

# Public Listing, Managerial Short-termism, and Brand Development

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January 2022

## Abstract

While product and company reputation are among the most valued intangible assets, we have little understanding of when and why managers focus on such resources. This shortcoming has limited both the resource-based and attention-based views of the firm. We construct a novel and comprehensive dataset of trademarks owned by big privately held and publicly listed firms in the U.S. over three decades to examine whether and how public listing status influences brand development. Doing so allows us to understand how the ownership environment shapes managerial attention. We find that while publicly listed firms register more new trademarks compared with their privately held counterparts, their new trademarks are less likely renewed. A variety of empirical tests help us attribute these patterns to managerial short-termism.

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## 1. Introduction

Brand development plays an important role in determining firms' short-term profitability and long-term sustainability in the consumer-oriented economy. To survive and thrive in market competition, firms need to launch new brands to penetrate new markets and to address changes in customer preferences and market conditions (Porter, 1996; Millot, 2009; Flikkema, Castaldi, De Man, & Seip, 2019). Once new brands survive and succeed market tests, they develop into firms' long-term capital and become strategic resources; for these reasons, brand reputation (at both the product and firm levels) is rated by CEOs as their most important intangible assets (Hall, 1992).

This likely stems from brand reputation being valuable, rare, non-substitutable, and inimitable (Barney, 1991), and can therefore be considered strategic firm resources under the resource-based view (RBV) of the firm. Indeed, a law and economics perspective on U.S. trademark law may be interpreted as providing trademark holders these exact economic incentives (Landes & Posner, 1987). A conventional application of the RBV would therefore predict that managers would invest in brand development unconditionally, especially given the cumulative value of this form of intangible asset (Dierickx & Cool, 1989). The same logic suggests that new brand success hinges on consistent investment, and should firms be capital-constrained, their access to public equity markets could provide the long-term capital necessary to invest in specialized complementary assets, which in turn facilitates growth and scale (Teece, 1986; King & Levine, 1993; Nanda & Rhodes-Kropf, 2013; Rajan & Zingales, 1998).

While accessing more liquid equity markets is beneficial on the resource side for publicly held firms, the literature has also highlighted advantages to private ownership (e.g., Durand & Vargas, 2003; Ferreira, Manso & Silva, 2014). An important advantage from the standpoint of sustained competitiveness for private firms is insulation from capital market pressures resulting

from public information disclosures, which can result in managerial short-termism (Aggarwal & Hsu, 2014; Kraft, Vashishtha, & Venkatachalam, 2018). Such pressure results from routine reporting and disclosure requirements, which may have both competitiveness implications (if the disclosed information is strategic) as well as organizational aspiration consequences (such as the tendency to devote effort to initiatives with measurable intermediate or final outcomes to the detriment of projects without such attributes, yet may yield more extreme value outcomes). Indeed, anecdotal evidence suggests that private ownership facilitates a long-term brand development perspective. Elon Musk, who has expressed his intention to bring Tesla private, said: “*Being public also subjects us to the quarterly earnings cycle that puts enormous pressure on Tesla to make decisions that may be right for a given quarter, but not necessarily right for the long-term*” in his blog post.<sup>1</sup>

The opposing theoretical forces of public versus private ownership and brand development motivates our empirical analysis. We start with the comprehensive trademark database from the United States Patent and Trademark Office (USPTO), which was recently made publicly available.<sup>2</sup> We match the trademark assignee names in the USPTO Trademark Case File Dataset to company names in the S&P Capital IQ database to compile a trademark dataset of 4,492 unique public firms and 15,210 unique, larger private firms<sup>3</sup> over the period 1984–2014. The trademark

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<sup>1</sup> <https://www.cnbc.com/2018/08/08/elon-musk-wants-to-take-tesla-private--heres-what-it-means.html>. As another prominent example, Michael Dell, the CEO of Dell Computer, wrote to Dell employees on his going private decision: “*Today, we announced a definitive agreement for me and global technology investment firm Silver Lake to acquire Dell and take it private... I believe that we are better served with partners who will provide long-term support to help Dell innovate and accelerate the company’s transformation strategy.*” See the press release at: <http://www.dell.com/Learn/us/en/uscorp1/secure/2013-02-04-michael-dell-silverlake-acquisition?c=us&l=en&s=corp>.

<sup>2</sup> As defined by the USPTO, “a trademark is a brand name.” (see: <https://www.uspto.gov/trademarks-getting-started/trademark-basics>). Moreover, as pointed out in Peterson, Smith, and Zerrillo (1999), “trademark” and “brand” are synonymous; what marketers call brands are what lawyers call trademarks. Before the availability of the USPTO trademark database, some prior studies based on U.S. trademarks focus on small samples (e.g., Gao and Hitt, 2012; Block, De Vries, Schumann, & Sandner, 2014).

<sup>3</sup> In the U.S., a private firm must file an Exchange Act registration statement if it has a class of equity securities, such as common stock, with 500 or more shareholders and has more than \$10 million in total assets. After that, the company

data enable us to examine both the birth and *death* of brands as trademark owners must renew their trademarks periodically; otherwise, these trademarks will be cancelled. Thus, we can use the renewal status of a trademark to infer whether it survives market competition and thus succeeds in the long run (Sandner & Block, 2011; Gao & Hitt, 2012; Bei, 2019; Nasirov, 2020). We measure a firm's brand development along two dimensions: how many new brands it launches, and the proportion of these new brands that have been renewed. The former reflects the quantity of new brands, while the latter reflects their quality or long-term performance. Section 2 provides details on our empirical sample and measurement, including key variables such as brand development (based on trademark data).

Our results (Section 3) suggest that public firms tend to launch more new brands (47% more new trademarks) compared to their private counterparts. However, the renewal ratio of public firms' new trademarks is 13% *lower* than that of private firms. Additional empirical tests suggest that these empirical patterns are most consistent with the managerial short-termism perspective associated with public listing. In brief, the tests are centered on a within public firm analysis of short-term institutional owners and on a legal ruling which exogenously lowered the cost of managerial short-termism by discouraging class action lawsuits for public firms headquartered in the U.S. Ninth Judicial Circuit Court (see Huang, Roychowdhury & Sletten, 2020).<sup>4</sup>

The results have a number of implications for theory elaboration, which we discuss in the concluding Section 4. The first finding that public firms are more aggressive in launching new brands is in line with the predictions of the RBV (brand development requires resources, and being

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is required to continue reporting via annual and quarterly reports and proxy statements to the SEC. Thus, the S&P Capital IQ database provides financial and accounting information on private U.S. firms that satisfy the above requirements with a similar level of detail as that provided by Compustat on public firms.

<sup>4</sup> The Ninth Circuit covers Alaska, Arizona, California, Guam, Hawaii, Idaho, Oregon, Montana, Nevada, and Washington, as illustrated in the Online Appendix (Figure OA1).

publicly listed helps alleviate financial constraints). The second major finding, that public firms' new brands are much less likely to survive and succeed in the long run, is less consistent with the conventional conceptualization of the RBV since brand capital requires a cumulative investment process. We argue that this necessitates sharpening the conditions under which a resource is considered strategic under the RBV. We do so by proposing a connection to the attention-based view (ABV) of the firm (Ocasio, 1997; Zhong, Ma, Tong, & Zhang, 2021), which provides a theory of how managerial attention shapes behavior may be situational. In the case of brand development investments by public versus private firms, we suggest that managerial short-termism induced by information disclosure and regular reporting requirements for public firms shape managerial attention. As a result, this research note elaborates the RBV by empirically and conceptually connecting it to the ABV, thereby strengthening both theories.

## **2. Data, Sample Construction, and Summary Statistics**

We first discuss the institutional background of U.S. trademarks and then provide a brief overview of our data assembly process in this section while providing the details in the Online Appendix (Sections A and B, respectively). We first construct a list of unique assignee names in the USPTO Trademark Case Files Dataset (Graham, Hancock, Marco, & Myers, 2013), and then prepare a list of standardized assignee names. We then match each of these names to the company names (and names of their subsidiaries) in the S&P Capital IQ database, which provides financial and accounting information of public firms and large private firms that are required to file financial reports to the SEC.

