Innovation for Innovators: The Financing of Intangibles

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Abstract

This paper examines the characteristics of firms that adopt new financial products and its association with measures of performance. We build a novel firm-level panel dataset and document a positive association between intangible capital and the adoption of new products. We also find that access to external financing through new types of securities is associated with size growth and further investments into intangibles. These findings have important implications for understanding the role that financial innovation can play in meeting the financing needs of firms that rely heavily on intangible capital.

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1 Introduction

In 1998 MediaOne Group raised $1.5 billion by issuing premium income equity securities (PIES), a new type of convertible security. It was one of the largest security offerings that year by a publicly listed firm. The following year, MediaOne issued an additional $1.1 billion in PIES. Despite these successful placements, only a handful of other firms have issued PIES in the subsequent years.

The case of PIES is not unique. There is now a variety of financial products beyond stocks and bonds that firms can utilize to secure funding for their projects. Despite this expansion in the range of financial products available, there is a wide disparity in the utilization of financial innovation among firms. The majority of new financial products are issued sparingly by a limited number of firms (Babus et al. (2022)). Nevertheless, for those firms that do adopt these newer financial products, they account for a substantial portion of their proceeds.

Access to a diverse set of financial products may allow firms to raise capital in larger amounts and at lower costs than they could otherwise (Lerner (2006)). This is likely due to the fact that financial innovation can provide more tailored solutions that align with the specific financing needs of firms, as argued by Ross (1989). The development of these types of financial products may help alleviate difficulties associated with raising funds for projects that involve unconventional technologies or business models that heavily rely on intangible assets, which are typically difficult to verify or liquidate and thus cannot be used as collateral. As a result, certain firms may be more inclined to adopt these new financial products.

Given the potential benefits of financial innovation, it is important to understand the factors that drive firms to adopt new financial products and the impact of these products on firms' performance. To this end we build a novel firm-level panel dataset that includes firm characteristics and securities issuances information, by merging Compustat (that includes various measures of firm characteristics) with the SDC (that includes information on the nature of financial products used by the firm).

We document that there is a positive association between intangible capital and the adoption of new products in the cross section and within firms over time. Additionally, raising external financing through new types of products is relatively more likely to be associated with size growth and further investments in intangibles than access to external financial through old types of securities.

Our findings have important implications for the growing body of literature examining the effects of intangible capital on firms' financing. As intangibles comprise an increasingly significant proportion of corporate assets (Crouzet et al. (2022)), it is crucial to understand the role that financial innovation plays in addressing firm's funding needs.

2 Data Description

We measure the adoption and usage of distinct financial products by building a panel dataset that includes firm characteristics and information on the type of financial products that firms use to access external financing through securities. We focus on the distinction between "old" and "new" types of financial products. We refer to "old' as financial products that existed before 1985 (first year of the analysis) which typically are standard products like common stock and bonds, and are commonly used across many firms. We refer to "new" as products that have been created after 1985 which typically are more complex products (like PIES), and also more tailored and issued by only a few firms (Babus et al. (2022)). Our data covers non-financial publicly traded corporations headquartered in the US over the period 1985-2014, organized into six five-year periods.

2.1 Data Sources

The firm-level data comes from Compustat and includes information on various firms characteristics (such as sales and leverage) and various measures of innovation and intangibles capital. We use Peters and Taylor (2017) to measure the replacement cost of the firm's knowledge capital that comes from R&D (IntKnowledge) and the replacement cost of the firm's organization capital that comes from SG&A (IntOrganization). We use Kogan et al. (2017) for number of patents (NumPatents), estimated market value of patents (MktPatents), and forward citations of patents (for robustness).

The securities issuances data come from the Global New Issues modules of the Security Database Company (SDC) Platinum Dataset published by Refinitiv. The data include issuances of equity and debt securities, where for each issuance of a security we observe the date, the name of the issuing firm, other issuer information, and the type of security. We aggregate the issuances into firm $\times$ period observations by computing the number of issuances and total proceeds by new and old types of financial products.

