Implications of Data Screens on Merger and Acquisition Analysis: A Large Sample Study of Mergers and Acquisitions from 1992 to 2009

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We analyze a comprehensive set of mergers and acquisitions from SDC data from 1992 through 2009. We do not impose common restrictions such as excluding private bidders, small targets, or deals without a deal value. We show a broader scope of mergers and acquisitions activity than that implied in the literature, which generally oversamples larger deals involving public firms. Further, some of our results differ from the extant literature. For example, the finding that mergers occur in waves is attenuated with a greater presence of smaller and/or non-public firms. Also, acquirers gain in most takeovers despite a threefold decline over the sample period in acquirer returns. (*JEL* G14, G34)

Much of what we know about mergers and acquisitions (M&As) is taken from studies that are performed on relatively small and unrepresentative samples, sometimes leading to inferences about them that are incomplete or misleading. We consider a substantially larger sample than those found in previous studies, which allows us to both present data that are more representative of the characteristics of M&As and provide evidence on the extent to which some conclusions of the prior literature hold true in the larger sample. Our results substantiate much of the earlier work, but we also provide evidence that some conclusions from unrepresentative samples do not hold for M&As in general.

In addition, we consider some of the definitions of acquisition and merger, discuss the distinction between public and private transactions, and provide some guidance on the importance of considering in detail the impact of sample selection on empirical analysis.

Our large sample allows us to supplement and in some cases modify what research has found about the nature of M&As. First, we show the considerable breadth of M&A activity. A large number of deals are screened out of most research because there is insufficient data for the analysis. Thus, the samples that are used oversample larger deals and deals involving publicly traded firms. For example, of the 311,894 acquisitions we identify in the SDC database, only 41.3% (128,900) include a U.S. acquirer. Of those transactions, 67,265 of the acquirers (21.6% of the original sample and 52.2% of the U.S. acquirer sample) have data available on CRSP. If we require that the target be at least 1% of the acquirer size, which also requires a non-missing deal value, then the number of transactions drops to 28,412 (22.0% of U.S. acquirer transactions). Further, requiring the target to have data available on CRSP and be valued at $50 million or more reduces the number of transactions to 3,100. These remaining deals are those most likely to be studied in detail, yet they represent only 2.4% of the U.S. acquirer transactions and only 1% of the worldwide sample.

Second, when we widen the scope of M&As to include those deals in the SDC database that are usually left out of research due to data constraints, some results differ from those in the extant literature. For example, research demonstrates the existence of merger waves and clustering in industries subject to exogenous shocks from factors such as changes in technology, input prices, or regulation. However, we find that merger waves, both in aggregate and within industries, are far less apparent in the larger dataset. This mitigation of waves is because the larger sample includes deals with private acquirers and small deals. Merger and acquisition activity that includes small deals and private acquirers is much smoother and less wavelike than the pattern observed with only public acquirers and large deals. Further, the relation between IPO activity and M&A activity is much weaker in the larger sample than others have found with more restrictive samples.

Additionally, instead of industry waves, we find that M&As are concentrated in certain days within a year. The top three acquisition effective dates account for 3.56% of all effective dates, and the days on which they occur are days 365, 181, and 90, corresponding to the end of a quarter. We speculate that these closing dates are influenced by tax considerations or by financial advisors pushing deals through in order to obtain higher rankings. On the flip side, the completion rate is only 0.22% (versus the unconditional expectation of 0.82%) during the three days around and including Christmas (days 358, 359, and 360). These three days have the fewest number of acquisition completion announcements.

Third, we verify, expand, and present new evidence regarding acquirer abnormal announcement returns. Our evidence suggests that on average,

acquisition activity—acquiring, divesting, and being acquired—is wealth increasing for shareholders of acquiring firms. For 9,533 unique U.S. acquirers with CRSP data, the average combined abnormal return from all of a firm's acquisition and divestiture activity is 15.7%. Only when one has limited the sample to large public firms buying other large public firms is the acquirer announcement return negative; in the larger samples of acquirers, the acquirer abnormal return is positive and significant. Similarly, some of the findings on the relation between returns and method of payment are sample specific. The result that negative acquirer returns are associated with deals where stock is a means of payment is not a universal finding. Stock as a method of payment in M&As is used more than cash in deals associated with the highest cumulative abnormal returns. Further, the use of stock is as frequent in the greatest value-reducing deals as in the deals that create the most value. Thus, market timing by managers cannot fully explain the use of stock.

Finally, we show that the vast majority of firms listed on CRSP participate in the market for corporate control and that this market is resilient despite broad economic fluctuations. We find that 75.5% participate in M&As and do so quite frequently (on average, U.S. acquirers on CRSP made eight acquisitions from 1992 to 2009). Also, once we consider frequently deleted deals, M&A activity is best described as predominant and pervasive. For example, during the financial crisis of 2008 and 2009 when both equity values were depressed and debt financing was difficult to obtain, M&A activity could at worst be described as merely slowing down.

The remainder of this article is organized as follows: In Section 1, we present descriptive statistics on the full sample of M&As in the SDC database, and we discuss what is meant by common terminology such as public, private, mergers, and acquisitions. We examine M&A clustering and waves in Section 2. Statistics on the broadest set of acquisition announcement returns are presented in Section 3. We conclude in Section 4.

1. Sample Size and Evidence on Mergers and Acquisitions

1.1 Sample selection in studies of mergers and acquisitions
Existing M&A research, even research based on "large samples," generally uses relatively small samples compared to the available set of M&A activity. For example, large-sample research includes the work of Erel, Liao, and Weisbach (2010) with 56,978 and Ellis, Moeller, Schlingemann, and Stulz (2011) with 37,414 cross-border deals; Ahern (2007) and Moeller, Schlingemann, and Stulz (2005) both with over 12,000 acquisitions; Maksimovic and Phillips (2008), who examine the acquisitions of plants by 24,868 firms; and Maksimovic, Phillips, and Yang (2010), who examine the acquisition of plants and differences between public and private firm characteristics in mergers for 40,000 firms. At the opposite extreme, Boone and Mulherin (2008) look at about 300 acquisitions, but do so in detail. In the middle, and

more typical, are studies such as Rhodes-Kropf, Robinson, and Viswanathan (2005) with 4,325 acquirers; Fuller, Netter, and Stegemoller (2002) with 3,135 target firms; Rhodes-Kropf and Robinson (2008) with 3,400 deals; and Andrade, Mitchell, and Stafford (2001) with 3,688 deals. In contrast, we find that the full set of SDC M&As from 1992 to 2009 numbers more than 310,000 (128,900 transactions when restricted to U.S. acquirers). This sample includes more acquisitions per year than any other study of U.S. acquirers and includes recent data.

We examine all completed M&As available on SDC's U.S. Mergers and Acquisitions Database from January 1, 1992, to December 31, 2009. Initially, we do not restrict the data as to whether or not targets or acquirers are domestic or foreign, nor do we place restrictions on whether or not SDC reports target deal value.[1] We limit our analysis to transactions with an explicit change of control: The acquirer must purchase 50% or more of the target's shares in the transaction and own less than 50% of the target prior to the transaction.[2] Our sample selection is based on the following steps:

Step 1: All acquisitions from 01/01/1992 to12/31/2009.

Step 2: Disclosed and Undisclosed [deal value] Mergers and Acquisitions (Deal Type: 1, 2).

Step 3: Deal Status is "Completed."

Step 4: Percentage of Shares Acquired in Transaction: 50 to HI.

Step 5: Percentage of Shares Held by Acquirer Six Months Prior to Announcement: 0 to 49.

After these screens, we eliminate 9,332 duplicate observations[3] and are left with 311,894 transactions with available deal values totaling over $32 trillion. We adjust all dollar values to 2010 dollars by the Consumer Price Index (CPI).

For illustrative purposes, we compare our sample selection criteria to that of Fuller, Netter, and Stegemoller (2002), who consider a sample of more than 500 unique acquirers for more than 3,000 public and private targets from 1990 to 2000. These authors use four restrictions that we do not employ in this study. First, they require the target to be a public firm, a private firm, or a subsidiary of a public firm. Our sample includes, for example, government-owned entities and subsidiaries of private firms. Their second restriction requires the target firm to have a disclosed dollar value. We examine all deals, whether a

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[1] The deal value reported by SDC is not necessarily equivalent to the value of the target. For example, if an acquirer purchases 60% of a $100 million firm, then the deal value is $60 million.

[2] We choose to examine deals where the transaction is significant for both the bidder and the target. Thus, we would not include a deal where the acquirer had 49% and acquired 2% or where the acquirer owns 30% of the target and then acquires another 25%. However, any deal where the bidder acquires more than 50% of the target is included.

[3] We delete duplicate observations based on all of the following variables: announcement and effective date, acquirer and acquirer parent name, deal value, target and acquirer SIC code, and percentage stock as method of payment.

deal value is disclosed or not. Third, they impose the restriction that acquiring firms are U.S. firms publicly traded on the AMEX, NASDAQ, or NYSE and have five days of return data around the takeover announcement listed in the CRSP file. Although we analyze acquirers with this restriction for comparative purposes in some of our reported results, we place no restriction on the public status or nationality of the acquirer for our primary sample. Finally, in Fuller et al., neither the acquirer nor the target is a utility or a financial institution. We place no restriction on the industry of the acquirer. The Fuller et al. restrictions are typical of much M&A research, especially the second and third restrictions, and result in the elimination of a significant number of mergers, especially of smaller firms. However, their sample is large by comparison to many studies, mainly due to the inclusion of private targets.

1.2 SDC data

We start our analysis of SDC data in 1992 after comparing the number of domestic deals reported in the SDC database to the number of domestic deals reported by W. T. Grimm & Co. from 1980 to 1991 (see Table A1). For the first two years of data, 1980 and 1981, SDC reports less than one-third of the number of domestic deals that Grimm reports. From 1982 to 1986, there are no quarters in which SDC coverage is greater than that of Grimm, with the number of transactions in SDC representing from 26% to 93% of that in Grimm. The first quarter in which SDC coverage is greater than that of Grimm is the second quarter of 1987. After the third quarter of 1988, SDC coverage is consistently greater than Grimm, averaging 1.36, 1.71, and 1.84 times the Grimm coverage in 1989, 1990, and 1991, respectively. Therefore, by at least 1989 the SDC coverage appears to be complete (at least as compared to Grimm) using the screens typical of academic research. This relatively rapid change in SDC coverage in the 1980s suggests that researchers wanting to analyze data from the 1980s using the SDC database should be cautious, especially if answering their research question involves examining acquisition activity over time. Though we do not determine the nature of the bias for SDC M&A data from the 1980s, we do know that it is less complete than that since 1990.

In our analysis, we concentrate on deals since 1992. The main reason is that only after 1992 does the SDC database cover deals of any value, including unreported values. Specifically, SDC Platinum online help for U.S. and non-U.S. targets data from the worldwide mergers, acquisitions, and alliances database says about coverage: "All corporate transactions involving at least 5% of the ownership of a company where the transaction was valued at $1 million or more (after 1992, deals of any value are covered) or where the value of the transaction was undisclosed." We take all data on transaction characteristics from SDC in our analysis. In addition, we use CRSP and Compustat to determine price and accounting data, respectively.

Table 1
Classifications of mergers and acquisitions

Panel A. Types of M&A transactions

Bruner (2004)	SDC form of deal variable and definition
These classifications are distinguished by tax implications for buyers and sellers, buyer's exposure to target's liabilities, need for target (buyer) shareholder vote, target company survival, and form of payment: 　1.　Cash purchase of asset 　2.　Cash purchase of stock 　3.　Cash merger 　4.　Statutory merger or consolidation 　5.　Forward triangular merger 　6.　Reverse triangular merger 　7.　Voting stock-for-stock 　8.　Voting stock-for-assets	*Merger*: A combination of business takes place or 100% of the stock of a public or private company is acquired. *Acquisition*: Deal in which 100% of a company is spun off or split off is classified as an acquisition by shareholders. *Acquisition of majority interest*: The acquirer must have held less than 50% and be seeking to acquire 50% or more, but less than 100% of the target company's stock. *Acquisition of assets*: Assets of a company, subsidiary, division, or branch are acquired. Code is used in all transactions when a company is being acquired and the consideration sought is not given. *Acquisition of certain assets*: Deals in which sources state that "certain assets" of a company, subsidiary, or division are acquired.

(continued)

A difficulty in M&A research is that the type of transaction of interest to the researcher may not have a matching definition in a data source such as the SDC database.[4] For example, there is subjectivity in defining the different types of M&As. Bruner (2004) designates eight classifications (reported in Panel A of Table 1) based on the impact on taxes for buyers and sellers, voting implications, and form of payment in addition to other substantive characteristics. In contrast, SDC classifications are more general and are broadly based on the amount of the firm acquired. Thus, the researcher would want to take care that the transactions defined in the database are consistent with the set being studied. In this article, we do not distinguish among the SDC definitions such as acquisitions of assets, mergers, acquisitions of majority interest, or acquisitions of "certain assets." To the seller, the implications of an asset sale may have little in common with a merger. However, it is not clear what distinction to make, if any, among these transactions when the acquirer is the party-of-interest, as in our research. For example, it is difficult to assign specific nomenclature to a transaction in which an acquirer purchases 12 grocery stores. The acquirer is likely purchasing a business—12 businesses, in this case—while the target's parent is selling an asset. We try to avoid using SDC's definitions since they are vague. Instead of using SDC's subcategorization of M&A, we start with all takeovers, as loosely defined as possible (see SDC steps 1 and 2 above), and use some common screens to determine if control of an asset changes in the transaction (see SDC steps 3–5 above).

