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2018

Li, K., Qiu, B., & Shen, R. (2018). Organization Capital and Mergers and Acquisitions. *Journal of Financial and Quantitative Analysis*, 53(4), 1871-1909. doi:10.1017/S0022109018000145

<https://hdl.handle.net/10356/81315>

<https://doi.org/10.1017/S0022109018000145>

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Organization Capital and Mergers and Acquisitions

Kai Li, Buhui Qiu, and Rui Shen*

Abstract

Using a sample of completed U.S. acquisition deals over the period 1984–2014, we find that acquirer organization capital as measured by capitalized selling, general, and administrative (SG&A) expenses is associated with superior deal performance. We show that high organization-capital acquirers achieve significantly higher abnormal announcement period returns, and better post-merger operating and stock performance, than low organization-capital acquirers. Additional tests suggest a causal relation between acquirer organization capital and deal performance. We further show that post-merger, high organization-capital acquirers cut more on the cost of goods sold, invest more in SG&A expenses, and achieve greater asset turnover and innovative efficiency.

I. Introduction

Organization capital is the body of knowledge and business processes and systems that facilitates the match between labor and physical production

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facilities and allows firms to utilize resources more efficiently.¹ Importantly, this agglomeration of knowledge and business processes and systems cannot be easily imitated by competitors due to its proprietary nature (Prescott and Visscher (1980)) but is potentially transferable from one organization (e.g., the acquirer) to another (e.g., the target firm). Examples of organization capital include Walmart's supply chain management system and Disney's animatronics and show design system.² In this paper, we ask whether high organization-capital acquirers can effectively apply their superior knowledge and expertise to target firm assets, leading to better performance outcome.

The experience of Danaher Corporation illustrates the role of organization capital in creating shareholder value through mergers and acquisitions (M&As). Danaher Corporation, headquartered in Washington, DC, is one of the largest manufacturing companies in the United States, with over 50,000 employees. Its products are concentrated in the fields of design, manufacture, and marketing of industrial and consumer products. It operates in four segments: professional instrumentation, medical technologies, industrial technologies, and tools & components. The science and technology giant, according to Anand, Collis, and Hood ((2011), p. 2), has "a systematic and wide-ranging set of organizational processes the firm has developed to drive growth and create value," which is named the Danaher Business System (DBS). Since the 1980s, the firm has acquired several hundred companies and successfully applied the DBS to the acquired firms to capture operational efficiency gains from the combination. Over the years, Danaher has achieved phenomenal growth and created tremendous shareholder value via acquisitions.

In this paper, we ask the following research questions: Do firms with more (less) organization capital make good (bad) acquirers in the market for corporate control? What are the underlying mechanisms? Although prior work has shown a positive association between organization capital and firm value (see footnote 2 for references), our study aims to identify whether M&As constitute an underlying channel through which firms with more organization capital create value.

To study the empirical relation between organization capital and M&As, we construct a measure of organization capital using widely available accounting data. Following the accounting literature (see, e.g., Lev and Radhakrishnan (2005), Eisfeldt and Papanikolaou (2013)), we measure a firm's stock of organization capital using capitalized selling, general, and administrative (SG&A) expenses, a large part of which consists of expenses related to information technology (IT) and human capital (e.g., IT expenses, consulting, training, and white collar worker wages).

¹Ever since Adam Smith (1776), economists have been studying the properties of organization capital and its effects on production output. See, for example, Marshall (1930), Arrow (1962), Rosen (1972), Jovanovic (1979), Prescott and Visscher (1980), Becker (1993), Ericson and Pakes (1995), Hall (2000), Tomer (1987), Jovanovic and Rousseau (2001), Atkeson and Kehoe (2005), McGrattan and Prescott (2010), and Bloom, Sadun, and Van Reenen (2012).

²A large number of accounting and finance studies have shown positive associations between organization capital and firm value and stock returns. See, for example, Lev and Sougiannis (1996), Chan, Lakonishok, and Sougiannis (2001), Lev and Radhakrishnan (2005), Lev, Radhakrishnan, and Zhang (2009), Banker, Huang, and Natarajan (2011), Eisfeldt and Papanikolaou (2013), and Hirshleifer, Hsu, and Li (2013).

Using a large and comprehensive sample of completed U.S. M&A transactions over the period 1984–2014, we show that acquirers with more organization capital achieve significantly higher abnormal announcement period returns and better post-merger operating and stock performance than acquirers with less organization capital. *Ceteris paribus*, a 1-standard-deviation increase in pre-acquisition organization capital of the acquirer is associated with a 0.26-percentage-point increase in abnormal announcement period returns, a 1.94-percentage-point increase in post-merger 3-year improvement in operating performance, and a 6.32-percentage-point increase in post-merger 3-year buy-and-hold abnormal returns. Using the calendar-time portfolio approach of Fama (1998) does not change our main findings.

It is well known that organization capital is multi-faceted, capturing internal knowledge and expertise (Atkeson and Kehoe (2005)), business processes and practices (Evenson and Westphal (1995)), and human capital (Prescott and Visscher (1980)), and that it is extremely challenging to measure (Lev, Radhakrishnan, and Evans (2016)); therefore, it is important to ensure that our measure of organization capital is close to its true intent. We do a number of different analyses to assuage the concern. First, we employ different alternative measures to our main measure of organization capital to address measurement errors including agency problems that might vary systematically across industries. Second, we cross-validate our measure using some well-established markers for best practices in the corporate world: the managerial ability score of Demerjian, Lev, and McVay (2012), Fortune magazine's "100 Best Companies to Work for in America" list, and Computerworld's "100 Best Places to Work in IT" list. Finally, we carry out a number of subsample analyses where organization capital and its role might be more cleanly captured at certain stages of firm life cycles (young vs. old) and across firms of different sizes (small vs. large) and of different governance qualities. These analyses reassure us that our measure of organization capital is correlated with what it is intended to capture, that is, the body of knowledge and business processes and systems leading to competitive edge and operational efficiency.

Naturally, there are concerns that our findings may be driven by endogeneity. One concern is that some omitted variables that are correlated with both acquirer organization capital and deal performance could lead to a spurious association between the two. Another concern is endogenous selection, whereby some latent variables that drive high organization-capital firms to do a deal and, thus, enter our M&A sample may also be correlated with deal performance.

To address the omitted variables concern, we employ the instrumental variable approach to extract the exogenous component of acquirer organization capital and relate it to deal performance. Our instrumental variables capture the trade-offs of firms investing in organization capital: the staggered recognition of the inevitable disclosure doctrine (IDD) by U.S. state courts and state-level unemployment insurance (UI) benefits. The former is a legal doctrine that states that a firm's former employees can be prevented from working at a rival firm if doing so would lead to inevitable disclosures of the firm's trade secrets to its rival (e.g., Hamler (2000), Klasa, Ortiz-Molina, Serfling, and Srinivasan (2018)). By reducing the risk that a firm's employees will pass along proprietary knowledge and

information intrinsic to the firm's competitive edge to competitors, we expect that the adoption of the IDD will encourage firms to invest more in organization capital. The latter captures a firm's strong incentive to invest in organization capital. Eisfeldt and Papanikolaou (2013) argue that losing talent is the key risk of firms investing in organization capital. Generous UI benefits are shown to be positively associated with employees' investment in marketable human capital and negatively associated with job switches to avoid unemployment and labor mobility (Levhari and Weiss (1974), Brown and Kaufold (1988), Light and Omori (2004), and Hassler, Rodriguez Mora, Storesletten, and Zilibotti (2005)). We expect that firms in states with more generous UI benefits invest more in organization capital compared to firms in states with less generous UI benefits. We find that after instrumenting acquirer organization capital, the positive and significant association largely remains between the exogenous component of acquirer organization capital and measures of post-merger firm performance.

To address the endogenous selection concern, we employ a quasi-natural experiment involving a sample of acquirers with bids that failed for reasons unrelated to firm performance (i.e., the control group) and a sample of acquirers with completed deals matched on pre-bid performance measures (i.e., the treatment group). In this case, we can argue that the assignment of an acquirer into the treatment group is random, and we can difference out any selection concerns by comparing the performance of firms in the treatment group pre- and post-merger with that in the control group. We employ a difference-in-differences specification that exploits within-firm variation and find that, relative to the control group, firms in the treatment group perform significantly better after the merger. We further find that the positive effect of deal completion on post-merger performance is significantly larger for high organization-capital acquirers than for low organization-capital acquirers. Taken together, the evidence suggests a causal effect of high acquirer organization capital on deal performance.

To shed light on the underlying mechanisms through which acquirer organization capital helps create shareholder value in M&As, we examine post-merger cost and efficiency changes associated with high organization-capital acquirers. We find that within the 3-year period after deal completion, high organization-capital acquirers significantly cut more on the cost of goods sold, while they significantly invest more in SG&A expenses, than low organization-capital acquirers. In terms of efficiency measures, we find that high organization-capital acquirers achieve greater improvement in asset turnover and innovative efficiency than low organization-capital acquirers. Finally, we show that target organization capital is not significantly associated with any deal performance measures.

In summary, our evidence suggests that acquirers' body of knowledge and business processes and systems is an importance source of value creation in M&As.

Our paper contributes to the literature in two dimensions. First, it adds to the voluminous M&A literature (see, e.g., the surveys by Andrade, Mitchell, and Stafford (2001) and Betton, Eckbo, and Thorburn (2008)) by providing fresh evidence demonstrating that acquirer organization capital fosters value creation

in M&As. Using a multitude of approaches, including the instrumental-variable approach and a quasi-natural experiment involving failed bids, we are able to establish a causal link between acquirer organization capital and deal performance.

Second, it adds to a growing body of work that documents the importance of intangibles to firm performance and corporate policies. Prior work shows that firm reputation, employee satisfaction, research and development (R&D), and organization capital are associated with sustained superior financial performance (see, e.g., Chan et al. (2001), Roberts and Dowling (2002), Carlin and Gervais (2009), Lev, Radhakrishnan, and Zhang (2009), Edmans (2011), and Eisfeldt and Papanikolaou (2013)). Berk, Stanton, and Zechner (2010) and Falato, Kadyrzhanova, and Sim (2013) highlight the importance of human and intangible capital to corporate financing choices. Phillips and Zhdanov (2013) and Bena and Li (2014) show that corporate innovation is a key factor driving M&As. Our findings in this paper suggest that organization capital has an important implication for corporate acquisition policy: High organization-capital acquirers make better deals.

The paper proceeds as follows: In Section II, we review related literature and develop our hypotheses. We describe our sample formation and construction of key variables and provide a sample overview in Section III. We present the main results on the role of acquirer organization capital in M&As in Section IV. We address endogeneity concerns in Section V and examine the underlying mechanisms behind the positive effect of organization capital on deal performance in Section VI. In Section VII, we explore the role of target organization capital in M&As. We conclude in Section VIII.

II. Literature Review and Hypothesis Development

A. Related Literature

Our paper is closely related to and motivated by two strands of the literature. First, there is a large M&A literature examining why mergers take place. The literature has put forth a number of explanations, including agency, hubris, market timing, and industry shocks. We contribute to the M&A literature by providing large sample evidence demonstrating that more acquirer organization capital is causally related to better deal outcome.

Second, there is a growing accounting and finance literature studying the relations between organization capital or components of organization capital and firm performance and corporate policies. In one of the first studies in this area, Lev and Sougiannis (1996) document a significant association between firms' R&D expenses and subsequent stock returns, suggesting either a systematic mispricing of the shares of R&D-intensive companies or a compensation for an extra market risk factor associated with R&D. Chan et al. (2001) further demonstrate that stock prices do not fully value firms' intangible assets, R&D and advertising expenses, by showing that firms with high R&D (advertising) expenses earn large excess returns. Using total factor productivity as a measure of organizational efficiency, Maksimovic and Phillips (2001) show that organizational efficiency plays a key role in the market for corporate assets. Lev and Radhakrishnan (2005) and Lev et al. (2009) show that a firm's organization capital is an important

determinant of its operating performance and firm value. Using SG&A expenses as a proxy for input resource expenditure, Banker et al. (2011) show that in firms where input resource expenditures create considerable future value, managers increase these expenditures after receiving long-term incentives. Lustig, Syverson, and Van Nieuwerburgh (2011) demonstrate that organization capital contributes to increased chief executive officer (CEO) pay inequality and pay-performance sensitivity and an accompanying decrease in labor market reallocation. Carlin, Chowdhry, and Garmaise (2012) further show that high organization-capital firms experience low employee turnover and possess high diversity in skill and wages among incumbent employees who are promoted from within the firm. Eisfeldt and Papanikolaou (2013) develop a model to show that the time-varying division of cash flows from organization capital between shareholders and the key talent of the firm imposes an additional risk to shareholders. As a result, firms with more organization capital have average returns that are 4.6% higher per annum than firms with less organization capital. Hirshleifer et al. (2013), instead, attribute the return predictive ability of innovative efficiency (i.e., the ratio of patents to R&D capital) to mispricing and investor inattention. In this paper, we examine whether and how acquirer organization capital helps create shareholder value through corporate M&As.

B. Our Hypotheses

As defined in Section I and further elaborated by Lev and Radhakrishnan ((2005), p. 75), firms with more organization capital possess “an agglomeration of technologies—business practices, processes and designs, and incentive and compensation systems—that together enable some firms to consistently and efficiently extract from a given level of physical and human resources a higher value of product than other firms find possible to attain.” Thus, organization capital captures a firm’s competitive edge that cannot be easily imitated.

However, organization capital can be potentially transferred from one firm to another. Lustig et al. (2011) and Eisfeldt and Papanikolaou (2013) argue that at least part of a firm’s organization capital is embodied in its key talent and, thus, can be transferred to other firms as a result of job changes. Bloom et al. ((2012), p. 169) provide further evidence that “US multinationals partially transfer their business models to their overseas affiliates—and a walk into McDonald’s or Starbucks anywhere in Europe suggests that this is not an unreasonable assumption.”

