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Earnouts: A study of financial contracting in acquisition agreements ☆

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ABSTRACT

We empirically examine earnout contracts, which provide for contingent payments in acquisition agreements. Our analysis reveals considerable heterogeneity in the potential size of the earnout, the performance measure on which the contingent payment is based, the period over which performance is measured, the form of payment for the earnout, and the overall sensitivity of earnout payment to target performance. Our tests of the determinants of contract terms yield support for the view that earnouts are structured to minimize the costs of valuation uncertainty and moral hazard in acquisition negotiations.

1. Introduction

The successful completion and implementation of a corporate acquisition poses several challenges to acquiring and target firms. First, private information on both sides of the transaction creates a gap between the target's and the acquirer's estimate of the intrinsic value of the deal. Second, although target managers can be critically important for the successful integration of the target and acquiring firms, it can be difficult to retain them following the acquisition. Third, having received a premium based on expected synergies from the acquisition, target manager–shareholders may have little incentive to generate those synergies even if they do remain with the combined post-acquisition firm. If these issues cannot be resolved, it can be difficult to complete the acquisition even if it has positive expected synergies.

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Earnouts represent a contractual means through which several of these challenges can be addressed. Specifically, payments to shareholders in acquisitions can consist of two components: an upfront fixed payment and additional future payments that are contingent upon some observable measure of performance. These latter payments, commonly referred to as earnouts, are the focus of our study. By tying the target's consideration in the acquisition to future performance, the earnout can bridge a valuation gap between the target and the acquirer that is caused by disagreements about the target's expected future performance. Moreover, because the consideration received by the target is contingent on future performance, target managers have an increased incentive to remain with the firm and to maximize this performance if the managers are also shareholders.[1]

Using a sample of 990 acquisitions that are completed between 1994 and 2003, we empirically analyze the specific contractual terms of acquisition agreements that contain an earnout clause.[2] An understanding of these terms and their determinants has taken on increased importance in light of the recent revision to SFAS 141 on business combinations. Under the prior standard of SFAS 141, there was no recognition on the acquirer's financial statements of expected earnout payments at the time of the acquisition. Rather, contingent consideration in the acquisition was recognized as an increase in goodwill at the time that it was ultimately paid. Under the revised standard (SFAS 141(R), effective in fiscal 2009), any earnout included in the acquisition agreement must be measured at fair value and recognized on the acquirer's balance sheet as part of the initial purchase price. The fair value of the earnout is then updated annually, resulting in a gain or a loss on the acquirer's income statement. Thus, an understanding of how earnouts are structured is essential to understanding their potential impact on the volatility of the acquirer's reported earnings.

Our analysis proceeds in two steps. First, we present detailed descriptive evidence on the terms of earnout contracts. Second, we draw upon economic theories of contracting to develop and test predictions for the cross-sectional variation in earnout contract terms.

Our evidence shows that earnouts are complex, multidimensional contracts exhibiting substantial heterogeneity in the size of the potential earnout payment, the performance measure on which the earnout is based, the interval over which performance is measured, the performance thresholds that must be achieved in order to receive an earnout payment, and the form of the earnout payment. The typical earnout payment is a linear or a stepwise function of the target's performance (subject to a maximum) over the subsequent one to three years. The earnout payments are potentially quite large; on average, if the maximum earnout is paid, it would amount to 33% of the total transaction value. Perhaps not surprisingly, we find that the sample targets are almost exclusively private firms or subsidiaries of public firms.[3] In addition, we find that, relative to the population of mergers over the sample time period, acquisitions involving earnouts are slightly more likely to involve targets and acquirers from different industries.

Our cross-sectional analysis focuses on the three primary terms of earnout contracts – the potential size of the earnout payment, the length of the earnout period, and the type of performance measure on which contingent payments are made – and evaluates the extent to which cross-sectional variation in these terms is consistent with predictions from two broad classes of economic theories of contracting: (i) adverse selection/uncertainty models and (ii) moral hazard models. In developing our predictions, we draw from a wide set of literature that has previously studied contracts in the context of franchising arrangements, commercial and labor contracts, financing (debt and equity) arrangements, and executive compensation contracts.

We find support for the view that earnout contracts are designed to mitigate problems associated with valuation uncertainty. Specifically, earnout size is positively associated with proxies for the uncertainty of target value; earnout periods are longer when valuation uncertainty is likely to be resolved over a longer period of time; and the choice of performance measure in earnout contracts is associated with proxies for the amount of information conveyed by that performance measure and the verifiability of that measure.

We also find some support for models based on moral hazard considerations. Specifically, we find that earnout size is positively associated with proxies for the importance of target manager effort, while the length of earnout periods is negatively related to proxies for the noise in the performance signal. However, we find no evidence that our proxy for differences in target managers' responsiveness to incentives affects the association between earnout size and our measures of the importance of target manager effort.

Finally, we recognize that our analysis of individual contract terms is limited in at least two respects. First, earnout contract terms are endogenously determined and are likely to reflect tradeoffs among one another as well as with other terms of the transaction. Second, our measure of earnout size ignores complexities in earnout payment structure that affect both the expected size of the earnout payment and the sensitivity of the payment to realized target performance.

[1] We recognize that there are other means by which the acquiring firm can provide incentives for the target manager to remain with the post-acquisition firm (e.g. stock options or side payments). Our study is not intended to analyze the relative merits of earnouts versus these other contractual solutions. However, we do exploit differences between the typical ownership structure of private targets and that of targets that are subsidiaries of public firms to test predictions that rely on managers also being shareholders.

[2] We are aware of two prior studies of earnouts (Kohers and Ang, 2000; Datar et al., 2001). However, these studies address only the basic decision of whether or not to include an earnout in an acquisition; they do not analyze the terms of the earnout contracts.

[3] Kohers and Ang (2000) and Datar et al. (2001) also find that earnouts are observed primarily in private targets. As argued in Officer (2007), valuation uncertainty is likely to be most severe in acquisitions of such unlisted targets because of lower standards for information disclosure and the fact that information about subsidiaries may be obscured by the financial reporting choices of corporate parents.

Therefore, we employ Monte Carlo simulation methods to compute expected earnout payments and a summary measure of the sensitivity of earnout payments to changes in target performance for the subset of our sample for which we are able to obtain pre-acquisition data on target performance. These measures incorporate the performance threshold that must be attained for an earnout payment to be made, the previous level of that performance measure, an estimate of the volatility of that performance measure, and the length of the earnout period. Consistent with our earlier results, we find that expected earnout payments are economically important and are positively related to measures of target valuation uncertainty and the importance of target manager effort.

Our study is related to three other strands of literature. A first set analyzes the role of accounting information in financial contracts. For example, studies such as Smith and Warner (1979), Watts and Zimmerman (1986), Beatty et al. (2002), and Asquith et al. (2005) demonstrate how accounting-based debt covenants can reduce contracting costs, while Lambert and Larcker (1987) and Sloan (1993) analyze the use of accounting earnings in top executive compensation contracts. Armstrong et al. (2010) provide a survey of the existing theoretical and empirical research on these and other issues related to the role of financial reporting in the contracting process. Our study complements this literature in that it shows how accounting information is used to reduce contracting costs in acquisition agreements.

A second set addresses the role that valuation uncertainty plays in various aspects of the merger market. Studies such as Shleifer and Vishny (2003), Rhodes-Kropf and Viswanathan (2004), and Officer (2004) consider the impact of uncertainty about acquiring firm value on the number of bids made, whether the consideration offered is cash or acquirer stock, and whether the merger bid contains a "collar." The prior earnouts literature (Kohers and Ang, 2000; Datar et al., 2001) considers the impact of uncertainty about target firm value on whether bids include contingent payments. We extend this literature by demonstrating that the structure of contingent payment contracts is consistent with the goal of solving the problem of valuing a target with limited information.

A third set of studies analyzes venture capital (VC) financing agreements. Like the acquisition of smaller, private targets, venture capital financings pose challenges related to valuation uncertainty and moral hazard. Our study is in the spirit of Kaplan and Stromberg's (2003) detailed analysis of contracts between entrepreneurs and venture capitalists in that it contributes to an understanding of how financial contracting solves problems associated with valuation uncertainty and moral hazard in real world situations.

The remainder of the paper is organized as follows: in Section 2, we describe our sample selection process and present descriptive statistics on the earnout contracts. Section 3 presents evidence on the determinants of the primary terms of earnout contracts. Section 4 presents evidence from a Monte Carlo simulation of earnout payments and the sensitivity of those payments to changes in target performance. Section 5 provides a brief discussion of our findings in relation to prior work in the financial contracting literature and offers concluding remarks.

2. Sample selection and data description

2.1. Sample acquisitions

Our sample begins with the 25,213 acquisitions listed on the Securities Data Corporation's (SDC) Mergers and Acquisitions database that were completed by publicly traded U.S. corporations between 1994 and 2003. Of this set, SDC identifies 990, or 3.9%, that include an earnout as part of the acquisition agreement. This rate of earnout use is slightly below the 4.1% observed in Datar et al. (2001) and the 5.6% observed in Kohers and Ang (2000). As shown in Panel A of Table 1, the rate of earnout use has increased over the sample period from 3.1% in 1994 to 6.8% in 2003.[4]

Although the target companies come from a wide variety of industries, they exhibit some clustering relative to the SDC population in industries with large amounts of intangible assets. For example, 33% of the sample targets (untabulated) come from the following five industries: computer programming and data processing (19%), management and public relations services (4%), drugs (4%), electronic components and accessories (3%), and surgical, medical, and dental instruments (3%). These same five industries account for 23% of the SDC population.

Panel B of Table 1 reports descriptive statistics for the sample target companies and compares them to the SDC population. All data are obtained from the SDC Mergers and Acquisitions database. It is striking that fewer than 2% of the target companies are publicly traded. The sample companies are predominantly private companies (74%) and subsidiaries of public companies (23%). By way of comparison, 19% of the SDC acquisition population involves publicly traded targets (the difference is significant at the 0.01 level). Panel B also shows that acquisitions with earnout payments are slightly more likely to involve target firms from another industry (as measured by primary 3-digit SIC code) than are targets in the SDC population. The difference is statistically significant at the 0.05 level. To the extent that private targets and targets from industries that are different from those of the acquirer present more difficult valuation challenges, the evidence in Panel B supports the view that earnouts are more likely to be used in acquisitions of targets that are more difficult to value.[5]

[4] If we restrict the comparison group to all *private* targets, the rate of earnout use ranges from 3.2% in 1994 to 8.3% in 2003.

