: United States	7.28*** (0.39)	7.54*** (0.38)	7.53*** (0.38)	8.32*** (0.39)	8.32*** (0.39)
Target country: Middle East	6.92*** (1.00)	6.94*** (0.99)	6.91*** (0.99)	7.58*** (0.99)	7.61*** (0.99)
Target country: Western Europe	10.02*** (0.22)	10.01*** (0.22)	10.04*** (0.22)	10.04*** (0.22)	10.06*** (0.22)
Target country: Eastern Europe	8.04*** (0.35)	8.04*** (0.34)	8.02*** (0.34)	7.06*** (0.35)	7.06*** (0.35)
Target sector: Energy supply	2.88*** (0.41)	2.53*** (0.40)	2.53*** (0.40)	2.46*** (0.40)	2.43*** (0.40)
Target sector: Other SGI	0.33* (0.17)	0.29* (0.17)	0.30* (0.17)	0.31* (0.17)	0.31* (0.17)
Target sector: Financial & Insurance	-0.39* (0.22)	-1.09*** (0.22)	-1.12*** (0.23)	-0.99*** (0.22)	-0.97*** (0.22)
Target sector: Mining & Quarrying	7.98*** (0.27)	7.76*** (0.27)	7.75*** (0.27)	7.53*** (0.27)	7.54*** (0.27)
Target sector: Manufacturing & Construction	0.19 (0.13)	0.20 (0.13)	0.21 (0.13)	0.17 (0.13)	0.19 (0.13)
ROS of the acquirer		0.02*** (0.00)	0.02*** (0.00)	0.01*** (0.00)	0.01*** (0.00)
ROS of the target		0.04*** (0.00)	0.04*** (0.00)	0.04*** (0.00)	0.04*** (0.00)
Listed acquirer			0.41*** (0.12)	0.22* (0.12)	0.61*** (0.15)
Domestic deals				-1.63*** (0.12)	-1.62*** (0.12)
% of shares of Acquirer's top shareholder					0.01*** (0.00)
Constant	-0.25 (0.22)	-0.72*** (0.22)	-1.10*** (0.25)	0.45 (0.28)	-0.16 (0.31)
Year	YES	YES	YES	YES	YES
Observations	22,706	22,706	22,706	22,706	22,706
R-squared	0.552	0.560	0.560	0.563	0.564

Standard errors in parentheses  
 \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

