The Paradox of Innovation Non-Disclosure: Evidence from Licensing Contracts

Online Appendix

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IA.1 Examples of Redacted Clauses

In this appendix, we provide examples of redacted passages from licensing contracts assigned into four categories (IP, Product, Payment, Other) through our classification exercise. First, the following table of patents being licensed under the agreement in question serves as an example of a contract clause that we classified as an "IP" redaction. Redacted portions are indicated by hand-drawn markings.

Exhibit 1

Patent/ Application #	Title of Patent/Application	Date Filed	Inventors	Status
UTSWMC PATENTS AND PATENT APPLICATIONS FOR VASCULAR TARGETING AGENTS				
United States Cases				
4,880,935	"Heterobifunctional Linking Agents Derived from N-Succinimido-Dithio-Alpha Methyl-Methylene-Benzoates"	11/14/89	Philip Thorpe	Issued 11-14-89
5,338,542	"Disulfide Linked Immunotoxins"	8/16/94	Philip Thorpe	Issued 8-16-94
07/846,349 (UTSD:279)	"Methods and Compositions for Targeting the Vasculature of Solid Tumors"	3/5/92	Philip Thorpe and Francis Burrows	Abandoned
6,004,554 UTSD:344 Div of 279	"Methods for Targeting the Vasculature of Solid Tumors"	9/6/94	Philip Thorpe and Francis Burrows	Issued 12-21-99
5,855,866 (UTSD:393)	"Methods For Treating the Vasculature of Solid Tumors"	3/2/94	Philip Thorpe and Francis Burrows	Issued 1-5-99
5,965,132 (UTSD 430) CIP of 393	"Methods for Targeting the Vasculature of Solid Tumors"	10/12/99	Philip Thorpe and Francis Burrows	Issued 10-12-99
09/357,277 (UTSD 430-001) CIP of 393 + 430	"Diagnostic Methods for Targeting the Vasculature of Solid Tumors"	12/8/98	Philip Thorpe and Francis Burrows	Pending
5,776,427 (UTSD:451)	"Methods for Targeting the Vasculature of Solid Tumors"	6/1/95	Philip Thorpe and Francis Burrows	Issued 7-7-98
5,863,538 UTSD:452	"Compositions for Targeting the Vasculature of Solid Tumors"	6/1/95	Philip Thorpe and Francis Burrows	Issued 1-26-99
5,660,827 (UTSD:453)	"Antibodies that Bind to Endoglin"	6/1/95	Philip Thorpe and Francis Burrows	Issued 8-26-97

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Confidential Treatment

Second, the following terms describing the intended downstream product-market applications of the licensee serve as an example of a contract clause that we classified as a "Product" redaction. Once again, redacted portions are indicated by hand-drawn markings.

A. TANOX intends to initially pursue development of humanized antibodies against IgE, but may discontinue such development and pursue development of humanized antibodies directed against the CD40 antigen or another Substitute Antigen (defined below)

B. TANOX desires to license certain patents owned or controlled by PDL related to humanized antibodies directed against either IgE or against the Substitute Antigen, and

Third, the following terms laying out details of the license fee and royalty to be paid by the licensee to the licensor serve as an example of a contract clause that we classified as a "Payment" redaction. As before, redacted portions are indicated by hand-drawn markings.

3.01 Payments. In consideration for the license granted by PDL under Article 2 of this Agreement TANOX shall pay to PDL a nonrefundable signing and licensing fee within fifteen (15) days of the Effective Date in the sum of One Million Five Hundred Thousand United States Dollars (US$1,500,000).

3.02 Royalties to PDL. Subject to reduction for any offset as provided in Section 3.05, or withholding under Section 3.09(b), and in further consideration of the rights and licenses granted under Article 2, TANOX shall pay to PDL a royalty of Three Percent (3%) of the Net Sales of all Licensed Products sold by TANOX or its Affiliates or sublicensees in each country until the last date on which there is a Valid Claim that, but for a license granted to TANOX under this Agreement, would be infringed by the making, using, having made or sale of that Licensed Product in such country or by the manufacture of Licensed Product in the country of manufacture.

Finally, the following extract laying out termination conditions serves as an example of a contract clause that we classified as an "Other" redaction. The redaction is indicated by hand.

2.5 Term of the Research Program. Work under the Research Program will commence as of the Effective Date and, unless terminated earlier by either party pursuant to the terms of this Agreement or extended by mutual agreement of the parties, will terminate upon expiration of the Research Term. Upon the second anniversary of the Effective Date or at any time thereafter, the Research Term may be terminated by Organon by providing six months' prior written notice to Gene Logic. Upon early termination by Organon of the Research Term pursuant to the preceding sentence, any licenses granted to Gene Logic pursuant to Section 5.7 shall remain in full force and effect.

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IA.2 Additional Figures and Tables

IA.2.1 EDGAR Log

In Appendix Table IA.5, we buttress our analysis with data from the EDGAR log. We use the MaxMind database to infer the ownership of IP addresses, following Crane et al. (2023). For each filing, we compute the amount of EDGAR searches about the firm in the days $t-35$ to $t-5$ prior to the filing. We deflate this reading either by (1) the total reading about the company, or (2) the total assets of the firm, to differentially account for the size and general newsworthiness of the firm. Columns (1) through (4) focus on the redaction of IP terms using different versions of the deflator and controls. Our analysis suggests that firms whose filings are relatively more likely to be read by institutional investors (as opposed to other parties, including competitor firms) are less likely to redact (i.e., they disclose more). A second, more robust finding emerges: readership from *competitors* seems to drive redaction decisions. Redaction of payment terms and product terms is not driven by competitors' reading. This suggests that product market competition uniquely drives the redaction of IP, and defending from competition and expropriation of IP is a key motivator behind the decision to redact.

IA.2.2 Past Redactions and Institutional Ownership

Our next set of tests relate firms' decisions to redact IP information to the level of institutional ownership in their shareholder bases and their prior redaction frequency. The logic underlying these tests is to verify the conjecture that institutional ownership and past redaction tendency serve as constraints on a firm's marginal redaction decision. We estimate a variant of Eq. (2) in which the dependent variable is an indicator for whether a given contract contains IP redactions (*Redact IP*) and the key independent variables of interest are *IO*, the fraction of a firm's total shares outstanding owned by institutions (defined as entities filing 13-F disclosures with the SEC) and *Cumulative IP*, the cumulative number of past IP redactions made by the filing firm in licensing agreements since the beginning of our sample period.