In an M&A setting, using survey data of 101 horizontal acquisitions conducted by U.S. and European acquirers, Capron and Pistre (2002) find that acquirers often transfer their own product innovation capabilities, marketing expertise, and general management expertise to target firms, and such (expected) knowledge transfer from acquirers to target firms is positively associated with acquirer abnormal announcement period returns. Using both the U.K. and continental European plant-level data sets, Bloom et al. (2012) show that affiliates of U.S. multinationals achieve higher productivity than non-U.S. multinationals and domestic firms from their IT capital and are also more IT intensive. They further show that U.S. multinationals’ superior management practices account for most of their higher output elasticity of IT.

We expect that by mobilizing and exploiting its superior organization capital, a high organization-capital acquirer will realize greater operating performance improvement and reap more synergistic gains after the acquisition than a low organization-capital acquirer. Because acquirer organization capital is unique and not easy to imitate (e.g., Walmart's supply chain management system), we further expect that a high organization-capital acquirer would be able to capture most of the synergistic gains from the acquisition compared to a low organization-capital acquirer. Such long-term gains to the acquirer should be at least partially reflected in announcement period returns and most likely would be reflected in post-merger long-run operating and stock performance.³ We, thus, have the following hypotheses:

Hypothesis 1. Acquisitions made by high organization-capital acquirers are associated with higher announcement period returns than those made by low organization-capital acquirers.

Hypothesis 2. Acquisitions made by high organization-capital acquirers are associated with better post-merger operating and stock performance than those made by low organization-capital acquirers.

Our empirical analyses are designed to test these hypotheses and also to distinguish between alternative explanations.⁴ In the next section, we describe our sample and key variable construction and present descriptive statistics.

III. Sample Formation and Overview

A. Our Sample of Acquirers

We obtain a large and comprehensive sample of completed M&A transactions from the Thomson One Banker Securities Data Company (SDC) database for the period 1984–2014. We impose the following filters to obtain our final sample: i) the deal is classified as “Acquisition of Assets (AA),” “Merger (M),” or “Acquisition of Majority Interest (AM)” by the data provider;⁵ ii) the acquirer

³A number of long-run event studies show that investors systematically fail to quickly assess the full impact of corporate announcements, with the implication that inferences based on announcement period returns are insufficient to capture the wealth effect of corporate events (see, e.g., Loughran and Vijh (1997), Rau and Vermaelen (1998) on M&As and Brav, Geczy, and Gompers (2000), Eckbo, Masulis, and Norli (2007) on initial public offerings and seasoned equity offerings). Further, if certain corporate events truly create (destroy) value for shareholders, the gains (losses) should eventually appear in the event firms' cash flows, which is why we include operating performance measures in our analysis as well.

⁴In this paper, we focus on the role of acquirer organization capital in M&As for the following reasons. Acquirers are typically much larger than target firms and, thus, are more likely to apply their organization capital to target firms than the reverse, as modeled in Carlin, Chowdhry, and Garmaise (2011) and shown in our Danaher example in Section I. Further, after deal completion, acquirer managers are more likely to be in charge of the combined entity. If acquirers had low organization capital to start with, as reflected in low-efficiency business processes and systems and poor managerial skills, then those acquirer managers might not be able to fully utilize target firms' organization capital or might even destroy it. It is, thus, harder to detect any meaningful association between target firm organization capital and post-merger acquirer performance. Nonetheless, later in the paper, we will explore the role of target organization capital in deal performance.

⁵According to Netter, Stegemoller, and Wintoki (2011), these three deal forms capture about 98% of M&A deals covered by the Thomson One Banker SDC database during the period 1992–2009.

is a U.S. public firm listed on the American Stock Exchange (AMEX), New York Stock Exchange (NYSE), or NASDAQ; iii) the acquirer holds less than 50% of the shares of the target firm before deal announcement and ends up owning 100% of the shares of the target firm through the deal; iv) the deal value is at least \$1 million (in 1983 dollar value); v) the relative size of the deal (i.e., the ratio of transaction value over book value of acquirer total assets), is at least 1%; vi) the target firm is domiciled in the United States; vii) the target firm is a public firm, a private firm, or a subsidiary; viii) multiple deals announced by the same acquirer on the same day are excluded; and ix) basic financial and stock return information is available for the acquirer. Our final sample consists of 17,910 completed deals for the period 1984–2014.

Panel A of Table 1 provides a sample overview. We see a large merger wave around the time of the Internet bubble and a smaller wave in the period preceding the recent financial crisis.

B. Measuring Organization Capital

Following Lev and Radhakrishnan (2005), Lev et al. (2009), and Eisfeldt and Papanikolaou (2013), we measure a firm's stock of organization capital using capitalized SG&A expenses normalized by total assets. Among other things, SG&A expenses include IT investment, consulting, employee training costs, advertising and marketing expenses, R&D expenses, and information systems and distribution channel investment, which are expenses aimed at improving a firm's body of knowledge and business processes and systems and, hence, are investment in its organization capital.⁶

We compute the stock of organization capital (OC) using the perpetual inventory method. Specifically, we recursively estimate the stock of organization capital by cumulating the deflated value of SG&A expenses:

$$(1) \quad OC_{i,t} = (1 - Depr_{OC})OC_{i,t-1} + \frac{SG\&A_{i,t}}{CPI_t},$$

where $Depr_{OC}$ is the depreciation rate and CPI_t is the consumer price index. To implement the law of motion in equation (1), we first choose the initial stock according to

$$OC_{i,0} = \frac{SG\&A_{i,1}}{g + Depr_{OC}},$$

where the average real growth rate of firm-level SG&A expenses, g , is industry (at the 2-digit Standard Industrial Classification (SIC) level) and decade specific and depends on which year firm i first enters the Compustat database; the depreciation rate of firm-level organization capital is 15%, which is the depreciation rate used by the U.S. Bureau of Economic Analysis (BEA) in their estimation

⁶SG&A expenses also include items such as managerial perk consumption, restructuring expenses, and audit fees, which might have little to do with a firm's competitive edge. It is worth noting that the noise in this measure biases against us finding any significant association between acquirer organization capital and deal performance. Nonetheless, later in the paper, we conduct a series of tests to address possible measurement errors in our key variable of interest.

TABLE 1
Summary Statistics

Table 1 presents the sample consisting of 17,910 completed M&A transactions between 1984 and 2014 from the Thomson One Banker SDC database. The sample selection criteria are as follows: i) the deal is classified as "Acquisition of Assets (AA)," "Acquisition of Majority Interest (AM)," or "Merger (M)" by the data provider; ii) the acquirer is a U.S. public firm listed on the AMEX, NYSE, or NASDAQ; iii) the acquirer holds less than 50% of the shares of the target firm before the deal announcement and ends up owning 100% of the shares of the target firm through the deal; iv) the deal value is at least \$1 million (in 1983 dollar value); v) the relative size of the deal (i.e., the ratio of transaction value over book value of acquirer total assets) is at least 1%; vi) the target firm is domiciled in the United States; vii) the target firm is a public firm, a private firm, or a subsidiary; viii) multiple deals announced by the same acquirer on the same day are excluded; and ix) basic financial and stock return information is available for the acquirer. Panel A presents the distribution of the sample. Panel B presents descriptive statistics of the variables. Panel C presents pairwise correlations of the variables, with superscripts a, b, and c corresponding to statistical significance at the 1%, 5%, and 10% levels, respectively. Definitions of the variables are provided in the [Appendix](#).

Panel A. Sample Distribution

Year	All Deals	Private Target	Subsidiary Target	Public Target
1984	381	157	138	86
1985	213	40	75	98
1986	281	88	100	93
1987	221	68	76	77
1988	259	71	101	87
1989	288	103	127	58
1990	276	97	130	49
1991	283	126	104	53
1992	452	217	176	59
1993	587	280	229	78
1994	767	390	224	153
1995	857	421	257	179
1996	1,054	531	298	225
1997	1,444	776	372	296
1998	1,353	707	358	288
1999	1,103	583	268	252
2000	969	548	202	219
2001	610	284	170	156
2002	591	266	212	113
2003	569	262	180	127
2004	679	364	192	123
2005	678	364	184	130
2006	675	373	185	117
2007	651	374	158	119
2008	445	257	118	70
2009	280	137	83	60
2010	371	185	113	73
2011	367	203	118	46
2012	403	214	123	66
2013	363	170	128	65
2014	440	254	118	68
All	17,910	8,910	5,317	3,683

Panel B. Descriptive Statistics

Variable	No. of Obs.	Mean	10th Percentile	Median	90th Percentile	Std. Dev.
CAR(-1, 1)	17,910	1.408	-6.228	0.624	9.915	7.699
ΔROA1	8,678	-5.621	-18.337	-0.954	5.051	20.003
BHAR1	8,678	-8.461	-79.296	-6.102	61.330	65.679
ΔROA3	4,594	-5.538	-19.265	-2.007	4.196	14.435
BHAR3	4,594	-20.739	-150.160	-16.561	105.569	124.346
OC	17,910	0.969	0.048	0.693	2.194	1.052
ROA	17,910	2.853	-6.626	4.043	12.112	10.035
M/B	17,910	3.627	1.067	2.346	6.870	4.345
LEVERAGE	17,910	0.198	0	0.138	0.507	0.203
PAST_RETURN	17,910	35.488	-30.769	18.750	110.606	77.520
TOP5_INSTITUTIONS	17,910	0.212	0.051	0.208	0.367	0.121
TOTAL_ASSETS	17,910	3,187.113	51.897	537.123	7,277.490	8,236.495
ALL_CASH	17,910	0.266	0	0	1	0.442
ALL_STOCK	17,910	0.198	0	0	1	0.399
DIVERSIFYING	17,910	0.380	0	0	1	0.485
TENDER_OFFER	17,910	0.036	0	0	0	0.186
RELATIVE_SIZE	17,910	0.327	0.019	0.111	0.767	0.678
PRIVATE_TARGET	17,910	0.497	0	0	1	0.500
SUBSIDIARY_TARGET	17,910	0.297	0	0	1	0.457

(continued on next page)

TABLE 1 (continued)
Summary Statistics

Panel C. Pairwise Correlations

	CAR (-1, 1)	ΔROA1	BHAR1	ΔROA3	BHAR3	OC	ROA	M/B	LEVERAGE	PAST_ RETURN	TOP5_ INST	FIRM_ SIZE	ALL_ CASH	ALL_ STOCK	DIVERSIFYING	TENDER_ OFFER	REL_ SIZE	PRIV_ TARGET	SUB_ TARGET		
CAR(-1, 1)	1.000																				
ΔROA1	0.025 ^b	1																			
BHAR1	-0.024 ^b	0.177 ^a	1																		
ΔROA3	0.012	0.771 ^a	0.167 ^a	1																	
BHAR3	-0.047 ^a	0.145 ^a	0.549 ^a	0.214 ^a	1																
OC	0.071 ^a	-0.026 ^b	0.023 ^b	-0.013	0.006	1															
ROA	-0.041 ^a	-0.023 ^b	0.062 ^a	-0.193 ^a	0.058 ^a	-0.023 ^a	1														
M/B	-0.007	-0.187 ^a	-0.022 ^b	-0.197 ^a	-0.006	0.076 ^a	-0.041 ^a	1													
LEVERAGE	0.012	0.166 ^a	0.021 ^b	0.221 ^a	0.019 ^c	-0.279 ^a	-0.108 ^a	-0.231 ^a	1												
PAST_RETURN	0.017 ^b	-0.091 ^a	-0.018 ^c	-0.138 ^a	0.003	-0.016 ^b	0.036 ^a	0.351 ^a	-0.131 ^a	1											
TOP5_INST	-0.044 ^a	0.064 ^a	0.034 ^a	0.048 ^a	0.034 ^a	0.015 ^c	0.124 ^a	-0.021 ^a	-0.058 ^a	-0.043 ^a	1										
FIRM_SIZE	-0.154 ^a	0.175 ^a	0.049 ^a	0.201 ^a	0.082 ^a	-0.321 ^a	0.197 ^a	-0.076 ^a	0.299 ^a	-0.074 ^a	0.219 ^a	1									
ALL_CASH	0.011	0.054 ^a	0.015	0.038 ^a	0.015	0.028 ^a	0.113 ^a	-0.061 ^a	-0.042 ^a	-0.060 ^a	0.146 ^a	0.141 ^a	1								
ALL_STOCK	-0.044 ^a	-0.094 ^a	-0.025 ^b	-0.067 ^a	0.004	-0.046 ^a	-0.099 ^a	0.156 ^a	-0.045 ^a	0.108 ^a	-0.143 ^a	-0.004	-0.300 ^a	1							
DIVERSIFYING	0.018 ^b	-0.011	-0.016	-0.034 ^b	-0.024 ^b	0.086 ^a	0.035 ^a	-0.012	-0.054 ^a	-0.012	-0.042 ^a	-0.048 ^a	0.017 ^b	-0.037 ^a	1						
TENDER_OFFER	-0.026 ^a	0.028 ^a	0.010	0.026 ^c	-0.011	0.028 ^a	0.050 ^a	-0.029 ^a	0.008	-0.028 ^a	0.004	0.142 ^a	0.174 ^a	-0.080 ^a	0.035 ^a	1					
REL_SIZE	0.090 ^a	-0.144 ^a	-0.041 ^a	-0.143 ^a	-0.052 ^a	0.123 ^a	-0.116 ^a	0.202 ^a	-0.145 ^a	0.110 ^a	-0.115 ^a	-0.291 ^a	-0.118 ^a	0.142 ^a	0.002	0.020 ^a	1				
PRIV_TARGET	0.051 ^a	-0.086 ^a	-0.014	-0.116 ^a	-0.014	0.094 ^a	-0.040 ^a	0.088 ^a	-0.189 ^a	0.066 ^a	-0.011	-0.300 ^a	-0.100 ^a	0.011	0.038 ^a	-0.183 ^a	-0.054 ^a	1			
SUB_TARGET	0.069 ^a	0.050 ^a	0.000	0.064 ^a	-0.015	-0.015 ^b	0.034 ^a	-0.060 ^a	0.082 ^a	-0.042 ^a	0.060 ^a	0.044 ^a	0.118 ^a	-0.240 ^a	0.009	-0.120 ^a	-0.037 ^a	-0.647 ^a	1		

of R&D capital in 2006 (Eisfeldt and Papanikolaou (2013)).⁷ $SG\&A_{i,1}$ is firm i 's first-year SG&A expenses with non-missing data in Compustat. During our sample period, we note that 82% of Compustat firm-year observations have valid (i.e., non-missing) information on SG&A expenses. We treat subsequent missing values of firm i 's SG&A expenses as 0. Finally, we scale organization capital by a firm's book value of total assets.