Panel A in Table 1 suggests that if a researcher is interested in the examination of issues related to the technicalities inherent in the form of the deal (e.g., tax implications, the acquirer's exposure to the target's liabilities, etc.), then the individual should use SDC's definitions of merger and acquisition as

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[4] This is the argument for case studies where all the characteristics of a single transaction can be studied in detail.

Table 1
Continued

Panel B. Transaction types

(1) SDC form of deal variable	Domestic acquirers N = 128,900				Foreign acquirers N = 182,994			
	(2) % of sample	(3) % with missing deal value	(4) % public targets	(5) % paid with mainly stock	(6) % of sample	(7) % with missing deal value	(8) % public targets	(9) % paid with mainly stock
Acquisition of assets	72.9%	64.7%	0.4%	14.0%	58.8%	60.1%	0.4%	10.4%
Merger	20.7%	34.8%	28.0%	51.1%	23.3%	46.1%	15.2%	36.4%
Acq. of a majority interest	4.1%	47.1%	18.6%	12.2%	17.0%	49.5%	12.4%	9.8%
Acq. of "certain assets"	1.8%	58.5%	0.1%	14.1%	0.4%	47.8%	0.2%	12.4%
Acquisition	0.5%	31.0%	13.1%	2.5%	0.4%	41.4%	13.6%	3.3%
Acq. of remaining interest	0.0%	45.5%	31.8%	35.0%	0.1%	64.3%	9.8%	16.7%
Exchange offer	0.0%	50.0%	50.0%	0.0%	0.0%	0.0%	100.0%	100.0%

This table presents information about the definitions of kinds of mergers and acquisitions (in Panel A) and the classification of mergers and acquisitions as reported in the SDC database (in Panel B). Panel B reports statistics with respect to the "deal form" variable provided in SDC. Column 1 shows "deal form." Column 2 (6) reports the percentage of the sample of domestic (foreign) acquirers that makes up each transaction type. Columns 3 and 7 show the percentage of transactions for which there is no deal value. Columns 4 and 8 report the percentage of transactions in which the target's public status according to SDC is public. Columns 5 and 9 report the percentage of transactions in which stock is the main method of payment. Note that the level of reporting on method of payment is roughly the same as target deal value. So, if a transaction does not have a reported deal value, then it likely does not have method of payment data either.

a guide only, not as the definitive word on form. Similarly, SDC provides very little guidance as to how the data are collected or how the variables that classify the data are defined. This lack of guidance leaves the researcher with little help in determining if classifications regarding M&As are correct or appropriate for his or her research.[5]

There is also little certainty on the degree to which the SDC database is complete, even when one of the parties in the transaction is public. For example, in an appendix to their paper, Rodrigues and Stegemoller (2007) show that SDC reports only about 96% (68 of 71) acquisitions made by Cisco Systems from 1995 to 2004. Further, we suggest nothing about the completeness of the SDC data regarding foreign transactions, as we have no means of comparison for these transactions as we do for domestic deals. For the most part, we do not include acquisitions by foreign firms in our analysis here.

Panel B in Table 1 reports statistics on SDC's "form of deal" variable for both U.S. and foreign acquirers. The majority of the transactions in our sample of U.S. acquirers are acquisitions of assets (72.9%). Among the acquisition of assets transactions, 64.7% do not have a deal value, and only 0.4% of these transactions involve a target with a public status classification of "public" according to SDC. Mergers comprise the next largest grouping of transactions, at 20.7% of our sample of U.S. acquirers, of which 34.8% have a missing deal value and 28% involve a public target as classified by SDC. The next largest category is acquisitions of a majority interest. These deals are 4.1% of our sample, and 18.6% of the deals are for targets classified as public by SDC. No other classification (acquisition of "certain assets," acquisition, acquisition of remaining interest, or exchange offer) makes up more than 2% of our sample of U.S. acquirers.

Panel B of Table 1 demonstrates that the types of deals that are most likely to be covered by traditional academic studies are mergers. Though mergers (as defined by SDC) comprise one-fifth of the M&A sample, they have much more information about the deal available to the researcher than other transactions in the data. Comparing mergers to the much more abundant acquisition of assets, we see that mergers are almost twice as likely to have a deal value recorded for the target and more than 50 times more likely to have extensive information about the target's other characteristics since the target is publicly traded. Mergers, as classified by SDC, are only a stock swap about half the time. Yet, this proportion of stock deals is more than three times as much as in any of the other top five deal forms. Thus, inserting "merger" as a form of deal screen in SDC will bias a study of M&As toward public-public deals paid for with stock. To then characterize all M&As by the results of such studies is misleading.

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[5] We do not address the question of whether the individual data items are consistent in SDC, which may also occur. Boone and Mulherin (2007), for example, show the incompleteness of the SDC data in their examination of termination provisions (see their Table 3, p. 470).

The data for acquisitions by foreign acquirers are fairly similar and are in Columns 6–8 of Panel B in Table 1. The main difference from the U.S. acquirers is that there are fewer deals classified as acquisitions of assets (58.8% vs. 72.9% for U.S. acquirers) and more acquisitions of majority interest (17.0% for foreign acquirers vs. 4.1% for U.S. acquirers). We do not pursue the reasons for these differences here but instead only note them.

1.3 Effects of data screens on sample size and other variables

The implications of sample selection on corporate finance research are illustrated in numerous papers. For example, Kahle and Walkling (1996) show that there are significant differences in industry classifications between CRSP and Compustat, which has implications for some inferences in financial research. Fuller, Netter, and Stegemoller (2002), in studying a fairly large sample of mergers, find that results from other studies are dependent on the sample of M&As used. For example, they add acquisitions of privately held targets to deals with public targets and find that the proportion of cash deals is much larger than in deals for public targets alone. Further, bidder returns are more positive when the targets are private. Moeller, Schlingemann, and Stulz (2005) show a relation between the size of a deal and wealth creation (or loss) from a deal. Boone and Mulherin (2007) study a relatively small sample of takeovers in detail and find that the SDC data about the extent of M&A activity (number of bidders, for example) miss a significant amount of M&A activity. More recently, Holderness (2009) examines ownership concentration in U.S. firms using hand-collected data on a sample of 375 CRSP- and Compustat-listed firms. Using more inclusive data, he finds that ownership is not more diffuse in the U.S. than in other countries, contradicting the commonly held academic view.

1.4 Acquirer screens and definition of public versus private acquirers

Table 2 shows the effects of various screens common in the M&A literature on sample size. In Row 1, we present statistics for all completed M&As reported by SDC in which the acquirer purchased a stake of 50% or more in the target and owned less than 50% of the target prior to the purchase. Each subsequent row in Table 2 illustrates the impact of an additional commonly used screen. Starting with Row 4, the even-numbered rows describe the previous row's observations that we screen out before the following row. The columns report data on several variables that are part of most M&A studies, including the acquirer's mean CAR, the mean dollar gain to the acquirer, the percentage of deals that are mostly stock, and the percentage of deals that are mostly cash. Column 3 reports for each screen the percentage of all deals, but Column 4 is more relevant since it is restricted to U.S acquirers and it shows for each screen the percentage of U.S. acquirers (percentage of U.S. acquirers on CRSP) that the transactions in that row represent.

Table 2
Typical sample restrictions found in studies of mergers and acquisitions

(1) Restriction	(2) Number of obs.	(3) % of original sample	(4) % of Row 2 (Row 3)	(5) Mean CAR	(6) Mean gain in $ mil.	(7) % mostly stock	(8) % mostly cash
(1) None	311,894	100%		1.0%***	−$3.7	24.1%	62.1%
				[77,327]	[77,265]	[82,939]	[82,939]
(2) U.S. Acquirer	128,900	41.3%	100%	1.1%***	−$4.8	29.7%	55.3%
				[67,301]	[67,256]	[36,015]	[36,015]
(3) Acquirer is on CRSP	67,265	21.6%	52.2%	1.1%***	−$4.8	35.0%	51.9%
			(100%)	[67,256]	[67,256]	[24,565]	[24,565]
(4) minus	32,664	10.5%	25.3%	0.7%***	−$2.9	34.6%	49.9%
			(48.6%)	[32,661]	[32,661]	[621]	[621]
(5) Target deal value ≥ $1 mil.	34,601	11.1%	26.8%	1.3%***	−$6.7	35.0%	51.9%
			(51.4%)	[34,595]	[34,595]	[23,944]	[23,944]
(6) minus	6,189	2.0%	4.8%	0.3%***	$25.5	23.7%	69.1%
			(9.2%)	[6,189]	[6,189]	[3,287]	[3,287]
(7) Target relative size ≥ 1%	28,412	9.1%	22.0%	1.6%***	−$13.7***	36.8%	49.2%
			(42.2%)	[28,406]	[28,406]	[20,657]	[20,657]
(8) minus	15,058	4.8%	11.7%	2.0%***	$2.8***	35.2%	48.8%
			(22.4%)	[15,053]	[15,053]	[10,474]	[10,474]
(9) Target deal value ≥ $50 mil.	13,354	4.3%	10.4%	1.2%***	−$32.3***	38.4%	49.6%
			(19.9%)	[13,353]	[13,353]	[10,183]	[10,183]
(10) minus	9,528	3.1%	7.4%	2.2%***	$30.7***	27.1%	58.1%
			(14.2%)	[9,528]	[9,528]	[6,490]	[6,490]
(11) Target is public	3,826	1.2%	3.0%	−1.3%***	−$189.3***	58.3%	34.7%
			(5.7%)	[3,825]	[3,825]	[3,693]	[3,693]
(12) minus	726	0.2%	0.6%	0.3%	−$86.5**	43.0%	48.6%
			(1.1%)	[726]	[726]	[658]	[658]
(13) Target is on CRSP	3,100	1.0%	2.4%	−1.7%***	−$213.4***	61.6%	31.7%
			(4.6%)	[3,099]	[3,099]	[3,035]	[3,035]

This table presents statistics for all completed mergers and acquisitions announced between 1992 and 2009 reported by SDC in which the acquirer owned less than 50% of the target prior to the purchase and acquired 50% or more of the target (Row 1). In Row 2, the acquirer's nationality is U.S. if either the acquirer or the acquirer's ultimate parent is incorporated in the U.S. Row 3 contains those acquirers for which there is an available market value five days prior to the acquisition announcement on CRSP for either the acquirer or the acquirer's parent. Row 7 removes deals in which target deal value scaled by the acquirer market value is less than 1%. Row 11 contains only those deals in which the target is public according to SDC. In Row 13, all deals in which the target does not have a 3-day CAR (day 0 is the announcement day) from CRSP are eliminated. Each row labeled "minus" contains only those transactions which are eliminated from the previous row (e.g., Row 4 is equal to Row 3 minus Row 5). The screens are cumulative. Column 3 shows the number of takeovers in a particular row scaled by the number of takeovers in Row 1; in Column 4 the number of takeovers is scaled by the total in Row 2 and, in parentheses, Row 3. Column 5 is the acquirer's mean CAR. The product of the acquirer's CAR and market value of equity five days prior to the acquisition announcement is in Column 6. % mostly stock (cash) is the number of deals financed with 50% or greater stock (cash) divided by the total number of deals with available method of payment data. The number of observations for Columns 5–8 are in brackets. Dollar values are in millions and adjusted to 2010 dollars by the CPI. *** and ** represent significance at the 1% and 5% levels, respectively.

Table 2 shows the rapid decline in sample size as further restrictions are placed on the sample. The initial sample of 311,894 observations is cut by more than half to 128,900 (Row 2) when the restriction that the acquirer must be from the U.S. is imposed and by almost half again to 67,265 (Row 3) with the requirement that the U.S. acquirer be on CRSP. Though the sample containing U.S. acquirers with CRSP price data is less than a quarter of the original sample and only 52% of the U.S. acquirer sample, it is still large relative to other studies of CRSP acquirers. Further, we find (and report in Table A2) that these transactions represent M&A activity by the majority of firms on the CRSP database: 91.4% of all CRSP firms present over the full sample period engage in at least one acquisition, and the mean (median) number of transactions per firm is 15.8 (8) targets. If we require only a five-year presence on CRSP, then 75.8% of all CRSP firms engage in at least one acquisition, and the mean (median) number of transactions per firm is 8.2 (4) targets.[6]

In the remainder of our analysis we refer to acquirers not on CRSP as private firms and those on CRSP as public firms. This distinction is significant since there are gradations of what is meant by a public or a private firm. There is a clear definition for the publicly traded firms on CRSP: Their stock is traded on the NYSE, NASDAQ, or AMEX (see the CRSP Data Description Guide). However, if a firm is not listed on CRSP, it does not follow that the stock is not traded or that the firm does not file disclosure documents with the SEC, either of which would make a firm "public" in some fashion—there is public financial data for the latter and both public financial data and prices for the former. For example, Bartlett (2010) shows that many firms that delist in a "going private" transaction are still subject to SEC regulations if they have some publicly traded security besides equity. Therefore, our reference to public firms is not a precise reference; it would be more accurate (though less concise) to refer to our classification of public and private firms as "firms on CRSP at the time of the acquisition announcement" and "firms not on CRSP at the time of the acquisition announcement," respectively. Finally, we note in Table 2 in Rows 11–13 the difference between the number of targets that are classified as "public" according to SDC and the targets covered by CRSP that we consider to be public for our sample.

