Internet Appendix

For "**The Bonding Hypothesis of Takeover Defenses: Evidence from IPO Firms**"

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This Internet Appendix reports supplemental materials to accompany the main results in "The Bonding Hypothesis of Takeover Defenses: Evidence from IPO Firms." It is organized into 33 sections that are organized in the order that the supplemental and robustness tests are referenced in the paper. Here is an outline of the 33 sections:

Section 1: Alternate definitions of *Large customer;*

Section 2: Alternate measures of appropriable quasi-rents;

Section 3: IPO firms with negative EBITDA;

Section 4: Alternate takeover defense measures;

Section 5: Classified board as the only takeover provision considered;

Section 6: Takeover defense adoption using the G-index and E-index;

Section 7: Relationship length as a function of G-index and E-index, univariate comparisons;

Section 8: Relationship duration tests using data for both public and private large customers

Section 9: Relationship length as a function of G-index and E-index, multivariate tests;

Section 10: Relationship duration using alternate instrumental variables models;

Section 11: IPO firm valuation using *Dependent supplier* and *Strategic alliance*;

Section 12: Firm valuation and number of takeover defenses measured by G-index and E-index;

Section 13: Firm valuation using alternate instrumental variables models;

Section 14: Univariate comparisons using alternate measures of IPO firm valuation;

Section 15: Multivariate tests using alternate measures of IPO firm valuation;

Section 16: IPO valuation, venture capital backing, and law firm identity;

Section 17: Venture capital backing;

Section 18: Takeover defenses and firm float;

Section 19: Forced CEO turnover and takeover defense adoption;

Section 20: The impact of ex ante takeover likelihood on takeover defense adoption;

Section 21: Large customers that hold equity or debt in the IPO firm;

Section 22: Considering industry concentration as a control;

Section 23: Management quality, IPO firm valuation and takeover defenses;

Section 24: Descriptive statistics partitioned by takeover defenses;

Section 25: Descriptive statistics partitioned by *Large customer* and *Strategic alliance*;

Section 26: Acquisition frequency by takeover defense adoption;

Section 27: IPO valuation using offer price as opposed to firm value;

Section 28: IPO valuation, takeover defenses, and sales growth;

Section 29: IPO valuation for subsets of IPO firms backed by Wilson Sonsini and Brobeck Phleger;

Section 30: IPO valuation controlling for the potential endogeneity in firm relationships;

Section 31: Using a binary variable for firms with a high number of takeover defenses;

Section 32: Comparison to the results in Field and Karpoff (2002);

Section 33: Spillover effects on large customers in the same industry as the IPO firm;

These tests indicate that our main results seem to be robust to a wide variety of alternative econometric specifications and empirical proxies, providing wide support for the bonding hypothesis.

1. Alternate definitions of *Large customer*

The results reported in the paper define *Large customer* as consisting of any firm that purchases more than 10% of sales from the IPO firm. We replicated our results using different definitions of a large customer. As an example, Appendix Table A.1 reports results in which *Large customer* is defined as a customer that accounts for 15%, 20%, or 25% of the IPO firm's sales. Overall, the results are not significantly different using these alternate definitions.

2. Alternate measures of appropriable quasi-rents

Our results focus on three main proxies for appropriable quasi-rents: the presence of large customers, the presence of large suppliers, and the presence of strategic alliance partners for the IPO firm. We repeated our analyses using four other measures of the IPO firm's counterparties' appropriable quasi-rents. The first alternate measure is overfunded pension assets. As Pontiff, Shleifer, and Weisbach (1990) point out, the firm's employees are an important counterparty with whom the firm has long-term relationship commitments. Existing managers may guarantee these commitments, whereas a new management team could be more willing to abrogate such guarantees. This is particularly likely when the firm's pension fund is overfunded. We use the amount the pension fund is overfunded divided by the total value of the pension liabilities to measure the size of the appropriable quasi-rents.

Titman and Wessels (1988) argue that employees in industries with low employee turnover are likely to make high investments in job-specific human capital. In the event of a takeover, the acquiring entity can then appropriate this investment in human capital by reneging on prior implicit agreements with employees. This leads us to our second alternative measure of appropriable quasi-rents, an indicator taking a value of one if the firm is in a low employee turnover industry (below the median) as defined by the US Bureau of Labor Statistics.

Gorecki (1975) notes that customers of firms with products that have few substitutes face the risk of appropriation because the face high costs of switching to other products. As a third alternate measure of

appropriable quasi-rents, we use the number of trademarks registered in the IPO firm's industry at the US Patent and Trademark Office.

Along the same lines as our trademark industry measure, Titman (1984) argues that firms in industries with high selling, general, and administrative expenses tend to have more unique products. Our fourth alternative measure of appropriable quasi-rents is an indicator taking a value of one if the IPO firm is in a high SG&A (above the median) industry.

Table A.2 reports our tests for the adoption of takeover defenses using these four alternative measures of appropriable quasi-rents. The measures for overfunded pension assets, low employee turnover, and high trademark industries all are significantly related to the number of takeover defenses. In Table A.3 we repeat the tests that examine the duration of the relationship between the IPO firms and their large customers. The results for three of the four alternate measures are similar to those reported in the paper. Table A.4 reports results using the alternate measures in tests of IPO firm valuation. Firm valuation is positively related to each of these measures, although the results are not always statistically significant. Finally, Table A.5 reports results for the relation between takeover defenses and operating performance in the presence of appropriable quasi-rents. The relation is positive, although it is statistically significant only using the high SG&A measure. Although several of the coefficients are not significant, we interpret these results as generally consistent with the bonding hypothesis even when we use alternate measures of the IPO firm's counterparties' appropriable quasi-rents.

3. IPO firms with negative EBITDA

As discussed in the paper, our sample consists only of firms with positive EBITDA in the period immediately before their IPO. This is because it is typical to delete negative EBITDA firms in tests that use IPO valuation measures. To investigate whether the bonding hypothesis also applies to negative EBITDA firms, we collected data on all IPO firms during our sample period that meet our sample criteria but have negative EBITDA. There are 628 such firms.

In the negative EBITDA sample, 14.1% of the firms have a large customer, compared to 60.0% in our main sample. This indicates that this type of important business relationship is less prevalent among negative EBITDA firms. To measure these firms' takeover defenses, we collected data on whether or not each firm has a classified board. We use this measure of takeover defense to replicate our non-valuation tests using the sample of firms with negative EBITDA.

Our overall finding is that the patterns we observe in the main sample also appear in the negative EBITDA sample. For example, Table A.6 reports on the relation between the use of a takeover defense and the presence of a large customer. In the main sample, firms with large customers are significantly more likely to adopt a classified board (65.6% versus 60.6% for firms without a large customer). In the negative EBITDA sample, 67.8% of firms with large customers adopt classified boards, compared to 58.4% of firms without a large customer. These results are analogous to those in Table 2 of the paper, which shows that firms with large customers adopt significantly more takeover defenses than firms without large customers.

Table A.7 reports on the relation between the use of a takeover defense and relationship duration. In the main sample, firms with classified boards have relationships that last 3.0 years, on average, compared to 2.4 years for firms without classified boards (t-statistic for the difference = 2.25). Among IPO firms with negative EBITDA, firms with classified boards have relationships that last 3.5 years, on average, compared to 2.5 years for firms without classified boards (also significant at the 5% level). These results are analogous to the findings in Table 4 of the paper, which show that the use of takeover defenses is associated with longer lasting business relationships.

4. Alternate takeover defense measures

The results documented in Table 2 in the paper show that firms with large customers tend to adopt more takeover defenses as measured by the Field and Karpoff index (Field and Karpoff (2002)), the G-index (Gompers, Ishii, and Metrick (2003)), and the E-index (Bebchuk, Cohen, and Ferrell (2009)). We repeated these tests eliminating various defenses from the Field and Karpoff measure, to examine whether

the results are driven by one or two defenses, or whether they reflect the influence of many of the defenses in these indices.

Table A.8 reports results using takeover indices that remove miscellaneous takeover defenses, blank check preferred stock, supermajority vote requirements, and classified boards. In each case, firms with large customers still have significantly more takeover defenses using these alternate indices.

5. Classified board as the only takeover provision considered

One criticism of the G-index, the E-index, and the Field and Karpoff (2002) index is that takeover defenses are considered as equally important in generating these indices. Several authors argue that classified boards are disproportionately powerful at preventing takeovers (Bebchuk, Coates, and Subramanian (2002)). We therefore repeat our major analyses using only the presence of a classified board to measure a firm's takeover defense.

Internet Appendix Table A.9 reports a logistic regression using an indicator variable that takes a value of one if the IPO firm has a classified board and a zero otherwise. We omit industry control variables in this regression because some industries have no classified board adoptions. The coefficients for *Large customer* and *Strategic alliance* are positive and significant at the 10% level. (Using OLS and including all industry indicator variables, the results are a bit stronger. For example, the large customer indicator has a coefficient of 0.062 and is significant at the 5% level.) These results imply that IPO firms with large customers and strategic alliances are more likely to have classified boards.

Internet Table A.10 reports on hazard model tests that examine relationship duration, but using classified boards as our measure of takeover defenses. The results are similar to those reported in Table 5 of the paper, although the coefficients are not as consistently significant. We also regress firm value on the classified board indicator and find a positive and significant coefficient of 0.050 (p-value =0.00). These results imply that our major results are generally robust when we use the presence of a classified board to measure a firm's takeover defense, although some of the coefficients are not statistically significant.

6. Takeover defense adoption using the G-index and E-index

Appendix Table A.11, Panel A replicates the tests in Table 3 of the paper using G-index and E-index as the dependent variables. The results are economically and statistically similar to those in the main paper. (Previous versions of the paper included a full complement of results using the G-index and E-index. Many of these results have been moved to the Internet Appendix to save space.)

Table A.11, Panel B repeats our major regressions from Table 3 using ordinary least squares rather than Poisson regressions. As shown in the table, the results are quite similar using OLS models. In untabulated tests we also re-run our analyses utilizing an indicator for firms adopting above the median number of takeover defenses, as in Chemmanur, Paeglis, and Simonyan (2010). The results also are similar to those in Table 3 of the paper.

7. Relationship length as a function of G-index and E-index, univariate comparisons

In Table 4 of the main paper, we show that IPO firms adopting more takeover defenses as measured by the Field and Karpoff (2002) index ultimately have longer relationships with their large public customers. We repeat these results in Table A.12 using the G-index and E-index measures of takeover defenses and find qualitatively similar results. When we split the samples into approximately thirds, we find that the relationships monotonically increase in length as we move from the fewest number of takeover defense adoptions to the most takeover defense adoptions. These results imply that our tests are robust to different measures of takeover defenses.

8. Relationship duration tests using data for both public and private large customers

Table 4 in the main paper reports on the relationship between IPO firms and their large public customers. These relationships are then examined in multivariate regressions in Table 5 of the paper. Since Table 5 requires variables that are unobservable for large private customers, Tables 4 and 5 omit observations in which the IPO firm has a large private customer. In Internet Appendix Table A.13 we tabulate the relationship length for the IPO firms with any large customers (either public or private

customers). The results are similar to the main results reported in the paper. For example, for firms with fewer than three takeover defenses (N=197) the average relationship length is 2.78 years compared to 3.38 years for firms with greater than three takeover defenses (N=3.38). This difference is statistically significant in both a t-test and a Wilcoxon rank sum test. These results indicate that the relationship duration results hold regardless of whether the large customer is public or private.

9. Relationship length as a function of G-index and E-index, multivariate tests

In this section we examine the robustness of the hazard model results reported in Table 5 of the paper. Our hazard model shows that when firms have a higher number of takeover defenses as measured by the FK-index, the relationship has a lower hazard rate and is less likely to terminate. Appendix table A.14 reports on similar tests using the G-index and E-index to measure a firm's takeover defenses. The hazard rate is reduced significantly when the firm adopts higher levels of takeover defenses as measured by the G-index (model 1) or E-index (model 2). These results are similar to those in Table 5.

10. Relationship duration using alternate instrumental variables models

Table A.15 reports the results of three alternate instrumental variable tests for the duration of the relationship between the IPO firm and its large public customer. Models 1 and 2 report the first and second stage regressions using only the law firm indicator variables and the law firm gaffe indicator as instruments, and omitting the law firm acquisition experience instrument. Models 3 and 4 report the first and second stage regressions using only the gaffe indicator and law firm acquisition experience as instruments, and omitting the law firm indicator variables as instruments. Models 5 and 6 use a different instrument based on the location of the IPO firm.

One difficulty with examining relationship duration is that this variable has a non-normal distribution so a simple 2SLS model with the relationship duration as the dependent variable is likely to be misspecified. We therefore create a panel dataset with the dependent variable taking a value of one if the relationship terminates and a zero otherwise. This technique is similar to the model used by Fee, Hadlock, and Thomas (2004) in

examining the relation between equity ownership and relationship termination. For each IPO firm with a relationship lasting another year, we have an additional observation for the firm. Thus a firm with a three year relationship will have three observations (two with dependent variables taking a value of zero and one with a dependent variable taking a value of one). We then use a maximum likelihood estimation technique that controls for continuous endogenous explanatory variables and a discrete dependent variable. The results from the MLE regression are in Internet Table A.15.

Models (1), (3), and (5) in our MLE setup are analogous to a first stage regression in a 2SLS regression framework. In the first-stage models determining the level of takeover provision adoption, there is a positive and statistically significant relation between the instruments and the use of takeover defenses. The regressions in Table A.15 have different numbers of observations because industries with perfect multicollinearity in the MLE setup are dropped.

In Model 1 of Table A.15 we use only the law firm indicator variables and the gaffe indicator as our instrumental variables to ensure that our results are not appreciably impacted by the omission of the investment banking activity of the law firm as an instrumental variable. It is possible that the investment banking activity of the underwriter may not meet the exclusion criterion as an instrument. However, the results in Model 2 are not appreciably different from those reported in Models 7-8 in Table 5 of the paper. We then repeat our analyses utilizing only the investment banking experience and the law firm gaffe indicator variables as our instruments and find that our key variable, the instrumented value of takeover index is insignificant at normal levels (p-value = 0.31).

Next, we explore the use of a geographic instrument for the number of takeover defenses adopted by the firm. As reported by Coates (2001), firms in Silicon Valley in the 1990s used significantly fewer takeover defenses compared to firms from other areas of the US. Coates (2001) attributes this difference to the specialization of law firms. Law firms outside Silicon Valley are significantly more likely to be involved in mergers and acquisitions work, implying that these firms would recommend their clients adopt more takeover

provisions. This leads us to a geography instrumental variable for firms located in California.[1] While we recognize that there is a great deal of industry clustering within California, our tests include industry control variables.

California firms adopt fewer defenses than non-California firms (2.97 vs. 3.25), a difference that is statistically significant at the 1% level. The California location variable also is significant in the first-stage regression in Model 5. In Model 6, the instrumented number of defenses is significantly and negatively related to the likelihood of relationship termination. This result is similar to the results reported in the paper.

11. IPO firm valuation using *Dependent supplier* and *Strategic alliance*

Based on the results in our paper, we find that valuation is higher when the firm has an appropriable quasi-rent and adopts additional takeover defenses (Table 8). In the paper, we tabulate the valuations for using the *Large customer* measure of appropriable quasi-rents. In Internet Table A.16 we repeat our univariate analysis of IPO firm valuation using *Dependent supplier* and *Strategic alliance*. In both cases, IPO firm valuation is positively related to the number of defenses when the IPO firm has a dependent supplier or strategic alliance, although the result is statistically significant only for *Strategic alliance*. The weaker results using *Dependent supplier* may reflect the small number of observations in which *Dependent supplier* equals one (54).

12. Firm valuation and number of takeover defenses measured by G-index and E-index

It is important to show that our valuation results are robust to the use of various measures of takeover defenses. We repeat the tests in Table 9 of the paper using the G-index and E-index. Appendix Table A.17 shows that our valuation results are nearly identical using these alternative measures – in both cases, the use of more takeover defenses is positively related to firm value.

[1] Alternatively, when we use as our instrument an indicator variable for firms located in the San Francisco MSA we find qualitatively similar results. We code firms as being in the San Francisco MSA if they are located in Alameda County, Contra Costa County, San Francisco County, San Mateo County, Marin County, Santa Clara County, San Benito County, Sonoma County, Solano County, Santa Cruz County, or Napa County, consistent with the US Census Bureau Statistical Area definition. We obtain state and county location information from COMPUSTAT.

13. Firm valuation using alternate instrumental variables models

Table A.18 reports the results of three alternate instrumental variable tests for IPO firm valuation. Models 1 and 2 report the first and second stage regressions using only the law firm indicator variables and the gaffe indicator as instruments, and omitting the law firm acquisition experience instrument. Models 3 and 4 report the first and second stage regressions using only the gaffe indicator and law firm acquisition experience as instruments, and omitting the law firm indicator variables as instruments. Models 5 and 6 use the geography variable of a California State indicator and find qualitatively similar results. In all cases, firm value is positively related to the instrumented number of takeover defenses, and in all cases the coefficient is significant at the 1% level.

