

Corporate Governance, Incentives, and Industry Consolidations

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This article studies the determinants of the success of industry consolidations using a unique sample of firms established at the time of their initial public offering: roll-up IPOs. In these transactions, small, private firms merge into a shell company, which goes public at the same time. These firms deliver poor stock returns; their operating performance mimics that of comparable firms but does not justify their high initial valuations. However, if the managers and owners of the firms included in the transaction remain involved in the business as shareholders and directors, operating and stock price performance improve, and future acquisitions are better received by the market. Higher ownership by the sponsor of the transaction leads to a reduction in performance, consistent with the view that the sponsor's compensation is excessive. These findings highlight the impact of corporate governance on performance.

During the previous two decades, improvements in information technology and the advent of outsourcing substantially increased the optimal scale of firms in a large number of fragmented industries.¹ How does an industry evolve to reach the new optimal firm size? Three methods are possible. The first is for larger firms in the industry to acquire smaller competitors, or to force them out of business through competition. Of course, this implies that some firms are large enough to start with and have

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¹ See Mitchell and Mulherin (1996) and Andrade, Mitchell, and Stafford (2002) for a discussion of the relation between industry shocks (including technology changes) and mergers.

the resources to make acquisitions. This may not always be the case. The second is for consolidations to be funded by private investors, who start buying up small firms until they are large enough to cash out at an initial public offering. However, this method requires private funds to be accessible, meaning that the consolidation process is therefore limited by the availability of these resources. This article studies a third method, which developed in the United States in the mid-1990s and saw a period of frantic activity: the roll-up initial public offering (IPO).

Roll-up IPOs (i.e., “roll-ups”) are transactions in which a shell company goes public while simultaneously merging with a number of other firms that operate in the same industry. This strategy does not require private investors to finance the transaction, nor does it need an established large player in the industry. The IPO provides the company with liquid shares and cash, which can then be used as payment in the purchase of the companies that are merged. In addition, the shares, together with the cash proceeds, can also be used to make further acquisitions in an attempt to continue the consolidation process started at the IPO stage. Thus, a roll-up IPO allows a company to fund an extreme level of growth over a very short time horizon.

The roll-up is therefore a market solution to the capital constraints of firms who engage in consolidations privately. However, a roll-up transaction is only a successful market solution if it provides the capital required without increasing the costs in excess of the potential benefits; otherwise, it is a market excess in the sense of Van Horne (1985). In this paper, we study all roll-ups that took place in the U.S. over the period 1994–1998 to examine how they are structured and which structure is most successful in delivering shareholder value. While it would be interesting to study consolidators in general, many of them start out as private companies; thus, it is not possible to examine these transactions from their inception to the IPO stage. Further, those that do go public are likely to have been the successful ones, which would bias our analysis. This is not the case for rollups. There is no reason why our conclusions would not apply to consolidations that start privately.

We start by describing the roll-up structure in detail and examining the stock price and accounting performance of the companies created via this financial mechanism. We then relate these performance measures to several aspects of the governance structure of the companies involved in the roll-up and to a number of other relevant factors to determine how to successfully start the consolidation process in an industry.

Our sample consists of 47 firms that engaged in a roll-up transaction over the five-year period from 1994 to 1998. Similar to IPOs in general, we find that the firms in our sample deliver poor stock returns in the long run; even worse, in fact, than the performance documented for the overall IPO market. Total returns for our sample of roll-ups through

the earlier of the delisting date or December 31, 2001 are indeed negative. However, we find that there is tremendous cross-sectional variation in the returns and that these returns can be predicted by governance characteristics in place at the time of the roll-up. In particular, it is important for the managers of the companies acquired in the roll-up transactions (i.e., the founding companies) to remain involved in the business. Long-run stock price performance (from the initial IPO event until either delisting or the end of 2001) is higher when more of the directors come from the founding companies. More specifically, there is a 2.8 percentage point increase in returns for every percentage point increase in the fraction of directors consisting of founders. In addition, we find that roll-up firms perform better if the original founders own more shares of the company at the time of going public: every percentage point change in founder ownership increases returns by 1.9 percentage points. Since we do not find that returns are related to a measure of “cashing out” by founders, it is unlikely that the causality in these regressions runs the other way. Thus, our results indicate that industry consolidations have greater market success if they provide the original founders with incentives and control.

The accounting performance of roll-up companies, using measures such as operating margin and return on sales, is less clear-cut. Roll-ups do not significantly underperform their industry benchmarks. However, because these firms are often the first large publicly traded firm in their industry, it is unclear how good the industry, as defined on Compustat, is as a benchmark. We therefore also examine how these firms perform relative to stock analyst expectations and find that, on average, the firms' actual earnings fall far short of forecasted levels. In addition, these firms are sold and initially trade at higher valuations relative to other firms in the industry, which further indicates that the market held high expectations for these deals. Again, the cross-sectional dispersion in accounting performance is substantial, and our evidence suggests that only the firms with the right governance structure in place at the IPO stage were able to live up to market expectations: consistent with the returns results, accounting performance is significantly better if the original founders own more stock and control a larger fraction of the board.

The consolidation process does not conclude at the time of the IPO. The 47 firms in our sample make 614 acquisitions after the IPO through the end of 2001. In fact, the assets of these firms almost quadruple from a median of \$140 million in the IPO year to \$525 million for the last available year. It is common for multiple transactions to be announced on the same day, we are able to identify 336 distinct announcement dates. The market reaction around the announcement is actually positive: market-adjusted returns average 1.28% for the three days around the acquisition announcement. When we sum this return across all acquisition

announcements made by each firm and average across the firms in our sample, we obtain an abnormal announcement period return due to acquisition activity of 10.47%. Consistent with the accounting and stock returns evidence, there is a positive relation between founder involvement and the stock response associated with the acquisitions. The positive stock price reaction seems at odds with the firms' poor long-run stock price performance. However, we find that companies are more likely to make further acquisitions when they have performed well up to that point: companies make acquisitions after they have outperformed the market by more than 16 percentage points. Despite this, though, stock performance subsequent to the acquisitions is very poor. The post-acquisition market-adjusted returns (counting each acquisition date as an individual observation) through delisting or December 31, 2001 are -113%.

Our findings indicate that the initial governance structure is critical to start the consolidation process and to successfully complete it through further acquisitions. When performance deteriorates, the consolidation process stops. Next, we investigate how firms respond to poor performance and whether these responses are effective. Specifically, we document the organizational changes and restructurings that occur from the IPO event through the end of 2001. The results are dramatic: 55% of the firms experience CEO and/or Chairman turnover, 51% sell off assets or announce a restructuring program, 11% enter financial distress, and 17% become the defendant in a lawsuit initiated by shareholders. Additionally, 19% of the firms receive private equity infusions between the IPO date and the end of 2001, which is surprising given that these are publicly traded firms. Generally, these attempts to halt poor performance are not successful; the abnormal returns at the announcement of these events are insignificant and the firms continue to underperform following the restructuring. Thus, organization changes after the roll-up do not appear to be effective. This once again underscores that having the right governance structure in place at the time of the roll-up is the most important determinant of long-run success.

It is clear from our analysis that investors in roll-up firms incur large losses, on average. However, not everyone loses in these transactions. The greatest beneficiary from the roll-up transaction is the sponsor who brings the companies together into a single business entity. We find that the value of the cash and stock compensation, computed at the offering price, net of the sponsor's investment in the company averages \$29.2 million (median = \$15.3 million), or 17.28% of the initial offering value of the company. While it is difficult to determine whether this compensation is "fair," it does appear to be quite high. Moreover, we find that the level of sponsor ownership in the roll-up has a negative impact on the subsequent stock price performance of the firm. Thus, when sponsors pay

themselves “too much” there is not enough wealth left in the firm to manage the consolidations and continue the consolidation process.

The remainder of this article proceeds as follows. Section 1 discusses roll-up transactions in more detail. Section 2 describes and summarizes our transaction sample. Section 3 analyzes both the stock and operating performance of the companies. Section 4 examines acquisitions activity and organizational changes in the years after the IPO. Section 5 concludes the study.