An additional consideration in our analysis of public and private acquirers is that our sample of "public" firms is much more complete than our sample of "private" firms. While we include many more of these private firms than earlier work, we surely significantly understate the number of firms in this category. Thus, it is difficult to say much about deals with private acquirers. Further, what we can say is likely not very related to the actual number of non-public

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[6] Table A2 also shows that acquisitions are important relative to the amount spent on acquisitions versus common firm expenditures. For example, the dollar amount spent on acquisitions is more than twice that of taxes or dividends and is greater than that spent on interest expense and capital expenditures.

acquirer deals. It is hard to imagine that SDC has access to private-private deals with any degree of regularity or precision. In other words, our private acquirer sample is not representative because it likely loads up on transactions in which the target is public or in which the deal is otherwise newsworthy.

1.5 Target screens

Target size restrictions further significantly reduce the sample size shown in Rows 5–9 in Table 2; for example, with the requirement that the target deal value be greater than $50 million (Row 9), the U.S. sample is only 10.4% of the original 128,900 U.S. acquirer observations. Restrictions on SDC's classification of the public status of the target and that target stock returns be reported on CRSP take the sample down to 2.4% of the original set of U.S. acquirers.

In Columns 5–8 of Table 2, we report the averages of four variables used in many studies of M&As. The number of observations used in the calculation of each variable is included in brackets. Column 5 reports the acquirer's mean cumulative abnormal announcement return (CAR) in the three-day window around the announcement date provided by SDC. The mean CAR for the acquirer is positive and significant in all samples until Row 11, where the screen eliminates all deals in which the target is not public. Thus, the commonly reported negative average return to acquirers reflects a relatively small set of all deals. However, the mean dollar gain to the acquirer (Column 6), which is the product of the acquirer's CAR and market value of equity five days before the acquisition announcement, tells a different story than the CAR results. In almost every sample, the acquirer, on average, loses money, though most transactions actually create value, as evidenced by positive and significant median dollar gains in every row until Row 11. The unreported values range from $3.5 million in Row 9 to −$13.4 million in Row 13.

Columns 7 and 8 of Table 2 report the method of payment expressed as a percentage of the total number of deals in that row. Most of the samples have a static percentage of mostly stock versus mostly cash deals (about 25%–35% stock deals and 50%–65% cash deals, with the rest unknown) until the sample is restricted to targets that SDC classifies as public (Row 11). For these targets, the percentage of stock deals is 58.3% (61.6% in the deals when the target is on CRSP), while the percentage of cash deals is 34.7% (31.7% when the target is on CRSP).

Table 3 provides additional details on the screens in Table 2, but in Table 3 each row is independent (i.e., the screens are not cumulative). Thus, one can tell for each screen independently (reported by row) the percentage of the 128,900 deals with a U.S. acquirer (Column 2) or 182,994 deals with a non-U.S. acquirer (Column 3) or the difference between the percentages in Columns 2 and 3 (Column 4). We find for deals with a U.S. acquirer that 7% of the deals have a public target, 29.7% are mostly stock deals, 55.3% are mostly cash, 20.4% are cross-border deals, 0.3% involve the government, and perhaps

Table 3
Deal characteristics of U.S. and non-U.S. acquirers from 1992 to 2009

(1)		(2) Acquirer is in the U.S.	(3) Acquirer is not in the U.S.	(4) Column 2 minus Column 3
(1)	Sum of deal values	$16,702,943	$15,873,972	$828,971
(2)	% of deals with a public target	7.0%	5.9%	1.1%
(3)	% of deals paid with mostly stock	29.7%	19.9%	9.8%
(4)	% of deals paid with mostly cash	55.3%	67.3%	−12.0%
(5)	% of deals that are cross-border deals	20.4%	35.0%	−14.6%
(6)	% of deals involving the government	0.3%	4.0%	−3.7%
(7)	% of deals with missing deal values	57.5%	54.9%	2.6%
(8)	# of transactions	128,900	182,994	−54,094

This table compares deal characteristics of U.S. and non-U.S. acquirers. The transactions examined are completed mergers and acquisitions announced between 1992 and 2009 reported by SDC in which the acquirer owned less than 50% of the target prior to the purchase and acquired 50% or more of the target. Whether the acquirer is in the U.S. or not is determined by the country reported by SDC of the acquirer's parent. Row 2 shows the number of deals in which the target is a public firm, scaled by that column's total number of transactions, which is shown in Row 8. In Rows 3 and 4, % mostly stock (cash) is the number of deals financed with 50% or greater stock (cash) divided by the number of transactions for which there is method of payment data. Row 5 shows the number of deals in which the acquirer and target are in different countries scaled by the column's total number of transactions. Row 6 shows the number of transactions in which the government owns either the target or the acquirer scaled by that column's total number of transactions. Row 7 shows the number of transactions without a deal value scaled by that column's total number of transactions. Dollars (in millions) are adjusted to 2010 dollars by the CPI.

most importantly, since these deals are rarely studied, 57.5% have missing target deal values. The results for the deals with non-U.S. acquirers are similar. Perhaps the most noteworthy differences in Columns 2 and 3 are that foreign deals involve the government in the transaction more than ten times as much and appear to use considerably more cash and less stock in the transaction.

Tables 4 and 5 provide further evidence on the effects of the missing deal value screen and impact of the deal values reported. Table 4 reports the acquisition activity of all deals for U.S. acquirers by year (128,900 observations). Several results stand out. First, while the number of deals in any year is fairly stable (ranging from 3% to 8% of the total number of deals [Column 5]), the value of deals each year varies more dramatically, from a low of 1% in 1992 to a high of 12% in 1998 of the total value (Column 3). Second, the percentage of transactions with a missing deal value is large and fairly consistent from year to year in the 1990s and trends upward in the 2000s (Column 7). The average of transactions per year with missing deal value is 57%. Third, the percentage of deals that are cross-border deals (Column 6) is also consistent across years. The mean number of cross-border deals is 20%, and the range is 16% to 23%. Finally, the data for 2009 provide insight on the recent discussion on decline in M&A activity in this period. In 2009, M&A activity is slightly less than for an average year (5% of deals vs. 6% per year on average, and 4% of the

Table 4
Acquisitions of U.S. firms by year

(1) Year	(2) Sum of deal values ($mil)	(3) Value-wtd. % of deals in this panel	(4) Number of obs.	(5) Equal-wtd. % of deals in this panel	(6) % cross-border deals	(7) % of trans. w/missing deal value
1992	$208,167	1%	4,207	3%	17%	55%
1993	$318,848	2%	4,835	4%	16%	52%
1994	$418,888	3%	5,736	5%	17%	51%
1995	$659,536	4%	6,720	5%	17%	56%
1996	$742,616	5%	7,797	6%	18%	54%
1997	$1,117,299	7%	8,915	7%	19%	49%
1998	$1,806,427	12%	9,881	8%	20%	52%
1999	$1,703,466	11%	8,778	7%	22%	54%
2000	$1,703,943	11%	8,407	7%	23%	56%
2001	$856,913	6%	6,149	5%	23%	56%
2002	$470,830	3%	5,808	5%	20%	56%
2003	$653,420	4%	6,379	5%	19%	58%
2004	$853,746	6%	7,277	6%	21%	61%
2005	$1,196,591	8%	8,058	7%	22%	61%
2006	$1,486,769	10%	8,649	7%	22%	63%
2007	$1,301,906	8%	8,645	7%	23%	64%
2008	$588,381	4%	7,125	6%	23%	69%
2009	$615,196	4%	5,534	5%	20%	68%
Total	$16,702,943	100%	128,900	100%	–	–
Mean	$927,941	6%	7,161	6%	20%	57%

This table presents the yearly acquisition activity of U.S. acquirers from 1992 to 2009. The transactions must be completed mergers and acquisitions reported by SDC in which the acquirer owned less than 50% of the target prior to the purchase and acquired 50% or more of the target. We consider the acquirer nationality as U.S. if either the acquirer or the acquirer's ultimate parent is incorporated in the U.S. Column 2 reports the sum of all deal values for a particular year adjusted to 2010 dollars. Column 3 is the number in Column 2 scaled by the total deal values from 1992 to 2009. Column 4 presents the total number of acquisitions in each year. The number of acquisitions in a particular year scaled by the total acquisitions from 1992 to 2009 is reported in Column 5. Column 6 shows the number of acquisitions in which the acquirer and target are in different countries scaled by the total number of takeovers in that year. Column 7 shows the number of transactions without a deal value scaled by the total number of transactions. In the last two rows, we present the total and mean for each column.

value-weighted amount vs. 6% for an average year). Nonetheless, a significant amount of M&A continued in 2009.

Table 5 illustrates the value, number of deals, and frequency of missing deal value across various samples of acquisitions of U.S. acquirers, including whether the target is foreign, whether the acquirer is on CRSP or Compustat, and whether the target is non-public according to SDC's classification. The samples reported here, as in Table 3, are the result of the single indicated screen. Thus, the 119,932 non-public targets reported in Row 4 are

Table 5
Characteristics of U.S. acquirers and their targets

(1)	(2) Sum of deal values ($mil)	(3) Number of observations	(4) % of trans. w/missing deal value	(5) % of total with deal value by value	(6) % of total by frequency
(1) Target is a foreign firm	$2,047,715	21,716	59.6%	12.3%	16.8%
(2) Acquirer is on CRSP	$12,115,094	67,265	47.1%	72.5%	52.2%
(3) Acquirer is on Compustat (1992-2008)	$4,436,064	29,337	42.0%	26.6%	22.8%
(4) Non-public target	$7,071,596	119,932	60.9%	42.3%	93.0%
Target deal value (x) (in millions)					
(5) $0.1 ≤ x < $50	$490,148	33,048	0.0%	2.9%	25.6%
(6) $50 ≥ x < $1,000	$4,379,664	19,164	0.0%	26.2%	14.9%
(7) x ≥$1 billion	$11,833,131	2,597	0.0%	70.8%	2.0%
(8) Total	$16,702,943	128,900	57.5%	100.0%	100.0%

This table presents statistics for all completed mergers and acquisitions reported by SDC in which the acquirer owned less than 50% prior to the purchase and acquired 50% or more of the target and the nationality of the acquirer is U.S. The announcement date of the transaction must be between 1992 and 2009. We determine the nationality of the acquirer to be U.S. if either the acquirer or the acquirer's ultimate parent is incorporated in the U.S. according to SDC. Similarly, foreign targets are those that do not meet this qualification. Acquirer is on CRSP are those acquirers in SDC for which the firms have an available market value on day −5 on CRSP for either the acquirer or the acquirer's ultimate parent. Acquirer is on Compustat are those acquirers with a matching parent CUSIP on Compustat with non-zero total assets in the year the acquisition is announced (at the time of this analysis Compustat data are available through 2008). Non-public targets are deals in which the target is not classified as public by SDC. Target deal value is measured by the transaction value given in SDC. Column 2 presents the sum of all reported deal values for each Row. Column 4 shows the number of transactions without a deal value scaled by the total number of transactions. Column 5 shows the sum of reported deal values for a particular row scaled by the sum of reported deal values in the last row of the panel. Column 6 shows the number of observations for a particular row scaled by the number of observations in the last row of the panel. Dollar values are in millions and are adjusted to 2010 dollars by the CPI.

the difference between all transactions by U.S. acquirers and the public targets among those transactions. In Rows 5, 6, and 7, data for targets with deal value are also reported to illustrate the frequency of relative deal size within the full sample.

In general, the number of transactions with missing deal values is fairly consistent, ranging from about 42% to 60% across the various samples (Column 4 of Rows 1 through 4 in Table 5). The percentage of transactions with missing values is highest for non-public targets (60.4%). When the acquirer is on CRSP or Compustat, the percentage of transactions with missing deal values is about 47%. Thus, in general half of all deals have a missing transaction value. Since most M&A research eliminates transactions with missing deal values, the majority of studies include at most only half of the total number of deals. Though not reported until Table 12, we note here that of the reported deal values for transactions in which the acquirer is on CRSP, the median (average) deal value is $35 million ($341 million).

Columns 5 and 6 in Table 5 report the percentage of deals by value and frequency of each row relative to the full sample of U.S. acquirers. The most

striking results come from the evidence of the relative importance of large deals, as reported in Rows 5, 6, and 7. The smallest deals (deal value between $0.1 million and $50 million in Row 5) represent 25.6% of U.S. acquirers' transactions, but the relative value of those deals is only 2.9% of the U.S. acquirers' sample. These values are likely biased downward because many of the missing deal values will probably fall into this value range. The transactions between $50 million and $1 billion (in Row 6) comprise 14.9% of the frequency and 26.2% of the value in the U.S. acquirers' sample. Finally, for the largest deals (over $1 billion in Row 7), the difference between value-weighted percentage of deals and equal-weighted percentage is large. The largest deals are a trivial proportion of the number of deals (2.0%) but a large part of the value of deals with reported values (70.8%). The results for non-public targets (Row 4), which tend to be smaller on average, are consistent with the results for the smallest targets by deal value. They represent 93.0% of the total number of deals but are 42.3% of the total value of transactions. In addition, if data were available for the 60.4% of non-public targets without deal value, the data would probably reinforce this difference between the relative number of deals and the value of deals.