C. Measures of Deal Performance

Following prior work (e.g., Chen, Harford, and Li (2007), Masulis, Wang, and Xie (2007)), we employ a number of deal performance variables: $CAR(-1, 1)$, $\Delta ROA1$, $\Delta ROA3$, $BHAR1$, and $BHAR3$. The reason for us employing multiple post-merger long-run performance measures is that serial acquirers are quite common (Fuller, Netter, and Stegemoller (2002)) and we want to capture the stand-alone long-run performance effect of a particular deal; the 1-year window seems to be a good alternative to the 3-year window typically used to measure long-run performance.

$CAR(-1, 1)$ is the cumulative abnormal return (in percentage points) of the acquirer from 1 day before to 1 day after the deal announcement date (day 0). Daily abnormal stock return is calculated by subtracting the Center for Research in Security Prices (CRSP) value-weighted market return from the stock return of the acquirer.⁸ $\Delta ROA1$ is the change in acquirer return on assets (ROA) (in percentage points) from the year before deal announcement to the year after deal completion. $\Delta ROA3$ is the average ROA (in percentage points) of the acquirer in the 3-year period after deal completion minus ROA of the acquirer in the year prior to deal announcement. $BHAR1$ ($BHAR3$) is the 1-year (3-year) buy-and-hold abnormal stock return (in percentage points) of the acquirer after deal completion controlling for the size, book-to-market (BM), and momentum effects (Chen et al. (2007), p. 287). When computing long-run performance measures, we remove any acquirers subsequently making other large acquisitions (defined as the ratio of transaction value to book value of acquirer total assets greater than 1%) over the 1- or 3-year window to ensure that the long-run performance pertains to a particular deal. Our results do not change in any qualitative manner if we do not remove such acquirers (with confounding deals) when computing long-run performance measures.

Panel B of Table 1 provides basic summary statistics. Our Appendix provides detailed definitions of all variables. All dollar values are in 2014 dollars. All continuous variables are winsorized at the 1st and 99th percentiles.

We show that the mean $CAR(-1, 1)$ is positive at 1.41%, and the median is 0.62%. By comparison, Moeller, Schlingemann, and Stulz (2004) report a mean (median) acquirer $CAR(-1, 1)$ of 1.1% (0.36%) for 12,023 acquisitions from 1980 to 2001, and Betton et al. (2008) report a mean (median)

⁷Note that our results are robust to choices of the depreciation rate ranging between 10% and 40%.

⁸It is worth noting that our main results do not change qualitatively if daily abnormal stock returns are computed using the market model and the CRSP value-weighted market returns, with the estimation window being days $(-200, -60)$ prior to the deal announcement date (Chen et al. (2007)).

acquirer $CAR(-1, 1)$ of 0.73% (0%) for 15,987 transactions from 1980 to 2005. In contrast, post-merger long-run operating and stock performances are dismal with negative mean and median values. For example, the sample mean (median) BHAR3 is -20.7% (-16.6%), confirming the findings of prior studies (Loughran and Vijh (1997), Betton et al.).⁹ The standard deviations of the performance measures are all very large relative to their respective means, suggesting large heterogeneity in post-merger firm performance within the sample.

The mean (median) ratio of organization capital to total assets is 0.97 (0.69), with a standard deviation of 1.05. For comparison, Eisfeldt and Papanikolaou ((2013), Table 3) report the median ratio of organization capital to total assets is 0.27 for their low organization-capital quintile and 2.71 for their high organization-capital quintile.

Before making acquisitions, acquirers have a positive mean (median) ROA of 2.85% (4.04%), a mean (median) M/B of 3.63 (2.35), and strong stock returns in the year prior to making a bid with a mean (median) value of 35.5% (18.8%). The mean (median) leverage ratio of acquirers is 0.20 (0.14), and the mean (median) fraction of shares outstanding held by the top 5 institutional investors is 0.21 (0.21). In terms of the Compustat size decile, our average (median) acquirer is in the 9th (7th) decile.

In terms of deal characteristics, about a quarter of the deals use cash, a fifth use stock, and the rest employ a mix of cash and stock. Close to 40% of the deals are diversifying deals involving acquirer and target firms belonging to different 2-digit SIC codes. Less than 5% of the deals are tender offers. The mean (median) ratio of the transaction value to acquirer book assets is 0.33 (0.11). About half of the deals involve private targets, 30% of the deals involve subsidiary targets, and the remainder involve public targets. The sample characteristics are generally comparable to those reported in the literature (e.g., Andrade et al. (2001), Moeller et al. (2004)).

Panel C of Table 1 presents the correlation matrix of the variables. We show that acquirer organization capital is positively and significantly associated with $CAR(-1, 1)$ and BHAR1. The correlation matrix suggests little concern about multicollinearity. Given that omitted variable bias in univariate correlations can mask the true relations between the variables, we next employ multiple regressions to examine the role of acquirer organization capital in M&As.

IV. Main Results

A. Acquirer Organization Capital and Deal Performance

To test our hypotheses, we run cross-sectional regressions of acquirer abnormal announcement period returns and post-merger firm performance variables on pre-acquisition acquirer organization capital and other firm and deal controls:

⁹For comparison, Loughran and Vijh (1997) show that the average 5-year BHAR for a sample of 788 deals over the period 1970–1989 is -15.9%, and Betton et al. (2008) show that the average 5-year BHAR for a sample of 15,298 deals over the period 1980–2003 is -21.9%.

$$\begin{aligned}
 (2) \quad \text{DEAL_PERFORMANCE}_{i,t} = & \\
 & \alpha + \beta_1 \text{OC}_{i,t-1} + \beta_2 \text{ROA}_{i,t-1} + \beta_3 \text{M/B}_{i,t-1} \\
 & + \beta_4 \text{LEVERAGE}_{i,t-1} + \beta_5 \text{PAST_RETURN}_{i,t-1} \\
 & + \beta_6 \text{TOP5_INSTITUTIONS}_{i,t-1} + \beta_7 \text{FIRM_SIZE}_{i,t-1} \\
 & + \beta_8 \text{ALL_CASH}_{i,t-1} + \beta_9 \text{ALL_STOCK}_{i,t-1} \\
 & + \beta_{10} \text{DIVERSIFYING}_{i,t} + \beta_{11} \text{TENDER_OFFER}_{i,t-1} \\
 & + \beta_{12} \text{RELATIVE_SIZE}_{i,t-1} + \beta_{13} \text{PRIVATE_TARGET}_{i,t-1} \\
 & + \beta_{14} \text{SUBSIDIARY_TARGET}_{i,t-1} + \text{INDUSTRY_FE} \\
 & + \text{YEAR_FE} + \varepsilon_{i,t},
 \end{aligned}$$

where the dependent variable could be $\text{CAR}(-1, 1)$ or one of the four post-merger firm performance measures: ΔROA1 , BHAR1 , ΔROA3 , and BHAR3 . The control variables follow prior literature (e.g., Andrade et al. (2001), Moeller et al. (2004), and Chen et al. (2007)). In all specifications, we control for industry (at the 2-digit SIC level) and year fixed effects and present standard errors that are clustered at the acquirer level and robust to heteroskedasticity.¹⁰

Table 2 presents the regression results. In column 1, we show that acquirer organization capital is positively and significantly associated with acquirer abnormal announcement period returns at the 1% level, lending support for Hypothesis 1. In terms of economic significance, a 1-standard-deviation increase in acquirer organization capital is associated with a 0.26-percentage-point increase in $\text{CAR}(-1, 1)$; note that the sample mean $\text{CAR}(-1, 1)$ is 1.41%. Given that the average market capitalization of the acquirers at 2 days before the announcement is \$3.7 billion, the positive price reaction corresponds to an average increase in acquirer market capitalization by about \$10 million.

In columns 2–5, we show that acquirer organization capital is positively and significantly associated with all measures of post-merger long-run performance at the 5% level or lower, lending support for Hypothesis 2. In terms of economic significance, a 1-standard-deviation increase in acquirer organization capital is associated with a 1.52-percentage-point increase in ΔROA1 , a 2.99-percentage-point increase in BHAR1 , a 1.94-percentage-point increase in ΔROA3 , and a 6.32-percentage-point increase in BHAR3 ; note that both mean and median values for these four measures are negative.¹¹

In addition to the previous key findings, we further show that pre-acquisition acquirer ROA and M/B are negatively and significantly associated

¹⁰It is worth noting that our main findings remain unchanged when we include state fixed effects or remove deals with a relative size of less than 5%. See Table IA1 in the Internet Appendix (available at www.jfq.org).

¹¹Motivated by Bessembinder and Zhang (2013), in Table IA2 in the Internet Appendix, we further control for pre-merger differences between event and control firms in beta, idiosyncratic volatility, investment, and their respective squared terms, in the regression specification in equation (2), and find that our main findings remain unchanged. We do not control for post-merger differences between event and control firms because such differences might be due to acquirer organization capital, leading us to underestimate the effect of acquirer organization capital on post-merger firm performance. Further, later in the paper, we employ the calendar-time portfolio approach of Fama (1998) to help deal with cross-sectional correlations among event firms and changing firm characteristics post-merger.

TABLE 2
Acquirer Organization Capital and Deal Performance

Table 2 examines the relation between acquirer organization capital and deal performance. The sample consists of 17,910 completed M&A transactions between 1984 and 2014 from the Thomson One Banker SDC database. 2-digit Standard Industrial Classification (SIC) industry and year fixed effects are included. Definitions of the variables are provided in the Appendix. Heteroskedasticity-consistent standard errors (in parentheses) are clustered at the acquirer level. *, **, and *** correspond to statistical significance at the 10%, 5%, and 1% levels, respectively.

Variable	CAR(-1, 1)	Δ ROA1	BHAR1	Δ ROA3	BHAR3
	1	2	3	4	5
OC	0.250*** (0.084)	1.441*** (0.347)	2.839*** (0.953)	1.847*** (0.314)	6.007** (2.360)
ROA	-0.007 (0.008)	-0.149*** (0.044)	0.309*** (0.096)	-0.344*** (0.044)	0.380 (0.258)
M/B	-0.032 (0.021)	-0.456*** (0.110)	-0.140 (0.228)	-0.344*** (0.100)	0.163 (0.502)
LEVERAGE	2.921*** (0.396)	6.087*** (1.244)	8.193* (4.785)	4.862*** (1.166)	14.857 (13.077)
PAST_RETURN	0.002* (0.001)	-0.002 (0.005)	-0.015 (0.014)	-0.010** (0.005)	-0.007 (0.032)
TOP5_INSTITUTIONS	-1.905*** (0.563)	8.203*** (2.018)	11.182 (7.179)	6.500*** (1.913)	-19.286 (19.018)
FIRM_SIZE	-0.405*** (0.040)	1.388*** (0.140)	0.391 (0.486)	1.389*** (0.132)	2.524* (1.290)
ALL_CASH	0.536*** (0.127)	0.752* (0.416)	1.222 (1.692)	0.905** (0.419)	2.521 (4.409)
ALL_STOCK	0.023 (0.196)	-3.392*** (0.772)	-4.792** (2.235)	-2.049*** (0.737)	2.300 (5.622)
DIVERSIFYING	-0.037 (0.132)	-0.522 (0.459)	-1.612 (1.593)	-0.354 (0.435)	-5.837 (4.122)
TENDER_OFFER	1.138*** (0.311)	-0.460 (0.765)	-2.106 (3.858)	-0.931 (0.728)	-28.495*** (9.576)
RELATIVE_SIZE	0.950*** (0.168)	-1.887*** (0.587)	-2.961** (1.441)	-1.297** (0.528)	-2.443 (3.891)
PRIVATE_TARGET	2.270*** (0.186)	-0.802 (0.647)	-3.036 (2.155)	-0.692 (0.596)	-6.296 (5.770)
SUBSIDIARY_TARGET	2.758*** (0.198)	-0.520 (0.632)	-2.800 (2.240)	0.149 (0.583)	-7.120 (5.931)
INDUSTRY_FE and YEAR_FE	Yes	Yes	Yes	Yes	Yes
INTERCEPT	Yes	Yes	Yes	Yes	Yes
No. of obs.	17,910	8,678	8,678	4,594	4,594
Adj. R^2	0.053	0.119	0.008	0.176	0.004

with post-merger changes in ROA; the former is consistent with the well-known mean reversion pattern in ROA (Fama and French (2000)), and the latter is consistent with the long-run underperformance of glamour (i.e., high M/B) acquirers (Rau and Vermaelen (1998)). Acquirer leverage is mostly positively related to deal performance measures. Ownership by the 5 largest institutions is negatively and significantly associated with acquirer abnormal announcement period returns, while it is positively and significantly associated with post-merger changes in acquirer ROA. Acquirer size is negatively and significantly associated with acquirer abnormal announcement period returns but is positively and significantly associated with most of the post-merger long-run performance measures. All cash deals are mostly positively associated with deal performance, while all stock deals are mostly negatively associated with deal performance. Tender offers, large targets relative to acquirers, private targets, and subsidiary targets are positively and significantly associated with acquirer abnormal announcement period returns. Our findings on the control variables are generally consistent with those documented

in the M&A literature (e.g., Harford (1999), Fuller et al. (2002), Moeller et al. (2004), and Betton et al. (2008)), which gives us some confidence in our findings on the positive associations between acquirer organization capital and deal performance measures.

B. Using Alternative Measures of Acquirer Organization Capital

There are a number of potential concerns about our measure of organization capital. First, organization capital might be measured with error, because the primary input to the measure (SG&A expenses) might contain expenses not directly related to building up a firm's body of knowledge and business processes and systems that lead to its competitive edge, such as managers' perquisite consumption. If the fraction of SG&A expenses that represents investment in organization capital does not vary across firms, this error will not affect firms' rankings in terms of the ratio of organization capital to total assets. One way to address this concern is to not use the direct construct but to, instead, sort yearly firms in the Compustat universe into organization capital deciles, assign our sample of acquirers into those decile bins, and use the resulting rank of acquirer organization capital in the multivariate regressions. Panel A of Table 3 presents the results. We show that a higher rank of acquirer organization capital is associated with significantly better deal performance using all five measures.