[5] Another potential disadvantage of earnouts in public targets is that the earnout rights may be deemed securities under the Securities Act. To avoid the costs of securities registration, acquisition agreements typically prohibit the transfer of the right to the earnout payment and explicitly state that the right is not an investment contract or any other type of security (Walton et al., 2004).

Table 1
Descriptive statistics.

Descriptive statistics for a sample of 990 mergers completed between 1994 and 2003 that include an earnout contract. Panel A presents an annual time profile for the sample firms and for the Securities Data Corporation universe of completed mergers. Panel B presents ownership and industry data for the sample target firms and for the SDC universe of target firms in mergers. Panel C presents size and form of non-contingent payment data for the sample mergers and the SDC universe. Acquirer market value is its market value of equity. The transaction value is the total amount of consideration offered to the target firm in the merger, including both non-contingent and either maximum or expected contingent amounts.

Panel A: Time profile

Year	Sample		All mergers		Sample/all mergers (%)
	N	%	*N*	%	
1994	70	7.1	2223	8.8	3.1
1995	66	6.7	2271	9.0	2.9
1996	69	7.0	2781	11.0	2.5
1997	128	12.9	3688	14.6	3.5
1998	141	14.2	3710	14.7	3.8
1999	105	10.6	2960	11.7	3.5
2000	110	11.1	2678	10.6	4.1
2001	95	9.6	1763	7.0	5.4
2002	101	10.2	1602	6.4	6.3
2003	*105*	*10.6*	*1537*	*6.1*	6.8
Total	990	100.0	25,213	100.0	

Panel B: Target characteristics

	Sample %	All mergers %	Difference *p*-value[a]
Target ownership			
Private	74.4	50.6	[0.000]
Public	1.9	19.0	[0.000]
Subsidiary	23.1	28.7	[0.000]
J.V.	0.5	1.4	[0.015]
Primary SICs (3-digit)			
Same industry	40.2	43.4	[0.045]
Cross industry	59.8	56.6	
Secondary SICs (3-digit)			
Same industry	51.4	51.2	[0.903]
Cross industry	48.6	48.8	

Panel C: Deal characteristics

Mean (median), $ in thousands	Sample	All mergers	Difference *p*-value[a]
Acquirer market value	$2,439,364 ($181,341)	$7,411,025 ($507,000)	[0.000] [0.000]
Transaction value	$93,884 ($17,500)	$238,830 ($21,445)	[0.028] [0.000]
Trans./acquirer value	26.8% (11.2%)	79.6% (5.9%)	[0.835] [0.000]
Method of payment[b]	% of Observations		Difference *p*-value[b]
Cash	43.8	52.3	[0.000]
Cash and other	2.4	3.2	[0.171]
Stock	17.9	25.6	[0.000]
Stock and other	1.3	0.7	[0.034]
Mixed—cash/stock	29.4	15.3	[0.000]
Mixed—cash/stock and Other	4.1	2.1	[0.000]
Neither cash or stock	1.0	0.8	[0.407]

[a] Reported *p*-values are from two-sided *t*-tests (for means) or Pearson chi-squared tests (for medians).
[b] For the non-earnout portion of the transaction payment.

Finally, Panel C of Table 1 reports some descriptive statistics for the acquisitions. Relative to the SDC population, acquisitions in the earnout sample tend to be significantly smaller and to involve smaller acquiring firms. At the median, the value of the sample transactions amounts to 11% of the value of the acquiring firm. This is significantly larger than the relative transaction size of 6% for the SDC population. In terms of method of payment for the non-earnout portion of the transaction, 44% of the sample acquisitions use cash, 18% use stock, and 29% contain a mix of cash and stock. By comparison, 52% of the SDC population use cash, 26% use stock, and 15% use a mix of cash and stock. These differences between the earnout sample and the SDC population are all statistically significant at the 0.01 level.

2.2. Description of earnout contracts

In order to analyze the earnout contracts in greater detail, we search the companies' required SEC disclosures. We find detailed descriptions of the earnout contracts primarily in 8-K (67%), 10-K (8%), and 10-Q (12%) reports. A small number are also found in S-1, S-3, 13-D and other filings. Among other things, these reports provide detailed information on the size of the earnout payment, the period over which performance is measured, the performance measures on which the earnout payment is based, the party whose performance is being measured, and the consideration used in the earnout payment. Depending on the particular data item, these data are available for between 447 and 535 of the 990 sample acquisitions. Representative examples of the sample contracts are provided in the Appendix.

The data in Panel A of Table 2 indicate that the potential earnout payments are economically large and are a sizable fraction of the total consideration paid in the acquisition. On average, the maximum earnout that could be paid per acquisition is $21 million, with a median of $5 million. Conditional on the maximum being paid, the earnout constitutes 33% of the total transaction value, on average, with a median of 28%. We also record the earnout payments that are reported in the SDC database. The advantage of the SDC-recorded earnout payments is that they are available for all 990 observations. The disadvantage, however, is that SDC obtains its information from press releases. Our examination of these press releases indicates that they sometimes report the maximum earnout payment that could be paid under the contract and other times report the acquirer's estimate of what the payment will be, based on either current or future performance. Because we have no way of knowing how often the press releases are reporting maximum versus expected earnout payments, the SDC numbers should be interpreted with caution. Nonetheless, as shown in Panel A of Table 2, the SDC-reported payments are very similar to what we observe in the SEC filings. Earnout payments average $22 million, which is, on average, 33% of the total transaction value.[6] We later provide estimates of expected earnout payments for the subset of our sample for which we have sufficient data to employ Monte Carlo methods.

Earnout payments are made contingent upon some measure of post-acquisition performance. It is noteworthy that the contingent payment is almost always based on the post-acquisition performance of the target. In 90% of the cases (untabulated), the earnout is contingent on the performance of the target firm only, while in another 9% of the cases, it is contingent on the combined performance of the target and acquiring firms. In four cases (0.8% of the sample) the payment is not contingent on the performance of either the target or the acquiring firm. In three of these cases the earnout is based on the future price of oil (see the appendix entry for the Giant-BP PLC acquisition), while in the fourth it is based on industry railcar production. In most cases, the earnout payment is either a linear function of the target's performance subject to a maximum (42% of the sample) or a stepwise function of the target's performance subject to a maximum (40% of the sample). A smaller proportion of the earnout payments are concave functions (9%), convex functions (6%) or linear functions with no maximum (3%). (See the appendix entry for the Cyberguard-NetOctave acquisition for an example of a linear payoff structure with a maximum and the entry for the Polycom-Voyant Technologies acquisition for an example of a concave payout structure.)

Because most targets are private companies, it is difficult to obtain data on prior performance levels of the target. Nonetheless, we are able to obtain data for both the first earnout breakpoint and the most recent year of historical performance for 182 targets. After excluding those with negative values for historical performance, we calculate the percentage change in target performance required to receive an earnout payment.[7] We find that the median target must improve its performance by 18% relative to the prior year's level (untabulated) in order to receive an earnout payment. The distribution is highly skewed, however. On the one hand, over 25% of the targets need not improve performance at all in order to receive some payment. On the other hand, some require extremely large percentage increases in performance (average=427%) in order to receive an earnout payment. This latter finding is due to a number of observations for which the historical performance measure is positive, but near zero.

Panel B of Table 2 reports the distribution of the different performance measures that are used. Not surprisingly, since most targets are either private companies or subsidiaries of public companies, stock price is used as a performance measure in only six (1.2%) cases. Some accounting measure of profitability (e.g. cash flow, pre-tax income, gross profit, net income, earnings per share) is used to measure performance in 261 of the 498 (52%) cases for which we can identify this information in the SEC filings. In another 157 cases (32%), a measure of sales is used as the performance measure. Interestingly, non-financial measures are used in 61 (12.2%) cases. These non-financial measures include various product development milestones (e.g. clinical trials, FDA approval) or the securing of specific customer contracts (e.g. U.S. government contracts).[8] (See the appendix entry for the ILEX Oncology-Convergence Pharmaceuticals acquisition.)

In Panel C, we report statistics on the distribution of the period of time over which performance is measured and how frequently that performance is measured. The data indicate that performance is typically measured over a period of two

[6] Note that because SDC sometimes records total transaction value based on the acquirer's estimate of future earnout payments, it is possible that the maximum possible earnout payment will be greater than 100% of the total transaction value listed in SDC.

[7] The requirement of non-negative values for historical performance excludes 24 observations. An alternative approach would be to scale on target performance rather than historical performance. However, because the target performance is often equal to zero, we would actually lose 34 observations under this alternative approach.

[8] Similarly, Kaplan and Stromberg (2003) report that nearly 9% of venture capital financing agreements are contingent upon non-financial performance measures such as FDA or patent approval.

Table 2
Earnout characteristics.

Descriptive statistics on contract terms for earnouts included in merger transactions completed between 1994 and 2003. Panel A presents statistics on earnout size. Maximums are obtained from SEC filings. SDC Reported figures reflect a mix of maximum and expected payouts. Panel B details the performance measures on which earnout payments are based. Panel C presents statistics on the length of the total time period over which the earnouts are in effect and the frequency with which performance in measured during the contract. Panel D indicates the form in which earnout payments are contracted to be made.