The results are reported in columns (1) through (3) of Table IA.13. Column (1) relates firms' past redaction frequency to their marginal IP redaction decisions. The purpose of this specification is to analyze whether firms lose their ability to credibly signal high-value IP through redaction if they have frequently redacted in the past. Prior redaction tendency will affect the credibility of a firm's marginal redaction if investors believe that the supply of high-value IP a given firm can produce is finite. If investors observe the same firm repeatedly redacting, their subjective likelihood of the marginal redacted IP being truly valuable would decrease, and the likelihood that the firm is "crying wolf" would increase. Alternatively, a prior tendency to redact IP (accompanied by subsequently increased future innovation) could improve the credibility of

a firm's marginal IP redaction. Consistent with the former interpretation, the coefficient estimate on the prior number of past IP redactions in licensing agreements (*Cumulative IP*) is negative and significant. This suggests that a greater number of past redactions constrains firms' ability to redact at the margin. It points to concavity in the ability of firms to credibly signal IP quality through non-disclosure, suggesting firms cannot indiscriminately "redact IP forever."

In column (2), we turn to the link between the share of firms' total float owned by institutional investors and firms' marginal propensity to redact IP-related information from their material licensing agreement filings. The estimates point to a negative and significant within-firm relationship—firms are less likely to redact specific clauses containing information on their IP in their filings of material IP licensing contracts when institutions make up a greater fraction of their ownership base. This negative association is consistent with institutional owners demanding more disclosure from firms (Boone and White (2015)) and provides evidence for the trade-off underlying firms' redaction decisions—that in doing so, firms risk acting against the preferences of their institutional owners.

In column (3) of Table IA.13, we consider the interactive relationship between institutional ownership and prior redaction tendency and firms' marginal redactions. The interaction term between *Cumulative IP* and *IO* is negative and significant. These results are obtained in the presence of firm fixed effects and simultaneously controlling for prior redactions of other clauses (payment- and product-related). They point to an amplification role—firms are particularly less likely to redact IP information in the marginal licensing deal when they have a high level of institutional ownership and have redacted such information more frequently in the past. In other words, the constraint placed by institutional owners on their portfolio firms' IP redaction decisions binds the most when these signals are likely to be seen as less credible.

In our final set of tests, we examine how institutional shareholder heterogeneity influences the relationship between overall levels of institutional ownership, prior redaction frequency, and firms' marginal IP redaction decisions. To reconcile the potential contradictions between findings that investors support innovation while demanding disclosure, we further decompose investors into those who may be relatively accommodating to innovation versus those who may, relatively speaking, prefer disclosure. We define "innovation-oriented investors" as those in the top 30% of investors by shares of their portfolio holdings in patenting firms. We further assess whether the role of institutional owners is causal by studying exogenous fluctuations in institutional ownership attention. We adapt the strategy proposed by Kempf, Manconi and Spalt (2017) which defines institutional investors for a given firm as distracted when their portfolio stocks in other industries experience abnormal returns. In doing so, we uncover the unique role played by innovation-oriented institutional investors in supporting firms' strategic non-disclosure decisions. For each investor, we calculate the percentage of their portfolio (value-

weighted) invested in companies that have at least one patent in the past decade. We classify the top 30% as those interested in innovation and classify the bottom 30% as "other" institutions.[37]

Column (4) of Table IA.13 repeats the specification in column (2), considering as the main explanatory variables the decomposed institutional ownership shares. Firms with a greater fraction of both innovation-oriented institutional owners and other institutional owners are less likely to redact IP information in their marginal licensing contract filing, with innovation-focused institutional owners exerting a stronger negative influence on firms' tendency to conceal IP. Column (5) contains a modification of the specification in column (3), interacting the decomposed institutional ownership shares with prior redaction frequency. The interaction term between IO_{Innov} and *Cumulative IP* is positive and statistically significant, while the interaction term between IO_{Other} and *Cumulative IP* is negative and statistically significant. The constraint identified in column (3) thus appears to be largely enforced by non-innovation-focused institutional investors. In fact, the presence of high levels of innovation-focused institutional ownership seems to be associated with a greater likelihood of firms redacting IP information in their marginal licensing contract filing when they have done so more frequently in the past. Taken together, the coefficients in column (5) suggest that the type of institutional owner that supports IP non-disclosure varies based on firms' prior redaction frequency—firms are more likely to redact IP in the presence of higher levels of non-innovation-focused investor ownership when they have infrequently redacted in the past, while firms with a greater number of past IP redactions are more likely to conceal IP information in their marginal filing when they have more innovation-focused institutional investors in their ownership base. The results provide novel insights on investor heterogeneity along the margin of "innovation focus" being differentially associated with firms' innovation non-disclosure decisions.

IA.2.3 Institutional Investor Distraction

We next investigate how institutional investor attention modulates the positive capital market reaction to firms' decisions to redact IP-related information in their licensing contracts. The results in the prior section suggest that institutional investors (as a whole) have a strong preference for disclosure, and an increased presence of institutional investors in a firm's ownership base is associated with a lower tendency to redact IP information. They also suggest an important role for innovation-oriented institutional investors (those holding a relatively larger share of patenting firms in their portfolios) in supporting firms' strategic non-disclosure of information related to their innovation. We present evidence that these associations are likely to be causal and elucidate the mechanism (institutional owners' attention) by utilizing the institutional investor distraction measure developed by Kempf et al. (2017).

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[37]This decomposition is similar to the Cao et al. (2023) measure of investor ESG attention.

In Table IA.14, we consider a variant of Eq. (3) in which the variable of interest is the interaction term between the indicator for whether a given contract contains IP redactions (*Redact IP*) and the shareholder distraction measure (*Distraction*) for institutional owners in aggregate, and the decomposed categories of owners (*Distraction$_{Innov}$* and *Distraction$_{Other}$*).