Second, accounting practices governing the exact composition of SG&A expenses vary across industries, and agency problems associated with SG&A expenses may also vary across industries, suggesting that the measurement error in firm-level organization capital may have an industry component. To address these concerns, instead of using the construct for organization capital directly, we use the industry-median adjusted ratio of organization capital to total assets. Panel B of Table 3 presents the results. We show that industry-median adjusted acquirer organization capital is positively and significantly associated with all five deal performance measures. Panel C further shows that the rank of industry-median adjusted acquirer organization capital is positively and significantly associated with all four post-merger firm performance measures.

Finally, we also employ an alternative 5-year straight-line depreciation approach to capitalize SG&A expenses; the results are provided in Panel D of Table 3. We show that by using this alternative measure, acquirer organization capital is positively and significantly associated with all five deal performance measures. Further, instead of using capitalized SG&A expenses, we use the ratio of SG&A expenses to total assets to capture investment in organization capital (OC flow); the results are provided in Panel E of Table 3. We show that acquirer investment in organization capital is positively and significantly associated with three out of four post-merger firm performance measures.

C. Cross-Validating Our Measure of Organization Capital

It is well known that organization capital is multi-faceted, capturing internal knowledge and expertise (Atkeson and Kehoe (2005)), business processes and practices (Evenson and Westphal (1995)), and human capital (Prescott and Visscher (1980)), and that it is extremely challenging to measure (Lev et al. (2016)); therefore, it is important to validate our measure using some well-established

TABLE 3
Addressing Measurement Errors in Acquirer Organization Capital

Table 3 conducts a series of tests to address measurement errors in organization capital using alternative measures of OC and the same regression specification as in Table 2. The sample consists of 17,910 completed M&A transactions between 1984 and 2014 from the Thomson One Banker SDC database. For brevity, we only report the coefficient estimates on alternative measures of OC. 2-digit Standard Industrial Classification (SIC) industry and year fixed effects are included. Definitions of the variables are provided in the Appendix. Heteroskedasticity-consistent standard errors (in parentheses) are clustered at the acquirer level. *, **, and *** correspond to statistical significance at the 10%, 5%, and 1% levels, respectively.

Variable	CAR(-1, 1)	Δ ROA1	BHAR1	Δ ROA3	BHAR3
	1	2	3	4	5
<i>Panel A. Using the Decile Rank of OC</i>					
OC_RANK	0.086** (2.40)	0.993*** (6.78)	1.298*** (2.89)	1.044*** (7.24)	3.344*** (3.01)
CONTROL_VARIABLES	Yes	Yes	Yes	Yes	Yes
INDUSTRY_FE and YEAR_FE	Yes	Yes	Yes	Yes	Yes
No. of obs.	17,910	8,678	8,678	4,594	4,594
Adj. R ²	0.059	0.135	0.020	0.200	0.029
<i>Panel B. Using the Industry-Median Adjusted OC</i>					
IND_ADJ_OC	0.185** (2.21)	1.184*** (3.53)	2.424*** (2.59)	1.743*** (5.82)	4.532* (1.89)
CONTROL_VARIABLES	Yes	Yes	Yes	Yes	Yes
INDUSTRY_FE and YEAR_FE	Yes	Yes	Yes	Yes	Yes
No. of obs.	17,910	8,678	8,678	4,594	4,594
Adj. R ²	0.059	0.130	0.020	0.195	0.028
<i>Panel C. Using the Decile Rank of Industry-Median Adjusted OC</i>					
IND_ADJ_OC_RANK	0.015 (0.63)	0.633*** (6.96)	0.945*** (3.25)	0.666*** (7.60)	2.096*** (2.83)
CONTROL_VARIABLES	Yes	Yes	Yes	Yes	Yes
INDUSTRY_FE and YEAR_FE	Yes	Yes	Yes	Yes	Yes
No. of obs.	17,910	8,678	8,678	4,594	4,594
Adj. R ²	0.058	0.134	0.021	0.199	0.029
<i>Panel D. Using the 5-Year Straight-Line Depreciation of SG&A Expenses to Compute OC</i>					
OC_5YR_STRAIGHT_LINE	0.377** (2.33)	3.101*** (4.54)	5.715*** (3.06)	3.728*** (5.63)	13.056*** (2.92)
CONTROL_VARIABLES	Yes	Yes	Yes	Yes	Yes
INDUSTRY_FE and YEAR_FE	Yes	Yes	Yes	Yes	Yes
No. of obs.	17,910	8,678	8,678	4,594	4,594
Adj. R ²	0.059	0.132	0.021	0.197	0.029
<i>Panel E. Using SG&A Expenses to Measure Investment in OC</i>					
OC_FLOW	0.386 (0.85)	5.534*** (2.97)	7.782 (1.49)	7.542*** (4.22)	28.419** (2.19)
CONTROL_VARIABLES	Yes	Yes	Yes	Yes	Yes
INDUSTRY_FE and YEAR_FE	Yes	Yes	Yes	Yes	Yes
No. of obs.	17,910	8,678	8,678	4,594	4,594
Adj. R ²	0.058	0.129	0.020	0.191	0.028

markers for best practices in the corporate world.¹² We employ the following three measures of firm quality as alternatives to our measure of organization capital: the

¹²It is worth noting that Eisdeldt and Papanikolaou (2013), whose measure of organization capital we adopt in this paper, cross-validate their SG&A-based measure in a number of ways. First, they show that high organization-capital firms have higher managerial quality scores, according to the measure of Bloom and Van Reenen (2007), than low organization-capital firms. Second, high organization-capital

managerial ability score of Demerjian et al. (2012), Fortune magazine's "100 Best Companies to Work for in America" list, and Computerworld's "100 Best Places to Work in IT" list.

Using the data envelopment analysis (DEA), Demerjian et al. (2012) develop a new measure of managerial ability based on managers' efficiency, relative to their industry peers, in transforming corporate resources to revenues. These authors show that this new measure outperforms traditional measures (e.g., stock returns and media coverage) in capturing managerial ability.

Black and Lynch (2005) argue that employer-provided training is an important component of workplace organization and organization capital. In their framework, organization capital captures training, employee voice, and work design, which are the main criteria Fortune uses to create its "100 Best Companies to Work for in America" list (see Edmans (2011) and our Appendix for details). Edmans shows that firms on Fortune's list have greater employee satisfaction and deliver superior long-run stock returns. The list is available for years 1984, 1993, and 1998–2012.¹³ Given our lead-lag specification in equation (2), we use deals announced in 1985, 1994, and 1999–2011 for this analysis. The key variable of interest, FORTUNE_BEST_COMPANY, equals the reverse rank on Fortune's "100 Best Companies to Work for in America" list (as in Edmans (2011)) for an acquirer on the list, and 0 otherwise.

Finally, we also use Computerworld's "100 Best Places to Work in IT" list as an alternative measure of acquirer organization capital (see our Appendix for details). Both Bloom et al. (2012) and Eisfeldt and Papanikolaou (2013) take the view that investment in IT is an important part of organization capital. The list is available for 2003, 2006, and 2009. Given our lead-lag specification in equation (2), we use the 2003 list for deals announced in 2004–2006, the 2006 list for deals announced in 2007–2009, and the 2009 list for deals announced in 2010–2011. The key variable of interest, COMPUTERWORLD_BEST_PLACE_IN_IT, equals the reverse rank on Computerworld's "100 Best Places to Work in IT" list for an acquirer on the list, and 0 otherwise. Table 4 presents the results from this exercise.

We first show that all these measures of firm quality are positively and significantly correlated with organization capital (Panel A). We further show that these measures are positively and significantly associated with deal performance in six out of 15 cases and are never negatively and significantly associated with deal performance (Panel B). The exercise in Table 4 reassures us that our measure of organization capital is correlated with what it is intended to capture (i.e., the body of knowledge and business processes and systems leading to competitive edge and operational efficiency) and is more effective in capturing aspects of organization capital that are important for deal performance than other available markers for best practices in the corporate world, such as Computerworld's "100 Best Places to Work in IT" list.

firms spend more on IT. Finally, high organization-capital firms are also more likely to list "loss of key personnel" as a risk factor in their 10-K filings.

¹³We thank Alex Edmans for generously sharing with us Fortune's "100 Best Companies to Work for in America" list.

TABLE 4
Cross-Validating Our Organization Capital Measure

Table 4 presents cross-validation results of our organization capital measure. Panel A presents ordinary least squares (OLS) regression results using the Compustat universe, where the dependent variables are different measures of firm quality: the managerial ability score rank of Demerjian et al. (2012), Fortune's best company list, and Computerworld's best place in IT list. Panels B–D present regression results based on the same specification as in Table 3 but replace OC with these alternative measures of firm quality. 2-digit Standard Industrial Classification (SIC) industry and year fixed effects are included. Definitions of the variables are provided in the Appendix. Heteroskedasticity-consistent standard errors (in parentheses) are clustered at the firm level. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

Panel A. Correlations of Organization Capital with Various Firm Quality Measures

Variable	MANAGERIAL_ ABILITY_SCORE 1	FORTUNE_ BEST_COMPANY 2	COMPUTERWORLD_ BEST_PLACE_IN_IT 3
OC	0.004*** (0.001)	0.138*** (0.023)	0.125*** (0.029)
FIRM_SIZE	0.007*** (0.001)	0.322*** (0.048)	0.306*** (0.056)
INTERCEPT	Yes	Yes	Yes
No. of obs.	102,715	74,630	11,584
Adj. R^2	0.002	0.014	0.014

Variable	CAR(−1, 1) 1	Δ ROA1 2	BHAR1 3	Δ ROA3 4	BHAR3 5
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Panel B. Managerial Ability Score and Post-Merger Firm Performance

MANAGERIAL_ ABILITY_SCORE	−0.186 (0.277)	2.188** (1.072)	1.945 (3.413)	2.354** (1.053)	−10.815 (9.082)
CONTROL_VARIABLES	Yes	Yes	Yes	Yes	Yes
INDUSTRY_FE and YEAR_FE	Yes	Yes	Yes	Yes	Yes
No. of obs.	13,519	6,719	6,719	3,468	3,468
Adj. R^2	0.046	0.120	0.004	0.171	−0.001

Panel C. Fortune's Best Company and Post-Merger Firm Performance

FORTUNE_BEST_ COMPANY	0.008 (0.008)	0.085*** (0.018)	−0.042 (0.095)	0.069*** (0.024)	0.115 (0.196)
CONTROL_VARIABLES	Yes	Yes	Yes	Yes	Yes
INDUSTRY_FE and YEAR_FE	Yes	Yes	Yes	Yes	Yes
No. of obs.	10,238	4,998	4,998	2,530	2,530
Adj. R^2	0.043	0.156	0.007	0.213	0.007

Panel D. Computerworld's Best Place in IT and Post-Merger Firm Performance

COMPUTERWORLD_ BEST_ PLACE_IN_IT	0.017 (0.011)	−0.002 (0.028)	0.357*** (0.121)	0.037 (0.026)	0.626** (0.284)
CONTROL_VARIABLES	Yes	Yes	Yes	Yes	Yes
INDUSTRY_FE and YEAR_FE	Yes	Yes	Yes	Yes	Yes
No. of obs.	4,553	2,550	2,550	1,206	1,206
Adj. R^2	0.051	0.097	0.002	0.161	0.014

D. Subsample Analyses

We carry out a number of subsample analyses where organization capital and its role might be more cleanly captured at certain stages of firm life cycles (young vs. old) and across firms of different sizes (small vs. large) and of different governance qualities.

For young (small) firms, capitalized SG&A expenses, our measure for organization capital, might be closer to its true intent, capturing firms' investment in knowledge creation and in developing business processes and systems. In contrast, for old (large) firms, capitalized SG&A expenses might contain more routine expenditures in maintaining and operating business processes and systems

and even some deadweight overhead such as managers' perk consumption. We, thus, expect some cross-sectional variations in the effects of organization capital on deal performance based on acquirer age and size. Banker et al. (2011) show that CEO equity-based pay leads to an increase in firms' SG&A expenses, which create high future value, suggesting a positive association between governance and more efficient investment in organization capital. We, thus, expect a stronger relation between acquirer organization capital and deal performance in better-governed acquirers than in worse-governed acquirers.

Table 5 presents the regression results based on equation (2), where we sort acquirers by age, size (total assets), and governance quality as proxied by the fraction of CEO equity-based pay over total pay.¹⁴ Consistent with our conjecture, we find that the effects of acquirer organization capital on deal performance are stronger for young acquirers, small acquirers, and well-governed acquirers than for old acquirers, large acquirers, and poorly-governed acquirers (using sample medians as the cutoffs).¹⁵

As illustrated by our motivating example in Section I, we do not expect the effects of organization capital to vary across single- and multi-segment acquirers, as the body of knowledge and business processes and systems can be applied to different operations of the same firm. On the other hand, if going public is a certification of a firm's unique competitive edge and the quality of its organization capital, we would expect that it is more effective for public acquirers to apply their well-established organization capital to private target firms whose own organization capital is not yet well developed than to public target firms whose organization capital might clash with that of acquirers. We, thus, expect stronger effects of acquirer organization capital on deal performance in deals with private targets than in deals with public targets.

Panel D of Table 5 presents results sorting acquirers by their scope of operations: single- versus multi-segment firms; Panel E presents results sorting by target firm status: private versus public targets. Consistent with our conjecture, we find that acquirer organization capital has similar effects for single- and multi-segment acquirers, while acquirer organization capital has positive and significant effects on all five deal outcome variables for deals with private targets (representing 50% of the sample) and on one deal outcome variable for deals with public targets (representing 20% of the sample).¹⁶

Fuller et al. (2002) find that serial acquirers doing too many deals in a short period of time are associated with declining announcement period returns. It would be interesting to explore the role of organization capital for serial versus

¹⁴The number of observations is 7,022 instead of 17,910 in Panel C of Table 5. The sample size is smaller in Panel C because we only include deals with valid executive compensation information.