2.2 Matching and Summary Statistics

We match issuers in SDC to firms in Compustat using information of CUSIP and firm/issuer name using natural language processing techniques.[1] Firms are defined by Compustat iden-

[1]Our matching algorithm is sequential. First, we start by using exact match of CUSIP reported in SDC and Compustat. Second, we use CUSIP reported in other issuances with same alternative identifiers (issuer name, CIK code, SDC issuer code, etc.) that has already been linked to Compustat in the first step. Third, we use CUSIP of subsidiary involved in issuance. Forth, use "exact" name matching. Finally, the fifth step uses SerpAPI and other natural language processing techniques on the SDC issuer name and Compustat company name. The final matching key between Compustat and SDC is available upon request.

Table 1: Summary Statistics: Observations and averages of key firm variables

	Obs.	# Firms	Firm Characteristics (Averages)					
			Intangile Knowledge	Intangile Organization	Number Patents	Market Patents	Sales	Leverage
All	46,447	17,925	83.8	169.9	25.8	720.8	4,875	0.27
Non-matched	21,495	9,586	22.2	70.9	5.7	119.1	2,189	0.28
Matched								
- Only Old	17,628	6,477	34.0	74.2	10.1	136.9	1,567	0.23
- Some New	7,324	1,862	384.3	690.6	122.7	3,891.7	20,723	0.31

Notes: Statistics are reported by pooling together firm×period observations in our sample of Compustat firms, with periods consisting of 5-year blocks. The non-matched firms are those that have not been matched to any security issuance in the SDC data within the 1985-2014 sample period. The last two lines classify matched issuer-firms and their issuances into two groups of firms: those who only issue old securities types and those who have ever issued a new security type within the sample period. Other than leverage ((DLC+DLTT)/AT), all the aforementioned variables are expressed in millions of real USD (Jan 2000 CPIAUCNS). Before computing sample averages we aggregate variables at the firm×period level by computing the within-period annual average for stock variables and ratios and the analogous sum for flow variables.

tifiers (gvkey).

Table 1 reports the summary statistics. Around 47% of the publicly listed firms in our sample of Compustat firms are matched to issuance of securities during the sample period, with only 22% of the matched firms issuing new security types. Firms that issue new securities are on average much larger in terms of sales and assets than firms that issued only old security types, in line with findings from Lemmon et al. (2014) who singularly focus on the adoption of asset backed securities. Firms that issue new security types are not only different in terms of size, but they also have higher intangible capital and are more innovative as measured by their patents.

3 Adoption of new financial products

We start by evaluating if firms that have more intangible capital are more likely to issue new products. We use the following specification:

$$1[\text{IssuanceNew}_{it} > 0] = \beta W_{it} + \eta \mathbf{X}_{it} + \varepsilon_{it} \tag{1}$$

where the outcome variable is equal to 1 if the firm i issues new financial products at time t (0 otherwise), W_{it} is a variable measuring intangible capital and innovation, and $\mathbf{X}_{it}$ is a

Table 2: Adoption of New Securities

	(1)	(2)	(3)	(4)	(5)	(6)
IntKnowledge	0.024***	0.012***	0.005***	0.033***	0.017***	0.003**
	(0.003)	(0.002)	(0.001)	(0.004)	(0.003)	(0.001)
Obs.	22,631	21,865	19,360	12,783	12,517	11,655
R-squared	0.146	0.168	0.496	0.199	0.222	0.477
IntOrganization	0.034***	0.028***	-0.005	0.045***	0.033***	-0.015
	(0.005)	(0.005)	(0.005)	(0.006)	(0.005)	(0.010)
Obs.	22,631	21,865	19,360	12,783	12,517	11,655
R-squared	0.167	0.171	0.496	0.218	0.222	0.478
NumPatents	0.044***	0.027***	0.014**	0.049***	0.028***	0.017**
	(0.005)	(0.003)	(0.005)	(0.005)	(0.003)	(0.006)
Obs.	12,229	12,061	10,154	9,000	8,887	7,725
R-squared	0.243	0.265	0.553	0.272	0.301	0.540
MktPatents	0.032***	0.023***	0.014***	0.038***	0.026***	0.017***
	(0.005)	(0.003)	(0.003)	(0.005)	(0.002)	(0.004)
Obs.	12,229	12,061	10,154	9,000	8,887	7,725
R-squared	0.261	0.271	0.553	0.292	0.307	0.541
Period fixed-effects	Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed-effects	Yes	Yes	Yes	Yes	Yes	Yes
Firm-period controls	No	Yes	Yes	No	Yes	Yes
Firm fixed-effects	No	No	Yes	No	No	Yes
Sample	All	All	All	Matched	Matched	Matched