**Table 24. ROS of the target, after dropping the mining sector**

Dependent Variable: ROS of the target	(1)	(2)	(3)	(4)	(5)
	OLS	OLS	OLS	OLS	OLS
ROS of the Acquirer	0.12*** (0.01)	0.12*** (0.01)	0.12*** (0.01)	0.12*** (0.01)	0.12*** (0.01)
Public	-0.90* (0.51)	-0.85* (0.51)	-0.89* (0.51)	-0.90* (0.51)	-0.97* (0.51)
Acquirer country: China	-1.22 (2.06)	-0.84 (2.05)	-0.70 (2.05)	-0.46 (2.06)	-0.60 (2.06)
Acquirer country: United States	4.91*** (0.96)	5.01*** (0.96)	4.87*** (0.96)	4.46*** (0.99)	4.57*** (0.99)
Acquirer country: Russia	-5.14* (2.83)	-4.95* (2.82)	-4.25 (2.82)	-4.82* (2.84)	-5.12* (2.84)
Acquirer country: Middle East	6.12** (2.60)	6.22** (2.59)	6.04** (2.59)	5.68** (2.60)	5.16** (2.60)
Acquirer country: Western Europe	2.58*** (0.75)	2.60*** (0.75)	3.33*** (0.76)	3.18*** (0.77)	2.83*** (0.77)
Acquirer country: Eastern Europe	0.07 (1.16)	0.08 (1.16)	1.06 (1.18)	1.40 (1.20)	1.02 (1.20)
Acquirer sector: Energy supply	0.99 (1.12)	1.13 (1.12)	0.93 (1.12)	0.94 (1.12)	0.70 (1.12)
Acquirer sector: other SGI	0.96* (0.56)	0.99* (0.56)	0.76 (0.56)	0.74 (0.56)	0.77 (0.56)
Acquirer sector: Financial & Insurance	-0.83** (0.41)	-1.05** (0.41)	-0.77* (0.41)	-0.78* (0.41)	-0.82** (0.41)
Acquirer sector: Manufacturing & Construction	0.23 (0.40)	0.20 (0.40)	-0.02 (0.41)	-0.05 (0.41)	-0.10 (0.41)
Target country: China	2.36 (1.86)	2.01 (1.86)	2.16 (1.86)	1.97 (1.86)	1.75 (1.86)
Target country: United States	-10.32*** (1.17)	-10.31*** (1.17)	-10.35*** (1.17)	-9.98*** (1.18)	-9.89*** (1.18)
Target country: Russia	2.38 (2.84)	2.44 (2.84)	2.82 (2.84)	3.47 (2.86)	3.55 (2.86)
Target country: Middle East	-5.08* (2.92)	-4.94* (2.92)	-5.05* (2.92)	-4.73 (2.92)	-4.57 (2.92)
Target country: Western Europe	-6.40*** (0.73)	-6.37*** (0.73)	-6.25*** (0.73)	-6.17*** (0.73)	-6.08*** (0.73)
Target country: Eastern Europe	-5.48*** (1.05)	-5.26*** (1.05)	-5.34*** (1.05)	-5.67*** (1.07)	-5.63*** (1.07)
Target sector: Energy supply	5.96*** (1.04)	5.10*** (1.05)	5.11*** (1.05)	5.08*** (1.05)	5.06*** (1.05)
Target sector: Other SGI	0.19 (0.49)	0.04 (0.49)	0.09 (0.49)	0.09 (0.49)	0.09 (0.49)
Target sector: Financial & Insurance	15.57*** (0.62)	15.57*** (0.62)	15.44*** (0.62)	15.48*** (0.62)	15.51*** (0.62)
Target sector: Mining & Quarrying	-0.81 (0.83)	-0.92 (0.83)	-0.93 (0.83)	-0.95 (0.83)	-0.94 (0.83)
Target sector: Manufacturing & Construction	-0.62* (0.37)	-0.71* (0.37)	-0.64* (0.37)	-0.66* (0.37)	-0.59 (0.37)
Asset of the acquirer		-0.01 (0.01)	-0.01* (0.01)	-0.01* (0.01)	-0.01* (0.01)
Asset of the target		0.29*** (0.03)	0.28*** (0.03)	0.28*** (0.03)	0.28*** (0.03)
Listed acquirer			1.65*** (0.34)	1.58*** (0.34)	2.99*** (0.42)
Domestic deal				-0.66* (0.37)	-0.62* (0.37)
% of shares of Acquirer's top shareholder					0.03*** (0.01)
Constant	6.09*** (0.65)	6.03*** (0.65)	4.55*** (0.72)	5.16*** (0.79)	2.93*** (0.89)
Year	YES	YES	YES	YES	YES
Observations	24,139	24,139	24,139	24,139	24,139
R-squared	0.060	0.063	0.064	0.064	0.065