14. Univariate comparisons using alternate measures of IPO firm valuation

To examine whether our results are affect by our valuation method, we follow Chemmanur and Loutskina (2006) in calculating the IPO firm valuation based on future earnings per share, as first proposed by Ohlson (1990). This valuation measure relies on future performance of the IPO rather than historical performance. We define relative valuation based on cash flows as:

$$\text{Relative valuation}_{\text{cash flows}} = (\text{IPO stock price}_t)/(\text{Cash flow intrinsic value}_t)$$

where the cash flow intrinsic value is the sum of the book value of assets per share in the IPO year, B_0 (COMPUSTAT ceq/csho), plus the discounted net present value of earnings per share (COMPUSTAT ibcom/csho) over the next two years plus a terminal value, *tv*.

$$\text{Cash flow intrinsic value}_t = B_0 + \frac{EPS_1 - r * B_0}{1+r} + \frac{EPS_2 - r * B_1}{(1+r)^2} + tv$$

To calculate the terminal value, we use a constant growth rate perpetuity of cash flows based on the average of the second and third year's EPS, unless the perpetuity has a negative value in which case the terminal value is set to zero:

$$tv = \frac{(EPS_2 - r * B_1) + (EPS_3 - r * B_2)}{2} * \frac{1}{(1+r)^2 * (r-g)}$$

We use a constant discount rate of 13% and a growth rate of 5% in the reported results, although our inferences are not sensitive to wide variations in these values. To be in the sample of firms using this valuation measure, firms must have operating performance available in COMPUSTAT for the two years after the IPO.

The results using the Ohlson (1990) measure are tabulated in Appendix Table A.19. As with the other valuation measures, firm value is positively related to the use of takeover defenses. However, this positive relation is significant only for the subset of firms with large customers.

Table A.19, Panel B reports on valuation tests using Tobin's q as a measure of firm value. extensively as a measure of firm value. IPO firms with more takeover defenses have slightly higher Tobin's q measures, on average, but the results are not significant. The IPO firms with exactly three takeover defenses have the highest level of Tobin's q. Overall, the results using Tobin's q to measure firm value generally do not support the bonding hypothesis, while most of the results using all of the other valuation measures do support the bonding hypothesis.

15. Multivariate tests using alternate measures of IPO firm valuation

Table A.20 repeats our multivariate tests of firm value using two alternate measures of IPO firm value. We re-run the regressions in Table 9 using as dependent variables either the valuation measure based on market capitalization/sales or the valuation measure based on Ohlson (1990). The coefficients on

the FK-index, *Large customer*, and interaction terms have the same signs as those reported in Table 9, although in some instances the coefficients are not statistically significant.

16. IPO valuation, venture capital backing, and law firm identity

It is possible that our 2SLS results could be affected by a correlation between VC firm identity and law firm identity. We investigate this issue in three ways. First, in the first stage model, we include a control for whether the firm has venture capital support. This controls for the marginal impact of venture backing on the adoption of takeover defenses in tests that also control for law firm identity. Second, we re-estimate our models on the subsets of firms that have, or do not have, venture backing. As described in the paper, the results are similar in the two subsets of firms. In general, the results are stronger in the subset of venture-backed firms. We interpret this as evidence that venture capitalists have expertise that better enables their IPO firms to adopt value-increasing takeover defenses. And third, to construct a test that removes potential matching between VC firms and law firms, we examine the IPO firms that use one or both of only two popular law firms in our sample, Wilson Sonsini and Brobeck, Phleger & Harrison. For these firms, we split the sample into firms with and without venture capital backing. Again, the idea is to use these subsamples to eliminate cross-sectional variation in the IPO firms' law firms. Once again, the results from these smaller subsamples are similar to the overall results, despite the small sample sizes. For example, among the 31 firms with these two law firms that do not have VC backing, firm value is positively and significantly related to the use of takeover defenses in the second stage regressions. These results are reported below in Table A.21. (See also section 29 of this Internet Appendix, which reports valuation tests for IPO firms that are clients of these two law firms.)

17. Venture capital backing

In this section we consider the relationship between venture capital backing and our overall results. Venture capitalists are sophisticated investors that tend to take large equity positions and have special knowledge about IPO firm valuation. If takeover defenses increase value for a firm, we would

expect to see evidence that supports the bonding hypothesis particularly among IPO firms that are influenced by VC investors.

As reported in Table 3 of the main paper, venture backed firms are associated with a significantly higher number of takeover defenses. In univariate tests we find that firms with venture backing adopt an average of 3.3 takeover defenses, whereas firms without venture backing adopt 3.0 provisions (t-statistic for the difference in means = 3.58). The sophisticated nature of venture capital investors suggests that the higher level of takeover provision adoption is deliberate, not accidental.[2]

Internet Appendix Table A.22, Panel A reports on the relation between takeover defenses and relationship duration for IPO firms that receive venture backing. Firms with venture capital backing and fewer than three takeover defenses relationships with their large customers that last 0.71 years, on average. Firms with more than three takeover defenses have relationships that last 2.17 years. This difference is statistically significant at the 1% level. Takeover defenses also are positively related to relationship length among IPO firms without VC backing, but the difference is smaller than among the firms with VC backing.

Table A.22, Panel B reports a summary of the multivariate test in Table 5 of the paper, using only the subsample of VC-backed IPO firms. The coefficient (0.829) is larger than the pooled sample of IPO firms with and without venture backing (0.797) reported in Table 5 model 1. Overall, the results are at least as strong for venture capital-backed firms compared to other firms, although the difference is not statistically significant.

Table A.23, Panel A examines the impact of takeover defenses on large customers' announcement day returns (CAR(-3, 3)) for venture capital backed firms compared to other firms. The spillover effect on large customers is positively related to the IPO firm's use of takeover defenses for both the venture backed and non-venture backed subsamples. Table A.23, Panel B replicates the multivariate tests in Table 7 of the

[2] Alternatively, it may be that venture capital investments are typically made in one or a few industries that tend to adopt many takeover defenses as well. While this is certainly the case, the significant venture capital backing indicator variable in the regressions with industry indicator variables in Table 3 implies that industry is not the whole explanation for the difference.

paper, but for venture capital backed firms only. For this subset of firms, the large customer's announcement day return (CAR(-3, 3)) is positively and significantly related to the IPO firm's use of takeover defenses. The coefficient for the takeover defense index (3.113) is substantially larger than the coefficient for the total sample (1.940), suggesting that the impact is larger for venture backed IPO firms.

Table A.24 reports on our valuation tests, similar to those in Table 9 of the paper, but focusing on the subset of VC-backed IPO firms. The dependent variable is the relative valuation based on IPO firm P/EBITDA divided by a matching firm P/EBITDA. The coefficient on the FK-index is a positive and significant 0.173 (t-stat = 2.90). This coefficient is over double the coefficient for the pooled sample as reported in Table 9, suggesting that the impact of adopting more takeover defenses for venture capital backed firms is higher than for non-venture capital backed firms.

On the whole, these results imply that the bonding hypothesis is supported even among IPO firms that received venture capital backing. Although the differences are not always significant, takeover defenses have relatively large effects among VC-backed IPO firms.

18. Takeover defenses and firm float

In our sample, IPO firms issue an average of only 29% of common shares to the public at the IPO. A small public float increases the cost of an outside takeover and can substitute for takeover defenses in protecting the firm's managers and important counterparties from the threat of hostile takeover. It is typical to view the IPO as a first step toward an increase in public float, and possibly even toward acquisition (e.g., Zingales, 1995). In this section we examine whether our results are affected by the size of the public float at the time of the IPO.

We use as our measure of float the number of shares sold in the offering divided by the total shares outstanding for the firm. Our mean (median) measure of float is 0.29 (0.25) which is consistent with results reported in Field and Hanka (2001). Consistent with Hong, Scheinkman, and Xiong (2006), during the internet boom period of 1999-2000 the average float declines to 0.22.

The correlation between the takeover index measure used by Field and Karpoff (2002) and our measure of float is 0.02 and statistically insignificant. Table A.25 reports the float for firms in our sample partitioned by the number of takeover defenses and the presence of a large customer. The mean float is 0.31 for firms with below the median number of takeover defenses and 0.29 for firms with above the median number of takeover defenses. The t-test for the difference in means is not statistically significant, but the non-parametric Mann-Whitney test is significant at the 5% level. The difference, however, is more pronounced among firms with large customers. The float is not monotonically decreasing in the number of takeover defenses as firms with three defenses have the smallest float in each subsample. Nonetheless, the results imply that firm float may be correlated with takeover defenses and could affect our inferences.

We therefore repeated our tests including a control for the IPO firm's float. Throughout, the results are not qualitatively affected. For example, replicating the tests in Table 3 of the paper, we continue to find that the presence of a large customer, large supplier, and a strategic alliance are positively and significantly related to the number of takeover defenses. Replicating the valuation tests with a control for firm float also yields results that are similar to those reported in the paper.

19. Forced CEO turnover and takeover defense adoption

The bonding hypothesis implies that CEO continuity is important in promoting value-increasing interfirm relationships. We therefore examined whether takeover defenses are (negatively) related to forced CEO turnover in the five years after the IPO. A total of 137 firms in our sample of IPO 209 firms with large public customers have at least one forced CEO turnover in the five years after their IPOs. Table A.26, Panel A reports that 23.4% of these turnovers are forced. Table A.26, Panel B partitions the firms by their use of takeover defenses. The total number of CEO turnovers is not significantly different among the three groups of firms. But the fraction of CEO turnovers that are forced is significantly higher (at the 10% level) among firms with fewer than three defenses (34.15%) than among firms with more than three takeover defenses (19.30%). These results suggest that forced CEO turnovers are less likely among the firms with more takeover defenses.

20. The impact of ex ante takeover likelihood on takeover defense adoption

In this section we report on an analysis of the relation between the *ex ante* probability of takeover and the use of takeover defenses. We follow Billett and Xue (2007), who point out that, "…the ex ante rather than the *ex post* takeover probability captures the takeover deterrent effect…" In Billett and Xue (2007) the authors are explicitly concerned with the ex ante takeover probability impact on open market share repurchases. In our context, we are concerned with the ex ante takeover probability impact on the adoption of additional takeover defenses. But similar to Billett and Xue (2007), we cannot observe takeovers that do not occur. The idea of this method is to find out whether there is an association between takeover defenses and an ex ante measure of takeover likelihood, rather than the actual occurrence of a takeover. This is because firms presumably will use more defenses when the ex ante likelihood of acquisition is high, so the use of defenses and the actual observation of takeover are endogenous.

We model the latent takeover process as a function of observable firm characteristics. Our logistic model for takeover probability is:

$$I(\text{firm acquired}_i) = \alpha + \beta 1 \text{ firm ROA}_i + \beta 2 \log(\text{firm equity})_i + \beta 3 \text{ firm leverage}_i + \beta 4 \text{ firm M/B ratio}_i + \beta 5 \text{ firm PPE/assets}_i + \beta 6\, I(\text{firm relationship})_i + \beta 7\, I(\text{firm in same industry taken over})_i + e_i$$

Where the term I( ) refers to an indicator variable taking a value of one or zero. Our specification differs from that in Billet and Xue (2007) in one way: we do not include the sales growth rate because, with IPO firms, this would substantially limit the sample size.

Table A.27, Panel A reports the coefficients from this regression. Acquisition likelihood is negatively related to operating performance, firm size, and firm valuation. Firms in industries with more pre-IPO acquisitions are significantly more likely to be acquired. We use the coefficients from this model to calculate each firm's ex ante acquisition likelihood.

We use the fitted value of acquisition likelihood as a predictor variable in a Poisson regression in which the dependent variable is the IPO firm's number of takeover defenses. The results are in Panel B of

Table A.27. Controlling for all the previous controls used in Table 3 in the paper, the number of defenses is positively related to ex ante takeover likelihood. To the extent our measure of ex ante takeover likelihood is correlated with the underlying real likelihood, this result indicates that firm managers adopt more takeover defenses when their firm is more likely to face a takeover bid. The size of the coefficient on ex ante takeover likelihood (0.491), and using median values for the control variables, implies that an increase in the likelihood of takeover by 20% increases the number of takeover defenses from its median level of 3.00 to 3.32 (exp (log(3)+ 20%*0.491)).

21. Large customers that hold equity or debt in the IPO firm

One possible complicating factor is that we may be tracking firms that have stronger relationships with their large customers because the customers have invested in the supplier firm. This could explain the positive and significant spillover effect on the large customers when the IPO firm goes public, as the IPO could increase the value of the large customer's investment stake in the IPO firm. To examine this possibility, we first document that the large customer holds a substantial equity stake that is disclosed in the IPO prospectus for 29 (13.9%) of the 209 firms in our sample with large public customers. When the customer owns an equity stake, the firm adopts on average 3.45 takeover defenses and when the customer owns no equity stake, the firm adopts 2.97 takeover defenses, a statistically significant difference (t-stat = 1.95).

When we examine the customer announcement day CAR(-3, 3) for the S1 filing date of the IPO firm, we find that customers with an equity stake have an abnormal return of 1.71% whereas firms without an equity stake have an abnormal return of 1.08%. This difference is not statistically significant at normal levels (t-stat = 0.44).

We also examine whether our relationship duration results could be influenced by large customers with equity stakes in the IPO firm. Table A.28 repeats our duration tests (from Table 5 in the paper). Model 1 excludes cases in which the large customer holds any equity stake in the IPO firm. Model 2 excludes cases in which the large customer has made a loan to the IPO firm. The results from both models

are similar to those for the overall sample, as reported in Table 5 of the paper. We infer that the results are not substantially affected by the presence or absence of investment stakes by the IPO firm's large customers.

22. Considering industry concentration as a control

One possible interpretation of our results is that they are driven by the bargaining power of the IPO firms compared to their suppliers. If this is the case, the industry concentration of the IPO firm should have a significant impact on the overall results we tabulate. We therefore repeat many of our tests including the Herfindahl index of the IPO firm's industry as an additional control. We begin by separating our firms into those with a high Herfindahl index (above the median of 0.18) and below the median Herfindahl index. If our overall results are driven by a bargaining power linkage, then the results should be substantially weaker in high Herfindahl industries, where bargaining power may be high.

Table A.29.A tabulates the relationship length tests for firms in high Herfindahl industries and low Herfindahl industries. These results show there is very little difference between firms in low Herfindahl and high Herfindahl industries, suggesting that our results are not affected by industry concentration. In Table A.29.B reports the hazard model regression including the Herfindahl index. The takeover defense index coefficient does not change appreciably (0.806 controlling for Herfindahl index versus 0.797 in Table 5, Model 1). The Herfindahl index variable is itself significantly related to relationship duration, implying that the business relationships last longer in less competitive industries. This may reflect the fact that there are fewer alternative trading partners when the IPO firm is in a concentrated industry.

Table A.29.C reports on the spillover effect on the large customer's value. Large customer firms in concentrated industries have an abnormal return of 1.22%, compared to 1.29% for large customers of IPO firms in less concentrated industries. These coefficients are not significantly different. Table A.29.D reports on a multivariate test of the spillover effect on the large customer controlling for the Herfindahl index. The coefficient on the FK-index does not change at all (1.940) and the coefficient on the Herfindahl index is statistically insignificant (Table A.29.D).

These results do not support the view that our results reflect the IPO firm's bargaining power compared to, say, its large customer. While we do find that firms in highly concentrated industries tend to have longer business relationships with their large customers, the inclusion of a control for industry concentration does not materially affect any of our key results.

23. Management quality, IPO firm valuation and takeover defenses

A recent paper by Chemmanur, Paeglis, and Simonyan (2011) suggests that takeover defenses signal high quality managers and thus, increase IPO firm value. To examine whether our results are affected by management quality characteristics, we repeat several of our tests including the management quality proxies proposed by Chemmanur, Paeglis, and Simonyan (2011). As reported in Table A.30, the size of the management team (TSIZE) is positively related to the number of takeover defenses adopted by the IPO firm. None of the other measures of managerial quality used by Chemmanur, Paeglis, and Simonyan (2011), however, are consistently significant in the tests. Importantly, when we control for the variables used by Chemmanur, Paeglis, and Simonyan (2011) to proxy for management quality, our main result still holds, as the IPO firm adopts more defenses when it has a large customer.

We then examine the impact of the managerial quality measures from Chemmanur, Paeglis, and Simonyan (2010) on firm valuation. Table A.31 reports that the number of takeover defenses is still significantly and positively related to firm valuation, even adding these additional controls. The results involving some of the interaction terms are less significant in models 2-4, however. Several of the managerial quality variables are significantly related to IPO firm valuation, although the relations are not consistently positive.

24. Descriptive statistics partitioned by takeover defenses

In this section we examine summary descriptive statistics for firms with more versus fewer takeover defenses. The results are reported in Table A.32. On average, IPO firms with more takeover defenses have larger size, leverage, CEO compensation, inside ownership, board size, and board

independence. They also are more likely to be covered by state antitakeover laws and have higher ranked underwriters. These results underscore the likelihood that a firm's use of takeover defenses is related to other firm characteristics, and that we need to consider endogeneity in our tests about relationship duration, IPO firm value, and operating performance.

25. Descriptive statistics partitioned by large customer and strategic alliance

In this section we examine summary descriptive statistics for firms with versus without a large customer and firms with versus without a strategic alliance. The results are reported in Table A.33. Other than firm size, firm characteristics generally are not significantly different for firms with and without these two types of important relationships.

26. Acquisition frequency by takeover defense adoption

We examine the relation between takeover defenses and acquisition frequency for our full sample of 1,219 IPO firms. Among all 1,219 IPO firms, the acquisition rates are nearly identical at 27% for firms with fewer than three, exactly three, or more than three defenses. This result is tabulated in Table A.34.