Notes: The table reports the summary results of regressions using the linear probability model in equation (1) using different measures of intangible capital (in logs) as main explanatory variable on each row and where the binary outcome represents the issuance of new security types. Columns (1)-(3) are estimated for the entire sample, and columns (4)-(6) for the sample of matched firms that issued at least a security during the sample period. Columns (2), (3), (5) and (6) include size and leverage as control variables, with leverage measured as the ratio of total debt to assets and size measured as log-sales. Reported standard errors in parenthesis clustered by time period, with p-values summarized by * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

set of controls.

Table 2 provides the results of the regressions using a linear probability model for each measure of intangible capital.[2] Columns (1)-(3) are estimated for the entire sample, and columns (4)-(6) for the sample of matched firms that issued at least a security during the sample period. Our findings in columns (1) and (4) indicate that firms that have more intangible capital (both associated with innovation and with organization) are more likely

[2]The average of the dummy variable $1[\text{IssuanceNew}_{it} > 0]$ is 0.06 when including all firms, and 0.11 when we use the sample of "matched" firms. We also estimate a Poisson model for the outcome variable capturing the number of issuances using new financial products. The results are qualitatively similar. Moreover, we also estimate a similar specification where the variables measuring intangible capital and innovation are lagged. The results are also qualitatively similar for most variables.

to issue new securities. To address potential omitted variable concerns, we examine more saturated specifications that add controls for other covariates associated with adoption of new products (columns (2) and (5)). The positive association between intangible capital and adoption of new products is only partially explained by differences in size and leverage, as large and more leveraged firms are substantially more likely to use new products.[3]

Finally, we also consider a fixed-effects specification (columns (3) and (6)). By adding firm fixed-effects, we control for firm-specific factors such as a firm's average innovative capability and willingness to use new products. In this stricter specification, we continue to find a positive association between intangibles associated with innovation, suggesting that as firms increase their investments in innovation they are also more likely to raise funds through the issuance of new financial products. According to this specification, a one percent increase in the number of patents filed is associated with 1.7 higher percentage points in the probability of issuing new financial products.

The result that firms are more likely to adopt new financial products if they have more intangible assets is consistent with the idea that, historically, intangibles have been more difficult to pledge as collateral. We complement the findings in Hoberg and Phillips (2022) that firms which expand their scope through intangibles and better utilization of existing assets (which does not create much new collateral) favor financing with equity.[4] Along the same lines, firms that are highly innovative and need to finance non-standard projects are more likely to need to raise external funds by issuing tailored financial products, which can explain the association between the number and market value of patents and the adoption of new products.

4 Firm performance and new financial products

Next, we evaluate how firms' performance correlates with issuing new financial products and, in particular, how firms perform when issuing new products relative to issuing old products. We estimate the following specification:

$$W_{it+1} = \alpha^n Y_{it}^n + \alpha^o Y_{it}^o + \eta \mathbf{X}_{it} + \epsilon_{it+1} \tag{2}$$

[3]We also explored the variable intangibles as share of assets and found that the association is also significantly positive for intangible capital associated with knowledge.

[4]Our findings also relate to previous work by Colla et al. (2013) and Rauh and Sufi (2010) who examine the coarse composition of the debt structure for a limited sample of public firms, and show that firms tend to specialize into different types of debt.