Panel A: Distribution of earnout payments (in thousands)	*N*	Mean	Std. dev.	Min	25th%	Median	75th%	Max
SDC reported (U.S. Dollars)	990	$22,314	$89,228	$15	$1650	$4577	$14,000	$2,000,000
Maximum stated (U.S. Dollars)[a]	447	$21,099	$65,822	$150	$2000	$5000	$14,013	$700,000
Maximum stated (common stock shares)	71	8859	44,888	16	348	713	2391	349,500
SDC reported percentage of transaction value	990	32.7%	20.9%	1.0%	15.9%	28.6%	45.5%	100.0%
Maximum percentage of transaction value[a]	447	33.4%	23.1%	1.4%	15.6%	27.7%	47.3%	161.0%

Panel B: Performance measures	*N*	%
Cash flows[b]	160	32.1
Sales	157	31.5
Non-financial	61	12.2
Pre-tax income	51	10.2
Gross profit	24	4.8
Net income	23	4.6
Multiple measures[c]	8	1.6
Stock price	6	1.2
Earnings per share	3	0.6
Return on investment	2	0.4
Other	3	0.6
Total	498	100.0

Panel C: Distribution of earnout period (in years)	*N*	Mean	Std. dev.	Min	25th%	Median	75th%	Max
Total measurement time	529	2.57	1.89	0.08	1.00	2.00	3.00	20.00
No expiration date	6							

Measurement frequency	*N*	%
Monthly	2	0.4
Quarterly	23	4.3
Four months	1	0.2
Semi-annual	26	4.9
Eight months	2	0.4
Nine months	3	0.6
Annually	411	77.4
$>$ One year, $\leq$ Five years	60	11.3
$>$ Five years	3	0.6
Total	531	100.0

Panel D: Earnout payments Form of payment	*N*	%
Cash	186	38.7
Common stock	137	28.5
Cash and common stock	125	26.0
Debt	10	2.1
Cash and debt	9	1.9
Common stock and debt	3	0.6
Preferred stock	2	0.4
Other combinations[d]	5	1.0
Other	4	0.8
	481	100.0

[a] Includes only earnout payments denominated in U.S. dollars.
[b] Includes EBIT, EBITA, EBITD, EBITDA, EBITD, and EBTDA.
[c] Indicates a combination of several listed measures.
[d] Includes combinations of cash, common stock, preferred stock, convertible preferred stock, debt, and convertible debt.

years (average=2.57). While the interquartile range for the earnout period is from one to three years, the earnout period is as long as twenty years. Among those for which the earnout period is specified, performance is measured annually in 77% of the cases, semi-annually in 5% of the cases, and quarterly in 4% of the cases. The measurement interval is greater than one year in only 12% of the cases. Thus, it appears that the most typical earnout contract measures performance annually over a total period of two years. Nonetheless, there is wide variation in both the earnout period and the measurement frequency.

Finally, in Panel D, we report the form of payment for the contingent payment. As is the case with acquisition payments in general, the contingent payment takes three primary forms: cash only (39% of the cases), common stock only (29% of the cases), and a combination of cash and stock (26% of the cases). In a small number of cases (less than 7%) the payment includes debt or preferred stock.

3. Earnout terms and contracting theory

In this section, we empirically examine the determinants of the primary terms of earnout contracts: the potential size of the earnout payment, the length of the earnout period, and the type of performance measure on which contingent payments are made. For each contract term, we first develop predictions from relevant economic theories, then estimate reduced-form equations in which the contract term is specified as a function of a set of predetermined firm or transaction characteristics. We recognize, however, that the terms of the earnout contract are jointly determined and may reflect equilibrium tradeoffs among one another. For this reason, we later supplement our reduced-form analysis by combining these terms into a single summary measure and testing the association between that measure and a set of hypothesized determinants.[9]

3.1. Determinants of earnout size

In structuring an acquisition agreement with an earnout, the target and the acquirer must agree on what portion of the purchase price will be paid at closing and what portion will be contingent upon future performance. The data in Table 2 reveal a wide variation in the size of the potential earnout payment relative to the total transaction value in the acquisition, where transaction value refers to the sum of the fixed portion of the acquisition price and the SDC-reported earnout size. While on average the earnout is equal to 33% of the transaction value, maximum possible earnout payments range between 1.4% and 161% of the initial transaction value. Moving from the 25th to the 75th percentile changes the earnout size from 16% to 47% of the transaction value.

The size of the earnout can be viewed as a measure of the performance sensitivity of the payout to target shareholders. Our analysis evaluates the extent to which earnout size is consistent with predictions from two broad classes of contracting theories: (i) principal–agent/moral hazard models and (ii) adverse selection/uncertainty models.

Under the standard principal–agent approach pioneered by Holmstrom (1979), when an agent's effort is unobservable, optimal incentive contracts tie the agent's payoff to observable signals of effort. If target managers are also shareholders, earnout contracts can thus motivate target managers by tying their payoffs to observable measures of target performance.[10] Under the principal–agent approach, the optimal incentive intensity depends on (i) the incremental profits associated with the agent's efforts; (ii) the precision with which the agent's efforts can be assessed; (iii) the agent's risk tolerance; and (iv) the agent's responsiveness to incentives. Thus, if earnouts represent a solution to a principal–agent problem, we expect earnout size to be positively related to measures of the importance of the target manager's effort and the responsiveness of the target managers to incentives, and negatively related to the risk tolerance of the target manager and the precision with which target managers' efforts can be assessed.[11]

Earnouts can also be a solution to problems associated with uncertainty regarding target value. Target firm managers acting in the interests of their shareholders will accept an offer only if the price exceeds their assessment of the target's

[9] An alternative approach would be to estimate a system of equations to jointly explain the various contractual terms. Unfortunately, theory does not provide much guidance to find plausible variables that would help identify the system. Moreover, we believe that the summary measure that we analyze in Section 4 more appropriately captures the economic tradeoffs among the different contractual features.

[10] Because 74% of our sample targets are private firms, we are unable to obtain systematic data on the extent to which target managers are shareholders of the firms they manage. In general, there is little systematic data on private firm ownership in the U.S. However, Ang et al. (2000) obtain ownership data for a sample of 1708 small private U.S. corporations that participated in the Federal Reserve Board's National Survey of Small Business Finances. The survey does not provide firm names; thus we are unable to use this survey to obtain direct data on our sample firms. However, in their sample, 73% of the firms are owner-managed and 55% of the total sample firms are owner-managed and majority-owned by one person or family. This supports an assumption that managers of small private firms tend to have significant ownership positions in the firms they manage. Later in this section we use the presumed differences in private and public firm ownership to help discriminate between competing theories.

[11] Alternatively, acquisitions can be viewed as a two-sided moral hazard problem of the type studied in the literature on franchising and sharecropping (see, for example Bhattacharya and Lafontaine, 1995). In these models, optimal contracts call for performance sensitive payouts for both the principal and the agent. As argued in Brickley (2002), the two-sided moral hazard approach can be distinguished from the standard principal–agent approach by considering the relative importance of each party in generating performance. However, because it is difficult to distinguish the importance of target manager effort from the *relative* importance of target vs. acquiring firm management effort, our tests do not empirically separate the standard principal–agent model from the two-sided moral hazard model.

expected value in the absence of the acquirer's bid. Similarly, shareholder-value-maximizing acquiring firm managers will be unwilling to bid more than the sum of the target's stand-alone value and the synergies they expect to be created by the combination. If target managers possess superior information about the value of their firm, adverse selection models predict that acquiring firm managers will view target firm managers' willingness to accept a bid as a negative signal about the target's stand-alone value and, therefore, will not bid. Even in the absence of such asymmetric information, however, target and acquiring firm managers might differ in their assessments of target firm value.[12] As emphasized in the models of Myers and Majluf (1984) and DeMarzo and Duffie (1999), targets can signal that their assessment of value is higher by offering acquirers a claim that receives a greater proportion of the target's value when that value is lower. This is also likely to produce a selection effect of the type analyzed in Lazear (1986). That is, only targets who truly believe they are valued higher will be willing to accept contracts in which large portions of their payoffs are contingent on future performance. Thus, uncertainty based models predict that earnouts will be larger when there is more uncertainty regarding target value.

Testing these predictions requires proxy variables for the importance of managerial effort, the precision with which that effort can be measured, the responsiveness of the target managers to the incentives provided by earnouts, and target valuation uncertainty.[13] We conjecture that target manager effort is more important in cross-industry acquisitions, in riskier targets, and in acquisitions in which the target is from a high R&D/high growth industry.[14] As proxy variables for these potential effects, we use a dummy variable equal to one if the target and acquirer operate in different three-digit primary SIC code industries and zero otherwise[15]; the standard deviation of daily returns over the prior year for the median firm operating in the same industry as the target[16]; the target industry median ratio of R&D to sales; and the target industry median Tobin's Q ratio.

We note the following limitations to this approach. First, it is likely that those situations in which target manager effort is most important are also those for which target manager effort is measured imprecisely. These offsetting effects imply that, under the standard principal–agent model, the predicted net impact of these variables on earnout size is ambiguous. Second, these same variables are also plausibly related to target valuation uncertainty. Thus a positive association between earnout size and these measures is consistent with both the moral hazard and uncertainty-based models.

To help address these limitations, we also consider the target manager's responsiveness to the incentives provided by earnout contracts. In order to be responsive to earnout incentives, target managers must remain with the firm after it is acquired and hold meaningful amounts of the target firm's equity. Because the sample targets are primarily either private firms or subsidiaries of public firms, we do not have access to systematic data on target manager ownership or on whether target managers remain employed by the acquiring firm. However, based on prior evidence we expect managers of private firm targets to exhibit significantly greater percentage ownership than do managers of non-private firm targets.[17] This implies that target managers will be more responsive to earnout incentives in private targets than in non-private targets. Consequently, moral hazard models predict that, all else equal, earnouts will be smaller and less sensitive to proxy variables for the importance of managerial effort in non-private targets than in private targets. By contrast, because adverse selection/uncertainty models are not based on post-acquisition effort by target managers we do not expect the association between earnout size and our proxy variables for uncertainty to differ across the two subsamples.

Table 3 reports coefficient estimates from regressions in which the dependent variable is equal to the ratio of the earnout payment to the transaction value. We estimate the regressions using Tobit models to account for the fact that earnout size is censored at 100%, though our results are qualitatively identical if we estimate the regressions using ordinary least squares. As independent variables, we include the size of the transaction relative to the market value of the acquirer's equity, a dummy equal to one if the target and acquirer are from different industries, the target industry's standard deviation of daily returns, the target industry's ratio of R&D to sales, and the target industry's Tobin's Q. Also, because we use industry-level proxy variables for valuation uncertainty and growth opportunities, we compute standard errors that are clustered by industry. The results in Column (1) indicate that relative earnout size is negatively related to the

[12] Differing evaluations of a firm's value are commonly referred to as a 'valuation gap'. Bruner (2004) suggests that bridging a valuation gap is the most common reason for using an earnout. Mergers and acquisitions practitioners William Strong (Managing Director, Morgan Stanley) and Moshe Kupietzky (Managing Partner, Sidley Austin) suggest the same in informal conversation.

[13] Because we are not aware of good proxy variables for cross-sectional differences in risk tolerance, we do not attempt to control for this in our empirical tests. We assume equal or randomly distributed risk tolerance across the set of target firm managers.

[14] Myers (2000) argues that managerial effort is more important in firms that derive a greater portion of their value from future growth opportunities (e.g., new technologies). See also Smith and Watts (1992).