¹⁵In untabulated analyses, we sort acquirers by the managerial ability score of Demerjian et al. (2012) into high versus low score subsamples, and we find that the effects of acquirer organization capital on deal performance are stronger for acquirers with high managerial ability scores than for those with low managerial ability scores. Given the positive correlation between the managerial ability score and our measure of organization capital (Panel A of Table 4), this result provides further support that our measure is close to its true intent.

¹⁶Due to the large variation in deal performance measures for these two subsamples, the different effects of acquirer organization capital on private and public target firms are significant for two out of five performance measures.

TABLE 5
Subsample Analyses

Table 5 examines the relation between acquirer organization capital and deal performance using different subsamples based on the regression specification in equation (2). Panel A sorts acquirers into young versus old acquirers using the sample median. Panel B sorts acquirers into small versus large acquirers using the sample median. Panel C sorts acquirers based on corporate governance quality, which is the fraction of CEO equity-based pay to total pay. Panel D sorts acquirers based on their scope (single- vs. multi-segment firms). Panel E sorts target firms based on their status (private vs. public target firms). Panel F sorts acquirers into serial versus non-serial acquirers using the definition of Fuller et al. (2002). For brevity, we only report the coefficient estimates on OC. Control variables, 2-digit Standard Industrial Classification (SIC) industry, and year fixed effects are included in all regressions. Definitions of the variables are provided in the Appendix. Heteroskedasticity-consistent standard errors (in parentheses) are clustered at the acquirer level throughout. We also report p -values of Chow tests on whether the coefficient estimates on OC for any two subsamples are the same. *, **, and *** correspond to statistical significance at the 10%, 5%, and 1% levels, respectively.

Variable	CAR(-1, 1)	Δ ROA1	BHAR1	Δ ROA3	BHAR3
	1	2	3	4	5
<i>Panel A. Subsamples Based on Acquirer Age</i>					
OC (YOUNG_ACQUIRERS)	0.296** (0.142)	1.557** (0.648)	5.524*** (1.673)	2.228*** (0.631)	5.838 (4.068)
OC (OLD_ACQUIRERS)	0.213** (0.106)	0.152 (0.387)	-0.298 (1.209)	0.537 (0.357)	3.507 (3.031)
p -value of Chow test: Young-Old	0.638	0.060	0.004	0.017	0.639
<i>Panel B. Subsamples Based on Acquirer Size</i>					
OC (SMALL_ACQUIRERS)	0.351*** (0.109)	1.510*** (0.450)	3.004** (1.205)	2.144*** (0.424)	4.864 (3.118)
OC (LARGE_ACQUIRERS)	-0.086 (0.110)	1.373*** (0.321)	0.805 (1.481)	1.021*** (0.296)	6.724* (3.676)
p -value of Chow test: Small-Large	0.004	0.802	0.245	0.026	0.693
<i>Panel C. Subsamples Based on Acquirer Corporate Governance</i>					
OC (HIGH EQUITY-BASED PAY_ ACQUIRERS)	-0.148 (0.180)	1.909*** (0.517)	5.260** (2.148)	1.915*** (0.512)	14.731*** (5.256)
OC (LOW EQUITY-BASED PAY_ ACQUIRERS)	-0.008 (0.158)	0.191 (0.603)	-3.452 (2.149)	1.552** (0.650)	3.891 (4.965)
p -value of Chow test: High-Low	0.538	0.021	0.002	0.645	0.112
<i>Panel D. Subsamples Based on Acquirer Scope</i>					
OC (SINGLE-SEGMENT_ACQUIRERS)	0.288*** (0.111)	1.683*** (0.451)	2.749** (1.223)	2.145*** (0.450)	5.399 (3.315)
OC (MULTI-SEGMENT_ACQUIRERS)	0.276** (0.138)	1.127* (0.600)	3.195** (1.599)	1.574*** (0.429)	9.377*** (3.459)
p -value of Chow test: Single-Multiple	0.946	0.451	0.822	0.349	0.398
<i>Panel E. Subsamples Based on Target Firm Status</i>					
OC (PRIVATE_TARGETS)	0.351*** (0.115)	1.598*** (0.498)	4.137*** (1.372)	2.186*** (0.503)	9.618*** (3.028)
OC (PUBLIC_TARGETS)	-0.105 (0.214)	0.248 (1.044)	-0.610 (2.404)	1.052* (0.584)	4.208 (5.918)
p -value of Chow test: Private-Public	0.055	0.232	0.075	0.128	0.398
<i>Panel F. Subsamples Based on Acquirer Experience</i>					
OC (SERIAL_ACQUIRERS)	-0.179 (0.194)	1.969 (1.322)	3.052 (4.629)	2.671 (1.932)	32.334** (13.790)
OC (NON-SERIAL_ACQUIRERS)	0.240** (0.093)	1.405*** (0.361)	2.729*** (0.979)	1.809*** (0.320)	5.728** (2.399)
p -value of Chow test: Serial-Non-serial	0.049	0.663	0.942	0.610	0.028

non-serial acquirers given that serial acquirers are quite common over our sample period.

Panel F of Table 5 presents results sorting acquirers into serial versus non-serial acquirers. Following Fuller et al. (2002), an acquirer is a serial acquirer if it completes bids for five or more targets in any 3-year window during the sample period 1984–2014. There are 391 serial acquirers in our sample. We show that acquirer organization capital has positive and significant effects on all five deal outcome variables for non-serial acquirers, while it only has a positive and significant effect on post-merger 3-year buy-and-hold abnormal returns (BHAR3) for serial acquirers. There are a number of reasons for the weak association between serial acquirers' organization capital and deal performance. First, one possibility is that serial acquirers could not effectively apply their organization capital to target firms and/or post-merger integration over a short period of time. Second, it could also be that when serial acquirers have completed so many transactions, their organization capital gets diluted with all the changes. As such, non-serial acquirers might be expected to benefit more from their relatively intact organization capital.

E. The Calendar-Time Portfolio Approach

To address the concern that mergers tend to cluster in time and industry such that cross-correlations among event firms might invalidate the cross-sectional regression approach using buy-and-hold event-time returns (equation (2)), we implement a calendar-time portfolio approach advocated by Fama (1998).

We form equal- and value-weighted portfolios of acquirers for a holding period of 12, 24, or 36 months starting from the month following deal completion. We monthly rebalance the portfolios by dropping acquirers that reach the end of their holding periods and adding acquirers that have just completed a deal. Portfolio abnormal return is then estimated as the intercept of the following time-series regression:

$$(3) \quad R_{p,t} - R_{f,t} = \alpha + \beta_1 \text{MKT}_t + \beta_2 \text{SMB}_t + \beta_3 \text{HML}_t + \beta_4 \text{UMD}_t + \varepsilon_t,$$

where $R_{p,t} - R_{f,t}$ is the monthly excess return of the acquirer portfolio, MKT_t is the monthly market factor, SMB_t is the monthly size factor, HML_t is the monthly BM factor, and UMD_t is the monthly momentum factor. Table IA3 in the Internet Appendix presents the results.

Panel A of Table IA3 reports the regression results for portfolios composed of all acquirers in the sample. Panels B and C report the regression results for portfolios composed of acquirers with the highest (top tercile) and lowest (bottom tercile) amount of organization capital in the sample, respectively. Panel D reports the regression results for zero-cost hedge portfolios with buying high organization-capital acquirers and selling low organization-capital acquirers. We find that although the portfolios of all acquirers do not earn abnormal returns, the high (low) organization-capital acquirer portfolios earn positive (negative) alphas. The hedge portfolios achieve 4-factor alphas of 0.39%–0.54% per month (i.e., 4.7%–6.5% per year), which are statistically significant at the 1% level for all three holding periods examined.

In summary, Tables 2–5 provide strong evidence in support of our two hypotheses that high organization-capital acquirers achieve significantly higher abnormal announcement period returns and better post-acquisition long-run operating and stock performance than do low organization-capital acquirers; they also help assuage some concerns about the noise in the measurement of organization capital.¹⁷ We next try to establish the positive association between acquirer organization capital and deal performance to be causal and explore its underlying mechanisms.

V. Establishing Causality

It is a challenge to establish causality (i.e., whether more organization capital of acquirers leads to better deal performance). For example, there might be omitted firm characteristics that are correlated with both acquirer organization capital and deal performance outcome, leading to a spurious positive association between the two that is not causal. Alternatively, our results could be driven by endogenous selection, whereby some latent variables that drive high organization-capital firms to do a deal, and thus enter our M&A sample, may also be correlated with deal performance. We address these concerns in Section V.

A. The Instrumental Variable Approach

To address the concern of omitted variables that are correlated with both acquirer organization capital and deal performance, we employ the instrumental variable approach to extract the exogenous component of acquirer organization capital and relate it to deal performance. We need instrumental variables that explain firms' investments in organization capital (the relevance condition) but have nothing to do with deal performance (the exclusion restriction).

Our two instrumental variables capture the trade-offs of firms investing in organization capital. Our first instrumental variable is the staggered recognition of the IDD by U.S. state courts (e.g., Hamler (2000), Klasa et al. (2018)). This legal doctrine states that a firm's former employees can be prevented from working at a rival firm if doing so would lead to inevitable disclosures of the firm's trade secrets to its rival. By reducing the risk that a firm's employees will pass along proprietary knowledge and information intrinsic to the firm's competitive edge to competitors, we expect that the adoption of the IDD will encourage firms to invest more in organization capital, while having no association with deal performance.¹⁸

To measure changes in the protection of trade secrets afforded by the IDD, we create an IDD index following Klasa et al. (2018), which relies on

¹⁷Because our measure of organization capital captures long-term investment in SG&A and our results are robust to various depreciation rates, it is unlikely that earnings management incentives, such as timing the expenses, will affect our results.

¹⁸Chen, Gao, and Ma (2017) find that the desire to gain access to human capital is an important driver for M&As using the adoption of the IDD in target firms' states as an exogenous shock. In some sense, Chen et al. offer an alternative explanation for why the adoption of IDD is positively associated with firms' investment in organization capital as these firms are eager to become attractive target firms to earn offer premium. It is worth noting that Chen et al. do not show any performance implications of human capital-driven acquisitions.

state-by-state analyses of case law involving trade secrets to identify the timing of changes in state courts' positions regarding the IDD. For each of the 21 states whose courts adopted the IDD, the IDD index is equal to 1 starting the year a state court recognized the IDD in a precedent-setting case, and if in another precedent-setting case, a state court that previously recognized the IDD subsequently rejected it (there are three such cases: see Klasa et al. (2018)), the index reverts to 0 beginning the year it was rejected. The index is equal to 0 in all other state-years. Hence, our variable construction uses both the 21 adoptions of the IDD by U.S. state courts and the three rejections that reversed adoptions in prior years.

Our second instrumental variable is state-level UI benefits, which captures a firm's strong incentive to invest in organization capital. Eisfeldt and Papanikolaou (2013) argue that losing talent is the key risk of firms investing in organization capital. UI benefits represent an important program for reducing income risk faced by risk-averse employees. Because the risk of future unemployment makes employees' investment in marketable industry- and firm-specific human capital subject to uncertain returns, UI benefits help insure employees' investment in marketable skills and are shown to be positively associated with employees' human capital accumulation decisions (Levhari and Weiss (1974), Brown and Kaufold (1988)). Further, as UI benefits rise, employees lose incentives to "pre-empt" impending layoffs by changing jobs. Light and Omori (2004) show that exogenous increases in UI benefits reduce the probability of job switches to avoid unemployment. Finally, if mobility is costly, employees who are well insured against the risk of unemployment will have a lower incentive to move to regain employment. Hassler et al. (2005) document that geographical mobility is negatively correlated with the generosity of UI benefits. We, thus, expect that firms in states with more generous UI benefits invest more in organization capital because their employees have stronger incentives to accumulate industry- and firm-specific human capital and have a lower turnover risk compared to employees of firms located in states with less generous UI benefits (the relevance condition); UI benefits have no association with deal performance (the exclusion restriction).

The data on state-level UI benefits are from the U.S. Department of Labor's Database on Significant Provisions of State UI Laws from 1970 through 2014.¹⁹ Our measure of state-level UI benefits is the natural logarithm of the product of the maximum benefit amount and the maximum duration allowed (Hassler et al. (2005)).

Following prior literature (e.g., Pirinsky and Wang (2006), Hilary and Hui (2009)), we define a firm's location as the location of its headquarters. As noted by Pirinsky and Wang, this approach seems "reasonable given that corporate headquarters are close to corporate core business activities." Table 6 presents the results.

Column 1 of Table 6 presents the first-stage regression results, where we regress acquirer organization capital on the two instrumental variables (the IDD index and state-level UI benefits) and a set of other firm and deal characteristics to obtain the fitted value of organization capital. The *p*-value of Cragg–Donald's Wald *F* weak-instrument test statistic is 0.000, rejecting the null hypothesis that

¹⁹The data are available at <http://www.dol.gov/general/topic/unemployment-insurance>.

the instruments are weak (Cragg and Donald (1993), Stock and Yogo (2005)). Importantly, consistent with our conjecture, we show that the recognition of the IDD and the provision of UI benefits are positively and significantly associated with acquirers' investment in organization capital.

Columns 2–6 of Table 6 present the second-stage regression results, where we regress different deal performance measures on the fitted value for acquirer organization capital and the same set of control variables as used in the first

TABLE 6
Addressing the Omitted Variables Concern

Table 6 reports the 2-stage least squares (2SLS) regression results to address the omitted variables concern. The instrumental variables in the first stage are the *IDD_INDEX* and *UI_BENEFITS* in a firm's headquarters state. 2-digit Standard Industrial Classification (SIC) industry and year fixed effects are included. Definitions of the variables are provided in the Appendix. Heteroskedasticity-consistent standard errors (in parentheses) are clustered at the acquirer level. *, **, and *** correspond to statistical significance at the 10%, 5%, and 1% levels, respectively.

