The targets of State Capitalism: international firm-level evidence (2005-2012)

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Abstract

As the result of an increasing trend over the Great Recession, currently more than one out of five companies in the top Fortune 500 list is controlled by a government. We study the performance of contemporary State-owned enterprises (SOEs) by looking at a unique sample of more than 25,000 M&A deals. For the first time, we find evidence that SOEs acquire less performing targets, similarly to private firms. We also discover that the relative performance of the target is inversely correlated to the government share in the acquirer's equity and that financial SOEs buy relatively lower performing targets relative to their private benchmarks.

Keywords: State-owned enterprises, management inefficiency, firms' performance, worldwide mergers and acquisitions.

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1. Introduction

A surprising feature of the contemporary global economy is the return of State-owned enterprises (SOEs) as major players in several industries, with combined equity value of almost $2 trillion and more than 6 million employees (Christiansen 2011). According to Kowalski and Perepechay (2015), the operating revenues of the major SOEs account for 19% of global cross-border sales, and around 6 per cent of world GNI. Since 2008, after the Great Recession, the role of SOEs in developed economies increased dramatically as well: the shares of equity holdings by some OECD governments increased up to 20% of their GDP (OECD 2010).

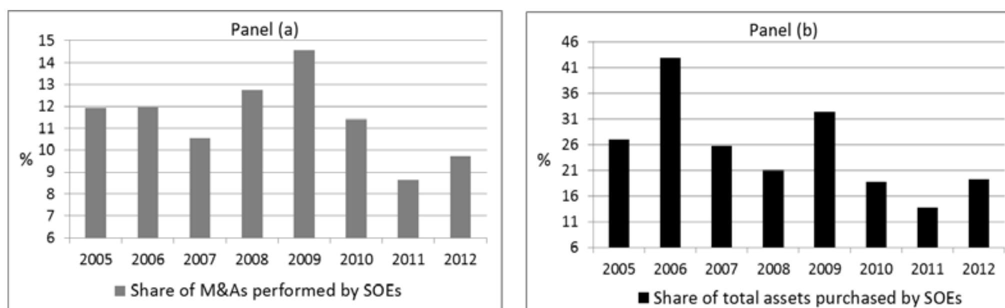
This revival of governments' control of firms is raising some policy concerns on efficiency grounds (Chernykh 2011). States still own enterprises for strategic purposes and they may be using SOEs as a vehicle for pursuing non-commercial and political objectives (World Bank 2006). This policy may involve anti-competitive effects and generate economic distortions at the global level[1] (Kowalski *et al.* 2013). Under this view, SOEs are ultimately expected to deviate from efficiency because their management is instructed to do so by politicians (Shleifer and Vishny 1994, 2002; Shleifer 1998).

In this paper we depart from the classic perspective of the comparison of the performance of public and private enterprises or of the change of performance after privatization (Boardman and Vining, 1989; Megginson and Netter, 2001) and we focus on the market for corporate control, where ownership itself is the object of transactions between firms. This market is a core institution of contemporary economies, as it should allow efficient asset reallocation from underperforming to more efficient firms (Manne 1965, Jensen and Ruback 1983, Andrade et al 2001). How significant is the role of SOEs in this market and how SOEs pick up their targets?

To answer these questions we have built a unique dataset of firm deals where, for the first time, the government control of acquiring firms is considered. The

significance of an inquiry about role of SOEs in this new perspective is apparent by inspection of Fig. 1, based on matched evidence from the Zephyr and Orbis data sets (Bureau Van Dijk). We have considered the information on the ownership of the acquirer and on the total assets of the targets for more than 100 thousands ownership deals over the period 2005-2012. The figure 1 on the left (Panel a) reports for each year the share of total M&As performed by a state-owned acquirer, and the right (Panel b) indicates the share of total assets purchased by SOEs. While 11% of these deals have been performed by a SOE, the cumulative assets purchased by SOEs worth in total more than 690 billion euros. This corresponds to 30% of the overall value of the traded assets in this very large sample.

Figure 1. Share of M&As (Panel a) and value of acquired assets (Panel b) performed by SOEs



Source: Authors' elaboration of data from Zephyr and Orbis (BvD) on 103.659 M&As deals.

How can we explain this rather striking evidence of the importance of SOEs in the market for corporate control? In fact, in the last years, despite decades of privatizations, SOEs have increased in size, profitability and number worldwide. Around 2010, and adopting a strict SOE definition (majority of equity under the ultimate control of a government) around ten per cent of the top 2000 listed companies of the world were government owned[2]. These major SOEs accounted for 11.15 % of total sales of the top 2000, 13. 51% of total

[2] http://www.forbes.com/global2000/list/

profits, 16.38% of total assets, 13.36% of total market value. Relative to private enterprises the average major SOE has 11,28 % greater revenues, 34,83% greater profits, 63,47% larger assets per firm, and 33,33 % higher market value, Kovalski et al (2013).

Enlarging the perspective to state invested firms (SIEs, de facto controlled by government through minority stakes), Christiansen and Kim (2014) suggest that around 2012-2013 the share of sales in the Forbes list is greater 14 per cent. The trend over time is clearly increasing. Kwiatokowski and Augostynovicz (2015) show that the number of SOEs in the Fortune top 500 of the world increased from 9.8% in 2005 to 22,8% in 2014, with increases of similar size in profits, employment and other performance indicators[3].

Moreover, in the last two decades, both the internal and external institutions governing SOEs have been deeply reformed. They have been increasingly corporatized and face stricter budget constraints. While SOEs entirely owned and controlled by governments persist, many SOEs have been opened to private equity. They have become mixed enterprises ultimately controlled by the State, often by means of minority stakes (Musacchio and Lazzarini 2014; Pargendler *et al*. 2013; Fan *et al.* 2013). Markets in which SOEs used to hold a monopolistic position have been liberalized (Clifton *et al.* 2011), leading them to compete against foreign firms in a globalized scenario (Khandelwal *et al.* 2013). As a result, contemporary SIEs are quite different organizations from the traditional SOEs of the last century. Their governance has been reformed, they have increasingly modernized their organization and management strategies (Mengistae and Xiu 2004; Bai and Xiu 2005; OECD 2010a).

