



Industries and Competition:  
New Foundations In Corporate Finance and  
Asset Pricing

by:

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# Summary of Keynote

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- Specifying industry structure and competition is fundamental to *finance* as well as economics.
  - Competitors are not just benchmarks. Firms choose financial policies to influence interaction with each other. *Can't just include fixed effects.*
  - Industry competition is not just a control variable or alternative disciplining device.
  - Competition is a fundamental state variable which impacts:
    - Viable governance structures
    - Viable compensation systems
    - Viable financing structure
    - Risk and survival of firms!!
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# Papers and New Data on Industries

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*Background for this talk:* Papers this talk is based on and our new industry data based on computation linguistics of 10-K filing text are available for free download at:

<http://hobergphillips.tuck.dartmouth.edu/>

Industry Data on Similarities, Fluidity and Concentration:

- Recently updated 1996-2017.
  - Will be backfilling for 1987-1995 and adding *international versions*.
  - See handout.
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# Focus of Central Problems in Finance

- Agency problems.
- Asymmetric information.
- *Not* market coordination problems which are the focus of industrial organization.

Central point I will be making: Cash flows which are the focus on the above central problems are fundamentally affected by product market competition and industrial organization.

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# Traditional Finance

- **Corporate Finance:** Investigates the failure of MM proposition that the real and financial decisions of the firm are independent.
  - **Asset pricing:** Prices are determined by firm risk relative to aggregate benchmarks. Firms risk characteristics are independent of actions of competitors.
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# Typical Corporate Finance

## Interaction of Finance and Real Decisions

**Type A: Certain capital structure affects real decisions**

Amount of debt affects risk of investment →

Risk shifting problem.

Amount of debt affects level of investment →

Debt overhang problem.

**Implication: Partial equilibrium or inefficiencies given recontracting costs.**

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# Typical Corporate Finance - 2

Interaction of Finance and Real Decisions

Type B: Problems in contracting: (agency problems) or selection problems given asymmetric information (signaling, separating equilibriums).

Give rise to investment inefficiencies which can be fully or partially solved with set of optimal financial contracts (back to 1st best or a better 2nd best).

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# Benchmarking

- Unspecified how market structure affects these problems. Typically assumed firms interact without considering the actions of their rivals? Why?
  - Answers question: Does the firm under- or over-perform against its benchmarks.
  - Where does industrial organization come in? Finance usually treats competitors as "benchmarks."
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## Benchmarking - 2

- We benchmark performance with other firms - both in corporate finance and asset pricing. The critique of Larry Summers is that "*finance is ketchup economics*" applies here. Relative pricing not what drives the benchmark.
  - Performance relative to industry benchmarks misses the bigger issues:  
What drives the industry benchmark?  
How do firms interact with each other?
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# Firm Interaction

- In industrial organization it is how firms interact with each other that is important. Firms take actions to impact this interaction - which of course impacts their performance.
  - Traditional Structure-Conduct-Performance:
    - Structure was exogenous (Monopoly, Oligopoly, Perfect Competition),
    - Conduct (pricing, quantity): interaction between firms (Bertrand, Cournot),
    - Performance: Cash flow outcomes.
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## New industrial organization:

- **Dynamics** are important.
  - **Structure and Conduct are both endogenous.**
  - Firm conduct affects the structure  $\implies$  with an aim to impact performance.
  - **Endogenous Barriers to Entry** (Shaked and Sutton, Sutton): Firms invest in R&D and advertising to differentiate themselves and create barriers to entry. Structure of course may impact the range of conduct possible.
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## MM for Competition and Finance (MM C&F)

- We need the equivalent of MM for competition and financial decisions.

"Competition doesn't affect the interaction of finance and real side decisions" under the following conditions:

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## MM for Competition and Finance (MM C&F)

- 1. Financial structure of a firm can be costlessly adjusted and is not impacted by rival firms.**
  - 2. Agency problems are not affected by competition.**
  - 3. Firms take the actions of their rivals as given. Rival firms do not affect NPVs.**
  - 4. Firms can adjust their physical capital stock without considering competitors.**
  - 5. Stock prices equally reflect fundamentals in competitive and concentrated industries.**
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## MM C&F: Condition 1

- **Financial structure of firms can be costlessly adjusted and is not impacted by rival firms ==> financial structure cannot be used as a commitment device differentially in competitive and concentrated industries.**

**→ However research has focused on how it can...**

Brander and Lewis (AER, 1986), Maksimovic (Rand, 1988), Phillips (1995), Kovenock and Phillips (1995, 1997), Campello (2006, JFE), cash and hedging Haushalter, Klasa, Maxwell (JFE, 2007) also recently Fresard (JF, 2010).

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## MM C&F: Condition 2

- **Agency problems are not affected by competition.**

**However:**

- ==> Compensation:** Hart (Rand, 1983), Scharfstein (Rand, 1988), Aggarwal and Samwick (JF, 1999).
- ==> Corporate governance** affected by competition: Giroud and Mueller (JFE, 2010).
- ==> Cash and Entry:** Can firms use cash holding / financial structure to prevent entry? (Boutin, Cestone, Fumagalli, Pica, Serrano-Velarde (JFE, 2013). Need an endogenous contracting problem that prevents rivals from getting financing.

