

# The Value of Trademarks

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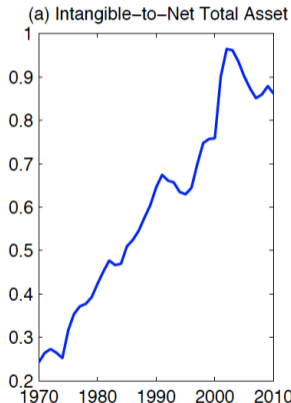
# Intangibles matter

Intangible Capital represents a significant part of the value of modern firms

“Take all the **physical assets** owned by all the companies in the S&P 500, all the cars and office buildings and factories and merchandise, then sell them all at cost in one giant sale, and they would generate a net sum that doesn't even come out to **20%** of the index's \$28 trillion value. Much of what's left comes from the things you can't see or count: algorithms and brands and lists”

*(Bloomberg, 2020)*

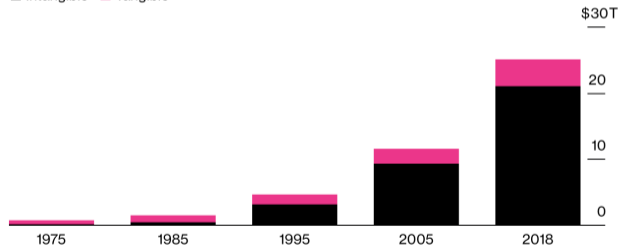
# Importance of intangibles has grown



## Invisible Importance

Tangible assets vs. intangible assets for S&P 500 companies

■ Intangible ■ Tangible



Source: Aon PLC and Ponemon Institute

Source: Falato et al. (JF, forthcoming)

# This paper

**Question:** What is the value of trademarks?

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**Subquestions:**

- Which firms use trademarks?
- Do trademarks affect firm performance?
- Why are trademarks valuable?

# What is a trademark?



“A word, phrase, design, or a combination that identifies your goods or services, distinguishes them from the goods or services of others, and indicates the source of your goods or services”

*United States Patent and Trademark Office (USPTO)*

# Examples of trademarks



shape

name



symbol

slogan



color



logo

# Data

We combine data from four sources:

- USPTO Trademark Case Files dataset
- Compustat
- CRSP
- Kogan, Papanikolaou, Seru and Stoffman (2017) dataset



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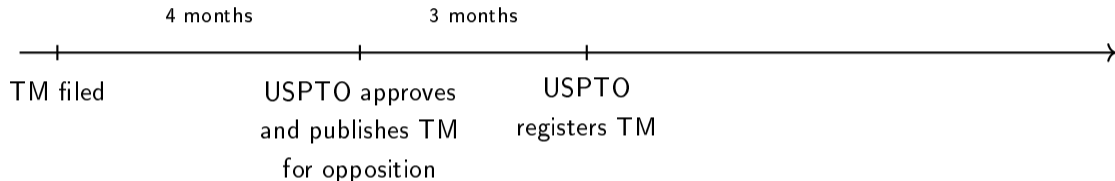
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- Compustat
- CRSP
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We are able to manually match 1.3 million trademarks to 21,800 unique Compustat firms from 1884 to 2021 (out of 10.8 million trademarks)

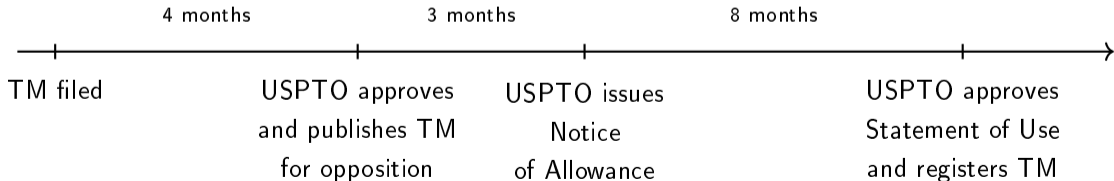
Data quality

# Trademark registration process

## A. In-commerce trademarks



## B. Intent-to-use trademarks



# How do we value trademarks?

- Follow the approach by Kogan, Papanikolaou, Seru and Stoffman (2017)

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- Main idea in their paper:
  - Decompose market reactions around patent grant date into patent value and unrelated returns