27. IPO valuation using offer price as opposed to firm value

Table A.35 reports on results that parallel those in Table 8 in the paper using IPO offer price rather than firm market value. This allows us to show that the valuation results are not driven by high underpricing for firms that adopt higher levels of takeover adoption, or by differences in debt. We continue to use a measure of relative valuation in Table A.35 but now it is calculated as the IPO firm's offer price times shares outstanding divided by EBITDA (or sales), and then divided by the ratio of market capitalization to EBITDA (sales) for the matched control firm We examine total offer price/EBITDA in Panel A, and offer price/Sales in Panel B. The results in Table A.35 are similar to those in Table 8 of the paper.

28. IPO valuation, takeover defenses, and sales growth

It is possible that firm valuation and takeover defenses could be related to firm growth. To consider this possibility, we calculated sales growth variables from the IPO year through years +1, +2, +3, and +4 relative to the IPO year. The median growth rates in firm sales are tabulated in Panel A of Table A.36.

Panel B of Table A.36 reports on firm valuation tests in which we include the firm's growth rate as an additional explanatory variable. (The growth rate is not available unless sales are reported in the years after the IPO, so we create a dummy variable for missing observations and set their growth rates to zero. The results are similar if we just use data from firms with growth rate data.) IPO firm valuation is positively and significantly related to the firm's ex post growth rate. The inclusion of the growth rate, however, does not affect our main result that firm valuation also is positively related to the use of takeover defenses among firms that have important business relationships.

29. IPO valuation for subsets of IPO firms backed by Wilson Sonsini and Brobeck Phleger

In this section we examine the possibility that our results might be affected by cross-sectional matching between firms and their law firms in a way that is correlated with firm value. We re-estimate our valuation tests using data only from firms that use the two most frequently observed law firms in the sample, Wilson Sonsini and Brobeck, Phleger & Harrison. Together, these two firms advise 153 of the IPO firms in the sample. The idea is to remove differences in law firm quality by limiting the sample to firms from the same law firms. The results are reported in Table A.37. Using just the 103 firms that use Wilson Sonsini, firm value is positively related to the firm's use of takeover defenses. The results are similar when we add the 50 firms that use Brobeck, Phleger & Harrison as their legal advisor. These results are subject to their own endogeneity concerns, but they suggest that cross-sectional differences in law firm quality is not a major driver of our valuation results.

30. IPO valuation controlling for the potential endogeneity in firm relationships

It is possible that the business relationship itself is endogenous to firm valuation, i.e., that the business relationship is correlated with the error term in the regressions reported in Table 9. To investigate this question, we estimated 2SLS models in which both the number of defenses and the presence of a large customer are treated as endogenous. The results are reported in Table A.38. In Model 1 we estimate two first-stage regressions to instrument for the number of takeover defenses and the interaction between takeover defenses and the presence of a large customer. We use the same instrumental variables as in the main paper to instrument for the number of takeover defenses: law firm indicator variables, law firm gaffe, and law firm acquisition experience.

In Model 2 we treat both takeover defenses and the large customer indicator as endogenous. Johnson, Kang, and Yi (2010) show that a useful instrument for having a large customer is an indicator variable that is set equal to one if the firm is in an industry with above the median number of firms having a large customer (excluding the large customer itself). We use this indicator variable to construct an instrument for the presence of appropriable quasi-rents among the firm's customers. We then estimate three first-stage regressions (one for the number of takeover defenses, one for the presence of a large customer, and one for the interaction). Model 2 reports on the second stage regression results.

In both Models 1 and 2, the coefficient on the interaction term is positive and statistically significant at the 10% level. Overall, our results indicate that the use of takeover defenses tends to increase IPO firms' value when they have an important large customer. The results in Table A.38 indicate that this result persists even when the presence of the business relationship is treated as endogenous.

31. Using a binary variable for firms with a high number of takeover defenses

In this section we repeat our tests using an indicator in place of the takeover defense index, as in Chemmanur, Paeglis, and Simonyan, 2011. The binary variable, *Above median number of defenses*, equals zero when the firm has three or fewer takeover defenses, and one when the firm has more than three

defenses. The defenses are measured using the Field-Karpoff (2002) index of takeover defenses. The results using this new variable are summarized in Table A.39.

Table A.39, Panel A (analogous to Table 3 in the paper) examines the determinants of an IPO firm's use of takeover defenses. Similar to the results in Table 3, the use of defenses is positively related to the presence of a large customer, dependent supplier, and strategic alliance. The coefficient on the large customer indicator is 0.078 (t = 2.55), indicating that IPO firms with a large customer are 7.8% more likely to deploy more than the median number of defenses than firms without a large customer.

Table A.39, Panel B (analogous to Table 5 in the paper) examines the relation between an IPO firm's use of defenses and the duration of the firm's relationship with its large customer. For simplicity, we estimate an OLS model for this test. Similar to the results in Table 5, IPO firms' use of takeover defenses is positively related to the relationship duration. The coefficient on the indicator variable for firms having above the median number of defenses is 0.953 (t = 3.30), implying that the business relationship lasts almost a year longer among IPO firms that adopt more than the median number of takeover defenses.

Table A.39, Panel C (analogous to Table 7 in the paper) examines the relation between the IPO firm's use of defenses and its large customer's abnormal stock return on the day the IPO prospectus is filed and made public. The coefficient on the indicator for firms having above the median number of takeover defenses is 5.749 (t = 4.45). This implies that the large customers' average stock return when the IPO firm has more than the median number of defenses is 5.75 percentage points higher than when the IPO firm does not have more than the median number of defenses.

Table A.39, Panel D (analogous to Table 9 in the paper) examines the relation between the IPO firm's use of takeover defenses and IPO firm valuation. Similar to the results in Table 9, the coefficient on the indicator for firms with more than the median number of takeover defenses is positive, but in this test the coefficient is not statistically significant (t = 1.18). This is one of a small number of robustness results in which a result shows some sensitivity to model specification. (In none of these results, however, does the sign of the coefficient change.)

32. Comparison to the results in Field and Karpoff (2002)

The fact that IPO firms have takeover defenses poses a puzzle because it runs counter to conventional views of IPO firms and takeover defenses. Daines and Klausner (2001) note that, if takeover defenses lower share values as is widely presumed, it would be irrational for pre-IPO shareholders to implement them and suffer the resulting loss when shares are sold to outside investors. Despite this intuition, 98.5% of the IPO firms in our sample from 1997-2005 have at least one takeover defense when they go public, and the average firm has three such defenses.

The bonding hypothesis offers a resolution to this puzzle: Takeover defenses are deployed at the IPO stage because, contrary to common assumption, they increase firm value. The increase in firm value does not arise from an increase in bargaining power as modeled by DeAngelo and Rice (1983) and Stulz (1988), or because of market myopia as in Stein (1988). Rather, defenses increase firm value because they help to protect the IPO firm's important business partners from opportunistic hold-up problems, thus facilitating the formation of profitable business relationships.

Our findings are at odds with Field and Karpoff (2002)'s resolution of the IPO takeover defense puzzle. They find that the likelihood that a firm has at least one takeover defense is positively related to the CEO's compensation, *Board size*, and *Dual CEO/chair*, and negatively related to *CEO age*, *Inside ownership*, and *Board independence*. These results imply that takeover defenses are more likely to be deployed at the IPO stage when senior managers derive large private benefits and are subject to relatively weak internal controls. This, in turn, implies that agency problems are important even at the pre-IPO stage.

We agree with the notion that even IPO firms may face severe agency problems, and that the agency hypothesis of takeover defenses may be at work in many firms. In Table A.40 we largely replicate the Field and Karpoff (2002) results when we include only their variables. Other than *Board independence*, we get the same signs as do Field and Karpoff (2002), although with fewer significant coefficients. Differences between our results and theirs appear to be due to different samples. When we limit our sample to the 1997-98 period – thus getting closer in time to their sample period of 1988-1992 – the results become somewhat more similar. Whereas some of the coefficients on the agency cost variables are

significant, and some are not, our measures of appropriable quasi-rents measures are consistently and persistently significant. We interpret these results as indicating that the use of takeover defenses is driven more by a desire to bond commitments to firm counterparties than by managerial agency problems, at least among firms that have important counterparties. Again, some of the differences could be attributable to samples drawn from different time periods.

33. Spillover effects on large customers in the same industry as the IPO firm

It is possible that the positive spillover effects on the IPO firm's large customers reflect new information that the large customers are likely to be takeover targets. This would imply that the relationship with the customer is not important *per se*, but that there is a shared industry effect. Thus, our customer abnormal return results may be explained not through the supply relationship with the IPO firm, but simply because the IPO firm and its large customer are in an acquisitive industry.

To test this conjecture, we examine the customer abnormal returns for firms with the same two digit SIC code as the IPO firm compared to customers in different industries as the IPO firm. Of the 209 large customers that are publicly traded, 56 are in the same industry as the IPO firm. The average CAR(-3,+3) for these 56 firms is 1.12%, compared to 1.18% for the 153 customers in a different industry as the IPO firm. The difference between these averages is not statistically significant. Our results are similar using three-digit or four-digit SIC codes to identify industries. In each case, the large customers in the same industry as the IPO firm do not have a significantly different abnormal return compared to the customers in a different industry. Overall, this suggests that the spillover effect on the IPO firms' large customers is not simply an IPO firm industry effect.

Table A.1.
Determinants of IPO firms' takeover defenses using different definitions of a large customer

This table reports the results of Poisson maximum-likelihood models in which the dependent variable is the number of takeover defenses as measured by one of three measures: the Field-Karpoff (2002) index, the G-index (Gompers, Ishii, and Metrick 2003), or the E-Index (Bebchuk et al. 2007). The regressors are defined in the Appendix. The sample consists of 1,219 IPOs reported in the Securities Data Corporation (SDC) New Issues database between 1997 and 2005. Control variables include log(1+CEO salary), CEO tenure, CEO age, inside ownership, a venture capital indicator variable, a development firm indicator variable, board independence, board size, dual CEO/chair indicator, log(firm assets), leverage, a state level takeover provision index, an indicator for firms incorporated in Delaware, the number of acquisitions in the IPO firm industry in the past 36 months, and the rank of the IPO firm underwriter. All regressions include fixed effects for year and Fama and French (1997) industry. Standard errors clustered by industry are reported below the regression coefficients. ***, **, and * denote two-tailed significance levels of the parameter estimates at the 0.01, 0.05, and 0.10 levels.

Determinants of IPO firm takeover defenses, total sample (N=1,219)

	FK-index as dependent variable			G-index as dependent variable			E-index as dependent variable		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Measures of appropriable quasi-rents:									
Large customer (indicator)	0.084***			0.065***			0.136***		
>15% sales	(0.031)			(0.014)			(0.049)		
Large customer (indicator)		0.0.083**			0.064**			0.132**	
>20% sales		(0.037)			(0.016)			(0.061)	
Large customer (indicator)			0.077**			0.060***			0.115**
>25% sales			(0.034)			(0.012)			(0.053)
Control variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year indicators	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry indicators	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Sample size	1,219	1,219	1,219	1,219	1,219	1,219	1,219	1,219	1,219
Log pseudolikelihood	-2146.891	-2147.016	-2147.408	-2817.130	-2817.307	-2817.948	-1782.152	-1782.449	-1783.296

Table A.2.
Determinants of IPO firm takeover defenses using alternate measures of appropriable quasi-rents

This table reports the results of Poisson maximum-likelihood models in which the dependent variable is the number of takeover defenses as measured by the Field-Karpoff (2002) index. The sample consists of 1,219 IPOs reported in the Securities Data Corporation (SDC) New Issues database between 1997 and 2005. All REITs, unit offerings, closed-end funds, ADRs, firms not covered by CRSP, firms that belong to either the financial services or utilities industries, IPOs with an offer price below $5, and IPOs without earning or sales data in the year before the IPO are excluded from the sample. We use the COMPUSTAT Segment Customer database to identify whether the IPO firms have large corporate customers. Control variables include log(1+CEO salary), CEO tenure, CEO age, inside ownership, a venture capital indicator variable, a development firm indicator variable, board independence, board size, dual CEO/chair indicator, log(firm assets), leverage, a state level takeover provision index, an indicator for firms incorporated in Delaware, the number of acquisitions in the IPO firm industry in the past 36 months, and the rank of the IPO firm underwriter. All regressions include fixed effects for year and Fama and French (1997) industry. Standard errors clustered by industry are reported below the regression coefficients. ***, **, and * denote the significance of the parameter estimates at the 0.01, 0.05, and 0.10 levels, respectively.

	(1)	(2)	(3)	(4)
Stakeholder relationship characteristics				
Overfunded pension assets	0.025*			
	(0.014)			
Low employee turnover (indicator)		0.075*		
		(0.043)		
High trademark industry (indicator)			0.408***	
			(0.064)	
High investment in SG&A (indicator)				-0.034
				(0.024)
Control Variables	Yes	Yes	Yes	Yes
Year indicators	Yes	Yes	Yes	Yes
Industry indicators	Yes	Yes	Yes	Yes
Sample size	1,219	1,219	1,219	1,219
Adjusted R^2	-2149.717	-1781.989	-2143.773	-2149.543

Table A.3.
Takeover defenses and relationship duration using alternate measures of appropriable quasi-rents

This table reports non-parametric (Cox) survival analysis tests in which the dependent variable is the post-IPO length of the business relationship between the IPO firm and its large publicly traded customer. The sample consists of 209 IPOs reported in the Securities Data Corporation (SDC) New Issues database between 1997 and 2005 that have large public customers at the time of their IPO. All REITs, unit offerings, closed-end funds, ADRs, firms not covered by CRSP, firms that belong to either the financial services or utilities industries, IPOs with an offer price below $5, and IPOs without earning or sales data in the year before the IPO are excluded from the sample. We use the COMPUSTAT Segment Customer database to identify whether the IPO firms have large corporate customers. A large corporate customer is defined as a customer whose sales account for more than 10% of the IPO firm's total sales. When there are multiple large corporate customers for each IPO firm, the customer that purchases the largest amount is identified as the sample customer. To determine whether a corporate customer is publicly traded or privately held, we match the names of large corporate customers in the COMPUSTAT Segment Customer database with those of all firms in COMPUSTAT. The Field and Karpoff (2002) FK-index is used to measure the IPO firm's use of takeover defenses. Standard errors clustered by industry are reported below the regression coefficients, and ***, **, and * denote the significance of the parameter estimates at the 0.01, 0.05, and 0.10 levels.

	(1)	(2)	(3)	(4)
FK-index a:		0.835**	0.551***	0.819***
		(0.064)	(0.106)	(0.065)
Above median takeover defenses (indicator) b:	0.538***			
	(0.075)			
Stakeholder relationship characteristics				
Overfunded pension assets c:	2.742***			
	(0.479)			
b x c	0.338***			
	(0.055)			
Low employee turnover (indicator) d:		0.329**		
		(0.143)		
a x d		0.902		
		(0.116)		
High trademark industry (indicator) e:			0.174***	
			(0.075)	
a x e			1.540**	
			(0.306)	
High investment in SG&A (indicator) f:				1.759*
				(0.559)
a x f				0.918
				(0.114)
Control Variables				
Year indicators	Yes	Yes	Yes	Yes
Industry indicators	Yes	Yes	Yes	Yes
Sample size	Yes	Yes	Yes	Yes
Log pseudolikelihood	209	209	209	209
	- 906.223	-907.401	-904.793	-906.777

Table A.4.
IPO firm valuation using alternate measures of appropriable quasi-rents

The dependent variable is the log of the ratio of IPO firm value to matching firm value. IPO firm value/matching firm value is the ratio of shares outstanding times the stock price to EBITDA (sales) for the IPO firm divided by the ratio of market capitalization to EBITDA for a matching firm. The matching firms are selected based on sorting the Fama and French (1997) industry into three portfolios based on sales in the year before the IPO. These portfolios are then sorted into three additional portfolios based on EBITDA/sales, ultimately producing a matrix of 3x3 portfolios for each industry. Then, within each portfolio, the firm with sales closest to the IPO firm is considered as the matching firm. The sample consists of 1,219 IPOs reported in the Securities Data Corporation (SDC) New Issues database from 1997-2005. All REITs, unit offerings, closed end funds, ADRs, firms not covered by CRSP, firms that belong to either the financial services or utilities industries, and IPOs with an offer price below $5 are excluded from the sample. We use the COMPUSTAT Customer Segment database to identify whether the IPO firms have large public corporate customers. The regressions include dummy variables for each year and Fama and French (1997) industry. Standard errors clustered by industry are reported below the regression coefficients. ***, **, and * denote the significance of the parameter estimates at the 0.01, 0.05, and 0.10 levels, respectively.

	(1)	(2)	(3)	(4)
Number of takeover defenses a:		0.074***	0.010	0.043
		(0.026)	(0.041)	(0.043)
Above median takeover defenses (indicator) b:	0.083			
	(0.028)			
Stakeholder relationship characteristics				
Overfunded pension assets c:	-2.118			
	(0.496)			
b x c	1.743***			
	(0.460)			
Low employee turnover (indicator) d:		0.042		
		(0.337)		
a x d		0.027		
		(0.061)		
High trademark industry (indicator) e:			-0.339	
			(0.215)	
a x e			0.110**	
			(0.049)	
High investment in SG&A (indicator) f:				-0.016
				(0.237)
a x f				0.083
				(0.065)
Control Variables	Yes	Yes	Yes	Yes
Year indicators	Yes	Yes	Yes	Yes
Industry indicators	Yes	Yes	Yes	Yes
Sample size	1,219	1,219	1,219	1,219
Adjusted R^2	0.19	0.19	0.19	0.19

Table A.5.
Change in operating performance using alternate measures of appropriable quasi-rents

This table reports ordinary least squares estimates in which the dependent variable is the change in IPO firm ROA from the year of the IPO to the year after the IPO minus the corresponding change in ROA at the IPO firm's matched firm. Matched firms are selected based on industry, year, and ROA values within 10% of the IPO firm ROA. A large customer is defined as a customer whose sales account for more than 10% of the IPO firm's total sales. Control variables include log(IPO proceeds), firm age, firm size, and firm size squared. ***, **, and * indicate significance at the 1%, 5%, and 10% levels.