Columns (1) through (4) relate the capital market response to a licensing contract filing event (DGTW characteristic-portfolio-adjusted excess returns in the 21 days post-filing) to firms' decision to redact IP information in the filing, conditioning on aggregate levels of firm institutional ownership, as well as decomposed institutional ownership (innovation-focused ownership and other ownership). Column (1) shows that the positive capital market response to the filing of a contract in which IP is redacted is undone by higher levels of institutional ownership in the filing firm's shareholder base. Thus, a greater presence of institutional investors is associated with a negative returns response to the filing firms' strategic non-disclosure. This reaction is consistent with the negative relationship between institutional ownership and firms' marginal decision to redact IP in their licensing contracts reported in column (2) of Table IA.13. In columns (2) through (4) we include the share of a firm's float owned by innovation-focused institutions and other institutions. The estimates show that the positive capital market reaction to the filing of licensing contracts with redactions (relative to those without) is amplified by a greater presence of innovation-focused owners (who seem to facilitate such non-disclosure). On the other hand, the positive returns response to IP redaction turns negative in the presence of greater levels of other (non-innovation-focused) institutional ownership. This suggests that institutional owners who lack exposure to (and, presumably, expertise in) innovation through their portfolio holdings constrain firms' ability to signal IP quality through strategic non-disclosure ("jam" the signal). Thus, IP redactions become associated with a negative returns response. These results are obtained in the presence of firm fixed effects, exploiting within-firm variation in ownership levels and redaction. This suggests that the results are unlikely to be a byproduct of sorting between firms and institutional owners of the two types.

In columns (5) and (6) we exploit quasi-exogenous variation in institutional investor distraction to provide causal evidence for the associations presented in columns (1) through (4). We do this by exploiting the Kempf et al. (2017) investor distraction measure, which reflects the extent to which a firm's shareholders experience extreme returns among stocks belonging to other industries that they hold in their portfolios, weighted by the shareholding of each investor in the focal company, and the share of the portfolios of each investor allocated to industries experiencing extreme returns. To the extent that distracted institutional investors are less effective in constraining firms' decisions to redact IP-related information, one might expect the "signal jamming" argument laid out above to no longer hold. The estimates in column (6) confirm this intuition. Consistent with distracted non-innovation-focused investors serving as less effec-

tive constraints on firms' IP redaction decisions, the negative modulating role of *IO* is undone when a firm's "other" institutional investors are distracted. When firms are able to redact IP in the presence of distracted non-innovation-oriented institutional investors (who are thus less able to compel disclosure), such redactions are associated with significantly higher returns over the three weeks post-filing. Conversely, when innovation-focused institutional owners are distracted, the positive interactive effect, too, is undone. This suggests that distracted innovation-focused investors are unable to support credible non-disclosure of IP by firms filing material licensing deals. These results obtain within-firm, using the quasi-exogenous distraction measure whose variation is driven by extreme returns among firms in industries differing from the focal filing firm that institutional investors hold in their portfolios, and is thus unlikely to be related to filing firms' redaction decisions.[38]

Taken together, the results in Tables IA.13 and IA.14 provide evidence that, on aggregate, institutional owners impose costs on firms when they redact proprietary IP information in their licensing deals, particularly when firms have redacted extensively in the past. This, in turn, causes the signal conveyed by IP redaction on the value of the underlying IP to be jammed. Decomposing institutional ownership into innovation-focused and "other" owners, we show that innovation-focused investors enable firms' use of strategic non-disclosure as a signal of their underlying IP quality (and thus drive the positive returns response to the filing of licensing agreements with IP redactions) while other investors constrain firms from doing so, compelling disclosure and driving negative returns responses to filings concealing IP-related information.

IA.2.4 Analysts

Analysts serve as information intermediaries in financial markets. One potential concern might be that analysts provide information that drives the positive capital market reaction. In Table IA.15, we examine the role of analyst coverage. We examine (1) the presence of analyst coverage, and (2) the number of analysts covering a particular filing firm. We find no evidence that analyst coverage explains our documented market reactions. For our second measure, the number of analysts, we find that IP redactions are associated with weaker future returns for firms with more analysts. This is opposite to the idea that analysts provide information that capital markets might price. It is also interesting to note that this is directionally similar to our results regarding institutional ownership. Given that institutions may pay for analyst reports, and thus induce analyst coverage, the similarity of results is not surprising.

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[38]That a greater presence of innovation-focused investors leads to depressed capital market responses when these investors are distracted suggests that firm-selection alone cannot explain the responses attributed to innovation-focused investors, as we are comparing outcomes within firms with similar degrees of institutional ownership by innovation-focused investors. In particular, these within-firm comparisons help dispel the alternative explanation that innovation-focused institutional investors are more likely to invest in firms that, ex-ante, have a greater chance of entering into contracts licensing more valuable IP.

IA.2.5 The American Inventors Protection Act

Our sample period includes the passage of the American Inventors Protection Act (AIPA). Under the AIPA, firms' patent applications are revealed within 18 months, whereas previously they were kept secret until granted. It is not obvious how the AIPA may factor into our narrative. Although Hegde and Luo (2017) document that the AIPA leads to firms expeditiously licensing their patents, it is far from clear if these licensing agreements would enter our sample. Patents prematurely filed and licensed may not be material, and therefore excluded from our sample. Second, supposing such agreements entered our sample, it is not clear if firms prefer to redact more or less. On the one hand, the market may anticipate that patents revealed within 18 months have less protection and are therefore less valuable. However, if the licensing agreement took place prematurely, firms may still value concealing the IP even if the patent application is revealed within 18 months.

We examine the effects of the AIPA in Table IA.16. In columns (1) and (2), we find that contracts filed by firms in industries in which patents had a significant delay between filing and grant (firms that are "treated" in studies exploiting the passage of AIPA, e.g., Kim and Valentine (2021)) were less likely to contain IP redactions after the passage of the AIPA. Other specifications, such as defining delay as an indicator variable for industries that are above the median in delay, lead to statistically weaker inferences. Thus, we conclude that there was likely a reduction in non-disclosure of IP by licensing firms after the AIPA, but that reduction is not clearly attributable to the AIPA. Examining market reactions, we find that our results on the positive returns response to IP redaction are robust to controlling for the AIPA.[39] In sum, the evidence suggests that the AIPA had limited effects on redaction and ensuing market reactions.