To perform our inquiry into the functioning of the market for corporate control when public enterprises are involved as acquirers (i.e. the opposite of privatization), we propose a simple conceptual model of asset optimization under a non-uniform distribution of target firms' returns. The model suggests

[3] http://fortune.com/fortune500/

that managers of public enterprises internalizing political objectives will buy lower performing targets than their private sector counterparts.

To test this prediction, we build a unique data set of M&As by matching data from the Zephyr and Orbis data sets. The former reports worldwide information on completed deals since 2000, while the latter reports detailed financial, accounting and corporate information since 2004. We select only those deals for which the ownership of the acquirer – whether its top shareholder is private or government-owned – and for which the pre-deal economic data of both the acquirer and the target company are simultaneously available. Dealing with SOEs, which are often not traded in the stock market, we use the operating profit margin (OPM) as the firm performance indicator.[4] For each deal, we compare the OPM of the target with that of its acquirer the year before the deal. Firstly, we question whether the traditional "high-buys-low" proposition in the Manne tradition (1965) – also known as Inefficient Management Hypothesis (IMH) (Mandelker 1974) – is confirmed by our data, without controlling for the ownership of the acquirer. We then assess whether there is a significant correlation between the pre-deal performance of the target company and the ownership nature of its acquirer. Next, we question whether the Inefficient Management Hypothesis (IMH) also holds for those M&As in which the acquirer is controlled by a government-owned entity, when we further control for the degree of public control. Notably, we first distinguish SOEs with a single public owner from SIEs where the government is the major, but not the unique, shareholder. Then, we further control for different degrees of public ownership: whether the government owns more or less than 50% of shares. We also analyze whether the targeting strategy of SOEs depends on the sector in which they operate.

[4] The operating profit margin indicates the percentage of revenues deriving from sales that returns 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. Being a ratio, this indicator is useful for comparing companies of different sizes.

Our findings clearly reject the null that the ownership of the acquirer, public versus private, doesn't matter in the market for corporate control, but we also reject the view that the IMH is violated by contemporary SOEs, however with some differences between those under full control of a government and SIEs.

The structure of the paper is as follows. Section 2 presents a simple conceptual framework for our research question. Section 3 presents the dataset, some stylized facts and the descriptive statistics. Section 4 presents our empirical approach. Section 5 discusses the main findings of the paper, while the robustness of our results through alternative specifications of the model is discussed in Appendix I. Section 6 concludes.

2. Conceptual framework

Why government ownership might play a role in targeting firms in the market for corporate control (MCC)? In this section, we present a simple conceptual framework that analyzes whether SOEs behave differently from private firms in the MCC. Two main points characterize our model. First, and differently from previous literature, we explicitly introduce the ownership of the acquirer to account for SOEs as active players in the MCC. This allows us to focus particularly on the question of whether the profitability of the target companies differ depending on the ultimate ownership of the acquirer. Second, we assume that the markets for target firms are incomplete in terms of the distribution of *ex ante* returns.

In our framework, let k_{jf} be the stock of capital of type j of firm f. Let z_f denote the quality of firm f in any number of firm features: management, technology, knowledge, motivation of employees and so on. For simplicity, we refer below to z_f as managerial quality and we assume that an increase in quality along this dimension increases the firm's profitability and hence its value. Our model loosely draws from Rhodes-Kropf and Robinson (2008). We assume a very simple production function, allowing for a simple closed-form solution. The level of output y for firm f owning capital of type j is:

$$y_{jf} = z_f k_{jf}^{\alpha}, \qquad (1)$$

where $\alpha \in (0,1)$. Let us now focus on the optimal investment choice of a firm, as long as it has not faced any chance to consider a merger deal. The firm, during the interval of time Δ, will choose a level of investment, i_{jf}, which solves:

$$\max_{i_{jf}}\left[\left(k_{jf} + i_{jf} + \Delta z_f \left(k_{jf} + i_{jf}\right)^{\alpha}\right)e^{-r\Delta} - i_{jf}(1-\theta)\right]. \qquad (2)$$

Equation (2) can be described as the maximization of the value of the firm, which is accounted as the value of assets in place plus the value of the production over the period of time Δ minus the cost of the investment, where θ is an externality parameter accounting for the social value of the investment, i_{jf}. SOEs are instructed by their owners to internalize the value of the social externality of the investment, while $\theta = 0$ for all private firms. The introduction of the externality parameter allows us to identify possibly different optimal choices of investments between private enterprises and SOEs. In fact, what discriminates between the two types of ownership in our frame is the internalization by the firms of the externality perceived by governments. Conversely, we assume that governments are unable to force private enterprise managers to internalize the externality (perhaps because of policy constraints), while they control SOE managers and can instruct them to include the externality in their objective function.

From the differentiation of (2), and assuming frictionless investment, the optimal level of capital stock for any firm will satisfy the condition:

$$k_{jf}^{*} = \left(\frac{z_f \alpha}{r - \theta(1+r)}\right)^{\frac{1}{1-\alpha}}, \quad (3)$$

where $\theta < \frac{r}{1+r}$ to guarantee a non-negative optimal level of capital. Equation (3) suggests that a firm in which the management is instructed to internalize the social externality of investment will have a larger optimal level of capital than private enterprises for which $\theta = 0$.