After merging the trademark data to financial data for public and private firms, we only keep a firm-year observation if it has at least one active trademark in the year. The sample ranges

from 1984 to 2014<sup>5</sup> for our analysis of the number of new trademarks awarded to firms. When we analyze the survival rate of new trademarks, we further limit our sample to the period 1984-2007 because it takes six years for us to observe whether a trademark survives at the six-year renewal milestone. We are aware of the issue that the Trademark Law Revision Act (TLRA) that was enacted in 1989 changed several aspects of trademark laws and regulations, and have also considered alternative sample periods 1990-2014 (or 1990-2007). We find consistent results (available on request).

We focus on the following two measures of brand development: Our first measure is *Trademark*, which is the log of *Trademark\_raw* plus one, in which *Trademark\_raw* denotes the number of new trademarks registered by a firm in a year.<sup>6</sup> We use such a log-linearization specification to mitigate the influence of outliers and skewness in the number of new trademarks. To ensure robustness, we also consider *Trademark\_raw* as the dependent variable in our Poisson regressions and negative binomial regressions in the Online Appendix (Section C). Our second measure, *Survival*, is defined as the log of *Survival\_raw* plus one. *Survival\_raw* is the percentage of newly registered trademarks that are renewed at the six-year maintenance milestone (of all the firm's newly-registered trademarks).<sup>7</sup> While the *Trademark* variable captures the “quantity” of

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<sup>5</sup> We do not have the full data of S&P Capital IQ database in 2015; thus, our sample stops at 2014. In Panels A and B in Figure OA2 in the Online Appendix, we present industry distributions of all new trademarks of private and public firms, respectively. For private firms, the top five trademark-filing industries based on two-digit Standard Industry Classification (SIC) codes (<https://www.osha.gov/data/sic-manual>) are Depository Institutions (17%, SIC 60), Business Services (11%, SIC 73), Wholesale Trade – Durable Goods (6%, SIC 50), Wholesale Trade – Nondurable Goods (5%, SIC 51), and Engineering & Management Services (4%, SIC 87). For public firms, the top five trademark-filing industries are Chemicals and Allied Products (12%, SIC 28), Business Services (11%, SIC 73), Industrial and Commercial Machinery and Computer Equipment (7%, SIC 35), Communications (6%, SIC 48), and Instruments & Related Products (6%, SIC 38).

<sup>6</sup> It is common in the literature to use the number of new trademarks to measure the intensity of firms' brand development (Mendonca, Pereira, & Godinho, 2004; Block, De Vries, Schumann, & Sandner, 2014; Flikkema, De Man, & Castaldi, 2014; Flikkema, Castaldi, De Man, & Seip, 2015, 2019).

<sup>7</sup> Prior studies have shown that renewed trademarks are more valuable (Sandner & Block, 2011; Gao & Hitt, 2012; Bei, 2019; Nasirov, 2020). Between the fifth and sixth year after registration, the owner must file the Declaration of Use and/or Excusable Non-use of a Mark under Section 8 to show the continued use of the trademark and pay fees to maintain the registration (<https://www.uspto.gov/trademarks/maintain>).

brand development, the *Survival* variable captures the “quality” or long-term-orientation of brand development. We find that both *Trademark* and *Survival* explain future firm profitability in the Online Appendix (Section D), confirming the value-relevance of our two measures of brand development.

Our key explanatory variable is *Public*, an indicator variable that equals one for public firms and zero for private firms in year  $t$ . We also consider additional variables in our regression analysis to control for the possible differences between private and public firms, and these variables include the firm’s total assets (*Size*), profitability (*ROA*), leverage (*Leverage*), age (*Age*), advertisement expenses scaled by total assets (*ADV*),<sup>8</sup> a dummy variable that captures firms with zero or missing advertisement expenses (*ADV\_D*), R&D expenses scaled by total assets (*RD*),<sup>9</sup> and a dummy variable that captures firms with zero or missing R&D expenses (*RD\_D*). The Appendix provides detailed definitions of all variables used in this study.

Table 1 presents summary statistics of our sample of all firms. For our analysis for the number of new trademarks, we have a sample of 129,394 firm-year observations. For our analysis of the trademark survival ratio, our sample size reduces to 38,269 firm-year observations due to the shorter sample period (1984-2007) and the requirement of non-zero new trademarks. Table 1 shows that 54% of our firm-year observations are public firms. An average sample firm has 2.71 new trademarks, and 53% of them eventually survive to the sixth-year renewal milestone. We also present the summary statistics of private firms and public firms (separately) in our sample in Table OA1 of the Online Appendix. An average public (private) firm has 4.42 (0.73) new trademarks, and 51% (59%) of them eventually survive to the sixth-year renewal milestone.

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<sup>8</sup> If a firm does not report advertisement expenses in a year, we set the value to be zero.

<sup>9</sup> If a firm does not report R&D expenses in a year, we set the value to be zero.

### 3. Empirical Results

**3.1 Public listing and brand development.** To empirically test the differences in brand development of public and private firms, we estimate the following ordinary least squares regression model (subscript  $i$  denotes firm,  $j$  denotes industry, and  $t$  denotes time):<sup>10</sup>

$$\text{Trademark or Survival}_{i,t+1} = \alpha + \beta_1 \text{Public}_{i,t} + \text{Controls}_{i,t} + \text{Industry\_FE}_j + \text{Year\_FE}_t + \epsilon_{i,t} \quad (1)$$

All variables have been defined in the prior section. We further control for industry fixed effects (*Industry\_FE*) and year fixed effects (*Year\_FE*) in the regression where an industry is defined using three-digit SIC codes. Standard errors at the firm level are clustered to correct for estimation errors related to firms, such as autocorrelation.

Some issues about our empirical setting are worth discussing. First, we cannot include firm fixed effects in this setting, as our main variable of interest, *Public*, largely overlaps with firm fixed effects. Second, there is a one-year lag between the dependent variable and the independent variable in our baseline setting. We have also considered a two-year lag, and find consistent results. Third, we include fixed effects for each industry-year pair to eliminate all time-varying industry effects, and find consistent results. Fourth, we also consider alternative trademark measures that are more product-specific and find consistent results. All these results are reported in the Online Appendix, Section C.

Table 2 shows that public firms, on average, produce more new brands but these brands are less likely to survive long. In Column (1), the coefficient on *Public* is 0.297 and is significant at the 1% level. Considering that an average firm launches 2.71 trademarks each year in our sample, public firms launch 1.28 more trademarks per year.<sup>11</sup> In Column (2), we find that the coefficient

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<sup>10</sup> When we use *Trademark* as the dependent variable,  $t$  runs from 1984 to 2014; when we use *Survival* as the dependent variable,  $t$  runs from 1984 to 2007 (so we have six years to calculate their survival rate).

<sup>11</sup> Since  $\text{Ln}(1 + \text{Trademark\_raw}) = X$  and  $\text{Ln}(1 + \text{Trademark\_raw} + \Delta \text{Trademark\_raw}) = X + \Delta X$  where  $\Delta X = 0.297 \times 1$ ,  $\Delta \text{Trademark\_raw} = (1 + \text{Trademark\_raw}) \times [\exp(\Delta X) - 1]$ . When we use the mean of *Trademark\_raw* (2.71), we obtain 1.28.



on *Public* is -0.045, and this estimate is significant at the 1% level. This indicates that the survival ratio of new brands launched by public firms is significantly less than those of private firms. Such a coefficient estimate corresponds to a drop of 6.7% in the survival ratio of new trademarks, which is substantial compared to our sample mean of 53%. As a result, in comparison with private firms, public firms launch 47% more new trademarks ( $=1.28/2.71$ ) but their new trademarks' renewal ratio is 13% lower ( $=6.7/53\%$ ).