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- We apply it to trademarks:  $R_j = \nu_j^{pat} + \underbrace{\nu_j^{tm}}_{\text{Value of firm's trademark}} + \epsilon_j$

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- We apply it to trademarks:  $R_j = \nu_j^{pat} + \underbrace{\nu_j^{tm}}_{\text{Value of firm's trademark}} + \epsilon_j$

- Measure market reaction around the trademark publication date

# Contribution

**First attempt to systematically measure the dollar value of trademarks and test their impact on subsequent firm performance**

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- Valuation of firm-level intangible capital  
(Lev and Radhakrishnan, 2005; Gourio and Rudanko, 2014; Sun and Zhang, 2018; Ewens, Peters, and Wang, 2020)
- Economics of trademarks  
(Economides, 1988; Sandner and Block, 2011; Heath and Mace, 2019; Bereskin et al., 2021)
- Brand equity and firm performance  
(Larkin, 2013; Bronnenberg et al., 2015; Mauer, Villatoro, and Zhang, 2021)



# The exponential rise of trademarks

**New fact 1:** The use of trademarks has been growing rapidly, especially in last four decades

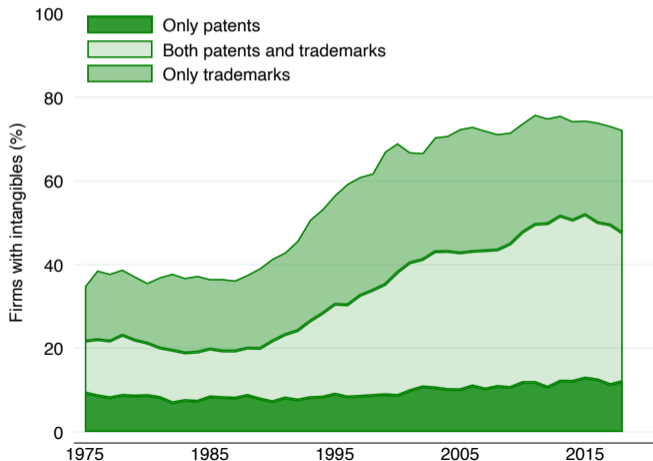
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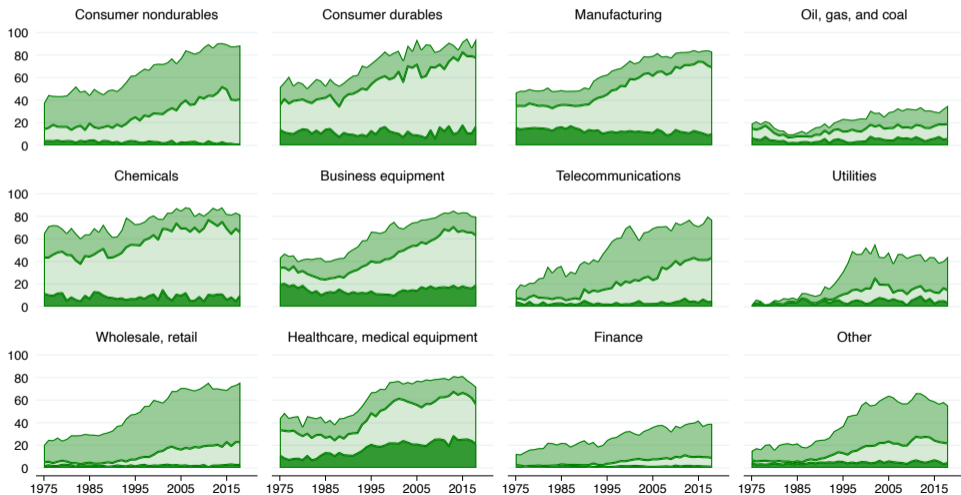


# Percentage of firms that hold intangibles

**New fact 2:** A wider range of firms use trademarks than patents



# Percentage of firms that hold intangibles, by industry



# The value of trademarks

**New fact 3:** Trademarks are very valuable to firms

## Panel A. Trademark Level

	Mean	Std. dev.	N
$R$	0.05	3.85	588,391
$\mathbb{E}[r^{TM} R]$	0.37	0.23	588,391
TM value	45.73	115.07	588,391