Of our 128,900 transactions by U.S. acquirers, about 57.5% do not report a deal value, resulting in an understatement of the value of all M&A activity. We attempt to determine how likely it is that these missing values actually exist as information available to stockholders at the time of the acquisition. We examine a random sample of 50 transactions with missing deal values. The observations are drawn from public U.S. firms that acquire a U.S. target with no reported deal value. These acquisitions are likely those for which deal value data might exist in news announcements or in the acquirer's 10-K. No announcement from the LexisNexis database of the 50 news announcements contains information about the value of the target. Nine of the 50 acquisitions have no announcement at all on LexisNexis, while the remaining 41 transactions do have an announcement with some wording regarding the non-disclosure of the terms of the deal. We then check 37 deals announced after 1995 in order to examine the acquirer's 10-K in the SEC's EDGAR database. Of these 37 transactions, only six 10-Ks contain information about the purchase price of the target. The range in value of purchase price is $0.25 million to $13.8 million, with the average being $3.8 million.

1.6 Summary of definitions and effects of data screens on samples

This section illustrates two important points about M&As. First, there is great imprecision in what is meant by the term "mergers and acquisitions." Most transactions that would commonly be recognized as an acquisition are classified as an asset sale by SDC. This distinction is misleading chiefly because there is no good way to tell whether or not labor contracts are involved, thereby making the terminology confusing and perhaps misleading. Second, studies

of M&As exclude a significant amount of transactions that can be reasonably classified as a merger or acquisition. For example, about half of all SDC M&As have one of the following characteristics that make inclusion in a typical academic study unlikely: The acquirer is foreign, the target does not have a reported deal value, or the acquirer and/or target does not have an available stock price. Thus, some conclusions drawn from such samples can be misleading because there is valuable information in the mere occurrence of a transaction in addressing issues like the persistence and cyclicality of M&As, and to this point we now turn.

2. Merger Clustering and Waves

A recurring theme in the research on M&As is that these transactions tend to occur in waves that cluster by industry (e.g., Mitchell and Mulherin 1996; Andrade, Mitchell, and Stafford 2001; Harford 2005). These researchers present evidence that exogenous events, especially regulatory or technology shocks, cause actors in the firms' nexus of contracts to reassess the boundaries of the firms and that restructuring occurs in clusters of firms in the same industry. This clustering is consistent with shocks impacting similar firms similarly. Waves can also occur across industries if the shocks affect the more general economic environment of the firms. In general, clustering or waves of M&A transactions can occur from changes in any of the control forces operating on a firm. Using the taxonomy of Jensen (1993), these control forces include changes in product and factor markets; changes in the legal, political, or regulatory system; changes in capital markets; or changes in the operation or regulation of internal governance. Changes in any one or more of these factors may affect the overall costs or benefits of mergers for a group of firms that may or may not be in the same industry, resulting in an increase or decrease in M&A activity.

An increase in M&A activity is often called either a "merger wave" or "merger clustering" in the literature. In general, the term "wave" is more often used to describe both aggregate and industry waves, while "cluster" is used for mergers concentrated in an industry. We use the terms interchangeably, though our focus is on clustering that occurs within industries using the 48 Fama-French industry groups.

Prior studies of merger waves (e.g., Mitchell and Mulherin 1996; and Harford 2005) focus primarily on M&As by publicly traded firms. The evidence presented here does not dispute their evidence that mergers cluster in the samples they study. However, when we broaden the sample of M&A transactions to include those made by firms that are not publicly traded on the NYSE or NASDAQ and deals with values not reported, the evidence for merger waves is significantly attenuated. The clustering of mergers appears to be driven largely by the clustering of acquisitions by publicly traded firms.
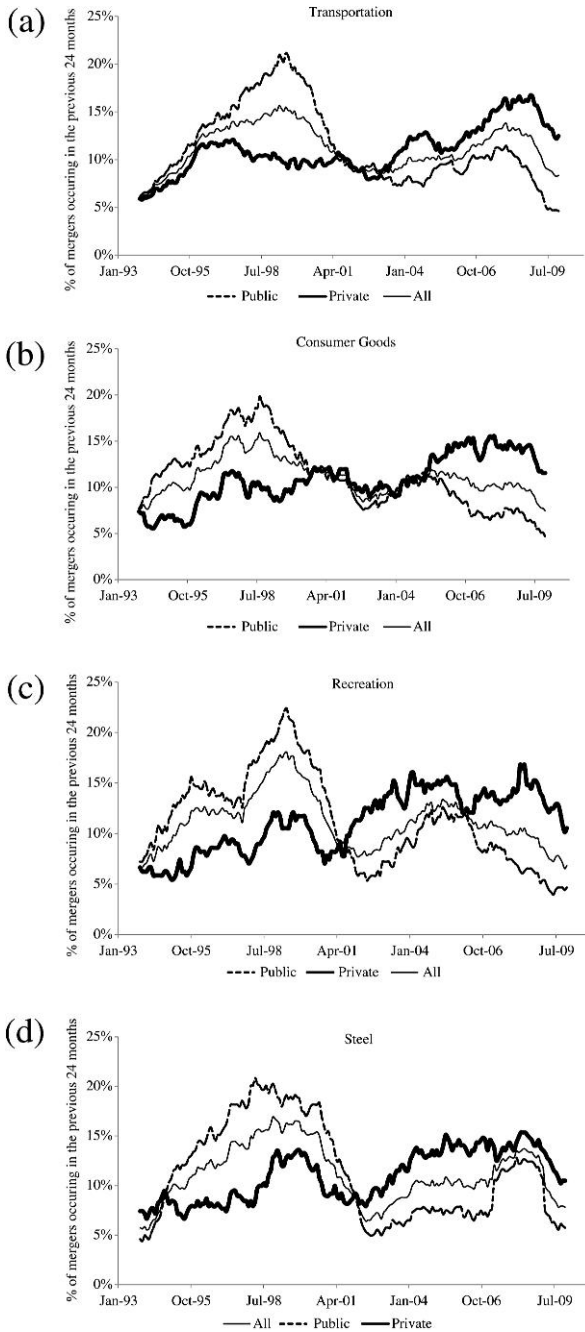
Figure 1
Mergers and acquisitions over time by acquirer status (U.S. acquirers)
These figures show, for each month between December 1993 and December 2009, the percentage of the total number of mergers between 1991 and 2009 that occurred in the previous 24 months for selected industries.

2.1 Graphical illustration of waves for public and private firms

Figure 1 provides visual evidence of this finding. The figure shows the time-series plot of merger clusters for four selected industries (transportation, consumer goods, recreation, and steel) for every month between December 1993 and December 2009. The time series is obtained by summing, for each month and industry, the total number of mergers in the previous 24 months and then dividing that sum by the total number of mergers over the entire sample period of 1992 through 2009. The four charts in Figure 1 illustrate that within each industry, acquisition activity by public firms shows a distinct wave-like pattern. We report three trend lines in each graph. The dotted line indicates the wave pattern for U.S. acquirers on CRSP. The bold line indicates the wave pattern for private U.S. acquirers. The thin line is for the combined dataset— all U.S. public and private acquirers and all targets. The line for public U.S. acquirers shows the highest peaks and lowest troughs. The trend line for private acquirers also shows a wave-like pattern but not as extreme as the public acquirers. This pattern is repeated in the industries not illustrated here also. The combined dataset of all U.S. acquirers (the thin line) shows the least wave-like pattern. The charts in Figure 1 suggest that the observed clustering of M&A activity appears to be driven by the acquisition activity of publicly traded firms more so than the activity of privately held firms.

2.2 Numerical evidence on merger waves for public and private firms

In Tables 6, 7, and 8, we provide evidence on the effects of sample selection on measured waves. In Table 6, we report the volatility of the time series of acquisition activity for U.S. public acquirers (on CRSP), for U.S. private acquirers, and for the combined sample of all U.S. acquiring firms. Volatility is measured as the standard deviation of the time series of M&A activity for each sample. The time series is constructed by summing, for each month and industry, the total number of M&As in the previous 24 months. Across most industries, we find that the volatility of acquisitions was significantly higher for public acquirers than for private acquirers and also for all acquirers. For example, in 32 of 48 industry groups, the standard deviation of acquisition activity for the sample of publicly traded acquirers is significantly higher than it is for the sample of private U.S. acquirers. In addition, the standard deviation of acquisition activity for publicly traded U.S. acquirers as compared to all U.S. acquirers is significantly higher in 43 of 48 industry groups.

The results in Table 7 provide further empirical support of the impact of sample selection on the identification of merger waves. We report, for each industry group, the 24-month window that had the largest number of mergers. We then test whether or not this cluster of mergers was likely to have occurred by chance. This potential cluster of mergers would only represent a true cluster or wave if the number of transactions exceeds some threshold of probable occurrence.

Table 6
Standard deviation of time series of acquisition activity by industry

Industry	(1) Publicly traded U.S. Acquirers and All Targets	(2) Private (not on CRSP) U.S. Acquirers and All Targets	(3) All U.S. Acquirers and All Targets
Agriculture	0.0816	0.0367***	0.0343***
Food Products	0.0255	0.0156***	0.0170***
Candy & Soda	0.0269	0.0375	0.0220***
Beer & Liquor	0.0498	0.0442**	0.0371***
Tobacco Products	0.0624	0.0871	0.0519***
Recreation	0.0451	0.0304***	0.0268***
Entertainment	0.0453	0.0271***	0.0282***
Printing & Publishing	0.0484	0.0290***	0.0296***
Consumer Goods	0.0365	0.0259***	0.0193***
Apparel	0.0182	0.031	0.0193
Healthcare	0.0566	0.0339***	0.0404***
Medical Equipment	0.0238	0.022	0.0159***
Pharmaceutical Products	0.0160	0.0449	0.0229
Chemicals	0.0377	0.0158***	0.0237***
Rubber & Plastic Products	0.0594	0.0216***	0.0332***
Textiles	0.0792	0.0262***	0.0416***
Construction Materials	0.0397	0.0352**	0.0295***
Construction	0.0577	0.0397***	0.0408***
Steel Works Etc.	0.0493	0.0256***	0.0287***
Fabricated Products	0.0769	0.0386***	0.0444***
Machinery	0.0442	0.0229***	0.0291***
Electrical Equipment	0.0269	0.0237**	0.0216***
Automobiles & Trucks	0.0587	0.0342***	0.0365***
Aircraft	0.0342	0.0459	0.0283***
Shipbuilding, Railroad Equipment	0.1036	0.0555***	0.0733***
Defense	0.0327	0.0472	0.0225***
Precious Metals	0.0462	0.0555	0.0413*
Non-Metallic & Ind. Metal Mining	0.0405	0.0309***	0.0324***
Coal	0.0851	0.0402***	0.0464***
Petroleum & Natural Gas	0.0292	0.0216***	0.0238***
Utilities	0.0504	0.0251***	0.0310***
Communication	0.0502	0.0225***	0.0345***
Personal Services	0.0369	0.0474	0.0288***
Business Services	0.0408	0.0492	0.0359***
Computers	0.0367	0.0248***	0.0280***
Electronic Equipment	0.0321	0.0216***	0.0274**
Measuring & Control Equipment	0.0183	0.0191	0.017
Business Supplies	0.0543	0.0226***	0.0330***
Shipping Containers	0.0659	0.0683	0.0605
Transportation	0.0417	0.0253***	0.0233***
Wholesale	0.0663	0.0276***	0.0367***
Retail	0.0371	0.0291***	0.0239***
Restaurants, Hotels, Motels	0.0771	0.0352***	0.0449***
Banking	0.0420	0.0423	0.0378***
Insurance	0.0214	0.0291	0.0212
Real Estate	0.0463	0.0474	0.0369***
Trading	0.0485	0.0409***	0.0340***
Almost Nothing	0.0586	0.0545	0.0488***

This table shows the standard deviation of the time series of acquisitions for samples of U.S. M&As. The time series is constructed by summing, for each month and industry, the total number of mergers and acquisitions in the previous 24 months. The nomenclature in the first column is that defined by Ken French's 48 Industry Portfolios. ***, **, and * indicate that standard deviation in 2 or 3 is significantly lower than that in 1 at the 1%, 5%, and 10% levels, respectively.