[15] Our findings are not sensitive to the definition of industry. We find similar results if industry is defined at the four-digit level and if we compare both primary and secondary SIC codes.

[16] Since most of the sample targets are either private firms or are subsidiaries of public firms, it is not possible to directly measure the standard deviation of returns for the target. Our use of public firms operating in the same industry does not imply that we believe that the public firms are identical to the private firms that comprise our sample. In fact, that is almost certainly not the case since earnout contracts are not generally used in public firms. Our use of public firms requires only that the variation in a given characteristic (i.e. valuation uncertainty) across industries in public firms is preserved in private firms.

[17] Footnote 10 on ownership in private firms indicates that majority ownership by owner–managers is common in private firms. By contrast, Holderness et al. (1999) report median officer/director ownership of 14.4% in a sample of over 4000 exchange-traded U.S. firms in 1995. Consistent with these patterns, Coates and John (2010) documents in a small sample of acquisitions that the median private target has only five shareholders of record, versus 465 shareholders of record in the typical public target. We further note that most of our publicly-traded targets are subsidiaries, rather than whole firms. If anything, we expect that subsidiary management ownership will be less than that of top management and directors.

Table 3
Earnout size.

Cross-sectional Tobit regressions on earnout size, measured as the ratio of earnout payment (as defined by SDC) to transaction value in mergers completed between 1994 and 2003 that include earnout contracts. Non-public and non-private target are based on target public status, with subsidiary targets classified as both non-public and non-private. Transaction value is the value of the total payment that could be made in the merger. Acquirer mkt value is its market value of equity. Cross-industry is a dummy variable that takes the value one if the acquirer and target have different primary 3-digit SIC codes and zero otherwise. Target industry standard deviation of daily returns, industry R&D%, and industry *Q* are the median values of these variables for firms in the same SIC code as the target firm. R&D % is the ratio of R&D to sales. *Q* is the ratio of market value of a firm, measured as book value of total assets less book value of equity plus market value of equity, to the book value of its total assets. Columns (4) and (5) include the inverse mills ratio from a Heckman sample selection model in column (3). Standard errors are clustered by target industry (defined by primary 3-digit SIC code), and *t*-statistics are provided in parentheses with ***, **, and * indicating significance at the 1%, 5%, and 10% levels, respectively.

	Earnout/transaction value		*Selection equation*	*Earnout/transaction value*	
	(1)	(2)	(3)	(4)	(5)
Intercept	0.215 (7.329)***	0.246 (6.995)***	−2.370 (−14.185)***	0.559 (4.201)***	0.508 (3.925)***
Non-public target			1.029 (9.048)***		
Log target size			−0.014 (−1.350)		
Transaction/acquirer mkt value	−0.028 (−2.440)**	−0.026 (−2.273)**	0.001 (0.201)	−0.026 (−2.282)**	−0.024 (−2.179)**
Cross-industry primary 3-digit level	0.002 (0.171)	0.001 (0.063)		0.005 (0.374)	0.004 (0.301)
Target industry std. dev. daily returns	1.328 (3.853)***	1.252 (2.806)***		1.219 (3.400)***	1.152 (2.470)**
Target industry R&D%	0.002 (0.474)	−0.025 (−1.112)		0.012 (2.400)**	−0.025 (−1.137)
Target industry *Q*	0.024 (2.057)**	0.019 (1.238)		0.023 (1.986)**	0.020 (1.254)
Non-private target		−0.127 (−2.446)**			−0.117 (−2.196)**
Non-private target × Cross-industry		0.011 (0.390)			0.007 (0.237)
Non-private target × Std. dev. returns		0.105 (0.204)			0.175 (0.310)
Non-private target × R&D%		0.035 (1.600)			0.044 (1.896)*
Non-private target × *Q*		0.029 (1.585)			0.025 (1.313)
Inverse Mills ratio				−0.175 (−2.649)***	−0.135 (−2.082)**
Pseudo R^2	3.2%	5.2%	12.4%	4.0%	5.6%
N	725	725	12,238	725	725

relative size of the transaction to the acquirer and positively related to industry standard deviation of returns and industry Tobin's Q.

To the extent that industry growth opportunities and return volatility are correlated with both valuation uncertainty and the importance of target manager effort, the findings in Column (1) are consistent with the predictions from both the adverse selection/uncertainty and moral hazard models. Earnouts are larger when there is more valuation uncertainty about the target and when the incremental benefits of target manager effort are greater. Therefore, in Column (2), we also include a dummy variable equal to 1 if the target firm is a subsidiary/joint venture/public firm (Non-Private Target) and interactions of this dummy variable with our proxies for the importance of target manager effort and uncertainty. Under the moral hazard models, we expect a negative coefficient on the non-private target dummy and negative coefficients on the interactions of the non-private target dummy with the cross-industry dummy, industry R&D, industry standard deviation of returns, and industry Tobin's Q. If non-private targets exhibit less valuation uncertainty, on average, than private targets, uncertainty models would also predict a negative coefficient on the non-private target dummy. However, under the uncertainty models, we do not expect significant coefficients on the interaction terms.

As shown in Column (2), we find that non-private targets have smaller earnouts than do private targets. However, we find no evidence that the sensitivity of earnout size to the cross-industry dummy, industry R&D, industry standard deviation of returns and industry Tobin's Q is significantly lower in non-private targets than in private targets.[18]

In Columns (3)–(5) of Table 3, we control for possible biases due to self-selection (i.e. firms have to select an earnout to be included in the sample) using Heckman's (1979) two-step procedure. To meet the exclusion restriction required for identification in the second-stage, the first-stage selection equation includes two variables, a dummy variable equal to one for non-publicly traded targets and the log of target size, that are excluded from the second-stage treatment model. As shown in Table 1, both variables are correlated with the likelihood of an acquisition including an earnout. However, neither is correlated with earnout size conditional on there being an earnout (these results are not reported in a table).

In Columns (4) and (5) of Table 3, the statistically significant coefficient on the Inverse Mills ratio confirms the existence of sample selection bias in the one-stage estimates. Controlling for this selection bias, the remainder of the coefficients are slightly smaller than in the one-stage models, but qualitatively similar. In Column (4) earnout size is positively related to industry standard deviation of returns, industry R&D, and industry Q. In Column (5), we add the dummy variable for non-private targets and interactions of that variable with the other independent variables. Again, we find that earnout size is significantly smaller in

[18] It is possible that including multiple interactions with the same Non-Private Target variable induces multicollinearity among the four interaction terms, which would reduce the power of the individual *t*-tests. We conduct an *F*-test for the joint significance of the four interaction terms in Columns (2) and (5) but are unable to reject the null hypothesis that the four coefficients are jointly insignificant at the 10% level.

non-private targets, but no evidence that the sensitivity of earnout size to the cross-industry dummy, industry R&D, industry standard deviation of returns and industry Tobin's Q is significantly lower in non-private targets than in private targets.

Overall, therefore, these findings are consistent with the uncertainty models in that earnout size is positively associated with proxy variables for the amount of valuation uncertainty (e.g., target public status). The findings also provide some support for the moral hazard models. On the one hand, we find that earnout size is positively associated with proxies for the importance of target manager effort (e.g., target return volatility, R&D intensity, and Q), and, conditional on there being an earnout, earnout size is smaller when target managers are likely to be less responsive to earnout incentives (i.e., when they own fewer shares). On the other hand, we find no evidence that differences in target managers' responsiveness to incentives affect the association between earnout size and our proxies for the importance of target manager effort.

3.2. Determinants of the length of earnout period

The descriptive statistics in Table 2 indicate that all but six of the sample earnouts specify an expiration date. The mean (median) earnout contract is in effect for a total of 2.57 (2) years, ranging from 0.08 years to 20 years.[19] In this subsection, we address the factors that influence the total length of earnout contracts. To develop predictions, we draw on separate literatures that have analyzed contract duration in commercial and labor contracts, in debt contracts, and in executive compensation contracts.

Brickley et al. (2006) identify the importance of relationship-specific investments and uncertainty in the contracting environment as key factors suggested by the theoretical literature on the duration of labor and commercial contracts. Because longer-term contracts can reduce 'hold-up' problems, models of relationship-specific investment (e.g., Klein et al., 1978; Williamson, 1979) generally predict a positive relation between contract duration and the importance of relationship-specific investment. Brickley et al. (2006) note that most models predict that contract length will decrease with uncertainty since longer term contracts inhibit the ability of parties to adjust to changes in the contracting environment. However, Harris and Holmstrom (1987) argue that this effect can be offset by the fact that the value of new information decays more rapidly in uncertain environments.[20]

The literature on debt maturity identifies asymmetric information as another possible determinant of contract duration. Specifically, Flannery (1986) argues that debt maturity choice will be a function of the potential mispricing of the debt instrument. In his model, firms with large potential information asymmetries will choose to issue shorter-term debt in order to avoid the larger information costs associated with longer-term debt.[21]

The commercial contracts and debt maturity literatures therefore predict that contract duration will be negatively related to uncertainty. Underlying both predictions is the idea that more frequent recontracting allows contract terms to adapt to changes in the economic environment and that such adaptability is more valuable the more uncertain is that environment. Unlike commercial and debt contracts, an acquisition is a one-time contract at the time of the sale; i.e. there is no recontracting. However, including an earnout in the acquisition contract allows the total consideration paid to adapt to post-acquisition changes in the economic environment, albeit according to a formula that is fully specified ex ante. The longer the earnout is in effect, the greater is the amount of adaptability it provides. Thus, while the commercial contracts and debt maturity literatures predict a negative relation between uncertainty and the duration of those contracts, the same insights imply a positive relation between uncertainty and the length of an earnout period.

Finally, the literature on executive compensation contracts suggests that the benefits of longer term contracts will depend on: (i) the payoffs from bonding managerial capital to the firm, (ii) the time necessary to resolve the uncertainty regarding the implications of managerial actions, and (iii) the noisiness of the performance signal over the contract period. Because of the inalienability of human capital, managers cannot credibly commit to remaining with a given firm (Hart and Moore, 1994). If a manager possesses specialized knowledge, his/her departure from the firm can impose large costs on the organization. Therefore, long-term contracts can be a vehicle for encouraging managers with specialized knowledge to remain with the firm.[22] Fudenberg et al. (1990) argue that longer-term contracts can be efficient when there is persistent uncertainty about the implications of managerial actions on firm value that gets resolved over time. However, this could be offset if longer-term contracts increase the noise in the performance signal (i.e., if the longer time period increases the odds that exogenous factors have an impact on the performance measure). Because noisier signals impose more risk on the agent, moral hazard models predict that such signals will receive less weight in compensation contracts with risk-averse agents (e.g., Prendergast, 1999). Similarly, to the extent that noisier performance signals increase the ability of the principal to distort the performance measure, this is likely to reduce the efficiency of long-term contracts.