	(1)	(2)	(3)	(4)
Number of takeover defenses a:		0.001	0.005	-0.001
		(0.000)	(0.056)	(0.002)
Above median takeover defenses (indicator) b:	0.027**			
	(0.010)			
Stakeholder relationship characteristics				
Overfunded pension assets c:	-0.031			
	(0.058)			
b x c	0.026			
	(0.055)			
Low employee turnover (indicator) d:		-0.167***		
		(0.044)		
a x d		0.010		
		(0.007)		
High trademark industry (indicator) e:			-0.033	
			(0.055)	
a x e			0.001	
			(0.008)	
High investment in SG&A (indicator) f:				-0.068***
				(0.023)
a x f				0.012**
				(0.006)
Control Variables	Yes	Yes	Yes	Yes
Year indicators	Yes	Yes	Yes	Yes
Industry indicators	Yes	Yes	Yes	Yes
Sample size	1,219	1,219	1,219	1,219
Adjusted R^2	0.07	0.07	0.07	0.08

Table A.6.
Classified boards and large customers for IPO firms with negative EBITDA

This table reports on the relation between the use of a classified board and the presence of a large customer. Panel A reports results from our main sample of 1,219 IPO firms, and Panel B reports results from a supplemental sample of 628 IPO firms with negative EBITDA in the last year before their IPOs. In the main sample, firms with large customers are significantly more likely to adopt a classified board (65.6% versus 60.6% for firms without a large customer). In the negative EBITDA sample, 67.8% of firms with large customers adopt classified boards, compared to 58.4% of firms without a large customer. These results are analogous to those in Table 2 of the paper, which shows that firms with large customers adopt significantly more takeover defenses than firms without large customers. ***, **, and * indicate significance at the 1%, 5%, and 10% levels.

Panel A: Number of takeover defenses partitioned by the presence of a large customer, main sample, n=1,219				
	IPO firms without large customers n=487	IPO firms with Large customers n=732	Test of Difference	
			t-statistic	Mann-Whitney z-test
Percent with classified board	60.57%	65.57%	1.77*	1.78*

Panel B: Number of takeover defenses partitioned by the presence of a large customer, negative EBITDA sample, n=628				
	IPO firms without large customers n=538	IPO firms with Large customers n=90	Test of Difference	
			t-statistic	Mann-Whitney z-test
Percent with classified board	58.36%	67.78%	1.69*	1.68*

Table A.7.
Classified boards and relationship duration for IPO firms with negative EBITDA

This table reports on the relation between the use of a classified board and the duration of the IPO firm's business relationship with its large customer. Panel A reports results from our main sample of 209 IPO firms whose large customers are themselves publicly traded corporations. Panel B reports results from a supplemental sample of IPO firms with negative EBITDA in the last year before their IPOs, for which 98 have large customers that are publicly traded corporations. ***, **, and * indicate significance at the 1%, 5%, and 10% levels.

Panel A. Post-IPO relationship length by classified board, main sample (n=209)

	Post-IPO relationship length (years)		
	n	Mean	Median
Firms without a classified board (a:)	84	2.4	2.0
Firms with a classified board (b:)	125	3.0	3.0
Test of difference (b – a) using *t*-test / Mann-Whitney (p-value)		2.25** (0.03)	1.92* (0.05)

Panel B. Post-IPO relationship length by classified board, negative EBITDA sample (n=98)

	Post-IPO relationship length (years)		
	n	Mean	Median
Firms without a classified board (a:)	40	2.5	2.0
Firms with a classified board (b:)	58	3.5	3.0
Test of difference (b – a) using *t*-test / Mann-Whitney (p-value)		2.04** (0.04)	2.67*** (0.01)

Table A.8.
IPO firm takeover defenses and large customers, omitting several key defenses

The sample consists of 1,219 IPOs reported in the Securities Data Corporation (SDC) New Issues database from 1997-2005. All REITs, unit offerings, closed end funds, ADRs, firms not covered by CRSP, firms that belong to either the financial services or utilities industries, and IPOs with an offer price below $5 are excluded from the sample. We use the COMPUSTAT Customer Segment database to identify whether the IPO firms have large public corporate customers. A large public corporate customer is defined as a customer whose sales account for more than 10% of the IPO firm's total sales. When there are multiple large corporate customers for each IPO firm, the customer that purchases the largest amount is identified as the sample customer. To determine whether a corporate customer is publicly traded or privately held, we match the names of large corporate customers in the COMPUSTAT Segment Customer database with those of firms in COMPUSTAT.

Category of anti-takeover provisions by the presence of large customers						
	IPO firms without large customers (N=487)		IPO firms with large customers (N=732)		Test of Difference	
	Mean	Median	Mean	Median	t-statistic	Mann-Whitney z-test
All ATPs but miscellaneous	2.75	3.00	2.91	3.00	2.43**	2.90***
					(0.02)	(0.00)
All ATPs but miscellaneous and blank check preferred	1.79	2.00	1.93	2.00	2.11**	2.73**
					(0.03)	(0.00)
All ATPs but miscellaneous, blank check preferred, and super-majority requirements	1.55	2.00	1.67	2.00	2.26**	2.41**
					(0.02)	(0.02)
All ATPs but miscellaneous, blank check preferred, super-majority requirements, and classified board	0.95	1.00	1.01	1.00	1.83*	2.54**
					(0.07)	(0.01)

Table A.9.
Determinants of IPO firms' having a classified board

This table reports the results of logistic regressions in which the dependent variable is the number of takeover defenses as measured by the presence of a classified board. The regressors are defined in the Appendix. The sample consists of 1,219 IPOs reported in the Securities Data Corporation (SDC) New Issues database between 1997 and 2005. Control variables include log(1+CEO salary), CEO tenure, CEO age, inside ownership, a venture capital indicator variable, a development firm indicator variable, board independence, board size, dual CEO/chair indicator, log(firm assets), leverage, a state level takeover provision index, an indicator for firms incorporated in Delaware, the number of acquisitions in the IPO firm industry in the past 36 months, and the rank of the IPO firm underwriter. *Large customer*, *Dependent supplier*, and *Strategic alliance* are indicator variables that reflect the existence of an important business relationship with the IPO firm. All regressions include fixed effects for year and Fama and French (1997) industry. Standard errors clustered by industry are reported below the regression coefficients. ***, **, and * denote two-tailed significance levels of the parameter estimates at the 0.01, 0.05, and 0.10 levels.

Determinants of IPO firm classified board, total sample (N=1,219)			
	(1)	(2)	(3)
Measures of appropriable quasi-rents:			
Large customer (indicator)	0.236*		
	(0.128)		
Dependent supplier (indicator)		0.166	
		(0.330)	
Strategic alliance (indicator)			0.186*
			(0.099)
Control variables	Yes	Yes	Yes
Year indicators	Yes	Yes	Yes
Industry indicators	No	No	No
Sample size	1,219	1,219	1,219
Pseudo R^2	0.09	0.09	0.09

Table A.10.
Takeover defenses and relationship duration using classified board as takeover defense measure, multivariate tests

This table reports the non-parametric (Cox) survival analysis tests in which the dependent variable is the post-IPO length of the business relationship between the IPO firm and its large publicly traded customer. The sample consists of 209 IPOs reported in the Securities Data Corporation (SDC) New Issues database between 1997 and 2005 that have large public customers at the time of their IPO. All REITs, unit offerings, closed-end funds, ADRs, firms not covered by CRSP, firms that belong to either the financial services or utilities industries, IPOs with an offer price below $5, and IPOs without earning or sales data in the year before the IPO are excluded from the sample. We use the COMPUSTAT Segment Customer database to identify whether the IPO firms have large corporate customers. A large corporate customer is defined as a customer whose sales account for more than 10% of the IPO firm's total sales. When there are multiple large corporate customers for each IPO firm, the customer that purchases the largest amount is identified as the sample customer. To determine whether a corporate customer is publicly traded or privately held, we match the names of large corporate customers in the COMPUSTAT Segment Customer database with those of all firms in COMPUSTAT. Standard errors clustered by industry are reported below the regression coefficients, and ***, **, and * denote the significance of the parameter estimates at the 0.01, 0.05, and 0.10 levels.

	(1)	(2)	(3)	(4)	(5)	(6)
Classified board (indicator) a:	0.623***	0.835**	0.677***	0.680***	0.631***	0.857
	(0.060)	(0.064)	(0.074)	(0.093)	(0.099)	(0.112)
Interfirm characteristics						
Social links between IPO CEO and customer CEO (indicator) b:		2.029**				
a x b		(0.584)				
		0.280***				
Long term contract (indicator) c:		(0.090)				
			1.395*			
a x c			(0.255)			
			0.672**			
Long pre-IPO relationship length (indicator) d:			(0.121)			
				0.935		
a x d				(0.110)		
				0.856		
High percent of IPO firm sales (indicator) e:				(0.192)		
					1.095	
a x e					(0.329)	
					0.981	
Strategic alliance with customer (indicator) f:					(0.248)	
						1.401*
a x f						(0.269)
						0.586**
						(0.135)
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes
Year indicators	Yes	Yes	Yes	Yes	Yes	Yes
Industry indicators	Yes	Yes	Yes	Yes	Yes	Yes
Sample size	209	209	209	209	209	209
Log pseudolikelihood	-909.321	-906.246	-908.809	-908.833	-909.287	-908.158

Table A.11.
Determinants of IPO firms' takeover defenses using the G-index and E-index

This table reports the results of Poisson (Panel A) and ordinary least squares (Panel B) regression models in which the dependent variable is the number of takeover defenses as measured by one of three measures: the Field-Karpoff (2002) index (Panel B only), the G-index (Gompers, Ishii, and Metrick 2003), or the E-Index (Bebchuk et al. 2007). The regressors are defined in the Appendix. The sample consists of 1,219 IPOs reported in the Securities Data Corporation (SDC) New Issues database between 1997 and 2005. Control variables include log(1+CEO salary), CEO tenure, CEO age, inside ownership, a venture capital indicator variable, a development firm indicator variable, board independence, board size, dual CEO/chair indicator, log(firm assets), leverage, a state level takeover provision index, an indicator for firms incorporated in Delaware, the number of acquisitions in the IPO firm industry in the past 36 months, and the rank of the IPO firm underwriter. *Large customer*, *Dependent supplier*, and *Strategic alliance* are indicator variables that reflect the existence of an important business relationship with the IPO firm. All regressions include fixed effects for year and Fama and French (1997) industry. Standard errors clustered by industry are reported below the regression coefficients. ***, **, and * denote two-tailed significance levels of the parameter estimates at the 0.01, 0.05, and 0.10 levels.

Panel A. Poisson regression of determinants of IPO firm takeover defenses, total sample (N=1,219)

	G-index as dependent variable				E-index as dependent variable			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Measures of appropriable quasi-rents:								
Large customer (indicator)	0.076***				0.156***			
	(0.016)				(0.045)			
Dependent supplier (indicator)		0.071**				0.197**		
		(0.031)				(0.092)		
Strategic alliance (indicator)			0.040***				0.122**	
			(0.012)				(0.051)	
Any important relationship				0.075***				0.197***
(indicator)				(0.014)				(0.044)
Control Variables:								
Year indicators	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry indicators	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Sample size	1,219	1,219	1,219	1,219	1,219	1,219	1,219	1,219
Log pseudolikelihood	-2835.512	-2840.861	-2840.358	-2836.131	-1777.68	-1780.422	-1779.464	-1782.530

Panel B. OLS regression of determinants of IPO firm takeover defenses, total sample (N=1,219)

	FK-index as dependent variable			G-index as dependent variable			E-index as dependent variable		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Measures of appropriable quasi-rents:									
Large customer (indicator)	0.229***			0.703***			0.216***		
	(0.082)			(0.157)			(0.070)		
Dependent supplier (indicator)		0.547***			0.602**			0.320**	
		(0.218)			(0.304)			(0.159)	
Strategic alliance (indicator)			0.258***			0.384***			0.218**
			(0.089)			(0.117)			(0.086)
Control variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year indicators	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry indicators	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Sample size	1,219	1,219	1,219	1,219	1,219	1,219	1,219	1,219	1,219
R^2	0.13	0.13	0.13	0.19	0.18	0.18	0.13	0.12	0.12

Table A.12.
Takeover defenses and relationship duration, univariate comparisons

This table reports the mean and median length, in years, of the post-IPO business relationship between the IPO firm and its large public customers. Panel A reports on subsamples partitioned by the IPO firm's number of takeover defenses as measured by G-index at the time of the IPO. Panel B reports on subsamples partitioned by the IPO firm's number of takeover defenses as measured by E-index at the time of the IPO. ***, **, and * denote the significance of the parameter estimates at the 0.01, 0.05, and 0.10 levels.

Panel A. Post-IPO relationship length by the no. of takeover defenses measured by the G-index

Number of IPO firm takeover defenses, G-index	Post-IPO relationship length (years)		
	N	Mean	Median
<9 takeover defenses (a:)	69	2.20	1.00
9-10 takeover defenses	54	2.81	2.00
>10 takeover defenses (b:)	86	3.11	3.00
Test of difference (b – a) using		3.16***	3.21***
t-test / Mann-Whitney (p-value)		(0.00)	(0.00)

Panel B. Post-IPO relationship length by the no. of takeover defenses measured by the E-index

Number of IPO firm takeover defenses, E-index	Post-IPO relationship length (years)		
	N	Mean	Median
0 takeover defenses (a:)	34	2.21	2.00
1-2 takeover defenses	141	2.75	2.00
>2 takeover defenses (b:)	34	3.21	3.00
Test of difference (b – a) using		2.32**	2.23**
t-test / Mann-Whitney (p-value)		(0.02)	(0.03)

Table A.13
Takeover defenses and relationship duration, both public and private large customers

This table reports the mean and median length, in years, of the post-IPO business relationship between the IPO firm and its large customer including both public and private large customers. Panel A reports on the total subsample of 732 IPOs reported in the Securities Data Corporation (SDC) New Issues database between 1997 and 2005 that had large customers at the time of their IPO. Panel B reports on subsamples partitioned by the IPO firm's number of takeover defenses at the time of the IPO, using the Field-Karpoff (2002) index as described in the Appendix. ***, **, and * denote the significance of the parameter estimates at the 0.01, 0.05, and 0.10 levels.

Panel A. Post-IPO relationship length for IPO firms with large public and private customers

	Post-IPO relationship length (years)		
	N	Mean	Median
	732	3.06	2.00

Panel B. Post-IPO relationship length by the number of takeover defenses

Number of IPO firm takeover defenses	Post-IPO relationship length (years)		
	N	Mean	Median
<3 takeover defenses (a:)	197	2.78	2.00
3 takeover defenses	241	2.90	2.00
>3 takeover defenses (b:)	294	3.38	2.50
Test of difference (b – a) using *t*-test / Mann-Whitney (p-value)		2.46** (0.01)	1.78* (0.07)

Table A.14.
Takeover defenses and relationship duration using the G-index or E-index

This table reports the non-parametric (Cox) survival analysis tests in which the dependent variable is the post-IPO length of the business relationship between the IPO firm and its large publicly traded customer. In Model 1 the firm's takeover defenses are measured using the G-index(Gompers, Ishii, and Metrick 2003), and in Model 2 the firm's takeover defenses are measured using the E-index (Bebchuk et al. 2007). The sample consists of 209 IPOs reported in the Securities Data Corporation (SDC) New Issues database between 1997 and 2005 that have large public customers at the time of their IPO. All REITs, unit offerings, closed-end funds, ADRs, firms not covered by CRSP, firms that belong to either the financial services or utilities industries, IPOs with an offer price below $5, and IPOs without earning or sales data in the year before the IPO are excluded from the sample. We use the COMPUSTAT Segment Customer database to identify whether the IPO firms have large corporate customers. A large corporate customer is defined as a customer whose sales account for more than 10% of the IPO firm's total sales. When there are multiple large corporate customers for each IPO firm, the customer that purchases the largest amount is identified as the sample customer. To determine whether a corporate customer is publicly traded or privately held, we match the names of large corporate customers in the COMPUSTAT Segment Customer database with those of all firms in COMPUSTAT. Standard errors clustered by industry are reported below the regression coefficients, and ***, **, and * denote the significance of the parameter estimates at the 0.01, 0.05, and 0.10 levels.