Our empirical evidence is consistent with a managerial short-termism explanation in which managers of public firms are subject to the performance pressure from equity markets and behave opportunistically for short-term interests (Stein, 1988; Keum, 2021). Consequently, such managers adopt more aggressive strategies in brand launching to send positive signals to relatively uninformed investors; however, the lack of long-term orientation in their brand development results makes their new brands less likely to survive market tests, which results in a lower renewal ratio. The next two empirical sections aim to strengthen the empirical tests of this explanation.

**3.2 Mechanism test: within-public firm brand development patterns.** We consider the composition of institutional investors for a mechanism test to strengthen our baseline result interpretation. Some institutional investors are short-term-oriented, which exacerbates public firms' myopic behavior (Bushee, 1998, 2001). Therefore, we calculate the ratio of a firm's outstanding shares held by short-term institutional investors (*Short-term IO*),<sup>12</sup> and estimate the following regression model using all public firms in our sample:

$$\text{Trademark or Survival}_{i,t+1} = \alpha + \beta_1 \text{Short-term IO}_{i,t} + \text{Controls}_{i,t} + \text{Industry\_FE}_j + \text{Year\_FE}_t + \epsilon_{i,t} \quad (2)$$

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<sup>12</sup> We follow Bushee (1998, 2001) in using "transient type institutional investor" as short-term-oriented institutional investors.

We present the results in Table 3. Column (1) shows that the coefficient on *Short-term IO* is 1.182 with statistical significance at the 1% level, suggesting that public firms with more short-term-oriented institutional investors tend to launch more new brands. Column (2), on the other hand, shows that the coefficient on *Short-term IO* is -0.058 with statistical significance at the 1% level, suggesting that the new brands of firms with more short-term-oriented institutional investors are less likely to survive in the long run. These results are consistent with Table 2 and confirm the short-termism mechanism underlying the difference in brand development between public and private firms.

**3.3 Identification test: an unexpected court ruling in the ninth circuit court.** To be assured that our findings are not due to unobserved factors, we use an unexpected court ruling that made class action lawsuits more difficult for public firms headquartered in the U.S. Ninth Circuit jurisdiction area, following Huang, Roychowdhury, and Sletten's (2020) empirical strategy. On July 2, 1999, an unexpected court ruling was issued by the Ninth Circuit Court (Re: Silicon Graphics Inc. Securities Litigation, 183 F.3d 970) that resulted in a much stricter pleading standard. As pointed out in Huang, Roychowdhury, and Sletten (2020), public firms became more short-term-oriented because managers faced lower litigation risk following the ruling. Therefore, we expect the difference in the performance of brand development between private and public firms covered by the Ninth Circuit will further diverge from that between private and public firms in other states after 1999. To study the impact of this unexpected court ruling, we introduce the following difference-in-differences (DiD) model:

$$\begin{aligned} Trademark\ or\ Survival_{i,t+1} = & \alpha + \beta_1 Post_{i,t} \times Ninth_{i,t} \times Public_{i,t} + \beta_2 Pre_{i,t} \times Ninth_{i,t} \times Public_{i,t} + \\ & \beta_3 Pre_{i,t} \times Public_{i,t} + \beta_4 Pre_{i,t} + \beta_5 Ninth_{i,t} \times Public_{i,t} + \beta_6 Ninth_{i,t} + \beta_7 Post_{i,t} \times Ninth_{i,t} + \\ & \beta_8 Post_{i,t} \times Public_{i,t} + \beta_9 Public_{i,t} + Controls_{i,t} + Industry\_FE_j + Year\_FE_t + \epsilon_{i,t} \quad (3) \end{aligned}$$

in which *Ninth* is a dummy variable for firms headquartered in the Ninth Circuit states (see Figure OA1 in the Online Appendix) and *Post* is a dummy variable that equals one after 1999. We choose a five-year window around the event as a tradeoff between the time it takes for the effect of the court ruling to be observed in brand development as weighed against introducing a longer time window, which may not localize the event effect. Our sample period in this DiD event study is therefore 1995 to 2004. Standard errors are clustered by U.S. state, given the state-level treatment (Png, 2017).

The results are reported in Table 4. In column (1), the coefficient on the DiD term  $Post \times Ninth \times Public$  is 0.087 with statistical significance at the 5% level. As for the survival ratio result in column (2), the coefficient on  $Post \times Ninth \times Public$  is -0.035 with statistical significance at the 10% level. We find that the coefficients on  $Pre \times Ninth \times Public$  are insignificant in both columns, which suggests that there is no difference in brand development before the court ruling and confirms the parallel trend assumption that is a necessary condition for a DiD test. Table 4 is consistent with a causal interpretation for the effect of public listing status on brand development, which can be attributed to the differences in short-termism.<sup>13</sup>

#### 4. Implications for Theory and Discussion

Brand development is a quintessential example of strategic resource investment. As such, it represents an ideal context to evaluate the adequacy of Barney's (1991) conditions for sustained advantages, namely that a resource be valuable, rare, inimitable, and non-substitutable. In line with

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<sup>13</sup> One potential alternative explanation to the empirical patterns is that public firms are more likely to trim their portfolio of brands to focus their attention on their most promising ones. While difficult to definitely rule out this explanation, it is not consistent with the empirical patterns we present in both this section on the exogenous legal environment shift, nor the results we presented in the prior empirical section on within-public firm heterogeneity stratified by short-term institutional investors.

the predictions of the RBV, public firms launch more brands/trademarks relative to their privately-held counterparts. However, the survival ratio of these new trademarks is lower than that of private firms, which runs counter to the cumulative nature of investment necessary to develop a strategic resource.

Since our various empirical tests point to managerial short-termism as the likely operative mechanism, it appears that the institutional environment is quite important in resource development, even in a context in which the strategic importance of a resource is uncontroversial. This suggests that the RBV might usefully be connected more tightly to the attention-based view (ABV) proposed by Ocasio (1997). In particular, Ocasio's concept of situated attention in which (among other factors) the institutional rules of the external business environment, such as government laws and regulations, can be powerful forces focusing managerial attention and provides a ready-explanation for the empirical patterns we document. In the brand development context, the salient institutional context associated with situated attention is managerial short-termism associated with regulatory requirements of frequent reporting and information disclosures.

More generally, linking the ABV to the RBV strengthens both theories. For the RBV, while most of the attention in the classical development of the theory centers on firms' internal resources, managerial cognition and agency are typically not factored into the theory. Similarly, managerial action in the RBV is often disconnected from the external business environment. We empirically illustrate how the institutional environment surrounding public versus private ownership can substantially influence managerial attention and behavior in this study.

The ABV also benefits from linking to the RBV. Ocasio (1997) ends his paper (p. 205) by freely acknowledging that the ABV is an incomplete theory of firm competitive advantage and firm heterogeneity. He speculates that the ABV will likely have to be integrated with resource

and/or industry perspectives to develop a comprehensive theory of dynamic business strategy. We believe one obstacle to building such a bridge connecting the theories in the past is the far-reaching nature of the ABV, which Ocasio (1997) also acknowledges (p. 204) by noting the high level of generality and abstraction of the ABV's mechanisms. We hope that our empirical analysis of a consensus strategic resource (brand capital) and differential investment across varied institutional environments tangibly illustrates a way to connect the ABV with the RBV, which to our knowledge has only rarely been connected empirically (if at all).

In addition to the theoretical implications, several managerial and business policy implications stem from our empirical results. First, managers' attention and energy may shift toward myopic investments and brand development after going public.<sup>14</sup> Such an organizational tendency should be factored in the IPO decisions of entrepreneurs and major shareholders of ventures when weighing the benefits and costs of the going-public decision. Possible mitigating actions to counteract short-termism associated with going public may include establishing effective corporate governance, introducing (institutional) investors who care about long-term firm value, and granting broadly-held stock options within the organization (with long vesting periods).

