

**PUBLICIZATION VERSUS PRIVATIZATION:  
RECENT WORLDWIDE EVIDENCE**

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Working Paper n. 2014-04

APRILE 2014

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



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# Publicization versus Privatization: Recent worldwide evidence

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This Version: 28 02 2014

## Abstract

This paper analyzes deals involving private and State-owned enterprises (SOEs) worldwide since 2004. We consider four types of deals: privatizations, publicizations, private reorganizations (i.e. private firms acquiring a private target) and public reorganizations. (i.e. both acquirers and targets are SOEs). We study whether the pre-deal performance and corporate characteristics of the acquirer and target companies vary across the four types of deals depending on ownership: public or private. Data are taken from Zephyr, which provides information on completed deals worldwide and Orbis, a firm-level dataset. The empirical analysis suggests the following. Some results of previous literature on M&As performed by private firms ('the inefficiency management hypothesis') are both confirmed and expanded. Acquirers involved in deals are both larger and better performing than their targets but some qualifications are in order with respect to ownership. The difference in size and performance between acquirers and targets is in fact more pronounced for public with respect to private acquirers. The evidence thus points to an active role of SOEs as acquires, as they significantly out-perform relative to their targets, including private ones, in terms of return on sales. Given these novel findings, further research is needed to examine the motivations behind the different types of deals considered and to verify the role of ownership.

**JEL Classification:** L32, L33, G34

**Keywords:** Publicization, Privatization, State-owned enterprises, M&As

**Acknowledgements:** This paper has been written within the context of the CIRIEC project "The Future of the Public Enterprises". The views and opinions expressed in the paper are solely those of the authors.

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## 1. Introduction

During the 1990s close to one trillion dollars of public assets have been privatized, more than three-quarters of which in OECD countries (OECD 2003). After reaching a peak at the end of the 1990s, however, a slowdown of privatizations has been detected over the last decade (Bortolotti et al. 2012). While up to 2005 the decline in the number of privatizations coincided with a slowing trend of stock prices that made public offering disadvantageous for governments, interestingly the trend continued during the stock market boom prior to the 2008 financial crisis (OECD 2009, Megginson and Bortolotti 2011).

Moreover, the number of privatizations have been often overstated since many of the reported privatizations have been only partial or formal, and did not bring to any real change in ownership. Bortolotti and Faccio (2009) discuss evidence suggesting that many deals that have been counted as privatizations in fact were hiding just a change in the enterprise's legal status or a limited divestiture of public ownership, concluding that in OECD countries governments maintain some degree of control in 62% of their privatized companies. According to the World Bank "it has become clear that, for both political and economic reasons, the state will remain a major owner of productive assets in a number of economies for years to come" (World Bank 2006, p. 1).

Thus, in spite of the long wave of privatization in the last decades, state-owned enterprises (SOEs) continue to persist for political, social and strategic reasons, remaining key players in various countries, particularly, in network industries (Nicoletti and Scarpetta 2003, Florio 2013). In 2005 the OECD attempted to map the SOEs which survived the privatization process in Western countries and concluded that, at the beginning of the new Millennium, SOEs were still playing a significant role in various OECD economies, 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). In more recent years, the financial crisis and economic recession have further induced state intervention in Western economies. Many OECD countries have injected consistent amounts of liquidity in the market to bail out private banks and strategic enterprises. According to the OECD, just after the crisis, shares of equity holdings owned by some OECD governments increased up to 20% of their GDP, above the OECD average of around 8% (OECD 2010).

This public intervention has been accompanied by an increasing active role of the government in the management of SOEs. In several occasions governments attempted and succeeded to influence portfolio companies and to pursue goals different from the maximization of the firm value (Kahan and Rock, 2011). According to a survey (OECD 2011), 2,057 SOEs are active in OECD countries, employing more than 6 million people, with an estimated value close to US\$ 1.9 trillion. Focusing on non-OECD countries, other analyses (Hall & Soskice, 2001, Chong and Lopez-de-Silanes 2003; Redding 2005; World Bank 2006) stress the even more active and direct role that SOEs play in promoting economic growth both in market and social democratic economies, particularly in China (Fligstein & Zhang, 2011, Lin, 2011, Redding & Witt, 2009). A recent report (OECD, 2013) documents that several non-OECD countries have consolidated public ownership in enterprises operating in strategic sectors. In fact, in the BRICS,<sup>2</sup> the aggregate SOEs' market value corresponds to 32% of their GDP. In these countries SOEs have increased in number, size, profitability and they have also pursued internationalization strategies through an increasing number of cross-border M&As (OECD 2013, Karolyi and Liao 2013).

The main aim of this paper is analyze deals involving SOEs in the last decade to highlight trends and common characteristics and stress similarities and differences with deals performed by private enterprises. Our novel dataset is constructed by matching information from Zephyr, a dataset of

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<sup>2</sup> BRICS stands for: , Russia, India, China and South Africa

worldwide deals recorded between 2004 and 2012, with firm-level data from Orbis, a dataset containing financial indicators of dealers, both provided by the Bureau Van Dijk. By matching the ownership of both the acquirer and target companies,<sup>3</sup> we first classify deals into four categories: 1) privatization, when a private enterprise acquires a SOE; 2) publicization, when the reverse process occurs, namely an SOE acquires a private enterprise; 3) private re-organization, when a private acquires another private entity; and 4) public re-organization when both the acquirer and target companies are state-owned. This data set allowed us to investigate three main research questions.

First, we compare the trend of publicizations with the trend of privatizations to assess whether a process reviving SOEs and a reversal of privatization are effectively taking place. We also want to verify the characteristics of such a process: which countries and sectors have been mainly interested, the size of the involved enterprises, and whether the current economic crisis has played a role.

Second, we compare the characteristics of the acquirer and target companies involved in the four types of deals with respect to their size and their performance - measured by different variables - questioning whether their pre-deal characteristics vary depending on ownership. By comparing their financial data, we assess whether private and public acquirers have similar or different economic characteristics and whether they buy similar or different types of target companies. In particular, we assess whether private acquirers are bigger and perform better than their private targets, as widely found in the previous literature on M&As, and we question whether the same result holds when considering SOE acquiring private and public target enterprises. Although the M&As literature on characteristics and determinants of deals is vast, to the best of our knowledge, no study has so far analyzed whether characteristics of acquirers and targets differ when companies involved in a deal are government-owned.

Finally, we compare the four types of deals by looking at the countries and sectors where the transactions mainly take place. We question whether SOEs tend to acquire target companies located in countries and operating in sectors that differ from the ones of the target companies acquired by private enterprises. In particular, we question whether public enterprises have a different attitude, compared to private firms, toward internationalization -through cross-border M&As- and toward business diversification -through cross-sector M&As. We also question whether public enterprises have a higher propensity than private ones to enter in deals in sectors of services of general interest.