	(1)	(2)
G-index	0.925***	
	(0.017)	
E-index		0.881*
		(0.063)
Control Variables	Yes	Yes
Year indicators	Yes	Yes
Industry indicators	Yes	Yes
Sample size	209	209
Log pseudolikelihood	-910.257	-911.571

Table A.15.
Instrumental variable tests for firm relationship duration using alternate instruments

These tests use maximum likelihood estimation with continuous endogenous regressors and a discrete dependent variable. To control for endogeneity of the adoption of takeover defenses, we utilize: (i) indicator variables for the IPO firm's law firm, (ii) *Law firm gaffe*, an indicator variable set equal to one when the law firm implements offsetting provisions in the IPO firm's corporate charter, (iii) a count of the number of acquisitions advised by the law firm, and (iv) an indicator taking a value of one if the IPO firm is located in California. The estimated the number of takeover defenses from the first stage is used in the second stage regression, in which the dependent variable is an indicator variable taking a value of one if the firm terminates its relationship with the large public customer and zero otherwise. There are N=209 unique firms in the sample with each firm having y observations where y is the number of years the relationship lasts. There are a total of 573 observations in the regressions with law firm instruments and 558 observations in the regressions with the California instrument. Each year the relationship lasts, we utilize that year's firm and relationship explanatory variables. ***, **, and * indicate significance at the 1%, 5%, and 10% levels.

	Considering number of ATPs as endogenous		Considering number of ATPs as endogenous	
	Endogenous variable determination Dependent variable = number of defenses (1)	Dependent variable determination Dependent variable = relationship termination (indicator) (2)	Endogenous variable determination Dependent variable = number of defenses (3)	Dependent variable determination Dependent variable = relationship termination (indicator) (4)
Instrumental variables:				
Law firm gaffe (indicator)	0.711***		0.950***	
	(0.118)		(0.201)	
Law firm acquisition experience			-0.018***	
			(0.006)	
Law firm indicator variables	Yes		No	
Instrumented number of takeover defenses		-0.143*		-0.077
		(0.076)		(0.076)
Control variables for relationship length:				
R&D / assets	-0.208	-1.138*	-0.183	-1.312**
	(0.167)	(0.677)	(0.176)	(0.538)
Percent of sales to large customer	0.579	-5.860***	0.523	-6.278***
	(0.567)	(1.197)	(0.744)	(1.330)
(Percent of sales to large customer)^2	-0.794	4.571***	-0.373	4.979***
	(0.676)	(1.443)	(0.854)	(1.388)
Strategic alliance (indicator)	-0.093	0.049	-0.003	0.077
	(0.102)	(0.159)	(0.136)	(0.120)
Log (total assets)	0.071**	-0.076	0.131***	-0.108*
	(0.035)	(0.062)	(0.036)	(0.063)
Negative free cash flow (indicator)	0.118*	0.274*	0.228	0.250***
	(0.070)	(0.145)	(0.157)	(0.084)
Controls for the number of takeover defenses				
Log (1+CEO salary)	0.009	-0.040	0.018	-0.033
	(0.016)	(0.032)	(0.033)	(0.035)
CEO tenure (years)	0.031***	-0.012	0.020	-0.015*
	(0.009)	(0.012)	(0.015)	(0.009)
CEO age (years)	0.001	-0.004	-0.007	0.000
	(0.005)	(0.008)	(0.018)	(0.009)
Inside Ownership	-1.112***	-0.113	-0.795*	-0.074
	(0.170)	(0.258)	(0.433)	(0.193)
Venture capital backed (indicator)	0.420***	-0.090	0.475*	-0.113
	(0.127)	(0.177)	(0.258)	(0.184)
Development firm (indicator)	0.202*	-0.107	-0.026	-0.092
	(0.124)	(0.182)	(0.208)	(0.098)
Board independence	-0.776**	-0.163	-1.321**	-0.228
	(0.332)	(0.510)	(0.580)	(0.661)
Board size	-0.050***	-0.009	0.015	-0.015
	(0.016)	(0.024)	(0.024)	(0.021)
Dual CEO / chair (indicator)	0.179*	-0.015	0.461***	-0.034
	(0.097)	(0.156)	(0.096)	(0.133)
Leverage	0.428***	0.296	0.563**	0.314
	(0.159)	(0.243)	(0.237)	(0.210)
State ATP Law (indicator)	-1.051***	-0.510*	0.630	-0.529***
	(0.210)	(0.280)	(0.644)	(0.132)
Delaware Incorporation (indicator)	0.364***	0.336**	0.134	0.394***
	(0.123)	(0.166)	(0.278)	(0.108)
Number acquisitions (hundreds)	0.001***	-0.001**	0.001***	-0.001***
	(0.000)	(0.000)	(0.000)	(0.000)
Year indicators	Yes		Yes	
Industry indicators	Yes		Yes	
Sample size	573		573	
Log likelihood	-832.062		-1065.476	

Table A.15 (continued)

	Considering number of ATPs as endogenous	
	Endogenous variable determination Dependent variable = number of defenses (5)	Dependent variable determination Dependent variable = relationship termination (indicator) (6)
Instrumental variables:		
Firm located in California (indicator)	-0.227*	
	(0.132)	
Instrumented number of takeover defenses		-0.778*
		(0.404)
Control variables for relationship length:		
R&D / assets	-0.171	-1.099*
	(0.256)	(0.636)
Percent of sales to large customer	1.353*	-3.407
	(0.824)	(2.830)
(Percent of sales to large customer)^2	-1.309	2.514
	(0.978)	(2.520)
Strategic alliance (indicator)	-0.050	0.052
	(0.116)	(0.160)
Log (total assets)	0.138***	0.019
	(0.044)	(0.113)
Negative free cash flow (indicator)	0.238**	0.424***
	(0.102)	(0.134)
Controls for the number of takeover defenses		
Log (1+CEO salary)	0.021	-0.011
	(0.022)	(0.036)
CEO tenure (years)	0.013	-0.003
	(0.009)	(0.017)
CEO age (years)	-0.009	-0.005
	(0.006)	(0.009)
Inside Ownership	-0.873***	-0.587
	(0.188)	(0.421)
Venture capital backed (indicator)	0.478***	0.253
	(0.122)	(0.303)
Development firm (indicator)	-0.086	-0.131
	(0.131)	(0.169)
Board independence	-1.158***	-1.078*
	(0.359)	(0.588)
Board size	-0.009	-0.014
	(0.018)	(0.023)
Dual CEO / chair (indicator)	0.493***	0.323
	(0.109)	(0.278)
Leverage	0.568***	0.687**
	(0.176)	(0.277)
State ATP Law (indicator)	0.623***	0.109
	(0.211)	(0.563)
Delaware Incorporation (indicator)	-0.123	0.174
	(0.119)	(0.258)
Number acquisitions (hundreds)	0.001***	0.000
	(0.000)	(0.001)
Year indicators	Yes	
Industry indicators	Yes	
Sample size	558	
Log likelihood	-1073.394	

Table A.16.
IPO firm valuation, univariate comparisons using *Dependent supplier* and *Strategic alliance*

This table reports the mean and median ratios of the IPO firm's relative valuation. Relative valuation is calculated as the ratio of shares outstanding times the stock price to EBITDA for the IPO firm divided by the ratio of market capitalization to EBITDA for its matched firm. The matched firms are selected by sorting the Fama and French (1997) industry into three portfolios based on sales in the year before the IPO. Each of these portfolios is then sorted into three additional portfolios based on EBITDA/sales, producing a matrix of 3x3 portfolios for each industry. Then, within each portfolio, the firm with sales closest to the IPO firm is selected as the matched firm. A large customer is defined as a customer whose sales account for more than 10% of the IPO firm's total sales. ***, **, and * indicate significance at the 1%, 5%, and 10% levels.

Panel A: IPO firm market capitalization/matching firm value (using EBITDA) partitioned by the number of takeover defenses and by dependent supplier

Number of IPO firm takeover defenses	IPO firm is not a dependent supplier (N=1,165)			IPO firm is a dependent supplier (N=54)		
	N	Mean	Median	N	Mean	Median
< 3 takeover defenses (a)	371	16.35	1.98	13	12.63	2.08
3 takeover defenses	360	55.19	3.61	11	52.27	3.88
> 3 takeover defenses (b)	434	28.49	2.94	30	65.51	6.36
Difference (b – a) using		1.45	2.43**		0.92	1.61
t-test / Mann-Whitney		(0.15)	(0.02)		(0.36)	(0.11)
(p-value)						

Panel B: IPO firm market capitalization/matching firm value (using EBITDA) partitioned by the number of takeover defenses and by strategic alliance

Number of IPO firm takeover defenses	IPO firm does not have a strategic alliance (N=865)			IPO firm has a strategic alliance (N=354)		
	N	Mean	Median	N	Mean	Median
< 3 takeover defenses (a)	305	11.03	1.76	79	36.26	2.97
3 takeover defenses	255	42.59	3.71	116	82.63	3.54
> 3 takeover defenses (b)	305	15.74	2.60	159	59.92	4.64
Difference (b – a) using		1.17	1.54		0.80	2.12**
t-test / Mann-Whitney		(0.24)	(0.12)		(0.42)	(0.03)
(p-value)						

Table A.17.
IPO firm valuation, multivariate tests using the G-index and E-index

This table reports ordinary least squares estimates in which the dependent variable is log(relative valuation). Relative valuation is calculated as the ratio of shares outstanding times the stock price to EBITDA for the IPO firm divided by the ratio of market capitalization to EBITDA for its matched firm. The matched firms are selected by sorting the Fama and French (1997) industry into three portfolios based on sales in the year before the IPO. Each of these portfolios is then sorted into three additional portfolios based on EBITDA/sales, producing a matrix of 3x3 portfolios for each industry. Then, within each portfolio, the firm with sales closest to the IPO firm is selected as the matched firm. *Large customer*, *Dependent supplier*, and *Strategic alliance* are indicator variables that reflect the existence of an important business relationship with the IPO firm. Control variables include IPO firm underwriter rank, log(IPO proceeds), an indicator taking a value of one if the IPO is venture backed, the percent of the shares that are primary shares, IPO firm leverage, and IPO firm R&D/assets. The G-index (Gompers, Ishii, and Metrick 2003), or the E-Index (Bebchuk et al. 2007) are used to measure the IPO firm's use of takeover defenses. ***, **, and * indicate significance at the 1%, 5%, and 10% levels.

	(1)	(2)
Takeover defense measures:		
G-index	0.061***	
	(0.019)	
E-index		0.095***
		(0.036)
Control Variables	Yes	Yes
Year indicators	Yes	Yes
Industry indicators	Yes	Yes
Sample size	1,219	1,219
Adjusted R^2	0.19	0.19

Table A.18.
Firm valuation using alternate instrumental variables models

The dependent variable is log(relative valuation) for the IPO firms. To control for endogeneity of the adoption of takeover defenses, we utilize: (i) indicator variables for the IPO firm's law firm, (ii) *Law firm gaffe*, an indicator variable set equal to one when the law firm implements offsetting provisions in the IPO firm's corporate charter, (iii) a count of the number of acquisitions advised by the law firm, and (iv) an indicator taking a value of one if the IPO firm is located in California. The estimated the number of takeover defenses from the first stage is used in the second stage regression, in which the dependent variable is log(relative valuation). Relative valuation is calculated as the ratio of shares outstanding times the stock price to EBITDA for the IPO firm divided by the ratio of market capitalization to EBITDA for its matched firm. The matched firms are selected by sorting the Fama and French (1997) industry into three portfolios based on sales in the year before the IPO. Each of these portfolios is then sorted into three additional portfolios based on EBITDA/sales, producing a matrix of 3x3 portfolios for each industry. Then, within each portfolio, the firm with sales closest to the IPO firm is selected as the matched firm. ***, **, and * indicate significance at the 1%, 5%, and 10% levels.

2SLS results using law firm information as an instrumental variable

	Considering number of ATPs as endogenous		Considering number of ATPs as endogenous	
	First Stage Dependent variable = number of defenses (1)	Second Stage Dependent variable = IPO firm valuation (2)	First Stage Dependent variable = number of defenses (3)	Second Stage Dependent variable = IPO firm valuation (4)
Instrumental variables:				
Law firm gaffe (indicator)	0.533***		0.729***	
	(0.134)		(0.108)	
Law firm acquisition experience			-0.009***	
			(0.003)	
Law firm indicator variables	Yes		No	
Instrumented number of takeover defenses		0.124**		0.400***
		(0.049)		(0.131)
Control variables for IPO firm value:				
Log (IPO proceeds)	-0.124	0.709***	-0.032	0.712***
	(0.101)	(0.095)	(0.084)	(0.113)
Venture capital backed (indicator)	0.138	0.484***	0.254***	0.420***
	(0.114)	(0.114)	(0.093)	(0.110)
Fraction sold	0.272**	-0.681***	0.231***	-0.756***
	(0.096)	(0.099)	(0.086)	(0.089)
Leverage	-0.230*	-0.547***	-0.145	-0.509***
	(0.134)	(0.077)	(0.117)	(0.089)
R&D/assets	-0.020	0.133***	-0.050	0.140***
	(0.051)	(0.043)	(0.051)	(0.051)
Underwriter rank	-0.004	-0.054*	0.096***	
	(0.038)	(0.029)	(0.030)	-0.081**
Controls for the number of takeover defenses				(0.035)
Log (1+CEO salary)	0.014	-0.056***	0.021	-0.062***
	(0.017)	(0.013)	(0.014)	(0.013)
CEO tenure (years)	0.006	-0.024***	0.006	-0.026***
	(0.008)	(0.006)	(0.007)	(0.005)
CEO age (years)	0.002	-0.004	0.001	-0.004
	(0.006)	(0.006)	(0.005)	(0.006)
Inside Ownership	-0.201	0.111	-0.139	0.151
	(0.158)	(0.125)	(0.139)	(0.124)
Development firm (indicator)	0.031	0.511*	-0.067	0.538*
	(0.248)	(0.308)	(0.225)	(0.317)
Board independence	-0.129	-0.126	0.189	-0.172
	(0.351)	(0.254)	(0.308)	(0.258)
Board size	0.021	0.008	0.023	0.003
	(0.015)	(0.014)	(0.013)	(0.015)
Dual CEO / chair (indicator)	0.058	0.060	0.127	0.028
	(0.092)	(0.107)	(0.082)	(0.108)
Log (total assets)	0.200**	-0.391***	0.117**	-0.423***
	(0.072)	(0.069)	(0.059)	(0.086)
State ATP Law (indicator)	0.404	-0.096	0.166	-0.171
	(0.259)	(0.201)	(0.195)	(0.255)
Delaware Incorporation (indicator)	-0.096	-0.070	0.011	-0.018
	(0.163)	(0.102)	(0.114)	(0.124)
Number acquisitions (hundreds)	0.027	0.070***	0.023	0.064***
	(0.032)	(0.020)	(0.029)	(0.022)
Year indicators	Yes	Yes	Yes	Yes
Industry indicators	Yes	Yes	Yes	Yes
Sample size	1,219	1,219	1,219	1,219
Adjusted R^2	0.29	0.23	0.12	0.18

Table A.18cont

	First Stage Dependent variable = number of defenses (5)	Second Stage Dependent variable = IPO firm valuation (6)
Instrumental variables:		
Firm located in California (indicator)	-0.349***	
	(0.093)	
Instrumented number of takeover defenses		0.915***
		(0.306)
Control variables for IPO firm value:		
Log (IPO proceeds)	0.003	0.630***
	(0.085)	(0.152)
Venture capital backed (indicator)	0.303***	0.216*
	(0.094)	(0.127)
Fraction sold	0.232***	-0.801**
	(0.087)	(0.130)
Leverage	-0.166	-0.339**
	(0.119)	(0.123)
R&D/assets	-0.025	0.139**
	(0.051)	(0.070)
Underwriter rank	0.105***	-0.132**
	(0.030)	(0.038)
Controls for the number of takeover defenses		
Log (1+CEO salary)	0.026*	-0.072**
	(0.014)	(0.024)
CEO tenure (years)	0.002	-0.023**
	(0.007)	(0.007)
CEO age (years)	-0.001	0.000
	(0.005)	(0.007)
Inside Ownership	-0.165	0.212
	(0.141)	(0.137)
Development firm (indicator)	-0.127	0.619*
	(0.229)	(0.373)
Board independence	0.402	-0.461
	(0.282)	(0.527)
Board size	0.052**	-0.056
	(0.023)	(0.053)
Dual CEO / chair (indicator)	0.098	-0.010
	(0.083)	(0.133)
Log (total assets)	0.095	-0.474**
	(0.061)	(0.101)
State ATP Law (indicator)	0.152	-0.322
	(0.201)	(0.304)
Delaware Incorporation (indicator)	-0.102	0.060
	(0.113)	(0.145)
Number acquisitions (hundreds)	0.025	0.056*
	(0.029)	(0.028)
Year indicators	Yes	Yes
Industry indicators	Yes	Yes
Sample size	1,219	1,219
Adjusted R^2 / Root MSE	0.09	1.916

Table A.19.
Univariate comparisons using alternate measures of IPO firm valuation

The sample consists of 1,219 IPOs reported in the Securities Data Corporation (SDC) New Issues database from 1997-2005 with positive earnings to price ratio. Valuation is measured using the Ohlson (1990) discounted cash flow valuation method (Panel A) and Tobin's Q (Panel B). All REITs, unit offerings, closed end funds, ADRs, firms not covered by CRSP, firms that belong to either the financial services or utilities industries, and IPOs with an offer price below $5 are excluded from the sample. We use the COMPUSTAT Customer Segment database to identify whether the IPO firms have large public corporate customers. A large public corporate customer is defined as a customer whose sales account for more than 10% of the IPO firm's total sales. When there are multiple large corporate customers for each IPO firm, the customer that purchases the largest amount is identified as the sample customer. To determine whether a corporate customer is publicly traded or privately held, we match the names of large corporate customers in the COMPUSTAT Segment Customer database with those of firms in COMPUSTAT. ***, **, and *** indicate significance at the 1%, 5%, and 10% level respectively.