## Research Question

### *Does competition mitigate managerial slack?*

Do business combination (BC) laws have a different effect on firms in competitive and non-competitive industries?

☞ Subsequent question:

### *Which agency problem is being mitigated?*

- Does competition curb managerial empire building?
  - Or does it prevent managers from enjoying a “quiet life” by forcing them to “undertake cognitively difficult activities”?
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**Table 3**

Dependent Variable: ROA

**Does Corporate Governance Matter in Competitive Industries?**

— *Endogeneity of BC Laws?* —

<i>Main Results</i>	[1]	[2]	[3]
Dependent Variable:	ROA	ROA	ROA
BC	-0.006** (2.25)	0.001 (0.35)	
BC x HHI		-0.033*** (4.95)	
BC x HHI(Low)			0.002 (0.68)
BC x HHI(Medium)			-0.008** (2.56)
BC x HHI(High)			-0.012*** (4.59)
Industry-year	0.206*** (9.67)	0.206*** (9.60)	0.206*** (9.61)
State-year	0.249*** (8.86)	0.249*** (8.83)	0.248*** (8.77)
Size	0.096*** (20.27)	0.097*** (20.38)	0.097*** (20.34)
Size-squared	-0.007*** (20.09)	-0.007*** (20.42)	-0.007*** (20.53)
Age	-0.021*** (5.34)	-0.021*** (5.44)	-0.021*** (5.37)
HHI	0.015* (1.66)	0.025*** (2.58)	
HHI(Medium)			0.006* (1.88)
HHI(High)			0.008** (2.12)
Firm Fixed Effects	Yes		
Year Fixed Effects	Yes		
Observations	77,460	77,460	77,460
Adj. R-squared	0.68	0.68	0.68

**Indirect effect of comp on profits**

**direct effect**

BC Year(-1)	-0.001 (0.17)
BC Year(0)	-0.002 (0.39)
BC Year(1)	-0.000 (0.07)
BC Year(2+)	0.004 (0.74)
BC Year(-1) x HHI	0.001 (0.07)
BC Year(0) x HHI	-0.027** (2.06)
BC Year(1) x HHI	-0.032*** (4.33)
BC Year(2+) x HHI	-0.034*** (4.15)
Industry-year	0.210*** (7.70)
State-year	0.256*** (7.74)
Size	0.097*** (20.37)
Size-squared	-0.007*** (20.44)
Age	-0.020*** (5.44)
HHI	0.025** (2.53)
Firm Fixed Effects	Yes
Year Fixed Effects	Yes
Observations	77,460
Adj. R-squared	0.68

**Giroud and Meuller (2010)**

## MM C&F: Condition 3

- **Firms take the actions of their rivals as given.**  
==> NPV, Risk of my investment does not depend on my rivals investment.  
==> No "races" to invest, no strategic investment
- Real options literature: (Grenadier (2002 and others), Novy-Marx (2009), Lambrecht (2000, 2004) , Morellec and Zhdanov (2005), Bernile, Lyandres, Zhdanov (2008), Carlson, Dockner, Fisher, Giammarino (2007). In industrial organization: Pakes and McGuire, dynamic games.
- Recently in R&D games: Phillips and Zhdanov (RFS, 2013). Firms invest more in R&D and threaten rivals, who then may take them over.
- Mergers and Product Market Synergies: Recent work by Hoberg and Phillips (RFS, 2010) shows that firms' incentives to merge to create product market synergies vary with competition.

# Product Market Synergies and Competition in Mergers and Acquisitions: A Text Based Analysis

## Hoberg & Phillips (RFS, 2010)

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- Fundamental Premise: Product market competition affects synergy creation and incentives to merge
  - Synergies difficult to measure
    - Why do profits increase for some mergers? Increased cost efficiency? economies of scale? Market power? Or new product introduction given complementary assets?
  - Competition can affect likelihood of merging and successful product introduction.
    - Firms in larger clusters might have high idea arrival: higher merger incidence.
    - Competition among firms in large clusters might reduce merger incidence.
  - Competition can affect how gains are shared
    - How large gains are: post merger rivals affect profit margins.
    - How gains are shared: are there substitute target firms?
- In all cases, identifying competition means knowing “how close” and “closeness to whom”.