1. Description of Roll-up Transactions

A roll-up occurs when two or more operating entities combine in a single business enterprise, effected by the issuance of stock just prior to or simultaneously with an initial public offering. Such a transaction is achieved by creating a shell company into which the sponsors of the transaction contribute cash to cover initial expenses such as due diligence costs. Sometimes the cash contribution is actually in the form of a loan, which can be forgiven later or repaid in common stock. The sponsors then identify and negotiate with potential founding companies. Simultaneous with the IPO, the assets of the founders are contributed to the shell company for stock and cash generated by the offering.

The main thrust behind roll-up transactions is that they serve as a vehicle to consolidate fragmented industries of considerable size. When the roll-up trend started in 1994, many industries, particularly in the service sector, consisted of a large number of very small companies. Consolidators aim to achieve substantial market share in these industries through acquisitions. As a result, they plan to realize significant economies of scale both in revenues, but mainly in cost reductions.²

The idea behind industry consolidation is not new; Waste Management may have started the trend in 1971. Roll-up IPOs, however, are a relatively new phenomenon. The first roll-up in our sample, U.S. Delivery Systems, took place in 1994 and we have been able to identify 47 transactions over the 1994–1998 period that have sufficient data available to be included in our study. Practitioners mention several reasons for the increased interest in roll-ups in the mid-1990s. First, a number of private equity partnerships discovered that roll-ups were the easiest way to achieve industry consolidation in industries without a natural leader. Second, potential investors in the vibrant IPO market of the 1990s were quite receptive to new ideas. Third, many small business owners were ready for retirement and lacked natural succession plans, making the possibility of selling out to a public

² Sparks (1998) stresses the importance of keeping the roll-up transaction focused on similar companies in a single industry. In particular, she notes that *not* diversifying a roll-up into unrelated businesses during or after the IPO is a crucial factor in the deal's ultimate success. See also Credit Lyonnais Securities (1998).

company an interesting alternative. Fourth, the growth in corporate outsourcing provided a unique opportunity for companies in the service industry. Fifth, improvements in information technology meant that greater economies of scale can be attained through consolidation. Sixth, the roll-up eliminated the personal guarantees of debt by the original owners of the founding companies. Of course, these last four reasons are not unique to roll-ups, but apply to business consolidation in general. It is also possible that it took until the mid-1990s for potential sponsors to realize that roll-ups could get executed without recognizing goodwill expenses.³

While it is the case that some consolidations started off privately, such firms have already achieved a certain level of success when they go public. In addition, their governance structure has already undergone substantial changes while the company was private, and data on these changes are not available. Only for roll-ups can we examine the governance structure of the company from the start and see how it affects performance.

2. Sample Selection and Sample Characteristics

We gather data on roll-ups from a variety of sources. To identify the sample, we employ lists of roll-up companies provided by securities firms, combined with a search of SEC filings. We obtain further data from S-1 filings and prospectuses. Several companies filed an initial registration statement without making it to the IPO stage. These firms are discarded from our sample. Additional data on the firms are obtained from SDC (IPO data and M&A announcements), CRSP (stock price data), Compu-stat (accounting data), and IBES (earnings forecasts).

Table 1 lists the roll-up transactions included in our analysis, in chronological order of their respective S-1 dates. Table 2 shows the distribution of transactions over time. The first roll-up took place in 1994, two transactions followed in 1995, and the bulk of the deals occurred in 1996, 1997, and 1998. Table 3 tabulates the number of founding companies involved in each transaction. The mode and median are both 7, and the mean is 9.7; ten or more firms are combined in over one-fourth of the cases (e.g., Pentagra Dental Group, Inc brought together 53 dental practices.)

Table 4 contains the industry composition of the sample. A total of 17 companies are in services industries, 6 are in construction, and 4 are durable goods wholesalers. The dominance of service companies is not surprising given that these industries tend to be more fragmented, a prior condition for motivating a roll-up transaction.

³ An appendix with additional information on the accounting issues surrounding roll-ups is available from the authors upon request.

Table 1
Sample of roll-up transactions

Company	Ticker	S-1 date
U.S. Delivery Systems	DLV	05/12/1994
U.S. Office Products	OFIS	02/14/1995
Physicians Resource Group	PRG	06/23/1995
Physician Support Systems Inc.	PHSS	01/16/1996
F.Y.I. Corp	FYII	01/23/1996
Cotelligent Group	COTL	02/14/1996
Coach USA	CUI	05/14/1996
American Residential Services	ARS	06/18/1996
StaffMark, Inc.	STAF	07/03/1996
Fortress Group Inc.	FRTG	07/17/1996
Telespectrum Worldwide Inc.	TLSP	08/08/1996
Signature Resorts	SIGR	08/15/1996
Service Experts	SVE	08/15/1996
Styling Technologies Inc.	STYL	09/20/1996
Medical Manager	MMGR	09/30/1996
United Auto Group	UAG	10/23/1996
PalEx, Inc.	PALX	12/24/1996
Apple Orthodontix Inc.	AOI	03/05/1997
Vestcom International Inc.	VESC	03/18/1997
Group 1 Automotive	GPI	06/24/1997
Comfort Systems USA	FIX	06/26/1997
American Physician Partners	APPM	06/27/1997
Metals USA	MUI	07/10/1997
Industrial Distribution Group	IDG	07/18/1997
Innovative Valve Technologies	IVTC	07/18/1997
Travel Services International	TRVL	07/22/1997
USA Floral Products Inc.	ROSI	08/07/1997
Transcoastal Marine Services	TCMS	08/29/1997
Imagemax Inc.	IMAG	09/12/1997
Advanced Communications Group Inc./DE	ADG	10/10/1997
Pentegra Dental Group Inc.	PEN	10/10/1997
Condor Technology Solutions Inc.	CNDR	10/13/1997
Integrated Electrical Services Inc.	IEE	10/24/1997
Dispatch Management Services Inc.	DMSC	11/10/1997
HomeUSA	HSH	11/14/1997
Pentacon Inc.	JIT	12/03/1997
Brightstar Information Technology Group Inc.	BTSR	12/24/1997
Provant Inc.	POVT	02/12/1998
Unicapital Corp.	UCP	02/20/1998
United Road Services	URSI	02/26/1998
Landcare USA Inc.	GRW	03/18/1998
Compass International Services Corp.	CMPS	04/13/1998
Transportation Components Inc.	TUI	04/20/1998
Hometown Auto Retailers Inc.	HCAR	05/15/1998
Railworks Corp.	RWKS	05/22/1998
Resortquest International	RZT	06/12/1998
Quanta Services Inc.	PWR	10/23/1998

The sample firms are listed in order of their S-1 filing dates, using their original name and ticker symbol.

Table 5 contains additional summary statistics. The average firm raises \$64.3 million (median = \$50.1 million). Based on the offer price, the average market capitalization of the companies is \$155.7 million (median = \$118.4 million). Underpricing, computed as the percentage price change from the offer price to the first trading price, is 14.6%, on average, (median = 9.52%), which is fairly typical of IPOs in general.

Table 2
Summary statistics: Distribution by year of IPO

Year	Number of roll-up IPOs
1994	1
1995	2
1996	12
1997	15
1998	17
Total	47

Table 3
Summary statistics: Number of founding companies involved in the roll-up transaction

Number of founding companies	Frequency
3	3
4	6
5	5
6	5
7	8
8	4
9	3
10 or more	13
Total	47

Table 4
Summary statistics: Industry classification

Industry	Frequency
Construction (SIC 17)	6
Wholesale trade — durable goods (SIC 50)	4
Automotive dealers and gasoline service stations (SIC 55)	3
Real estate (SIC 65)	2
Business services (SIC 73)	9
Health services (SIC 80)	3
Engineering, accounting, research, mgmt, and related services (SIC 87)	3
Other service industries (SIC 72, 75, 76)	2
Others	15

The founding companies collectively own approximately 40% of the company's shares after the offering, on average, and they supply about half of the directors of the new company. In addition, the CEO comes from the founding companies in 27.7% of the cases. This suggests substantial involvement by the founding companies in the initial operations of the roll-up. There is only one company in our sample where the founders did not receive any shares or board representation. The shares received by the founders comprise 58% of their total compensation, on