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[39]Tests in which we interact the relevant treatment and post-period terms with our redaction indicator suggest no obvious post-period differences in market reactions.

Table IA.1: Data Sources and Access Information

This table provides the list of data sources we use, the information we derive from each source, as well as access information. Formal citations for each dataset are provided in the references list of the main paper.

Data Source	Information Derived	Access Method	Year Accessed
RoyaltyStat Licensing Contracts Data	Filing firm identifiers and licensing contract variables	Proprietary (Email subscriptions@royaltystat.com)	2020
Manually Classified Redacted Clauses	Disaggregated redaction variables	Proprietary	2020
Kogan et al. (2017) Patents Data	Public firms' patenting variables	Link	2023
Compustat North America Fundamentals Annual	Firm control variables	WRDS table: comp.funda	2023
CRSP Daily Stock File	Stock returns and liquidity variables	WRDS table: crsp.dsf	2023
CRSP/Compustat Merged Database Linking Table	Linking Compustat to CRSP by mapping gvkey to permno	WRDS table: a_ccm.ccmxpf_linktable	2023
Hoberg-Phillips Data Library	Product market competition variables	Link	2023
EDGAR Log	EDGAR reading variables	Link	2023
Capital IQ Key Developments	Key corporate developments variables	WRDS table: keydev.wrds_keydev	2020
I/B/E/S	Analyst coverage variables	WRDS table: ibes.det_epsus	2023
Thomson Reuters Institutional (13f) Holdings Master File	Institutional ownership variables	WRDS tables: trown.file*	2023
EDGAR Master File	10-K, 10-Q, and other concurrent SEC filings variables	Link	2023
Kempf et al. (2017) Institutional Investor Distraction Data	Institutional investor distraction variables	Link	2023
Kenneth R. French Data Library	Fama and French (1997) industry classification	Link	2023
USPTO Litigation Dataset (2016 Version)	Patent litigation exposure variable	Link	2023
PatentsView	USPC patent classes	Link	2023
WRDS Link Library	Linking I/B/E/S to CRSP by mapping permno to ticker	WRDS table: wrdsapps.link_crsp_ibes	2023
Capital IQ Helper	Linking RoyaltyStat Data to Compustat by mapping CIK to companyid to gvkey	WRDS tables: capiq_helper.*	2023
Compustat Snapshot Names File	Compustat's firm names file that provides point-in-time gvkey to CIK links	WRDS table: compsnapshot.wrds_cs_names	2023

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Table IA.2: Classification of Redacted Clauses

This table reports results from a hand-collected classification exercise for a subset of 64 redacted licensing contracts. We report intensive and extensive margin proportions of whether a given clause was redacted or not across the set of contracts. Extensive margin refers to the overall proportion of contracts in which the term of interest is redacted, regardless of whether such a term is mentioned or not in the contract. Intensive margin refers to the proportion of contracts in which a given term is redacted, conditional on that term being mentioned in the contract.

Proportion of Redacted Clauses		
	Redacted (%)	
	Extensive Margin	Intensive Margin
Contract Term	(1)	(2)
Royalty Rate	98.44%	98.44%
Identity of Patents (Applications)	41.18%	80.95%
Identity of Patents (Grants)	46.51%	74.29%
License Fee	60.00%	73.33%
Identity of Non-Patent IP	55.32%	65.91%
Milestone Payments	55.81%	61.54%
Other Fees	55.81%	60.00%
Identity of Product	38.33%	46.55%
Termination Clauses	39.62%	39.62%
Duration	29.82%	29.82%
Territory of License	11.11%	12.96%
Signatories	6.35%	6.35%

Table IA.3: Redaction Correlation Matrix

This table reports correlation statistics for the redaction measures. The variables are *Redact, Redact IP, Redact Payment,* and *Redact Product.* The unit of observation is a licensing contract. *Redact* is an indicator variable that takes the value of 1 if a given contract contains at least one redaction. *Redact IP* is an indicator variable that takes the value of 1 if a given contract contains at least one intellectual property (IP) clause redaction, and 0 otherwise. *Redact Payment* is an indicator variable that takes the value of 1 if a given contract contains at least one payment clause redaction. *Redact Product* is an indicator variable that takes the value of 1 if a given contract contains at least one product clause redaction.

	Redact	*Redact IP*	*Redact Product*	*Redact Payment*
Redact	1	0.838	0.848	0.983
Redact IP	0.838	1	0.791	0.845
Redact Product	0.848	0.791	1	0.856
Redact Payment	0.983	0.845	0.856	1

Table IA.4: Which Side Files?

This table presents the results of a regression analysis examining the relationship between whether the filer is the licensor and various firm and contract characteristics in a sample of licensing contracts where both counterparties are publicly-traded firms. The dependent variable is an indicator variable that takes the value of 1 when the filing firm is the licensor and 0 when it is the licensee (*Licensor*). The analysis controls for different variables, such as whether the agreement is exclusive (*IsExclusive)*, the licensed patent count (*Patents*), tiered payments (*Tiered*), royalty rate (*Log(Rate)*), and product market fluidity (*Product Market Fluid*). Fixed effects and sampling restrictions are included as indicated. Standard errors are double-clustered by the licensor and licensee firm.