Table 7
Merger waves and clusters by industry

Industry	CRSP and U.S. acquirers and all targets			Not CRSP and U.S. acquirers and all targets			All U.S. acquirers and all targets		
	(1) Total	(2) M&A in largest 24-month cluster	(3) M&A in largest 24-month cluster	(4) Total	(5) M&A in largest 24-month cluster	(6) M&A in largest 24-month cluster	(7) Total	(8) M&A in largest 24-month cluster	(9) Mergers in largest 24-month cluster
Agriculture	172	49*	28.5%	229	46	20.1%	401	71	17.7%
Food Products	725	119*	16.4%	598	80	13.4%	1,323	190	14.4%
Candy & Soda	230	40	17.4%	174	38*	21.8%	404	66	16.3%
Beer & Liquor	69	16	23.2%	106	24	22.6%	175	35	20.0%
Tobacco Products	28	8	28.6%	18	6	33.3%	46	11	23.9%
Recreation	429	96*	22.4%	274	47	17.1%	703	127*	18.1%
Entertainment	843	177*	21.0%	550	91*	16.5%	1,393	241*	17.3%
Printing & Publishing	611	135*	22.1%	1,531	252*	16.4%	2,142	385*	18.0%
Consumer Goods	726	144*	19.8%	519	79	15.2%	1,245	198	15.9%
Apparel	407	59*	14.5%	189	31	16.4%	596	88	14.8%
Healthcare	2,738	604*	22.1%	1,573	260	16.5%	4,311	833*	19.3%
Medical Equipment	1,432	239*	16.7%	631	88	13.9%	2,063	295	14.3%
Pharmaceutical Products	1,462	203	13.9%	627	124*	19.8%	2,089	316*	15.1%
Chemicals	1,107	217*	19.6%	968	135	13.9%	2,075	333*	16.1%
Rubber & Plastic Products	370	85*	23.0%	470	71	15.1%	840	151	18.0%
Textiles	191	53*	27.8%	179	28	15.6%	370	74*	20.0%
Construction Materials	986	209*	21.2%	985	191*	19.4%	1,971	343*	17.4%
Construction	619	173*	28.0%	533	97*	18.2%	1,152	264*	22.9%
Steel Works Etc.	523	109*	20.8%	398	61	15.3%	921	156*	16.9%
Fabricated Products	141	44*	31.2%	166	28	16.9%	307	69*	22.5%
Machinery	1,738	388*	22.3%	960	149*	15.5%	2,698	484*	17.9%
Electrical Equipment	582	96*	16.5%	318	50	15.7%	900	135	15.0%
Automobiles & Trucks	665	159*	23.9%	433	76*	17.6%	1,098	211*	19.2%
Aircraft	386	73*	18.9%	179	44*	24.6%	565	96	17.0%
Shipbuilding, Railroad Equipment	81	32*	39.5%	36	9	25.0%	117	36*	30.8%

(continued)

Table 7
Continued

Industry	CRSP and U.S. acquirers and all targets			Not CRSP and U.S. acquirers and all targets			All U.S. acquirers and all targets		
	(1) Total	(2) M&A in largest 24-month cluster	(3) M&A in largest 24-month cluster	(4) Total	(5) M&A in largest 24-month cluster	(6) M&A in largest 24-month cluster	(7) Total	(8) M&A in largest 24-month cluster	(9) Mergers in largest 24-month cluster
Defense	129	25*	19.4%	35	7	20.0%	164	26	15.9%
Precious Metals	276	66*	23.9%	47	10	21.3%	323	70	21.7%
Non-Metallic & Ind. Metal Mining	275	56*	20.4%	113	21	18.6%	388	75*	19.3%
Coal	105	29*	27.6%	79	17	21.5%	184	37	20.1%
Petroleum & Natural Gas	2,347	443*	18.9%	985	148*	15.0%	3,332	567*	17.0%
Utilities	1,550	337*	21.7%	1,017	160*	15.7%	2,567	472*	18.4%
Communication	2,808	585*	20.8%	2,084	303*	14.5%	4,892	884*	18.1%
Personal Services	608	130*	21.4%	1,040	188*	18.1%	1,648	250	15.2%
Business Services	12,373	2,473*	20.0%	12,231	2,255*	18.4%	24,604	4,007*	16.3%
Computers	2,321	431*	18.6%	944	155*	16.4%	3,265	533*	16.3%
Electronic Equipment	3,095	585*	18.9%	916	143	15.6%	4,011	727*	18.1%
Measuring & Control Equipment	1,165	160*	13.7%	409	60	14.6%	1,574	213	13.5%
Business Supplies	477	107*	22.4%	340	56	16.5%	817	150*	18.4%
Shipping Containers	115	28*	24.4%	110	31*	28.2%	225	51*	22.7%
Transportation	1,083	229*	21.2%	1,061	176*	16.6%	2,144	336*	15.7%
Wholesale	2,592	671*	25.9%	2,135	363*	17.0%	4,727	886*	18.7%
Retail	2,073	392*	18.9%	1,266	210*	16.6%	3,339	529*	15.8%
Restaurants, Hotels, Motels	906	267*	29.5%	730	140*	19.2%	1,636	350*	21.4%
Banking	4,969	888*	17.9%	3,030	644*	21.3%	7,999	1,446*	18.1%
Insurance	1,620	262*	16.2%	1,806	292*	16.2%	3,426	516*	15.1%
Real Estate	428	105*	24.5%	975	196*	20.1%	1,403	239*	17.0%
Trading	5,345	1,288*	24.1%	14,932	2,797*	18.7%	20,277	3,522*	17.4%
Almost Nothing	119	28*	23.5%	63	14	22.2%	182	33	18.1%

This table shows the highest number and percentage of acquisitions in a 24-month period between 1992 and 2009. Industry is defined in Table 6. * indicates that the cluster did not occur by chance at the 5% level.

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Table 8
Industry clustering of industries with the largest number of acquisitions from 1992 to 2009

	Acquirer is U.S. and on CRSP and target is on CRSP			Acquirer is U.S. and on CRSP and all targets			All U.S. acquirers and all targets		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Industry	Rank	Cluster	N/$	Rank	Cluster	N/$	Rank	Cluster	N/$
Panel A. By frequency									
Textiles	1	53%	8	7	28%	53	10	20%	74
Shipbuilding and Railroad Equip.	2	50%	3	1	40%	32	1	31%	36
Defense	3	50%	4	34	19%	25	38	16%	26
Rubber and Plastic Products	4	44%	7	17	23%	85	22	18%	151
Fabricated Products	5	43%	3	2	31%	44	5	22%	69
Wholesale	6	39%	46	9	26%	671	14	19%	886
Aircraft	7	38%	10	35	19%	73	31	17%	96
Non-Metallic & Ind. Metal Mining	8	38%	8	30	20%	56	11	19%	75
Agriculture	9	38%	3	5	28%	49	25	18%	71
Shipping Containers	10	38%	3	11	24%	107	4	16%	336
Panel B. By value									
Non-Metallic & Ind. Metal Mining	1	83%	$30.7	1	78%	$32.1	1	71%	$32.6
Beer and Liquor	2	81%	$7.1	7	52%	$7.5	13	40%	$7.5
Recreation	3	79%	$13.1	2	62%	$15.0	7	46%	$15.3
Agriculture	4	75%	$1.6	6	53%	$3.5	15	40%	$3.5
Consumer Goods	5	74%	$61.0	4	59%	$65.1	4	53%	$66.8
Tobacco Products	6	73%	$30.3	3	62%	$30.8	2	55%	$30.8
Shipbuilding and Railroad Equip.	7	71%	$0.7	26	35%	$1.1	30	31%	$1.1
Shipping Containers	8	68%	$5.0	28	34%	$6.3	35	26%	$5.5
Rubber and Plastic Products	9	65%	$2.1	31	32%	$4.1	38	25%	$5.3
Candy and Soda	10	65%	$16.1	23	38%	$18.2	11	40%	$30.3

This table presents the top ten Fama-French 48 industries for M&A clustering from 1992 to 2009. We define acquisition activity by the frequency of acquisitions in Panel A and by value in Panel B. Clusters are measured as the highest consecutive 24-month period of acquisition activity within the industry. The acquisition sample on which the ranking is based is restricted to those transactions where both the acquirer and the target have available announcement returns on CRSP and in which the acquirer is located in the United States (Columns 2–4). Columns 5–7 represent the same set of acquirers as Columns 2–4, but there is no restriction on the target. In Panel A, Columns 4, 7, and 10 represent the total number of observations per industry for the entire 1992 to 2009 periods. In Panel B, Columns 4, 7, and 10 represent the total value of acquisitions, in billions of dollars, per industry for the entire period.

To determine this threshold, we note that our sample period covers 216 months. We assume that there are N mergers in an industry over that sample period and that the probability of any merger or acquisition occurring during any particular month during our sample period is 1/216. We randomly assign a merger to a month during that period and build a distribution (based on 1,000 simulations) of the largest 24-month cluster of mergers. Then, we define that a merger wave exists if the number of transactions in a 24-month period exceeds the 95th percentile of that distribution. Our calculation is based on Harford's (2005) methodology to identify merger waves.

In Table 7, we apply this wave threshold to three different samples of mergers: The first sample is restricted to acquisitions by publicly traded U.S.

acquirers, the second consists of acquisitions by private U.S. acquirers, and the third represents all U.S. acquirers. The difference in the number of waves or clusters identified across the samples is very clear. In the sample of publicly traded acquirers, 44 out of 48 of the industries are classified as having had a merger wave at least once between 1992 and 2009. In the sample of private acquirers, we find that only 21 of the 48 industry groups have a potentially identifiable cluster. For the full sample of all acquisitions by public and private acquirers, the number of industries with identified clusters is 31.[7] Thus, these results suggest that in many industries, any observed clustering of M&A activity appears to be driven largely by the acquisition activity of publicly traded acquirers.

The results reported in Table 8 are similar. In Columns 1 through 4 of Panel A, we report the ten industries with the largest cluster by frequency of mergers within a 24-month window between 1992 and 2009 among public U.S. acquirers and public targets. In Panel B, we show the ten industries with the largest cluster by dollar value of mergers over the same period. We see that the size and prominence of clusters diminish as we broaden our sample from publicly traded acquirers and targets to include all U.S. acquirers and targets.[8] For example, the defense industry is ranked third in its size of merger cluster by frequency for U.S. public acquirers and public targets in Panel A. We find that 50% of the mergers involving publicly traded acquirers in the defense industry between 1992 and 2009 occurred within a single 24-month window. However, when we extend our sample to include public acquirers and all public and private targets, the busiest 24-month window only included 19% of the mergers between 1992 and 2009. The size of this wave drops even further (to 16%) when we extend our sample to include all U.S. M&As, whether the acquirer or target is public or private. In fact, when we rank all the industries by the size of their merger clusters, the defense industry drops from being third in the sample restricted to publicly traded U.S. acquirers to 38th overall when we consider all U.S targets and acquisitions. We see a similar pattern for most of the industries reported in Column 1.

2.3 Summary of evidence on waves and implications for research

Our evidence is consistent with earlier results that mergers cluster and occur in waves when we consider just publicly traded acquirers. However, the results differ when we use the larger sample including private acquirers. In the more complete sample, M&As are more evenly spread through time, indicating that

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[7] The proportions for public and private acquirers (44 out of 48, and 21 out of 48) are significantly different from each other, with a significance level of less than 1%.

[8] Andrade and Stafford (2004) find a similar pattern in their examination of clustering of internal investment and mergers. They show that internal investment does not exhibit the same clustering pattern as that found in mergers. While our studies do not strictly overlap, they both show that firm-level investment is sensitive to the definition of an investment.

the acquisition behavior of private firms appears to differ significantly from that of publicly traded firms.

The public versus private distinction is one dimension on which sample selection issues can arise. However, private versus public is correlated with other considerations such as whether the deal is reported, the size of the deal, and the method of payment. If a researcher restricts her sample to acquisitions by publicly traded firms, she is likely to overestimate the presence of waves, but we cannot say from our evidence whether the public versus private split is the driver of the differences in the presence of waves or whether it is another factor correlated with the public versus private distinction. Note, for example, if the researcher excludes deals with no reported deal values, or those with a deal value of $1m or less, the researcher ends up dropping 72% of all acquisitions by private firms but only 48% of acquisitions by public firms. Thus, the researcher inadvertently creates a sample that is heavily biased toward acquisitions by public firms. If the "wave-like" nature of mergers within industries is exaggerated in acquisitions by public firms, excluding firms based on the deal value could also inadvertently exaggerate merger waves.

The differences in clustering of mergers between public and private firms may reflect differences in the costs of restructuring for these two groups of firms. Firms are constantly experimenting with new organizational structures. While easily identifiable large exogenous shocks in regulation and technology contribute to merger waves, the boundaries of the firm are constantly shifting due to many other factors. Investing in M&As is another way to create value for the firm similar to capital investments, R&D expenditures, or other investments. This is especially true if M&A transactions are relatively cheap to undertake, which is probably the case for smaller mergers and asset sales. However, the cost of restructuring in response to changes in the operating environment appears to be much larger for publicly traded firms as compared to private firms, perhaps due to the size of the transactions, organizational inertia, stakeholder entrenchment, or regulatory constraints. Thus, any wave in mergers among publicly traded firms may require a bigger regulatory or technology shock, while smaller firms may combine and recombine more easily and seamlessly.

In addition, a critical element in the difference in wave behavior between public and private acquirers may be that public firms have a readily observed market value and their shares are traded on the liquid markets of the NYSE or NASDAQ. Shleifer and Vishny (2003), in their paper "Stock Market-driven Acquisitions," argue that acquisitions may reflect market misvaluations of the combined values of bidding and acquiring firms.

Maksimovic, Phillips, and Yang (2010), using proprietary plant-level data, also look at merger waves, although their data are limited to manufacturing firms and the extent to which they acquire manufacturing plants. They use plant-level data for 40,000 firms for 1977 to 2004 and find that public manufacturing firms in general are more likely to participate in waves of plant

acquisitions than private firms. While their definition of an acquisition differs from ours, since we would classify most plant acquisitions as asset sales and they restrict themselves to manufacturing firms, their findings support the importance of considering the full sample of firms in determining the prevalence of merger waves. They also examine the differences in the characteristics of private and public firms and draw implications for M&A activity among public and private firms.