# Hypotheses about Industry Competition

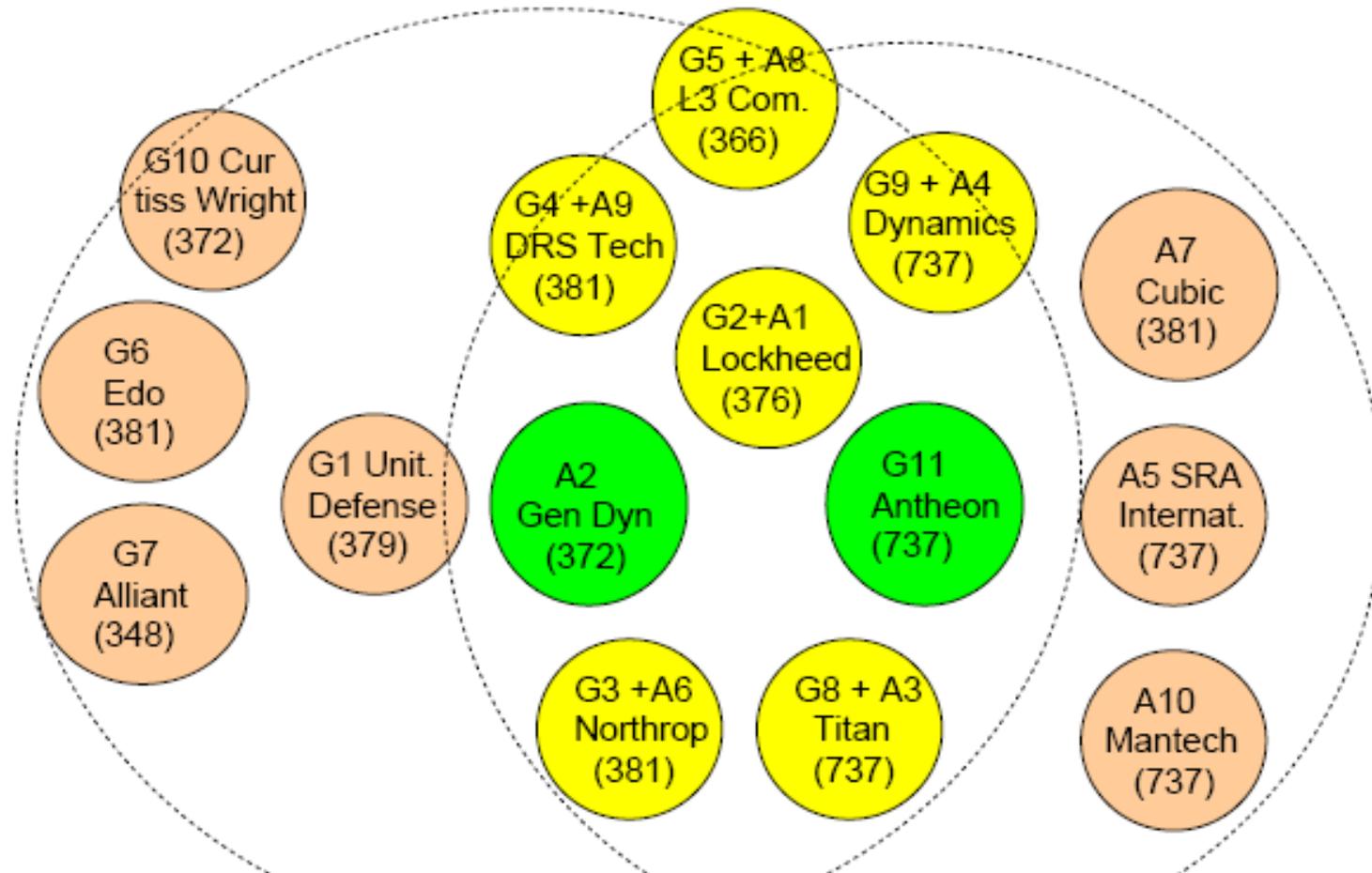
## Key Industrial Organization Predictions:

- H1: More concentration, more profitability  
(Lack of strong link in many previous studies).
- H2: Limit pricing: Firms with “close” potential rivals price more competitively and thus have lower profits.
- H3: Endogenous Barriers to Entry: Firms actively engage in mechanisms to increase their product differentiation and reduce future product market competition.
- ➔ We test these hypotheses in the context of mergers. Need accurate measures of “closeness” and product market differentiation