Table 5
Summary statistics: Size, underpricing, and governance

Variable	Mean	Median	SD	Min.	Max.	<i>N</i>
Number of founding companies	9.72	7	9.20	3	53	47
Size of IPO (\$ millions)	64.3	50.1	77.0	14.6	532	47
Market value at offer price (\$ mill)	155.7	118.4	141.8	18.0	914.5	47
Underpricing (%)	14.56	9.52	16.33	-8.3	58.9	47
Ownership of founders (%)	40.04	44.71	18.01	0	69.10	45
Directors from founders (%)	46.30	50.00	21.75	0	100	47
CEO from founding company (%)	27.66	—	—	—	—	47
Fraction of founder comp. in shares (%)	57.65	63.93	24.65	0	100	45
Board size	9.60	9.00	3.54	3	21	47
Ownership of sponsor (%)	16.90	12.45	12.00	0	50.49	45
Directors from sponsor (%)	20.23	17.00	17.95	0	100	44
Dollar return sponsor (\$ millions)	29.23	15.35	42.20	0.175	245.35	44

Size of IPO is computed as offer price multiplied by the number of shares offered to the public. Underpricing is computed as the percentage change in price from the offer price until the first aftermarket price. Fraction of founder comp. in shares is computed as: shares received by the founder multiplied by the offer price, divided by total founder compensation. The dollar return of the sponsor is computed as the total cash compensation of the sponsor plus the value of the shares owned by the sponsor in the roll-up, valued at the offer price, minus the sponsor's investment in the company, minus the value of the loans made to the company. Market value is the value of the firm, computed at the offer price.

average, with a median of 64%. Virtually all of the other compensation they receive is in cash or the assumption of debt.

The sponsors own 16.9% of the company, on average (median = 12.45%), which represents the bulk of their compensation for their effort in bringing the firms together;⁴ they sometimes receive cash compensation as well. However, they also make an initial equity investment in the company and they may make loans to the company, which are forgiven in some cases. When we value the firm at the offer price, add cash compensation, and subtract the funds invested in and loans made to the company, we find that the average sponsor makes \$29.2 million in a successful transaction, with a median of \$15.35 million.⁵ Unfortunately, we have only anecdotal evidence on how much effort is required in putting together a roll-up and how many proposed transactions do not make it to the IPO stage. It is therefore difficult to gauge whether this amount of compensation is appropriate, but at a cursory level it does appear to be very substantial. It is certainly much higher than fees received by investment banks in acquisitions [e.g., McLaughlin (1990)] and by sponsors in

⁴ The correlation between founder ownership and sponsor ownership is -0.28. It is not larger in absolute terms because some firms sell fewer shares to the public and have large founder and large sponsor ownership stakes.

⁵ Not all the loans made to the company are forgiven, but the language in the prospectuses is not always clear on this issue. To be conservative, we subtract the value of all the loans made to the company in calculating this figure. Without subtracting the loans, total compensation averages \$29.61 million (median = \$16.00 million).

leveraged buyouts [e.g., Kaplan and Stein (1993)]. Further, the sponsor holds 20% of the board seats of the sample firms.

3. Measures of Success or Failure

In this section, we examine the performance of the roll-up companies in our sample. We study both stock market and accounting performance. In each case, it is important to determine the appropriate benchmark. One possibility is to compare the company to other firms in the industry, but the problem with that approach is that there are few publicly traded firms in many of the industry segments we are studying. Indeed, this condition is perhaps the chief motivation for the transaction and the roll-up itself is often that industry's first publicly traded firm. While we can find other publicly traded companies with the same SIC code, these firms are likely to be very different from the roll-up companies. We therefore prefer to first compare the stock price performance of the companies in our sample to a measure of the overall stock market, but we will also report results using industry-, size-, and book-to-market-matched firms. In the empirical work that follows, we use the value-weighted CRSP index as our market proxy. For accounting performance, we adjust for the performance of other companies in the same four-digit SIC code.

3.1 Stock returns

In Table 6, we report stock returns for several subperiods after the effective date of the IPO. Because many transactions took place toward the end of the sample period, the sample size declines as we increase the time period over which we study returns. We find no significant difference in the general market performance and roll-up performance over the first six months. Roll-up firm returns average 4.88%, compared to a market return of 7.93% for the same period. After the first six months, however, average roll-up performance starts to deteriorate dramatically. Mean and median returns for the roll-up firms are negative in almost all subsequent six-month periods, and the returns are always significantly less than the market returns, except for the last subperiod. The 39 firms in our sample with at least two years of post-IPO return data have total returns of -7.45% (median = -38.20%) after two years, compared to market returns of 46.93% (median = 45.99%). In the last row of Table 6, we cumulate returns from the IPO date through delisting or December 31, 2001, whichever occurs earlier. These figures provide strong evidence that investing in roll-ups has been harmful to shareholder wealth, on average. Mean returns are -39.46% , and median returns are -82.77% , compared to strong positive market performance over this period.

The lack of abnormal returns for roll-up firms during the first six months after the IPO and the subsequent deterioration in returns is consistent with

Table 6
Stock price performance after the roll-up IPOs using the market return as a benchmark

Period	Roll-up return	Market return	<i>p</i> -value difference	<i>N</i>
Months 1–6	0.0488 (–0.0337)	0.0793 (0.0757)	.62 (.40)	47
Months 7–12	–0.0371 (–0.0957)	0.1390 (0.1504)	.03 (.02)	45
Months 13–18	–0.0305 (–0.0035)	0.1063 (0.1008)	.02 (.01)	43
Months 19–24	–0.1373 (–0.1667)	0.0901 (0.1023)	.00 (.00)	39
Months 25–30	–0.3013 (–0.3513)	0.0714 (0.0734)	.00 (.00)	37
Months 31–36	–0.1475 (–0.2099)	–0.0046 (–0.0006)	.06 (.04)	27
Months 37–42	–0.2519 (–0.3469)	–0.0184 (–0.0813)	.04 (.03)	20
Months 43–48	0.0124 (–0.1338)	–0.0132 (–0.0572)	.88 (.46)	13
1st year	0.0535 (–0.1957)	0.2229 (0.2016)	.13 (.15)	45
2nd year	–0.1802 (–0.2571)	0.1952 (0.1853)	.00 (.00)	39
3rd year	–0.3413 (–0.4375)	0.0736 (0.1417)	.00 (.00)	27
4th year	–0.2469 (–0.3724)	0.0031 (0.0928)	.28 (.05)	13
Years 1 and 2	–0.0745 (–0.3820)	0.4693 (0.4599)	.00 (.00)	39
Years 1–3	–0.2347 (–0.6168)	0.6050 (0.6744)	.00 (.00)	27
Years 1–4	–0.4364 (–0.7706)	0.7925 (0.9970)	.00 (.00)	13
Until 12/31/01 or delisting	–0.3946 (–0.8271)	0.5019 (0.3333)	.00 (.00)	47

The market return is based on the CRSP value weighted stock market index. Median returns are reported in parentheses. Returns are computed assuming a buy and hold strategy. The *p*-value is based on a *t*-test of equality of means and the *p*-value in parentheses is based on a sign rank test of equality of medians. The *t*-statistics employed to obtain *p*-values in this table are the skewness-adjusted *t*-statistics discussed by Lyon, Barber, and Tsai (1999).

the evidence reported by Loughran and Ritter (1995) for 4082 IPOs conducted in the U.S. market from 1970 to 1990, and with more recent evidence provided by Purnanandam and Swaminathan (2004) for 2288 U.S. IPOs from 1980 to 1997. However, starting six months after the IPO, the firms in our sample perform much worse than those studied by Loughran and Ritter. For example, we report second-year returns of –18.02%, on average, compared to 3.6% in their sample. Our market-adjusted returns for all periods after six months are also worse than those reported by Purnanandam and Swaminathan (2004), even compared to those firms that appear to be most overvalued based on their valuation measures.

Table 7 provides further evidence on the long-run stock price performance of the firms in our sample using two alternative benchmarks constructed from samples of matching firms. The first sample consists of firms in the same industry (four-digit SIC code) closest in size to the roll-up company.⁶ As illustrated in the table, the firms in our sample also underperform the industry benchmark by a large margin: roll-ups average returns of –39.46% versus 14.11% for the matched firms. The second sample consists of companies closest in size to the roll-up firm that have completed a traditional IPO within two weeks of the firms in our sample.

⁶ If a matching firm is delisted before the roll-up firm, we splice in the next-best matching firm at the time of delisting. This procedure is the same as the one followed by Loughran and Ritter (1995).