Standard errors in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

**Table 25. Assets of the target, after dropping the mining sector**

Dependent variable: Asset of the target	(1)	(2)	(3)	(4)	(5)
	OLS	OLS	OLS	OLS	OLS
Asset of the Acquirer	0.03*** (0.00)	0.03*** (0.00)	0.03*** (0.00)	0.03*** (0.00)	0.03*** (0.00)
Public	-0.31*** (0.11)	-0.29*** (0.11)	-0.31*** (0.11)	-0.31*** (0.11)	-0.31*** (0.11)
Acquirer country: China	-1.25*** (0.41)	-1.24*** (0.41)	-1.20*** (0.41)	-1.22*** (0.41)	-1.23*** (0.41)
Acquirer country: United States	-0.28 (0.19)	-0.35* (0.19)	-0.39** (0.19)	-0.36* (0.20)	-0.35* (0.20)
Acquirer country: Russia	-0.26 (0.51)	-0.42 (0.51)	-0.46 (0.51)	-0.43 (0.52)	-0.46 (0.52)
Acquirer country: Middle East	-0.11 (0.15)	-0.13 (0.15)	0.03 (0.15)	0.04 (0.15)	0.03 (0.15)
Acquirer country: Western Europe	-0.05 (0.23)	-0.06 (0.23)	0.16 (0.23)	0.13 (0.24)	0.12 (0.24)
Acquirer country: Eastern Europe	-0.39 (0.26)	-0.47* (0.26)	-0.49* (0.26)	-0.49* (0.26)	-0.50* (0.26)
Acquirer sector: Energy supply	-0.04 (0.12)	-0.05 (0.12)	-0.09 (0.12)	-0.08 (0.12)	-0.08 (0.12)
Acquirer sector: other SGI	0.94*** (0.08)	0.86*** (0.09)	0.93*** (0.09)	0.93*** (0.09)	0.92*** (0.09)
Acquirer sector: Financial & Insurance	0.18** (0.09)	0.18** (0.09)	0.14 (0.09)	0.14* (0.09)	0.14 (0.09)
Acquirer sector: Manufacturing & Construction	1.17*** (0.37)	1.14*** (0.37)	1.17*** (0.37)	1.18*** (0.37)	1.17*** (0.37)
Target country: China	-0.06 (0.23)	0.07 (0.23)	0.06 (0.23)	0.04 (0.24)	0.04 (0.24)
Target country: United States	-0.48 (0.58)	-0.41 (0.58)	-0.43 (0.58)	-0.46 (0.58)	-0.45 (0.58)
Target country: Middle East	-0.15 (0.15)	-0.06 (0.15)	-0.04 (0.15)	-0.04 (0.15)	-0.04 (0.15)
Target country: Western Europe	-0.79*** (0.21)	-0.72*** (0.21)	-0.73*** (0.21)	-0.71*** (0.21)	-0.71*** (0.21)
Target country: Eastern Europe	4.07*** (0.24)	3.96*** (0.24)	3.96*** (0.24)	3.97*** (0.24)	3.96*** (0.24)
Target sector: Energy supply	0.56*** (0.10)	0.54*** (0.10)	0.55*** (0.10)	0.55*** (0.10)	0.55*** (0.10)
Target sector: Other SGI	-0.06 (0.13)	-0.25* (0.13)	-0.28** (0.13)	-0.28** (0.13)	-0.28** (0.13)
Target sector: Financial & Insurance	0.12 (0.17)	0.13 (0.17)	0.13 (0.17)	0.13 (0.17)	0.13 (0.17)
Target sector: Mining & Quarrying	0.35*** (0.08)	0.35*** (0.08)	0.37*** (0.08)	0.37*** (0.08)	0.37*** (0.08)
Target sector: Manufacturing & Construction		0.01*** (0.00)	0.00*** (0.00)	0.00*** (0.00)	0.00*** (0.00)
ROS of the acquirer		0.01*** (0.00)	0.01*** (0.00)	0.01*** (0.00)	0.01*** (0.00)
ROS of the target			0.37*** (0.07)	0.37*** (0.07)	0.45*** (0.09)
Listed acquirer				0.05 (0.07)	0.05 (0.07)
Domestic deals					0.00 (0.00)
% of shares of Acquirer's top shareholder					
Constant	0.27** (0.13)	0.13 (0.13)	-0.20 (0.15)	-0.25 (0.16)	-0.36** (0.18)
Year	YES	YES	YES	YES	YES
Observations	21,775	21,775	21,775	21,775	21,775
R-squared	0.047	0.050	0.052	0.052	0.052

Standard errors in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1