During any short period of time, Δ, the firm earns $\Delta z_f (k_{jf})^{\alpha}$ and there is a probability that a positive shock will hit the firm and profitable merger opportunities will become available. These types of exogenous drivers, such as the development of new technology or innovative production processes, generate a flux of organizational changes. Assuming for simplicity that the type of capital can take either of two possible types, $j = 1,2$, and that firms can assume either the role of the acquirer, $f = A$, or the role of the target, $f = T$, we can define the benefit arising from a merger. Afterwards, the merged firm chooses its capital stock of type j_f (i.e. of either type 1 or type 2 and specific to firm f) to solve:

$$max_{i_{jA}i_{tT}} \left[k_{j_A A} + k_{j_T T} + i_{j_A A} + i_{j_T T} + \Delta z_M \begin{pmatrix} (k_{j_A A} + i_{j_A A})^{\alpha} + \\ (k_{j_T T} + i_{j_T T})^{\alpha} \end{pmatrix} \right] e^{-r\Delta} - (i_{j_A A} + i_{j_T T})(1-\theta), \quad (4)$$

where z_M is a function combining the managerial quality of the acquirer and of the target, z_A and z_T, respectively, and is increasing in both of them, capturing the idea that complementarities between the acquirer and the target can arise whenever the target managerial team adds new competences to the acquirer managerial team, providing complementary skills for the use of possibly complementary capital of type i_T. The optimal amount of post-merger capital, k_j^{M*}, is:

$$k_j^{M*} = \left(\frac{z_M \alpha}{r - \theta(1+r)}\right)^{\frac{1}{1-\alpha}}, \quad (5)$$

meaning that if the acquiring firm's management is instructed to internalize the externality, θ, it will choose a larger level of optimal capital. Nothing else is expected to change over time, until a new shock occurs and the perpetual value of the merged firm becomes:

$$\frac{z_M\left(\left(k_{jA}^{M*}\right)^{\alpha} + \left(k_{tT}^{M*}\right)^{\alpha}\right)}{r}.$$

So far, we have assumed that a target of the appropriate size is always available to match exactly the demand for complementary capital by potential acquirers. Potential targets are relatively small in terms of their performance compared with the optimal capital level of the acquiring firm, and they can be ranked according to their observable quality, that is, their reported returns.

We assume that no managerial team will try to buy out a target controlled by superior management and that the first target of an acquiring firm will be the one with the highest relative performance (z_T^I). However, if the demand for capital of the acquirer is such that the capital provided by the target firm will not suffice to reach the optimal level of capital, the acquiring firm will then consider the firm with the second highest performance (z_T^{II}) and so on, until it reaches the optimal level of capital, k_j^{M*}. Given the larger capital requirement of SOEs, because of the social externality, θ, they will stop buying targets with a value per unit of capital smaller than the marginal target acquired by an otherwise identical private firm. This implies that private firms are likely to purchase on average firms with higher relative performance, z_T, closer to that of the acquiring firm, z_A. This leads to the testable implication that the average performance of the target firm purchased by a state-owned acquirer is lower than that purchased by a private firm.

Let us now consider deals in which the acquirer is a SIE with multiple owners, where the government is the major shareholder. Its management internalizes

the information that private shareholders do not give a positive value to the social externality, θ. In such a case, one would expect the management of the SIEs to be more aligned to the private benchmark, namely that θ will be close to zero. In the same vein, some differences in the behavior of SOEs which are active in the MCC is likely to be more pronounced in specific industries characterized by important externalities. Hence, the strength of the political signal may be attributed particularly to SOEs in some sectors (e.g. labor-intensive ones if the externality is related to employment, hi-tech ones if it is related to R&D, etc.). We shall investigate these intuitions in our empirical strategy.

3. Data

We build our data set using Zephyr (produced by Bureau Van Dijk) data on completed deals worldwide from 2000. The deals include acquisitions, mergers, minority stakes, buy-outs and management buy-ins, while we disregarded rumors about potential and not completed deals. Due to some inaccuracies on the reporting of firm-level data which characterize Zephyr (Bollaert and Delanghe 2015), we extract from Zephyr only information on M&As (date of the completed deal, name of the acquiring and targeting firms), while data and information on the acquirers and targets are extracted from Orbis[5] (also produced by Bureau Van Dijk), a global firm-level data set reporting yearly information on firms since 2004: balance-sheet, account and legal information, corporate governance and organization, ownership structure and so on. Then, we match the M&As data from Zephyr with the firm-level data from Orbis through the common individual identification code.

Using pre-deal data, our final sample covers deals that took place during the period 2005–2012 (using 2004 data for deals of 2005 and so on). The key economic variables that we consider for both the acquirer and the target firms

[5] Zephyr and Orbis often report different data for the same firm in the same year. Being the former a database of M&As, and a latter a firm-level dataset, our firms data are exclusively extracted from Orbis.

involved in each deal are their pre-deal total assets (in current million euros) and operating profit margin (OPM). Stock market-based indicators (such as Tobin's Q) are unsuitable to our analysis as many SOEs are not traded in the stock market. In terms of our theoretical framework, the OPM acts as a proxy for the unobservable z_f parameter, as, after controlling for other features, the profitability of the firm is positively correlated with the effort and quality of its management in reducing costs, increasing sales or both. In a recent survey, 69% of the interviewed marketing managers confirmed that they find the operating profit margin very useful to measure the performance of a firm (Farris *et al.* 2010). For both the acquirer and the target involved in each deal, we also extract information on their sector of activity (identified through the proper NACE 2-digit code, rev. 2) and country of residence. We finally consider some variables related to the ownership and organization of the acquirer company: the percentage of shares owned by the top shareholder[6].

We classify firms as state-owned when their top shareholder in the year before the deal is a public body (state, government, public authority) independently of the number of shares owned. Next, we will distinguish between 100% SOEs and SIEs and we will control for the percentage of shares owned by the top public shareholder.

After dropping all the deals with missing information in either one of the parties involved, our sample is composed of 25,332 deals. About 10% of these deals (2,488) are performed by an SOE, broadly reflecting the relative weight of SOEs in the economy (see e.g. Kowalski *et al.* 2013). The number of yearly deals increased after 2008, the start of the Great Recession, as well as the share of deals involving a state-owned acquirer. Such a share was lower than 10% before 2008, peaked at 14% in 2009 and slowed down thereafter.

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[6] A range of checks was run to verify the correctness of the ownership information extracted from the top shareholder in 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 SOEs collected by various sources (OECD 2005; Christiansen 2011; Musacchio and Lazzarini 2014; Kowalsky *et al.* 2013; SASAC), correcting the ownership information whenever wrongly identified in the first place by our sources.