Our paper also contributes to a more general research question: how does ownership structure influence firms' innovation activities? This research question is particularly important in the sense that our knowledge in this domain is mainly based on public firms due to data limitations, which is limiting given the sheer number of private firms and innovation they have created. The evidence we present based on brand development is distinct from the findings of prior studies that are based on utility patents (which focus on technological innovation and only cover a relatively

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<sup>14</sup> A letter from Google's founders Larry Page and Sergey Brin is illustrative: "*In the transition to public ownership, we have set up a corporate structure that will make it harder for outside parties to take over or influence Google. This structure will also make it easier for our management team to follow the long term, innovative approach emphasized earlier.*" (source: <https://www.nytimes.com/2004/04/29/business/letter-from-the-founders.html>)

*small* set of industries): public firms tend to produce more patents (Acharya & Xu, 2017), while private firms tend to engage in riskier exploration (Gao, Hsu, & Li, 2018). We highlight that private firms' brand development is more likely to succeed in the long run than public firms', suggesting that the former group adopt a conservative yet long-term-oriented strategy in brand development. By constructing a comprehensive dataset of public and private firms' trademarks, we provide novel empirical evidence and new insights to this general research question.

More generally, given the recent public availability of the US trademark data, our hope is that these data open more possibilities of longitudinally studying brand development, which has been identified as typically firms' most important intangible asset. To better understand the critical area of brand development as a higher-order organizational capability necessitates factoring in managerial attention, a direction we hope we have helped initiate.

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## Appendix. Variable Definitions

Trademark	The natural logarithm of the number of newly registered trademarks by a firm in a given year plus one.
Trademark_Raw	The number of newly registered trademarks by a firm in a given year.
Survival	The natural logarithm of newly registered trademarks that ultimately survive the 6 <sup>th</sup> year renewal threshold plus one percent.
Survival_Raw	The percentage of newly registered trademarks that ultimately survive the 6 <sup>th</sup> year renewal threshold.
Trademark_Prod	The natural logarithm of the number of newly registered product trademarks by a firm in a year plus one.
Survival_Prod	The log ratio of newly registered product trademarks that ultimately survive the 6 <sup>th</sup> year renewal threshold plus one percent.
Public	The dummy variable which equals 1 if the firm is publicly listed, and 0 otherwise.
Size	Ln (total assets).
Leverage	Total debt scaled by total assets.
Age	Firm's age, as calculated from the year founded.
ADV	Advertising expenses plus SG&A scaled by total assets.
ADV_D	A dummy variable that equals one if ADV is zero or missing.
Long-term IO	The difference of institutional ownership by non-transient type minus that of transient type. The type of institutional investor is defined following Bushee (1998, 2001).
Good Governance	A dummy variable that equals one if a firm's G-index (Gompers, Ishii, and Metrick (2003)) is less or equal to five.

**Table 1. Summary Statistics**

	N	Mean	STD	25 <sup>th</sup> Percentile	Median	75 <sup>th</sup> Percentile
Trademark	129,394	0.63	0.92	0.00	0.00	1.10
Trademark_Raw	129,394	2.71	10.11	0.00	0.00	2.00
Survival	38,269	0.39	0.28	0.00	0.41	0.69
Survival_Raw	38,269	0.53	0.41	0.00	0.50	1.00
Trademark_Prod	118,795	0.54	0.83	0.00	0.00	1.10
Survival_Prod	33,206	0.38	0.29	0.00	0.41	0.69
Public	129,394	0.54	0.50	0.00	1.00	1.00
Size	129,394	2.77	10.25	0.03	0.19	0.96
ROA	129,394	0.03	0.21	0.00	0.00	0.12
Leverage	129,394	0.14	0.23	0.00	0.01	0.23
Age	129,394	3.44	0.95	2.77	3.47	4.23
ADV	129,394	0.17	0.27	0.00	0.04	0.25
ADV_D	129,394	0.41	0.49	0.00	0.00	1.00
RD	129,394	0.03	0.08	0.00	0.00	0.00
RD_D	129,394	0.79	0.41	1.00	1.00	1.00
Short Term IO	69,366	0.11	0.11	0.02	0.08	0.17

This table provides summary statistics for the main variables used in this paper. Trademark denotes the log number of newly registered trademarks plus one. Trademark\_Raw is the number of newly registered trademarks. Survival is the survival ratio of trademarks, calculated as the log of the percentage of newly registered trademarks that survive at the 6th year maintenance threshold plus one. Survival\_Raw is the percentage of newly registered trademarks that survive at the 6th year maintenance threshold. Trademark\_Prod and Survival\_Prod is calculated similarly as Trademark and Survival, respectively, for product trademarks. Public is a dummy variable that equals one for public firms. All other variables are defined in the Appendix. The sample period for trademarks is from 1984 to 2014, while for survival ratios, the sample period ends at 2007, due to the time needed to evaluate whether a trademark survives.

**Table 2. Public Listing and Brand Development**

VARIABLES	(1) Trademark	(2) Survival
<b>Public</b>	<b>0.297</b>	<b>-0.045</b>
	<b>(0.000)</b>	<b>(0.000)</b>
Size	0.028	-0.001
	(0.000)	(0.000)
ROA	0.506	0.098
	(0.000)	(0.000)
Leverage	0.153	-0.028
	(0.000)	(0.001)
Age	0.045	0.015
	(0.000)	(0.000)
ADV	0.184	-0.011
	(0.000)	(0.181)
ADV_D	-0.080	0.017
	(0.000)	(0.029)
RD	-0.147	0.044
	(0.063)	(0.162)
RD_D	-0.186	0.003
	(0.000)	(0.628)
Constant	0.443	0.336
	(0.000)	(0.000)
Industry FE	Yes	Yes
Year FE	Yes	Yes
Observations	129,394	38,269
Adjusted R2	0.290	0.057

This table presents the relationship between public listing and brand development in terms of the launch of new brands, as reflected in the number of new trademarks and the survival ratio of launched trademarks. Trademark denotes the log number of new trademarks plus one. Survival is the survival ratio of trademarks, calculated as the log of the ratio of newly registered trademarks that survive at the 6th year maintenance threshold plus one. Public is a dummy variable that equals one for public-listed firms. All other variables are defined in the Appendix. The sample period for trademarks is from 1984 to 2014, while for survival ratios, the sample period ends at 2007, due to the time needed to evaluate whether a trademark survives. p-values are calculated based on standard errors clustered at the firm level and are in parentheses.

**Table 3. The Mechanism Test: Short-term Institutional Ownership**

VARIABLES	(1) Trademark	(2) Survival
<b>Short-term IO</b>	<b>1.182</b>	<b>-0.058</b>
	<b>(0.000)</b>	<b>(0.001)</b>
Size	0.033	-0.001
	(0.000)	(0.000)
ROA	0.485	0.116
	(0.000)	(0.000)
Leverage	0.131	-0.028
	(0.001)	(0.009)
Age	0.091	0.017
	(0.000)	(0.000)
ADV	0.152	-0.007
	(0.000)	(0.483)
ADV_D	0.065	-0.012
	(0.155)	(0.313)
RD	-0.188	0.049
	(0.054)	(0.210)
RD_D	-0.127	0.002
	(0.000)	(0.817)
Constant	0.237	0.128
	(0.385)	(0.165)
Industry FE	Yes	Yes
Year FE	Yes	Yes
Observations	69,366	28,399
Adjusted R2	0.277	0.063

This table presents the relationship between short-term institutional ownership (IO) and brand development in terms of the launch of new brands, as reflected in the number of new trademarks and the survival ratio of launched trademarks for public firms. Trademark denotes the log number of new trademarks plus one. Survival is the survival ratio of trademarks, calculated as the log of the ratio of newly registered trademarks that survive at the 6th year maintenance threshold plus one. Short-term IO is institutional ownership by transient type institutional investors. All other variables are defined in the Appendix. The sample period for trademarks is from 1984 to 2014, while for survival ratios, the sample period ends at 2007, due to the time needed to evaluate whether a trademark survives. p-values are calculated based on standard errors clustered at the firm level and are in parentheses.