Table 7
Stock price performance after the roll-up IPOs using alternative benchmarks

Benchmark	Roll-up return	Benchmark return	<i>p</i> -value difference	<i>N</i>
Industry & size matched non-IPO	-0.3946 (-0.8271)	0.1411 (-0.0726)	.02 (.00)	47
Size matched IPO	-0.3946 (-0.8271)	-0.0492 (-0.3186)	.09 (.03)	47

Returns are computed until 12/21/01 or delisting, whichever occurs first. Median returns are reported in parentheses. Returns are computed assuming a buy and hold strategy. The *p*-value is based on a *t*-test of equality of means and *p*-value in parentheses is based on a sign rank test of equality of medians.

Roll-ups also perform poorly relative to this benchmark, suggesting the possibility that combining a merger event with an IPO event in a single transaction is a value-destroying transformation.⁷

Taken together, the comparison of the roll-up transactions with the matching-firm samples indicates that the stock price performance of the roll-up sample was substantially worse than that of either industry-matched existing firms of comparable size or single-firm IPOs of comparable size.⁸ However, it is also interesting to note that roll-up performance lags that of established firms by significantly more than it does that of newly created matching firms. Moreover, not all the roll-ups in our sample perform poorly. In fact, some of them outperform their benchmarks by large margins. In Section 3.3, we examine whether the structure of the firm at the time of the roll-up is related to their subsequent performance.⁹

3.2 Operating performance and valuation

In this section, we examine the operating performance and valuation of the firms in our sample. Table 8 contains data on industry-adjusted profitability. We make industry adjustments by subtracting the median ratio of all firms that operate in the same four-digit SIC code, as defined by Compustat. It is important to note that even though these firms share the same SIC code, they may be very different in nature. In fact, as we

⁷ We have also constructed a sample of matching firms based on both size and book-to-market matching with results very similar to those of the other two benchmarks.

⁸ As a final test of the long-run performance of the roll-ups, we employ the calendar time portfolio approach discussed by Fama and French (1993), Carhart (1997), and Lyon, Barber, and Tsai (1999). Using the Fama/French three-factor model augmented with a momentum factor, we find that roll-ups underperform by 1.29% per month, which is significant at the 5% level. For sake of brevity, we do not discuss our implementation of this approach in more detail but the results are available upon request.

⁹ It is possible that only firms that start out at a critical size end up being successful and are able to make additional acquisitions. To address this issue, we compute the dollar returns earned by the firms in our sample and compare these values to what would have been earned had we invested the same amounts in the market at the same point in time. These size-weighted return results confirm our previous results: the average loss to investors in roll-ups is \$82.2 million, compared to gains from investing in the market of \$84.7 million. This difference is highly significant.

Table 8
Industry-adjusted accounting performance

Period	Operating return on sales (%)			Return on sales (%)		
	Mean (<i>p</i> -value)	Median (<i>p</i> -value)	<i>N</i>	Mean (<i>p</i> -value)	Median (<i>p</i> -value)	<i>N</i>
Year 1	2.85 (.00)	2.26 (.01)	39	-1.55 (.33)	-.06 (.95)	38
Year 2	1.58 (.25)	.75 (.35)	34	-.94 (.35)	-.28 (.60)	31
Year 3	.53 (.72)	.20 (.48)	24	-6.21 (.03)	-1.02 (.03)	24
Year 4	1.24 (.47)	-.78 (.95)	15	-3.52 (.23)	-.39 (.40)	13

This table reports industry-adjusted statistics on operating returns on sales and return on sales. Operating return on sales is computed as operating income divided by total sales. Return on sales is computed as net income before extraordinary items divided by total sales. Industry is defined at the four-digit SIC code level. In the mean column, the *p*-value is based on a *t*-test of equality of the mean to zero; in the median column, the *p*-value is based on a sign rank test of equality of this median to zero.

discussed previously, the roll-ups may be the first firms in their properly defined industry to be traded publicly. Our results should therefore be interpreted with caution.

We report data on two profitability measures: operating profits divided by sales and net income divided by sales. We chose these measures because they are the least affected by the accounting method used to record acquisitions (i.e., purchase versus pooling). In the table, “Year” refers to the number of full years subsequent to the IPO. Both measures show few industry-adjusted differences. If anything, there is some evidence that the firms in our sample have better operating performance than the firms in their industry in the year following the IPO. There are some similarities between these findings and those of Jain and Kini (1994), who study the operating performance of 682 IPOs from 1976 to 1988. They find that firms perform better than the industry before the IPO and decline in performance to industry levels subsequently. Because the firms in our sample are only formed at the IPO stage, pre-IPO data are very limited and do not allow us to compare pre-IPO and post-IPO performance. Mikkelsen, Partch, and Shah (1997), on the other hand, do not find that operating performance worsens after the IPO for a sample of 283 offerings from 1980 to 1983.

Table 9 studies leverage and investment policy. Roll-ups tend to have a lot more debt than their industries. The mean ratio of long-term debt to assets is more than 10 percentage points above the industry in years 2 and 3. On the other hand, we find little difference in relative investment spending. Thus, the firms in our sample do not appear to grow externally at the expense of internal growth.

Table 9
Leverage and investment policy

Period	Long-term debt to assets (%)			Capital expenditures to sales (%)		
	Mean (<i>p</i> -value)	Median (<i>p</i> -value)	<i>N</i>	Mean (<i>p</i> -value)	Median (<i>p</i> -value)	<i>N</i>
IPO Year	4.73 (.00)	.86 (.14)	39			
Year 1	11.11 (.00)	9.37 (.00)	39	.88 (.23)	.03 (.50)	38
Year 2	14.10 (.00)	9.00 (.00)	34	.54 (.46)	.16 (.87)	33
Year 3	17.88 (.00)	15.72 (.00)	24	.57 (.41)	.01 (.72)	24
Year 4	8.48 (.16)	.46 (.36)	14	-.33 (.30)	-.54 (.09)	15

This table reports industry-adjusted statistics on roll-up leverage and capital spending. Industry is defined at the four-digit SIC code level. In the mean column, the *p*-value is based on a *t*-test of equality of the mean to zero; in the median column, the *p*-value is based on a sign rank test of equality of this median to zero.

The above analysis appears inconsistent with the stock price performance of the firms documented earlier. Essentially, we find few operational differences in the roll-up sample compared to the respective industries, except for the use of more leverage. As we mentioned, though, the industries in question may be poorly defined. An alternative explanation is that while these firms performed at par with their industries, they were expected to do much better; after all, the basic premise of roll-ups was to attain substantial cost and revenue synergies. To examine whether this was the case, we perform a variety of tests. First, we examine whether the initial valuations of the roll-ups imply high anticipated profit growth relative to other firms in the industry. Two ratios are examined for this purpose: Tobin's q^{10} and the P/E ratio. We only compute the P/E ratios for firms with positive earnings.

Table 10 reports statistics on the difference between the roll-up and industry valuation ratios. In the year of the IPO (less than one fiscal year since the IPO), the q ratio of the roll-ups is significantly above the industry medians. By the following year, the q ratios are similar to industry standards, but they drop off in subsequent years. For example, for the 24 firms with data in the third fiscal year after the IPO, median q ratios are 0.21 below the industry. The picture for the P/E ratio is more subtle. In the first year after the IPO, the P/E ratio is significantly above the industry median. In the following years, it drops off and mimics the industry. However, the evidence from both metrics suggests that the initial expectations for earnings growth relative to the industry were substantial.

As a second test of investor expectations regarding roll-up performance, we study valuation at the IPO stage using the methods proposed by Purnanandam and Swaminathan (2004). Based on the offer price, they

¹⁰ Tobin's q is computed as (assets – book value of equity – deferred taxed + market value of equity)/assets.