# Synergy measured with Document Similarity

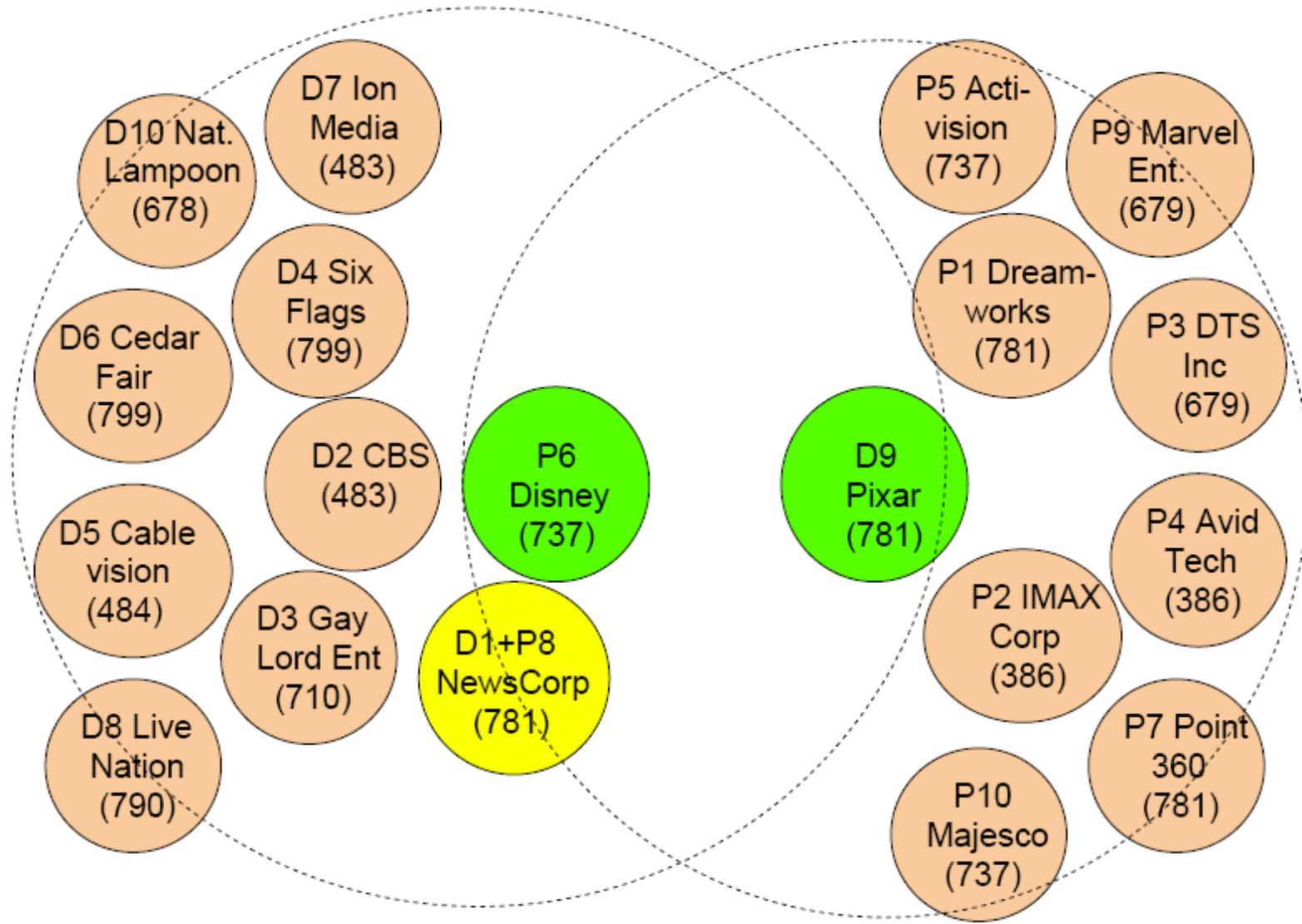
- Take all words used in universe of 10-Ks in product description each year (87,385 in 1997). Exclude words (3027 of them in 1997) appearing in more than 5% of all 10-Ks.
- Form boolean vectors for each firm in each year (1=word used, 0=not used). Normalize to unit length. Dot products => pairwise product similarity.

# General Dynamics (372) – Antheon (737)



Conclude: Example of similar but different. Merger permits new products (different enough), but similar enough to permit integration. Very different WITHIN the same industry. Variable Industry groupings: Firm Centric Notion of Competition and Industry do not impose transitivity across firms – similar to Networks

# Real Data: Merger of Disney and Pixar



Conclude: SIC codes miss the point, example of similar but different.

# T9: Announcement Returns

Event Window	Acquirer Product Similar to Rivals	Target Product Similar to Rivals	Gain in Prod. Diff. vs. Rivals	Target + Acquirer Pair Similar.	% Neighbor Patent Words	Same SIC-3 Industry Dummy	Vertical Similar Dummy	Acquirer Industry HHI (SIC-3)	Merger x Relative Size	Obs
<i>Combined Firm Announcement Returns</i>										
(1) t=0 only	0.018 (2.47)	-0.013 (-1.82)		0.008 (2.02)	-0.001 (-0.40)	-0.006 (-2.03)	0.016 (1.52)	0.021 (3.18)	4,937	
(2) t=0 only			0.018 (2.55)	0.009 (0.72)	0.009 (2.30)	-0.000 (-0.28)	-0.006 (-1.98)	0.014 (1.37)	0.021 (3.20)	4,937
(3) t=-1 to t=0	0.016 (1.81)	-0.015 (-1.78)		0.008 (1.83)	0.001 (0.88)	-0.007 (-1.85)	0.015 (1.29)	0.023 (3.08)	4,937	
(4) t=-1 to t=0			0.021 (2.65)	0.004 (0.28)	0.009 (2.12)	0.002 (1.00)	-0.006 (-1.80)	0.013 (1.11)	0.023 (3.10)	4,937
(5) t=-5 to t=0	0.033 (2.40)	-0.039 (-3.28)		0.007 (1.31)	0.002 (0.82)	0.002 (0.48)	0.006 (0.43)	0.022 (2.38)	4,937	
(6) t=-5 to t=0			0.028 (2.14)	0.027 (1.43)	0.010 (1.95)	0.002 (0.75)	0.002 (0.52)	0.002 (0.15)	0.023 (2.39)	4,937
(7) t=-10 to t=0	0.042 (2.47)	-0.035 (-2.47)		0.005 (0.84)	0.003 (1.30)	0.005 (0.79)	-0.000 (-0.01)	0.028 (2.81)	4,937	
(8) t=-10 to t=0			0.035 (2.10)	0.049 (2.30)	0.008 (1.37)	0.003 (1.13)	0.005 (0.80)	-0.003 (-0.19)	0.028 (2.81)	4,937

- (1) Combined firm returns larger when acquirer in comp. product market and when target is more unique.
- (2) Especially large when target is dissimilar to acquirer's near rivals and when pairwise similarity is larger.
- (3) Results also larger when patent-proxy for unique assets is higher.