Panel A. IPO firm price to cash flow value by number of defenses

Number of IPO firm antitakeover provisions	Total sample (N=691)			IPO firms without large customer (N=252)			IPO firms with large customer (N=445)		
	N	Mean	Median	N	Mean	Median	N	Mean	Median
<3 takeover defenses (a:)	223	3.12	2.95	98	7.95	2.89	125	0.66	3.05
3 takeover defenses	206	16.99	4.27	70	5.40	3.48	136	28.52	4.61
>3 takeover defenses (b:)	262	3.23	3.74	84	2.31	3.57	184	3.62	3.87
Difference (b – a) using		0.03	2.20**		1.42	0.69		0.78	2.15**
t-test / Mann-Whitney (p-value)		(0.98)	(0.03)		(0.16)	(0.49)		(0.43)	(0.03)

Panel B. IPO firm Tobin's Q by number of defenses

Number of IPO firm antitakeover provisions	Total sample (N=1,219)			IPO firms without large customer (N=487)			IPO firms with large customer (N=732)		
	N	Mean	Median	N	Mean	Median	N	Mean	Median
<3 takeover defenses (a:)	384	4.11	2.52	187	3.87	2.48	197	4.33	2.53
3 takeover defenses	371	6.17	3.00	130	7.36	3.16	241	5.56	2.89
>3 takeover defenses (b:)	464	4.26	2.57	170	4.01	2.13	294	4.36	2.74
Difference (b – a) using		0.38	0.08		0.20	0.89		0.14	0.40
t-test / Mann-Whitney (p-value)		(0.70)	(0.95)		(0.84)	(0.37)		(0.89)	(0.68)

Table A.20.
Multivariate tests using alternate measures of IPO firm valuation

This table reports ordinary least squares estimates in which the dependent variable is log(relative valuation) (Panel A) or the Ohlson (1990) cash flow measure of firm value (Panel B). Relative valuation is calculated as the ratio of shares outstanding times the stock price to sales for the IPO firm divided by the ratio of market capitalization to sales for its matched firm. The matched firms are selected by sorting the Fama and French (1997) industry into three portfolios based on sales in the year before the IPO. Each of these portfolios is then sorted into three additional portfolios based on EBITDA/sales, producing a matrix of 3x3 portfolios for each industry. Then, within each portfolio, the firm with sales closest to the IPO firm is selected as the matched firm. *Large customer* is an indicator variable that reflects the existence of an important business relationship with the IPO firm. Control variables include IPO firm underwriter rank, log(IPO proceeds), an indicator taking a value of one if the IPO is venture backed, the percent of the shares that are primary shares, IPO firm leverage, and IPO firm R&D/assets. ***, **, and * indicate significance at the 1%, 5%, and 10% levels.

	(1)	(2)	(3)	(4)
	Price / sales	Price / sales	Price / Cash flow value	Price / Cash flow value
Takeover defense measures:				
FK-index	0.057*	0.012	0.073***	0.060*
	(0.030)	(0.041)	(0.025)	(0.036)
Measures of appropriable quasi-rents:				
Large customer		-0.048		-0.015
		(0.217)		(0.187)
Large customer x takeover defense index		0.077		0.021
		(0.064)		(0.037)
Control Variables	Yes	Yes	Yes	Yes
Year indicators	Yes	Yes	Yes	Yes
Industry indicators	Yes	Yes	Yes	Yes
Sample size	1,219	1,219	594	594
Adjusted R^2	0.24	0.24	0.39	0.38

Table A.21.
IPO valuation 2SLS tests for a subset of firms with one of two popular law firms

This table replicates the 2SLS tests reported in Table 9 in the paper for a subset of IPO firms that (i) use one of only two law firms as legal advisors at the IPO (Wilson Sonsini or Brobeck, Phleger & Harrison), and (ii) do not have venture capital backing. This sample is a subset of our overall sample of 1,219 IPOs reported in the Securities Data Corporation (SDC) New Issues database from 1997-2005. All REITs, unit offerings, closed end funds, ADRs, firms not covered by CRSP, firms that belong to either the financial services or utilities industries, and IPOs with an offer price below $5 are excluded from the sample. Control variables include IPO firm underwriter rank, log(IPO proceeds), the percent of the shares that are primary shares, IPO firm leverage, and IPO firm R&D/assets. Standard errors clustered by industry are reported below the regression coefficients, and ***, **, and * indicate significance at the 1%, 5%, and 10% levels.

IPO firm valuation considering number of ATPs as endogenous, Wilson Sonsini and Brobeck Phleger & Harrison IPOs not backed by venture capital firms only		
	First Stage Dependent variable = number of defenses (1)	Second Stage Dependent variable = IPO firm valuation (2)
Instrumental variables:		
Law firm indicator variables	No	
Law firm gaffe (indicator)	1.897*	
	(0.863)	
Law firm acquisition experience	0.347*	
	(0.174)	
Instrumented number of takeover defenses		1.061**
		(0.420)
Control variables	Yes	Yes
Year indicators	Yes	Yes
Industry indicators	Yes	Yes
Sample size	31	31
Adjusted R^2	0.45	0.02

Table A.22.
Relationship duration by takeover defenses and venture capital backing

This table reports the mean and median length, in years, of the post-IPO business relationship between the IPO firm and its large publicly traded customer. Panel A reports on the total subsample of 108 IPOs with venture backing and 101 IPOs without venture backing reported in the Securities Data Corporation (SDC) New Issues database between 1997 and 2005 that had large public customers at the time of their IPO. Panel B. reports a non-parametric (Cox) survival analysis tests in which the dependent variable is the post-IPO length of the business relationship between the IPO firm and its large publicly traded customer for IPOs with venture backing only. *** and ** denote the significance of the parameter estimates at the 0.01 and 0.05 level, respectively.

Panel A. Univariate tests of relationship length by takeover provision adoption and venture backing

	Venture backed firms		Non-venture backed firms	
	N	Mean relationship length (years)	N	Mean relationship length (years)
<3 takeover defenses (a:)	24	0.71	40	1.45
3 takeover defenses	49	1.49	28	2.04
>3 takeover defenses (b:)	35	2.17	33	2.48
Test of difference (b – a) using *t*-test (p-value)		3.45*** (0.00)		2.19** (0.03)

Panel B. Multivariate regression results of relationship length for venture backed firms only

FK-index	0.829** (0.070)
Control Variables	Yes
Year indicators	Yes
Industry indicators	Yes
Sample size	108
Log pseudolikelihood	-399.223

Table A.23.
Customer abnormal announcement day return by takeover defenses and venture backing

This table reports the mean and median values of the impacts on the IPO firms' large customers' share values when the IPO firms' preliminary prospectus is filed. The sample consists 108 IPOs with venture backing and 101 IPOs without venture backing reported in the Securities Data Corporation (SDC) New Issues database between 1997 and 2005 that had large public customers at the time of their IPO. We use the COMPUSTAT Customer Segment database to identify whether the IPO firms have large public corporate customers. A large public corporate customer is defined as a customer whose sales account for more than 10% of the IPO firm's total sales. To determine whether a corporate customer is publicly traded or privately held, we match the names of large corporate customers in the COMPUSTAT Segment Customer database with those of firms in COMPUSTAT. Panel B reports the multivariate regression of the customer cumulative abnormal return onto the Field and Karpoff (2002) index plus control variables for venture backed firms only. Cumulative abnormal returns are calculated using a market model regression with parameters estimated from day -255 to day -46. ***, **, and * denote significance of the parameter estimates at the 0.01, 0.05, and 0.10 levels.

Panel A. Univariate tests of customer CAR(-3, 3) by takeover provision adoption and venture backing				
	Venture backed firms		Non-venture backed firms	
	N	Mean CAR(-3, 3)	N	Mean CAR(-3, 3)
<3 takeover defenses (a:)	24	-1.29%	40	-0.43%
3 takeover defenses	49	-1.09%	28	0.98%
>3 takeover defenses (b:)	35	4.31%	33	4.83%
Test of difference (b – a) using		2.98***		3.21***
t-test (p-value)		(0.00)		(0.00)

Panel B. Multivariate regression results of customer CAR(-3, 3) for venture backed firms only	
FK-index	3.113***
	(0.786)
Control Variables	Yes
Year indicators	Yes
Industry indicators	Yes
Sample size	108
R^2	0.30

Table A.24.
IPO firm valuation for venture capital backed firms, multivariate regressions

The dependent variable is the natural log of the IPO firm's relative valuation. The sample contains only the IPO firms that are venture backed. Relative valuation is calculated as the IPO firm's market capitalization at the IPO (shares outstanding times the IPO stock price) divided by EBITDA, divided by the ratio of market capitalization to EBITDA for the matched control firm. Control firms are selected by sorting the Fama and French (1997) industry into three portfolios based on sales in the year before the IPO. Each of these portfolios is then sorted into three additional portfolios based on EBITDA/sales, producing a matrix of 3x3 portfolios for each industry. Then, within each portfolio, the firm with sales closest to the IPO firm is selected as the matched control firm. *Large customer*, *Dependent supplier*, and *Strategic alliance* are indicator variables that reflect the existence of an important business relationship with the IPO firm. Control variables include IPO firm underwriter rank, log(IPO proceeds), the percent of the shares that are primary shares, IPO firm leverage, and IPO firm R&D/assets. Standard errors clustered by industry are reported below the regression coefficients, and ***, **, and * indicate significance at the 1%, 5%, and 10% levels.

	(1)	(2)	(3)	(4)
Takeover defense measures:				
FK-index	0.173***	-0.029	0.181***	0.132**
	(0.062)	(0.056)	(0.057)	(0.064)
Measures of appropriable quasi-rents:				
Large customer		-0.933***		
		(0.238)		
Large customer x takeover defense index		0.354***		
		(0.086)		
Dependent supplier			1.118	
			(0.684)	
Dependent supplier x takeover defense index			-0.181	
			(0.119)	
Strategic alliance (indicator):				-0.112
				(0.621)
Strategic alliance x takeover defense index				0.097
				(0.134)
Control Variables	Yes	Yes	Yes	Yes
Year indicators	Yes	Yes	Yes	Yes
Industry indicators	Yes	Yes	Yes	Yes
Sample size	629	629	629	629
Adjusted R^2	0.22	0.24	0.23	0.23

Table A.25.
IPO firm float partitioned by takeover defenses

The sample consists of 1,219 IPOs reported in the Securities Data Corporation (SDC) New Issues database from 1997-2005. All REITs, unit offerings, closed end funds, ADRs, firms not covered by CRSP, firms that belong to either the financial services or utilities industries, and IPOs with an offer price below $5 are excluded from the sample. We use the COMPUSTAT Customer Segment database to identify whether the IPO firms have large public corporate customers. A large public corporate customer is defined as a customer whose sales account for more than 10% of the IPO firm's total sales. When there are multiple large corporate customers for each IPO firm, the customer that purchases the largest amount is identified as the sample customer. To determine whether a corporate customer is publicly traded or privately held, we match the names of large corporate customers in the COMPUSTAT Segment Customer database with those of firms in COMPUSTAT. We use as a proxy for float the number of shares sold in the offering divided by the total number of shares outstanding for the IPO firm after the offering.

IPO firm float by number of ATPs

Number of IPO firm antitakeover provisions	Total sample (N=1,219)			IPO firms without large customer (N=487)			IPO firms with large customer (N=732)		
	N	Mean	Median	N	Mean	Median	N	Mean	Median
<3 takeover defenses (a:)	384	0.31	0.28	187	0.31	0.28	197	0.30	0.27
3 takeover defenses	371	0.25	0.25	130	0.24	0.20	241	0.26	0.23
>3 takeover defenses (b:)	464	0.29	0.22	170	0.32	0.26	294	0.28	0.24
Difference (b – a) using *t*-test / Mann-Whitney (p-value)		1.31 (0.19)	2.28** (0.02)		0.19 (0.85)	0.65 (0.52)		1.67* (0.09)	2.15** (0.03)

Table A.26
Takeover defenses and forced CEO turnover

This table reports the percent of IPO firms with forced CEO turnover conditional on having CEO turnover within five years of the IPO date. Panel A reports the percent of forced turnovers for the total sample of 137 IPO firms (out of the 209 IPOs with large public customers) with CEO turnover within five years. Panel B reports on subsamples partitioned by the IPO firm's number of takeover defenses at the time of the IPO, using the Field-Karpoff (2002) index as described in the Appendix. ***, **, and * denote the significance of the parameter estimates at the 0.01, 0.05, and 0.10 levels.

Panel A. Fraction of CEO turnovers that are forced

Total turnovers	Fraction forced
137	23.36%

Panel B. Fraction of CEO turnovers that are forced by the number of takeover defense

Number of IPO firm takeover defenses	Forced turnover	
	Total turnovers	Fraction forced
<3 takeover defenses (a:)	41	34.15%
3 takeover defenses	39	17.95%
>3 takeover defenses (b:)	57	19.30%
Test of difference (b – a) using *t*-test		1.67* (0.10)

Table A.27.
Ex ante acquisition likelihood and IPO firm takeover defenses

This table reports estimates to calculate the ex ante acquisition probability for IPO firms partitioned by the number of takeover defenses at the time of the IPO. The sample consists of 1,219 IPOs reported in the Securities Data Corporation (SDC) New Issues database from 1997-2005. All REITs, unit offerings, closed end funds, ADRs, firms not covered by CRSP, firms that belong to either the financial services or utilities industries, and IPOs with an offer price below $5 are excluded from the sample. Following Billett and Xue (2007), ex ante acquisition probability is calculated using fitted values from the following logistic model: $I(\text{firm acquired}_i) = \alpha + \beta 1 \text{ firm ROA}_i + \beta 2 \log(\text{firm equity})_i + \beta 3 \text{ firm leverage}_i + \beta 4 \text{ firm M/B ratio}_i + \beta 5 \text{ firm PPE/assets}_i + \beta 6 I(\text{firm relationship})_i + \beta 7 I(\text{firm in same industry taken over})_i + e_i$ Panel A reports the coefficients for this model. Panel B reports on multivariate tests of the relation between the number of takeover defenses and the ex ante calculated probability of acquisition using the coefficients from Panel A. ***, **, and * denote two-tailed significance levels of the parameter estimates at the 0.01, 0.05, and 0.10 levels.

Panel A: Logistic regression of predicted likelihood of acquisition control variables (N=1,219)	
	(1)
Firm ROA	-0.816***
	(0.178)
Log(firm equity)	-0.082**
	(0.038)
Firm leverage	-0.033**
	(0.013)
Firm M/B ratio	-0.066
	(0.132)
Firm PPE/assets	-0.193
	(0.271)
Prior acquisitions	0.049**
	(0.025)
N	1,219
R^2	0.02

Panel B: Poisson regression of takeover provision index onto controls plus predicted acquisition likelihood (N=1,219)	
	(1)
Ex ante acquisition likelihood	0.491***
	(0.151)
Control Variables:	
Log(1+CEOsalary)	0.008
	(0.005)
CEO tenure (years)	0.001
	(0.002)
CEO age (years)	0.000
	(0.001)
Inside ownership	-0.051
	(0.032)
Venture capital backed (indicator)	0.070***
	(0.026)
Development firm (indicator)	-0.031
	(0.061)
Board independence	0.069
	(0.111)
Board size	0.005
	(0.004)
Dual CEO/chair	0.029
	(0.031)
Log (total assets)	0.030**
	(0.010)
Leverage	-0.025
	(0.041)
State antitakeover law (indicator)	0.097
	(0.083)
Delaware incorporation (indicator)	-0.064*
	(0.033)
Number of acquisitions	0.006
	(0.006)
Underwriter Rank	0.038***
	(0.009)
Year indicators	Yes
Industry indicators	Yes
Sample size	1,219
Log pseudolikelihood	-2152.585

Table A.28.
Takeover defenses and relationship duration for customers without investments in the IPO firm

The table reports non-parametric (Cox) survival analysis regressions in which the dependent variable is the post-IPO length of the business relationship between the IPO firm and its large publicly traded customer. The sample consists of 209 IPOs reported in the Securities Data Corporation (SDC) New Issues database between 1997 and 2005 that have large public customers at the time of their IPO. All REITs, unit offerings, closed-end funds, ADRs, firms not covered by CRSP, firms that belong to either the financial services or utilities industries, IPOs with an offer price below $5, and IPOs without earning or sales data in the year before the IPO are excluded from the sample. We use the COMPUSTAT Segment Customer database to identify whether the IPO firms have large corporate customers. A large corporate customer is defined as a customer whose sales account for more than 10% of the IPO firm's total sales. When there are multiple large corporate customers for each IPO firm, the customer that purchases the largest amount is identified as the sample customer. To determine whether a corporate customer is publicly traded or privately held, we match the names of large corporate customers in the COMPUSTAT Segment Customer database with those of all firms in COMPUSTAT. The Field and Karpoff (2002) FK-index is used to measure the IPO firm's use of takeover defenses. Standard errors clustered by industry are reported below the regression coefficients, and ***, **, and * denote the significance of the parameter estimates at the 0.01, 0.05, and 0.10 levels.

	(1) Customer has no equity stake	(2) Customer makes no loan to firm
F-K index	0.799***	0.814***
	(0.053)	(0.054)
Control Variables	Yes	Yes
Year indicators	Yes	Yes
Industry indicators	Yes	Yes
Sample size	180	198
Log pseudolikelihood	-759.620	-856.696

Table A.29.