Table 3: Issuance of Securities and Firm Performance

Panel A: Extensive Margin

	(1) Size	(2) IntKnowledge	(3) IntOrganization	(4) NumPatents	(5) MktPatents
1[IssuanceNew > 0]	0.155***	0.093	0.116***	0.096*	0.123**
	(0.026)	(0.060)	(0.017)	(0.041)	(0.043)
1[IssuanceOld > 0]	0.108**	0.047**	0.004	0.043	0.070*
	(0.027)	(0.013)	(0.010)	(0.037)	(0.031)
Obs.	22,901	12,288	12,288	6,678	6,678
R-squared	0.933	0.943	0.964	0.842	0.903

Panel B: Intensive Margin

	(1) Size	(2) IntKnowledge	(3) IntOrganization	(4) NumPatents	(5) MktPatents
ProceedsNew	0.032***	0.016	0.021***	0.017*	0.017**
	(0.006)	(0.010)	(0.004)	(0.007)	(0.005)
ProceedsOld	0.026**	0.016**	0.006**	0.012**	0.021**
	(0.007)	(0.004)	(0.002)	(0.004)	(0.006)
Obs.	22,901	12,288	12,288	6,678	6,678
R-squared	0.933	0.944	0.964	0.842	0.903

Note: The tables reports the summary results of regressions estimating equation (2) with different measures of firm performance as outcome variables organized across columns. Panel A shows the extensive margin effect of issuing new versus old security types, while panel B shows the intensive margin effect as measured by the inverse hyperbolic sign transformation of log proceeds raised from the issuance of new and old security types. We control for observable firm characteristics such as leverage and size (log sales) and we also include time and firm fixed effects. Reported standard errors in parenthesis clustered by time period, with p-values summarized by * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

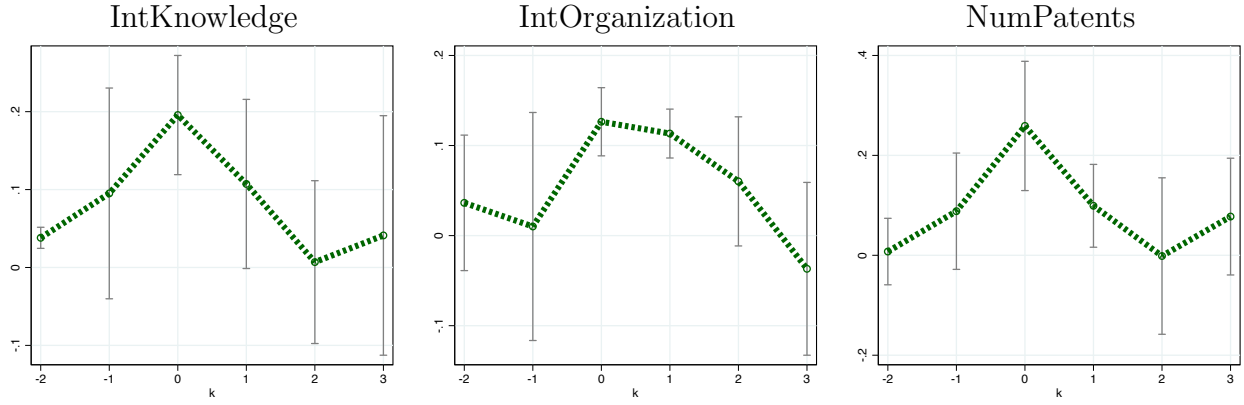
where W_{it+1} is a measure capturing firm performance of firm i at time $t+1$ and Y_{it}^n and Y_{it}^o are variables capturing the use of new and old products at time t, respectively. We control for a set of controls $\mathbf{X}_{it}$ including period fixed effects, firm fixed effects, and various firm $\times$ period controls. Our coefficients of interest are α^n and α^o capturing the estimated impact of using new and old products, respectively.

Table 3 provides the results for outcome variables capturing firm's size and intangible capital, including innovation. Panel A shows the results when we measure the use of financial products using dummies for issuing new and old products (1[IssuanceNew > 0] and 1[IssuanceOld > 0]). Perhaps not surprisingly, raising external financing through securities (either by new or old types) is associated with future growth. Importantly, however, the nature of financial products used seems to matter. Our results show that there is a quantitatively larger association when the financing is done through new products versus old products. Moreover, across all outcome variables capturing future innovation, we find

a strong positive association with using new products for financing, while the association is smaller or insignificant when firms raise funds using old products. While our results are not causal (and indeed our results in section 3 show that there is strong selection into the decision to adopt new products), our findings that the improvement in firms' performance following the adoption of new financial products is consistent with a potentially positive role of new financial products in easing firm's access to funds that can be used to invest in growth and new projects.