**Table 4. Public Listing and Brand Development: Ninth Circuit**

VARIABLES	(1) Trademark	(2) Survival
<b>Post × Ninth × Public</b>	<b>0.087</b> <b>(0.040)</b>	<b>-0.035</b> <b>(0.085)</b>
Pre × Ninth × Public	0.029 (0.284)	-0.004 (0.786)
Pre × Public	0.041 (0.352)	-0.016 (0.465)
Pre	-0.073 (0.101)	0.016 (0.450)
Ninth × Public	-0.125 (0.013)	0.014 (0.455)
Ninth	0.114 (0.015)	0.008 (0.587)
Post × Ninth	-0.053 (0.134)	0.010 (0.584)
Post × Public	0.129 (0.007)	0.008 (0.724)
Public	0.183 (0.000)	-0.049 (0.005)
Control variables	Yes	Yes
Industry FE	Yes	Yes
Year FE	Yes	Yes
Observations	36,571	19,378
Adjusted R2	0.273	0.067

This table presents the relationship between public listing and brand development in terms of the launch and survival of new brands, as reflected in the number and survival ratio of new trademarks in a difference-in-differences setting utilizing a Ninth Circuit court ruling. Public is a dummy variable that equals one for public-listed firms. Post is a dummy variable that takes the value of one after 1999. Pre is a dummy for year 1998 and year 1999. Ninth is a dummy for states covered by the Ninth Circuit. Trademark denotes the log number of new trademarks plus one. Survival is the survival ratio of trademarks, calculated as the log of the ratio of newly registered trademarks that survive at the 6th year maintenance threshold plus one. All other variables are defined in the Appendix. The sample period is from 1995 to 2014. p-values are calculated based on standard errors clustered at the state level and are in parentheses.

## **Online Appendix for “Public Listing, Managerial Short-termism, and Brand Development”**

### **A. Basics about U.S. Trademarks**

A trademark is a word, phrase, symbol, and/or design that serves to differentiate the source of goods or services of one party from those of others. The modern U.S. federal trademark registration system was established with the Lanham Act in 1946.<sup>1</sup> A firm may register a trademark application with the USPTO for a new trademark that will be used in some particular product/service classes.<sup>2</sup> In the application file, the applicant also needs to provide proof of the actual use of the trademark in commerce, such as a specimen, or can instead file an Intent-to-Use statement to agree to provide such proof in the next six months (i.e., Statement of Use) by filing (Graham et al., 2013).<sup>3</sup> When the application has met the minimum filing requirements, an application serial number is assigned, and the application is forwarded to an examining attorney in the USPTO. This attorney will review the trademark application, which includes a search for conflicting marks and an examination of the written application, the drawing, and any specimen. The attorney’s job is to ensure the novelty of the filed trademark that is reasonably distinct from existing trademarks and that can be easily identified by the public.<sup>4</sup>

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<sup>1</sup> Although the Act has been amended several times since, it remains the primary federal trademark statute in providing nationwide regulation and protection for trademark registration (Graham et al., 2013).

<sup>2</sup> The exclusive right to use the trademark is also confined to the registered trademark classes. For example, if the mark “Apple” is registered only in the class “Electrical and scientific apparatus,” its legal protection is only effective in this class, but not in an unregistered class such as “Wine and spirits” or “Medical apparatus.” Most countries, including the U.S., adopt the International Classification of Goods and Services, for which there are 45 classes in total (34 for goods and 11 for services). There are 45 product/service classes: <http://www.wipo.int/classifications/nice/nclpub/en/fr/home.xhtml>. A trademark can be filed in one or multiple classes, and 86.5% of trademark applications are registered in single classes (Graham et al., 2013). The application fees can be found via: <https://www.uspto.gov/trademarks-application-process/filing-online/trademark-application-fee-structure>

<sup>3</sup> It is noteworthy that 45.9% of intent-to-use applications are abandoned without being registered.

<sup>4</sup> The attorney may reject the application if the proposed trademark has been commonly used by the public (e.g., “Police”), if it is only descriptive of the product or of its quality (e.g., “Cheese” and “Delicious”), if it has no distinctive characters, if it has a scandalous connotation, or if it refers to specific official emblems (e.g., “California”) (e.g., Millot, 2009; Graham et al., 2013). Of note, 8.3% of trademark applications were rejected by examining attorneys (Graham et al., 2013). If an applicant decides that minor corrections are required, he/she will issue a letter (Office Action) to request corrections. If the attorney decides that the proposed trademark should not be registered, he/she will issue a letter (Office Action) explaining any substantive reasons for refusal, and any technical or procedural deficiencies in the application. The applicant

If the examining attorney raises no correction requests or objections, or if the applicant has addressed all concerns and overcome all objections raised by the attorney, the examining attorney will approve the trademark to be published in the *Official Gazette*, a weekly publication of the USPTO published on Tuesday. After the mark is published in the *Official Gazette*, a third party may file a notice of opposition to the trademark's registration during this 30-day period after publication.<sup>5</sup> If no opposition is filed or if the opposition is unsuccessful, the application enters the next stage of the registration process.

Before the official registration of the trademark, the applicant will need to file a statement of use to prove the actual use of the trademark in commerce if such proof has not been provided in an initial application. After all these necessary conditions are met, the trademark can then be officially registered. As shown in Graham et al. (2013), 78.8% of all applications were eventually granted. The median time from application to registration is 1.2 years for all registrations filed with actual use, and is 1.9 years for all those filed based on intent-to-use.

Firms can hold permanent ownership of their trademarks if they can maintain the trademarks in the sixth year from registration dates and if they renew the trademarks every 10 years from their respective registration dates.<sup>6</sup> Failure to file the required maintenance and renewal documents in the specified time periods will result in the cancellation of the trademark or invalidation of legal protection. Between the fifth and sixth year after registration, the owner must file the Declaration of Use of Mark in Commerce to show the continued use of the trademark and pay fees to maintain its registration.<sup>7</sup> In particular, the owner needs to present a specimen that is currently used for each class of goods or services

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needs to respond to the Office Action within six (6) months of the mailing date of the Office action, or the application will be declared abandoned.

<sup>5</sup> When a notice of opposition is filed, the owner of the opposed application has 30 days to file an answer with the TTAB. Thereafter, an opposition proceeding is held before the Trademark Trial and Appeal Board (TTAB), a body within the USPTO responsible for hearing and deciding certain kinds of trademark-related cases. 98.1% of published applications were registered (Graham et al., 2013).

<sup>6</sup> The relevant procedures for maintaining and renewing trademarks can be found on the USPTO website: <https://www.uspto.gov/trademarks-maintaining-trademark-registration/keeping-your-registration-alive> and <https://www.uspto.gov/trademarks-application-process/filing-online/registration-maintenancerenewalcorrection-forms>. The renewal frequency was 20 years before November 1989 and reduced to 10 years after the enactment of the Trademark Law Revision Act of 1988 [Title 1 of Pub. L. 100-667, 102 Stat. 3935 (15 U.S.C. 1051)]. Registrations can be renewed within one year before the end of every 10-year period after the registration date or within the 6-month grace period thereafter.

<sup>7</sup> The owner can still file an extension for six months after the sixth year from registration.

in which the trademark has been registered.<sup>8</sup> Based on the statistics of Graham et al. (2013), 47.1% of trademarks registered were maintained after the sixth year.

Currently in the US, trademark registration can be made at either the state or federal level. A state-level trademark enjoys protection only within the jurisdiction of the state, whereas a federal-level trademark can enjoy nationwide protection. In addition, state-level trademark laws are much less effective in protecting trademark owners because trademark litigation often involves many states in which the products and services; the state courts are reluctant in granting out-of-state injunctions; and firms could forum-shop which state court to file litigation (Peterson, Smith, & Zerrillo, 1999; Morrin & Jacoby, 2000; Roe, 2008).