Over half of the deals recorded in our data occurred in Western Europe, 10% in Russia and 8% and 6% in Eastern Europe and the United States[7]. Table 2 shows that state-owned acquirers are more active in the energy supply sector, in other services of general interest (SGI)[8] and in mining and quarrying, whereas they are relatively less frequent, but still important players, in the financial and insurance and in the manufacturing sector. Moreover, 27% of deals involve acquirers with a unique shareholder, and the same holds when looking at deals performed by SOEs.

Table 1. Distribution of deals by ownership, sector of the acquirer and presence on the stock market

	All deals		Deals with state-owned acquirer		
	Obs.	Percentage of total deals	Obs.	Percentage of total deals with state-owned acquirer only	Incidence of SOE deals
Total	25,332	100%	2,488	100%	10%
Sector of the acquirer					
Energy supply	614	2%	379	15%	62%
Other SGI	2,721	11%	358	14%	13%
Financial and Insurance	6,432	25%	542	22%	8%
Mining and Quarrying	1,193	5%	234	9%	20%
Manufacturing	7,481	30%	597	24%	8%
Other sectors	6,891	27%	378	15%	5%
Firms with a single owner	7,003	27%	726	29%	

Source: Own elaboration based on Zephyr and Orbis

[7] Bollaert and Delanghe (2015) compare Zephyr with the SDC Reuters databases and find no support for the claims about the superior coverage of EU transactions by Zephyr. 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 and the United Kingdom. Eastern Europe includes the following countries: Albania, Belarus, Bulgaria, Croatia, the Czech Republic, Estonia, Hungary, Latvia, Macedonia, Moldavia, Montenegro, Poland, Romania, Serbia, Slovakia, Slovenia and Ukraine. The developed rest of the world includes Australia, Canada, Japan and New Zealand.

[8] This definition includes water, waste, transport, and 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.

Compared to private counterparts, state-owned acquirers purchase more firms operating in the energy sector (3% of deals performed by private companies against 15% of the M&As performed by SOEs).

A comparison of the operating profit margin of the acquirer and of the target in each deal (Table 2) suggests that on average acquirers purchase lower-performing targets in roughly 60% of the deals. In spite of the much enlarged geographical perspective of our analysis, this percentage matches the evidence presented by Andrade *et al.* (2001) and Rhodes-Kropf and Robinson (2008) – in which two-thirds of the transactions involve acquirers outperforming targets. The share of acquiring firms outperforming targets increases to 64% in the case of state-owned acquirers. Table 2 shows the joint distribution of the OPM of acquirers and targets in the full sample (all deals). Using OPM quintiles, we find that 30% of the M&As cluster on the matrix diagonal (Table 2, Panel (a)). This suggests that acquirers purchase lower performing firms, but not the worst performing firms in the marketplace. This is consistent with previous findings (Ravenscraft and Scherer 1989; Rhodes-Kropf *et al*. 2005; Rhodes-Kropf and Robinson 2008). The share of deals clustered along the main diagonal slightly decreases to 26% in the subsample of deals with SOE acquirers (Table 2, Panel (b)). Interestingly, 46% of all the deals in our sample lie below the main diagonal, and this share increases to 49% when considering only deals performed by an SOE acquirer. This evidence suggests that the "high-buys-low" proposition remains the main driving motive in M&As in the case of state-owned acquirers as well.

Table 2. Deals distribution according to Operating Profit Margin (OPM) of acquirers and targets

	All deals		Deals with state-owned acquirer		
	Obs.	%	Obs.	%	
Deals in which acquirer OPM > Target OPM	15,269	60	1,586	64	

			Panel (a)			
	5 quintiles of Target OPM (%)					
All deals	1–low	2	3	4	5–high	Total
5 quintiles of acquirer OPM						
1 – low	9	4	3	3	2	20
2	8	6	4	2	1	20
3	6	4	4	4	2	20
4	6	3	4	5	3	20
5 – high	5	3	3	4	6	20
Total	33	19	18	17	13	25,332
Pearson chi^2 (16)= 2,400; Pr = 0.000						

			Panel (b)			
Deals with state-owned acquirer	5 quintiles of Target OPM (%)					
	1 – low	2	3	4	5– high	Total
5 quintiles of acquirer OPM						
1 – low	11	5	3	2	1	22
2	8	6	4	2	1	20
3	7	4	3	2	2	19
4	7	4	3	3	3	20
5 – high	6	3	3	4	3	20
Total	39	21	16	13	11	2,488
Pearson chi^2 (16) = 137.6820; Pr = 0.000						

Source: Own elaboration based on Zephyr and Orbis

The average OPM is higher for acquiring firms than for targets (Table 3). This evidence of the "high-buys-low" preposition holds irrespectively of the ownership nature of the acquirer, and the spread between the OPM of the acquiring and targeting firms increases when the acquirer is a SOE.

Table 3. Operating Profit Margin of the acquiring and targeting firms. All deals and deals by ownership of the acquirer

	All deals		Deals with state-owned acquirer only	
	Mean	SD	Mean	SD
Acquirer	12.785	22.428	14.924	24.388
Target	6.348	22.533	5.787	22.487

Source: Own elaboration based on Zephyr and Orbis

Table 4 shows the profit margin of the acquirers and their respective targets by distinguishing for the sector of activity of the acquirer. Notably, SOEs operating in the financial and insurance sectors purchase the lowest performing targets, while this does not hold for privately owned acquirers.