Panel B shows the results for the continuous outcome variables capturing how intensively firms use the different types of products (as measured by proceeds, i.e. the total funds raised). The estimated elasticity of firm' size with respect to funds raised through new products is only marginally larger than the estimated elasticity of firm' size with respect to funds raised through old products. For the measure capturing future intangible capital associated with organization and number of patents, we find a strong positive association with a more intensive use of new products for financing, while the association is similar for the other measures.

Figure 1: Extensive Margin of New Securities Issuance



Note: The figure shows the estimated coefficients of issuing new securities (α^n) on the corresponding outcome variables. We estimate a linear local projections specification: $W_{it+k} = \alpha^n 1[\text{IssuanceNew} > 0]_{it} + \eta \mathbf{X}_{it+k-1} + \epsilon_{it+k}$, where $k = -2, ..., 3$ refers to the lag between the issuance of new security types and the outcome variable. The controls are period and firm fixed effects, as well as measures of size and leverage. Each panel displays the estimated coefficients associated with the corresponding measure of intangible investment for different lags. The vertical lines indicate the corresponding 95% confidence intervals for standard errors clustered by time period.

Our baseline specification uses one period (i.e., 5-years) lag between issuance of securities and firm performance, to account for the fact that it may take some time for firms to invest the funds raised through the issuance of financial products and harvest the results. We also allow for alternative lags governing the relationship between issuances and firm performance. Figure 1 plots the estimated coefficients for different lags (we omit the market weighted

measure of patents because the results are very similar to the number of patents), where k refers to the lag between a dummy variable capturing the issuance of new financial products and the outcome variable.

The results show that there is a positive association concentrated around the contemporaneous time period and a one period lag, in line with a co-movement between the adoption of new financial products and the investments into innovation and intangibles.

5 Conclusion

In this paper we study the association between intangible capital (including innovation as measured by patent variables) and the type of financial products used to access external financing through securities. Our analysis contributes to a voluminous literature that documents the substantial heterogeneity in firms' capital structure and its determinants (see Graham and Leary (2011) for a survey). While the majority of the literature seeks to understand heterogeneity in firm's leverage, we take a granular approach to draw a link between the adoption of financial innovation in security types and firm characteristics, focusing on the distinction between old and new financial products.

Our results indicate a positive association between intangible capital and the adoption of new financial products. Additionally, we find that firms that adopt new types of products are more likely to experience growth in size and increased investments in intangibles compared to firms that rely on old product types alone, contributing to a literature that outlines key mechanisms linking financing decisions to product market outcomes (see Frésard and Phillips (2022) for a survey).

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Appendix

The final matching key between Compustat and SDC is available upon request.

Table 4: Summary Statistics: Observations and averages of key variables

			Firm Characteristics						Securities Characteristics			
	Obs.	# Firms	Int Know.	Int Org.	Num Patents	Mkt Patents	Sales	Lev.	Iss Old	Iss New	Proc Old	Proc New
All	46,447	17,925	83.8	169.9	25.8	720.8	4,875	0.27	0.8	0.2	119.7	61.6
Non-matched	21,495	9,586	22.2	70.9	5.7	119.1	2,189	0.28	-	-	-	-
Matched												
- Only Old	17,628	6,477	34.0	74.2	10.1	136.9	1,567	0.23	0.9	-	67.2	-
- Some New	7,324	1,862	384.3	690.6	122.7	3,891.7	20,723	0.31	3.1	1.2	597.0	391.0

Notes: Statistics are reported by pooling together firm×period observations in our sample of Compustat firms, with periods consisting of 5-year blocks. The non-matched firms are those that have not been matched to any security issuance in the SDC data within the 1985-2014 sample period. The last two lines classify matched issuer-firms and their issuances into two groups of firms: those who only issue old securities types and those who have ever issued a new security type within the sample period. Other than leverage ((DLC+DLTT)/AT), all the aforementioned variables are expressed in millions of real USD (Jan 2000 CPIAUCNS). Issuances characteristics report the average number of issuances and total proceeds of old and new security types in the pooled firms×period panel. Before computing sample averages we aggregate variables at the firm×period level by computing the within-period annual average for stock variables and ratios and the analogous sum for flow variables.