Table 10
Valuation measures relative to industry using post-IPO data

Period	Tobin's q			P/E ratio		
	Mean (p -value)	Median (p -value)	N	Mean (p -value)	Median (p -value)	N
IPO Year	.51 (.01)	.31 (.03)	37			
Year 1	-.04 (.82)	-.10 (.33)	39	8.86 (.01)	4.17 (.01)	29
Year 2	-.33 (.01)	-.22 (.01)	34	-.32 (.86)	-2.41 (.37)	19
Year 3	-.63 (.01)	-.21 (.00)	24	2.10 (.71)	-2.77 (.55)	15
Year 4	-.40 (.08)	-.20 (.07)	15	-2.34 (.21)	-1.19 (.21)	6

This table reports Tobin's q and P/E ratios for the roll-up firms net of their respective industry median values. Tobin's q is computed as [(book value of assets – book value of equity – deferred taxes + market value of equity) / book value of assets]. The P/E ratio is only computed for firms with positive earnings. In the mean column, the p -value is based on a t -test of equality of the mean to zero; in the median column, the p -value is based on a sign rank test of equality of this median to zero.

compute price-to-sales, price-to-EBITDA, and price-earnings ratios for the firms in their sample, where sales, EBITDA, and earnings are for the last fiscal year before the IPO. They then compare these ratios to those of matching firms. In particular, they divide the valuation measure for the IPOs by the valuation measure for matching firms to obtain a price-to-value ratio. We follow the same approach and use the two sets of matching firms employed in the return analysis. The first set consists of non-IPO companies matched by industry and size, while the second set consists of regular single-firm IPOs matched by size. The main drawback of this approach for our purposes is the lack of pre-IPO data for the roll-up firms. Because the firms are actually formed at the time of the IPO, pre-IPO data have to be obtained for the individual founding companies; these are not always available for all companies, and if they are, they often refer to different fiscal year-ends, which makes a proper computation of the ratio impossible. This analysis can therefore only be completed for a subset of the sample firms. Table 11 contains the results of our analysis. With one exception (the median price-to-sales valuation for IPO matches) all ratios are much larger than 1, which implies that these firms are sold at much higher valuations than the matching firms. However, the measures are sufficiently noisy so that not all measures are significantly different from 1. Nevertheless, the valuation figures are broadly supportive of those of Table 10 and indicate that the firms were priced quite aggressively, implying high expected growth rates.¹¹

¹¹ We have also examined the relation between stock price performance and these initial valuation measures, but this investigation does not yield significant results.

Table 11
Valuation measures at the IPO stage relative to matching firms

Measure	Non-IPO matches			IPO matches		
	Mean <i>p</i> -value	Median <i>p</i> -value	<i>N</i>	Mean <i>p</i> -value	Median <i>p</i> -value	<i>N</i>
Price-to-sales	17.23 (.18)	2.18 (.00)	25	3.00 (.02)	0.96 (.21)	24
Price-to-EBITDA	8.66 (.05)	3.06 (.00)	19	5.48 (.00)	4.76 (.00)	15
Price-earnings	8.07 (.23)	1.91 (.00)	16	4.06 (.03)	2.20 (.03)	13

Non-IPO matching firms are from the same industry and closest in size to the sample firm. IPO matching firms are firms closest in size that went public within two weeks of the sample firms. For each firm, we compute the Price-to-sales, Price-to-EBITDA, and Price-earnings ratios, where the Price is computed using the offer price and the accounting figures are from the latest annual report before the IPO. The relative valuation measure is computed by dividing the valuation measure for sample firms by the valuation measure for matching firms. In the mean column, the *p*-value is based on a *t*-test of equality of the mean ratio to 1; in the median column, the *p*-value is based on a sign rank test of equality of this median ratio to 1.

As a final test of the market's expectations for roll-ups, we analyze earnings forecast errors using forecasts obtained from IBES. We compute the forecast error as the raw difference in dollars between the actual earnings and the forecast. Analysts make many forecasts during the year, which we average in our analysis. The findings, which are displayed in Table 12, are striking. On average, roll-ups fall short of their forecasts by 40 cents per share. The difference is small in the first year, but is close to 56 cents in the second year. Thus, roll-ups did not deliver the expected earnings performance. Further, the final two columns indicate that firms that beat expectations do so modestly while the disappointments tend to be more pronounced. Of course, we know that analysts tend to be optimistic in general, and especially about IPOs [see Rajan and Servaes (1997)]; nevertheless, the forecast error is substantial and only 36% of the firms beat the forecast.

To summarize, the results of Tables 8–12 suggest that the accounting performance of roll-ups is not worse than that of their industries, but they do perform substantially below investor and analyst expectations. In addition, they tend to use a lot more debt financing than industry peers.

3.3 Cross-sectional determinants of stock returns and accounting performance

Having established the poor temporal performance of roll-ups in aggregate, this section examines the firm- and industry-specific characteristics that help determine whether specific roll-up transactions will be successful or not. For dependent variables, we study both stock returns and accounting performance. In an attempt to explain these performance metrics, we

Table 12
Earnings forecast errors

	Mean forecast error (actual-forecast) (<i>p</i> -value)	<i>N</i>	Fraction positive (<i>p</i> -value)	Error when actual > forecast	Error when actual < forecast
Year 1	-.067 (.10)	40	.53 (.48)	0.072	-0.219
Year 2	-.563 (.02)	40	.43 (.01)	0.117	-1.066
Year 3	-.295 (.13)	30	.27 (.01)	0.668	-0.644
Year 4	-.523 (.01)	18	.17 (.00)	0.056	-0.639
All years	-.400 (.00)	151	.36 (.00)	0.191	-0.728

In the forecast error column, the *p*-value refers to a *t*-test of equality of the mean to zero. In the fraction positive column, the *p*-value refers to a sign test.

focus on factors related to corporate governance of the firms involved in the deals, as well as other characteristics of the roll-up transactions.

The number of founding firms involved in a roll-up transaction may have an impact on the long-run performance of the company. The effect could be positive because the number of firms involved in the transaction proxies for the degree of consolidation; thus, having more firms leads to greater economies of scale. On the other hand, the larger the number of firms involved in the roll-up, the more difficult it is to integrate the companies, both culturally and from an ongoing operating standpoint. This schism implies that there may be an optimal number of initial companies. For example, Richard Howell of Notre Capital Partners, the sponsor of 8 of the transactions in our sample, suggests that having 5–12 founding companies is ideal.

Practitioners also argue that there are substantial first-mover advantages for roll-ups, not unlike the first-mover advantage enjoyed by sponsors of new security introductions [e.g., Tufano (1989)]. The first companies from a particular industry to affect such a transaction can reap economies of scale faster. Perhaps more importantly, they also get their choice of the best companies to include in the roll-up as well as the first opportunity to evaluate future acquisition targets. We investigate whether this first-mover advantage is reflected in better performance. We also include as a measure of the previous experience of the sponsors the number of prior roll-ups they completed.

The continued involvement of the founding companies in the management of the new business may also affect performance. Again, arguments can be developed to support both positive and negative effects. If founders continue to be involved in the management of the new company, each of them may favor his business over the others, which could delay integration

and lead to subsequent power struggles in the firm [see Rajan and Zingales (2000) for a discussion of the problems associated with power struggles when the parties are not equally endowed]. Conversely, if the founders receive proper incentives to maximize the value of the new firm, their continued involvement could prove to be very beneficial because they bring substantial knowledge of both the industry and their individual businesses to the table. Notre Capital, for example, makes continued involvement of the founders a precondition to getting the deal done.¹² This continued involvement also insures that the founders are not selling out when they feel their business is overvalued. We examine three aspects of founder involvement: (1) founder ownership; (2) founder board representation; and (3) whether one of the founding companies provides the CEO.

Finding a positive relation between founder ownership and performance is not necessarily an indication that founder ownership causes future performance. It may simply imply that the founders who know that their companies will perform well in the future elect to be paid in stock, while this is not the case for founders who expect poor performance. Another possibility is that better founders require more stock to join the roll-up firms, leading to a positive relation between performance and ownership. However, these arguments are not really about the level of founder ownership, but about how founders elect to be paid; that is, the choice between cash and stock. We therefore make sure that the level of founder ownership does not proxy for this choice by replacing founder ownership with the percentage of founder compensation paid as stock in some specifications.

We also examine the effect of sponsor ownership on performance. The effect of a high level of sponsor ownership on corporate performance could be positive or negative. The positive effect stems from the stronger incentives the sponsor has to monitor the firm [see Shleifer and Vishny (1986) and Burkhardt, Gromb, and Panunzi (1997) for an analysis of the value of large shareholders]. On the other hand, the firm has to generate enough wealth to pay for the sponsor's compensation. If the sponsor's ownership is very large, not enough money is raised in the IPO to further the consolidation process, or fewer funds/shares are available for founder compensation. As a result, the firm may start at a competitive disadvantage. Excessive sponsor compensation is one of the costs of financial excess identified by Van Horne (1985). Finally, we examine whether long-term roll-up performance is related to the level of board control exercised by the sponsor. We control for firm size at the time of the

¹²In particular, they suggest that the following organizational conditions need to be established before a roll-up can take place: (1) founder management signs a five-year employment contract with the new roll-up firm; (2) 75% of the compensation for selling the company is in roll-up stock; (3) the founders receive a board seat; and (4) as a group, the founders control the board, i.e., they have the majority of the seats.