## Panel B. Firm-Year Level

Number of TMs	2.26	5.89	236,524
Aggregate TM value	79.50	393.17	236,524
TM output	2.35	6.73	236,524

# Trademarks and firm performance

**New fact 4:** Trademarks are associated with subsequent improvement in firm performance

$$\log X_{f,t+\tau} - \log X_{f,t} = a_{\tau} TM \text{ output}_{f,t} + cZ_{f,t} + u_{f,t+\tau}$$

## Panel A. Gross Profits Growth

	Horizon (years)				
	1	2	3	4	5
TM output	1.603*** (11.45)	2.628*** (11.26)	3.475*** (11.57)	4.195*** (11.20)	4.933*** (11.16)
Industry $\times$ Year FE	Yes	Yes	Yes	Yes	Yes
N	122,818	114,263	106,557	99,471	93,053
R <sup>2</sup>	0.18	0.21	0.22	0.23	0.24

Table

# Trademarks and firm performance (cont'd)

	Horizon (years)				
	1	2	3	4	5
<b>Panel B. Production Output Growth</b>					
TM output	0.984*** (7.31)	1.656*** (7.37)	2.490*** (8.40)	3.338*** (9.09)	4.047*** (9.58)
<b>Panel C. Market Share Growth</b>					
TM output	0.846*** (5.30)	1.352*** (4.97)	1.956*** (5.32)	2.824*** (6.40)	3.360*** (6.53)
<b>Panel D. Physical Capital Growth</b>					
TM output	1.097*** (10.70)	1.737*** (9.66)	2.213*** (8.73)	2.780*** (8.56)	3.042*** (7.71)
<b>Panel E. Employment Growth</b>					
TM output	0.702*** (7.14)	1.199*** (7.14)	1.717*** (7.39)	2.329*** (7.79)	2.780*** (7.70)

# Are these results causal?

Correlation between trademarking and firm growth may not be causal

- Some firm attributes may determine both
- For example, firms that expect to grow may be more likely to invest in IP

We do several tests aimed at addressing these and other endogeneity concerns



# Addressing endogeneity

We provide additional evidence that suggests that our findings are indeed causal

- The improvement in performance appears to occur after trademark publication, not before.
- The effects are not there for non-registered trademarks (placebo test).
- Exploit the random assignment of USPTO examiners to trademarks.

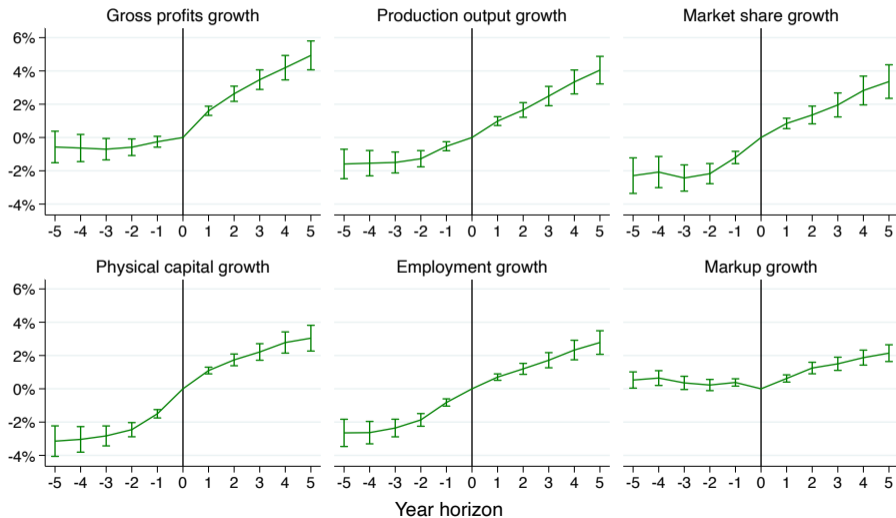
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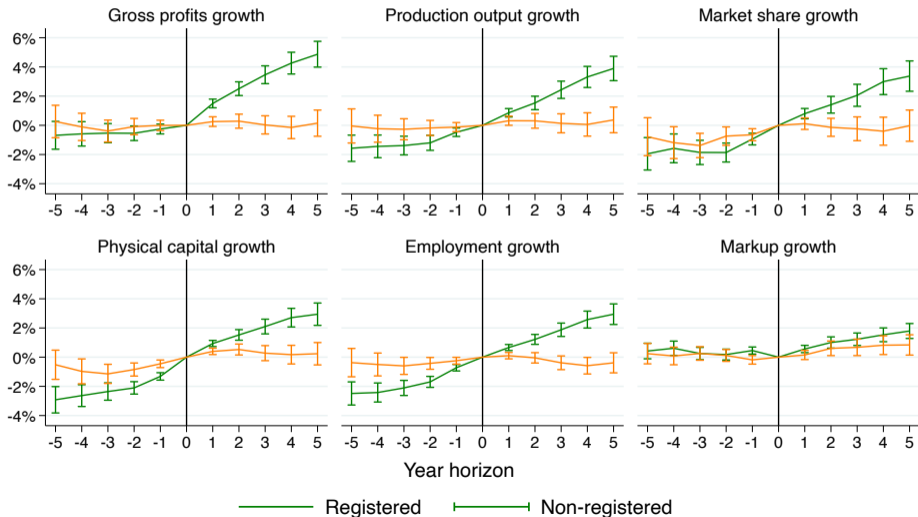
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Across all tests our findings indicate that trademarks *cause* subsequent firm growth!