Table 5: Adoption of New Securities: Additional Variables

	(1)	(2)	(3)	(4)	(5)	(6)
Log(sales)	0.024***	0.024***	0.016***	0.039***	0.039***	0.026***
	(0.003)	(0.003)	(0.003)	(0.005)	(0.005)	(0.004)
N	44,877	44,861	39,513	24,572	24,571	22,993
r2	0.132	0.132	0.515	0.196	0.196	0.495
Log(assets)	0.029***	0.029***	0.019**	0.051***	0.058***	0.027**
	(0.003)	(0.003)	(0.005)	(0.005)	(0.008)	(0.007)
N	46,349	44,861	39,513	24,943	24,571	22,993
r2	0.138	0.143	0.516	0.211	0.216	0.496
Log(S&GA)	0.032***	0.034***	0.021***	0.050***	0.049***	0.034***
	(0.005)	(0.005)	(0.004)	(0.007)	(0.008)	(0.007)
N	41,046	39,561	34,390	22,025	21,679	20,080
r2	0.144	0.149	0.515	0.204	0.207	0.497
Log(R&D)	0.028***	0.020***	0.013**	0.039***	0.027***	0.019**
	(0.004)	(0.004)	(0.003)	(0.006)	(0.006)	(0.005)
N	21,062	20,402	17,565	12,362	12,110	11,109
r2	0.155	0.163	0.494	0.202	0.210	0.479
Log(Cites)	0.033***	0.020***	0.011**	0.037***	0.021***	0.014**
	(0.004)	(0.002)	(0.003)	(0.004)	(0.001)	(0.004)
N	11,952	11,790	9,889	8,809	8,697	7,536
r2	0.232	0.264	0.552	0.261	0.302	0.540
Log(Scope)	0.023***	0.010**	0.008*	0.025***	0.014**	0.010
	(0.004)	(0.003)	(0.003)	(0.004)	(0.004)	(0.005)
N	32,583	32,174	28,854	21,297	21,103	19,176
r2	0.122	0.182	0.536	0.160	0.227	0.517
R&D-to-Assets	-0.000*	0.000**	-0.000	-0.000***	0.000**	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
N	46,349	44,861	39,513	24,943	24,571	22,993
r2	0.072	0.132	0.515	0.133	0.197	0.495
S&GA-to-Sales	-0.000**	0.000**	0.000	-0.000***	0.000***	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
N	21,062	20,402	17,565	12,362	12,110	11,109
r2	0.155	0.163	0.494	0.202	0.210	0.479
Intangible-to-Assets	-0.000	0.000	-0.000	-0.000***	0.000**	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
N	46,346	44,859	39,513	24,943	24,571	22,993
r2	0.072	0.132	0.515	0.133	0.196	0.495
Period fixed-effects	Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed-effects	Yes	Yes	Yes	Yes	Yes	Yes
Firm-period controls	No	Yes	Yes	No	Yes	Yes
Firm fixed-effects	No	No	Yes	No	No	Yes
Sample	All	All	All	Matched	Matched	Matched

Notes: The table reports the summary results of regressions using the linear probability model in equation (1) using different measures of intangible capital (in logs) as main explanatory variable on each row and where the binary outcome represents the issuance of new security types. Columns (1)-(3) are estimated for the entire sample, and columns (4)-(6) for the sample of matched firms that issued at least a security during the sample period. Columns (2), (3), (5) and (6) include size and leverage as control variables, with leverage measured as the ratio of total debt to assets and size measured as log-sales. Reported standard errors in parenthesis clustered by time period, with p-values summarized by * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 6: Adoption of New Securities: Poisson Specification