IPO in all regression models. In addition, we include industry dummies corresponding to the 12 Fama-French industry groupings in some specifications.

Tables 13 and 14 contains the results of our regression analyses. Table 13 employs market-adjusted buy-and-hold returns to the roll-up firms as the dependent variable, using the CRSP value-weighted index as a market proxy. We focus on the longest time horizon available for each firm. As such we do not lose observations in our analysis, but the shortcoming of this approach is that we measure performance across different time horizons. Although not reported in the table, our cross-sectional findings continue to hold if we use our alternative benchmarks to adjust returns instead of the overall market. We also find similar results if we focus on one-year or two-year returns.

Table 13
Cross-sectional regression of long-term stock returns of roll-up firms on transaction characteristics and governance variables

Explanatory variable	(i)	(ii)	(iii)	(iv)
Constant	-1.1515 (0.76)	-2.1849 (0.66)	-1.6705 (0.61)	-3.1113 (0.43)
Log (number of roll-up firms)	-0.3079 (0.24)	-0.2529 (0.41)		
First mover (two-digit)	0.1904 (0.64)	0.0187 (0.96)		
#Prior deals done	-0.0130 (0.90)	-0.0169 (0.90)		
Founder ownership	1.7452 (0.07)	2.2496 (0.05)	1.4042 (0.10)	1.8889 (0.06)
Fraction of board controlled by founders	1.7119 (0.08)	3.1452 (0.01)	1.9049 (0.02)	2.8217 (0.00)
Founder CEO dummy	-0.1923 (0.65)	-0.4997 (0.25)		
Sponsor ownership	-2.8449 (0.13)	-2.5933 (0.20)	-2.9726 (0.03)	-3.4729 (0.01)
Fraction of board controlled by sponsor	-0.7895 (0.60)	-0.8225 (0.64)		
Log (market value on first trading day)	0.0033 (0.99)	0.0206 (0.96)	-0.0095 (0.97)	0.0675 (0.84)
Industry dummies included	No	Yes	No	Yes
Adjusted <i>r</i> -squared	0.26	0.30	0.28	0.31
<i>N</i>	43	43	43	43

The dependent variable in this table is the market-adjusted buy and hold return for each roll-up computed from the first aftermarket price until 12/3/01 or delisting. The CRSP value-weighted index is employed as the market proxy. The following independent variables are used: Number of roll-up firms is the number of founding firms involved in the roll-up at the IPO stage. First mover is a dummy variable set equal to one if the firm is the first roll-up in our sample in its two-digit SIC code industry. # of prior deals done is the number of prior transactions in our sample completed by the sponsor. Founder ownership is the fraction of the firm held by the founding companies when the IPO was completed. Fraction of board controlled by founders is computed as: number of founders on the board at the time of the IPO divided by board size. Founder CEO dummy is a dummy variable set equal to one if the CEO was employed by one of the founding companies before the roll-up. Sponsor ownership is the fraction of the firm held by the roll-up sponsor when the IPO was completed. Fraction of board controlled by sponsor is computed as: number of sponsor representatives on board at the time of the IPO divided by board size. *P*-values are listed in parentheses. Industry dummies are based on the Fama-French 12 industry classification.

Models (i) and (ii) include all explanatory variables, while models (iii) and (iv) include only those variables significant at the 10% level or better, with the exception that we always control for firm size. Note that we lose some observations because for some roll-ups, the ownership data are either ambiguous or the company has multiple classes of shares outstanding with different voting rights.

We find no evidence that the long-term roll-up stock price performance depends on the number of firms included in the original roll-up plan and no indication that being the first transaction in an industry matters. Similarly, long-run performance is not significantly better when the sponsors have prior experience in putting deals together or when the CEO has a prior relationship with one of the founder firms. We do find evidence, however, that the continued involvement of the founders as shareholders and members of the board has a positive impact on the long-term performance of the roll-up firm. Thus, founder participation increases the benefits or reduces the costs of these transactions. These effects actually become stronger in models (ii) and (iv), which include industry dummies. These results are also economically important: increasing founder ownership from its 25th percentile (27.7%) to its 75th percentile (51.6%) increases long-run returns by almost 54 percentage points, based on the coefficients in model (ii).

The coefficient on the founder board control variable indicates that long-run returns are between 1.7 [based on model (i)] and 3.1 [based on model (ii)] percentage points higher, after adjusting for market movements, for every percentage point increase in the fraction of the board consisting of founders. Once again, this strongly supports the notion that continued founder involvement is important. Since both board control and founder ownership are included in the model, the board control variable is not simply proxying for founder ownership; in fact, the correlation between these variables is only 0.19.

Sponsor ownership has a negative effect on the stock returns of the company. While surprising in terms of incentives, this result is consistent with the view that the sponsor's compensation was excessive and did not leave enough wealth in the company to execute the company's strategy. Kaplan and Stein (1993) also point to excessive compensation for promoters as one of the problems associated with the MBOs of the late 1980s. Sponsor board control is not related to long-run performance.¹³

We also investigate whether founder ownership proxies for founders who cash out of firms expected to perform poorly. To do this, we replace the level of founder ownership with the fraction of total founder

¹³ One potential concern with this analysis is that sponsor ownership is negatively related to founder ownership. To make sure this is not driving the result, we redefine sponsor ownership as fractional ownership of the shares not held by founders [i.e., $\text{new sponsor ownership} = \text{old sponsor ownership} / (1 - \text{founder ownership})$]. The coefficient on this variable is also negative and significant at the 3% level.

compensation that is granted in the form of company shares. The results for this specification, which are not reported in Tables 13, show that the coefficient on this fraction is positive, but not significant. Thus, long-run performance is not affected by the extent to which the founders are “cashing out.” This finding provides evidence against the reverse causality interpretation of the relation between founder ownership and returns.

One potential inconsistency in the results in Tables 13 is that the coefficient on the CEO founder dummy is negative and economically large, although it is not estimated very precisely, while other evidence suggests that more founder involvement is beneficial. Further analysis reveals that two issues are important in explaining this finding. First, while founder involvement is important, an individual founder may not have the expertise to run the business. Thus, founder CEOs may make poor business decisions. This argument is behind Notre Capital’s requirement that a founder does not become the CEO of the any of the roll-up deals it sponsors. In the next section, we will discuss evidence on acquisition performance in support of this conjecture. Second, if one founder is the CEO, this may lead to conflicts of interest among founders because they are no longer equally endowed [see also Rajan and Zingales (2000)]. To investigate this question in more detail, we gather data on individual founder ownership in each company and compute the coefficient of variation of founder ownership per firm. Long-run returns are negatively related to this coefficient of variation and the inclusion of this explanatory variable reverses the sign on the founder CEO dummy and reduces its economic significance. (These findings are not reported in a table, but are available upon request.)

In Table 14, we study the relation between annual accounting performance and the same regressors. We employ as many data points on each firm as are available. Again, we control for firm size at the time of the IPO and we include industry dummies in some specifications.¹⁴ Although these tests were performed with the full set of explanatory factors, to conserve space we only report the results for those variables that are significant in this model or were significant in explaining stock returns. All specifications also include dummies to reflect the number of years since the firm has gone public, and the standard errors are adjusted to take into account that the regressions contain multiple observations on some firms.

The dependent variable in the first two columns is the industry-adjusted operating return on sales, and in the last two columns it is industry-adjusted return on sales. In all models, we find that founder ownership and board membership have a positive impact on performance. The results are statistically significant in all models for founder ownership

¹⁴ The dependent variable in the models has already been adjusted for industry. However, it is still possible that there is variation in this industry-adjusted figure across industries.