[19] The typical earnout contract also provides for periodic measurement and payment at specified intervals. There is little variation, however, in the measurement interval. As shown in Table 2, over 77% of the earnouts we study specify that performance is measured annually.

[20] Empirical evidence in Crocker and Masten (1988) and Brickley et al. (2006) is consistent with a negative relation between uncertainty and contract duration in natural gas contracts and franchise contracts, respectively.

[21] The debt maturity literature also analyzes the impact of contracting costs and taxes on the optimal maturity structure (see, e.g., Barclay and Smith, 1995). Because it is unclear how these factors impact the duration of earnout contracts, we do not discuss them here.

[22] Kole (1997) empirically analyzes the implications of these arguments for various attributes of executive compensation contracts such as equity awards, vesting periods, and other encumbrances on restricted stock awards.

Table 4
Length of earnout period.

Tobit regressions of length of earnout period in mergers completed between 1994 and 2003 that include earnout contracts. Transaction is the value of the total payment that could be made in the merger. Acquirer market value is its market value of equity. Cross-industry is a dummy variable that takes the value one if the acquirer and target have different primary 3-digit SIC codes and zero otherwise. Target industry standard deviation of daily returns, industry R&D%, and industry *Q* are the median values of these variables for firms in the same SIC code as the target firm. R&D% is the ratio of R&D to book value of total sales. *Q* is the ratio of market value of a firm, measured as book value of total assets less book value of equity plus market value of equity, to the book value of its total assets. Non-private target indicates subsidiaries, joint ventures, and public targets. Standard errors are clustered by target industry (defined by primary 3-digit SIC code), and *t*-statistics are provided in parentheses with ***, **, and * indicating significance at the 1%, 5%, and 10% levels, respectively.

Tobit regressions; Dependent variable: Length of earnout period		
Intercept	4.439 (8.258)***	3.951 (9.069)***
Transaction/acquirer mkt value	−0.074 (−0.616)	−0.066 (−0.539)
Cross-industry primary 3-digit level	−0.262 (−0.906)	−0.018 (−0.068)
Target industry std. dev. daily returns	−24.201 (−4.263)***	−19.748 (−3.973)***
Target industry R&D%	1.627 (5.870)***	1.074 (1.437)
Target industry *Q*	−0.385 (−4.175)***	−0.276 (−2.638)***
Non-private target		2.276 (1.298)
Non-private target × Cross-industry		−1.347 (−1.481)
Non-private target × Std. dev. returns		−11.940 (−0.791)
Non-private target × R&D%		1.174 (1.267)
Non-private target × *Q*		−0.623 (−1.796)
Pseudo R^2	7.4%	9.7%
N	415	415

Contract theory thus implies that the duration of the earnout period will be affected by the specificity of target firm activities, the amount of specialized knowledge possessed by target managers, the degree of uncertainty/asymmetric information about optimal managerial actions and about firm value, and the time needed to resolve this uncertainty. We derive the following testable predictions for the length of the earnout period.

Because we expect that both specificity and specialized knowledge will be greater in targets operating in different industries from those of the acquiring firm and in target firms with higher R&D spending or higher Tobin's Q, we expect the duration of earnout contracts to be longer in these situations.

The predictions with respect to uncertainty and asymmetric information are mixed. While the models from the commercial/labor contract and debt maturity literatures generally imply a positive relation between uncertainty/asymmetric information and earnout period, the moral hazard models of compensation with risk averse agents imply a negative relation between uncertainty and earnout period.

Finally, to the extent that uncertainty is resolved over a longer period of time in firms whose value is derived from future growth opportunities (i.e. high R&D and high Tobin's Q firms), the model of Fudenberg et al., 1990 implies a positive relation between the length of the earnout period and R&D/Tobin's Q.

Table 4 presents the results of a Tobit regression in which the total length of the earnout period is the dependent variable.[23] The coefficient on the target industry standard deviation of daily returns is negative and significant. This suggests that the impact of additional noise in the performance signal outweighs the potential benefits of contract length in high variability environments.

We also find that earnout periods are positively associated with target industry R&D and negatively related to target industry Tobin's Q. The former result is consistent with the importance of target manager firm-specific human capital and with the hypothesis that longer earnout periods are used when valuation uncertainty is resolved over a longer period of time. However, industry Q is also a common proxy for growth opportunities and its coefficient is negative and significant, which runs counter to this hypothesis.

If issues related to the need for post-acquisition target management effort are driving the observed relations and if target management ownership is higher for private firm targets than for non-private targets, we expect the sensitivity of earnout period to our target-effort-related proxies to be lower for non-private targets than for private targets. We again test this hypothesis by adding to the Table 4 regressions a dummy variable equal to 1 if the target firm is a subsidiary/joint venture/public firm (non-private target) and interactions of this dummy variable with our proxies for target effort and uncertainty. Theories related to the specificity of target firm activities, the amount of specialized knowledge possessed by target managers, and the degree of uncertainty/asymmetric information about optimal managerial actions imply that we should expect negative coefficients on the interactions of the non-private target dummy with the cross-industry dummy, industry R&D, and industry Tobin's Q. The results for our sample of earnouts are presented in the second column of Table 4. The data largely indicate no significant difference between private and non-private targets with respect to the sensitivity of

[23] The sample size is reduced in these and ensuing models because we are unable to find sufficiently detailed information on earnout structure for a number of observations. Also, because we find no evidence of sample selection bias in the models in Table 4, we do not report two-stage treatment models in Table 4.

earnout period to the characteristics of interest.[24] The marginally significant negative coefficient on the interaction with Tobin's Q is consistent with earnout period being influenced by the need for post-acquisition effort. However, the results also indicate a negative relation between Tobin's Q and earnout period for the private firm targets. This runs counter to target-effort-related hypotheses.

Overall, we find some support for the view that, ceteris paribus, earnout periods are longer when uncertainty is likely to be revealed over a longer period of time. However, this effect is offset in more uncertain environments in which longer earnout periods would expose target shareholders to greater risk.

3.3. Determinants of performance measure

As shown in Table 2, earnout payments are contingent on a wide variety of performance measures. Because the target is generally not publicly traded, it does not have an observable market price. Hence, other measures must typically be used, including accounting items (e.g., sales, cash flow, measures of income) and non-accounting performance measures.

As noted earlier, moral hazard models predict that when the agent's effort is unobservable, optimal incentive contracts will tie the agent's payoff to observable signals of that effort. Similarly, models based on adverse selection and valuation uncertainty predict that contingent payments will be tied to observable signals of firm value. As emphasized in the "Informativeness Principle" of Holmstrom (1979), contingent payments should be dependent on those performance measures that reduce the error with which the agent's effort or firm value is estimated and should exclude those measures that are not reflective of the agent's efforts or firm value. Using this framework, Lambert and Larcker (1987) and Sloan (1993) analyze and provide evidence that the relative weights placed on stock returns and accounting earnings in CEO compensation contracts are associated with proxies for the 'signal' and the 'noise' in the two measures of managerial effort.

In addition to being observable, signals of effort or value must also be verifiable. As one example, Brickley (2002) reports that royalty rates in franchise contracts are typically based on sales rather than profits. He notes that a likely explanation for this empirical regularity is that profits can be affected by arbitrary cost allocations; thus, sales can be more easily verified.

This discussion implies that the choice of performance measure in earnout contracts will be associated with proxies for the amount of information conveyed by that performance measure and the verifiability of that measure. This leads to several empirical predictions.

First, we conjecture that accounting measures of performance will be less informative in younger firms who tend to be less profitable, and whose value is derived primarily from future growth opportunities. Thus, we expect these firms to be more likely to tie earnout payments to non-accounting measures of performance than to accounting measures like sales or profits.[25]

Second, among firms whose value is derived primarily from future growth opportunities, we expect current income to be a relatively less informative signal of effort/value than sales. Moreover, in such firms, tying the earnout payment to income can create the perverse incentive for target managers to reduce value-increasing investments that would decrease short-term income. Thus, we expect that income will be used less frequently than other measures of performance in high-growth firms (i.e., those whose value is derived primarily from future profits).

Third, we conjecture that acquirers have greater discretion over cost allocations in acquisitions in which the target and acquiring firm operate in the same industry. Thus, we expect that sales will be more easily verified than profits in same-industry mergers. We predict, therefore, that the performance measure used in earnout contracts is less likely to be a measure of income the greater is the degree of post-acquisition integration of the target and acquirer. In these situations, we expect to observe sales or non-financial measures of performance being used.

Finally, if sales are more easily verified than profits, we expect that it will be more likely that sales is the performance measure used in earnouts in acquisitions in which there is high asymmetric information between the target and the acquiring firm.

In Table 5, we estimate a multinomial logit model in which the dependent variables include the performance measure categories of sales, non-financial, income, or all other financial measures. The independent variables include the size of the transaction relative to the market value of the acquirer's equity, a dummy equal to one if the target and acquirer are from different industries, the target industry's standard deviation of daily returns, the target industry's ratio of R&D to sales, and the target industry's Tobin's Q. The performance measure of income is used as the baseline outcome for the model; therefore, coefficient estimates for each column indicate the propensity of a given performance measure choice relative to income.

The multinomial logit results indicate that the likelihood of the performance measure being sales or other financial measures rather than income is greater when the target is from an industry with high standard deviation of returns and high Tobin's Q. Non-financial measures are also more likely than income to be used by firms in high Tobin's Q industries

[24] Similar to footnote 18 in Table 3, it is possible that including multiple interactions with the same non-private target variable induces multicollinearity among the four interaction terms, which would reduce the power of the individual *t*-tests. We conduct an *F*-test for the joint significance of the four interaction terms in Column (2) but are unable to reject the null hypothesis that the four coefficients are jointly insignificant at the 10% level.

[25] Similarly, Smith and Watts (1992) argue that growth options are likely to make accounting numbers poorer measures of performance. Likewise, Lambert and Larcker (1987) predict that CEO compensation will be more strongly associated with stock returns than with accounting earnings in firms whose value is derived more from growth opportunities since the consequences of CEO effort are less likely to be reflected in current earnings.