# Trademarks and firm performance (cont'd)



# Registered vs. non-registered TMs



## TMs and firm performance: IV regression (second stage)

Trademarks are associated with subsequent improvement in firm performance

$$\log X_{f,t+\tau} - \log X_{f,t} = a_{\tau} \text{Success rate}_{f,t} + cZ_{f,t} + \epsilon_{f,t+\tau}$$

$$\text{Success rate}_{f,t} = \gamma \text{Examiner leniency}_{f,t} + \beta X_{f,t} + u_{f,t}$$

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## Panel A. Profits Growth

	Horizon (years)				
	1	2	3	4	5
Success rate	1.036 (0.73)	2.703 (1.25)	6.171** (2.27)	8.510** (2.54)	8.893** (2.26)
Industry $\times$ Year FE	Yes	Yes	Yes	Yes	Yes
N	54,075	50,475	47,243	44,255	41,559
R <sup>2</sup>	0.06	0.07	0.08	0.08	0.08

# Trademark and patent complementarity

Do firms increase trademarking after patenting and vice versa?

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Do firms increase trademarking after patenting and vice versa? **Yes!**

## Panel A: Patent Output Growth

	Horizon (years)				
	1	2	3	4	5
TM output	2.164*** (7.35)	3.333*** (8.05)	4.238*** (8.07)	5.335*** (8.34)	7.205*** (9.57)
Industry $\times$ Year FE	Yes	Yes	Yes	Yes	Yes
N	140,196	130,206	121,055	112,771	105,195

## Panel B: TM Output Growth

Patent output	5.394*** (13.11)	5.704*** (10.87)	4.913*** (7.89)	4.469*** (6.16)	3.931*** (4.99)
Industry $\times$ Year FE	Yes	Yes	Yes	Yes	Yes
N	140,196	130,206	121,055	112,771	105,195



# Trademarks and innovation

Do trademarks measure innovation?

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Do trademarks measure innovation? **It looks like it!**

Use Ewens, Peters, and Wang (2020)'s measure of intangible capital

Decompose intangible capital into:

- 1 Knowledge capital related to innovation
- 2 Organizational capital related to business processes and practices

Interpret correlation with knowledge capital as (suggestive) evidence that trademarks may be proxying for innovative activities at the firm.

# Trademarks and Consumer Search Costs

Do trademarks reduce consumer search costs?

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	Low	High	<i>t</i> -stats
<b>By HHI</b>			
TM output	3.024	2.412	-6.27***
<b>By Product Market Fluidity</b>			
TM output	3.424	4.415	6.79***

# Conclusion

Intangible assets are the largest determinant of value in modern corporations. Yet, we know little about important forms of intangible capital, such as trademarks

In this paper we attempt to fill this gap and provide several new facts about trademarking in the last 70 years

- The use of trademarks has skyrocketed in the last few decades
- Trademarks are widespread in the economy – unlike other forms of IP, trademarks are commonly used in all sectors