Table 14
Cross-sectional regression of industry-adjusted accounting performance on transaction characteristics and governance variables

Explanatory variable	Dependent variable			
	Operating return on sales (i)	Operating return on sales (ii)	Return on sales (iii)	Return on sales (iv)
Constant	0.0037 (0.99)	0.0275 (0.84)	-0.3147 (0.14)	-0.3519 (0.16)
Founder ownership	0.1339 (0.02)	0.1048 (0.00)	0.2062 (0.00)	0.2132 (0.00)
Fraction of board controlled by founders	0.0098 (0.77)	0.0928 (0.01)	0.1175 (0.02)	0.1954 (0.00)
Sponsor ownership	0.0264 (0.67)	0.0114 (0.84)	0.1146 (0.12)	0.0924 (0.30)
Log (market value on first trading day)	-0.0043 (0.80)	-0.0069 (0.55)	0.0055 (0.76)	0.0104 (0.63)
Industry dummies included	No	Yes	No	Yes
Adjusted <i>r</i> -squared	0.13	0.25	0.16	0.15
<i>N</i>	107	107	102	102

In this table, industry-adjusted return on sales measures are used as dependent variables. Founder ownership is the fraction of the firm held by the founding companies when the IPO was completed. Fraction of board controlled by founders is computed as: number of founders on the board at the time of the IPO divided by board size. Sponsor ownership is the fraction of the firm held by the roll-up sponsor when the IPO was completed. *P*-values are listed in parentheses. Industry dummies are based on the Fama-French 12 industry classification.

and in all but one model for founder board membership. Further, the economic significance of the results is substantial. For example, the regression in column (ii) suggests that operating return on sales is 0.10 percentage points higher for each percentage increase in founder ownership. These findings substantiate the results of the return regressions, showing that founder involvement positively influences operating performance.

In contrast to the stock return regressions, the impact of sponsor ownership on operating performance is not statistically significant. We examine two possible reasons for this result. First, perhaps firms with higher sponsor ownership were valued higher at (or shortly after) their IPO, embedding investor expectations of outperformance in their stock price. However, we find no evidence to support this conjecture using the valuation measures reported in Tables 10 and 11. A second possibility is that when these firms made additional acquisitions after the initial roll-up, they overpaid for these transactions. As we will discuss shortly, the stock price evidence presented in the next section is consistent with this explanation. We have also studied the relation between our valuation measures and founder involvement. There is no significant relation using the price-to-value ratios computed at the time of the IPO. However, when we use the industry-adjusted *q* ratio computed at the fiscal year-end after the IPO (year 0), we find that founder ownership and founder board control are both positively and significantly related to valuation (not reported in a table).

Overall, the findings contained in Tables 13 and 14 indicate that there are important cross-sectional differences in the long-run stock price and

accounting performance of the firms in our sample. If the founding companies control a larger fraction of the board or hold a substantial amount of stock in the roll-up company, the firms perform very well; if not, they underperform. Sponsor ownership, on the other hand, affects stock returns negatively, consistent with the excessive compensation interpretation. Thus, involvement of the founders of the companies included in the initial stages of the industry consolidation is a key ingredient of success.^{15,16}

4. Acquisition Activity and Organizational Changes

4.1 Subsequent acquisition activity

As mentioned previously, a basic premise behind the initial transaction is that the firm will make further acquisitions to continue the consolidation process that began at the IPO stage. To gain a more complete appreciation of the potential benefits accruing to the roll-up transaction, it is therefore important to examine these subsequent acquisitions and determine how the market receives them. To facilitate this effort, we identify the acquisitions made by the firms in our sample using the SDC database.

Of the 47 companies in our sample, 42 companies make 614 acquisitions from their IPO until the end of 2001. Thus, the average firm clearly continues the consolidation process started at the IPO. These acquisitions also lead to tremendous growth in firm size. Median assets increase from \$140 million in the year of the IPO to \$525 million for the last available year of data; median sales go from \$98 million to \$259 million.

Several acquisitions are often announced on the same day; as a result, we are able to identify 336 days on which acquisition announcements are made. We measure abnormal returns relative to the CRSP index to proxy for the stock market and report these in Table 15. Abnormal three-day event returns average 1.28% (p -value = .01) and the median is 0.86% (p -value = .00).¹⁷ When we sum the abnormal returns across all the

¹⁵ Of course, the ownership structure and board composition change in subsequent years as some founders and sponsors sell their shares and more companies are acquired using stock financing. However, the firm's governance structure at the time of the IPO is the best predictor of its structure in subsequent years. Firms with high founder ownership at the time of the IPO continue to have higher ownership in subsequent years. When we repeat our performance regressions using the governance structure for the firms in subsequent years, our findings continue to hold.

¹⁶ We have also investigated whether ownership concentration, computed as joint founder and sponsor ownership is related to stock returns or accounting performance, but we do not find a significant relation.

¹⁷ When 42 firms make 336 announcements over a six-year period, it is likely that some of the event-windows overlap. As a result, the observations are not independent. We employ a calendar time approach to determine whether this weakens our inferences. On each day, we construct a portfolio of firms that announce an acquisition on that day, the previous day, or the next day. There are 645 such days over the sample period. The average daily abnormal return is 0.39% (p -value = .02), and the median is 0.25% (p -value = .00). This corresponds to a three-day return of 1.17%, which is close to the 1.28% reported in Table 15.

Table 15
Abnormal returns surrounding acquisition announcements after the IPO

Description	Mean % (<i>p</i> -value)	Median % (<i>p</i> -value)	<i>N</i>
3-Day window around announcement	1.28 (.01)	0.86 (.00)	336
Announcement returns summed across all acquisitions by company	10.47 (.02)	7.40 (.01)	42
Pre-announcement market-adjusted return before each announcement	16.58 (.00)	7.68 (.00)	336
Post-announcement market-adjusted return after each announcement	-113.00 (.00)	-86.23 (.00)	336

Abnormal returns are computed as the company return minus the return on the value weighted CRSP index. In the mean column in this table, the *p*-value is for a *t*-test of equality of the mean to zero while in the median column, the *p*-value is for a sign rank test of equality of the median to zero.

announcement dates for each firm, the mean is 10.47% and the median 6.24%. Thus, it appears that investors respond positively to further consolidation in the industry. It may also be the case that the announcement of additional acquisitions signals investors that the integration of the firms combined during the IPO has been successful. The announcement effects are very different from the neutral or negative abnormal returns observed around acquisitions in general [see, e.g., Brown and Ryngaert (1991)].

The positive market response to these acquisitions does not appear to be consistent with the average poor long-run performance reported earlier. The explanation for this is that the returns of companies before and after their acquisitions are very asymmetric, and that only successful firms make acquisitions. This is also illustrated in Table 15.

To determine pre-acquisition returns, we compute the market-adjusted returns from the IPO until each acquisition date. Thus, there is one observation for each acquisition date, and firms that make more acquisitions are included more often in the computation of this average. We find average market-adjusted returns before each acquisition of 16.58% and median market-adjusted returns of 7.68%. Conversely, the character of abnormal performance changes dramatically when market-adjusted returns are measured in the post-announcement period (i.e., from the date of the new acquisition until the end of 2001). Averaged across all announcements, acquirers underperform the market by 113% (median = 86%). While we know that firms generally make acquisitions after they performed well [e.g., Roll (1986)], the performance subsequent to these acquisitions is much worse than documented previously [see, for instance, Loughran and Vijh (1997)].

Which roll-up firms make good acquisitions? To answer this question, we relate the stock price response associated with each acquisition to the governance characteristics of the acquiring firms. Table 16 contains the results. All acquisition attempts are combined in column (i), while column (ii) focuses on transactions during the first two years after the IPO.

Table 16
Cross-sectional regression of abnormal returns surrounding acquisition announcements after the IPO

Explanatory variable	All acquisitions (i)	Acquisitions during first 2 years (ii)
Constant	-0.0193 (0.51)	-0.0157 (0.60)
Founder ownership	0.0323 (0.40)	0.0369 (0.37)
Fraction of board controlled by founders	0.0551 (0.08)	0.0553 (0.10)
Sponsor ownership	-0.0178 (0.71)	-0.0450 (0.37)
Founder CEO dummy	-0.0173 (0.19)	-0.0218 (0.13)
Adjusted <i>r</i> -squared	0.01	0.01
<i>N</i>	292	250

Abnormal returns are computed as the company return minus the return on the value weighted CRSP index. This table reports the estimated coefficients for regressions of abnormal returns on roll-up governance variables. *P*-values are listed in parentheses.