The novelty of our work is that, while previous literature has analyzed the pre-deal characteristics of acquirers and targets focusing on M&As among privately-owned enterprises, we extend this approach by also considering deals where at least one enterprise is government-owned. By developing this comparative analysis we are setting the stage for further research aimed at understanding whether, when performing a deal, SOEs behave like profit maximizing private enterprises or whether they might be guided by different, social or political, goals. Indeed, while SOEs have been traditionally used by governments to solve market failures and to achieve social goals (Atkinson and Stiglitz 1980, Bos 1994), in the last decade SOEs have been increasingly corporatized and legally re-organized: they have been subjected to general corporate law, in many cases they have been listed on a stock exchange market, where they compete with private firms to attract private equity (OECD 2005, Pargendler et al. 2013).

The structure of the paper is the following. In the next section we briefly review the related literature, focusing in particular on papers discussing the pre-deal characteristics of acquirers and targets and on the M&As where SOEs are involved. We then describe the data used, explaining the process of building our novel dataset from the deal-level and firm-level databanks, Zephyr and Orbis, respectively. We then describe in more detail the deals, distinguishing between publicization,

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<sup>3</sup> Both Zephyr and Orbis databases are provided with a unique enterprise identifying key allowing us to perform exact matching of firms contained in both datasets.

privatization, and re-organization deals in the last decade. We first document aggregate trends and then briefly describe the cross-border and cross-sector dimensions of deals, focusing on firms operating in the sector of services of general interest and on the most representative sectors. Finally we describe the economic and financial performance of both acquirer and target companies discussing differences by deal types and ownership. The final section discusses and concludes.

## 2. Literature review

A vast literature has investigated the reasons underlying an enterprise's decision to acquire another one or to merge with it. A strand of this literature has tried to infer the rationale for a M&A deal by questioning "who buys whom" and comparing the pre-deal characteristics of the acquirer and target companies. Manne's (1965) seminal article (1965) points out that takeovers provide disciplinary devices to correct firms' internal inefficiencies. Well-performing enterprises will acquire underperforming and badly managed target companies, whose inefficient management will be substituted with a superior one: a result also known as the "inefficient management hypothesis" (Mandelker 1974, Walsh and Edwoods, 1991). Several papers have compared the pre-deal performance differences in the acquirer and target characteristics<sup>4</sup> finding evidence that in the pre-deal period acquirers are more productive, have a higher asset valuation, and perform better than acquired firms<sup>5</sup> (Maksimovic and Phillips 2001, Jovanovic and Rousseau 2002, Andrade and Stafford 2004, Rousseau 2006, Breinlich 2008). Using pre-deal accounting-based data and looking at the returns on equity, on assets and on sales ( respectively ROE, ROA and ROS), Mueller (1980) finds that acquirers are larger, have grown faster and are more leveraged than both target companies and non-participants industry peers. This result has been confirmed with respect to other performance measures<sup>6</sup> (Hasbrouk 1985, Andrade et al. 2001, Bradley and Sundaram 2006, Liu and Qiu 2013). Conversely, other papers comparing the pre-deal stock market or return performance of acquirers, targets and non-merging control group do not find a clear evidence for the inefficient management hypothesis (among others Agrawal and Jaffe 1995, Franks and Mayer 1995). Ravenscraft and Scherer (1989), who analyze pre-deal accounting-based data of small and unlisted companies, also find that, before acquisition, target companies are highly profitable and their pre-merger profitability is substantially above that of manufacturing sector peers. Camerlynck et al. (2005) provide some evidence that target and acquiring companies have a complementary financial profile<sup>7</sup> and that, before a deal, target companies are more profitable than their industrial peers. Rhodes-Kropf et al. (2005) find that firms with a higher market-to-book ratio (M/B) tend to acquire target companies with lower M/B ratio but that acquired firms have a much higher evaluation than their non-acquired industry peers. They suggest that the general statement "high buys low" should be substituted by the proposition "high buy less high (but not low)".

The mentioned literature entirely focuses on deals performed by private enterprises and, to the best of our knowledge, no study has so far analyzed whether these findings hold when the companies

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<sup>4</sup> While most of this literature analyses pre-deal stock market data – abnormal returns or share prices, market to book ratio- a smaller strand of literature has focused on accounting data, such as net income, return on equity or assets, leverage, and liquidity of the firm.

<sup>5</sup> Various performance measures are used to compare acquirers and targets: market to book ratio; cash flow; excess stock returns, measured as excess returns of the firm's common stock to the market index.

<sup>6</sup> Size (sales, total assets, number of employees, total intangible assets, total capital expenditure, and research and development - R&D - expenditure), technology (asset to labor ratio, capital expenditure to labor ratio, and R&D expenditure to labor ratio) productivity (sales per worker) and profitability (total earning, earning per worker, and earning to asset ratio) Liu and Qiu (2013); Average q-ratio (Hasbrouk 1985); abnormal operating performance, given by the difference between the combined firm's operating margin and the corresponding industry median operating margin (Andrade et al. 2001); stock price performance before the acquisition announcement, equity capitalization, cash and equivalents to total assets, capital expenditure to total assets; (Bradley and Sundaram 2006).

<sup>7</sup> They analyze the profitability, liquidity, financial structure, added value and failure risk using statistical analysis of industry-adjusted variables. Among the various variables the firms' performance is measured by: net return on sales before taxes; net return on total assets before taxes; net return on equity after taxes; cash flow return on equity; gross added value per employee; personnel expenses per employee.

involved in a M&A are ultimately government-owned. Our paper intends to cover this gap by questioning whether the pre-deal characteristics of the acquirer and target companies vary depending on their ownership type.

While the literature on pre-deal characteristics of acquirers and targets has not investigated the case of public ownership, another stand of literature has analyzed the determinants of some publicization episodes. Chernykh (2011) analyzes the wave of renationalization that took place in Russia after 2004. She finds that nationalizations occurred in strategic sectors and were not correlated with the firm's financial debt. She claims that the State has not limited itself to save firms in financial distress but that nationalizations have been mainly politically driven to ensure public control of strategic assets. Several studies find that Chinese SOEs have undertaken cross-border M&As to: ensure national energy security through direct access to energy resources and raw materials (Luo and Tung 2007, Chen and Lin 2009, Jeong and Weiner, 2012); to acquire new capabilities and to exploit intangible assets (Deng 2009).