Table 5
Performance measures.

Multinomial logit regressions for the sample of mergers completed between 1994 and 2003 that include earnout contracts. The dependent variable in the models includes four performance measure categories of: sales, non-financial, income, or all other financial measures. Transaction is the value of the total payment that could be made in the merger. Acquirer market value is its market value of equity. Cross-industry is a dummy variable that takes the value one if the acquirer and target have different primary 3-digit SIC codes and zero otherwise. Target industry standard deviation of daily returns, industry R&D%, and industry *Q* are the median values of these variables for firms in the same SIC code as the target firm. R&D % is the ratio of R&D to sales. *Q* is the ratio of market value of a firm, measured as book value of total assets less book value of equity plus market value of equity, to the book value of its total assets. Standard errors are clustered by target industry (defined by primary 3-digit SIC code), and *t*-statistics are provided in parentheses with ***, **, and * indicating significance at the 1%, 5%, and 10% levels, respectively.

	Sales (vs. income)	Non-financial (vs. income)	Other financial measures (vs. income)
Intercept	−1.510 (−1.816)*	−0.997 (−0.991)	−0.673 (−0.890)
Transaction/acquirer mkt value	−0.419 (−0.776)	0.204 (0.771)	0.287 (1.249)
Cross-industry primary 3-digit level	−0.577 (−1.363)	−1.153 (−2.425)**	−0.656 (−1.608)
Target industry std. dev. daily returns	35.123 (2.640)***	6.360 (0.457)	34.953 (3.050)***
Target industry R&D%	−0.038 (−0.029)	0.654 (0.489)	−7.783 (−3.547)***
Target industry *Q*	0.611 (2.407)**	0.566 (1.949)*	0.635 (2.381)**
Pseudo R^2	8.4%		
N	387		

and when the target and acquirer are in the same industry.[26] Our findings thus support the view that performance measures employed in earnout contracts are chosen primarily based on their informativeness with respect to target effort or firm value.

4. Expected earnout payments and the sensitivity of earnouts to target performance

Our findings in the previous section are limited in at least two respects. First, as noted previously, earnout contract terms are endogenously determined and are likely to reflect tradeoffs among one another. Second, our analysis of earnout contracts to this point ignores additional complexities in earnout contracts that affect both the expected size of the earnout payment and the sensitivity of the earnout payment to realized target performance. For example, consider two earnout contracts that are based on the income of the target over the next year. Both set the maximum earnout payment equal to 50% of the total transaction value. Thus, the two contracts are identical along the dimensions that we analyze in Section 2. However, suppose one contract makes positive earnout payments as long as the target earns any positive net income, while the other contract requires that target net income be 40% higher than that of the previous year before any earnout payment is made. Clearly, all else equal, the expected earnout size and the sensitivity of earnout payment to target performance will be greater in the first case.

To address these limitations, we incorporate the terms of each earnout contract into a Monte Carlo simulation of possible earnout payments. For each acquisition, we first identify the specific structure of the earnout contract – i.e., the performance measure used to determine the earnout payment, the threshold levels of performance required to receive an earnout payment, the structure of the payment function, and the length of the earnout period. We then simulate possible earnout payments by estimating target performance outcomes using the past level of target performance and an estimate of the variability of that performance measure.

Because most of our earnout sample is comprised of private targets, data on pre-acquisition performance is limited. Nonetheless, we are able to obtain data on performance in the year prior to the acquisition for 182 of our target firms. These data are disclosed in acquirers' filings following merger completion (primarily 8-K filings, and to a lesser extent S-1, S-3, S-4, 10-K, and 10-Q filings). We then estimate the volatility of the performance measure on which the earnout is based using the prior five years of historical data for a matched firm in the same 3-digit SIC industry. Public firms with available operating performance data are selected based on the closest match of market value of capital to the target's transaction value. Finally, assuming a normal distribution with a mean equal to the pre-acquisition performance level and our estimate of volatility, we simulate performance outcomes over the length of the earnout contract by taking 10,000 random draws from the performance distribution. In this way, we are able to produce an empirical distribution of earnout payments that simultaneously incorporates all of the various attributes of the earnout contract (e.g., contract length, performance measure, performance thresholds, maximum payouts) as well as the distribution of possible outcomes for the performance benchmark.

[26] We hypothesize above that financial measures are likely to be less informative for firms that are young or that lack profitability. To test this hypothesis we included three additional variables in the regressions: firm age, firm ROA, and a dummy variable equal to 1 if the firm has positive income and 0 otherwise. Consistent with the hypothesis, the results indicate that non-financial measures are more likely to be used by young firms and by those with lower profitability and negative income. However, because this data is available for only a limited subset of our firms we do not present these regressions in a table.

Table 6
Descriptive statistics for Monte Carlo simulation results.

Descriptive statistics on the results from Monte Carlo simulations of future target performance and expected earnout payoffs. Future target performance draws are taken from a distribution with a mean equal to the target's prior annual performance using the performance measure identified by its earnout contract. The variance of the distribution equals the five-year variance of a matched firm's performance in the target's industry. For each of 10,000 random draws, the target's earnout payoff is calculated given the earnout contract design. Expected earnout size for each observation is the mean payoff from this simulation. Sensitivity of payoff to performance is the change in earnout payment from the 25th to the 75th percentile of the distribution of earnout payoffs divided by the fixed portion of transaction value.

(% or $s in thousands)	*N*	Mean	Std. dev.	Min	25th%	Median	75th%	Max
Expected earnout size	127	$2,385.9	$5,079.8	$0.0	$56.3	$628.0	$2,094.6	$39,231.2
Expected earnout size/transaction value	127	13.8%	21.3%	0.0%	0.5%	6.0%	18.0%	100.0%
Sensitivity of payoff to performance[a]	124	18.5%	39.3%	0.0%	0.0%	4.0%	25.1%	268.7%

[a] Three observations have a transaction value comprised of 100% in earnout payment, and are excluded from this variable due to a zero in the denominator. In addition, one outlier is winsorized due to near 100% earnout payment which results in a small denominator and extreme value of sensitivity percentage

Table 6 reports the expected earnout payments (i.e. the mean of the simulated distribution) that result from this exercise. On average, the expected earnout payment is equal to $2.4 million and constitutes 13.8% of the total transaction value. Thus, expected earnout payments appear to be economically important. As before, however, the data indicate that expected earnout payments exhibit considerable cross-sectional variation. Moving from the 25th to the 75th percentile changes the expected earnout payment from 0.5% to 18.0% of the transaction value. Moreover, these results suggest that the SDC-reported data overstate the expected earnout payoffs and, thus, the total transaction values for many acquisitions. Recall from Panel A of Table 2 that the SDC-reported earnout contracts represented an average amount of $22.3 million, or 32.7% of transaction value. Based on our simulations, these numbers appear to represent an upper bound, rather than an expectation of the potential earnout payoffs in most acquisitions. This is not surprising given our prior indication that SDC sometimes records expected earnout size but other times records maximum potential earnout payoffs.

Table 6 also reports a measure of the sensitivity of the earnout payment to changes in the target performance. For each firm, we compute the earnout payment at the 25th percentile of the simulated distribution of target performance and at the 75th percentile of that distribution. Our measure of sensitivity is then the change in the earnout payment from the 25th to the 75th percentile expressed as a percentage of the fixed portion of transaction value. As shown in Table 6, this sensitivity averages 18.5% and exhibits considerable cross-sectional variation. Thus, the average firm exhibits a high degree of sensitivity of earnout payoff to its own future performance. This is consistent with our previous evidence that expected earnout payoffs are closely tied to observable measures of target performance. Despite this average tendency, however, we find that about 19% of our sample firms exhibit an expected earnout payoff of zero (not reported in a table).

Table 7 reports Tobit regressions of expected earnout payments and earnout payment sensitivity on the relative size of the acquisition, industry measures of standard deviation of returns, Tobin's Q, and R&D, and a cross-industry dummy variable.[27] Because of missing data, our sample of earnout firms is further reduced to 106 observations. Recall that models based on moral hazard predict that expected earnout size will be positively related to measures of the importance of the target manager's effort and the responsiveness of the target managers to incentives (private vs. non-private targets), and negatively related to the precision with which target managers' efforts can be assessed. Models based on valuation uncertainty predict a positive association between expected earnout size and measures of valuation uncertainty.

The first column of Table 7 explores the relation between expected earnout payments and these characteristics. These results indicate that expected earnout payments are positively related to target industry Q, target industry standard deviation of returns and the cross-industry dummy variable. In Columns (2) and (3), we again control for self selection using Heckman's two-step procedure. Once we do so, only the coefficient on industry Q remains statistically significant.

Columns (4) and (6) report the results from Tobit regressions in which the dependent variable is the sensitivity of the earnout payment (if any) to changes in the performance of the target. Again, if earnouts are structured to bridge valuation gaps between acquirers and targets or if managerial effort is more important in riskier firms, we expect this sensitivity to be positively associated with target standard deviation of returns. Similarly, if managerial effort is more important in targets that derive a greater portion of their value from growth opportunities, we expect a positive relation between earnout sensitivity and target growth opportunities. Although the results in Column (4) indicate that earnout payment sensitivity is positively related to target industry standard deviation of returns and industry Q, the coefficients are not statistically significant at conventional levels. Similarly, we fail to find significance in the second-stage regressions in Column (6).[28]

[27] Note that the Tobit specification is important here because of the high frequency of observations with an expected earnout equal to zero.

[28] As noted earlier, the power of our tests in Table 7 is reduced due to our need for pre-acquisition target performance data. We also explored again partitioning the data into private targets and targets that are subsidiaries of public companies in order to proxy for the effect of the responsiveness of target managers to earnout incentives. Unfortunately, because there are only 18 observations in the subsidiary subsample, we are not able to conduct any meaningful subsample analysis.

Table 7
Expected earnout size and payoff performance sensitivity.