	(1)	(2)	(3)	(4)	(5)	(6)
IntKnowledge	0.392***	0.158***	0.073***	0.557***	0.118***	0.073***
	(0.018)	(0.018)	(0.026)	(0.031)	(0.019)	(0.026)
N	20,683	19,948	3,285	12,039	11,777	3,285
IntOrganization	0.494***	0.220***	-0.063	0.688***	0.168**	-0.063
	(0.020)	(0.057)	(0.040)	(0.030)	(0.068)	(0.040)
N	20,683	19,948	3,285	12,039	11,777	3,285
NumPatents	0.330***	0.063***	0.085**	0.461***	0.035**	0.085**
	(0.024)	(0.018)	(0.034)	(0.025)	(0.016)	(0.034)
N	11,167	11,005	2,730	8,372	8,263	2,730
MktPatents	0.285***	0.107***	0.102***	0.414***	0.075***	0.102***
	(0.016)	(0.026)	(0.028)	(0.022)	(0.027)	(0.028)
N	11,167	11,005	2,730	8,372	8,263	2,730
Log(sales)	0.439***	0.711***	0.542***	0.638***	0.638***	0.542***
	(0.030)	(0.023)	(0.031)	(0.028)	(0.028)	(0.031)
N	42,407	42,411	7,088	23,536	23,536	7,088
Log(assets)	0.506***	0.551***	0.355***	0.708***	0.641***	0.355***
	(0.025)	(0.047)	(0.052)	(0.024)	(0.040)	(0.052)
N	43,854	42,411	7,088	23,904	23,536	7,088
Log(S&GA)	0.513***	0.275***	0.159*	0.647***	0.206***	0.159*
	(0.020)	(0.063)	(0.084)	(0.034)	(0.064)	(0.084)
N	38,653	37,206	5,833	21,017	20,675	5,833
Log(R&D)	0.476***	0.418***	0.179**	0.687***	0.327***	0.179**
	(0.028)	(0.049)	(0.088)	(0.041)	(0.046)	(0.088)
N	19,512	18,869	2,944	11,727	11,478	2,944
Log(Cites)	0.281***	0.035***	0.021	0.378***	0.006	0.021
	(0.024)	(0.012)	(0.022)	(0.025)	(0.012)	(0.022)
N	10,909	10,753	2,667	8,185	8,077	2,667
Log(Scope)	0.315***	0.158***	0.043	0.317***	0.162***	0.043
	(0.022)	(0.060)	(0.096)	(0.046)	(0.060)	(0.096)
N	30,571	30,179	6,133	20,274	20,082	6,133
R&D-to-Assets	-0.002***	0.002***	-0.001	-0.006***	0.001***	-0.001
	(0.001)	(0.000)	(0.002)	(0.000)	(0.000)	(0.002)
N	43,854	42,411	7,088	23,904	23,536	7,088
S&GA-to-Sales	-0.000	0.000***	0.000	-0.000	0.000***	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
N	42,414	42,411	7,088	23,539	23,536	7,088
Intangible-to-Assets	-0.003***	0.000	-0.000	-0.005***	0.000	-0.000
	(0.001)	(0.000)	(0.002)	(0.001)	(0.000)	(0.002)
N	43,851	42,409	7,088	23,904	23,536	7,088
Period fixed-effects	Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed-effects	Yes	Yes	Yes	Yes	Yes	Yes
Firm-period controls	No	Yes	Yes	No	Yes	Yes
Firm fixed-effects	No	No	Yes	No	No	Yes
Sample	All	All	All	Matched	Matched	Matched

Notes: The table reports the summary results of regressions using the linear probability model in equation (1) using different measures of intangible capital (in logs) as main explanatory variable on each row and where the binary outcome represents the issuance of new security types. Columns (1)-(3) are estimated for the entire sample, and columns (4)-(6) for the sample of matched firms that issued at least a security during the sample period. Columns (2), (3), (5) and (6) include size and leverage as control variables, with leverage measured as the ratio of total debt to assets and size measured as log-sales. Reported standard errors in parenthesis clustered by time period, with p-values summarized by * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 7: Adoption of New Securities: Lagged Specification