2.4 Daily clustering of mergers and acquisitions

We also consider daily clustering of M&As and the impact of the sample analyzed on measures of daily clustering. As we increase the scope of the acquisitions analyzed, daily clustering becomes more distinct, as reported in Table 9. This table reports the acquisition rates by the most and least active days of the calendar year and also reports the mean and median length of the number of days it takes to complete a deal. Panels A through D examine all announcement days (Panels A and C) and effective days (Panels B and D) by most active (Panels A and B) and least active (Panels C and D) days of the year.

A comparison of Panels A and B, and C and D, in Table 9 reveals that deals tend to be announced and become effective at the beginning or end of a quarter. The Christmas season and Thanksgiving are the least popular times to announce or complete a deal. The clustering of acquisition announcements and effective dates around quarter-start and quarter-end dates suggests that the timing of acquisitions is influenced by quarterly reporting periods. For example, in Panel B we observe that the two most frequent effective dates are December 31 and June 30, with 5,130 and 3,456 transactions becoming effective on these dates, respectively. The unconditional number of transactions that we should expect to become effective on these dates from our sample of firms is 353.2 (128,900 firms divided by 365 days). Further, most of the deals completed on these two dates have a period of more than a week between the announcement and effective date of the takeover, which is indicative of the parties having some discretion regarding when the deal is to close.

In Panel E of Table 9, we accumulate the observations across the four quarter-ends (March 31, June 30, September 30, and December 31) and quarter-beginnings (January 1, April 1, July 1, and October 1) for all acquirers and for U.S. CRSP acquirers. The reported percentages in Columns 2 and 3 are the number of takeovers on these particular dates compared to all takeovers. The unconditional probability for an acquisition announcement or effective date is 1.096%, or 4/365. Thus, we see that there are a larger percentage (over twice as many) of deals announced at the end and the beginning of a quarter for both the full sample and U.S. CRSP acquirers. The effective dates are even more striking, with over three times as many deals going effective at the end or the beginning of a quarter for all firms and U.S. CRSP acquirers than would occur randomly.

Table 9
Acquisition rates by day of the year from 1992 to 2009

(1) Day of the year	(2) Number of observations per day	(3) % that are public deals	(4) Mean # of days to completion	(5) Median # of days to completion
Panel A. Five most frequent announcement dates				
July 1	2,194	3.4%	24	0
January 1	2,189	1.2%	50	0
June 30	2,112	4.1%	25	0
March 31	1,955	5.2%	25	0
December 31	1,902	2.7%	17	0
Panel B. Five most frequent effective dates				
December 31	5,130	6.2%	122	51
June 30	3,456	6.2%	66	7
March 31	3,286	5.4%	57	13
October 1	3,164	7.7%	59	7
July 1	3,163	5.8%	48	0
Panel C. Five least frequent announcement dates				
December 25	116	8.6%	48	15
December 26	318	6.3%	52	0
February 29	344	5.2%	26	0
December 27	448	6.7%	39	0
December 24	451	7.1%	49	0
Panel D. Five least frequent effective dates				
December 25	98	8.5%	59	4
December 26	254	5.0%	38	0
December 24	399	8.1%	41	0
December 27	404	9.7%	37	0
February 29	491	5.7%	52	2

Panel E. Clustering around quarter beginnings and ends

(1)	(2) Four quarter-ends	(3) Four quarter-beginnings
Announcement date		
All firms	2.413%	2.557%
U.S. CRSP firms	1.912%	1.923%
Effective date		
All firms	4.626%	3.895%
U.S. CRSP firms	4.131%	3.322%

This table shows the acquisition activity of the most and least active days of the calendar year for all completed M&As reported by SDC in which the acquirer owned less than 50% of the target prior to the purchase and acquired 50% or more of the target. Panels A through C examine all announcement days, and Panels B and D examine effective days by most active (Panels A and B) and least active (Panels C and D) days of the year. In Column 3, Panels A through D show the number of takeovers in which the target is a public firm scaled by the total number of takeovers for that particular day of the year. Days to completion, shown in Columns 4 and 5, are the number of days between the announcement and effective dates. The mean (median) time to completion for the entire sample is 36.7 (0) days. In Panel E, only the four quarter-ends (March 31, June 30, September 30, and December 31) and quarter-beginnings (January 1, April 1, July 1, and October 1) are analyzed. The reported percentages in Columns 2 and 3 are the number of takeovers on these particular dates scaled by all takeovers. The unconditional probability for an acquisition announcement or effective date is 1.096% or 4/365.

2.5 Clustering of mergers and acquisitions and IPO waves

Recent studies (e.g., Celikyurt, Sevilir, and Shivdasani 2010; Hovakimian and Hutton 2010; Rau and Stouraitis 2010) suggest that IPO and merger waves, to the extent that they occur, are strongly correlated. Since we have found that a larger sample impacts the magnitude of the wave pattern in M&As, we

Table 10
Correlations between monthly frequencies of acquisitions and IPO listings from 1992 to 2009

(1)	(2) IPO listings	(3) Lagged IPO listings
U.S. acquirers & all targets		
Correlation coefficients	0.081	0.152**
Number of acquisitions	128,900	128,900
Number of listings	6,163	6,455
U.S. CRSP acquirers & all targets		
Correlation coefficients	0.509***	0.584***
Number of acquisitions	67,301	67,301
Number of listings	6,163	6,455
U.S. CRSP acquirers & U.S. CRSP targets		
Correlation coefficients	0.474***	0.567***
Number of acquisitions	3,931	3,931
Number of listings	6,163	6,455
Number of months	216	216

This table presents Pearson correlation coefficients for the relation between monthly acquisition frequencies and IPO listing frequencies. IPO listing frequencies are from Jay Ritter's website: http://bear.cba.ufl.edu /ritter/ipoisr.htm. In Column 2, the month of the IPO frequencies is matched to the month of the acquisition frequencies, as defined by the acquisition announcement date. In Column 3, we match the month of the acquisition frequency to the IPO frequencies of the previous year. For example, acquisitions occurring in March 2002 are matched to IPO listings in March 2001. U.S. CRSP acquirers & U.S. CRSP targets are those acquirers and targets that are both located in the United States, according to SDC, and that have announcement-day returns available on CRSP. *** represents significance at the 1% level.

also examine the effect of sample selection on the relation between mergers and IPOs. Table 10 reports the correlation between the monthly frequencies of acquisitions and IPO listings. In Column 2, we match the frequency of M&A transaction announcements in a month to the frequency of IPO listings in the same month. In Column 3, we match the acquisition frequency for a month to the IPO frequency of the same month in the previous year. For example, we match acquisitions announced in March 2002 to IPO listings in March 2001.

The results in Table 10 also show that any inference on the presence (or magnitude) of the correlation between IPO and acquisition activity depends on the breadth of the M&A sample. We find that if we use a sample of M&As by all U.S. acquirers, there is no significant contemporaneous correlation between IPO and acquisition activity. However, we find a strong contemporaneous correlation (0.509) if we limit the sample to just publicly traded acquirers. Similarly, when we examine the correlation between current acquisition activity and lagged (by one year) IPO activity, our inference depends on the breadth of the sample. For example, if we examine acquisitions by publicly traded U.S. acquirers, the correlation between acquisition activity and lagged IPO activity is 0.584; the correlation drops to 0.152 if we extend the sample to all U.S. acquirers.

3. Analysis of Abnormal Returns

In this section, we examine more closely acquirer and target three-day announcement CARs for as comprehensive a sample as we can generate from

1992 through 2009. While there are a multitude of studies of acquirer and target returns and their relation with different deal, target, and acquirer characteristics (e.g., Bruner 2004 cites more than 80 and there have been many studies since 2004), we document for a large, up-to-date sample some details on returns around M&A announcements, including the relation between the method of payment and returns.

3.1 Returns to acquirers and targets and method of payment over time

Table 11 presents the time series of three-day CARs for U.S. acquirers (Column 2) and targets (Column 4) for each year from 1992 to 2009. In addition, we present information about the proportion of acquisitions that are for public targets (Column 6), financed mostly with cash (Column 7), the standard deviation of acquirer CARs (Column 8), and the percentage of acquirer CARs that are negative (Column 9). The firms examined in this table are U.S. acquirers and targets with price and returns data available on CRSP.

Table 11
Deal characteristics by year

(1) Year	(2) Acquirer CAR	(3) Number of acq. CARs	(4) Target CAR	(5) Number of target CARs	(6) % of acq. that have public targets	(7) % of acq. paid with mostly cash	(8) Standard deviation of acq. CAR	(9) % of acq. CARs that are negative
1992	1.8%	2,581	18.2%	125	7.2%	35.6%	0.088	42.1%
1993	1.8%	3,159	20.6%	152	7.1%	41.7%	0.081	43.5%
1994	1.2%	3,833	18.9%	228	8.4%	42.0%	0.078	44.4%
1995	1.1%	4,147	18.0%	283	9.2%	41.7%	0.075	46.3%
1996	1.4%	5,045	16.5%	312	8.5%	41.1%	0.080	44.5%
1997	1.3%	6,243	13.8%	410	8.7%	42.8%	0.096	46.1%
1998	1.0%	6,621	18.0%	410	8.8%	45.9%	0.108	49.7%
1999	1.2%	5,337	20.7%	391	9.8%	43.0%	0.116	48.5%
2000	0.6%	4,297	21.7%	318	10.2%	39.1%	0.105	48.6%
2001	1.1%	3,068	26.1%	263	11.7%	49.0%	0.099	45.4%
2002	0.9%	2,745	30.7%	144	8.7%	63.2%	0.081	43.5%
2003	0.8%	2,741	22.7%	165	8.6%	64.5%	0.078	47.5%
2004	0.7%	3,140	17.9%	167	7.9%	68.8%	0.085	46.3%
2005	0.6%	3,423	18.8%	153	6.9%	71.9%	0.051	45.9%
2006	0.6%	3,397	20.2%	168	7.6%	74.8%	0.079	46.9%
2007	0.6%	3,251	24.3%	162	7.6%	74.8%	0.103	49.0%
2008	0.6%	2,528	33.2%	106	5.9%	75.2%	0.076	45.5%
2009	1.0%	1,745	31.6%	91	7.7%	71.0%	0.078	46.5%

This table presents deal characteristics for all completed mergers and acquisitions reported by SDC in which the acquirer owned less than 50% prior to the purchase and acquired 50% or more of the target and the nationality of the acquirer is the U.S. The announcement date of the transaction must be between 1992 and 2009. Acquirers in this sample must be a U.S. firm with a market value on CRSP five days prior to the acquisition announcement. The mean 3-day cumulative abnormal returns (CAR) in which day zero is the takeover announcement day are presented for the acquirer and the target in Columns 2 and 4, respectively. The number of observations for the CARs are in Columns 3 and 5. Column 6 represents the percentage of all acquisitions in that row that are classified as public by SDC. Column 7 shows the percentage of deals in that row for which method of payment data is available and in which the method of payment is comprised of at least 50% cash. Column 8 presents the standard deviation of acquirer CARs, and Column (9) presents the percentage of acquirer returns that are less than zero. All CARs in this table are significant at the 1% level.
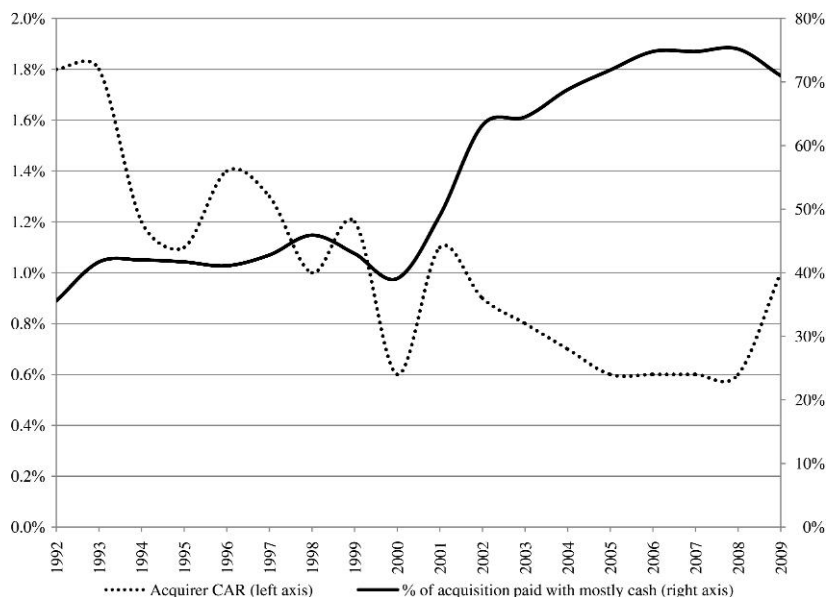
Figure 2
Time-series changes in acquirer CARs and percentage of transactions financed with mostly cash
This figure shows the yearly movement in acquirer CARs and the upward movement in percentage of transactions financed with mostly cash from 1992 to 2009. The data used for this figure are in Columns 2 and 7 of Table 6. The sample is U.S. acquirers with stock price data available on CRSP, a total of 67,301 observations. Complete definitions are found in the notes of Table 6.