Variable	1st Stage		2nd Stage			
	OC 1	CAR(-1, 1) 2	Δ ROA1 3	BHAR1 4	Δ ROA3 5	BHAR3 6
OC		-1.129 (1.335)	8.514* (4.429)	30.589** (15.410)	11.015*** (3.841)	12.581 (29.346)
<i>Instrumental Variables</i>						
IDD_INDEX	0.049** (0.025)					
UI_BENEFITS	0.116** (0.050)					
ROA	-0.002* (0.001)	-0.010 (0.009)	-0.131*** (0.046)	0.357*** (0.108)	-0.313*** (0.047)	0.395 (0.277)
M/B	0.006** (0.003)	-0.019 (0.023)	-0.468*** (0.116)	-0.395 (0.307)	-0.499*** (0.132)	0.134 (0.702)
LEVERAGE	-0.439*** (0.060)	2.418*** (0.708)	8.951*** (2.137)	18.478** (7.780)	8.625*** (2.008)	21.133 (17.494)
PAST_RETURN	-0.000*** (0.000)	0.001 (0.001)	-0.005 (0.004)	-0.007 (0.011)	-0.009* (0.005)	-0.025 (0.023)
TOP5_INSTITUTIONS	0.100 (0.100)	-1.741*** (0.604)	7.888*** (2.243)	11.133 (7.992)	7.162*** (2.318)	-15.971 (19.381)
FIRM_SIZE	-0.143*** (0.008)	-0.617*** (0.194)	2.384*** (0.657)	4.325* (2.280)	2.469*** (0.495)	3.400 (3.716)
ALL_CASH	0.019 (0.018)	0.561*** (0.137)	0.559 (0.476)	0.586 (1.884)	0.443 (0.541)	1.348 (4.641)
ALL_STOCK	-0.012 (0.024)	0.031 (0.202)	-3.411*** (0.816)	-4.566* (2.433)	-1.688** (0.848)	3.745 (5.923)
DIVERSIFYING	0.054*** (0.018)	0.020 (0.154)	-0.874* (0.531)	-2.762 (1.876)	-0.427 (0.520)	-5.363 (4.189)
TENDER_OFFER	0.076* (0.040)	1.222*** (0.332)	-0.826 (0.903)	-3.976 (4.301)	-1.481 (1.064)	-30.134*** (9.860)
RELATIVE_SIZE	0.044*** (0.016)	0.929*** (0.185)	-2.118*** (0.653)	-3.900** (1.752)	-1.736*** (0.627)	-1.723 (4.138)
PRIVATE_TARGET	-0.103*** (0.021)	2.087*** (0.236)	-0.175 (0.766)	-1.059 (2.695)	-0.182 (0.699)	-6.002 (5.955)
SUBSIDIARY_TARGET	-0.086*** (0.022)	2.615*** (0.238)	-0.105 (0.719)	-1.300 (2.620)	0.575 (0.705)	-7.674 (6.158)
INDUSTRY_FE and YEAR_FE	Yes	Yes	Yes	Yes	Yes	Yes
INTERCEPT	Yes	Yes	Yes	Yes	Yes	Yes
p -value of Cragg–Donald's Wald F -test for weak instruments	0.000					
p -value of Sargan overidentification test		0.825	0.578	0.949	0.353	0.822
No. of obs.	17,285	17,285	8,454	8,454	4,490	4,490
Adj. R^2	0.328	0.052	0.117	0.008	0.169	0.002

stage.²⁰ The p -values of Hansen's J overidentification test statistic are very large across all regressions, indicating valid instruments that are uncorrelated with the error term (Hansen (1982)).²¹ Importantly, we show that the instrumented measure of acquirer organization capital is positively and significantly associated with three of the four post-merger firm performance measures.

B. A Quasi-Natural Experiment

To address the endogenous selection concern, we employ a quasi-natural experiment involving a sample of acquirers with bids that failed for reasons unrelated to firm performance (i.e., the control group) and a sample of acquirers with completed deals matched on pre-bid performance measures (i.e., the treatment group).²² In this case, we can argue that the assignment of an acquirer into the treatment group is random and we can difference out any selection concerns by comparing the performance of firms in the treatment group pre- and post-merger with that in the control group.

To form the control sample, we begin with 1,075 withdrawn bids with necessary firm-level information in Compustat/CRSP announced over the period 1984–2014. We then read news articles in LexisNexis and Factiva for each withdrawn bid, excluding those bids that may have failed due to the performance of either merger partner, including disagreement over growth strategy, restructuring, valuation, news of negative developments, and bids where the reason for failure cannot be determined or that were expected to fail. We arrive at a sample of 389 withdrawn bids due to reasons exogenous to firm performance, including competing bids, objections by regulatory bodies, and adverse macroeconomic shocks or market conditions.

Panel A of Table 7 provides the detailed steps taken to form the final control sample involving acquirers with withdrawn bids, matched with acquirers with completed deals by the acquirer/target firm industry (at the 2-digit SIC level), and similar industry-adjusted ROA and stock return performance in the 3-year period prior to the bid. We end up with a control sample of 160 withdrawn bids (92 bids that failed due to competing bids, 46 due to objections by regulatory bodies, and 22 due to adverse market conditions), matched with a treatment sample of 160 completed deals with the closest acquirer size.

To further ensure that the deal completion decision (hence, the formation of our control and treatment samples) is exogenous to any observable firm characteristics, in Panel B of Table 7, we run a probit regression, where the dependent

²⁰ Given that the 2-stage estimator is biased and inefficient but consistent (Wooldridge (2006)), it is not surprising that the coefficient on OC is much larger than, but has similar levels of significance as, the coefficient estimate on the un-instrumented OC in Table 3.

²¹ Note that there are two instrumental variables for acquirer organization capital, allowing us to employ formal statistical tests (e.g., Hansen's (1982) J overidentification test and Sargan's (1958) overidentification test) to determine whether the instruments pass the exclusion restriction. Hansen's J overidentification test statistic is reported with robust and/or clustered standard errors. For the 2-stage least squares (2SLS) estimator without robust or clustered standard errors, the overidentification test statistic is Sargan's statistic (Sargan (1958)), which is calculated as the product of the number of observations and the R^2 from a regression of the residuals on the full set of instruments. The untabulated p -values of Sargan's overidentification test statistic are, again, very large across all regressions, suggesting valid instruments.

²² See Li and Prabhala (2007) for an overview of self-selection in corporate decisions.

variable is an indicator variable, COMPLETION, that takes a value of 1 if the firm-year observation belongs to the treatment sample, and 0 otherwise. In column 1, we use 3 years of data prior to the bid announcement and show that only firm size has some negative and significant predictive ability in the likelihood of deal completion. In column 2, we use firm characteristics as of the fiscal year-end prior to the bid announcement to explain deal completion. We also add the pre-bid 3-year average change in operating performance (ROA) as an explanatory variable. We find that none of the firm characteristics in the year prior to the bid announcement is associated with the likelihood of deal completion.

TABLE 7
Addressing Endogenous Selection: A Quasi-Natural Experiment

Table 7 reports the treatment effect of a merger deal on post-merger acquirer performance outcome. Panel A provides the steps taken to form the sample of control deals involving failed bids for reasons exogenous to firm performance. Panel B presents coefficient estimates from probit regressions relating pre-bid acquirer characteristics to the likelihood of deal completion. The dependent variable is the completion indicator variable. Panel C presents coefficient estimates from ordinary least squares (OLS) regressions using a panel data set that has, for each deal in the treatment sample (i.e., completed deals) and the control sample (i.e., failed bids), observations running from 3 years prior to bid announcement to 3 years after deal completion/withdrawal. The dependent variable is either ROA or buy-and-hold stock return (BHR) in each year. Columns 1 and 2 present results from the difference-in-differences specification. Columns 3–6 separate the sample into high versus low organization-capital acquirers using Compustat terciles as the cutoffs. Columns 7 and 8 present results from the difference-in-difference-in-differences specification. Definitions of the variables are provided in the Appendix. Heteroskedasticity-consistent standard errors (in parentheses) are clustered at the acquirer level. *, **, and *** correspond to statistical significance at the 10%, 5%, and 1% levels, respectively.

Panel A. Control Sample Construction

Withdrawn due to competing bids, regulatory objections, or adverse market conditions	389
Acquirer completed a deal in the same year with another target firm in the same industry as the target in the withdrawn deal	-61
Not enough years of observation surrounding the withdrawal	-116
Matching on the acquirer industry (at the 2-digit SIC level)	-5
Matching on the target firm industry (at the 2-digit SIC level)	-17
Matching on pre-bid industry-adjusted 3-year average ROA and buy-and-hold return terciles	-30
Final failed merger bid sample	160

Panel B. Explaining Deal Completion

Variable	COMPLETION	
	1	2
OC	0.028 (0.107)	0.094 (0.094)
ROA	-0.007 (0.010)	0.001 (0.026)
M/B	-0.047 (0.045)	-0.035 (0.047)
LEVERAGE	-0.235 (0.471)	-0.271 (0.438)
PAST_RETURN	0.000 (0.001)	-0.001 (0.002)
TOP5_INSTITUTIONS	0.006 (0.007)	0.006 (0.007)
FIRM_SIZE	-0.100** (0.048)	-0.075 (0.061)
AVERAGE_ROA_GROWTH_IN_THE_PAST_THREE_YEARS		0.004 (0.027)
INDUSTRY_FE and YEAR_FE	Yes	Yes
INTERCEPT	Yes	Yes
No. of obs.	960	320
Pseudo-R ²	0.081	0.124

(continued on next page)

TABLE 7 (continued)
Addressing Endogenous Selection: A Quasi-Natural Experiment

Panel C. The Difference-in-Differences Regressions

Variable	Full Sample		High OC Acquirers		Low OC Acquirers		Full Sample	
	ROA 1	BHR 2	ROA 3	BHR 4	ROA 5	BHR 6	ROA 7	BHR 8
TREAT	-0.269 (0.742)	-4.754 (6.749)	-3.774** (1.562)	6.499 (9.026)	-0.153 (0.587)	-4.731 (6.116)	0.331 (1.034)	-8.344 (8.545)
AFTER	-1.965*** (0.607)	-11.902** (4.815)	-2.073 (2.316)	-26.251* (13.451)	-0.997** (0.495)	-6.597 (4.653)	-0.810 (0.672)	-8.852* (5.190)
TREAT × AFTER	1.318** (0.648)	4.170 (4.591)	4.108* (2.119)	25.985** (12.366)	1.000* (0.600)	-6.369 (5.992)	-0.849 (1.070)	5.257 (7.388)
OC							1.451 (1.054)	6.412 (6.777)
OC × TREAT							0.111 (0.827)	-3.245 (5.659)
OC × AFTER							-1.465* (0.841)	-3.578 (3.987)
OC × TREAT × AFTER							1.568* (0.934)	10.501** (5.119)
ROA	0.221*** (0.055)	0.222 (0.306)	0.273 (0.180)	0.121 (0.588)	0.236*** (0.085)	0.498 (0.614)	0.222*** (0.052)	0.270 (0.313)
M/B	0.081 (0.241)	-5.793*** (1.134)	0.369 (0.534)	-3.275 (2.467)	0.046 (0.355)	-8.463*** (2.039)	0.098 (0.228)	-5.889*** (1.173)
LEVERAGE	-2.477 (1.698)	71.360*** (14.305)	-6.242 (3.843)	49.843 (47.188)	-3.883 (2.389)	64.589*** (22.912)	-2.351 (1.706)	74.153*** (14.063)
PAST_RETURN	0.013*** (0.005)	-0.084** (0.036)	-0.007 (0.015)	-0.222** (0.094)	0.013*** (0.004)	-0.071 (0.055)	0.013*** (0.005)	-0.083** (0.036)
TOP5_INSTITUTIONS	-0.049* (0.029)	-0.239 (0.222)	-0.014 (0.078)	-0.644 (0.641)	-0.006 (0.029)	-0.256 (0.324)	-0.047 (0.030)	-0.274 (0.227)
FIRM_SIZE	-1.761*** (0.566)	-31.185*** (4.752)	-1.902 (1.916)	-29.964* (16.154)	-1.541** (0.590)	-24.521*** (5.590)	-1.626*** (0.588)	-26.997*** (5.056)
YEAR_FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
FIRM_FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
INTERCEPT	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
No. of obs.	1,920	1,920	312	312	762	762	1,920	1,920
Adj. R ²	0.612	0.370	0.618	0.346	0.646	0.477	0.535	0.243

We then estimate the standard difference-in-differences regression to exploit within-firm variation, using a panel data set containing information on deals in the treatment and control samples from 3 years prior to bid announcement to 3 years after deal completion/withdrawal (excluding the bid announcement year):

$$(4) \text{ DEAL_PERFORMANCE}_{i,t} = \alpha + \beta_1 \text{TREAT}_{i,t} + \beta_2 \text{AFTER}_{i,t} + \beta_3 \text{TREAT}_{i,t} \times \text{AFTER}_{i,t} + \text{OTHER_ACQUIRER_CONTROLS} + \text{YEAR_FE} + \text{FIRM_FE} + e_{it}.$$

The dependent variable, $\text{DEAL_PERFORMANCE}_{i,t}$, is either ROA or buy-and-hold annual return (BHR) of acquirer i in each year t .²³ $\text{TREAT}_{i,t}$ is an indicator variable equal to 1 for completed deals, and 0 otherwise (i.e., for withdrawn bids). $\text{AFTER}_{i,t}$ is an indicator variable equal to 1 for the post-merger time period, and 0 otherwise. The coefficient on the 2-way interaction term $\text{TREAT}_{i,t} \times \text{AFTER}_{i,t}$

²³Ideally, we would like to obtain direct evidence on changes taking place in target firms, but data limitation prevents us from doing so because separate financial reporting on target firms after deal consummation is unavailable.

captures the treatment effect of a completed merger on deal performance. We include year fixed effects to remove a common trend affecting deals in both the treatment and control samples. We also include firm fixed effects to estimate the within-firm differences over time in firm performance for the same set of acquirers (Wooldridge (2006)). Columns 1–2 of Panel C in Table 7 present the results.

We find that after deal completion (withdrawal), both ROA and buy-and-hold return decline. However, the coefficients on the 2-way interaction term are positive and the coefficient is positive and significant at the 5% level when the dependent variable is ROA, suggesting some treatment effects of completed mergers on deal performance.