## Conclusion (cont'd)

First attempt to measure dollar value of trademarks

- Trademarks are very valuable to firms
  - The average trademark is worth \$46 million, which is more than the value of the average patent
  - On average, the yearly trademark output of the firms in our sample is worth \$80 million, which is about 2% of total asset value
- Trademark registration appears to cause subsequent firm growth
  - Employment, capital, output, profits, and market share all increase significantly in the years that follow new trademark output

## Conclusion (cont'd)

Trademarks appear to be related to innovation

- Trademarking is complementary to patenting
- Suggestive evidence that trademarks may be proxying for (late-stage) product innovation
- Suggestive evidence that trademarks may reduce consumer search costs

Trademarks are an important **missing intangible capital!**

# Quality of TM-firm matches

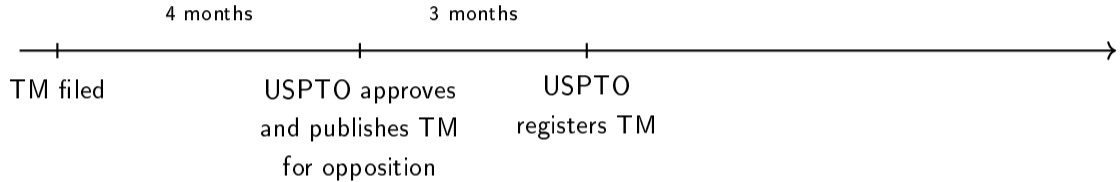
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TM characteristics	Our sample	Whole universe
<b>Panel A. Trademarks, by type</b>		
% of trademarks	67.9	61.8
% of service marks	32.0	37.9
<b>Panel B. Trademarks, in-commerce vs. intent-to-use</b>		
% of in-commerce TMs	58.7	57.0
<b>Panel C. Trademarks, by registration</b>		
% of registered TMs	62.2	56.9
% of registered in-commerce TMs	87.6	71.3
% of registered intent-to-use TMs	46.0	38.8