Other papers have questioned whether private and SOEs show a different attitude towards internationalization through cross-border M&As, finding that SOEs are less internationalized than privately-owned enterprises (Elstrin et al. 2013, OECD 2013). Dinc and Erel (2012) find evidence of economic nationalism as a counter-force which opposes cross-border transactions by SOEs. Ramasamy et al. (2012) focus on cross-border M&As performed by Chinese firms and find that acquisitions by private firms are driven by a rent-seeking objective, while SOEs acquisitions are driven mainly by strategic and political reasons. Karolyi and Liao (2013) find small differences between cross-border M&As performed by private and SOEs, but find that SOEs have a higher propensity than private enterprises to acquire firms located in countries that are geographically close and that operate in similar sectors.

These papers focus on public acquirers only while, to the best of our knowledge, no paper has so far considered simultaneously the role of ownership on the acquired companies' side. Our paper aims at covering this gap by combining evidence on public and private ownership for both acquirer and target companies, i.e. ownership on the two sides of a deal. The importance of adopting our perspective seems evident. As M&A processes are bilateral transactions, evidence about the mutual characteristics of both players, the buyer and the target, is needed either to confirm or to reject the 'inefficient management hypothesis'. In other words: are SOEs, in their role as acquirers, performing better than their targets? Are private firms acquiring SOEs performing better than their targets? Finally, are there differences in relative terms in privatizations versus publicizations from the angle of relative efficiency of acquirers and targets?

### **3. The dataset: the construction process and descriptive statistics**

Data on deals performed by enterprises, regardless of their ownership structure, are extracted from Zephyr, a database managed by the Bureau Van Dijk with information on completed deals worldwide.<sup>8</sup> We narrow the sample selection on those deals for which financial and ownership information are available simultaneously for acquirer, target and vendor companies. By matching available information for these three types of companies, we restrict, out of a much larger potential pool, the sample of data to 45,874 deals over the period 2004 and 2012. There are still a significant number of missing observations which we consider as randomly distributed. This further restricts

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<sup>8</sup> <https://www.bvdinfo.com/en-gb/products/economic-and-m-a/m-a/zephyr>. Sources come from reports, international financial journals, company press release, electronic publications, company websites, stock exchange information. We excluded the rumors about potential and not completed deals. Completed deals include: acquisitions, greenfields, mergers, demergers, buy-backs, minority stakes, buy-outs, share buy-backs, management buy-ins.

the sample, but we have preferred to select a relatively small number of deals for which all the key information is available.

Since information about the enterprise's ultimate owner (UO) provided by Zephyr refers only to the latest available year rather than the year when the deal occurred, when defining the ownership type of the dealers we might wrongly consider as public (private) a firm which is public (private) nowadays but that was not public (private) at the time of the deal. To avoid this potential sampling error we had to further restrict our sample only to those observations where the UO of both the acquirer and vendor have not changed since the time of the deal.<sup>9</sup> To this aim, we have developed an algorithm that allows us to extract only those observations where both the vendor and acquiring companies involved in a deal (at time  $t$ ) do not figure, in turn, as target companies in a subsequent deal (at any time  $t+j$ ). This strict selection procedure leaves us with our final sample of 13,475 observations. Being sure that the ownership of the dealers has never varied in the considered period ( $t, t+j$ ), within this smaller sample we can correctly infer the ownership nature of the enterprise when the deal took place by looking at the enterprise's current UO.

Before describing the dataset and performing the empirical analyses, a working definition of SOEs is in order. We consider as state-owned any enterprise whose ultimate owner, defined as the independent shareholder with the highest direct or total percentage of ownership, is a central or local public entity, including public authorities, governments, municipalities and local entities. Further, we consider this independent shareholder to be an ultimate owner of an enterprise if it holds more than 25% of shares. This is certainly less formalistic than considering more than 50% of ownership (Kowalski et al, 2013), as discussed by Florio (2014). See also Florio and Fecher (2011) about the opportunity of considering a broad approach to the understanding of government ownership.

For each enterprise involved in a deal, we extract information, at the time  $t$  of the deal, about its ownership, in terms of private or public nature of its UO, its country of origin and its sector of primary activity (NACE Rev. 2 code as shown in the Annex II).

We complement this information with accounting variables, taken from the Orbis dataset,<sup>10</sup> also managed by the Bureau Van Dijk. In detail, for each enterprise in the dataset, we consider the number of employees, total assets, operating revenues and earnings before interest and taxes (EBIT). We have also computed ratios related to performance: returns on sales (ROS), computed as operating income over revenues, return on assets (ROA), revenues per employee (REE) and assets per employee.

By exploiting the information on the ownership nature -private or public- of both the acquirer and target companies at the year of the deal, we have classified each deal in our sample in one of the following four categories:

1. Private re-organization, when the deal involves both privately-owned acquirer and target;
2. Public re-organization, when the deal involves both publicly owned acquirer and target;
3. Privatization, when the deal involves a privately-owned acquirer and a publicly-owned target;
4. Publicization, when the deal involves a publicly-owned acquirer and a privately-owned target.

Of the 13,475 deals in our sample, the majority falls within the private re-organization case, representing around 84% of the total (Table 1). Privatizations, instead, represent around 8% of the total while public reorganizations and publicizations account for 5% and above 3%, respectively.

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<sup>9</sup> In order to ascertain the pre-deal ownership nature of the target, we look at the ownership type of the vendor, while we look at the acquirer's ownership to infer its post-deal ownership. In the rest of the paper we thus report information on the ownership of target and acquirers.

<sup>10</sup> <http://www.bvdingo.com/en-gb/products/company-information/international/orbis-1>

The weight of re-organizations is in general higher, irrespective of the acquirer's ownership, although private re-organizations represent 92% of deals with a private acquirer, while public re-organizations represent only 61% of deals with a public acquirer. This suggests that the relative weight of publicizations is higher, in deals with public acquirers, than that of privatizations in deals with private acquirers.

**Table 1: Deals by ownership of Acquirer and Target**

		Target		Total
		Public	Private	
Acquirer	Public	690 (61%)	1,034 (8%)	<b>1,724 (13%)</b>
	Private	450 (39%)	11,301 (92%)	<b>11,751 (87%)</b>
Total		<b>1,140 (100%)</b>	<b>12,335 (100%)</b>	<b>13,475 (100%)</b>

Source: Own elaboration on Zephyr-Orbis

Focusing on the size of firms involved in deals, measured in terms of employees,<sup>11</sup> more than 60% of deals involve large enterprises as acquirers, while targets are more equally distributed among the different class sizes (Table 2).<sup>12</sup>

**Table 2: Deals by size of Acquirer and Target**

	Non-missing Obs	Acquirer	Non-missing Obs	Target
Small (10 to 49)	749	13%	975	23%
Medium (50 to 250)	1,201	19%	1,504	35%
Big (>250)	4,348	69%	1,817	42%
<b>Total Obs</b>	<b>6,298</b>	<b>100%</b>	<b>4,296</b>	<b>100%</b>

Source: Own elaboration on Zephyr-Orbis

Note. All reported figures are based on non-missing observations.