			Licensor		
	(1)	(2)	(3)	(4)	(5)
Log Ratio of Assets (Licensor/Licensee)	−34.028***				
	(1.840)				
Log Ratio of Sales (Licensor/Licensee)		−33.884***	−30.922***	−33.131***	−36.408***
		(1.864)	(2.551)	(4.829)	(5.895)
Exclusive			−1.513	2.122	0.512
			(6.471)	(8.020)	(10.097)
Patents			−1.893	−0.459	−0.144
			(2.005)	(2.676)	(3.132)
Tiered			10.179*	7.120	7.468
			(5.246)	(6.688)	(7.806)
Additional Payments			0.404	−1.531	8.088
			(9.455)	(12.083)	(18.699)
Log(Rate)			−0.260	0.598	2.867
			(3.209)	(4.449)	(5.688)
Product Market Fluid (Licensor)				−3.999	−1.779
				(10.884)	(13.425)
Product Market Fluid (Licensee)				4.494	8.778
				(14.226)	(15.614)
Technology Industry × Year FE			✓	✓	✓
Sample Filter					Redacted
Observations	441	441	441	297	195
R^2	0.475	0.471	0.649	0.714	0.720
Note:					*p<0.1; **p<0.05; ***p<0.01

Table IA.5: Determinants of Redaction and EDGAR Log Reading

This table reports results on the determinants of redaction. The dependent variables are *Redact IP, Redact Payment,* and *Redact Product.* The unit of observation is a licensing contract. All other variables are as previously defined. *EDGAR Investor, EDGAR Competitor,* and *EDGAR Other* are the number of reads of filings by the filing firm by 13-F institutional investors, firms in the same industry as the filing firm, and other firms, divided by total readings or total assets. Fixed effects and controls are included as indicated, and standard errors are dual-clustered by the technology industry and year.

	Redact IP				Redact Payment		Redact Product	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
EDGAR Competitor	0.021**	0.018***	0.029**	0.032**	−0.014**	−0.017	−0.003	−0.002
	(0.009)	(0.004)	(0.011)	(0.013)	(0.005)	(0.012)	(0.005)	(0.007)
EDGAR Investor		0.002		0.019	−0.006	−0.013	0.028*	0.009
		(0.006)		(0.013)	(0.006)	(0.008)	(0.014)	(0.013)
EDGAR Other		−0.010*		−0.023*	0.010	0.013*	−0.011*	−0.005
		(0.005)		(0.011)	(0.006)	(0.007)	(0.005)	(0.008)
Redact Payment	0.759***	0.760***	0.766***	0.767***			0.715***	0.718***
	(0.020)	(0.044)	(0.018)	(0.041)			(0.049)	(0.036)
Redact IP					0.601***	0.607***	0.021	0.031
					(0.038)	(0.043)	(0.041)	(0.042)
Redact Product	0.019	0.015	0.023	0.021	0.399***	0.389***		
	(0.030)	(0.033)	(0.027)	(0.031)	(0.028)	(0.018)		
Deflator	Read	Read	Asset	Asset	Read	Asset	Read	Asset
Firm FE	✓	✓	✓	✓	✓	✓	✓	✓
Industry × Year FE	✓	✓	✓	✓	✓	✓	✓	✓
Firm Controls		✓		✓	✓	✓	✓	✓
Observations	1,458	1,444	1,379	1,365	1,444	1,365	1,444	1,365
R^2	0.942	0.942	0.944	0.945	0.963	0.964	0.923	0.924
Note:							*p<0.1; **p<0.05; ***p<0.01	

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Table IA.6: Redaction and Future Patent Stock Market Value

This table reports results on redaction and future patent stock market value. The dependent variable is $Patents_{t \to t+3}^{TSM}$, which is defined as the natural logarithm of the cumulative stock market value of the filing firm's patents as per Kogan et al. (2017). All other variables are as previously defined. Fixed effects and controls are included as indicated, and standard errors are dual-clustered by the technology industry and year.

| | $Patent_{t+1 \to t+3}^{TSM}$ | | | | | | |
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Redact	0.699***	0.052	−0.081	−0.076			
	(0.137)	(0.052)	(0.089)	(0.105)			
Redact × Licensor			0.227***	0.143			
			(0.061)	(0.100)			
Redact IP					0.520*	−0.210	−0.199*
					(0.270)	(0.144)	(0.111)
Redact Product					−0.210**	0.073	0.091
					(0.086)	(0.131)	(0.101)
Redact Payment					0.630***	0.051	0.051
					(0.117)	(0.095)	(0.104)
Redact IP × Licensor						0.802***	0.692***
						(0.148)	(0.117)
Redact Product × Licensor						−0.555**	−0.627***
						(0.208)	(0.160)
Redact Payment × Licensor						0.037	0.123
						(0.185)	(0.168)
Year FE	✓	✓	✓		✓	✓	
Firm FE		✓	✓	✓		✓	✓
Industry × Year FE				✓			✓
Firm Controls				✓	✓	✓	✓
Observations	4,344	4,344	3,574	3,574	2,922	2,398	2,398
R^2	0.546	0.908	0.914	0.929	0.571	0.935	0.952

Note: *p<0.1; **p<0.05; ***p<0.01

Table IA.7: Intensive Margin of Redaction and Future Returns

This table reports results on the relationship between redaction and future returns. The dependent variable is $r^{DGTW}_{t \to t+21}$, or the filing firm's returns over the time window (in days since filing) indicated in the subscript, adjusted for [Daniel, Grinblatt, Titman and Wermers (1997)](), or DGTW, characteristics-adjusted portfolio returns. The independent variables are *Log Redact IP*, *Log Redact Payment*, and *Log Redact Product* which count the number of redactions in a given licensing contract. The unit of observation is a licensing contract. Fixed effects and controls are included as indicated, and standard errors are dual-clustered by the technology industry and announcement date.

| | $r^{DGTW}_{t \to t+21}$ | | | |
	(1)	(2)	(3)	(4)
Log Redact IP	0.092***	0.124***	0.126***	0.161***
	(0.032)	(0.028)	(0.028)	(0.004)
Log Redact Product			−0.112**	−0.090**
			(0.049)	(0.040)
Log Redact Payment			0.026	0.041***
			(0.017)	(0.013)
Year FE	✓	✓	✓	
Firm FE		✓	✓	✓
Industry × Year FE				✓
Firm Controls	✓	✓	✓	✓
Observations	2,922	2,922	2,922	2,922
R^2	0.102	0.633	0.635	0.762
Note:				*p<0.1; **p<0.05; ***p<0.01

Table IA.8: Redaction, Future Returns, and R&D (pre-2007)

This table reports results on redaction and future returns and R&D. All variables are as previously defined. The sample is restricted to the pre-2007 period. Fixed effects and controls are included as indicated, and standard errors are dual-clustered by the technology industry and year.