## **B. Merge of Databases**

The USPTO Trademark Case Files Dataset, our primary data source, documents all federally registered trademarks from 1870 and 2015. The data contains information on trademark characteristics, prosecution events, ownership, classification, and renewal history for nearly 7.9 million trademarks. For each trademark record, it has the following information: key dates (filing, registration, renewal, or cancellation), status (registered, abandoned, renewed, or canceled), trademark class, mark textual content, and owner information (owner name and location).

The S&P Capital IQ database, on the other hand, provides financial and accounting information of public firms and private firms that file financial reports to the SEC. In the U.S., a private firm must file an Exchange Act registration statement if it has a class of equity securities, such as common stock, with 500 or more shareholders and has more than \$10 million in total assets. After that, the company is required to continue reporting via annual and quarterly reports and proxy statements to the SEC. Thus, the S&P Capital IQ database provides financial and accounting information on private U.S. firms that satisfy the above requirements with a similar level of detail as that provided by Compustat on public firms.

Because the USPTO Trademark Case File Dataset only provides an owner's name and location for each trademark record, we take the following steps to link it to the public

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<sup>8</sup> Other materials such as the promotion documents or advertisements that demonstrate that the trademark is in use are also acceptable.



and private firms' identifiers. First, from the Trademark Case Files Dataset, we obtain a list of owner names, denoted as List A. From the Capital IQ database, we obtain a list of company names and their S&P Capital IQ identifiers, denoted as List B. Since the number of private firms is huge, we only include those that are domiciled in the U.S. and have at least one year with reported total assets above 1 million USD.

Second, we notice that sometimes firms hold intellectual properties such as trademarks through subsidiaries. For example, most of Toys "R" Us' trademarks are registered and held by its subsidiary Geoffrey, LLC. Therefore, simply matching the trademark owners with the names of its parent entity is insufficient. To address this problem, we use the list of firms' subsidiaries in Capital IQ to expand List B to include all their (current) subsidiaries. As a result, both the parent's name "Toys 'R' Us" and the subsidiaries' names (e.g., "Toys 'R' Us International LLC," "Geoffrey, LLC") are included in our expanded List B.

We then conduct fuzzy matching between List A and List B using the Levenshtein distance to keep the closest ten possible matches and then manually verify each one. To ensure accuracy in matching, we also cross-check our matches using available information from online searches (e.g., Bloomberg BusinessWeek) and the location information in the trademark dataset and S&P Capital IQ database.

## **C. Robustness Checks**

### *C.1. Different Specifications*

We adopt an ordinary least square (OLS) regression and log transformation in our estimation for Equation (1) when the dependent variable is *Trademark*. As the number of new trademarks is a count variable, we can also opt for a count model. We thus re-run Equation (1) in this section, but use *Trademark\_raw* as the dependent variable and estimate Poisson regressions and negative binomial regressions. Our results are reported in Table OA2. In Column (1) we use a Poisson regression while in Column (2) we use a negative binomial regression. In both columns, we observe a positive and significant coefficient on *Public*, consistent with our baseline finding.

### *C.2. Additional Time Lag*

We adopt the standard one-year lag between the dependent variable and independent variable in our baseline results, based on Equation (1). In this section, we extend that time lag to two years and examine if our results are robust to this specification. We re-run Equation (1) using *Trademark* and *Survival* with a two-year time lag (i.e., in year  $t+2$ ) and report our results in Table OA3. We obtain almost the same results: public firms have more new brands than private ones; however, their mortality rate for these brands is higher than that of private firms.

### *C.3. Time-varying Industry Effects*

To ensure that our baseline results are not driven by some time-varying, industry-specific factors, we include industry times year fixed effects in Equation (1) and report our results in Table OA4. Again, we obtain consistent results: public firms have more new brands. The mortality rate of these brands, however, is higher for public firms. Therefore, our baseline results are not driven by industry-year specific factors.

### *C.4. Product Trademarks*

We acknowledge that some trademarks are pure logos or slogans that are designed for marketing purposes, rather than designed to identify new brands. We thus perform robustness tests by focusing on product trademarks. To separate ‘product’ and ‘marketing’ trademarks, we employ the following mechanism by relying on two variables: ‘mark identification character’ (the textual content of trademark) and ‘mark drawing code’ (the design type of trademark).<sup>9</sup> Essentially, if the mark contains many words, it is more likely to be a marketing slogan rather than a product name. Additionally, if the mark is more about the logo design rather than the simple product name, it is considered a marketing trademark. Using the method of Hsu, Li, Liu, and Wu (2021), we find that about 63% of trademarks are product trademarks while the remaining are marketing trademarks.

We replace the number of new trademarks by the number of new product trademarks, and replace the corresponding survival ratio with the survival ratio of product trademarks in Equation (1). As reported in Table OA5, the results are similar to our baseline

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<sup>9</sup> This approach is based on Faurel, Li, Shanthikumar, and Teoh (2019) and Hsu, Li, Liu, and Wu (2021).

results. We again observe that public firms register more new product trademarks, and that their survival ratio for product trademarks is lower.

## **D. Value Implications of Trademarks**

### *D.1. Prior Literature*

Due to the lack of US-based trademark databases in the past, prior studies on the value-relevance of trademarks are mainly based on public firms in Europe (Graham et al., 2013). Greenhalgh and Rogers (2006) find that the number of trademarks scaled by total assets is positively associated with the non-manufacturing firms' market values in a sample of 347 British firms in the 1989-1999 period. Also, using 1,216 international firms in the 1996-2002 period, Sandner and Block (2011) find that a firm's trademark number is significantly and positively associated with its Tobin's Q. Finally, using a sample of 10,230 German firms, Crass, Czarnitzki, and Toole (2016) show that a firm's trademark number positively predicts long-term future profit margins. The survey of Flikkema, Castaldi, de Man, and Seip (2019) suggest a positive correlation between the number of trademarks and the number of product innovations among start-ups. Schautschick and Greenhalgh (2016), Nasirov (2018), and Castaldi (2020) provide a helpful summary of prior studies on firms' intention to file trademarks and the value-relevance and potential use of trademark-based indicators.

Ever since the USPTO trademark database became available around 2013, researchers have started to use U.S. firms to examine the value implications of trademarks. Block, De Vries, Schumann, and Sandner (2014) find that start-up firms' trademark number is positively related to their evaluation from venture capitalists in 2,341 start-ups. Focusing on S&P 1500 firms from 1993 to 2011, Faurel, Li, Shanthikumar, and Teoh (2019) find that firms registering more trademarks earn future increases in sales and profitability. Meanwhile, Hsu, Li, Li, Teoh, and Tseng (2020) examine the value and pricing implications of all U.S. public firms, finding that firms that have registered more trademarks are associated with higher increases in future profitability and stock returns. All these analyses support the information content of trademark data and confirm the economic value of trademarks.

### *D.2. The Relation between Profitability and Trademarks*

A natural follow-up question is: does brand development matter in terms of firm operations? In what follows, we attempt to answer this question by examining the relationship between brand development and future operating performance. To begin, we estimate the following model for all our sample firms:

$$ROA_{i,t+3(t+5)} = \alpha + \beta_1 Trademark\ or\ Survival_{i,t} + Controls_{i,t} + Industry_{FE_j} + Year_{FE_t} + \epsilon_{i,t}, (A1)$$

for which *ROA* is return on assets calculated three-year or five-year ahead of new brands (i.e., *ROA* in year  $t+3$  or  $t+5$ ) and measures firms' long-term operating performance. The estimation results are reported in Table OA6. In Columns (1) to (2), in which we focus on the number of newly launched brands, we observe a clear pattern: the coefficients on *Trademark* are positive and significant, indicating that the more trademarks a firm has, the better future operating performance it will experience, which is largely consistent with the literature. The coefficients of 0.7% and 0.8% are fairly substantial. More importantly, in Columns (3) to (4), in which we focus on the relationship between survival ratios of trademarks and operating performance three-years or five-years ahead, we again find positive and significant coefficients on *Survival*, which means the higher the survival ratio of trademarks, the better future operating performance will be. These results indicate that both the quantity and quality of brand development are important for firms' future profits and values.