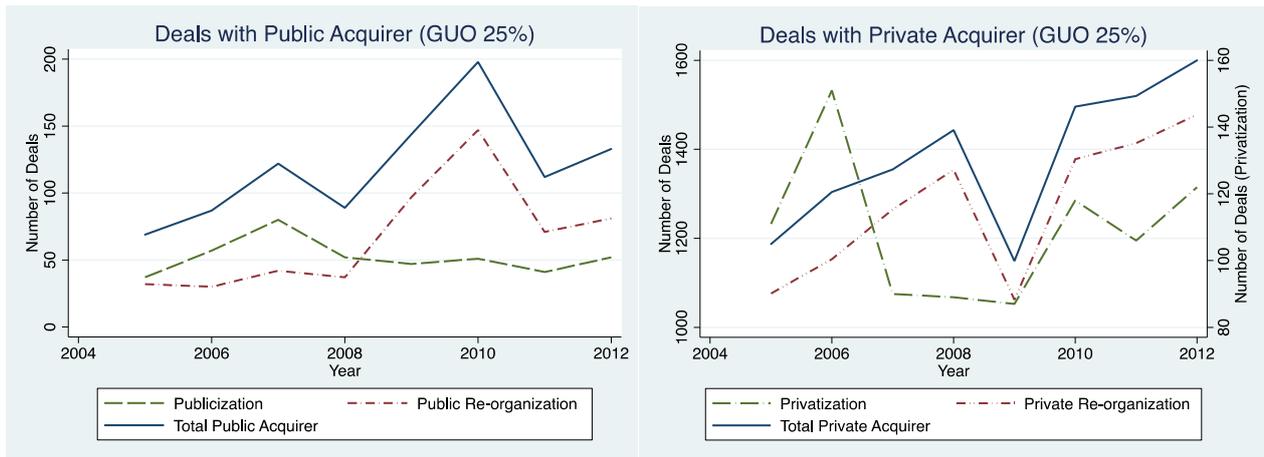
#### 4. Publicizations, privatizations and re-organizations

In this section, we analyze and compare the four typologies of deals described in Table 1, highlighting trends and main characteristics. Figure 1 plots the number of deals per year, considering public and private acquirers (left and right panel, respectively). Between 2008 and 2010, there has been a sharp increase in the number of deals involving public acquirers (Figure 1, left panel), mainly driven by publicizations. This finding is probably related to “rescue operations” from public bodies due to the ongoing economic crisis. Deals with private acquirers (Figure 1, right panel), also seem to be increasing in the period considered, albeit with a small slump between 2008 and 2009. Focusing on privatization, there seems to have been a slowdown between 2007 and 2009, with a reprise afterwards, with a dynamic behavior that is most likely driven by the ongoing economic crisis.

<sup>11</sup> According to article 2 of the EU recommendation 2003/61 “the category of small and medium-sized enterprises (SMEs) is made up of enterprises which employ fewer than 250 persons”. In particular the recommendation identifies a micro-enterprise if it has less than 10 employees. An enterprise is defined to be small if it employees less than 50 persons and more than 10 persons, while a medium enterprise employees between 50 and 250 persons.

<sup>12</sup> Data for firms with less than 10 employees have been excluded from the sample.

**Figure 1: Number of deals with public and private acquirers**

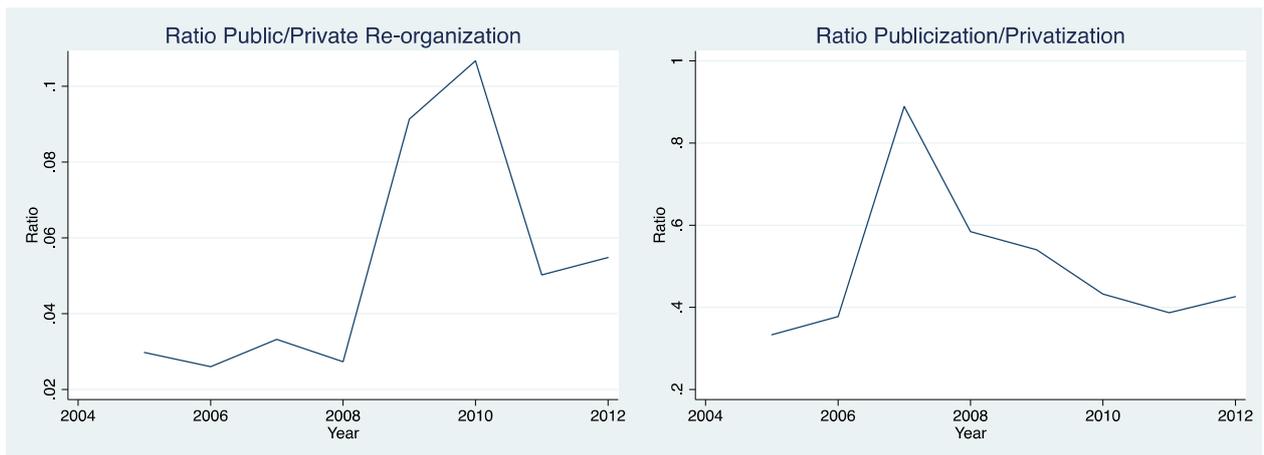


Source: Own elaboration on Zephyr-Orbis

Notes: The right-hand figure has a double scale on the vertical axis, showing the number of ‘private re-organization’ and ‘total deals with private acquirer’ on the left axis, and the number of ‘privatization’ on the right axis.

To further examine this issue we have computed two ratios, based on the number of deals, indicating the relative weight of public re-organizations over private re-organizations and of publicizations over privatizations (Figure 2, left and right panel, respectively). The left-hand panel of Figure 2 shows a slight positive trend of the public to private re-organization ratio, which suggests that re-organizations among public enterprises are increasing with respect to private re-organizations, with a peak in 2010. The right-hand panel highlights an increasing trend, suggesting that the weight of publicizations with respect to privatizations has slightly increased over time, with a peak in 2010. A tentative explanation of these trends, especially in the period 2007-2010, points to the response by governments to the Great Recession, which has brought to several episodes of nationalization and bailouts.