Table 4. Operating Profit Margin of the acquirer and target firms. All deals and deals by ownership of the acquirer. Sector of the acquirer

	Energy supply				**Other SGI**				**Financial and Insurance activities**			
	All deals		Deals with state-owned acquirer		All deals		Deals with state-owned acquirer		All deals		Deals with state-owned acquirer	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
A	14.029	18.758	16.150	18.430	9.712	17.645	11.194	16.071	21.420	30.470	15.725	29.941
T	9.313	21.883	8.764	22.098	5.547	21.312	5.983	21.935	7.622	25.736	2.526	23.605

	Mining and Quarrying				**Manufacturing and Construction**				**Other sectors**			
	All deals		Deals with state-owned acquirer		All deals		Deals with state-owned acquirer		All deals		Deals with state-owned acquirer	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
A	28.706	23.954	39.777	34.640	8.881	15.575	9.568	14.700	7.307	17.380	9.151	22.159
T	20.005	25.648	7.801	24.824	4.956	20.500	7.104	20.018	4.357	20.386	3.970	23.323

Source: Own elaboration based on Zephyr and Orbis; *Note*: A = Acquirer; T= Target

4. The empirical model

The conceptual framework (section 2) and descriptive statistics show the possible directions of the departure from the private benchmark of SOEs that are active in the MCC. In this section, we specify our empirical approach. To test the correlation between the profitability of the target and of the acquirer firm, we estimate the following multivariate linear regression using ordinary least squares:

$$z_{T_{i,t-1}} = \alpha + \beta z_{A_{i,t-1}} + X'_{Ai,t-1}\gamma + X'_{Ti,t-1}\delta + \zeta YEAR_{i,t} + +\varepsilon_{i,t-1}, \quad (6)$$

where $i = 1, \ldots I$ identifies individual deals; z_A and z_T stand respectively for the profitability of the acquirer and target companies measured by their OPM; $YEAR$ is the year of the deal; and X_{Ai} and X_{Ti} are vectors of indicator variables for the acquirer and the target, respectively. The main specification includes their country of location, their sector of activity and their level of total assets. We also allow the country fixed effect to be different for each sector and year of the deal for both the acquirer and the target and we cluster data according to the sector and area of the acquirer.

The scalars α, β and ζ and the vectors γ and δ include the set of coefficients to be estimated. In equation (6), we use subscript $t-1$ for all the variables but the dummy $YEAR$ to highlight the fact that all the considered variables are measured in the year before the deal, which occurred in year t, as we need to know the characteristics of the involved firms that led to the deal and reduce the issues of endogeneity of the included control variables. From now onwards, we omit the time subscript only to simplify the notation.

Equation (6) allows us to verify whether acquirers outperform targets ($z_T < z_A$), that is, when $\hat{\alpha} + \hat{\beta}\overline{z_A} < \overline{z_A}$, where hats indicate the estimated coefficients and overbars unconditional means, extending the evidence of Table 3 by controlling for a set of other variables ($YEAR, X_A, X_T$).

Then, we estimate equation (7) adding information on the ownership of the acquirer:

$$z_{T_i} = \alpha + \beta z_{A_i} + X'_{Ai}\gamma + X'_{Ti}\delta + \zeta YEAR_i + \lambda SOE_{Ai} + \varepsilon_i, \qquad (7)$$

Where SOE_{Ai} is a dummy that equals one when the acquirer is a state-owned enterprise and zero otherwise. Equation (7) allows us to verify first whether the "high-buys-low" prediction that in the MCC acquirers perform better than targets is valid when the acquirer is state-owned. Confirmation comes from checking whether $\hat{\alpha} + \hat{\beta}\overline{z_A} + \hat{\lambda} SOE_A < (\overline{z_A}|o_A = s)$. This allows to verify how the profitability of the target varies when the acquirer is state-owned. Firms purchased by SOEs would have better (worse) profitability indices than firms bought by private acquirers $(z_T|o_A = s > z_T\,|o_A = p)$ if $\hat{\lambda} > 0$ $(\hat{\lambda} < 0)$, controlling for a set of observable characteristics.

Next, we estimate equation (8), where we distinguish SOEs with a unique owner:

$$z_{T_i} = \alpha + \beta z_{A_i} + X'_{Ai}\gamma + X'_{Ti}\delta + \zeta YEAR_i + \eta 100\% SHARE_{Ai} + \lambda SOE_{Ai} + \mu SOE_{Ai} \times 100\% SHARE_{Ai} + \varepsilon_i, \; (8)$$

$100\%SHARE_{Ai}$ is a dichotomous variable equal to one if the acquirer is entirely controlled by a unique shareholder, and zero otherwise, while the interaction between the state-owned dummy (SOE) and the $100\%SHARE$ variable allows one to test whether SOEs which are entirely owned by the government behave in the MCC differently from SIEs. In the last specification of the model, we also control for state-owned acquirers operating in a particular industry:

$$z_{T_i} = \alpha + \beta z_{A_i} + X'_{Ai}\gamma + X'_{Ti}\delta + \zeta YEAR_i + \eta 100\% SHARE_{Ai} + \lambda SOE_{Ai} + \mu SOE_{Ai} \times 100\% SHARE_{Ai} + \nu IND_{Ai} + \xi SOE_{Ai} \times IND_{Ai} + +\varepsilon_i, \; (9)$$

where IND_{Ai} is a dummy that equals one when the acquirer operates in a given sector (e.g. the financial sector, manufacturing sector etc.) and zero otherwise. By interacting the state-owned dummy (SOE) with the industry dummy (IND), we assess whether the SOEs operating in that sector purchase different types of targets with respect to SOEs operating in the other sectors.

5. Results

The estimates of equations (6) and (7) are provided in Table 5. The coefficient on the operating profit margin (first row of the column 1) shows that for each unit increase in the OPM of the acquirer, the OPM of the target will increase roughly by 0.1 points. This confirms the standard IMH proposition that on average acquirers outperform their respective targets, even conditional on some observable characteristics for both acquiring and targeting firms (level of assets, country and sector of both acquirers and targets, year of the deal) and on a full set of triple interactions between year, country and sector fixed effects.

In column (2) we control also for the ownership of the acquirer, and the coefficient indicates that there is no statistically significant evidence for rejecting the hypothesis that the performance of the target differs depending on the ownership nature of the acquirer. The major result which emerges from Table 5 is that the general finding of the standard IMH – that it is efficient for private acquirers to purchase firms performing less well – cannot be rejected even when the deal is performed by a SOE.

Table 5. Analysis of the Operating Profit Margin (OPM) of acquirers and targets, introducing ownership of the acquirer.