The results reported in Table 11 show that the average CARs for acquirers, and to a lesser extent targets, change considerably over time. Most dramatically, there is a downward trend in acquirer CARs (Column 2) that ends up in a threefold drop from a high of 1.8% in 1992 and 1993 to a low of 0.6% in 2000 and 2005–2008. Figure 2 illustrates this decline in acquirer CARs over the sample period. If we lessen the impact of outliers (not shown), we find the same relatively large pattern ending in a threefold drop in acquirer CARs from a high of 1.5% in 1993 to a low of 0.4% in 2007. If we examine acquirer CARs in transactions in which the target also has price data on CRSP (not shown), the time trend is not as distinct.

Although acquirer CARs appear to be monotonically decreasing during the period of our study, there is no year in which the percentage of acquirer CARs that are negative exceeds 50%. The highest percentage of acquirer CARs with negative returns (found in Column 9) is 49.7% in 1998, and the lowest is 42.1% in 1992. Thus, acquirer CARs are, in every year, mostly positive.

The pattern in target returns is less obvious. First, note the relatively small number of deals with target returns on CRSP. This percentage of deals with acquirer returns on CRSP ranges over the years from 5.9% to 11.7%. Second,

there is no general trend in target returns, with returns varying up and down throughout the period.

Figure 2 and Table 11 also illustrate the large increase over time in the number of transactions paid for with mostly cash (we define this as at least 50% cash in the method of payment). The lowest proportion of deals paid for with 50% or more cash is 35.6%, found in 1992, and the highest proportion is 75.2% in 2008. This substantial increase in cash-financed transactions is almost monotonic and is not greatly influenced by the effect of outliers.

3.2 Aggregate method of payment, deal size, and deal values statistics

Table 12 presents descriptive information for acquirer and deal values, changes in values, and the relation between the method of payment and change in val-

Table 12
U.S. Acquirers on CRSP from 1992 to 2009

(1)	(2) Mean	(3) Median	(4) Number of observations
Panel A. Acquirer and deal value			
Acquirer value	$12,848	$906	67,265
Deal value	$341	$35	35,574
Relative deal size	23.5%	5.5%	35,574
Panel B. Changes in acquirer and deal value			
Acquirer CAR	1.1%***	0.3%***	67,256
Acquirer dollar gain ($mil)	−$4.8	$0.8***	67,256
Target CAR	20.4%***	16.0%***	4,047
Acquirer large losses			
Acquirer CAR	−4.9%***	−3.1%***	1,916
Target CAR	20.6%***	17.4%***	275
Relative deal size	8.5%	0.3%	922
Acquirer large gains			
Acquirer CAR	5.3%***	3.3%***	1,898
Target CAR	26.8%***	22.4%***	164
Relative deal size	4.5%	0.3%	901

Panel C. Influence of method of payment on acquier value

(1)	(2) Mostly stock	(3) Mostly cash	(4) All other payment methods	(5) Deals w/no payment information
CRSP target	−2.1%***	0.2%	−0.3%	0.7%
	[2,276]	[1,330]	[231]	[209]
Target is not on CRSP	2.9%***	1.5%***	2.2%***	0.8%***
	[6,316]	[11,408]	[2,999]	[42,487]

This table considers U.S. acquirers with a market value on CRSP five days prior to the acquisition announcement. Acquirer value is the product of outstanding shares and share price on CRSP five days prior to the acquisition announcement. Deal value is the SDC deal value. Relative deal size is deal value divided by acquirer value. Acquirer dollar gain is the product of CAR and acquirer value. Acquirer large losses (gains) include those transactions in which the dollar loss (gain) to the acquirer is less than (greater than) or equal to $1 billion. Mostly stock (cash) is transactions in which the method of payment is 50% or greater stock (cash). In Panel C, mean CARs are reported and the number of observations is in brackets. Dollars are in millions and are adjusted by the CPI to 2010 dollars.*, **, and *** represent significance at the 10%, 5%, and 1% levels, respectively.

ues. The data are for transactions in which stock price information about the acquirer is available on CRSP. Panel A contains means and medians for deal value and the size of the acquirer. We report the median and mean value of the acquirer (measured as the product of the acquirer's price and shares outstanding five days prior to the acquisition announcement), deal value, and the ratio of the deal value to the acquirer market value–relative deal size. Panel A shows that when the acquirer is on CRSP and there is an available deal value, the acquirer is, on average, five times larger than the price paid for the transaction— the mean relative deal size is 23.5%. Further, in the median transaction, the acquirer is almost 20 times the value of the deal—the median relative size is 5.5%. For comparison of the impact of data screens, these means and medians are much smaller than the average 33.4% and median 11.9% in Moeller, Schlingemann, and Stulz (2004), who exclude only transactions in which the target deal value is less than $1 million.

Panel A of Table 12 confirms that the conventional wisdom, which implies that most M&As are large transactions, is misleading. If we consider that almost half of all transactions in this panel (31,691 out of 67,265) do not have an available deal value and are therefore likely very small, we can conclude that most acquisitions done by CRSP firms are probably less than 5% of the acquirer's value.

Panel B of Table 12 reports changes in the value of the acquirer and target in the three days surrounding the announcement date for transactions in which the acquirer is a U.S. firm with CRSP data. We examine acquirer and target CARs, the dollar gain to the acquirer, and details about transactions in which the acquirer gains or loses $1 billion or more (Moeller, Schlingemann, and Stulz 2005). For the 67,256 deals represented in this panel, the average acquisition represents a statistically significant 1.1% gain to the acquirer.[9] The average dollar gain (−$4.8 million) is not different from zero, though the median dollar gain to the acquirer is a statistically significant $0.8 million. Further, for the 4,047 publicly traded targets, target shareholders experience significant gains of 20.6% in the three days around the announcement, which is similar to the 21.7% target returns found by Bauguess, Moeller, Schlingemann, and Zutter (2009) for transactions from 1996 to 2005.

In Table A3, we follow 9,633 unique acquirers (with both an acquisition and a three-day return in CRSP) and compile the returns from its acquisitions, divestitures, and becoming a target itself. We combine the returns to all of these activities per firm, getting the sum of acquisition activity for each firm. Approximately 45% of the acquiring firms also undertake at least one divestiture, and 3,312 of the 9,633 become targets. We sum all activity per firm and average these sums and find that the average return from acquisition activity

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[9] There are nine transactions in which the acquirer has a market value five days prior to the announcement, but no announcement returns.

(being an acquirer, spinning off subsidiaries, and being a target) is 16.3%, and the median is 8.7%. Thus, the sum of all acquisition-related activity is value increasing for individual firms.

We also document acquirer returns, target returns, and the relative deal size of big gainers and losers in Panel B. We show that there are 1,916 acquisitions in which the acquirer loses more than $1 billion in the three days around the acquisition announcement. There are a similar number of acquirers that gain big: 1,898 acquirers gain more than $1 billion. Moeller, Schlingemann, and Stulz (2004) in their study of large deals report similar statistics, though the subsequent literature has focused largely on the losers. The similar number of deals in which the acquirer gains, as opposed to loses, is consistent with the belief that transactions with large absolute acquirer value changes are on average zero NPV projects for acquirers.

There are three additional findings of interest from these extreme-dollar-changing acquisitions. First, in big-gainer deals the targets are, on average, about half the relative size of the big-loser targets. Second, there are 40% fewer publicly traded targets in big-gainer deals than in big-loser deals, as indicated by the difference in target returns—there are 275 and 164 target returns for big-loser and big-gainer deals, respectively. Third, of the publicly traded targets in each type of deal, the targets of the big-gainer acquirers earn 6% more than the targets of the big-loser acquirers (26.8% vs. 20.6%).

In Panel C of Table 12, we present mean acquirer CARs based on method of payment (mostly cash, mostly stock, all other payment methods, and no payment information available) in columns and target public status (the target is on CRSP or not) in rows. This panel presents one of the single most perplexing statistics in bidder returns (as first documented by Chang 1998): Deals financed with stock provide both the highest and lowest bidder returns. In the 2,276 deals in which the target is on CRSP (and is therefore publicly traded), stock deals are associated with −2.1% returns. In the 6,316 deals in which the target is not public, stock deals are associated with 2.9% returns. This panel also provides further evidence that small, less significant acquisitions (Rodrigues and Stegemoller 2007) are material to the market. For the 42,457 transactions in which there is no method of payment detail, which is usually associated with no deal value information, there is an improvement in the value of the acquirer by a statistically significant 0.8%. Thus, the transactions that are immaterial for reporting reasons nevertheless on average create wealth for the acquirer's shareholders.

Figure 3 shows further detail on acquirer returns around M&As and their relation with the method of payment. We examine 24,560 acquisitions by U.S. acquirers on CRSP for which there is an available method of payment reported in the SDC database. From these transactions we form acquirer abnormal return deciles from the lowest (decile 1) to the highest (decile 10) abnormal returns. We then determine the percentage of transactions in each decile financed with mostly stock (seen as black in the figure), mostly cash
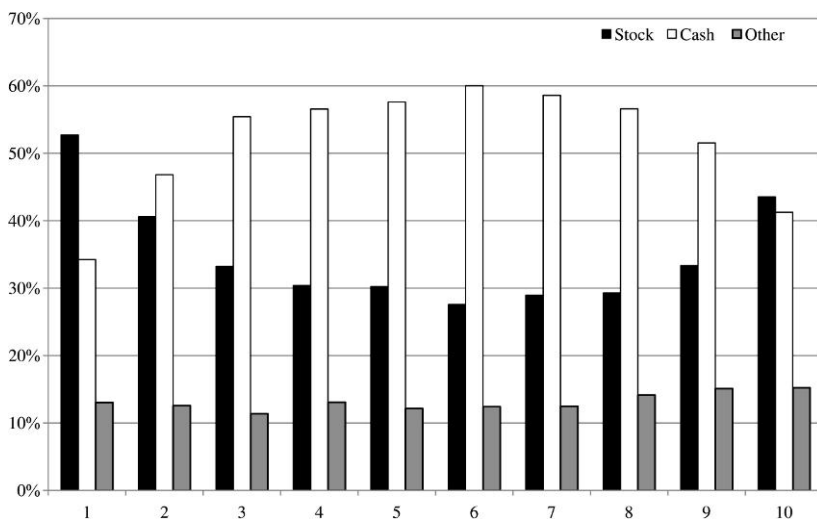
Figure 3
Method of payment for acquirer abnormal return deciles
In this figure we show the relation between method of payment and acquirer abnormal returns for 24,560 deals by U.S. acquirers with return data on CRSP and available method of payment information on SDC. Within each return decile we show the percentage of deals financed with a particular method of payment. We classify a transaction as mostly cash or stock if the percentage of the method of payment is more than 50% cash or stock, respectively. We classify the method of payment as other if there is payment data on SDC and neither cash nor stock is greater than 50% of the payment method.

(white), and all other methods of payments that are not mostly stock or cash (gray).[10]

Figure 3 illustrates three important points about the relation between method of payment and acquirer abnormal announcement returns. One, the smallest percentage of deals financed with mostly cash is found in the top (41%) and bottom (34%) deciles, while the largest percentage is found in the middle deciles. Two, the opposite pattern is seen in the relation between stock as a payment method and acquirer abnormal returns: The percentage of deals financed with mostly stock is largest in the top (44%) and bottom (53%) deciles and is smallest in the middle deciles. Three, the relation between method of payment and acquirer returns is not linear, although most studies model the relation as if it were linear.[11]

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[10] The "Other" category includes payment methods such as bonds, preferred stock, earnouts, asset swaps, etc.

[11] We also examine, but do not tabulate, the highest and lowest 500 CARs from our data. Deals financed with mostly cash represent 29.2% of the 500 transactions with the highest CARs, and mostly stock-financed deals represent 55.6% of the 500 highest. A similar proportion exists for the worst 500 returns. Deals financed with mostly cash represent 29.8% of the 500 transactions with the worst CARs, and mostly stock-financed deals represent 59.6% of the 500 deals with the worst returns.

Table 13
Acquisition activity by acquirer and deal size from 1992 to 2009 for U.S. acquirers on CRSP

(1)	(2) Small Acquirer	(3) Medium Acquirer	(4) Large Acquirer
Small Target			
CAR	3.7%***	0.8%***	0.2%***
Sum of deal values ($mil)	$78,585	$310,648	$273,938
Median relative size	18.3%	5.5%	0.8%
Number of observations	10,197	22,089	24,373
Number of obs. in which targets have no deal value	4,382	10,493	16,827
Medium Target			
CAR	10.0%***	2.4%***	0.5%***
Sum of deal values ($mil)	$34,112	$592,252	$2,064,307
Median relative size	274%	45.5%	5.1%
Number of observations	175	2,422	6,248
Large Target			
CAR	−5.9%	7.5%**	−1.0%***
Sum of deal values ($mil)	$9,644	$186,018	$8,567,334
Median relative size	2,973%	258%	26.8%
Number of observations	5	103	1,689

This table presents the level of acquisition activity by the size of the target (in rows) and the acquirer (in columns). Acquirer size is the product of the number of shares outstanding and acquirer stock price five days prior to the acquisition announcement. Target size is the deal value available in SDC. All dollar amounts, including the size measures, are adjusted to 2010 dollars. Small is any value less than $100 million (including missing values). Medium is any value between $100 million and less than $1 billion. Large is $1 billion or more. Acquisition activity is measured three ways: (1) by the sum of all deal values; (2) by the sum of all relative size values, in which relative size is target size scaled by acquirer size; and (3) by the number of transactions. ** and *** represent significance at the 10% and 5% levels, respectively.