**Figure 2: Public-Private re-organization ratio and Publicization-Privatization ratio**



Source: Own elaboration on Zephyr-Orbis

Notes: In the left-hand panel, the ratio is computed as the number of public re-organizations over the number of private re-organizations. In the right-hand panel, the ratio is computed as the number of publicizations over the number of privatizations.

Focusing on the geographic scope of the four categories, we compare domestic versus cross-border deals, where the acquirer and target companies are located in different countries.

In our sample, cross-border deals are less frequent than domestic ones in all four categories, representing around 29% of the total (Table 3). In absolute terms, cross-border deals are more frequent when the acquirer is a private enterprise, consistently with the findings of previous literature (Dinc and Erel 2012; Estrin et al. 2013, OECD 2013). However, we find that focusing on each single M&A category, publicizations involve the highest percentage of cross-border deals (36% against 64% of domestic deals), followed by private re-organizations (30%) and privatizations (26%), contrasting what found in previous studies, suggesting that public and private enterprises show a comparable propensity to perform cross-border deals. In particular, deals within the category of publicizations appearing more oriented toward internationalization than privatizations (Karolyi and Liao 2013). A different picture emerges when considering the case of public re-organization, in which cross-border deals represent only around 10% in the category, a result which is more aligned with previous findings. This last finding might be read as suggesting that governments may be using public enterprises to pursue national economic or social goals within national borders. Verification of this conjecture is however left for future research.

**Table 3: Cross-border deals**

	<b>Public re-organization</b>	<b>Publicization</b>	<b>Privatization</b>	<b>Private re-organization</b>	<b>Total</b>
Deal with acquirer and target in the same country	622 (90%)	287 (64%)	769 (74%)	7,942 (70%)	9,620 (71%)
Deal with acquirer and target in different countries (cross-border)	68 (10%)	163 (36%)	265 (26%)	3,359 (30%)	3,855 (29%)
<b>Total Obs</b>	<b>690 (100%)</b>	<b>450 (100%)</b>	<b>1,034 (100%)</b>	<b>11,301 (100%)</b>	<b>13,475 (100%)</b>

*Source: Own elaboration on Zephyr-Orbis*

*Note. All reported figures are based on non-missing observations.*

Moving on to the sectoral dimension, we explore, for each type of deal, in which sectors acquirer and target companies mainly perform their economic activity. From previous literature and recent episodes, we would expect SOEs to be more active than private firms in sectors of services of general interest.

By focusing on selected sectors of services of general interest (Table 4), it is clear that the majority of deals concern firms in the transport, telecommunications and electricity sectors. Focusing on ownership, we find that public acquirers are more active than their private counterparts especially in electricity and gas supply (35 NACE code) where the percentage of public re-organization is the highest. Private firms, on the contrary, are particularly active in the telecommunication sector (61 NACE code).

**Table 4: Deals in sectors of services of general interest**

Target Sectors	Public re-organization	Publicization	Privatization	Private re-organization
05. Mining of coal and lignite	1.9%	0%	2.8%	4%
35. Electricity, gas, steam and air conditioning supply	51.9%	36.3%	38.3%	25.2%
36. Water collection, treatment and supply	1.9%	4.4%	3.9%	3.5%
37. Sewerage	0%	0%	0%	0.2%
38. Waste collection, treatment and disposal activities; materials recovery	1.3%	1.1%	1.1%	3.6%
39. Remediation activities and other waste management services	1.3%	0%	0%	3%
49. Land transport and transport via pipelines	10.1%	18.7%	12.2%	13.3%
50. Water transport	4.4%	1.1%	3.9%	7.3%
51. Air transport	3.2%	8.8%	2.8%	2.6%
52. Warehousing and support activities for transportation	17.1%	12.1%	20%	15%
53. Postal and courier activities	0.6%	1.1%	3.3%	1.6%
61. Telecommunications	6.3%	16.5%	11.7%	20.7%
<b>Total Obs</b>	<b>690 (100%)</b>	<b>450(100%)</b>	<b>1,034(100%)</b>	<b>13,475(100%)</b>

Source: Own elaboration on Zephyr-Orbis

Notes: Percentage of deals over the total of non-missing observations.

To explore the sectoral dimension further, we verify the sector in which private and public acquirers and targets, respectively, are more active, without restricting our attention to services of general interest. From Table 5, for deals involving private enterprises, the most frequent sector in which both acquirers and targets are involved is that of financial services activities. Focusing instead on deals amongst public enterprises, in publicizations acquirers tend to operate in financial service sector, while the target firms are active predominantly in electricity, gas, steam and air conditioning. This finding could be in line with a public mission explanation, with publicly-owned financial operators acquiring distressed private enterprises, active in service of general interest sectors, with the aim of ensuring continuity of service in welfare-relevant sectors. In public re-organizations, instead, both acquirers and targets are in the electricity, gas, steam and air conditioning sector, suggesting the importance of deals in sectors of services of general interest when SOEs are involved.

**Table 5 – Most representative NACE Rev.2 sectors by deal-type**

Panel A: Acquirer

	Public re-organization	Publicization	Privatization	Private re-organization	Total Sample
	Non-missing Obs	Non-missing Obs	Non-missing Obs	Non-missing Obs	Non-missing Obs
<b>NACE CODE</b>	35. Electricity, gas, steam and air conditioning supply	64. Financial service activities except insurance and pension funding	64. Financial service activities except insurance and pension funding	64. Financial service activities except insurance and pension funding	64. Financial service activities except insurance and pension funding
	65 (9%)	135 (30%)	195 (20%)	2,494 (23%)	2,889 (22%)
<b>Total Obs</b>	<b>685 (100%)</b>	<b>446 (100%)</b>	<b>999 (100%)</b>	<b>11,070 (100%)</b>	<b>13,200 (100%)</b>

*Panel B: Target*

	<b>Public re-organization</b>	<b>Publicization</b>	<b>Privatization</b>	<b>Private re-organization</b>	<b>Total Sample</b>
	<b>Non-missing Obs</b>	<b>Non-missing Obs</b>	<b>Non-missing Obs</b>	<b>Non-missing Obs</b>	<b>Non-missing Obs</b>
<b>NACE CODE</b>	35. Electricity, gas, steam and air conditioning supply	35. Electricity, gas, steam and air conditioning supply	64. Financial service activities except insurance and pension funding	64. Financial service activities except insurance and pension funding	64. Financial service activities except insurance and pension funding
	100 (15%)	52 (12%)	86 (8%)	632 (6%)	791 (5%)
<b>Total Obs</b>	<b>684 (100%)</b>	<b>445 (100%)</b>	<b>1,030 (100%)</b>	<b>11,234 (100%)</b>	<b>13,393 (100%)</b>

*Source: Own elaboration on Zephyr-Orbis*

*Note. All reported figures are based on non-missing observations.*

Finally, we verify whether public firms exhibit a higher tendency to acquire firms outside or within the same sector of their primary economic activity with respect to their private counterparts. Table 6 shows that 62% of total deals are cross-sector, irrespective of the ownership of the firms involved. The percentage of cross-sector deals is higher than 61% in all the four types of deals and public acquirers show a higher propensity than private ones to acquire target companies that are active in a different sector of economic activity. Public acquirers tend to be more active in cross-sector deals, with respect to private ones, especially in public re-organizations as compared to private re-organizations (72% versus 61%, respectively). This result might be suggestive of both a higher propensity to diversification of public enterprises when compared to the private counterparts, and a lower propensity to the exploitation of industrial synergies.