	(1)	(2)	(3)	(4)	(5)	(6)
IntKnowledge	0.029***	0.016***	0.002	0.039***	0.022***	-0.002
	(0.004)	(0.003)	(0.002)	(0.004)	(0.003)	(0.001)
N	14,009	13,658	11,503	8,454	8,298	7,182
r2	0.180	0.200	0.544	0.226	0.245	0.522
IntOrganization	0.040***	0.036***	-0.014	0.050***	0.041***	-0.027**
	(0.006)	(0.007)	(0.007)	(0.007)	(0.008)	(0.009)
N	14,009	13,658	11,503	8,454	8,298	7,182
r2	0.199	0.202	0.544	0.242	0.245	0.523
NumPatents	0.051***	0.032***	0.007	0.056***	0.032***	0.005
	(0.004)	(0.003)	(0.004)	(0.004)	(0.003)	(0.005)
N	9,209	9,082	7,387	6,757	6,674	5,605
r2	0.267	0.288	0.600	0.296	0.321	0.582
MktPatents	0.038***	0.029***	0.014***	0.044***	0.033***	0.015**
	(0.004)	(0.003)	(0.003)	(0.004)	(0.003)	(0.004)
N	9,209	9,082	7,387	6,757	6,674	5,605
r2	0.293	0.299	0.601	0.324	0.333	0.583
Log(sales)	0.028***	0.028***	0.003	0.042***	0.042***	-0.001
	(0.004)	(0.004)	(0.004)	(0.005)	(0.005)	(0.006)
N	27,813	27,810	23,229	16,363	16,363	14,097
r2	0.152	0.152	0.572	0.214	0.214	0.545
Log(assets)	0.036***	0.044***	0.019	0.056***	0.077***	0.027
	(0.005)	(0.006)	(0.010)	(0.007)	(0.011)	(0.015)
N	28,444	27,810	23,229	16,593	16,363	14,097
r2	0.164	0.170	0.572	0.232	0.241	0.546
Log(S&GA)	0.036***	0.036***	0.001	0.051***	0.046***	-0.005
	(0.006)	(0.006)	(0.007)	(0.008)	(0.009)	(0.010)
N	24,907	24,283	19,940	14,542	14,328	12,169
r2	0.160	0.167	0.560	0.212	0.219	0.537
Log(R&D)	0.034***	0.023***	0.002	0.043***	0.029***	-0.002
	(0.005)	(0.005)	(0.003)	(0.006)	(0.006)	(0.005)
N	13,211	12,881	10,486	8,217	8,061	6,807
r2	0.183	0.190	0.541	0.223	0.231	0.522
Log(Cites)	0.037***	0.022***	0.003	0.041***	0.022***	0.002
	(0.003)	(0.002)	(0.002)	(0.003)	(0.002)	(0.002)
N	9,082	8,959	7,271	6,675	6,593	5,531
r2	0.250	0.282	0.601	0.279	0.316	0.583
Log(Scope)	0.023***	0.008**	0.008	0.022**	0.010**	0.011
	(0.005)	(0.002)	(0.004)	(0.005)	(0.002)	(0.006)
N	21,527	21,343	17,888	14,076	13,980	11,941
r2	0.143	0.210	0.577	0.180	0.254	0.554
R&D-to-Assets	-0.000***	0.000***	0.000	-0.000**	0.000***	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
N	28,444	27,810	23,229	16,593	16,363	14,097
r2	0.093	0.152	0.572	0.152	0.215	0.545
S&GA-to-Sales	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
N	27,817	27,810	23,229	16,366	16,363	14,097
r2	0.096	0.153	0.572	0.154	0.216	0.545
Intangible-to-Assets	-0.000***	0.000*	-0.000	-0.000*	0.000*	-0.000**
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
N	28,444	27,810	23,229	16,593	16,363	14,097
r2	0.093	0.152	0.572	0.152	0.214	0.545
Period fixed-effects	Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed-effects	Yes	Yes	Yes	Yes	Yes	Yes
Firm-period controls	No	Yes	Yes	No	Yes	Yes
Firm fixed-effects	No	No	Yes	No	No	Yes
Sample	All	All	All	Matched	Matched	Matched

Notes: The table reports the summary results of regressions using the linear probability model in equation (1) using different measures of intangible capital (in logs) as main explanatory variable on each row and where the binary outcome represents the issuance of new security types. Columns (1)-(3) are estimated for the entire sample, and columns (4)-(6) for the sample of matched firms that issued at least a security during the sample period. Columns (2), (3), (5) and (6) include size and leverage as control variables, with leverage measured as the ratio of total debt to assets and size measured as log-sales. Reported standard errors in parenthesis clustered by time period, with p-values summarized by * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.