Cross-sectional Tobit regressions using mergers completed between 1994 and 2003. The dependent variable in columns (1) and (3) is expected earnout size, measured as the ratio of expected earnout payment (mean from 10,000 Monte Carlo iterations) to expected transaction value. The dependent variable in columns (4) and (6) is earnout payment sensitivity to performance, measured as the change in earnout payment from the 25th to the 75th percentile of the distribution of earnout payments (from 10,000 Monte Carlo iterations) to fixed portion of transaction value. The Monte Carlo procedure is described in Table 6. Columns (3) and (6) include the inverse mills ratio from Heckman sample selection models in columns (2) and (5). Standard errors are clustered by target industry (defined by primary 3-digit SIC code), and *t*-statistics are provided in parentheses with ***, **, and * indicating significance at the 1%, 5%, and 10% levels, respectively.

	Expected earnout size (1)	Selection equation (2)	Expected earnout size (3)	Earnout sensitivity to performance (4)	Selection equation (5)	Earnout sensitivity to performance (6)
Intercept	−0.118 (−2.121)**	−2.907 (−7.671)***	5.646 (2.247)**	−0.085 (−0.517)	−2.983 (−7.822)***	12.890 (2.848)***
Non-public target		0.902 (3.121)***			0.907***	
Log target size		−0.030 (−1.390)			−0.023 (−1.078)	
Transaction/acquirer Mkt value	−0.014 (−0.993)	0.003 (0.652)	−0.015 (−0.870)	−0.038 (−0.854)	0.003 (0.647)	−0.023 (−0.742)
Cross-industry primary 3-digit level	0.069 (1.672)*		0.050 (1.315)	0.078 (0.925)		0.024 (0.344)
Target industry std. dev. daily returns	1.587 (2.350)**		0.483 (0.792)	1.122 (0.521)		−0.925 (−0.703)
Target industry R&D%	−0.330 (−1.593)		−0.274 (−1.492)	−0.290 (−0.449)		0.024 (0.068)
Target industry *Q*	0.070 (3.036)***		0.061 (3.495)***	0.020 (0.401)		−0.007 (−0.282)
Inverse Mills ratio			−2.154 (−2.264)**			−4.832 (−2.848)***
Pseudo R^2	7.8%	11.0%	53.2%	1.3%	10.7%	68.4%
N	106	11,617	106	104	11,615	104

5. Discussion and conclusions

Our evidence highlights the role of earnout contracts in mitigating contracting costs associated with valuation uncertainty and moral hazard in acquisitions. In the absence of an earnout, valuation uncertainty can produce a gap between the target's and the acquirer's estimate of value that can preclude completion of the acquisition. Our findings are consistent with the view that earnouts address this issue by tying a greater proportion of the acquisition payment to observable measures of target firm performance when uncertainty about target value is high. Moreover, the earnout contracts tie the contingent payment to the performance measure that appears to be the most highly correlated with the target's unobservable intrinsic value.

Many of our findings are also consistent with the view that earnouts are structured as a solution to moral hazard problems – i.e., when the net benefits of the acquisition depend on the unobservable efforts of the target managers. Specifically, we find that earnout size is positively related to measures of the importance of managerial effort and negatively related to the precision with which those efforts can be measured. We also find that the choice of performance measure on which the earnout is based is associated with measures of the degree to which the measure is informative about managerial effort. Finally, we observe that earnout periods are shorter when it is more likely that acquiring firms have the ability to distort the performance measure on which the earnout is based. Contrary to predictions from moral hazard models, however, we find little evidence that the sensitivity of earnout terms to variables that proxy for moral hazard problems differ between private and non-private targets – i.e., our measure of the responsiveness of target managers to earnout incentives.

Our findings point to two promising areas for future research. First, although our summary measures of expected payments and earnout payment sensitivity capture the net effects of the interactions among the various terms of earnout contracts, there is little existing theory guiding the equilibrium tradeoffs among these terms. Presumably, the observed combination of contract features reflects an equilibrium tradeoff that optimizes the benefits of information production net of the costs imposed on the target manager-shareholders. Second, our findings should prove useful for future research on the accounting implications of SFAS 141R. Our evidence shows that contingent payments in acquisitions can be quite large and that they vary systematically with proxies for costs associated with valuation uncertainty and moral hazard. Under SFAS 141R, this implies large subsequent changes in earnings if large adjustments are made to the 'fair value' of the earnout. Because there is currently no industry standard for measuring the fair value of contingent payments, our findings

can serve as a benchmark for future research that considers the impact of alternative valuation methods on accounting earnings.

Appendix

In this appendix, we provide four examples of earnout contracts that are representative of the variety of earnout provisions and structures found in the sample.

A.1. Cyberguard Corporation acquisition of NetOctave Inc., Form 8-K, 3.13.2003

This example illustrates an earnout payment contingent upon future sales of the target firm. The cash payment is calculated as a linear function (37.5%) of target sales, with a maximum payout of $450,000. Performance is measured quarterly for a total earnout length of one year.

PURCHASE PRICE: Subject to the terms and conditions hereof, in reliance upon the representations and warranties of Seller contained herein, and in consideration of the sale, assignment, transfer and delivery of the Assets as herein contemplated, Buyer agrees to tender to Seller as the purchase price (the "Purchase Price") the following:

(a) at Closing, the sum of Three Hundred Thousand Dollars ($300,000) cash paid by wire transfer of immediately available funds to an account designated by Seller (the "Cash Payment");
(b) a contingent payment of Thirty-Seven and One-Half Cents ($0.375) for every One Dollar ($1) of Seller's products listed on Schedule 1.4(b) ("Seller's Product") invoiced to any third party (which shall specifically exclude Buyer) in the first twelve (12) months following the date of this Agreement up to a maximum amount of Four Hundred Fifty Thousand Dollars ($450,000), payable in four (4) quarterly increments as earned (the "Contingent Payment"); provided, however, no Seller's Product integrated into Buyer's firewall and/or VPN products shall be used to calculate the Contingent Payment. By way of example and for demonstration purposes only, if Buyer invoices One Million Two Hundred Thousand Dollars ($1,200,000) of Seller's Product, excluding all Seller's Product integrated into Buyer's firewall and/or VPN products, in the aggregate over the twelve (12) months following the Closing Date, Buyer will make four payments to Seller, each payment being made within thirty (30) days after the end of each respective quarter and which in the aggregate shall total Four Hundred Fifty Thousand Dollars ($450,000); and
(c) the number of shares of common stock of Buyer equivalent to Seven Hundred Fifty Thousand Dollars ($750,000) divided by the average closing price per share of common stock of Buyer for the ten (10) trading days ending two (2) business days prior to the date of this Agreement (the "Stock Consideration", and such price per share shall be referred to herein as the "Stock Price").

A.2. Polycom Inc., acquisition of Voyant Technologies, Form 8-K, 1.16.2004

This example illustrates the potential complexity of calculating earnout payments. The contract provides for earnout payments of either cash or common stock based on gross profit of the target firm (the "Company"). Performance is measured annually for a total earnout length of two years, and the maximum earnout payment is capped at $35 million. The payment structure is concave since the first year payment equals 203.69% of gross profit in excess of $39.0 million and the second year payment equals 117.51% of gross profit in excess of $51.5 million.

THIS AGREEMENT AND PLAN OF MERGER (the "Agreement") is made and entered into as of November 21, 2003 by and among Polycom, Inc., a Delaware corporation ("Parent"), Voyager Acquisition Corporation, a Delaware corporation and a wholly-owned subsidiary of Parent ("Merger Sub"), Voyant Technologies, Inc., a Delaware corporation (the "Company"), and with respect to Section 1.9, Article VII and Article IX, Mark Soane as Stockholder Representative (the "Stockholder Representative") and U.S. Bank National Association as Escrow Agent (the "Escrow Agent").

1.9 Earn-Out Payment.

(a) Amount of Earn-Out Payment: As additional consideration for the Merger, Parent shall pay to the Payment Agent, on behalf of and for distribution to the former Company Stockholders in accordance with their respective Allocable Portions, an aggregate amount of up to $35 million when, as and if any such amount becomes payable as set forth in this Section 1.9(a). The Earnout Payments payable pursuant to this Section 1.9 do not constitute compensation for services, but rather constitute part of the consideration for the Company Capital Stock purchased by Parent in the Merger and shall be treated as such for all tax purposes.

(i) First Tranche: If Gross Profit during the First Tranche Period is less than the First Tranche Floor, no Earn-Out Payments shall be made in respect of the First Tranche Period. If Gross Profit during the First Tranche Period is equal to or greater than the First Tranche Ceiling, an Earn-Out Payment in respect of the First Tranche Period equal to the First Tranche Maximum Payout shall be paid in full. If the Gross Profit during the First Tranche Period is greater than or equal to the First Tranche Floor, but less than the First Tranche Ceiling, an Earn-Out Payment in

respect of the First Tranche Period equal to the product obtained by multiplying (i) the First Tranche Maximum Payout, by (ii) the quotient obtained by dividing (A) the excess of Gross Profit during the First Tranche Period over the First Tranche Floor, by (B) the First Tranche Difference, shall be made.

(ii) Second Tranche: If Gross Profit during the Second Tranche Period is less than the Second Tranche Floor, no Earn-Out Payments shall be made in respect of the Second Tranche Period. If Gross Profit during the Second Tranche Period is equal to or greater than the Second Tranche Ceiling, an Earn-Out Payment in respect of the Second Tranche Period equal to the Second Tranche Maximum Payout shall be paid in full. If the Gross Profit during the Second Tranche Period is greater than or equal to the Second Tranche Floor, but less than the Second Tranche Ceiling, an Earn-Out Payment in respect of the Second Tranche Period equal to the product obtained by multiplying (i) the Second Tranche Maximum Payout, by (ii) the quotient obtained by dividing (A) the excess of Gross Profit during the Second Tranche Period over the Second Tranche Floor, by (B) the Second Tranche Difference, shall be made.

(iii) Gross Profit shall be calculated separately with respect to each of the First Tranche Period and the Second Tranche Period, respectively. In no event shall the Gross Profit applicable to either the First Tranche Period or the Second Tranche Period have any effect on either (A) the Gross Profit applicable to the other period, or (B) the Earn-Out Payment (if any) payable with respect to the other period, nor shall the results of the Earn-Out Operating Unit in any subsequent period have any effect on either (X) the Gross Profit applicable to either the First Tranche Period or the Second Tranche Period, or (Y) any Earn-Out Payment payable hereunder.