**Table 6: Cross-sector deals**

	<b>Public re-organization</b>	<b>Publicization</b>	<b>Privatization</b>	<b>Private re-organization</b>	<b>Total</b>
	<b>Non-missing Obs</b>	<b>Non-missing Obs</b>	<b>Non-missing Obs</b>	<b>Non-missing Obs</b>	<b>Non-missing Obs</b>
<b>Deals with different NACE 2 Digit sector</b>	412 (72%)	223 (69%)	545 (66%)	6,960 (61%)	8,140 (62%)
<b>Deals with equal NACE 2 Digit sector</b>	161 (28%)	99 (31%)	280 (34%)	4,450 (39%)	4,990 (38%)
<b>Total Obs</b>	<b>573 (100%)</b>	<b>322 (100%)</b>	<b>825 (100%)</b>	<b>11,410 (100%)</b>	<b>13,130 (100%)</b>

*Source: Own elaboration on Zephyr-Orbis*

*Note. All reported figures are based on non-missing observations.*

## **5. The role of ownership: pre-deal characteristics of private and public dealers**

After having provided a general overview of the deals in our sample, and stressed some descriptive trends and idiosyncrasies according to the type of deal considered, we focus now more explicitly on the role of ownership of the firms involved in the deals. We will specifically focus on the economic and financial performance characteristics, at the time  $t$  of the deal, of both acquirers and targets, to provide preliminary evidence that deals involving public firms may be different, in terms of characteristics of the involved firms, with respect to deals performed by private enterprises. As mentioned, we are particularly interested in discussing whether the evidence is consistent with the ‘inefficient management hypothesis’.

### **5.1 Economic characteristics**

In this Section we analyze whether the pre-deal economic characteristics of the acquirer and their respective target companies vary across the four categories of deals, depending on ownership. For

this purpose, we look at the pre-deal value of the following variables: total assets, turnover (or operating revenues) and number of employees. Furthermore, we consider two ratios, namely operating revenue per employee (REE), and total assets per employee (assets/employee).

Tables 7 and 8 show the main results of our empirical analysis. First, we report the median value of the considered variables for both the acquirer and target companies by deal-type (Table 7). Then we test whether the median value of the difference, computed for each deal, is statistically significant by means of a Wilcoxon test (Table 8). The Wilcoxon-Mann-Whitney test (Wilcoxon, 1945, Mann and Whitney, 1948) is a non-parametric analog to the independent samples t-test, but it is more appropriate when non-Gaussian distributions are involved. A positive value of the median of the differences implies that the acquirer has a greater value of the variable of interest than its respective target.

**Table 7: Pre-deal economic characteristics of acquirer and target**

	Public re-organization		Publicization		Privatization		Private re-organization	
	Obs	Median	Obs	Median	Obs	Median	Obs	Median
<b>Total Assets<sup>°</sup> of Acquirer</b>	300	952,376	201	3,062,400	448	76,767	3,703	181,767
<b>Total Assets<sup>°</sup> of Target</b>		18,615		130,032		19,518		20,781
<b>Turnover<sup>°</sup> of Acquirer</b>	298	66,253	185	700,430	414	77,011	3,457	168,297
<b>Turnover<sup>°</sup> of Target</b>		15,030		63,939		18,270		25,452
<b>No. of Employee of Acquirer</b>	221	639	105	3,611	296	270	2,472	764
<b>No. of Employee of Target</b>		293		346		139		122
<b>REE* of Acquirer</b>	218	85	96	211	283	131	2,198	211
<b>REE* of Target</b>		31		171		69		154
<b>assets/employee of Acquirer</b>	219	608	100	949	284	172	2,020	251
<b>assets/employee of Target</b>		37		211		58		150

Source: Own elaboration on Zephyr-Orbis

Note. All reported figures are based on non-missing observations.

<sup>°</sup> th = thousands of Euro; \*Revenue for Employee = Turnover/Employee

What emerges is that acquirers tend to be larger, in terms of assets, turnover and number of employees, than their respective targets, regardless of the deal type (Table 7). The *p-value* test on the median value of the differences between acquirers and targets confirms this finding for all four categories of deals (Table 8). Acquirers, both private and public, are firms with higher assets, larger turnover values and more employees than their respective targets in all the deal types considered. However, ownership does matter, as the difference between acquirer and target is larger if the acquiring enterprise is a SOE.

**Table 8: Economic characteristics: differences between acquirer and target (pre-deal)**

	<b>Public re-organization</b>	<b>Publicization</b>	<b>Privatization</b>	<b>Private re-organization</b>
<b>Variables</b>	<b>Median</b>	<b>Median</b>	<b>Median</b>	<b>Median</b>
<b>Total Assets*</b>	500,473***	2,191,452***	25,688***	108,240***
<b>Turnover*</b>	24,955***	400,672***	26,235***	109,080***
<b>Employee</b>	93***	2,488***	92***	508***
<b>REE</b>	16***	23	25***	24***
<b>Assets/employee</b>	462***	148***	34***	66***

Source: Own elaboration on Zephyr-Orbis

Note. All reported figures are based on non-missing observations.

\* th of Euro; \*\*\* Statistically significant at 5% level

In fact, in relative terms, the largest difference between acquirer and target companies with respect to assets, turnover and employees is in the case of publicization deals. Focusing in detail on assets (Table 7), public acquirers have approximately 50 times the value of assets of their public targets, 25 times larger with respect to private targets. In contrast, acquirers in privatizations have assets that are only 4 times those of their public targets, while private acquirers in private re-organizations are 9 times larger than their private targets in terms of assets. Public acquirers are, compared to private acquirers, much larger in terms of assets with respect to their targets, irrespective of the latter's ownership structure. Public acquirers targeting private companies may thus be large enterprises, which are able, in terms of asset structure and turnover, to acquire relatively smaller enterprises. This trend is also quite pronounced with respect to assets in the public re-organization case. It notable that privatizations are at the lower end of the spectrum in terms of relative dimension of acquirer and target.