# Table 10: Long-term Real Outcomes

Horizon	Acquirer Product Simil. (10 Near.)	Gain in Prod. Diff. vs. Rivals	Target + Acquirer Pair Simil.	% Neighbor Patent Words	Same SIC-3 Industry Dummy	Vertical Similar. Dummy	Acquirer Industry HHI (SIC-3)	Target Relative Size	Log Total \$ Size	Obs
<i>Panel A: Operating Income/Assets</i>										
1 Year	0.034 (1.37)		0.003 (0.33)	-0.004 (-1.37)	-0.025 (-2.17)	0.033 (1.09)	0.005 (1.14)	0.000 (0.44)	4,451	
3 Year	0.065 (2.24)		-0.007 (-0.54)	-0.009 (-2.32)	-0.039 (-3.78)	0.073 (1.72)	0.017 (2.76)	-0.002 (-1.33)	4,451	
1 Year		0.033 (1.81)	0.054 (2.29)	0.004 (0.40)	-0.005 (-1.47)	-0.025 (-2.16)	0.034 (1.14)	0.005 (1.12)	0.001 (0.81)	4,451
3 Year		0.048 (2.08)	0.081 (2.63)	-0.007 (-0.55)	-0.010 (-2.40)	-0.039 (-3.81)	0.076 (1.79)	0.017 (2.77)	-0.001 (-0.94)	4,451
<i>Panel C: Log Sales Growth</i>										
1 Year	0.402 (5.79)		-0.014 (-0.37)	0.008 (0.69)	-0.028 (-1.19)	-0.193 (-2.11)	0.068 (3.78)	-0.015 (-4.25)	4,451	
3 Year	0.684 (4.97)		-0.070 (-0.83)	0.010 (0.57)	-0.022 (-0.41)	-0.075 (-0.50)	0.070 (2.34)	-0.014 (-2.63)	4,451	
1 Year		0.268 (4.25)	0.288 (3.72)	-0.026 (-0.65)	0.008 (0.72)	-0.027 (-1.14)	-0.173 (-1.92)	0.070 (3.85)	-0.014 (-3.80)	4,451
3 Year		0.452 (3.86)	0.463 (3.37)	-0.091 (-1.08)	0.011 (0.62)	-0.020 (-0.38)	-0.040 (-0.26)	0.073 (2.41)	-0.012 (-2.24)	4,451

Conclude: acquirers in competitive product markets experience higher profitability and sales growth when similar and gain in differentiation. Results stronger as horizon is lengthened.

# Table 11: Synergies Growth in Product Descriptions

Row	Horizon	Acquirer Product Simil. (10 Near.)	Gain in Prod. Diff. vs. Rivals	Target + Acquirer Pair Simil.	% Neighbor Patent Words	Same SIC-3 Industry Dummy	Vertical Similar. Dummy	Acquirer Industry HHI (SIC-3)	Target Relative Size	Log Total \$ Size	Initial Prod. Desc. Size
<i>Panel A: Ex post growth in product description</i>											
(1)	1 Year	0.594 (3.47)			-0.000 (-0.00)	-0.019 (-0.99)	0.111 (2.06)	-0.032 (-0.21)	-0.050 (-1.39)	0.015 (2.83)	-0.274 (-11.72)
(2)	2 Year	0.720 (4.14)			0.018 (0.30)	-0.017 (-0.71)	0.095 (2.10)	0.025 (0.13)	-0.036 (-0.90)	0.018 (2.96)	-0.359 (-15.82)
(3)	3 Year	0.721 (3.57)			0.129 (1.96)	-0.001 (-0.06)	0.029 (0.64)	0.050 (0.24)	-0.024 (-0.60)	0.015 (2.65)	-0.394 (-16.87)
(4)	1 Year		0.202 (1.28)	0.873 (4.62)	-0.009 (-0.16)	-0.029 (-1.51)	0.109 (2.02)	0.018 (0.12)	-0.046 (-1.29)	0.019 (3.43)	-0.272 (-11.81)
(5)	2 Year		0.256 (1.61)	0.930 (4.47)	0.004 (0.06)	-0.027 (-1.13)	0.093 (2.09)	0.085 (0.45)	-0.030 (-0.77)	0.022 (3.47)	-0.356 (-15.83)
(6)	3 Year		0.169 (0.99)	0.805 (3.63)	0.109 (1.67)	-0.010 (-0.41)	0.026 (0.60)	0.119 (0.58)	-0.018 (-0.43)	0.018 (3.14)	-0.386 (-16.73)

Conclude: Acquirer product market competitiveness very related to product desc. growth. Support for post-merger real gains being related to synergies and unique assets.