| | $r^{DGTW}_{t \to t+21}$ | | | $R\&D_{t+1 \to t+3}$ | |
	(1)	(2)	(3)	(4)	(5)
Redact IP	0.046**	0.069***	0.069***	0.243**	0.233***
	(0.020)	(0.015)	(0.021)	(0.110)	(0.051)
Redact Product	−0.037***	−0.065***	−0.065***	−0.122*	−0.118**
	(0.011)	(0.011)	(0.011)	(0.064)	(0.048)
Redact Payment	0.017	0.003	0.003	0.107	−0.174***
	(0.015)	(0.022)	(0.017)	(0.064)	(0.052)
Firm FE		✓	✓		✓
Industry × Year FE	✓	✓	✓	✓	✓
Firm Controls	✓	✓	✓	✓	✓
Observations	2,271	2,271	2,271	2,152	2,152
R^2	0.309	0.763	0.763	0.422	0.803
Note:					*p<0.1; **p<0.05; ***p<0.01

Table IA.9: Redaction and Future Liquidity

This table reports results on redaction and future liquidity. The dependent variables are $Spread_{t \to t+21}$ and $Spread_{t+7 \to t+21}$, which represent, respectively, the average daily quoted spread for filing firms over the time periods (in days) post-filing indicated in the subscript. All other variables are as previously defined. Fixed effects and controls are included as indicated, and standard errors are dual-clustered by the technology industry and filing date.

	$Spread_{t \to t+21}^{Daily}$ (1)	$Spread_{t+7 \to t+21}^{Daily}$ (2)	$Spread_{t+7 \to t+21}^{Daily}$ (3)	$Spread_{t \to t+21}^{Daily}$ (4)	$Spread_{t \to t+21}^{Daily}$ (5)	$Spread_{t+7 \to t+21}^{Daily}$ (6)	$Spread_{t+7 \to t+21}^{Daily}$ (7)
Redact	−0.002* (0.001)	−0.003** (0.001)	−0.002*** (0.0005)				
Redact IP				−0.002 (0.002)		−0.002 (0.002)	
Redact Product				0.001 (0.002)		0.0004 (0.002)	
Redact Payment				−0.0004 (0.003)		−0.001 (0.003)	
Log Redact IP					−0.010*** (0.002)		−0.011*** (0.002)
Log Redact Product					−0.00002 (0.006)		0.0004 (0.006)
Log Redact Payment					0.0005 (0.003)		0.0005 (0.003)
Firm FE	✓	✓	✓	✓	✓	✓	✓
Industry × Year FE			✓	✓	✓	✓	✓
Firm Controls			✓	✓	✓	✓	✓
Observations	4,427	4,418	2,982	2,914	2,914	2,910	2,910
R²	0.859	0.855	0.940	0.948	0.949	0.947	0.948
Note:						*p<0.1; **p<0.05; ***p<0.01	

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Table IA.10: Redaction and Future Returns Based on Filing Type

This table reports results on the relationship between redaction and future returns. The dependent variable is $r_{t \to t+21}^{DGTW}$ or the filing firm's returns over the time window (in days since filing) indicated in the subscript, adjusted for Daniel, Grinblatt, Titman and Wermers (1997), or DGTW, characteristics-adjusted portfolio returns. The independent variables are *Redact IP, Redact Payment,* and *Redact Product.* The unit of observation is a licensing contract. *Redact IP* is an indicator variable that takes the value of 1 if a given contract contains at least one intellectual property (IP) clause redaction, and 0 otherwise. *Redact Payment* is an indicator variable that takes the value of 1 if a given contract contains at least one payment clause redaction. *Redact Product* is an indicator variable that takes the value of 1 if a given contract contains at least one product clause redaction. Sample restrictions, fixed effects, and controls are included as indicated, and standard errors are dual-clustered by the technology industry and announcement date.

			$r_{t \to t+21}^{DGTW}$		
	(1)	(2)	(3)	(4)	(5)
Redact IP	0.096***	0.066***	0.098***	0.103***	0.050***
	(0.006)	(0.014)	(0.034)	(0.022)	(0.002)
Redact Product	0.0004	−0.129***	−0.131***	−0.046**	−0.006
	(0.010)	(0.018)	(0.034)	(0.021)	(0.004)
Redact Payment	−0.034***	0.054*	0.016	−0.010	−0.046***
	(0.006)	(0.031)	(0.015)	(0.025)	(0.003)
Firm FE	✓	✓	✓	✓	✓
Industry × Year FE	✓	✓	✓	✓	✓
Firm Controls	✓	✓	✓	✓	✓
Sample	10-K	No 10-K	10-Q	No 10-Q	No 10-K or 10-Q
Observations	998	1,953	813	2,055	1,083
R^2	0.937	0.804	0.827	0.857	0.942
Note:					*p<0.1; **p<0.05; ***p<0.01

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Table IA.11: Redaction and Future Returns Controlling for Concurrent Filings

This table reports results on the relationship between redaction and future returns. The dependent variable is $r_{t \to t+21}^{DGTW}$ or the filing firm's returns over the time window (in days since filing) indicated in the subscript, adjusted for Daniel, Grinblatt, Titman and Wermers (1997), or DGTW, characteristics-adjusted portfolio returns. The independent variables are *Redact IP, Redact Payment,* and *Redact Product.* The unit of observation is a licensing contract. *Redact IP* is an indicator variable that takes the value of 1 if a given contract contains at least one intellectual property (IP) clause redaction, and 0 otherwise. *Redact Payment* is an indicator variable that takes the value of 1 if a given contract contains at least one payment clause redaction. *Redact Product* is an indicator variable that takes the value of 1 if a given contract contains at least one product clause redaction. *10-K* is an indicator variable that takes the value of 1 if the given filing is accompanied by a 10-K filing. *10-Q* is an indicator variable that takes the value of 1 if the given filing is accompanied by a 10-Q filing. *# Other* is the logarithm of one plus the number of other filings filed concurrently with the given filing. Fixed effects and controls are included as indicated, and standard errors are dual-clustered by the technology industry and announcement date.