We then look at the assets per employee and REE ratios. When looking at the asset per employee ratio we find that all the four types of deal show a positive median value of the difference between the acquirers and targets, implying that acquirers have a larger portion of assets per employee than targets. Similar conclusions can be reached by considering the REE.

We finally observe that the public re-organization case is characterized by the highest median value of the differences with respect to the asset per employee ratio while there is not a big difference in the REE ratio among the four types of deals. A possible reading of this result suggests that public acquirers with a strong asset structure may be targeting public firms with the highest proportion of employees compared to assets.

## 5.2 Financial performance

Until now, we have focused on the relative dimension of acquirers and targets. To better unveil structural differences in the characteristics behind deals performed by public versus private enterprises, and to verify the existence of a potential pattern in terms of performance, we have further resorted to a restricted sample for which we have full information on financial performance indicators for all the enterprises involved in deals. The variables considered for this empirical exercise are earnings before interest and taxes (EBIT), return on sales (ROS, computed as operating income over revenue) and return on assets (ROA), along with information on total assets and turnover.<sup>13</sup> Information on these variables is available for a lower number of deals with respect to the previous Section (see Table 9).

We first report median values (Table 9), then compute the difference between acquirer and target for each deal and examine the statistical significance of the median value of this difference by

<sup>13</sup> The information on employees has been excluded since the sample would have been reduced further.

means of the Wilcoxon test (Table 10). While some caution should be taken given the limited number of available observations, some tentative conclusions can be drawn by analyzing these figures which shed light on the differences between the four classes of deals.

**Table 9: Financial indicators - data in levels (acquirer and target) pre-deal**

	Public re-organization	Publicization	Privatization	Private re-organization
	Median	Median	Median	Median
Total Assets <sup>°</sup> of Acquiror	619,333	1,637,534	56,844	179,544
Total Assets <sup>°</sup> of Target	14,913	73,569	14,495	20,734
Turnover <sup>°</sup> of Acquiror	66,253	719,604	58,041	137,232
Turnover <sup>°</sup> of Target	14,350	82,899	15,097	24,327
Ebit <sup>°</sup> of Acquiror	9,512	79,377	3,522	8,326
Ebit <sup>°</sup> of Target	535	5,504	303	632
ROS* of Acquiror	14	14	8	7
ROS* of Target	6	8	4	4
ROA** of Acquiror	3	7	7	6
ROA** of Target	5	7	5	4
<b>Obs</b>	255	115	319	2,358

Source: Own elaboration on Zephyr-Orbis

Note. All reported figures are based on non-missing observations.

<sup>°</sup> th = thousands of Euro; \*Return on Sales = Ebit/Turnover; \*\*Return on Asset = Ebit/Total Asset

**Table 10: Financial indicators: differences between acquirer and target (median value) pre-deal**

Variables	Public re-organization	Publicization	Privatization	Private re-organization
	Median	Median	Median	Median
Total Assets <sup>°</sup>	276,677***	1,452,280***	24,505***	123,876***
Turnover <sup>°</sup>	25,111***	512,546***	18,920***	89,327***
Ebit <sup>°</sup>	6,234***	40,882***	2,351***	6,221***
ROS <sup>°°</sup>	7.2***	5***	4.6***	3.4***
ROA <sup>°°°</sup>	-0.7	-0.9	3.5***	2.4***
<b>Obs</b>	255	115	319	2,358

Source: Own elaboration on Zephyr-Orbis

Note. All reported figures are based on non-missing observations.

: <sup>°</sup> th of Euro; <sup>°°</sup>Ebit/Turnover; <sup>°°°</sup>Ebit/Turnover; \*\*\* Statistically significant at 5% level

Starting from the private re-organization case, which presents the highest number of observations, we observe that, for both acquirers and targets, the median values (Table 9) of total assets and turnover are comparable to the previously estimated values (Table 7), suggesting that, in spite of being smaller, this sample is quite representative of the previous one.

With respect to performance indicators, and considering the distance between acquirers and targets, private acquirers have higher assets, operating revenues, EBIT, ROS and ROA than their respective privately-owned target companies. These differences are statistically significant (Table 10) and suggest that private re-organization deals involve acquirers that are both bigger and better performing than their respective targets. This finding is consistent with the 'inefficient management

hypothesis', and with previous literature reported in Section 2. Comparable conclusions can be drawn by considering the privatization case.

Moving on to deals where acquirers are government-owned, differences in terms of EBIT and ROS confirm the above mentioned result that acquirers, in general, perform better than their respective target companies. Interestingly, while the difference in ratios suggests that acquirers tend to perform better than targets in all types of deals, this difference is greater, in relative terms, for the publicization and public re-organization cases. This finding suggests that public acquirers tend to perform better, in relation to their respective targets, than private acquirers do relative to their targets. Active public firms, engaged in deals, both domestically and internationally (see Table 3), are thus relatively well performing and are targeting potentially weaker firms. This finding extends the 'inefficient management hypothesis' to government-owned firms, and is entirely novel.

A different picture emerges when looking at ROA, mainly due to the disproportionately high values of total assets of public acquirers. In fact, in public re-organization and in publicization deals, public acquirers, while having higher assets, operating revenues and EBIT, exhibit lower ROA than the SOEs they acquire. The difference is however not statistically significant.

Overall, these findings suggest that in all deals, both amongst private and public enterprises, acquirers tend to be both bigger and better performing (in terms of ROS and EBIT) with respect to their targets. This evidence is consistent with the hypothesis that the underlying motivation for the deal can be broadly explained on economic and financial grounds.

## **6. Conclusions**

This analysis presented in this paper aimed at testing whether being a SOE matters in the market for ownership. We have documented the construction and analysis of a new database on deals that took place worldwide during the period 2004-2012 among private and public enterprises, based on data from two global databases managed by Bureau Van Dijk. Starting from the methodologies and results of previous literature on determinants and characteristics of M&A, we expand existing knowledge by explicitly adding the public versus private ownership dimension to the analysis. Our results both confirm previous findings and suggest new perspectives on the role of public or private ownership of the firms involved in deals.

A first result is related to the size of acquirers, both private and public, with respect to targets. We find that, in general, acquirers are larger than their respective targets, much in line with previous literature (see, among others, Franks and Mayer 1996; Andrade and Stafford 2004 and Camerlynck et al. 2005).