# Table 12: Economic Magnitude (Returns+Profitability)

Description	<i>Product Similarity (10 Nearest)</i>		<i>Neighbor Patent Words</i>	
	10 %ile	90 %ile	10 %ile	90 %ile
<i>Panel A: Announcement Returns</i>				
Combined Firm Ann Returns (t=0)	0.3%	0.7%	0.3%	0.7%
Combined Firm Ann Returns (t=-10 to t=0)	2.2%	3.0%	2.5%	2.7%
<i>Panel B: Profitability and Sales Growth</i>				
$\Delta$ OI/Assets: 1 Year (A)	-0.9%	-0.2%	-0.6%	-0.5%
$\Delta$ OI/Assets: 3 Year (A)	-2.2%	-1.0%	-1.4%	-1.8%
$\Delta$ OI/Sales: 1 Year (A)	-0.7%	-0.2%	-0.9%	0.0%
$\Delta$ OI/Sales: 3 Year (A)	-2.4%	-1.5%	-2.3%	-1.7%
Sales Growth: 1 Year (A)	12.0%	19.8%	16.2%	15.5%
Sales Growth: 3 Year (A)	20.3%	33.6%	28.7%	25.2%
<i>Panel C: Growth in Product Descriptions</i>				
Prod Desc Growth: 1 Year (A)	-2.2%	8.9%	3.3%	3.3%
Prod Desc Growth: 3 Year (A)	-3.4%	10.1%	0.1%	6.6%

Conclude: Economic impact on announcement returns modest, stronger on fundamentals, especially sales growth and growth in product descriptions.

# Merger paper conclusions

“Synergies and competition matter”

Merger pair similarity – while high - is quite heterogeneous

\*\* Best mergers with higher ex post cash flows and new product introductions are ones

(1) with similar acquirer and target

(2) with targets that are further away from A's nearest rivals

(3) that have unique, hard to replicate assets (patents) that make potential new products.

→ “Similar but Different”.

## MM C&F: Condition 4

**Firms can adjust their physical capital stock without considering competitors.**

→ However financial condition of competitors affects asset liquidity - Shleifer and Vishny (JF, 1992).

**Implies risk factors are similar in competitive and concentrated industries.**

→ However, recent work of Hou and Robinson (JF, 2006) shows that equity risk is quite different even after adjusting for common risk factors. Valta (JFE, 2014) for debt.

→ Liquidity differences, equity cost vary with product market competition (Ortiz-Molina and Phillips, JFQA, 2014).

## MM C&F: Condition 5

**Stock prices equally reflect fundamentals in competitive and concentrated industries.**

Implications for Asset pricing and corporate finance:

==> NPV of my investment can be computed under equilibrium rival investment strategies

==> Stock prices equally reflect fundamentals in competitive and concentrated industries. However, recent work of Peress (JF, 2010) and Hoberg and Phillips (JF, 2010) says otherwise.

==> Industry Momentum based on text-identified competitors: Hoberg and Phillips (JFQA, 2018)

# Product Market Competition, Insider Trading, & Stock Market Efficiency

Peress (JF, 2010)

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- How does competition firms' product markets influence their behavior in equity markets?
  - Do product market imperfections spread to equity markets?
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# Peress (JF, 2010) (T4) Stock Price Informativeness

**Table IV**  
**Market Power and Stock Price Informativeness**

This table presents results of annual panel regressions of stock price informativeness on market power and other firm characteristics over the 1996-2005 period. Informativeness is measured as (the inverse of) the average absolute abnormal return surrounding an earnings announcement (from  $t=-2$  to  $t=+2$ ). Abnormal returns are the residuals from the Fama-French three-factor model. Market power is measured as the excess price-cost margin or Lerner index. Absolute value of  $t$ -statistics are displayed below the coefficient estimates. They are based on standard errors clustered both by firm and year. The symbols \*\*\*, \*\* and \* denote significance at the 1%, 5% and 10% levels respectively, for the two-tailed hypothesis test that the coefficient equals zero. See Table 1 for the variable definitions.

	Stock price informativeness									
Mkt power	-0.096	-0.044	-0.030	-0.013	-0.013	-0.032	-0.190	-0.120	-0.083	-0.112
	8.50***	4.92***	5.93***	1.81*	1.65*	4.26***	8.82***	5.03***	4.48***	7.51***
Mkt Power * Size							0.025	0.015	0.012	0.013
							6.15***	3.55***	3.20***	4.75***
Size		-0.017	-0.016	-0.016	-0.016	-0.020	-0.021	-0.018	-0.018	-0.022
		17.06***	16.34***	18.27***	18.06***	35.35***	15.68***	14.78***	15.50***	34.61***
Illiquidity			0.001	0.001	0.001	0.001		0.001	0.001	0.001
			6.14***	6.00***	5.94***	5.07***		6.27***	6.05***	5.05***
Return on assets			-0.034	-0.108	-0.107	-0.099		-0.033	-0.104	-0.095
			1.320	11.59***	10.09***	10.30***		1.310	9.56***	9.69***
Market-to-book				0.365	0.368	0.275			0.427	0.344
				2.91***	3.17***	2.77***			3.46***	3.36***
Leverage					0.003	0.031			0.003	0.031
					0.410	5.97***			0.480	5.99***
Turnover						0.026				0.026
						12.69***				12.73***
Constant	0.160	0.250	0.238	0.241	0.241	0.260	0.269	0.250	0.250	0.270
	32.07***	47.36***	56.45***	58.01***	56.08***	54.57***	35.41***	37.01***	38.06***	46.44***
Observations	23 432	23 417	23 415	23 113	23 040	22 718	23 417	23 415	23 040	22 718
R-squared	0.023	0.198	0.237	0.255	0.255	0.375	0.202	0.239	0.256	0.376