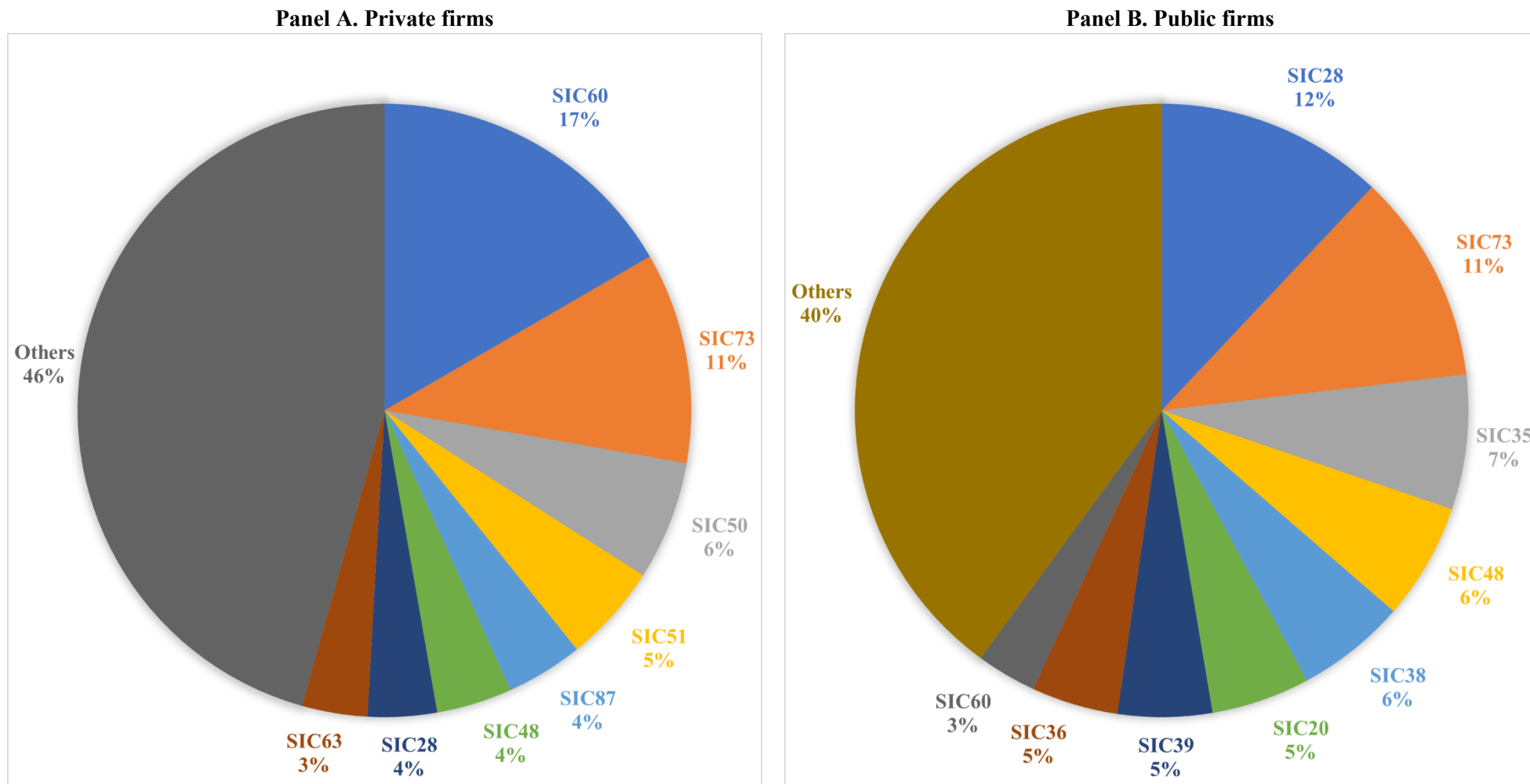
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**Figure OA1. The Coverage of the Ninth Circuit**

This figure presents the geographic coverage of the Ninth Circuit, which includes Alaska, Arizona, California, Guam, Hawaii, Idaho, Oregon, Montana, Nevada, and Washington. The source: [https://www.ca9.uscourts.gov/content/view.php?pk\\_id=0000000135](https://www.ca9.uscourts.gov/content/view.php?pk_id=0000000135)



**Figure OA2. Industry Distribution of Trademarks**

This figure presents industry distributions of all new trademarks registered in our sample period. We use SIC two-digit industries (see <https://www.osha.gov/data/sic-manual>). Panel A includes all private firms, and Panel B includes all public firms.

**Table OA1. Summary Statistics**

This table provides summary statistics for the main variables used in this paper. Panel A includes all private firms, and Panel B includes all public firms. Trademark denotes the log number of newly registered trademarks plus one. Trademark\_Raw is the number of newly registered trademarks. Survival is the survival ratio of trademarks, calculated as the log of the percentage of newly registered trademarks that survive at the 6th year maintenance threshold plus one. Survival\_Raw is the percentage of newly registered trademarks that survive at the 6th year maintenance threshold. Trademark\_Prod and Survival\_Prod is calculated similarly as Trademark and Survival, respectively, for product trademarks. Public is a dummy variable that equals one for public firms. All other variables are defined in the Appendix. The sample period for trademarks is from 1984 to 2014, while for survival ratios, the sample period ends at 2007, due to the time needed to evaluate whether a trademark survives.

<b>Panel A. Private</b>	N	Mean	STD	25 <sup>th</sup> Percentile	Median	75 <sup>th</sup> Percentile
Trademark	60,028	0.29	0.57	0.00	0.00	0.00
Trademark_Raw	60,028	0.73	2.44	0.00	0.00	0.00
Survival	9,870	0.42	0.31	0.00	0.00	0.59
Survival_Raw	9,870	0.59	0.45	0.00	0.00	0.80
Trademark_Prod	51,453	0.24	0.50	0.00	0.00	0.00
Survival_Prod	7,809	0.41	0.31	0.00	0.00	0.61
Public	60,028	0.00	0.00	0.00	0.00	0.00
Size	60,028	1.28	6.98	0.00	0.01	0.06
ROA	60,028	-0.01	0.18	-1.95	0.00	0.00
Leverage	60,028	0.07	0.23	0.00	0.00	0.00
Age	60,028	3.45	0.98	0.69	2.83	3.56
ADV	60,028	0.07	0.25	0.00	0.00	0.00
ADV_D	60,028	0.82	0.38	0.00	1.00	1.00
RD	60,028	0.01	0.07	0.00	0.00	0.00
RD_D	60,028	0.94	0.23	0.00	1.00	1.00



<b>Panel B. Public</b>	N	Mean	STD	25 <sup>th</sup> Percentile	Median	75 <sup>th</sup> Percentile
Trademark	69,366	0.93	1.06	0.00	0.00	0.69
Trademark_Raw	69,366	4.42	13.39	0.00	0.00	1.00
Survival	28,399	0.37	0.27	0.00	0.00	0.41
Survival_Raw	28,399	0.51	0.39	0.00	0.00	0.50
Trademark_Prod	67,342	0.77	0.94	0.00	0.00	0.69
Survival_Prod	25,397	0.37	0.28	0.00	0.00	0.41
Public	69,366	1.00	0.00	1.00	1.00	1.00
Size	69,366	3.96	11.57	0.00	0.09	0.41
ROA	69,366	0.06	0.22	-1.95	0.00	0.10
Leverage	69,366	0.20	0.21	0.00	0.02	0.15
Age	69,366	3.44	0.92	0.69	2.77	3.40
ADV	69,366	0.25	0.27	0.00	0.07	0.18
ADV_D	69,366	0.06	0.23	0.00	0.00	0.00
RD	69,366	0.04	0.09	0.00	0.00	0.00
RD_D	69,366	0.66	0.48	0.00	0.00	1.00
Short Term IO	69,366	0.11	0.11	0.02	0.08	0.17

**Table OA2. Public Listing and Brand Development: Different Specifications**

This table presents the relationship between public listing and brand development in terms of the launch of new brands as reflected in the number of new trademarks for which we use Poisson or Negative Binomial regressions. Trademark\_raw denotes the number of new trademarks. Public is a dummy variable that equals one for publicly-listed firms. All other variables are defined in the Appendix. The sample period for trademarks is from 1984 to 2014. p-values are calculated based on standard errors clustered at the firm level and are in parentheses.