Abnormal returns around acquisitions are very noisy, which explains the low explanatory power of the models and the weak statistical significance of the explanatory variables. These caveats notwithstanding, three results emerge from this analysis. First, there is a positive relation between acquisition announcement effects and founder involvement, and the effect of founder board membership is statistically significant. Second, the effect of sponsor ownership is negative and economically large, consistent with the negative relation between sponsor ownership and long-run returns documented in Section 3. For example, based on model (ii), moving sponsor ownership from its 25th percentile (9.99%) to its 75th percentile (24.58%) decreases abnormal returns by 66 basis points. Third, the coefficient on the founder CEO dummy is negative, which helps explain why firms with a founder CEO have lower long-run stock returns.

Overall, the preceding evidence is consistent with the following scenario. In a roll-up transaction, a number of firms go public in a single entity, with the promise that more acquisitions will follow to further consolidate the industry. These acquisitions will be partially financed by the company's stock. If the new firms perform well, they make the promised acquisitions. On average, the market supports these transactions, in the continued belief that they will enhance profitability. The firms that are successful continue to make acquisitions; the ones that are not successful lose their acquisition currency and therefore stop the consolidation process. Successful firms are the ones where the original founders have higher ownership stakes in the firm and control a larger fraction of the board, while the sponsors have a lower ownership stake. These variables also affect how the acquisitions are received by the market.

4.2 Restructurings and organizational changes

To conclude the investigation, we study the organizational changes made by the sample of roll-up firms. The goal of this analysis is to find out whether the firms take action in response to poor market performance and to determine whether these changes are successful. To do this, we

document the organizational changes, restructurings, and new financings obtained by the firms that occur from the IPO through the end of 2001 by reading all news articles on Lexis–Nexis about each firm during that period. Table 17 summarizes these changes. For each type of event, we report the market-adjusted returns before the event, the three-day announcement effect, and the market-adjusted returns after the event. For the sake of brevity, we only report the mean figures; the medians are very similar. All the pre-event returns are significantly different from zero at the 5% level or better, except for the pre-event return before private debt offerings. None of the announcement effects are significant, except for those associated with asset sales. Finally, the post-event returns are all significant, except for the “other restructurings” and “chairman turnover” categories. We also provide results on industry-adjusted profitability in the years before and after the event.

An analysis of the turnover and restructuring events leads to a number of interesting observations. First, the roll-up firms go through a tremendous amount of change after the IPO. Of the 47 sample firms, 25 have CEO and/or Chair turnover and 24 either sell assets or announce some other restructuring program. Though some reorganization is expected, this level of organizational change is extreme, even after controlling for performance. For example, Weisbach (1988) reports annual turnover of 6% for the worst decile stock performers in his sample of 367 NYSE firms over the period 1974–1983. For IPOs, Mikkelsen, Partch, and Shah (1997) find CEO turnover in 39% of the firms over the five-year period after going public. Second, executive turnover, divestitures, and other restructuring activities are all preceded by poor stock price performance. The stock returns of the average firm trail the market by 80–120 percentage points. The operating performance of these firms is not particularly poor, but the ratio of net income to sales is low. Third, the restructuring activities are not successful in halting the poor performance. Denis and Denis (1995) document that it takes up to two years to observe improvements in performance after CEO turnover, which may explain why we find no evidence of better operating performance. What is surprising, however, is that stock prices continue to drop subsequently as well, which is inconsistent with Denis and Denis’ evidence. In addition, we do not find a positive stock price response when the executive change is announced, which is again different from what has been documented in the past.¹⁸

The new financing events indicate that the roll-up firms only perform poorly prior to private equity investments. In fact, the firms outperform

¹⁸ We also studied the relation between the probability of turnover and restructuring and the corporate governance variables examined previously. The results are generally in line with those already reported: firms are less likely to restructure or experience CEO/Chair turnover when founders own more shares and control a larger fraction of the board. These effects are not statistically significant, however, except for the negative relation between turnover and founder ownership.

Table 17
Major events

Event	Restructuring events	Restructuring firms	Average market-adjusted returns		Industry-adjusted operating return on sales (%)		Industry-adjusted return on sales (%)		
			Pre-event	Announcement	Post-event	Pre-event	Post-event	Pre-event	Post-event
<i>Executive turnover</i>									
CEO turnover	27	23	-0.8462	-0.0291	-0.3859	-1.60	1.38	-1.29	-2.38
Chairman turnover	20	17	-1.1100	-0.0656	-0.1318	0.92	0.60	1.05	-4.67
<i>Restructuring</i>									
Asset sales	25	12	-1.3144	0.0777	-0.4966	0.30	0.64	-0.72	-8.37
Financial distress	3	3	-1.1131	-0.6173	-0.8755	2.66	-5.31	-2.16	-7.27
Other restructuring	16	13	-1.0910	-0.0997	-0.1659	0.43	-0.34	-1.46	-4.18
<i>New financing</i>									
Private equity investm.	10	8	-0.8638	-0.0227	-0.4933	-0.29	0.36	-0.90	-1.35
Equity issue	21	15	0.4969	0.0069	-1.6853	1.20	3.59	0.62	-0.63
Private debt offering	31	20	0.3954	-0.0131	-1.4340	1.31	2.90	-0.19	-1.83
Bank loan	74	35	-0.5230	-0.0226	-0.6874	1.95	2.18	0.43	-2.70
<i>Other</i>									
Shareholder lawsuits	10	9	-1.0918	-0.0625	-0.1648	6.53	2.26	1.09	-16.38

This table summarizes executive turnover, restructuring activities, and new financing in the sample firms from the IPO date until the end of 2001 for the sample of 47 roll-up IPOs. Ten of the announcements of Chairman turnover occur on the same day as the CEO turnover and are often the same person. The announcement effect is computed over a three-day window surrounding the event, using the CRSP value weighted index as the benchmark.

the market before equity issues, which is consistent with prior evidence [see, e.g., Mikkelsen and Partch (1986)]. After obtaining new financing, however, returns deteriorate quickly. These results are similar to those for the acquisition announcements just discussed.

In sum, poor performance leads to a high level of restructuring activity. However, these changes do not, in general, abate the continuing deterioration of the stock price. Combined with the previous evidence on long-run performance, this suggests that the proper organizational structure needs to be established from the beginning for roll-up firms to be successful. In addition, the firms that underwent major restructurings had less founder involvement from the start.

5. Concluding Remarks

What ingredients need to be in place to successfully consolidate a fragmented industry? This paper sheds some light on this question through the study of 47 companies involved in roll-up initial public offerings over the period 1994–1998. The advantage of studying roll-ups is that we can follow the consolidated firm from the day it is founded, thereby avoiding the selection bias associated with the analysis of firms that started the consolidation process privately.

While the stock price performance of the firms in our sample is poor, on average, there is substantial cross-sectional variation and some firms actually perform relatively well. In particular, we document that continued involvement of the founders of the firms is crucial for the long-run success of the venture. Stock returns improve by more 1.5 percentage points for each percentage point increase in original founder ownership and founder board control. This suggests that the incentives provided by stock ownership overcome potential power struggles between the founders. The beneficial impact of founder involvement also emerges when we study accounting performance. Further, our results are more consistent with causality going from founder involvement to performance rather than vice versa. Thus, having the proper initial governance structure is the key determinant of a successful industry consolidation.

The announcement of subsequent acquisitions by roll-up firms leads to a positive stock price response, but market-adjusted post-announcement returns are significantly negative. Many of the firms with particularly poor performance remove their top executives, sell off some of their assets, or attempt other types of restructuring. However, these attempts to halt poor performance appear to be unsuccessful. Once again, this suggests that it is important for roll-ups to have the right governance structure at the time of the IPO. Firms with more founder involvement from the start also make better acquisitions and experience less top management turnover.

The sponsor's average compensation in these transactions is almost \$30 million, which appears excessive and may contribute to the subsequent poor performance. Consistent with the notion that the sponsors of the transaction pay themselves too much for organizing the deal, sponsor ownership has a negative impact on long-run stock returns.

Because roll-ups performed poorly on average, potential financing for these transactions dried up after 1998. Our analysis indicates that labeling all roll-up transactions as excessive is not warranted and that the market should be receptive to those transactions that are structured along the lines indicated herein. In fact, our conclusions also apply to consolidations that start off as private companies; these firms too should make sure that the founders of the acquired companies continue to own shares in the company and are members of the board.

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