Takeover defenses and relationship duration and announcement day returns controlling for the Herfindahl Index

Panel A reports the univariate relationship length by takeover defenses for firms in high versus low Herfindahl industries. Panel B reports non-parametric (Cox) survival analysis tests in which the dependent variable is the post-IPO length of the business relationship between the IPO firm and its large publicly traded customer. Panel C reports the announcement day return for the customers in high versus low Herfindahl industries. Panel D reports the multivariate regression results with customer announcement day return (CAR(-3, 3) as the dependent variable, controlling for Herfindahl index. The sample consists of 209 IPOs reported in the Securities Data Corporation (SDC) New Issues database between 1997 and 2005 that have large public customers at the time of their IPO. All REITs, unit offerings, closed-end funds, ADRs, firms not covered by CRSP, firms that belong to either the financial services or utilities industries, IPOs with an offer price below $5, and IPOs without earning or sales data in the year before the IPO are excluded from the sample. We use the COMPUSTAT Segment Customer database to identify whether the IPO firms have large corporate customers. A large corporate customer is defined as a customer whose sales account for more than 10% of the IPO firm's total sales. When there are multiple large corporate customers for each IPO firm, the customer that purchases the largest amount is identified as the sample customer. To determine whether a corporate customer is publicly traded or privately held, we match the names of large corporate customers in the COMPUSTAT Segment Customer database with those of all firms in COMPUSTAT. The Field and Karpoff (2002) FK-index is used to measure the IPO firm's use of takeover defenses, and results using the G-index and E-index are tabulated in the Internet Appendix. Standard errors clustered by industry are reported below the regression coefficients, and ***, **, and * denote the significance of the parameter estimates at the 0.01, 0.05, and 0.10 levels.

Panel A. Univariate tests of relationship length by takeover provision adoption and Herfindahl index

	High Herfindahl firms		Low Herfindahl firms	
	N	Mean relationship length (years)	N	Mean relationship length (years)
<3 takeover defenses (a:)	33	2.06	31	2.29
3 takeover defenses	37	2.35	40	3.00
>3 takeover defenses (b:)	34	3.41	34	3.24
Test of difference (b – a) using		2.08**		2.93***
t-test (p-value)		(0.04)		(0.00)

Panel B. Multivariate regression results of relationship length controlling for Herfindahl index

FK-index	0.806***
	(0.053)
Herfindahl Index	0.407**
	(0.174)
Control Variables	Yes
Year indicators	Yes
Industry indicators	Yes
Sample size	209
Log pseudolikelihood	-906.814

Panel C. Customer CAR(-3, 3) by Herfindahl index

	High Herfindahl	Low Herfindahl	t-test
Customer CAR(-3, 3)	1.22%	1.29%	0.07
			(0.94)

Panel D. Multivariate regressions for customer CAR(-3, 3) controlling for Herfindahl index

F-K index	1.940***
	(0.452)
Herfindahl Index	-0.541
	(2.618)
Control Variables	Yes
Year indicators	Yes
Industry indicators	Yes
Sample size	209
R^2	0.22

Table A.30.
Determinants of IPO firm takeover defenses including management quality variables

The dependent variable is the number of anti-takeover provisions and we utilize a Poisson maximum-likelihood model. The sample consists of 1,219 IPOs reported in the Securities Data Corporation (SDC) New Issues database between 1997 and 2005. All REITs, unit offerings, closed-end funds, ADRs, firms not covered by CRSP, firms that belong to either the financial services or utilities industries, IPOs with an offer price below $5, and IPOs without earning or sales data in the year before the IPO are excluded from the sample. *Large customer*, *Dependent supplier*, and *Strategic alliance* are indicator variables that reflect the existence of an important business relationship with the IPO firm. *Any important relationship* is an indicator taking a value of one if the IPO firm has a large customer, a dependent supplier, or a strategic alliance. We use the COMPUSTAT Segment Customer database to identify whether the IPO firms have large corporate customers. A large corporate customer is defined as a customer whose sales account for more than 10% of the IPO firm's total sales. When there are multiple large corporate customers for each IPO firm, the customer that purchases the largest amount is identified as the sample customer. Measures of management quality are: management team size (TSIZE), percent of management team with MBA degrees (PMBA), percent of management team who are certified public accountants (PCPA), percent of management team who served as executive officers or vice presidents or higher prior to joining the IPO firm (PFTEAM), percent of management team who have previously been law or accounting firm partners (PLAWACC), average number of years the management team members have been with the firm (TENURE), the coefficient of variation of the team members' tenures (TENHET), the CEO salary and bonus divided by the average non-CEO management team salary in the year before the IPO (FCEO), and the number of boards the management team sit on (BOARDS). The regressions include dummy variables for each year and Fama and French (1997) industry. Standard errors clustered by industry are reported below the regression coefficients. ***, **, and * denote the significance of the parameter estimates at the 0.01, 0.05, and 0.10 levels, respectively.

	(1)	(2)	(3)	(4)
Large customer (indicator)	0.098***			
	(0.025)			
Dependent supplier (indicator)		0.147***		
		(0.054)		
Strategic alliance (indicator)			0.098***	
			(0.027)	
Any important relationship (indicator)				0.119***
				(0.029)
Management team quality controls				
TSIZE	0.015***	0.015***	0.016***	0.016***
	(0.005)	(0.005)	(0.005)	(0.005)
PMBA	-0.085	-0.060	-0.070	-0.087
	(0.066)	(0.067)	(0.063)	(0.065)
PCPA	0.130	0.154*	0.164*	0.143
	(0.086)	(0.092)	(0.093)	(0.092)
PFTEAM	0.035	0.015	0.030	0.044
	(0.065)	(0.065)	(0.062)	(0.064)
PLAWACC	0.038	0.119	0.081	-0.016
	(0.121)	(0.127)	(0.131)	(0.131)
TENURE	0.005	0.003	0.003	0.006
	(0.006)	(0.006)	(0.006)	(0.006)
TENHET	0.053**	0.039	0.046	0.056**
	(0.026)	(0.031)	(0.030)	(0.026)
FCEO	0.005	0.005**	0.006**	0.004
	(0.003)	(0.003)	(0.003)	(0.003)
BOARDS	-0.001	-0.004	-0.005	-0.001
	(0.013)	(0.013)	(0.013)	(0.013)
Control variables	Yes	Yes	Yes	Yes
Year indicators	Yes	Yes	Yes	Yes
Industry indicators	Yes	Yes	Yes	Yes
Sample size	1,219	1,219	1,219	1,219
Log pseudolikelihood	-2142.881	-2166.191	-2164.674	-2142.140

Table A.31.
IPO valuation including managerial quality variables

This table reports on an extension of Table 9 in the paper by including additional control variables used by Chemmanur, Paeglis, and Simonyan (2011) to measure the management team's quality. The sample consists of 1,219 IPOs reported in the Securities Data Corporation (SDC) New Issues database from 1997-2005. All REITs, unit offerings, closed end funds, ADRs, firms not covered by CRSP, firms that belong to either the financial services or utilities industries, and IPOs with an offer price below $5 are excluded from the sample. *Large customer*, *Dependent supplier*, and *Strategic alliance* are indicator variables that reflect the existence of an important business relationship with the IPO firm. *Any important relationship* is an indicator taking a value of one if the IPO firm has a large customer, a dependent supplier, or a strategic alliance. Control variables include IPO firm underwriter rank, log(IPO proceeds), an indicator taking a value of one if the IPO is venture backed, the percent of the shares that are primary shares, IPO firm leverage, and IPO firm R&D/assets. Measures of management quality are: management team size (TSIZE), percent of management team with MBA degrees (PMBA), percent of management team who are certified public accountants (PCPA), percent of management team who served as executive officers or vice presidents or higher prior to joining the IPO firm (PFTEAM), percent of management team who have previously been law or accounting firm partners (PLAWACC), average number of years the management team members have been with the firm (TENURE), the coefficient of variation of the team members' tenures (TENHET), the CEO salary and bonus divided by the average non-CEO management team salary in the year before the IPO (FCEO), and the number of boards the management team sit on (BOARDS). Standard errors clustered by industry are reported below the regression coefficients, and ***, **, and * indicate significance at the 1%, 5%, and 10% levels.

	(1)	(2)	(3)	(4)	(5)
Takeover defense measures:					
FK-index	0.098***	0.033	0.078***	0.070**	-0.006
	(0.027)	(0.044)	(0.027)	(0.030)	(0.241)
Measures of appropriable quasi-rents:					
Large customer (indicator)		-0.063			
		(0.180)			
Large customer x takeover defense index		0.110*			
		(0.059)			
Dependent supplier (indicator)			-0.972		
			(0.485)		
Dependent supplier x takeover defense index			0.294***		
			(0.083)		
Strategic alliance (indicator)				-0.105	
				(0.333)	
Strategic alliance x takeover defense index				0.086	
				(0.083)	
Any important relationship (indicator)					-0.050
					(0.240)
Any important relationship x takeover defense index					0.139
					(0.084)
Management team quality controls					
TSIZE	-0.042***	-0.039***	-0.042***	-0.040**	-0.039**
	(0.016)	(0.015)	(0.015)	(0.016)	(0.015)
PMBA	0.588***	0.577**	0.609***	0.583**	0.604**
	(0.218)	(0.234)	(0.219)	(0.225)	(0.244)
PCPA	0.167	0.161	0.155	0.191	0.210
	(0.378)	(0.371)	(0.385)	(0.378)	(0.368)
PFTEAM	-0.308**	-0.288**	-0.325**	-0.282**	-0.254*
	(0.133)	(0.139)	(0.138)	(0.129)	(0.141)
PLAWACC	0.527	0.449	0.538	0.466	0.352
	(0.478)	(0.476)	(0.480)	(0.487)	(0.474)
TENURE	-0.083***	-0.080***	-0.083***	-0.082***	-0.077***
	(0.012)	(0.012)	(0.012)	(0.013)	(0.128)
TENHET	0.244**	0.245**	0.243**	0.250**	0.256**
	(0.123)	(0.122)	(0.122)	(0.122)	(0.123)
FCEO	-0.024	-0.025	-0.024	-0.020	-0.025
	(0.034)	(0.032)	(0.035)	(0.034)	(0.032)
BOARDS	0.006	0.009	0.008	0.005	0.011
	(0.049)	(0.049)	(0.049)	(0.051)	(0.050)
Control variables	Yes	Yes	Yes	Yes	Yes
Year indicators	Yes	Yes	Yes	Yes	Yes
Industry indicators	Yes	Yes	Yes	Yes	Yes
Sample size	1,219	1,219	1,219	1,219	1,219
R^2	0.26	0.27	0.27	0.26	0.27

Table A.32.
Descriptive statistics for firms partitioned by the number of takeover defenses

This table reports descriptive statistics for each of three subsamples partitioned by the firm's number of takeover defenses as measured by the Field-Karpoff (2002) index. The sample consists of 1,219 IPOs reported in the Securities Data Corporation (SDC) New Issues database from 1997-2005. All REITs, unit offerings, closed end funds, ADRs, firms not covered by CRSP, firms that belong to either the financial services or utilities industries, and IPOs with an offer price below $5 are excluded from the sample. We use the COMPUSTAT Customer Segment database to identify whether the IPO firms have large customers. Variables are defined in the Appendix to the paper.

Summary statistics by number of takeover defenses					
	< 3 takeover provisions a: (N=384)	3 takeover provisions (N=371)	>3 takeover provisions b: (N=464)	Test of Difference b-a	
	Mean	Mean	Mean	t-statistic	Mann-Whitney z-test
IPO firm CEO characteristics					
CEO compensation ($ thousands)	374.88	380.40	514.23	1.55	3.05***
CEO tenure (years)	6.14	5.32	6.11	0.07	0.92
CEO age (years)	48.08	46.52	47.50	0.96	0.88
IPO firm characteristics					
Inside ownership	0.60	0.59	0.57	1.72*	2.04**
Venture capital backed (indicator)	0.38	0.64	0.53	4.46***	4.42***
Development firm (indicator)	0.03	0.04	0.03	0.80	0.25
Board independence	0.38	0.38	0.40	1.89*	1.62*
Board size	10.97	12.11	11.95	4.15**	3.78***
Dual CEO/chair (indicator)	0.54	0.58	0.57	0.78	0.78
Total assets ($ millions)	264.01	308.06	486.13	1.47	4.21***
Leverage	0.42	0.33	0.36	2.14**	1.65*
Market capitalization ($ millions)	459.93	975.37	716.11	2.72**	5.11***
Sales ($ millions)	121.07	101.63	123.77	0.39	0.18
State takeover defenses (indicator)	0.91	0.97	0.95	2.27**	2.27**
Delaware incorporation (indicator)	0.73	0.86	0.76	1.13	1.13
Number of acquisitions	242.62	260.02	262.63	1.38	0.45
Underwriter rank	7.37	8.04	8.15	6.40***	4.56***
Customer-Supplier relationships					
Large customer (indicator)	0.51	0.65	0.63	3.56***	3.54***
Dependent supplier (indicator)	0.03	0.03	0.06	2.04**	2.03**
Strategic alliance (indicator)	0.20	0.31	0.34	4.46***	4.42***

Table A.33.
Descriptive statistics for firms partitioned by the presence of a large customer or strategic alliance

This table reports descriptive statistics for subsamples partitioned by the presence of a large customer (Panel A) or a strategic alliance (Panel B). The sample consists of 1,219 IPOs reported in the Securities Data Corporation (SDC) New Issues database from 1997-2005. All REITs, unit offerings, closed end funds, ADRs, firms not covered by CRSP, firms that belong to either the financial services or utilities industries, and IPOs with an offer price below $5 are excluded from the sample. We use the COMPUSTAT Customer Segment database to identify whether the IPO firms have large customers. Variables are defined in the Appendix to the paper.

Panel A: Number of takeover defenses partitioned by the presence of a large customer				
	IPO firms with no large customers (N=487)	IIPO firms with large customers (N=732)	Test of Difference	
	Mean	Mean	t-stat	Mann-Whitney z-test
IPO firm CEO characteristics				
CEO compensation ($ thousands)	494.37	386.51	1.63*	0.67
CEO tenure (years)	6.00	5.80	0.56	0.99
CEO age (years)	47.54	47.28	0.53	0.64
IPO firm characteristics				
Inside ownership	0.59	0.58	0.74	0.82
Venture capital backed (indicator)	0.50	0.53	0.85	0.85
Board independence	0.39	0.38	0.95	0.53
Board size	11.73	11.66	0.34	0.54
Dual CEO/chair (indicator)	0.56	0.57	0.34	0.34
Total assets ($ millions)	537.77	258.47	2.54**	0.58
Leverage	0.36	0.37	0.81	0.93
Market capitalization ($ millions)	651.75	755.94	1.06	1.47
Sales ($ millions)	119.52	113.96	0.97	0.61
State takeover defenses (indicator)	0.95	0.94	0.35	0.35
Delaware incorporation (indicator)	0.78	0.78	0.19	0.19
Number of acquisitions	211.40	284.25	6.34***	5.86***
Underwriter rank	7.83	7.90	0.68	0.09
Takeover Provisions				
FK-Index	3.05	3.24	2.33**	2.87***
G-index	9.27	9.81	3.71***	3.43***
E-index	1.42	1.56	2.10**	2.35**

Panel B: Number of takeover defenses partitioned by the presence of a strategic alliance				
	IPO firms with no strategic alliance (N=865)	IPO firms with strategic alliance (N=354)	Test of Difference	
	Mean	Mean	t-stat	Mann-Whitney z-test
IPO firm CEO characteristics				
CEO compensation ($ thousands)	494.37	386.51	1.63*	0.67
CEO tenure (years)	6.00	5.80	0.56	0.99
CEO age (years)	47.54	47.28	0.53	0.64
IPO firm characteristics				
Inside ownership	0.59	0.58	0.74	0.82
Venture capital backed (indicator)	0.50	0.53	0.85	0.85
Board independence	0.39	0.38	0.95	0.53
Board size	11.73	11.66	0.34	0.54
Dual CEO/chair (indicator)	0.56	0.57	0.34	0.34
Total assets ($ millions)	537.77	258.47	2.54**	0.58
Leverage	0.36	0.37	0.81	0.93
Market capitalization ($ millions)	651.75	755.94	1.06	1.47
Sales ($ millions)	119.52	113.96	0.97	0.61
State takeover defenses (indicator)	0.95	0.94	0.35	0.35
Delaware incorporation (indicator)	0.78	0.78	0.19	0.19
Number of acquisitions	211.40	284.25	6.34***	5.86***
Underwriter rank	7.83	7.90	0.68	0.09
Takeover Provisions				
FK-Index	3.05	3.24	2.33**	2.87***
G-index	9.27	9.81	3.71***	3.43***
E-index	1.42	1.56	2.10**	2.35**

Table A.34.
Acquisition frequency and IPO firm takeover defenses

This table reports on the fraction of IPO firms that are acquired within three years of their IPOs, partitioned by the number of takeover defenses at the time of the IPO. The sample consists of 1,219 IPOs reported in the Securities Data Corporation (SDC) New Issues database from 1997-2005. All REITs, unit offerings, closed end funds, ADRs, firms not covered by CRSP, firms that belong to either the financial services or utilities industries, and IPOs with an offer price below $5 are excluded from the sample.