VARIABLES	(1) Poisson Trademark_raw	(2) Negative Binomial Trademark_raw
Public	0.843 (0.000)	0.668 (0.000)
Size	0.034 (0.000)	0.050 (0.000)
ROA	1.693 (0.000)	0.995 (0.000)
Leverage	0.353 (0.000)	0.393 (0.000)
Age	0.253 (0.000)	0.080 (0.000)
ADV	0.214 (0.017)	0.372 (0.000)
ADV_D	-0.387 (0.000)	-0.451 (0.000)
RD	-0.031 (0.920)	-0.184 (0.281)
RD_D	-0.093 (0.290)	-0.215 (0.000)
Constant	0.402 (0.395)	0.969 (0.000)
Industry	Yes	Yes
Year FE	Yes	Yes
Observations	129,394	129,394

**Table OA3. Public Listing and Brand Development: Additional Lag**

This table presents the relationship between public listing and brand development in terms of the launch and survival of new brands, as reflected in the number and survival ratio of new trademarks for which the lag between dependent and independent variables are two-years instead of one-year in our baseline specification. Trademark denotes the log number of new trademarks plus one. Survival is the survival ratio of trademarks, calculated as the log of the ratio of newly registered trademarks that survive at the 6th year maintenance threshold plus one. Public is a dummy variable that equals one for public-listed firms. All other variables are defined in the Appendix. The sample period for trademarks is from 1984 to 2014, while for survival ratios, the sample period ends at 2007, due to the time needed to evaluate whether a trademark survives. p-values are calculated based on standard errors clustered at the firm level and are in parentheses.

VARIABLES	(1) Trademark(t+2)	(2) Survival(t+2)
Public	0.281 (0.000)	-0.028 (0.000)
Size	0.028 (0.000)	-0.001 (0.000)
ROA	0.488 (0.000)	0.089 (0.000)
Leverage	0.143 (0.000)	-0.008 (0.362)
Age	0.042 (0.000)	0.015 (0.000)
ADV	0.184 (0.000)	-0.008 (0.286)
ADV_D	-0.102 (0.000)	0.024 (0.001)
RD	-0.109 (0.173)	0.039 (0.180)
RD_D	-0.188 (0.000)	0.001 (0.840)
Constant	0.370 (0.000)	0.290 (0.000)
Industry	Yes	Yes
Year FE	Yes	Yes
Observations	127,984	38,287
Adjusted R2	0.296	0.160

**Table OA4. Public Listing and Brand Development: Industry-year Fixed Effects**

This table presents the relationship between public listing and brand development in terms of the launch and survival of new brands, as reflected in the number and survival ratio of new trademarks for which industry times year fixed effects are controlled. Trademark denotes the log number of new trademarks plus one. Survival is the survival ratio of trademarks, calculated as the log of the ratio of newly registered trademarks that survive at the 6th year maintenance threshold plus one. Public is a dummy variable that equals one for publicly-listed firms. All other variables are defined in the Appendix. The sample period for trademarks is from 1984 to 2014, while for survival ratios, the sample period ends at 2007, due to the time needed to evaluate whether a trademark survives. p-values are calculated based on standard errors clustered at the firm level and are in parentheses.

VARIABLES	(1) Trademark	(2) Survival
Public	0.295 (0.000)	-0.046 (0.000)
Size	0.028 (0.000)	-0.001 (0.000)
ROA	0.516 (0.000)	0.096 (0.000)
Leverage	0.163 (0.000)	-0.030 (0.001)
Age	0.044 (0.000)	0.015 (0.000)
ADV	0.184 (0.000)	-0.007 (0.377)
ADV_D	-0.085 (0.000)	0.017 (0.033)
RD	-0.138* (0.092)	0.035 (0.290)
RD_D	-0.181 (0.000)	0.004 (0.527)
Constant	0.357 (0.000)	0.367 (0.000)
Industry × Year FE	Yes	Yes
Observations	129,394	38,269
Adjusted R2	0.290	0.052

**Table OA5. Public Listing and Brand Development: Product Trademarks**

This table presents the relationship between public listing and brand development in terms of the launch and survival of new brands, as reflected in the number and survival ratio of new product trademarks. Trademark\_prod denotes the log number of new product trademarks plus one. Survival\_prod is the survival ratio of product trademarks, calculated as the log of the ratio of newly registered product trademarks that survive at the 6th year maintenance threshold plus one. Public is a dummy variable that equals one for public-listed firms. All other variables are defined in the Appendix. The sample period for trademarks is from 1984 to 2014, while for survival ratios, the sample period ends at 2007, due to the time needed to evaluate whether a trademark survives. p-values are calculated based on standard errors clustered at the firm level and are in parentheses.

VARIABLES	(1) Trademark_Prod	(2) Survival_Prod
Public	0.245 (0.000)	-0.045 (0.000)
Size	0.024 (0.000)	-0.001 (0.000)
ROA	0.417 (0.000)	0.096 (0.000)
Leverage	0.134 (0.000)	-0.030 (0.001)
Age	0.043 (0.000)	0.012 (0.000)
ADV	0.131 (0.000)	-0.013 (0.136)
ADV_D	-0.059 (0.001)	0.022 (0.007)
RD	-0.159 (0.029)	0.057 (0.083)
RD_D	-0.175 (0.000)	0.006 (0.350)
Constant	0.388 (0.000)	0.376 (0.000)
Industry FE	Yes	Yes
Year FE	Yes	Yes
Observations	118,795	33,206
Adjusted R2	0.265	0.055

**Table OA6. Brand Development and Future Operating Performance**

This table presents the relationship between brand development and future operating performance. ROA is return on assets calculated three-years and five-years ahead in column (1)/(3) and (2)/(4), respectively. Trademark denotes the log number of new trademarks plus one. Survival is the survival ratio of trademarks, calculated as the log of the ratio of newly registered trademarks that survive at the 6th year maintenance threshold plus one. All other variables are defined in the Appendix. The sample period for trademarks is from 1984 to 2014, while for survival ratios, the sample period ends at 2007, due to the time needed to evaluate whether a trademark survives. p-values are calculated based on standard errors clustered at the firm level and are in parentheses.

VARIABLES	(1) ROA t+3	(2) ROA t+5	(3) ROA t+3	(4) ROA t+5
Trademark	0.013 (0.000)	0.016 (0.000)		
Survival			0.038 (0.000)	0.036 (0.000)
Size	-0.000 (0.035)	-0.000 (0.015)	0.000 (0.000)	0.000 (0.000)
	0.580 (0.000)	0.487 (0.000)	0.565 (0.000)	0.481 (0.000)
Leverage	0.060 (0.000)	0.068 (0.000)	0.066 (0.000)	0.064 (0.000)
Age	0.008 (0.000)	0.007 (0.000)	0.012 (0.000)	0.011 (0.000)
ADV	0.058 (0.000)	0.059 (0.000)	0.064 (0.000)	0.066 (0.000)
ADV_D	0.012 (0.000)	0.010 (0.000)	0.011 (0.000)	0.009 (0.004)
RD	-0.152 (0.000)	-0.217 (0.000)	-0.072 (0.129)	-0.129 (0.030)
RD_D	-0.005 (0.290)	-0.009 (0.165)	-0.005 (0.351)	-0.014 (0.039)
Constant	-0.040 (0.000)	-0.026 (0.004)	-0.049 (0.000)	-0.022 (0.055)
Industry FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Observations	87,906	69,871	32,998	29,821
Adjusted R2	0.453	0.374	0.429	0.340