We next examine whether and how the improvement in treatment sample performance varies across acquirers with different amounts of organization capital. We first present the difference-in-differences regression results in columns 3–6 of Table 7 by separating the treatment and control samples into high (top tercile) and low (bottom tercile) organization-capital acquirers using Compustat terciles as the cutoffs.²⁴ We find that for the high organization-capital acquirer subsample, the coefficients on the 2-way interaction term $TREAT_{i,t} \times AFTER_{i,t}$ are positive and significant at the 10% level or lower, whereas for the low organization-capital acquirer subsample, the coefficient on the 2-way interaction term is positive and significant at the 10% level only when the dependent variable is ROA. The difference in ROA between the high and low organization-capital acquirers is significant at the 10% level and the difference in BHR is significant at the 1% level, suggestive of a heterogeneous treatment effect of completed mergers by acquirer organization capital.

To further explore heterogeneity, we then estimate an expanded difference-in-differences regression with triple interaction terms (i.e., difference-in-difference-in-differences specification):

$$\begin{aligned}
 (5) \quad DEAL_PERFORMANCE_{i,t} &= \alpha + \beta_1 ACQUIRER_OC_{i,t-1} \\
 &+ \beta_2 TREAT_{i,t} + \beta_3 AFTER_{i,t} + \beta_4 ACQUIRER_OC_{i,t-1} \times TREAT_{i,t} \\
 &+ \beta_5 TREAT_{i,t} \times AFTER_{i,t} + \beta_6 ACQUIRER_OC_{i,t-1} \times AFTER_{i,t} \\
 &+ \beta_7 ACQUIRER_OC_{i,t-1} \times TREAT_{i,t} \times AFTER_{i,t} \\
 &+ OTHER_ACQUIRER_CONTROLS \\
 &+ YEAR_FE + FIRM_FE + e_{it}.
 \end{aligned}$$

Our variable of interest is the 3-way interaction term, $ACQUIRER_OC_{i,t-1} \times TREAT_{i,t} \times AFTER_{i,t}$, which captures the heterogeneous treatment effect of a completed merger by high organization-capital acquirers versus by low organization-capital acquirers on their deal performance variables (compared to that of the control sample). Columns 7 and 8 of Table 7 present the results.

We find that the coefficients on the 3-way interaction term $ACQUIRER_OC_{i,t-1} \times TREAT_{i,t} \times AFTER_{i,t}$ are positive and significant at the 10% level or

²⁴It is worth noting that using the within-sample terciles as the cutoffs does not change our main findings.

lower, suggesting heterogeneous treatment effects of completed mergers on deal performance by acquirer organization capital.²⁵

In summary, after using different approaches to address endogeneity concerns and establish causality, we conclude that the relation between pre-acquisition acquirer organization capital and deal performance is likely to be causal.

VI. The Underlying Mechanisms

To shed light on the mechanisms underlying high organization-capital acquirers' superior deal performance, we examine post-merger cost and efficiency changes associated with high organization-capital acquirers compared to those associated with low organization-capital acquirers. Evenson and Westphal (1995) argue that a firm's organization capital relates to its operating capabilities, investment capabilities, and innovation capabilities; we, thus, expect that high organization-capital acquirers, relative to low organization-capital ones, will be associated with greater post-merger improvements in cost structure and innovative efficiency.

The cost measures that we examine are the cost of goods sold and SG&A expenses, both normalized by net sales and measured in percentage points. The efficiency measures are asset turnover and innovative efficiency. The former is the natural logarithm of the number of times a firm's assets are turned over during a fiscal year (i.e., net sales divided by average total assets). The latter is the natural logarithm of 1 plus the ratio of the patent count to R&D capital, following Hirschleifer et al. (2013). Patent data are obtained from the NBER Patent Database. We run multivariate regressions similar to the specification in equation (2) with a number of modifications: i) the dependent variable is the post-merger 1- or 3-year change in the cost or efficiency variable; ii) the lagged (i.e., pre-merger) level of the dependent variable is included as an explanatory variable to control for potential mean reversion; and iii) only firm-level controls are included (i.e., there is no deal-level control). Table 8 presents the results.

We find that high organization-capital acquirers significantly cut more on the cost of goods sold, while they significantly invest more in SG&A expenses, than low organization-capital acquirers, using either post-merger performance window. This is an interesting finding, as it suggests that one major source of M&A synergies by high organization-capital acquirers is more drastic cost-cutting in the cost of goods sold (which leads to an improvement in the gross profit

²⁵To provide further support to our difference-in-differences analysis, we conduct a falsification test following Roberts and Whited (2013). In this test, we want to show that had we moved deal completion (i.e., the treatment) to 3 years before it actually took place (given that this is a false treatment), there would have been no significant treatment effects of deal completion on post-merger firm performance, providing further evidence in support of a causal relation between deal completion and post-merger firm performance. Table IA4 in the Internet Appendix presents the results using a 6-year panel data set from 3 years prior to the pseudo deal completion to 3 years after. We find little treatment effects of deal completion on performance (columns 1–6) and no heterogeneous treatment effects by acquirer organization capital (columns 7 and 8), suggesting that the observed performance improvement is more likely to be causal, as opposed to due to endogenous selection.

TABLE 8
Post-Merger Changes in Cost and Efficiency Measures

Table 8 examines post-merger acquirer cost and efficiency changes. The sample consists of 17,910 completed M&A transactions between 1984 and 2014 from the Thomson One Banker SDC database. In Panel A, the dependent variables are computed as the level of a cost/efficiency measure (i.e., COGS, SG&A, ASSET_TURNOVER, and INNOVATIVE_EFFICIENCY) in the first year after deal completion minus the level of the same measure in the last year before deal announcement; we require no confounding deal in the first year after deal completion for the analysis in this panel. When Δ INNOVATIVE_EFFICIENCY1 is the dependent variable, we further require the acquirer to have a non-zero value of pre-merger innovative efficiency. In Panel B, the dependent variables are computed as the average level of a cost/efficiency measure in the 3 years after deal completion minus the level of the same measure in the last year before deal announcement; we require no confounding deal in the first 3 years after deal completion for the analysis in this panel. When Δ INNOVATIVE_EFFICIENCY3 is the dependent variable, we further require the acquirer to have a non-zero value of pre-merger innovative efficiency. For brevity, we only report the coefficient estimates on OC. Other control variables include the respective pre-acquisition cost/efficiency measure, ROA, M/B, LEVERAGE, PAST_RETURN, TOP5_INSTITUTIONS, FIRM_SIZE, and 2-digit Standard Industrial Classification (SIC) industry and year fixed effects. Definitions of the variables are provided in the [Appendix](#). Heteroskedasticity-consistent standard errors (in parentheses) are clustered at the acquirer level. *, **, and *** correspond to statistical significance at the 10%, 5%, and 1% levels, respectively.

Panel A. Post-Merger 1-Year Changes in Cost and Efficiency Measures

Variable	Δ COGS1	Δ SG&A1	Δ ASSET_TURNOVER1	Δ INNOVATIVE_EFFICIENCY1
	1	2	5	6
OC	-0.903*** (0.233)	2.090*** (0.291)	0.018*** (0.006)	0.008* (0.004)
CONTROL_VARIABLES	Yes	Yes	Yes	Yes
INDUSTRY_FE and YEAR_FE	Yes	Yes	Yes	Yes
INTERCEPT	Yes	Yes	Yes	Yes
No. of obs.	8,016	8,017	7,970	1,199
Adj. R^2	0.147	0.416	0.254	0.465

Panel B. Post-Merger 3-Year Changes in Cost and Efficiency Measures

Variable	Δ COGS3	Δ SG&A3	Δ ASSET_TURNOVER3	Δ INNOVATIVE_EFFICIENCY3
	1	2	5	6
OC	-1.272*** (0.306)	0.981** (0.391)	0.022*** (0.008)	0.011*** (0.004)
CONTROL_VARIABLES	Yes	Yes	Yes	Yes
INDUSTRY_FE and YEAR_FE	Yes	Yes	Yes	Yes
INTERCEPT	Yes	Yes	Yes	Yes
No. of obs.	4,161	4,162	4,143	680
Adj. R^2	0.153	0.416	0.293	0.702

margin). Interestingly, we also show that while cutting the cost of goods sold, high organization-capital acquirers continue to increase investment significantly in organization capital via greater SG&A expenses than their low organization-capital counterparts. In terms of efficiency measures, high organization-capital acquirers experience significantly greater improvement in asset turnover and innovative efficiency than their low organization-capital counterparts. The evidence in Table 8 suggests that the significantly better post-merger performance associated with high organization-capital acquirers is at least partly driven by their greater cost-cutting effort, investment in organization capital, and improvement in operational and innovative efficiency, supporting a causal interpretation.

VII. Additional Investigation: Target Organization Capital

So far, we have shown that M&As are a channel through which acquirer organization capital fosters value creation. It is natural to ask what the role is of

target organization capital in deal performance.²⁶ On the one hand, by its very nature, more organization capital from either side of the deal could be helpful for value creation; so, target organization capital could be positively associated with deal performance. On the other hand, if the target firm has more organization capital while the acquirer is leading post-merger integration, it could lead to culture clashes and be harmful for value creation in M&As; so, target organization capital may not be positively associated with deal performance. We examine this important question by assembling one of the largest data sets on target firms.

Among our sample of M&A deals, there are 2,366 deals with financial information available for public target firms. We then collect financial information on private target firms in our sample from Capital IQ through manually matching the private target firms with Capital IQ firms based on firm name, industry, and state of incorporation.²⁷ We end up with 719 deals with financial information for private target firms. To use public parent financial information for a subsidiary target firm, we impose a requirement that the transaction value of the deal be greater than 10% of public parent total assets.²⁸ We end up with 1,040 deals with financial information for subsidiary target firms. In the end, we have financial information for a sample of 4,125 target firms, representing one of the largest samples on target firms in the literature.²⁹

Table 9 presents the results. In Panel A, we expand the regression specification in equation (2) by adding target organization capital and target ROA. Based on a much smaller sample than our main sample due to data availability for target firms, we show that acquirer organization capital is positively associated with all five deal performance measures and is positively and significantly associated with two measures of post-merger long-run performance at the 5% level or lower. Importantly, we show that target organization capital is not significantly associated with any deal performance measures. In Panel B, we expand the regression specification in equation (2) by adding the gap between acquirer and target organization capital and target ROA. We show that the gap between acquirer and target organization capital is positively associated with all five deal performance measures and

²⁶We thank the referee for suggesting this analysis.

²⁷The data on private firms in Capital IQ are based on mandatory disclosure requirements of the U.S. Securities and Exchange Commission (SEC) for private firms with more than 500 shareholders and more than \$10 million in total assets (Gao, Harford, and Li (2013), (2017)).

²⁸It is worth noting that using no filter or 20% of public parent total assets as the cutoff does not change our main findings. See Table IA5 in the Internet Appendix.

²⁹Officer (2007) examines acquisition discounts for private and subsidiary targets based on a sample of 364 private targets and 643 subsidiary targets with valuation multiples from SDC. Cooney, Moeller, and Stegemoller (2009) employ a sample of 68 private targets that filed with the SEC for initial public offerings (IPOs) to examine acquisitions of private firms with valuation histories. Officer, Poulsen, and Stegemoller (2009) study the role of target information asymmetry in acquirer returns based on a sample of 735 private targets with 8-K and S-4 filings (due to all stock-swap transactions). Jaffe, Jindra, Pedersen, and Voetmann (2015) employ a sample of 835 subsidiary targets to study returns to acquirers of public and subsidiary targets. It is worth noting that our approach may be subject to sample selection (Capital IQ only has information on large private target firms) and measurement error (we use public parent firms to proxy for their large subsidiaries), and we advise readers to interpret our findings with the previous caveat in mind.

is positively and significantly associated with three measures of deal performance at the 5% level or lower.³⁰

In summary, our results in Table 9 show that target organization capital does not appear to matter for deal performance, whereas the gap between acquirer and target organization capital drives deal performance. The latter is an important finding because it implies that when the gap is high, these are the cases where the acquirer can influence or improve target performance the most. Alternatively,

TABLE 9
Target Organization Capital and Deal Performance

Table 9 examines the relation between acquirer organization capital, target organization capital, and deal performance. The sample is a subsample of our M&A sample where we have information on 2,366 public, 719 private, and 1,040 subsidiary target firms. To use public parent financial information for a subsidiary target firm, we impose a requirement that the transaction value of the deal be greater than 10% of public parent total assets. Panel A examines the role of target organization capital in deal performance. Panel B examines the role of the gap between acquirer organization capital and target organization capital in deal performance. 2-digit Standard Industrial Classification (SIC) industry and year fixed effects are included. Definitions of the variables are provided in the Appendix. Heteroskedasticity-consistent standard errors (in parentheses) are clustered at the acquirer level. *, **, and *** correspond to statistical significance at the 10%, 5%, and 1% levels, respectively.

Panel A. Including Target Organization Capital

Dependent Variable	CAR(-1, 1)	ΔROA1	BHAR1	ΔROA3	BHAR3
	1	2	3	4	5
OC	0.176 (0.89)	1.270 (1.58)	2.624 (1.32)	2.169*** (3.93)	10.949** (2.45)
ROA	-0.017 (-0.80)	-0.287** (-2.50)	0.154 (0.67)	-0.508*** (-6.52)	-0.003 (-0.01)
M/B	-0.046 (-1.05)	-0.282 (-1.42)	-0.078 (-0.16)	-0.402** (-2.08)	0.245 (0.31)
LEVERAGE	3.176*** (3.56)	1.654 (0.81)	5.108 (0.54)	1.059 (0.57)	6.623 (0.25)
PAST_RETURN	0.001 (0.66)	-0.020* (-1.82)	-0.013 (-0.79)	-0.009 (-1.09)	-0.074 (-1.60)
TOP5_INSTITUTIONS	-3.140** (-2.25)	9.015** (2.37)	-5.843 (-0.38)	11.434*** (3.15)	3.795 (0.10)
FIRM_SIZE	-0.492*** (-5.74)	1.321*** (5.10)	-0.322 (-0.34)	1.278*** (5.71)	2.812 (1.22)
ALL_CASH	1.343*** (4.42)	1.452* (1.94)	7.048** (2.18)	1.670** (2.26)	14.180 (1.64)
ALL_STOCK	-0.335 (-0.94)	-2.007** (-1.97)	1.566 (0.41)	0.581 (0.58)	21.513** (2.10)
DIVERSIFYING	-0.262 (-0.91)	-1.341 (-1.46)	-1.290 (-0.40)	0.195 (0.24)	-2.306 (-0.28)
TENDER_OFFER	0.812** (2.21)	0.495 (0.51)	-1.558 (-0.34)	-0.056 (-0.07)	-29.983** (-2.57)
RELATIVE_SIZE	-0.087 (-0.33)	-1.848** (-2.42)	-6.544*** (-2.71)	-1.707*** (-2.68)	0.665 (0.12)
PRIVATE_TARGET	2.668*** (5.54)	2.047 (1.52)	3.678 (0.71)	-0.239 (-0.16)	-2.690 (-0.21)
SUBSIDIARY_TARGET	2.489*** (6.28)	0.323 (0.28)	-5.502 (-1.39)	1.334 (1.34)	-3.341 (-0.30)
TARGET_OC	-0.154 (-1.46)	-0.460 (-1.04)	-1.082 (-0.97)	-0.327 (-0.73)	1.959 (0.62)
TARGET_ROA	-0.007 (-1.01)	0.048 (1.42)	0.025 (0.38)	0.050 (1.59)	-0.401* (-1.76)
INDUSTRY_FE and YEAR_FE INTERCEPT	Yes Yes	Yes Yes	Yes Yes	Yes Yes	Yes Yes
No. of obs.	4,125	2,230	2,230	1,192	1,192
Adj. R ²	0.081	0.125	0.016	0.254	0.031

(continued on next page)

³⁰Panel A of Table IA5 in the Internet Appendix shows that our main findings remain unchanged when we use the ratio of acquirer organization capital to target organization capital to capture the differential effect of organization capital from acquirers and targets.