Similar conclusions are reached when considering financial performance indicators, suggesting that acquirers out-perform their targets. This second result is in line with previous literature, which has focused on M&As among privately-owned enterprises and has widely found that acquirers perform better than the target companies they buy (see, among others, Maksimovic and Phillips 2001, Jovanovic and Rousseau 2002, Andrade and Stafford 2004). Furthermore, these results are confirmed when focusing on public acquirers, a distinction which is entirely novel to the literature. We confirm that public acquirers are both larger (in terms of assets, employment and turnover) and characterized by higher financial performance indicators (ROS and EBIT) than their private and public targets.

The importance of this finding is that it confirms that government ownership of firms, even in the relatively narrow perspective of financial performance, doesn't contradict the 'inefficiency management hypothesis'. Managers of more efficient SOEs target and acquire less efficient private and public firms, similarly to what managers of more efficient private firms do in deals involving private or public firms as targets. In this perspective, SOEs as acquirers are contributing to the

efficiency of the market for ownership. This may be considered a surprising result if SOEs were systematically associated with pervasive inefficiency. Our findings thus reject the widely held view that SOEs are always inefficient relative to private firms, or that their acquisitions are mainly politically motivated, i.e. without due consideration of efficiency (see the discussion of previous literature in Section 2).

When considering instead ROA, private acquirers are better performing than their targets, a result which does not hold for public acquirers. This result can be attributed to the fact that public acquirers in our sample own very large total assets. Florio (2014), based on data on the first 2000 Forbes enterprises from Kowalski et al. (2013), reports finding which corroborate our results in terms of relative performance of public acquirers. Approximately 10% of firms in the Forbes 2000 list are public, where a firm is considered public if government bodies own 50% of its shares.<sup>14</sup> Computing ROS and ROA for both the subset of public firms and for the total, Florio (2014) reports that public firms belonging to the Forbes 2000 list have higher ROS than all the Forbes 2000 firms (thus are outperforming private firms) while ROA is lower, similarly to what we find here.

Moreover, explicit consideration of ownership allows us to compare the relative difference between acquirers and targets according to whether acquirers are private or public, thus further expanding the scope of results with respect to previous literature. What emerges in terms of both size and financial performance is that the difference between acquirers and targets is generally larger when the acquirer is publicly-owned. Further research is needed to explore the underlying drivers of this difference between deals involving public versus private acquirers, and to verify whether it can be related to the existence of different motivations for public enterprises entering in deals, other than purely economic and financial considerations, as suggested, among others, by Chernykh 2011, Luo and Tung 2007, Chen and Lin 2009, Jeong and Weiner 2012 and Ramasamy et al. 2012). In this perspective, however, our findings do not support the view that SOEs target less efficient companies, i.e. that they aim to 'too low'. The ROS of public acquirers in our sample is 14%. This is twice the ROS of private acquirers. The ROS of targets in deals when the acquirer is public is between 6 and 8%, while the ROS of the target is 4% when the acquirer is private. While caution is needed in the interpretation of these figures since they are based on a relatively small sample of 3,047 deals, out of the initial sample of 13475, we have showed, however, that the characteristics of the firms in the smaller and data-richer sample, are quite similar to those of the larger sample. Hence, the large difference in the performance of public acquirer and their targets can not be attributed to the view that SOEs buy particularly badly managed firms. Certainly, in the media, prominent cases of rescue of bankrupt firms (private and public) are widely covered, but this does not seem to be the most frequent occurrence in our sample. There is a different story suggested by the data: a story of well performing public enterprises that acquire the ownership of less performing, but apparently healthy, target companies. Further research is needed to understand the motivations of these SOEs.

Finally, with respect to the dynamics of deals, we can notice that both publicizations and privatizations seem to have been influenced by the current economic crisis. In detail, publicizations have peaked around 2009-2010, while privatizations, around the same years, have experienced a slump. While we are not able to evaluate the underlying mechanisms, a possible explanation is related to both the governments' responses to the crisis and the behavior of the stock market.

Taken together these findings suggest that public firms which have entered in deals between 2004 and 2012 are in general of a relevant size and relatively well-performing with respect to their private counterparts. Following previous literature on the characteristics of private acquirers involved in M&A deals, we suggest that public acquirers target firms which they can afford to consider and which are clearly less performing. The difference in performance between public

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<sup>14</sup> The definition of SOEs adopted in the present paper is based on the more restrictive 25% threshold.

acquirers and their respective public and private targets is larger than the difference between private acquirers and private targets. The overall message is that, by considering firms active in deals in recent years, publicly-owned enterprises are still active players and, contrary to some critics, are well-performing and capitalized.

We believe that these new results deserve some further analyses, which will constitute the focus of our next research, focusing explicitly on the determinants of the differences related to the ownership of firms involved in deals.

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## Annex

### NACE Rev.2 – 1 Digit: all sectors

Description
0. Crop & animal production, Forestry, Mining
1. Manufacture of food, textile, wood, paper, wearing apparel coke and refined petroleum products
2. Manufacture of chemical products, rubber & plastic, metals, machinery & electrical equipment, motor vehicles
3. Manufacture of furniture, Electricity, gas, sewerage, waste collection treatment & disposal, water collection
4. Construction of buildings, civil engineering, wholesale and retail trade, land transport via pipelines
5. Water & Air transport, postal activities, Accommodation, Publishing activities, Motion picture, video and television
6. Programming activities, Computer, Information service activities, Financial services, Insurance, Real estate activities, legal & accounting services
7. Activities of head office, Architectural & engineering, Scientific research, Advertising & market research, Veterinary activities, Travel agency, Rental & leasing
8. Security & investigation, Office administrative, Public Administration & defense, Education, Residential care activities
9. Creative, arts & entertainment, Libraries, museum, Gambling & betting, Sports, Repair of computers, household as employers of domestic personnel

### NACE Rev.2 – 2 Digit: only the main sectors of our statistics

Description
05. Mining of coal and lignite
35. Electricity, gas, steam and air conditioning supply
36. Water collection, treatment and supply
37. Sewerage
38. Waste collection, treatment and disposal activities; materials recovery
39. Remediation activities and other waste management services
46. Wholesale trade, except of motor vehicles and motorcycles
47. Retail trade, except of motor vehicles and motorcycles
49. Land transport and transport via pipelines
50. Water transport
51. Air transport
52. Warehousing and support activities for transportation
53. Postal and courier activities
61. Telecommunications
62. Computer programming, consultancy and related activities
64. Financial service activities, except insurance and pension funding
66. Activities auxiliary to financial services and insurance activities
72. Scientific research and development
84. Public administration and defense; compulsory social security