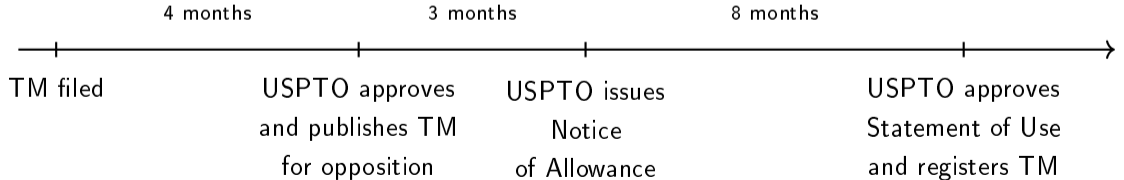


# Trademark registration process

## A. In-commerce trademarks

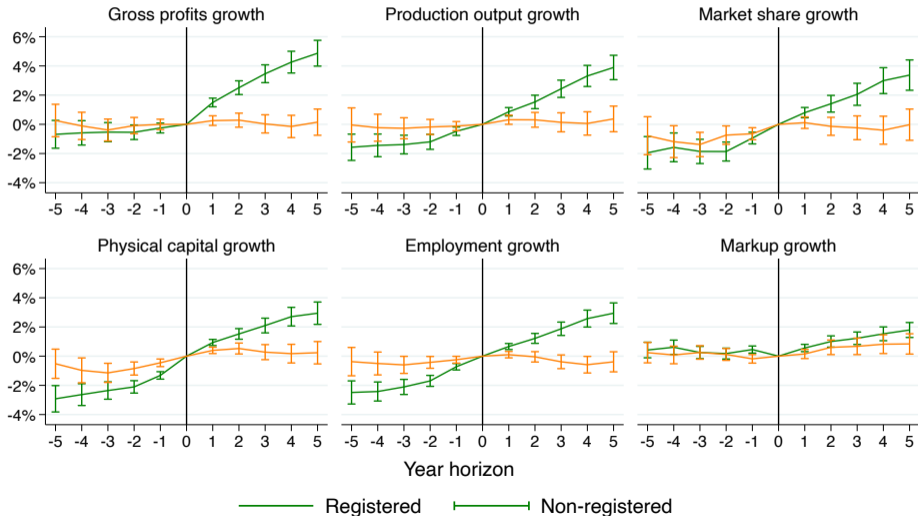


## B. Intent-to-use trademarks



# Registered vs. non-registered TMs

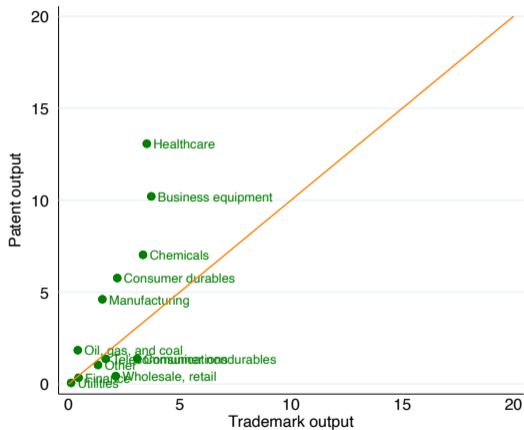
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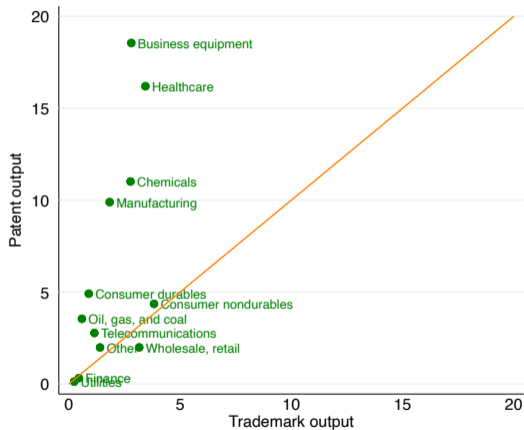
Registered Non-registered

# Patent and Trademark Output: By Industry

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A. Equally-weighted



B. Weighted by Total Assets

# TMs and firm performance: by legal basis

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## Panel A: Profit Growth

	Horizon (years)				
	1	2	3	4	5
Intent-to-use TM output	0.825*** (5.44)	1.282*** (5.27)	1.587*** (5.32)	1.886*** (5.28)	2.304*** (5.58)
In-commerce TM output	1.155*** (8.18)	1.968*** (9.02)	2.665*** (9.38)	3.240*** (9.51)	3.668*** (9.22)
Industry $\times$ Year FE	Yes	Yes	Yes	Yes	Yes
N	133,467	123,933	115,343	107,506	100,332
R <sup>2</sup>	0.18	0.21	0.22	0.23	0.24

# TMs and firm performance: by legal basis (cont'd)

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	Horizon (years)				
	1	2	3	4	5
<b>Panel B: Production Output Growth</b>					
Intent-to-use TM output	0.766*** (5.46)	1.235*** (5.43)	1.386*** (4.68)	1.779*** (4.91)	2.147*** (5.22)
In-commerce TM output	0.613*** (4.58)	1.113*** (5.33)	1.866*** (6.91)	2.528*** (7.59)	3.083*** (8.12)
<b>Panel B: Market Share Growth</b>					
Intent-to-use TM output	0.756*** (4.49)	1.305*** (4.68)	1.255*** (3.37)	1.668*** (3.71)	2.299*** (4.57)
In-commerce TM output	0.371** (2.29)	0.606** (2.39)	1.292*** (3.83)	1.995*** (4.82)	2.333*** (4.90)

## TMs and firm performance: IV regression (second stage)

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Trademarks are associated with subsequent improvement in firm performance

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	Horizon (years)				
	1	2	3	4	5
<b>Panel B. Production Output Growth</b>					
Success rate	0.019 (0.01)	1.581 (0.76)	7.840*** (2.96)	11.174*** (3.44)	13.373*** (3.48)
<b>Panel C. Market Share Growth</b>					
Success rate	1.923 (1.10)	3.175 (1.12)	11.157*** (3.11)	17.028*** (3.92)	21.754*** (4.28)
<b>Panel D. Physical Capital Growth</b>					
Success rate	0.568 (0.55)	1.803 (1.01)	4.240* (1.79)	7.080** (2.41)	11.154*** (3.14)
<b>Panel E. Employment Growth</b>					
Success rate	2.326** (2.30)	4.733*** (2.76)	7.696*** (3.38)	11.047*** (3.95)	15.311*** (4.52)



# Distribution of Trademark examiner leniency

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