	$r_{t \to t+21}^{DGTW}$			
	(1)	(2)	(3)	(4)
Redact IP	0.073***	0.076***	0.077***	0.101***
	(0.008)	(0.008)	(0.008)	(0.020)
Redact Product	−0.051***	−0.049***	−0.049***	−0.047
	(0.010)	(0.010)	(0.009)	(0.029)
Redact Payment	0.003	−0.003	−0.005	−0.020
	(0.015)	(0.011)	(0.013)	(0.018)
Redact IP × 10-K or 10-Q		−0.240***		
		(0.035)		
Redact Product × 10-K or 10-Q		0.051		
		(0.043)		
Redact Payment × 10-K or 10-Q		0.126***		
		(0.022)		
Redact IP × 10-Q			−0.205***	
			(0.026)	
Redact Product × 10-Q			0.019	
			(0.012)	
Redact Payment × 10-Q			0.146***	
			(0.024)	
Redact IP × # Other				−0.069*
				(0.037)
Redact Product × # Other				−0.013
				(0.043)
Redact Payment × # Other				0.057**
				(0.024)
Firm FE	✓		✓	✓
Industry × Year FE	✓		✓	✓
Firm Controls	✓	✓	✓	✓
Observations	2,868	2,868	2,868	2,868
R^2	0.745	0.742	0.742	0.743
Note:				*p<0.1; **p<0.05; ***p<0.01

Table IA.12: Redaction and Other Corporate Events During Post-Filing Window

This table reports results on redaction and future announcements by the firm in the period following the filing of a licensing agreement. The dependent variables in columns (1) through (4) are indicator variables for the presence of a "key development" in the Capital IQ Key Developments database from day 2 to day 21 following a filing event. *Key Dev* in column (1) refers to a key development of any kind, whereas columns (2) and (3) refer to earnings-related news, product or new client news, and column (4) refers to M&A announcements. Column (5) includes as an additional control the logarithm of one plus the total number of key developments occurring at the filing firm in the same (+2,+21) day post-filing window. All other variables are as defined in prior tables. Fixed effects and controls are included as indicated, and standard errors are dual-clustered by the technology industry and year.

	Key Dev (1)	*Key Dev^{Earnings}* (2)	*Key Dev^{Product}* (3)	*Key Dev$^{M\&A}$* (4)	$r_{t \to t+21}^{DGTW}$ (5)
Redact IP	0.016	−0.027	−0.075**	−0.007	0.056***
	(0.043)	(0.016)	(0.029)	(0.015)	(0.013)
Redact Payment	0.126***	0.016	0.073*	−0.001	0.003
	(0.035)	(0.012)	(0.040)	(0.007)	(0.016)
Redact Product	−0.165***	0.008	−0.035	0.017***	−0.027
	(0.027)	(0.007)	(0.035)	(0.004)	(0.018)
Firm FE	✓	✓	✓	✓	✓
Industry × Year FE	✓	✓	✓	✓	✓
Firm Controls	✓	✓	✓	✓	✓
Key Dev Control					✓
Observations	2,922	2,922	2,922	2,922	2,922
R^2	0.819	0.792	0.759	0.781	0.765
Note:					*p<0.1; **p<0.05; ***p<0.01

Table IA.13: Constraints on IP Redaction: Past Redactions and Institutional Ownership

This table reports results on the determinants of IP redaction conditional on cumulative past redaction activity by the filing firm and overall and disaggregated firm institutional ownership. The dependent variable is *Redact IP*. The unit of observation is a licensing contract. *Redact IP* is an indicator variable that takes the value of 1 if a given contract contains at least one intellectual property (IP) clause redaction, and 0 otherwise. *Redact Payment* is an indicator variable that takes the value of 1 if a given contract contains at least one payment clause redaction. *Redact Product* is an indicator variable that takes the value of 1 if a given contract contains at least one product clause redaction. The *Cumulative* analogues of the redaction dummies represent the natural logarithm of one plus the cumulative number of redactions made by the filing firm since the beginning of our sample period. *IO* is the natural logarithm of the percentage shares owned by 13-F filing instutitions. IO_{Innov} is the natural logarithm of the percentage shares owned by 13-F filing institutions classified as "innovation oriented." Innovation oriented institutions are those in the top three deciles of the annual distribution of 13-F filing institutions ranked by the value-weighted share of portfolio firms that were granted at least one patent in that year. IO_{Other} is the natural logarithm of the percentage shares owned by 13-F filing instutitions classified as "other". Other instutitions are those 13-F filing instutitions in the bottom three deciles of the annual distribution of 13-F filing institutions ranked by the value-weighted share of portfolio firms that were granted at least one patent in that year. Fixed effects and controls are included as indicated, and standard errors are dual-clustered by the technology industry and year.

| | *Redact IP* | | | | |
	(1)	(2)	(3)	(4)	(5)
Cumulative IP	−0.128***		−0.067		−0.083
	(0.043)		(0.049)		(0.051)
IO		−0.112***	0.140		
		(0.036)	(0.088)		
IO_{Innov}				−0.462***	−0.905***
				(0.115)	(0.220)
IO × Cumulative IP			−0.187***		
			(0.027)		
IO_{Innov} × *Cumulative IP*					0.784***
					(0.152)
IO_{Other}				−0.093**	0.226**
				(0.041)	(0.094)
IO_{Other} × *Cumulative IP*					−0.229***
					(0.033)
Redact Payment	0.524***	0.568***	0.501***	0.567***	0.505***
	(0.049)	(0.024)	(0.050)	(0.025)	(0.052)
Redact Product	0.264***	0.163***	0.261***	0.163***	0.260***
	(0.043)	(0.037)	(0.042)	(0.035)	(0.049)
Firm FE	✓	✓	✓	✓	✓
Industry × Year FE	✓	✓	✓	✓	✓
Firm Controls	✓	✓	✓	✓	✓
Observations	1,151	2,640	1,151	2,635	1,147
R^2	0.901	0.902	0.903	0.902	0.904
Note:					*p<0.1; **p<0.05; ***p<0.01

Table IA.14: Redaction, Institutional Owner Distraction, and Future Returns

This table reports results on redaction, institutional ownership distraction, and future returns. The dependent variable is $r^{DGTW}_{t\rightarrow t+21}$. The unit of observation is a licensing contract. All variables are as defined in prior tables. *Distraction* is the shareholder distraction measure of Kempf et al. (2017), and reflects the the extent to which a firm's shareholders experience extreme returns among stocks belonging to other industries that they hold in their portfolios, weighted by the shareholding of each investor in the focal company, and the share of the portfolios of each investor allocated to industries experiencing extreme returns. The distraction measures for "innovation oriented" and "other" institutions are analogously defined. Fixed effects and controls are included as indicated, and standard errors are dual-clustered by the technology industry and announcement date.