Total sample of IPO firm acquisition rate for firms by number of takeover defenses (N=1,219)					
	Fewer than three takeover defenses (a)	Exactly three takeover defenses	More than three takeover Defenses (b)	Test of Difference b-a	
	Mean	Mean	Mean	t-statistic	Mann-Whitney z-test
IPO firms taken over					
Number of firms taken over	103	100	126		
Total number of firms	384	371	464		
Percent of firms taken over	26.8%	27.0%	27.2%	0.11	0.11

Table A.35
Univariate comparisons of IPO firm valuation using equity value in place of firm value

This table replicates Panels A and B of Table 8 in the paper using offer price/EBITDA in place of Firm value/EBITDA in Panel A, and offer price/Sales in place of Firm value/Sales in Panel B. The table reports mean and median ratios of the IPO firm's relative valuation. In Panel A, relative valuation is calculated as the IPO firm's offer price times shares outstanding divided by EBITDA, and then divided by the ratio of market capitalization to EBITDA for the matched control firm. In Panel B, relative valuation is calculated as the IPO firm's offer price times shares outstanding divided by sales, and then divided by the ratio of market capitalization to sales for the matched control firm. The matched firms are selected by sorting the Fama and French (1997) industry into three portfolios based on sales in the year before the IPO. Each of these portfolios is then sorted into three additional portfolios based on EBITDA/sales, producing a matrix of 3x3 portfolios for each industry. Then, within each portfolio, the firm with sales closest to the IPO firm is selected as the matched firm. A large customer is defined as a customer whose sales account for more than 10% of the IPO firm's total sales. ***, **, and * indicate significance at the 1%, 5%, and 10% levels.

Panel A: IPO firm offer value/matching firm value (using EBITDA) partitioned by the number of takeover defenses and by large custome

Number of IPO firm takeover defenses	Total sample (N=1,219)			IPO firms without a large customer (N=487)			IPO firms with a large customer (N=732)		
	N	Mean	Median	N	Mean	Median	N	Mean	Median
< 3 takeover defenses (a)	384	10.55	1.71	187	15.09	1.66	197	6.25	1.78
3 takeover defenses	371	23.31	2.87	130	16.04	2.72	241	27.22	3.02
> 3 takeover defenses (b)	464	21.41	2.59	170	17.61	1.96	294	23.60	2.98
Difference (b – a) using *t*-test / Mann-Whitney (p-value)		1.91* (0.06)	2.62** (0.01)		0.27 (0.79)	0.23 (0.82)		2.40** (0.02)	3.00*** (0.00)

Panel B: IPO firm offer value/matching firm value (using sales) partitioned by the number of takeover defenses and by large customer

Number of IPO firm takeover defenses	Total sample (N=1,219)			IPO firms without a large customer (N=487)			IPO firms with a large customer (N=732)		
	N	Mean	Median	N	Mean	Median	N	Mean	Median
< 3 takeover defenses (a)	384	37.72	1.81	187	58.94	1.59	197	17.58	2.03
3 takeover defenses	371	27.25	3.29	130	24.10	2.91	241	28.70	3.54
> 3 takeover defenses (b)	464	32.61	2.93	170	42.31	2.61	294	27.01	3.00
Difference (b – a) using *t*-test / Mann-Whitney (p-value)		0.26 (0.80)	2.80** (0.01)		0.39 (0.70)	1.34 (0.18)		0.67 (0.52)	2.38** (0.02)

Table A.36.
IPO valuation, takeover defenses, and sales growth

This table reports on an extension of Table 9 in the paper by including additional controls for the IPO firm's sales growth. The dependent variable is the natural log of the IPO firm's relative valuation. The sample consists of 1,219 IPOs reported in the Securities Data Corporation (SDC) New Issues database from 1997-2005. All REITs, unit offerings, closed end funds, ADRs, firms not covered by CRSP, firms that belong to either the financial services or utilities industries, and IPOs with an stock price below $5 are excluded from the sample. Sales growth is measured from the year of the IPO through years 1-4 after the IPO. Control variables include IPO firm underwriter rank, log(IPO proceeds), an indicator taking a value of one if the IPO is venture backed, the percent of the shares that are primary shares, IPO firm leverage, and IPO firm R&D/assets. Standard errors clustered by industry are reported below the regression coefficients, and ***, **, and * indicate significance at the 1%, 5%, and 10% levels.

Panel A. IPO firm ex post growth in revenue

	Median
Growth in revenue:	
Growth to year +1	28.32%
Growth to year +2	51.53%
Growth to year +3	69.63%
Growth to year +4	75.47%

Panel B. Multivariate regression IPO firm valuation controlling for ex post growth in revenue

	(1)	(2)	(3)	(4)
Takeover defense measures:				
FK-index	0.089***	0.087***	0.088***	0.086***
	(0.027)	(0.029)	(0.029)	(0.029)
Growth to year +1	0.086***			
	(0.012)			
Growth to year +2		0.002		
		(0.002)		
Growth to year +3			0.004	
			(0.004)	
Growth to year +4				0.002
				(0.002)
Missing growth (indicator)	-0.014	0.134	0.134	0.145*
	(0.230)	(0.115)	(0.096)	(0.082)
Control Variables	Yes	Yes	Yes	Yes
Year indicators	Yes	Yes	Yes	Yes
Industry indicators	Yes	Yes	Yes	Yes
Sample size	1,219	1,219	1,219	1,219
Adjusted R^2	0.20	0.19	0.19	0.19

Table A.37.
IPO valuation for clients of key law firms

The dependent variable is the natural log of the IPO firm's relative valuation. This table reports on an extension of Table 9 in the paper by including only observations from IPO firms that use one of the two most popular law firms in our sample, Wilson Sonsini and Brobeck, Phleger & Harrison. Together, these two firms advise 153 of the IPO firms in our sample; 103 use Wilson Sonsini and 50 use Brobeck, Phleger & Harrison. These 153 cases are drawn from the overall sample consisting of 1,219 IPOs reported in the Securities Data Corporation (SDC) New Issues database from 1997-2005. All REITs, unit offerings, closed end funds, ADRs, firms not covered by CRSP, firms that belong to either the financial services or utilities industries, and IPOs with an offer price below $5 are excluded from the sample. Control variables include IPO firm underwriter rank, log(IPO proceeds), an indicator taking a value of one if the IPO is venture backed, the percent of the shares that are primary shares, IPO firm leverage, and IPO firm R&D/assets. Standard errors clustered by industry are reported below the regression coefficients, and ***, **, and * indicate significance at the 1%, 5%, and 10% levels.

Multivariate regression IPO firm valuation Wilson Sonsini and Brobeck Phleger & Harrison IPOs				
	Wilson Sonsini IPOs only	Wilson Sonsini IPOs only	Wilson Sonsini and Brobeck Phleger & Harrison IPOs only	Wilson Sonsini and Brobeck Phleger & Harrison IPOs only
Takeover defense measures:				
FK-index	0.368***	0.292***	0.257***	0.278***
	(0.089)	(0.118)	(0.067)	(0.095)
Control Variables	No	Yes	Yes	Yes
Year indicators	No	No	No	Yes
Industry indicators	No	No	No	Yes
Sample size	103	103	153	153
Adjusted R^2	0.03	0.07	0.04	0.07

Table A.38.
IPO valuation with endogenous large customers

This table reports the results from two two-stage least squares models of IPO firm value that treat *Large customer* and its interaction with the number of takeover defenses as endogenous. Model 1 reports the second stage regression that includes the instrumented value for the interaction of *Large customer* and the number of takeover defenses, using law firm indicator variables, *Law firm gaffe*, and *Law firm acquisition experience* as instruments. Model 2 reports the second stage regression from a model that also includes the instrumented value for *Large customer*, using as an instrument an indicator variable that is set equal to one if the firm is in an industry with above the median number of firms having a large customer (excluding the large customer itself). Standard errors clustered by industry are reported below the regression coefficients, and ***, **, and * indicate significance at the 1%, 5%, and 10% levels.

	Second Stage Dependent variable = IPO firm valuation (1)	Second Stage Dependent variable = IPO firm valuation (2)
Instrumental variables for number of ATPs		
Instrumented number of takeover defenses	0.058	0.058
	(0.067)	(0.060)
Instrumented (Large customer x number of takeover defenses)	0.151*	0.151**
	(0.081)	(0.076)
Instrumented large customer		-0.223
		(0.279)
Control variables for IPO firm value:		
Log (IPO proceeds)	0.716***	0.716***
	(0.095)	(0.095)
Venture capital backed (indicator)	0.492***	0.492***
	(0.115)	(0.116)
Fraction sold	-0.684***	-0.684***
	(0.100)	(0.100)
Leverage	-0.576***	-0.576***
	(0.074)	(0.078)
R&D/assets	0.136***	0.136***
	(0.042)	(0.041)
Underwriter rank	-0.056**	-0.056**
	(0.028)	(0.028)
Controls for the number of takeover defenses		
Log (1+CEO salary)	-0.057***	-0.057***
	(0.013)	(0.013)
CEO tenure (years)	-0.023***	-0.023***
	(0.006)	(0.006)
CEO age (years)	-0.004	-0.004
	(0.006)	(0.006)
Inside Ownership	0.117	0.117
	(0.122)	(0.122)
Development firm (indicator)	0.451	0.451
	(0.307)	(0.331)
Board independence	-0.070	-0.070
	(0.262)	(0.261)
Board size	0.009	0.009
	(0.014)	(0.014)
Dual CEO / chair (indicator)	0.038	0.039
	(0.116)	(0.113)
Log (total assets)	-0.395***	-0.395***
	(0.066)	(0.065)
State ATP Law (indicator)	-0.136	-0.136
	(0.191)	(0.194)
Delaware Incorporation (indicator)	-0.064	-0.064
	(0.105)	(0.105)
Number acquisitions (hundreds)	0.001***	0.001***
	(0.000)	(0.000)
Large customer (indicator)	-0.222	
	(0.247)	
Year indicators	Yes	Yes
Industry indicators	Yes	Yes
Sample size	1,219	1,219
Adjusted R^2	0.23	0.20

Table A.39.
Replication tests using a binary measure of takeover defenses

This table summarizes the results of tests in which the takeover defense index is replaced with a binary variable, *Above median number of defenses*, that equals zero when the firm has three or fewer takeover defenses, and equals one when the firm has more than three defenses. The defenses are measured using the Field-Karpoff (2002) index of takeover defenses. Panel A reports on OLS regressions in which *Above median number of defenses* is the dependent variable. (Logistic regressions yield similar results.) Panel B reports on the determinants of the business relationship duration between the IPO firm and its large customer. Panel C reports on the relation between the IPO firm's use of takeover defenses and the spillover effect on the large customer's share price. And Panel D reports on the relation between the IPO firm's relative valuation and its use of takeover defenses. ***, **, and * indicate significance at the 1%, 5%, and 10% levels.

Panel A: Dependent variable = *Above median number of defenses*			
	(1)	(2)	(3)
Large customer (indicator)	0.078***		
	(0.031)		
Dependent supplier (indicator)		0.150**	
		(0.069)	
Strategic alliance (indicator)			0.092***
			(0.033)
Control variables	Yes	Yes	Yes
Year indicators	Yes	Yes	Yes
Industry indicators	Yes	Yes	Yes
Sample size	1,219	1,219	1,219
R^2	0.04	0.03	0.04

Panel B: Dependent variable = Relationship duration	
Above median number of defenses (indicator)	0.953***
	(0.289)
Control variables	Yes
Year indicators	Yes
Industry indicators	Yes
Sample size	209
R^2	0.25

Panel C: Dependent variable = Large customer announcement day return	
Above median number of defenses (indicator)	5.749***
	(1.292)
Control variables	Yes
Year indicators	Yes
Industry indicators	Yes
Sample size	209
R^2	0.01

Panel D: Dependent variable = Relative firm valuation	
Above median number of defenses (indicator)	0.107
	(0.077)
Control variables	Yes
Year indicators	Yes
Industry indicators	Yes
Sample size	1,219
R^2	0.23

Table A.40.
Comparisons to the Field and Karpoff (2002) results on the determinants of IPO firms' takeover defenses

This table reports the results of a Poisson maximum-likelihood model (Panel A) and OLS regression model (Panel B) in which the dependent variable is the number of takeover defenses as measured by the Field-Karpoff (2002) index. The regressors are defined in the Appendix to the paper. The sample consists of 1,219 IPOs reported in the Securities Data Corporation (SDC) New Issues database between 1997 and 2005. The regressions include dummy variables for each year and Fama and French (1997) industry as reported. Standard errors clustered by industry are reported below the regression coefficients. ***, **, and * denote two-tailed significance levels of the parameter estimates at the 0.01, 0.05, and 0.10 levels.

Panel A. Poisson regressions

	(1) All firms	(2) Pre-1999 firms	(3) All firms	(4) All firms	(5) All firms
Measure of appropriable quasi-rent:					
Large customer (indicator)			0.077***		0.099***
			(0.028)		(0.026)
Control Variables:					
Log(1+CEOsalary)	0.011***	0.026***	0.010**	0.010**	0.010**
	(0.005)	(0.008)	(0.005)	(0.005)	(0.005)
CEO tenure (years)	0.001	0.000	0.001	0.001	0.001
	(0.002)	(0.004)	(0.003)	(0.002)	(0.002)
CEO age (years)	-0.001	-0.006**	-0.001	-0.001	0.000
	(0.001)	(0.003)	(0.001)	(0.001)	(0.001)
Inside ownership	-0.047	-0.072	-0.043	-0.056*	-0.051*
	(0.032)	(0.074)	(0.032)	(0.029)	(0.029)
Venture capital backed (indicator)	0.094**	0.095**	0.093***	0.085***	0.087***
	(0.028)	(0.039)	(0.028)	(0.025)	(0.025)
Development firm (indicator)	-0.032	-0.122	-0.062	-0.035	-0.064
	(0.063)	(0.125)	(0.063)	(0.068)	(0.067)
Board independence	0.085	0.097	0.088	0.100	0.104
	(0.120)	(0.162)	(0.124)	(0.112)	(0.116)
Board size	0.015**	0.013	0.017**	0.017**	0.018**
	(0.007)	(0.012)	(0.007)	(0.007)	(0.007)
Dual CEO/chair	0.035	0.140**	0.034	0.030	0.025
	(0.027)	(0.066)	(0.027)	(0.031)	(0.031)
Log (total assets)	0.050**	0.084***	0.051***	0.051***	0.052***
	(0.011)	(0.023)	(0.011)	(0.012)	(0.011)
Leverage	-0.039	-0.150***	-0.044	-0.032	-0.040
	(0.043)	(0.052)	(0.042)	(0.042)	(0.041)
State antitakeover law (indicator)	0.099	0.238**	0.102	0.099	0.094
	(0.081)	(0.113)	(0.084)	(0.080)	(0.082)
Delaware incorporation (indicator)	-0.040	-0.114*	-0.041	-0.050	-0.047
	(0.030)	(0.068)	(0.029)	(0.031)	(0.032)
Year indicators	Yes	Yes	Yes	Yes	Yes
Industry indicators	No	No	No	Yes	Yes
Sample size	1,219	417	1,219	1,219	1,219
Log pseudolikelihood	-2171.223	-749.778	-2168.658	-2152.605	-2148.882

Panel B. OLS regressions

	(1) All firms	(2) Pre-1999 firms	(3) All firms	(4) All firms	(5) All firms
Measure of appropriable quasi-rent:					
Large customer (indicator)			0.237***		0.305***
			(0.087)		(0.082)
Control Variables:					
Log(1+CEOsalary)	0.032**	0.071***	0.031**	0.031*	0.030**
	(0.015)	(0.020)	(0.015)	(0.015)	(0.015)
CEO tenure (years)	0.004	-0.001	0.004	0.004	0.004
	(0.008)	(0.012)	(0.008)	(0.008)	(0.009)
CEO age (years)	-0.003	-0.018**	-0.003	-0.001	-0.001
	(0.004)	(0.009)	(0.004)	(0.004)	(0.004)
Inside ownership	-0.151	-0.228	-0.137	-0.175*	-0.158
	(0.102)	(0.222)	(0.104)	(0.096)	(0.096)
Venture capital backed (indicator)	0.288***	0.268**	0.285***	0.264***	0.267***
	(0.086)	(0.114)	(0.087)	(0.080)	(0.080)
Development firm (indicator)	-0.106	-0.340	-0.199	-0.108	-0.199
	(0.199)	(0.299)	(0.200)	(0.218)	(0.218)
Board independence	0.290	0.294	0.295	0.346	0.350
	(0.369)	(0.486)	(0.381)	(0.356)	(0.369)
Board size	0.051**	0.042	0.054**	0.057**	0.059**
	(0.024)	(0.034)	(0.024)	(0.025)	(0.025)
Dual CEO/chair	0.107	0.394**	0.103	0.095	0.083
	(0.086)	(0.180)	(0.084)	(0.100)	(0.100)
Log (total assets)	0.158**	0.237***	0.159***	0.158***	0.160***
	(0.036)	(0.069)	(0.036)	(0.037)	(0.036)
Leverage	-0.121	-0.414**	-0.134	-0.100	-0.123
	(0.133)	(0.153)	(0.132)	(0.133)	(0.132)
State antitakeover law (indicator)	0.288	0.629**	0.295	0.290	0.281
	(0.232)	(0.294)	(0.240)	(0.238)	(0.246)
Delaware incorporation (indicator)	-0.128	-0.340	-0.130	-0.152	-0.144
	(0.094)	(0.206)	(0.093)	(0.101)	(0.102)
Year indicators	Yes	Yes	Yes	Yes	Yes
Industry indicators	No	No	No	Yes	Yes
Sample size	1,219	417	1,219	1,219	1,219
R^2	7.45	12.02	8.08	12.13	13.07