TABLE 9 (continued)
Target Organization Capital and Deal Performance

Panel B. Including the Gap between Acquirer Organization Capital and Target Organization Capital

Variable	CAR(-1, 1) 1	Δ ROA1 2	BHAR1 3	Δ ROA3 4	BHAR3 5
OC_GAP	0.147** (1.97)	0.857*** (2.63)	0.757 (1.08)	1.022** (2.52)	2.162 (1.02)
ROA	-0.018 (-0.81)	-0.292** (-2.51)	0.142 (0.62)	-0.518*** (-6.53)	-0.075 (-0.12)
M/B	-0.046 (-1.04)	-0.261 (-1.34)	-0.044 (-0.09)	-0.344* (-1.76)	0.591 (0.74)
LEVERAGE	3.155*** (3.57)	1.456 (0.73)	1.451 (0.44)	0.440 (0.24)	1.664 (0.06)
PAST_RETURN	0.001 (0.65)	-0.020* (-1.86)	-0.014 (-0.85)	-0.009 (-1.16)	-0.074* (-1.69)
TOP5_INSTITUTIONS	-3.139** (-2.25)	9.018** (2.38)	-5.845 (-0.38)	11.392*** (3.09)	5.171 (0.14)
FIRM_SIZE	-0.500*** (-5.73)	1.200*** (4.77)	-0.464 (-0.49)	1.120*** (5.27)	1.773 (0.76)
ALL_CASH	1.336*** (4.40)	1.473** (1.98)	6.998** (2.17)	1.749** (2.41)	14.534* (1.67)
ALL_STOCK	-0.330 (-0.93)	-1.890* (-1.84)	1.715 (0.45)	0.678 (0.67)	22.080** (2.14)
DIVERSIFYING	-0.260 (-0.90)	-1.344 (-1.46)	-1.149 (-0.36)	0.249 (0.31)	-1.743 (-0.21)
TENDER_OFFER	0.819** (2.22)	0.562 (0.58)	-1.492 (-0.33)	0.201 (0.24)	-28.324** (-2.44)
RELATIVE_SIZE	-0.089 (-0.33)	-1.909** (-2.51)	-6.453*** (-2.69)	-1.819*** (-2.83)	0.133 (0.02)
PRIVATE_TARGET	2.676*** (5.58)	2.188 (1.64)	3.936 (0.76)	-0.082 (-0.06)	-2.194 (-0.17)
SUBSIDIARY_TARGET	2.484*** (6.28)	0.278 (0.25)	-5.348 (-1.35)	1.371 (1.39)	-2.877 (-0.26)
TARGET_ROA	-0.008 (-1.11)	0.038 (1.17)	0.028 (0.44)	0.037 (1.25)	-0.453** (-1.97)
INDUSTRY_FE and YEAR_FE INTERCEPT	Yes Yes	Yes Yes	Yes Yes	Yes Yes	Yes Yes
No. of obs.	4,125	2,230	2,230	1,192	1,192
Adj. R^2	0.082	0.129	0.016	0.250	0.027

when the gap is high, these might be the cases in which there is less cultural resistance post-merger. Overall, our results support the proposition that it is acquirer organization capital that matters in deal performance. We leave the question of whether and how acquirers make use of target organization capital for future research.

VIII. Conclusions

Using a large and comprehensive sample of completed U.S. M&A transactions over the period 1984–2014, we find that acquirer organization capital as measured by capitalized SG&A expenses is associated with superior deal performance. We first show that high organization-capital acquirers achieve significantly higher abnormal announcement period returns, and better post-merger operating and stock performance, than low organization-capital acquirers. Additional tests suggest a causal relation between acquirer organization capital and deal performance. In terms of underlying mechanisms, we show that post-merger, high organization-capital acquirers cut more on the cost of goods sold, invest more in SG&A expenses, and achieve greater asset turnover and innovative efficiency.

Finally, we show that target organization capital does not appear to matter for deal performance. We conclude that M&As are a channel through which acquirer organization capital fosters value creation.

Future research is called for to examine whether and how acquirer organization capital interacts with other mechanisms, such as product market competition and corporate governance practices, in determining takeover outcomes.

Appendix. Variable Definitions

All firm characteristics are measured as of the fiscal year-end before the bid announcement, and all continuous variables are winsorized at the 1st and 99th percentiles. All dollar values are in 2014 dollars.

OC: Organization capital scaled by total assets, constructed using SG&A expenses and the perpetual inventory method following Eisfeldt and Papanikolaou (2013). For a firm in Compustat, starting from the first year with non-missing SG&A expenses, we recursively construct the stock of organization capital by cumulating the CPI-deflated value of SG&A expenses using a depreciation rate of 15%. The initial stock of organization capital is calculated with an industry- and decade-specific real growth rate of SG&A expenses.

CAR(-1, 1): Cumulative abnormal return (in percentage points) of the acquirer from 1 day before to 1 day after the deal announcement date. Abnormal return is calculated by subtracting the CRSP value-weighted market return from the stock return of the acquirer.

Δ ROA1: Return on assets (in percentage points) of the acquirer in year $c + 1$ minus return on assets of the acquirer in year $a - 1$. Year c is the year of deal completion. Year a is the year of deal announcement. To compute the variable, the acquirer must not complete any confounding deal with a transaction value greater than 1% of the acquirer's total assets within 1 year after deal completion.

BHAR1(3): 1-year (3-year) buy-and-hold abnormal stock return (in percentage points) of the acquirer after deal completion constructed following Lyon, Barber, and Tsai (1999) and Chen et al. (2007). Specifically, we first sort the NYSE/NASDAQ/AMEX firms each month into NYSE size deciles and then further partition the bottom decile into quintiles, producing 14 total size groups. We simultaneously sort firms into BM deciles. After determining which of the 140 (14 size \times 10 BM) groups the acquirer is in at the month-end prior to deal completion, we choose from that group the control firm that is the closest match on prior year stock return and is not involved in any significant acquisition activity in the prior year (3 years). 1-year (3-year) buy-and-hold return (starting from the month after deal completion) is then calculated for the acquirer and the control firm. Finally, the 1-year (3-year) buy-and-hold abnormal return is the difference between the acquirer return and the corresponding contemporaneous control firm return. To compute the variable, the acquirer must not complete any confounding deal with a transaction value greater than 1% of the acquirer's total assets within 1 year (3 years) after deal completion.

Δ ROA3: Average return on assets (in percentage points) of the acquirer from year $c + 1$ to year $c + 3$ minus return on assets of the acquirer in year $a - 1$. To compute the variable, the acquirer must not complete any confounding deal with a transaction value greater than 1% of the acquirer's total assets within the 3 years after deal completion.

ROA: Income before extraordinary items scaled by total assets (in percentage points).

M/B: Market value of equity divided by book value of equity.

- LEVERAGE:** Book value of debt divided by the sum of book value of debt and market value of equity.
- SALES_GROWTH:** $(\text{Sales in year } t - \text{Sales in year } t-1) / \text{Sales in year } t - 1$.
- PAST_RETURN:** Buy-and-hold stock return (in percentage points) in the year prior to deal announcement.
- TOP5_INSTITUTIONS:** The fraction of shares outstanding held by the 5 largest institutional investors prior to deal announcement.
- CASH_HOLDINGS:** Cash and short-term investment scaled by total assets.
- FIRM_SIZE:** Natural logarithm of total assets.
- ALL_CASH:** An indicator variable that takes the value of 1 if the bid involves only cash payment to the target shareholders, and 0 otherwise.
- ALL_STOCK:** An indicator variable that takes the value of 1 if the bid involves only stock swap with the target shareholders, and 0 otherwise.
- DIVERSIFYING:** An indicator variable that takes the value of 1 if the acquirer is not from the same 2-digit SIC industry as the target firm, and 0 otherwise.
- TENDER_OFFER:** An indicator variable that takes the value of 1 if the bid is a tender offer made to the target shareholders, and 0 otherwise.
- RELATIVE_SIZE:** The ratio of deal transaction value to the acquirer's total assets.
- PRIVATE_TARGET:** An indicator variable that takes the value of 1 if the target firm is privately held, and 0 otherwise.
- SUBSIDIARY_TARGET:** An indicator variable that takes the value of 1 if the target firm is a subsidiary, and 0 otherwise.
- OC_RANK:** The annual decile rank of a firm's organization capital based on the Compustat universe.
- IND_ADJ_OC:** (Organization capital – the 2-digit SIC industry-median organization capital) scaled by total assets.
- IND_ADJ_OC_RANK:** The annual decile rank of a firm's industry-median adjusted organization capital based on the Compustat universe.
- OC_5YR_STRAIGHT_LINE:** Organization capital scaled by total assets, constructed by capitalizing SG&A expenses using a 5-year straight line depreciation method. Salvage value is set to 0. The beginning value of organization capital before IPO is assumed to be 0.
- OC_FLOW:** SG&A expenses scaled by total assets (in percentage points).
- IDD_INDEX:** To measure changes in the protection of trade secrets afforded by the IDD, for each state, the IDD index is equal to 1 starting the year a state court adopts the IDD in a precedent-setting case and equal to 0 in all years preceding the date of the precedent-setting case. If in another precedent-setting case a state court subsequently rejects the IDD, the index reverts to 0 beginning the year it is rejected; for a state whose court did not explicitly consider or considered but rejected the IDD, its IDD index is equal to 0 over the sample period.
- UL_BENEFITS:** The natural logarithm of the product of the maximum benefit amount and the maximum duration following Hassler et al. (2005).
- COMPLETION:** An indicator variable that takes the value of 1 if an acquirer has completed its bid, and 0 otherwise.
- COGS:** Cost of goods sold scaled by net sales (in percentage points).
- SG&A:** SG&A expenses scaled by net sales (in percentage points).
- ASSET_TURNOVER:** The natural logarithm of asset turnover (i.e., net sales divided by the average total assets in a fiscal year).

INNOVATIVE_EFFICIENCY: Following Hirshleifer et al. (2013), innovative efficiency is measured as $\ln(1 + \text{Patent Count} / \text{R\&D Capital})$.

MANAGERIAL_ABILITY_SCORE: Based on Demerjian et al. (2012). Using data envelopment analysis that includes 1 output (sales) and 7 inputs (net property, plant, and equipment, net operating leases, net R&D, purchased goodwill, other intangible assets, cost of inventory, and SG&A expenses), the measure captures managers' efficiency in generating revenues. The score ranges from 0 to 1.

FORTUNE_BEST_COMPANY: The reverse rank of a firm on Fortune's "100 Best Companies to Work for in America" list, and 0 if a firm is not ranked. Fortune compiles the ranking based on the following methodology (Edmans (2011)). Two-thirds of the score comes from employee responses to a 57-question survey created by the Great Place to Work Institute in San Francisco, which covers topics such as attitudes toward management, job satisfaction, fairness, and camaraderie. The remaining one-third of the score comes from the Institute's evaluation of factors such as a firm's demographic makeup, pay and benefits programs, and culture. The final score covers four areas: credibility (communication to employees), respect (opportunities and benefits), fairness (compensation and diversity), and pride/camaraderie (teamwork, philanthropy, and celebrations). The list is available for 1984, 1993, and 1998–2012.

COMPUTERWORLD_BEST_PLACE_IN_IT: The reverse rank of a firm on Computerworld's "100 Best Places to Work in IT" list, and 0 if a firm is not ranked. Computerworld compiles their rankings based on the following methodology. The first component is a 66-question survey asking about average salary and bonus increases, the percentage of IT staffers promoted, IT staff turnover rates, training and development, and the percentage of women and minorities in IT staff and management positions. The second component is information on retention efforts; programs for recognizing and rewarding outstanding performance; benefits such as flextime, elder care, and childcare; and policies for reimbursing employees for college tuition and the cost of pursuing technology certifications. The third component is feedback from employees, including their satisfaction with training and development programs, compensation, benefits and work/life balance, employee morale in their IT departments, and the importance of various benefits. See details at http://www.computerworld.com/s/article/9239821/How_we_chose_the_Best_Places_to_Work_in_IT. The list is available for 2003, 2006, and 2009.

TARGET_OC: Target firm organization capital constructed in the same way as acquirer OC.

TARGET_ROA: Target firm income before extraordinary items scaled by total assets (in percentage points).

OC_GAP: The difference between acquirer OC and target OC.

OC_RATIO: Natural logarithm of the ratio of acquirer OC to target OC.

MKT: The market factor constructed monthly as market returns minus the risk-free rate.

SMB: The size factor constructed monthly as small size portfolio returns minus big size portfolio returns.

HML: The BM factor constructed monthly as high BM portfolio returns minus low BM portfolio returns.

UMD: The momentum factor constructed monthly as winner portfolio returns minus loser portfolio returns.

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