	$r^{DGTW}_{t\rightarrow t+21}$					
	(1)	(2)	(3)	(4)	(5)	(6)
IO	−0.059**				0.011	
	(0.028)				(0.033)	
IO_{Other}		−0.029		−0.032		−0.040*
		(0.027)		(0.028)		(0.024)
Distraction					−0.080	
					(0.130)	
Redact Product	−0.046***	−0.049***	−0.057***	−0.050***	−0.040***	−0.034***
	(0.016)	(0.016)	(0.015)	(0.016)	(0.012)	(0.009)
IO_{Innov}			−0.224***	−0.283***		−0.222***
			(0.042)	(0.029)		(0.052)
Redact IP	0.120***	0.120***	0.077***	0.114***	0.132***	0.024
	(0.012)	(0.012)	(0.013)	(0.014)	(0.018)	(0.030)
Redact Payment	−0.001	0.001	0.004	0.004	−0.010	0.003
	(0.026)	(0.025)	(0.023)	(0.026)	(0.025)	(0.010)
Redact IP × IO	−0.099***				−0.054	
	(0.022)				(0.052)	
IO_{other} × Redact IP		−0.105***				
		(0.022)				
$Distraction_{Innov}$						0.571**
						(0.230)
$Distraction_{Other}$						−0.543***
						(0.172)
Redact IP × IO_{Innov}			0.185***	0.225***		0.189***
			(0.049)	(0.044)		(0.067)
Redact IP × IO_{other}				−0.109***		−0.072
				(0.023)		(0.052)
Redact IP × Distraction					−0.316**	
					(0.143)	
Redact IP × $Distraction_{Innov}$						−0.352
						(0.256)
Redact IP × $Distraction_{Other}$						0.848***
						(0.216)
Firm FE	✓	✓	✓	✓	✓	✓
Industry × Year FE	✓	✓	✓	✓	✓	✓
Firm Controls	✓	✓	✓	✓	✓	✓
Observations	2,640	2,635	2,635	2,635	2,181	1,909
R^2	0.746	0.747	0.746	0.747	0.781	0.775

Note: *p<0.1; **p<0.05; ***p<0.01

Table IA.15: Redaction and Analyst Coverage

This table reports results on redaction, analyst coverage, and future returns. The dependent variable is $r_{t \to t+21}^{DGTW}$. *Log Analysts* is the logarithm of one plus the number of analysts covering the filing firm and *Has Analysts* is an indicator variable that takes the value of 1 if the filing firm is covered by at least one analyst (0 otherwise). The unit of observation is a licensing contract. All variables are as defined in prior tables. Fixed effects and controls are included as indicated, and standard errors are dual-clustered by the technology industry and year.

	$r_{t \to t+21}^{DGTW}$		
	(1)	(2)	(3)
Redact IP	0.042*	0.120***	0.040*
	(0.022)	(0.018)	(0.020)
Redact Product	−0.032	−0.014	−0.048
	(0.046)	(0.053)	(0.041)
Redact Payment	−0.074	−0.055	−0.059
	(0.058)	(0.040)	(0.048)
Redact IP × Has Analysts	0.015		0.015
	(0.029)		(0.028)
Redact Product × Has Analysts	−0.004		0.015
	(0.039)		(0.034)
Redact Payment × Has Analysts	0.099*		0.082*
	(0.055)		(0.048)
Redact IP × Log Analysts		−0.037***	
		(0.009)	
Redact Product × Log Analysts		−0.012	
		(0.023)	
Redact Payment × Log Analysts		0.040**	
		(0.016)	
Firm FE	✓	✓	✓
Industry × Year FE	✓	✓	✓
Firm Controls		✓	✓
Observations	3,082	2,922	2,922
R^2	0.754	0.762	0.764
Note:			*p<0.1; **p<0.05; ***p<0.01

Table IA.16: The American Inventors Protection Act

This table reports results on redaction and future returns. The dependent variables are *Redact IP* and $r_{t \to t+21}^{DGTW}$. The unit of observation is a licensing contract. *Delay* is the logarithm of the delay in months between patent filings and grants for each firm's industry (NAICS 4-digit) over the 1996 to 2000 period. *Post* takes the value of one for years 2001 onwards (inclusive) and zero otherwise, while $Post_{t-1}$ takes the value of one for the year 2000 and zero otherwise. All other variables are as defined in prior tables. Crucially, in this sub-sample, the sample period is 1996 to 2005 and the treatment period begins in 2001. Fixed effects and controls are included as indicated, and standard errors are dual-clustered by the technology industry and year.

| | *Redact IP* | | $r_{t \to t+21}^{DGTW}$ | | |
	(1)	(2)	(3)	(4)	(5)
Redact IP			0.057***	0.057***	0.061***
			(0.011)	(0.011)	(0.010)
Redact Product	0.210***	0.210***	−0.044***	−0.044***	−0.044***
	(0.058)	(0.059)	(0.012)	(0.012)	(0.013)
Redact Payment	0.502***	0.501***	−0.005	−0.004	−0.012
	(0.028)	(0.029)	(0.016)	(0.016)	(0.017)
Delay × Post	−0.062**	−0.072**		−0.013	−0.032
	(0.027)	(0.029)		(0.015)	(0.030)
Delay × Pre		−0.025**			−0.050
		(0.010)			(0.036)
Firm FE	✓	✓	✓	✓	✓
Industry × Year FE	✓	✓	✓	✓	✓
Firm Controls	✓	✓	✓	✓	✓
Observations	1,475	1,475	1,475	1,475	1,475
R^2	0.907	0.907	0.724	0.724	0.723

Note:	*p<0.1; **p<0.05; ***p<0.01