(iv) Method of Payment: Subject to Sections 1.9(a)(i) and 1.9(a)(ii), each Earn-Out Payment shall be made by Parent to the Payment Agent, on behalf of and for the account of the former Company Stockholders, by no later than the twelfth (12th) business day following the public announcement by Parent of its earnings for the quarter ended March 31, 2005, in the case of the First Tranche Period, or March 31, 2006, in the case of the Second Tranche Period, and subject to Section 1.9(b) the Payment Agent shall promptly pay such Earn-Out Payment by check delivered to the addresses of the former Company Stockholders provided to the Payment Agent by the Stockholder Representative not later than five (5) business days prior to the date of such payment after taking such action as is necessary to assure that all applicable federal or state income withholding and any other taxes required by law to be withheld are withheld and deducted from such funds otherwise to be paid.

(b) Election of Cash or Stock; Registration.

(i) Parent shall be entitled to elect for each of the First Tranche and Second Tranche whether it will pay to the former Company Stockholders set forth on Schedule 1.9(b), each of whom has entered into a Stockholder Support Agreement contemporaneously with the execution hereof containing, among other things, representations that such stockholder is an "accredited investor" within the meaning of the Securities Act of 1933, as amended (the "Securities Act"), their respective portions of the applicable Earn-Out Payment in cash or Parent Common Stock by providing notice of such election to the Payment Agent and Stockholder Representative prior to March 31, 2005, in the case of the First Tranche, and March 31, 2006, in the case of the Second Tranche. If Parent shall elect to pay any such Earn-Out Payment in Parent Common Stock, the Parent Common Stock shall be valued at the average of the closing prices of one share of Parent Common Stock, as reported on The Nasdaq National Market (or other applicable national securities exchange), for each of the ten (10) consecutive trading days ending two (2) business days preceding the date of which such shares of Parent Common Stock are actually issued to the Payment Agent for delivery to the applicable former Company Stockholder.

"Cost of Goods Sold" shall mean the cost to the Company (prior to the Closing) or to Parent or the Surviving Corporation or any affiliate of Parent or the Surviving Corporation (after the Closing) during the relevant period of manufacturing Earn-Out Products (including related inventory valuation adjustments), purchasing Earn-Out Products from third parties, providing services included in, supporting or related to Earn-Out Products (including providing web hosted services related to Earn-Out Products, unless Parent shall have notified the Stockholder Representative of its election to exclude such services from the Earn-Out Products), and royalties payable to third parties in connection with any of the foregoing, determined in accordance with GAAP consistently applied and in a manner consistent with Parent's normal accounting policies. Notwithstanding any of the foregoing, Cost of Goods Sold shall include only allocations and provisions related to the Earn-Out Operating Unit (as defined in Section 1.9(g)), and shall not include any allocations or provisions for Parent corporate level overhead and depreciation.

"Earn-Out Payment" shall mean any payment pursuant to Section 1.9, whether pursuant to the First Tranche or Second Tranche.

"Earn-Out Products" shall mean (i) the products and services provided by the Company as of or prior to the date hereof, (ii) all products and services that are derivative from or successors to or replacements for or that have substantially similar form, fit and function to any products or services referred to in clause (i), and (iii) all revisions and enhancements to any products or services referred to in clause (i) or clause (ii).

"First Tranche Ceiling" shall mean $48,851,000.

"First Tranche Difference" shall equal $9,819,000.

"First Tranche Floor" shall mean $39,032,000.
"First Tranche Maximum Payout" shall mean $20,000,000.
"First Tranche Period" shall mean the calendar year ending December 31, 2004.
"Gross Profit" shall mean (i) Net Sales less; (ii) Cost of Goods Sold less; and (iii) Uncollectible Accounts.
"Net Sales" shall mean the revenue recognized by the Company (prior to the Closing) or Parent and its consolidated subsidiaries (after the Closing) during the relevant period from the sale, lease, license, exchange, provision or other disposition for value of Earn-Out Products to third parties determined in accordance with GAAP consistently applied and in a manner consistent with Parent's normal accounting policies. In the event that any Earn-Out Products are offered in combination with any other products or services, Net Sales attributable to such Earn-Out Products shall be determined based upon the relative published list prices of each product or service sold, leased, licensed, exchanged, provided or otherwise disposed of within such combination.
"Second Tranche Ceiling" shall mean $64,237,000.
"Second Tranche Difference" shall equal $12,765,000.
"Second Tranche Floor" shall mean $51,472,000.
"Second Tranche Maximum Payout" shall mean $15,000,000.
"Second Tranche Period" shall mean the calendar year ending December 31, 2005.

A.3. Giant Industries acquisition of BP PLC-Refinery, Form 10-K405, 4.1.2002

This example provides for payments to be made to the target firm contingent on future gasoline and oil prices obtained from contracts trading on the New York Mercantile Exchange. This non-financial performance benchmark is unrelated to both the acquirer and target firms' performance, and the linearity of payment structure is not classified. Potential cash payments are capped at $25 million, and the earnout measurement intervals are monthly for a total length of three years.

MARGIN PAYMENT: For the period commencing January 1, 2003 through and including December 31, 2005 (except as set forth otherwise herein) (the "Margin Payment Period"), Buyer shall pay to Seller (or Seller's designee) on a monthly basis in immediately available funds, by wire transfer to an account designated by Seller, an amount (each such amount, a "Margin Payment") equal to (I) the Gasoline Margin Payment for such month, plus (II) the Heating Oil Margin Payment for such month, plus (III) any portion of any previous Margin Payment (including any interest accrued thereon) that remains unpaid; provided, however, that Buyer's total Margin Payments under this Agreement shall not exceed Twenty Five Million Dollars ($25,000,000) (excluding interest paid, if any, by Buyer to Seller as a result of Buyer's failure to make payment when due on any Margin Payment), and the Margin Payment Period shall expire upon Buyer's payment of such amount. Buyer's obligation to pay each Margin Payment when due shall not be conditioned upon or related in any way to the performance of the Business or any other businesses of the Buyer, Buyer's operation thereof, the condition of the Purchased Assets or Buyer's ownership of the Purchased Assets.

(i) For purposes of this Section 3(e), the "Gasoline Margin Payment" in any month shall equal an amount determined by multiplying (x) 10,000 by (y) the amount by which the Actual Gasoline Margin exceeds $5.500 per barrel by (z) the number of days in the month. For purposes of this Section 3(e), the "Heating Oil Margin Payment" in any given month shall equal an amount determined by multiplying (x) 10,000 by (y) the amount by which the Actual Heating Oil Margin exceeds $4.000 per barrel by (z) the number of days in the month.
(ii) For purposes of this Section 3(e), the "Actual Gasoline Margin" shall be an amount equal to (a) the average amount per barrel of the near month unleaded gasoline contract quoted on the New York Mercantile Exchange for each day of the month on which such contract is quoted, measured at settlement less (b) the average amount per barrel of the near month light sweet crude oil contract quoted on the New York Mercantile Exchange for each day of the month on which such contract is quoted, measured at settlement. For purposes of this Section 3(e), the "Actual Heating Oil Margin" shall be an amount equal to (a) the average amount per barrel of the near month heating oil contract quoted on the New York Mercantile Exchange for each day of the month on which such contract is quoted, measured at settlement, less (b) the average amount per barrel of the near month light sweet crude oil contract quoted on the New York Mercantile Exchange for each day of the month on which such contract is quoted, measured at settlement.

A.4. ILEX Oncology Inc., acquisition of Convergence Pharmaceuticals, Form 8-K, 7.30.1999

This earnout provides for payment of acquirer stock contingent on non-financial drug development milestones achieved by the target firm. The performance evaluation period occurs at frequencies of approximately two and three years from the acquisition date, for a total earnout length of three years. The linearity of this payment structure is recorded as stepwise with a maximum payment of 1 million shares.

As additional consideration and as part of the Merger Consideration and subject to the terms and conditions contained herein, (1) upon achievement of the First Milestone (as hereinafter defined), ILEX shall issue pro rata to each of the Former

Seller Shareholders, subject to Section 2.8, an aggregate of 500,000 shares of the Earn-Out Shares; and (2) upon achievement of the Second Milestone (as hereinafter defined), ILEX shall issue pro rata to each of the Former Seller Shareholders, subject to Section 2.8, an aggregate of 500,000 shares of the Earn-Out Shares (the "Earn-Out Right"). The First Milestone shall be defined as the initiation of treatment of the first patient following initiation of an ILEX Phase I trial in the U.S. or Europe with any item of Intellectual Property, which such First Milestone must occur no later than December 31, 2001. The Second Milestone shall be defined as the initiation of treatment of the first patient following initiation of an ILEX Phase II trial in the U.S. or Europe with any item of Intellectual Property, which such Second Milestone must occur no later than December 31, 2002.

"Earn-Out Shares" shall mean 1,000,000 shares of ILEX Stock otherwise deliverable at the Effective Time to the Former Seller Shareholders in connection with the Merger.

"Intellectual Property" shall mean:

(a) All rights in and to the Licenses;
(b) All rights in and to ApoMigren(TM), Arresten(TM), Chelerythrine, NM-3, Restin(TM), TumStatin(TM) and CanStatin(TM);
(c) All of Seller's patents and applications therefore, further including, but not limited to, all divisions, reissues, substitutions, reexaminations, continuations, continuations-in-part and extensions thereof (the "Patents");
(d) All of Seller's inventions, whether or not patentable, further including, but not limited to, all new developments and inventions, as well as all improvements on prior inventions regardless of prior inventorship;
(e) All of Seller's know-how and work product, regardless of form and whether tangible or intangible, further including, but not limited to, flow charts, test data, records and journals; blueprints, drawings and photographs; research reports, including any models or other hardware; licensing, marketing or development analysis;
(f) All of Seller's copyright interests regardless of actual or potential registrability, and including moral rights, rights of publication and rights of attribution and integrity;
(g) All of Seller's trademark or service mark interests, together with all of the goodwill of the business associated therewith and represented thereby (the "Trademarks");
(h) All of Seller's trade secrets;
(i) All of Seller's other intellectual property and other proprietary interests, whether or not identifiable as of the date of execution hereof, relating to, or used in connection with, the Business or Assets now or at any time in the future (to the extent consistent with the respective contractual obligations of the Shareholders as of the date hereof to the academic institutions with which each is affiliated).

"Licenses" shall mean (i) that certain license dated as of July 2, 1999 between Seller and Beth Israel Deaconess Medical Center; (ii) that certain license dated as of July 6, 1999 between Seller and Arch Development Corporation; and (iii) that certain license dated as of July 13, 1999 between Seller and Microbial Chemistry Research Foundation and Mercian Ltd. (the "Microbial License").

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