	(1)	(2)
VARIABLES	OLS	OLS
OPM of the acquirer	0.112***	0.112***
	(0.021)	(0.022)
State-owned acquirer		-0.827
		(0.926)
Constant	8.607**	8.611**
	(3.729)	(3.733)
Asset of the Acquirer, Asset of the target	YES	YES
Year, country and sector fixed effects	YES	YES
Full set of country, sector and year interactions	YES	YES
Clusterization by sector and area of the acquirer	YES	YES
Observations	25,332	25,332
R-squared	0.142	0.142

Source: Own elaboration based on Zephyr and Orbis
Notes: Fixed effects include the year of the deal, the area of the acquirer, the sector of the acquirer, the area of the target and the sector of the target. A Full set of interactions includes all pairwise interactions of country and industry and year of the deal and their triple interactions for the acquirer, as well as an analogous set of interactions for the target firm. Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

Next, we test whether previous results are still valid when we further distinguish state-owned acquirers depending on whether the government is its unique shareholder. Column 1 of Table 6 shows that the $100\% share$ dummy is positive and significant, implying that enterprises with a single owner purchase better performing target firms. This could suggest that enterprises with a single owner prefer to purchase only firms with solid economic performance. In the second specification of Table 6 (column 2) we introduce the interaction of the $state - owned\ acquirer$ dummy with the $100\% share$ dummy, and this allows us to distinguish among SOEs and SIEs. The results show that SOEs which are entirely public acquire “lower” performing targets

relative to private acquirers and to SIEs. This result is consistent with our framework, as it implies that on average only managers of SOEs with a unique public owner are likely to give a positive value to the social externality of M&As. Conversely SIEs do not show any difference in their targeting strategy with respect to private acquirers.

Table 6. Analysis of Operating Profit Margin (OPM) of acquirers and targets, introducing ownership of the acquirer, and interactions between ownership of the acquirer and deals by 100% owned acquirers

VARIABLES	(1) OLS	(2) OLS
OPM of the acquirer	0.113***	0.114***
	(0.021)	(0.021)
State-owned acquirer	-0.848	0.078
	(0.904)	(1.042)
100% shares	1.080**	1.404***
	(0.436)	(0.381)
State-owned acquirer*100% shares		-3.218***
		(0.991)
Constant	8.591**	8.543**
	(3.742)	(3.752)
Asset of the Acquirer, Asset of the target	YES	YES
Year, country and sector fixed effects	YES	YES
Full set of country, sector and year interactions	YES	YES
Clusterization by sector and area of the acquirer	YES	YES
Observations	25,332	25,332
R-squared	0.143	0.143

Source: Own elaboration based on Zephyr and Orbis *Notes*: Fixed effects include the year of the deal, the area of the acquirer, the sector of the acquirer, the area of the target and the sector of the target. A Full set of interactions includes all pairwise interactions of country and industry and year of the deal and their triple interactions for the acquirer, as well as an analogous set of interactions for the target firm. Standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

In Table 7 we test whether previous results are still valid when we further distinguish state-owned acquirers depending on their sector of activity. Indeed, both the performance of the target firms and the objectives that acquiring firms require to pursue could be sector-specific. For this purpose, we interact the state-ownership dummy with the industry dummy IND_i. First, we find that the interaction between the $state-owned\ acquirer$ and the $100\% shares$ dummies suggests that the statistically significant difference in the targeting strategy observed between SIEs and SOEs holds independently on the sector of activity of the acquirer. On top of that, we find that previous results on the role of state-owned enterprises were partially confounded by the pooling of SOEs operating in different industries.

The interaction between the state-ownership and the manufacturing industry dummies (column 1) shows that SOEs operating in the manufacturing sector purchase better performing targets than their private manufacturer counterparts. Conversely, state-owned acquirer operating in the financial sector purchase lower targets than private financial acquirers (column 2).This suggests that managers of government-owned financial entities (which include development banks) are instructed to pursue social goals, independently on the degree of public ownership. Finally, results in columns (3) to (6) show that the interactions between the dummy SOE_{Ai} and the other industry dummies are not significant, pointing out that in the energy, mining, SGI industries state-owned acquirers do not show any difference with respect to their private counterparts operating in the same sectors. This brings us to exclude the possibility that our previous results were driven by some industry-specific factors which could influence the performance of SOEs (e.g. the fact that SOEs are more concentrated in the energy markets, which are typically under oligopoly).

Table 7. Analysis of Operating Profit Margin (OPM) of acquirers and targets, introducing the sector dummy, and its interaction with the ownership of the acquirer

VARIABLES	(1) OLS	(2) OLS	(3) OLS	(4) OLS	(5) OLS	(6) OLS
OPM of the acquirer	0.114***	0.113***	0.114***	0.114***	0.114***	0.114***
	(0.021)	(0.021)	(0.021)	(0.021)	(0.021)	(0.021)
State-owned acquirer	-0.995	0.865	0.068	0.024	0.232	0.075
	(0.919)	(0.881)	(1.100)	(1.192)	(1.090)	(1.135)
100% shares	1.362***	1.353***	1.404***	1.403***	1.407***	1.404***
	(0.370)	(0.351)	(0.381)	(0.379)	(0.382)	(0.382)
State-owned acquirer*100% shares	-2.868***	-3.064***	-3.216***	-3.224***	-3.247***	-3.219***
	(1.014)	(0.989)	(0.998)	(0.983)	(0.993)	(0.980)
State-owned acquirer * acquirer Sector: Manufactur	3.510**					
	(1.672)					
State-owned acquirer * acquirer Sector: Finance		-3.136***				
		(1.072)				
State-owned acquirer * acquirer Sector: Energy			0.147			
			(1.388)			
State-owned acquirer * acquirer Sector: other SGI				0.332		
				(1.179)		
State-owned acquirer * acquirer Sector: Mining					-3.148	
					(2.781)	
State-owned acquirer * acquirer sector: other services						0.016
						(1.763)
Constant	8.639**	8.545**	8.543**	8.544**	8.526**	8.543**
	(3.726)	(3.756)	(3.753)	(3.752)	(3.754)	(3.745)
Asset of the Acquirer, Asset of the target	YES	YES	YES	YES	YES	YES
Year, country and sector fixed effects	YES	YES	YES	YES	YES	YES
Full set of country, sector and year interactions	YES	YES	YES	YES	YES	YES
Clusterization by sector and area of the acquirer	YES	YES	YES	YES	YES	YES
Observations	25,332	25,332	25,332	25,332	25,332	25,332
R-squared	0.143	0.143	0.143	0.143	0.143	0.143