We examine the interaction of acquirer and target size on the returns to acquirers in Table 13. This table presents the level of acquisitions activity by the size of the target (in rows) and the acquirer (in columns). We define "small" acquirers or targets as those with a deal value less than $100 million (including missing deal values), "medium" is between $100 million and less than $1 billion, and "large" is $1 billion or more. Acquisition activity is measured in three ways: (1) by the sum of all deal values; (2) by the sum of all relative size values, in which relative size is deal value scaled by acquirer size; and (3) by the number of transactions.

One result stands out in our analyses of acquirer returns related to the relative deal size. The only case where the acquirer returns are significantly negative is for large acquirers buying large targets. The abnormal return for these deals is a significant −1.0%. No other pair of acquirers and targets classified by size quadrant has significantly negative returns. Of the nine relative size quadrants, seven have significantly positive returns.[12] Thus, the finding of negative returns to acquirers is concentrated in deals with large firms buying other large

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[12] Small acquirers acquiring large targets also have a negative mean return, but the return is insignificant at conventional significance levels.

firms, but in other cases the average returns to the acquirer are generally positive. This result could be consistent with the idea that machismo is present when managers of big firms compete for corporate control.

3.3 Summary of analyses of returns in mergers and acquisitions

This section provides data on the return, as well as the method of payment characteristics for M&As. We employ as large a sample as we can compile from the SDC database from 1992 to 2009. The larger sample we use contains deals that are smaller and more positive than what is usually found in studies of M&As. Again, we show that much of what is commonly referred to as M&As (often public firms buying other public firms) understates the extent of M&As. Most deals by CRSP firms are not, by any relative measure, large. Second, there is a threefold decrease in the abnormal returns to acquirers from 1992 to 2008, and there is not an obvious reason as to why. Third, unlike acquirer returns, target returns present no discernable pattern, although they are by no means stable over time, with an annual average between 18% and 33%. Fourth, most acquisitions by firms with price data on CRSP exhibit positive abnormal acquirer returns, and the only category of these transactions with significantly negative returns is large firms buying other large firms.

Finally, there are two especially interesting observations from our results about the method of payment: the large increase over time in cash-financed transactions and the preponderance of deals with positive returns to acquirer deals financed with mostly stock. We find that during our sample period, there is a doubling in the percentage of deals paid for with mostly cash—from 36% in 1992 to 71% in 2009. We do not, however, provide a rationale for this dramatic increase in cash deals. Also, stock-financed deals are present in a greater proportion than are cash-financed deals in the top decile of the three-day CAR for the acquirer (44% stock vs. 41% cash), and the overall relation of stock-financing and acquirer abnormal returns is not linear. These results are inconsistent with the view that stock deals are associated with negative acquirer stock returns.

4. Conclusion

Much of the research in M&As includes only those deals in which there are a significant amount of data available on the acquirer and the target. However, the exclusion of other deals has the effect of making much of this research unintentionally misleading, implying that most mergers are between large firms with publicly available prices. In fact, a significant portion of M&A transactions does not fit that category. Thus, many M&A papers analyze less than 5% of the acquisitions made by domestic acquirers. We study a substantially larger sample of M&As than those found in previous studies, including many

deals that are usually screened out. For example, we include deals with targets with a small or unreported deal value and acquirers for which there are no available price data. These deals often but not always involve private acquirers. The larger sample allows us to provide complete new information about the characteristics of M&As in general. Further, we provide evidence that some conclusions about M&As from more restrictive samples do not hold for M&As in broader samples.

Theoretically, the absence of data in transactions involving smaller or private firms may lead to defining M&As too strictly. Mergers and acquisitions are imprecise terms in the same way that the term football player is imprecise— not all football players belong to a professional, collegiate, or high school team and, even for those in those groups, a football player may mean different things. The terms mergers and acquisitions encompass a wide variety of transactions with different structures that have varying effects on participants in the transactions. Here we use the term mergers and acquisitions for all transactions where the control rights to an asset (broadly defined to include the purchase of an existing business, one of its divisions, or the assets or some of the assets of a business) are transferred in some way.[13] Mergers and asset sales represent the extremes of the transactions we analyze. In a merger, the transaction forms a significantly different firm from two distinct firms, and it is not always clear to the casual observer who is doing the acquiring. At the other extreme, an asset sale consists of an obvious acquirer and target, and the relative size of the target is small enough that the acquirer is largely unchanged. Though it is sometimes the case that asset sales are comprised of only assets, this nominal designation is not accurate in many cases.[14] We therefore include in our sample many transactions that we suggest are M&As but do not generally appear in empirical studies.

Our broader dataset reveals several important findings both on the extent of M&As, as well as the characteristics of M&As. We find that deal characteristics such as size of deals, number of deals, and the importance of non-publicly owned firms and cross-border acquisitions are very different from that in much of the extant literature. However, we also show that large deals do make up a significant portion of reported deal values. For example, in the U.S. over our time period, U.S. deals of over $1 billion make up only 2.0% of the transactions but 70.8% of the reported deal value.

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[13] This use of a broad definition of M&A is similar to those works that use the term takeover to describe M&A broadly. For example, Jarrell, Brickley, and Netter (1988) in their M&A review article use the term takeover to refer to a transaction that is in the market for corporate control, or in "market for the right to control the management of corporate resources."

[14] For example, Cisco's acquisition of IronPort Systems in January 2007 is classified by SDC as an "Acquisition of Assets." However, in the news releases surrounding the announcement, IronPort Systems is said to remain a somewhat independent unit of Cisco and retain the majority of its 408 employees.

Some of our evidence contrasts with previous findings developed using less inclusive samples of M&As. One significant result in our study is that the patterns of merger waves found in earlier research is very much attenuated in our sample, which includes many more transactions. Research demonstrates the existence of merger waves in samples composed mainly of public acquirers and large deals. We include private acquirers and small deals, which are disproportionately screened out of most studies of waves in M&As. However, including private acquirers and small deals in the sample significantly smooths out the pattern of M&A activity over time. This result holds for M&A activity in general and within industries. There does seem to be, however, daily clustering of deals, especially at the end and start of quarters. Finally, the correlation of M&A activity with IPO activity is much less in the full sample than others have found in more restrictive samples.

We also find that, for the aggregate market, M&A activity increases overall wealth, and that acquirers gain in most takeovers even though acquirer announcement returns have decreased threefold from 1992 to 2009. This result is perhaps inconsistent with the view that acquirers do not gain in takeovers. We also find evidence that it is not a general result that stock deals are associated with negative abnormal returns for the acquirer. For example, stock as a method of payment in M&As is used more than cash in deals associated with the highest cumulative abnormal returns. Further, the use of stock as a payment method is as frequent in the greatest value-reducing deals as in the deals that create the most value.

Detailed data on the firms involved in a transaction can enable a researcher to identify important relations in M&As. However, one must be careful in extending the implications of the work to firms that are not in the samples. We believe that this detailed summary of the characteristics of M&As for a comprehensive sample is useful both on its own and as an aid in future research.

Table A1
Number of domestic deals reported by W. T. Grimm & Co. and SDC in the quarter they are announced

(1) Year	1st Quarter			2nd Quarter			3rd Quarter			4th Quarter			(14) Yearly average of SDC/ Grimm
	(2) SDC	(3) Grimm	(4) SDC / Grimm	(5) SDC	(6) Grimm	(7) SDC / Grimm	(8) SDC	(9) Grimm	(10) SDC / Grimm	(11) SDC	(12) Grimm	(13) SDC / Grimm	
1980	5	411	1%	10	445	2%	20	500	4%	38	535	7%	4%
1981	88	599	15%	128	585	22%	191	623	31%	169	588	29%	24%
1982	157	604	26%	204	594	34%	200	574	35%	196	574	34%	32%
1983	183	540	34%	285	595	48%	294	677	43%	315	721	44%	42%
1984	321	710	45%	314	627	50%	280	562	50%	355	644	55%	50%
1985	319	829	38%	334	734	46%	326	732	45%	392	706	56%	46%
1986	365	728	50%	478	800	60%	495	908	55%	838	902	93%	64%
1987	486	614	79%	496	417	119%	525	559	94%	667	462	144%	109%
1988	565	621	91%	556	534	104%	575	595	97%	693	542	128%	105%
1989	790	684	115%	797	561	142%	781	648	121%	790	473	167%	136%
1990	794	537	148%	1,025	573	179%	772	512	151%	892	436	205%	171%
1991	781	438	178%	791	475	167%	939	510	184%	936	454	206%	184%

This table presents the number of domestic deals announced according to SDC and W. T. Grimm & Co. for transactions occurring from 1980 to 1991. For deals from SDC, the acquirer's parent nation must be the U.S. All announcement numbers from W. T. Grimm & Company were found in news announcements on LexisNexis. SDC/Grimm (Columns 4, 7, 10, 13, and 14) is the proportion of deals announced according to SDC scaled by the deals announced according to W. T. Grimm & Co. Column (14) presents the average proportion of deals reported by SDC to deals to Grimm.

Table A2
Acquisition experience and the relative importance of mergers and acquisitions for all CRSP firms from 1992 to 2009

Panel A. All CRSP firms

(1)	(2) All firms present from 1992 to 2009	(3) All firms present for at least 5 years
Total CRSP firms	1,483	8.875
% [number] of CRSP firms with at least one acquisition in SDC	91.4% [1,355]	75.8% [6,728]
Mean [median] number of acquisitions per CRSP firm	15.8 [8]	8.2 [4]

(1)	(2) Interest expense	(3) Income taxes	(4) Common dividends	(5) Capital expenditures	(6) R&D expenses	(7) Acquisitions
Panel B. All Compustat firms						
Sum	$10,630,298	$5,538,408	$4,357,255	$10,824,000	$3,243,820	–
Mean	$875	$450	$364	$1,019	$507	–
Number of observations	12,145	12,317	11,967	10,623	6,402	–
Panel C. Only firms with acquisitions disclosed on SDC						
Sum	$8,052,726	$4,975,824	$3,883,707	$9,574,505	$2,975,579	$10,217,775
Mean	$1,292	$790	$618	$1,719	$865	$1,622
Number of observations	6,235	6,300	6,288	5,570	3,441	6,300

Panel A shows the analysis of all CRSP firms with a share code of 11 and excludes those firms with an SIC code of 6723 or 6726 (12,918 firms). The first row presents the number of unique firms on CRSP identified by a CRSP PERMNO. The second row presents the percentage of firms from the first row that made at least one acquisition in SDC. The third row shows the number of acquisitions made per firm on CRSP. Column 2 requires that the CRSP firm be present the entire period of 1992 to 2009. Column 3 requires that the firm be present for five years and must not have an end date before 1992. Panels B and C highlight the cash flow uses of Compustat firms from 1992 to 2008 that have a stock ownership code (stko) of zero and are incorporated in the United States. Interest expense is DATA15; Income taxes is DATA16; Common dividends is DATA21; Capital expenditures is DATA30; R&D expenses is DATA46. The final column is Acquisitions from SDC. We sum all items by CUSIP. We adjust dollars (in millions) to 2010 by the CPI. While Panel B reports all firms on Compustat, Panel C presents only those firms on Compustat for which we could find a matching CUSIP on SDC, thus the firm must have recorded at least one acquisition from 1992 to 2008 on SDC. Firms in the SDC database are matched to Compustat firms using the SDC CUSIP of the parent.

Table A3
Firm and aggregate returns to all acquisition-related activity of U.S. acquirers with data on CRSP

(1)	(2) Mean	(3) Median	(4) Sum	(5) Number of unique acquirers	(6) Number of observations
Panel A. Acquisitions					
CAR	7.3%***	3.0%***	709.4%	9,633	67,301
Dollar	−$33.8	$1.8***	−$325,442	9,628	67,301
Panel B. Divestitures					
CAR	4.4%***	1.6%***	189.4%	4,335	17,421
Dollar	−$10.7	$1.5***	−$46,526	4,334	17,421
Panel C. Becoming a target					
CAR	20.2%***	16.0%***	669.1%	3,312	3,394
Dollar	$199.1***	$30.5***	$659,236	3,311	3,394
Panel D. Sum of all activity					
CAR	16.3%***	8.7%***	1,568.0%	9,633	9,633
Dollar	$29.8	$8.9***	$287,234	9,628	9,628
Panel E. Sum with only "normal" acquirers					
CAR	5.6%***	3.1%***	112.0%	1,980	1,980
Dollar	−$260.9**	$11.5***	−$516,588	1,980	1,980

All of the statistics in this table are conditioned on the firm being both an acquirer and having announcement-day returns on CRSP. The columns mean, median, and sum present those statistics for the CAR associated with each event. We match the CRSP permanent number (PERMNO) of unique acquirers in SDC to the PERMNO of targets and parents of targets (in the case of divesting a subsidiary), thereby detailing the overall acquisition activity of each acquirer from SDC with CRSP return data. We identify a divesting parent by eliminating all matching target-parent and target CRSP permanent numbers. Sum of all activity sums up all of the activity (acquisitions, divestitures, and becoming a target) per PERMNO to provide the overall change in dollar and returns for each acquirer. The last two rows reexamine the analysis using only acquirers with acquisitions that are more normally observed in M&A studies: The target is public and is greater than 1% of the acquirer, and the deal value is $50 million or more. All dollars are in millions and are adjusted to 2010 dollars using the CPI. ** and *** represent significance at the 5% and 1% levels, respectively.

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