# Real and Financial Industry Booms and Busts

## Hoberg & Phillips (JF, 2010)

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- How important are industry booms?
  - Are outcomes predictable: cash flows + stock prices?
  - Does competition matter? Are outcomes different in competitive and concentrated industries?
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# Hoberg and Phillips (JF, 2010): (T7) Regressions Predicting Firm-level Abnormal Stock Returns: $AR_{i,t+1}$

Variable	OLS + Year Clusters	OLS + Year/Ind Clusters	Fama MacBeth
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## Panel B: Competitive Industries Only

Industry Relative Valuation	-0.004 (-1.60)	-0.004 (-1.45)	-0.003 (-1.16)
Firm Relative Valuation	-0.003 (-6.26) <sup>a,e</sup>	-0.003 (-7.22) <sup>a,e</sup>	-0.003 (-6.71) <sup>a,e</sup>
Industry Relative Investment	-0.005 (-1.76) <sup>c</sup>	-0.005 (-2.08) <sup>b</sup>	-0.006 (-2.21) <sup>b</sup>
Firm Relative Investment	-0.001 (-4.93) <sup>a</sup>	-0.001 (-4.39) <sup>a</sup>	-0.001 (-3.57) <sup>a</sup>
Industry New Finance	-0.046 (-3.97) <sup>a,f</sup>	-0.046 (-4.07) <sup>a,f</sup>	-0.028 (-2.60) <sup>a</sup>
Firm New Finance	-0.015 (-6.88) <sup>a,f</sup>	-0.015 (-5.25) <sup>a,f</sup>	-0.012 (-4.14) <sup>a,e</sup>
Observations	674,367	674,367	674,367

## Panel C: Concentrated Industries Only

Industry Relative Valuation	-0.003 (-1.37)	-0.003 (-1.28)	-0.002 (-1.11)
Firm Relative Valuation	-0.001 (-1.20) <sup>e</sup>	-0.001 (-1.32) <sup>e</sup>	-0.001 (-1.25) <sup>e</sup>
Industry Relative Investment	-0.003 (-1.48)	-0.003 (-1.48)	-0.003 (-1.72) <sup>c</sup>
Firm Relative Investment	-0.001 (-1.20) <sup>e</sup>	-0.001 (-1.32) <sup>e</sup>	-0.001 (-1.25) <sup>e</sup>
Industry New Finance	-0.003 (-1.48)	-0.003 (-1.48)	-0.003 (-1.72) <sup>c</sup>
Firm New Finance	-0.001 (-1.20) <sup>e</sup>	-0.001 (-1.32) <sup>e</sup>	-0.001 (-1.25) <sup>e</sup>
Observations	674,367	674,367	674,367

Conclude: abnormal stock returns are predictable and negatively related to *industry* investment in competitive industries, especially those with high new financing and investment.

\* Results weaker in concentrated industries.

# Research Possibilities - 1

- We still don't know what is the bigger picture. How to give advice to managers? If you are in a very competitive industry / concentrated industry / monopolistic industry, what financial securities should you use (%debt, type of debt - short term vs. long term) to finance your investment?
-

## Research Possibilities - 2

- Dynamics:
    - Do firms use cash and other financial policies to affect future competition?
    - Are changes in industry competition correlated with changes in optimal financial and actual financial policies?

Hoberg and Phillips (JPE, 2016) focuses on endogenous competition.
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# “Dynamic Text-Based Industries and Endogenous Product Differentiation”

## Hoberg & Phillips (JPE, 2016)

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- Develop new measures of firm relatedness and industry competitiveness. Jointly test importance of competition and new product synergies.
  - New automated methodology to read 47,609+ firm 10-Ks, and extract product descriptions.
    - Web crawling based in PERL, SEC Edgar website. APL based text parsing similarity matrix algorithms extract and process product descriptions for each 10-K.
  - Compute degree of similarity of every firm pair – both within and across industries:  $(5,000 * 5,000 / 2) \times 9$  years.
  - Build measures of asset complementarities and relatedness/similarity to other firms. Test theories of the endogeneous product market competition/ product differentiation (Shaked and Sutton (1987), Sutton (1991), Nevo (2000, 2001), Seim (2006).