Source: Own elaboration based on Zephyr and Orbis *Notes*: Fixed effects include the year of the deal, the area of the acquirer, the sector of the acquirer, the area of the target and the sector of the target. A Full set of interactions includes all pairwise interactions of country and industry and year of the deal and their triple interactions for the acquirer, as well as an analogous set of interactions for the target firm. Standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

In Table 8 we further investigate the role of public ownership by distinguishing SOEs according to different degrees of ownership. We introduce a set of dummies which vary according to the percentage of stakes owned by the major shareholder. By interacting these dummies with the SOE dummy, we distinguish among SOEs where the major shareholder owns respectively more than 75%, more than 50% or more than 25% of shares (columns 1, 2 and 3). Results show that by lowering the ownership threshold, the coefficient of the interaction term between the SOE dummy and the ownership threshold dummy becomes less significant. Notably, it is no more significant when we include SIEs where government entities own less than 50% of shares. In column (4) of Table 8 we generalize this result by controlling for the percentage of stakes owned by the major shareholder ($pc\ of\ shares$), which is a continuous variable ranging between 1% and 100%. Its coefficient is negative and significant, implying that the performance of the target firm diminishes as the degree of government control increases above its average level.

This suggests that for lower levels of government control, SOEs enterprises tend to converge towards the private benchmark and, in particular, SIEs where the government does not own the absolute majority of shares behave in the MCC not differently from private enterprises.

Table 8. Analysis of Operating Profit Margin (OPM) of acquirers and targets, introducing ownership of the acquirer, and different degrees public ownership

	(1) OLS	(2) OLS	(3) OLS	(4) OLS
OPM of the acquirer	0.113***	0.112***	0.112***	0.112***
	(0.022)	(0.022)	(0.022)	(0.022)
State-owned acquirer	0.091	0.337	0.149	0.706
	(1.114)	(1.377)	(1.424)	(1.467)
State-owned acquirer*share >=75%	-2.200**			
	(0.855)			
State-owned acquirer*share >=50%		-2.062*		
		(1.090)		
State-owned acquirer*share >=25%			-1.309	
			(1.251)	
State-owned acquirer* pc of shares				-0.027**
				(0.013)
Constant	8.493**	8.499**	8.391**	8.242**
	(3.754)	(3.747)	(3.800)	(3.774)
Observations	25,332	25,332	25,332	25,332
R-squared	0.142	0.142	0.142	0.142

Source: Own elaboration based on Zephyr and Orbis *Notes*: Fixed effects include the year of the deal, the area of the acquirer, the sector of the acquirer, the area of the target and the sector of the target. A Full set of interactions includes all pairwise interactions of country and industry and year of the deal and their triple interactions for the acquirer, as well as an analogous set of interactions for the target firm. Standard errors in parentheses, *** $p<0.01$, ** $p<0.05$, * $p<0.1$

Finally, we test the robustness of our results in different ways. The estimated models are presented in the Appendix. First, we trim the distribution of the target's and the acquirer's OPM at the second and ninety-eighth percentiles to check whether the results could depend on some outliers (Table 9). Second, we drop from our sample one country at a time. In Table 10, we present the results for the top 11 countries in terms of the number of deals performed by

an SOE acquirer. All these robustness checks broadly confirm the results that target firms in deals with SOE operating in the financial and insurance sector have a lower level of operating profit margin by about 3–4 points.

We also confirm that SOEs which are entirely owned by the government acquire firm with a worse performance with respect to firms purchased by private enterprises. This is not hold when we drop Russia from our sample, where the role of public ownership is entirely captured by financial state-owned enterprises. Indeed, when we omit the interaction term between the SOE dummy and the financial sector dummy, the coefficient for the 100% SOEs is again significant, even when we drop Russia from our sample.

6. Discussion and concluding remarks

The market for corporate control is an important economic institution. Without a well-functioning MCC, the only way for a firm to increase its asset base, regardless of its ownership and objectives, is to make a direct purchase of assets in specific markets. These assets should be interpreted here in the broadest meaning: tangible, such as equipment and buildings; intangible, such as brands, licenses and patents, or skilled human capital; and potential assets, such as market penetration, knowledge of local contexts and social capital in terms of relations with stakeholders, including the government. Private investors who own a firm can instruct the managers to maximize the profits and take decisions on the optimal size of capital in this broad sense. However, without a well-functioning 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, in which such equipment is supplied on a regular basis (except for the most complex ones), for most of the remaining types of assets, the product markets are imperfect. Buildings and facilities do not move and are often unique; patents and other assets deriving from intellectual property may have limited substitutes. Skilled labor takes time and an appropriate context to be formed. Moreover, certain assets work well only when combined with others. The reputation of a firm takes years or decades to

build. Market penetration in certain countries needs 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 a new market. In a precise sense, the early intuition by Manne (1965) and several others that the MCC is about trading 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.

We enlarge the perspective of this way of thinking about the MCC questioning whether enterprises ultimately owned by governments and active in the MCC systematically disturb the efficiency of such a market in terms of the IMH. A counterfactual history would clarify the importance of the question. If governments are offering special protection to the firms they control, including for example easier access to credit than for their private competitors, legal franchises or other privileges, then weakly managed SOEs would be able to acquire the control of better rival teams just because of government protection. This would fundamentally disrupt the efficiency of the MCC, which raises concerns of some recent policy literature and of editorials in the media about the aggressive role of SOEs, as mentioned in the Introduction.

To what extent are these concerns justified by empirical evidence? There are three core results. The first one is that SOEs in general behave as predicted by the IMH, that is, state-owned acquirers purchase on average underperforming targets. Thus, if the MCC is efficient because of the usual argument for private firms, it is also efficient on the SOEs' side. We do not find evidence that the share of deals in which the acquirer is performing less well than the target is larger when the acquirer is a SOE.

Second, we find that the behavior of SOEs in the MCC depends on the degree of public ownership. SOEs where the government owns more than 50% of shares, and particularly SOEs where the government is the unique shareholder (100% of shares in the hand of a unique public institution), buy lower performing firms than private enterprises. Conversely, we do not find

statistically significant evidence for rejecting the hypothesis that SIEs, where the government owns less than 50% of shares, and private acquirers purchase targets with different levels of performance.

Finally, we find that financial SOEs, particularly in some Western European countries, buy relatively lower performing targets than targets purchased by private financial acquirers. Why do financial state-owned institutions and 100% controlled SOEs buy lower than their private counterparts? We interpret this finding in our conceptual framework as a higher inclination of these type of SOEs to acquire assets because of their unobserved political objectives and managerial characteristics. For example, government-owned venture capital tends to focus on local SMEs, on start-ups in the high-tech sectors and on other targets with low short-term returns; development banks support local infrastructure investment with long maturity; and some government-owned banks tend to rescue loss-making firms that are perceived as politically important.

Conversely, SIEs, i.e. firms which are only invested by the government, and where the percentage of share owned by private investors is relevant, have apparently become market-oriented enterprises that are managed in a non-different way from private enterprises. While the profitability of SOEs relative to their targets might be an indication of market power, as suggested e.g. by Christiansen and Kim (2014), we do not find evidence that in regulated industries there are substantial differences between private enterprises and SOEs in terms of the market for corporate control.

The fact that on average contemporary reformed SOEs do not disrupt the MCC is good news and should suggest that the economic concerns about the expansion of contemporary SOEs in general should not be exaggerated and should be assessed case by case.

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Appendix I – Robustness checks

We test the robustness of our results in three ways. First, considering the highly dispersed data and the likelihood that some results could be driven by outliers, we test the robustness of our final results by trimming the distribution of the ratio of target to acquirer *operating profit margin* at the second and ninety-eighth percentiles. The previous results are largely confirmed (first specification of Table 9).

Finally, the previous results continue to hold when dropping countries from our sample one at a time. We report in Table 10 the results when dropping the countries with a higher concentration of deals performed by SOEs.

Table 9. Analysis of Operating Profit Margin (OPM) of acquirers and targets, after trimming at the 2-nd and 98-th percentiles

	(1)	(2)
	OLS	OLS
OPM of the acquirer	0.111***	0.111***
	(0.026)	(0.026)
State-owned acquirer	-0.439	0.261
	(0.703)	(0.526)
100% shares	0.562	0.515
	(0.340)	(0.330)
State-owned acquirer*100% shares	-1.707**	-1.541**
	(0.754)	(0.746)
State-owned acquirer * acquirer Sector: Finance		-2.977***
		(0.672)
Constant	6.734***	6.702***
	(1.065)	(1.073)
Asset of the Acquirer, Asset of the target	YES	YES
Year, country and sector fixed effects	YES	YES
Full set of country, sector and year interactions	YES	YES
Clusterization by sector and area of the acquirer	YES	YES
Observations	23,391	23,391
R-squared	0.181	0.182

Source: Own calculation using Orbis and Zephyr data *Notes*: Fixed effects include the year of the deal, the area of the acquirer, the sector of the acquirer, the area of the target and the sector of the target. A Full set of interactions includes all pairwise interactions of country and industry and year of the deal and their triple interactions for the acquirer, as well as an analogous set of interactions for the target firm. Standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

Table 10. Analysis of Operating Profit Margin (OPM) of acquirers and targets, after dropping one country at a time

	(1) without RU	(2) without FR	(3) without CN	(4) without FI	(5) without IT	(6) without NO	(7) without SE	(8) without ES	(9) without PL	(10) without JP	(11) without GB
OPM of the acquirer	0.120***	0.119***	0.113***	0.113***	0.112***	0.112***	0.118***	0.114***	0.113***	0.112***	0.116***
	(0.027)	(0.019)	(0.021)	(0.022)	(0.021)	(0.024)	(0.019)	(0.020)	(0.022)	(0.021)	(0.022)
State-owned acquirer	1.096	1.144	0.803	0.952	0.897	1.226	0.532	1.093	0.789	0.930	0.847
	(1.091)	(1.004)	(0.929)	(0.916)	(0.905)	(0.827)	(0.974)	(0.903)	(0.916)	(0.922)	(0.911)
100% shares	1.497***	1.250***	1.347***	1.357***	1.305***	1.101***	1.191***	1.246***	1.365***	1.436***	1.849***
	(0.358)	(0.332)	(0.356)	(0.381)	(0.357)	(0.318)	(0.292)	(0.373)	(0.355)	(0.352)	(0.548)
State-owned acquirer*100% shares	-2.025	-3.599***	-3.336***	-3.207**	-3.123***	-3.177***	-2.411*	-2.520**	-3.058***	-3.208***	-3.742***
	(1.215)	(0.832)	(1.009)	(1.282)	(0.984)	(1.114)	(1.223)	(1.020)	(1.013)	(1.010)	(0.812)
State-owned acquirer * acquirer Sector: Finance	-4.124***	-2.451*	-2.974***	-3.016***	-3.154***	-3.714***	-2.831**	-3.047***	-3.149***	-3.035***	-2.995**
	(1.180)	(1.264)	(1.087)	(1.071)	(1.088)	(1.186)	(1.117)	(1.070)	(1.102)	(1.120)	(1.234)
Constant	8.366**	9.327**	8.547**	8.626**	8.513**	8.557**	8.215**	9.145**	8.534**	8.305**	8.885**
	(3.775)	(4.256)	(3.761)	(3.735)	(3.771)	(3.695)	(3.794)	(4.107)	(3.749)	(3.779)	(3.822)
Observations	22,706	22,987	24,989	23,979	24,432	24,146	23,798	23,495	24,770	24,136	22,112
R-squared	0.150	0.151	0.142	0.146	0.146	0.145	0.147	0.149	0.145	0.145	0.160

Source: Own elaboration based on Zephyr and Orbis *Notes*: Fixed effects include the year of the deal, the area of the acquirer, the sector of the acquirer, the area of the target and the sector of the target. A Full set of interactions includes all pairwise interactions of country and industry and year of the deal and their triple interactions for the acquirer, as well as an analogous set of interactions for the target firm. Standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1