# Hoberg and Phillips (JPE, 2016)

## Endogenous Competition

Dependent Variable	Log	Log	Zero	Zero
	Industry Ad / Sales	Industry R+D / Sales	Adver. Dummy	R+D Dummy
<i>Panel A: 10-K 300 Based Industry Controls</i>				
(1) $\Delta$ Similarity Concentration Index	0.007 (9.04)	0.006 (9.28)	-0.099 (-11.63)	-0.070 (-9.45)
(2) $\Delta$ Log Total Summed Similarity	-0.062 (-4.30)	-0.019 (-1.22)	1.246 (8.17)	0.707 (3.27)
(3) $\Delta$ Average Similarity	-0.000 (-2.64)	0.000 (0.94)	0.002 (4.50)	-0.000 (-0.43)
(4) $\Delta$ Sales 10-K Based HHI	0.003 (4.41)	0.002 (4.81)	-0.057 (-7.24)	-0.034 (-5.63)
(5) $\Delta$ Sales 10-K Based C4 Index	0.006 (7.84)	0.005 (8.65)	-0.089 (-10.65)	-0.068 (-9.86)
(6) $\Delta$ Observed Lerner Index	0.003 (4.37)	0.003 (5.45)	-0.032 (-3.29)	-0.025 (-4.64)
(7) $\Delta$ Observed Firm Profitability	0.003 (4.10)	0.003 (4.22)	-0.031 (-2.99)	-0.021 (-3.31)

Conclude: Our new competition measures pick up incentives to differentiate yourself – endogenous competition.

# Research Possibilities - 3

**In industry equilibrium models**, industries go through the following process:

1. **Growth:** Large number of firms ( $N$ ), high prices.
2. **Consolidation:** Standardization of technology, prices decline, some firms exit. Which firms, how do they exit? (Pastor and Veronisi 2006 have begin to explore the implications for risk and asset prices, Maksimovic and Phillips 2008 for firm organization and industry life cycle).
3. **Stability**
4. **Decline:** firms again exit with few firms remaining.

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# Industry Life Cycle

- Does firm organization and the industry life cycle contribute to who exits and how? Maksimovic and Phillips (2008, Journal of Finance) begins to explore this topic.
  - Are risk properties of asset prices different over the stages of the industry life-cycle?
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# New Data on Industries and Competition Available (free download)

- Our new data on industries is available for download at:  
<http://hobergphillips.tuck.dartmouth.edu/>
  - Recently updated 1996-2017.
  - Will be backfilling for 1987-1995 and adding international versions.
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# Summary

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- Specifying industry structure and competition is fundamental.
  - Competitors are not just benchmarks. Firms choose financial policies to influence interaction with each other. *Can't just include fixed effects.*
  - Industry competition is not just a control variable or alternative disciplining device.
  - Competition is a fundamental state variable which impacts:
    - Viable governance structures
    - Viable compensation systems
    - Viable financing structure
    - Risk and survival of firms!!
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# More Information

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- For more on the above topics and a more extensive reading list please consult a Ph.D. syllabus of a course I have designed and taught: "Interaction of Finance and Industrial Organization" See the web at:  
[Ph.D. Course on my Website](#)
  - This course has been taught at Helsinki, HEC - Paris, Insead, Maryland, Melbourne, UNSW (Australia), Tulane, USC, Vienna Graduate School of Finance (VGSF).
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# More Information: Full Course on my Website

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**Finance and Industrial Organization<sup>4</sup>**

**Gordon Phillips<sup>4</sup>**

**Tuck School of Business<sup>4</sup>**

**Dartmouth College<sup>4</sup>**

**April 25, 2019<sup>4</sup>**

## **Summary<sup>4</sup>**

The primary topics below concern the interaction between the firm's real decisions and its financial decisions in different equilibrium industrial organization settings. Understanding the links between finance and industrial organization involves a fair amount of microeconomics and industrial organization in addition to finance. I emphasize the links between theoretical and empirical research in both industrial organization and corporate finance.

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# Welcome to the Hoberg-Phillips Data Library

**<< NEW: All TNIC and Fluidity data extended through 2017! >>**

Data provided by [Gerard Hoberg \(USC\)](#)  
and [Gordon Phillips \(Dartmouth\)](#)

The Hoberg and Phillips Text Based Industry Classifications have a spatial representation. All firms have a location in a product market space shaped as a unit sphere. Competitive product markets are areas of the sphere where many firms are located. Concentrated areas are sparsely populated.

Some regions of the product space have no firms residing there, as some text descriptions of products would describe products with no demand, such as the word combination: "eggs", "paint" and "gardening".

The best way to tap the full

## [Text-based Network Industry Classifications \(TNIC\) data \[click here\]](#)

\* These new industry classifications are based on firm pairwise similarity scores from text analysis of firm 10K product descriptions. Competitors are firm centric with each firm having its own distinct set of competitors - analogous to networks or a "Facebook" circle of friends. These new industry classifications are updated annually and offer more research flexibility, and are also more informative, than FIC (fixed industry) classifications such as SIC, NAICS, and the 10-K based FIC classifications below. Our research shows they sharply improve upon SIC and NAICS codes in explaining many different firm specific decisions, including firm profitability, Tobins Q and dividends. These benefits are outlined in Hoberg and Phillips (2010, 2016), with references available by clicking on above link.

## [Industry Concentration and Total Similarity Data \[click here\]](#)

\* HHI Concentration metrics and Total Similarity data is available based on TNIC Industries.

## [Product Market Fluidity Data \[click here\]](#)

\* Product Market Fluidity data assesses the degree of competitive threat and product market change surrounding a firm, and is based on Hoberg, Phillips and Prabhala (2014).

- download at: <http://hobergphillips.tuck.dartmouth.edu/>