

The Negative Effects of Mergers and Acquisitions on the Value of Rivals

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Motivation

- On June 16, 2017, **Amazon** announced the \$13.7 billion acquisition of **Whole Foods**
 - Whole Food shares rose by 29%, Amazon shares rose by 4%
- What happened to the share prices of **Whole Foods' rivals** at the announcement?
 - Kroger: **-15.8%**
 - Walmart: **-6.6%**
 - Costco: **-8.2%**
 - United Natural Foods: **-23.3%**
 - Sprouts Farmers Market: **-9.7%**
 - Target: **-10.3%**

Motivation

- On August 7, 2013, **AOL** announced the \$405 million acquisition of **Adap.tv**, a digital video advertising platform
- How did **rival firms** react to this acquisition?
- Millennial Media: **-33.2%**
- Google: **-3.8%**
- Yahoo: **-2.1%**
- WebMD Health Corp: **-1.1%**

Motivation

- Mergers & acquisitions generate **reallocations of economic activity**
 - Direct consequences for acquirers, targets and rival firms
- Potential competitive effects of M&As for **product market rivals**
 - M&As allow firms to become “stronger” competitors (Bradley, Desai, and Kim (1983))
 - ... enjoy economies of scale and/or scope
 - ... larger client base (lower costs)
 - ... fewer financial constraints
 - ... expand or protect market shares
 - Increased competition may **undermine the prospects for rivals** of target

Motivation

- Important changes in the structure of industries over past two decades
- Industries are becoming
 - **increasingly concentrated** (Council of Economic Advisors (2016); Grullon, Larkin, and Michaely (2016))
 - Exhibit **“winner-take-most”** features (Bloom (2017))
 - Are dominated by **“superstar” firms** (Autor, Dorn, Katz, Patterson, and Van Reenen (2017))
 - Structural changes occur partly **through M&As** (Blonigen and Pierce (2017))

This paper

- If acquisitions are expected to **change competition** → **abnormal stock returns** around the announcement
- We study rivals' **stock price reactions** around the announcement of horizontal acquisitions
- Not new...
 - ... but the existing literature finds **positive rival CARs**
 - ... we document **negative rival CARs**
 - ... our evidence is consistent with hypothesis that increased competition harms rivals

Existing literature

- Eckbo (1983)
 - Positive rival CARs (between 0.2% and 2%), 259 transaction
- Song and Walking (2000)
 - Small positive but insignificant average rival CARs, 141 transactions
- Fee and Thomas (2004)
 - Positive rival CARs (0.54%), 554 transactions
- Shahrur (2005)
 - Positive rival CARs (0.39%), 463 transactions
- Bernile and Lyandres (2016)
 - Positive rival CARs (0.8% to 2.2%), 453 transactions

All papers document **positive rival CARs**

Results are based on **small samples**

Main results

- Sample
 - **7,981 transactions**
 - 4,303 distinct publicly-listed rivals
 - Sample period: 1990 – 2015 (252,887 stock price reactions)
- Abnormal returns
 - **Average (median) rival CARs are negative: -0.15% (-0.40%)**
 - Large overall value loss for rivals for all deals over 25 years: \$2.77 trillion
 - Rivals with high growth opportunities / in tech industries suffer the most
 - Negative rival CARs large when target acquired by cash rich firm
- Real outcomes
 - Rivals experience **lower sales growth and market share**
 - **Higher probability of bankruptcy** when CARs negative
 - Higher probability of becoming an acquirer when CARs negative
 - Higher probability of deal challenge when CARs negative

Theoretical considerations

- **Positive rival CARs:**

- **Collusion effect** (Eckbo (1983): When a competitor is acquired, the number of rivals goes down, increasing the bargaining power of remaining firms
- **“Anticipation”** effect (Song and Walking (2000)): As M&As happen in waves and targets are bought at a premium, an acquisition makes other acquisitions in the industry more likely
 - Difference between public and private merger waves

- **Negative rival CARs**

- Acquisitions **increase market power and relax financing constraints of combined entity**, leading to tougher competition for rivals
- **Reverse anticipation:** when a competitor is acquired, the chance for rivals to get acquired in the future goes down
- **Negative information:** Private information of acquirer about target reveals negative information about unpicked rivals

Data and sample

- U.S. domestic M&As between 1990 and 2015 from SDC
 - Exclude financial, utilities industries, and deals involving government
 - Exclude LBOs, spinoffs, recapitalizations, self-tender offers, exchange offers, repurchases, acquisitions of remaining interest, privatizations, buybacks etc.
- Focus on **horizontal deals**
 - Transaction value of at least \$10 million
 - Exclude deals when less than three rivals (same 4-digit SIC code)
- Stock returns from CRSP; additional accounting data from Compustat
- Final sample of **7,981 transactions**

Descriptive statistics

Variable	N	Mean	Median	S.D.	p10	p90
Deal characteristics						
Log(number of deals)	7,981	3.865	3.871	1.288	2.079	5.900
Log(value of deals)	7,981	7.857	8.153	2.222	4.840	10.454
Log(transaction value)	7,981	4.406	4.121	1.507	2.690	6.444
Public acquirer	7,981	0.651	1.000	0.477	0.000	1.000
Public target	7,981	0.123	0.000	0.329	0.000	1.000
Rival characteristics						
Log(total assets)	23,839	6.008	5.989	2.168	3.179	8.905
Market-to-book ratio	23,815	2.135	1.563	1.712	0.944	3.951
Cash-to-asset ratio	23,656	0.148	0.079	0.179	0.008	0.395
Public acquirer characteristics						
Log(total assets)	4,806	6.768	6.697	1.712	4.626	9.123
Market-to-book ratio	4,803	2.303	1.700	1.806	1.049	4.196
Cash-to-asset ratio	4,764	0.112	0.061	0.130	0.005	0.286
Public target characteristics						
Log(total assets)	229	5.885	5.697	2.129	3.074	8.829
Market-to-book ratio	221	2.480	1.681	2.024	1.091	5.162
Cash-to-asset ratio	220	0.130	0.066	0.156	0.007	0.378

Computation of rival CARs

- Industries identified by the four-digit SIC industry code
- Abnormal returns computed for two windows:
 - **7 days (-3/+3)** and **11 days (-5/+5)** around the announcement day
- Abnormal returns computed as difference between realized and expected returns using two models:
 - **Market model** using CRSP value-weighted index
 - **Four-factor model (FF)**, including the factors SMB, HML, and MOM
 - Observation period spans from 251 days to 21 days before the deal announcement
- Results at **individual rival-deal level** and **equally-weighted portfolio level** (collapses all rivals at the deal level)

Rival CARs

CARs	Unit of observation	N	Mean	Median	S.D.	p10	p90
CAR (-3,3)	Rival-deal	252,887	-0.057	-0.357***	9.201	-9.903	9.800
	Deal	7,981	-0.067	-0.100**	3.784	-4.260	4.059
CAR(-3,3) 4F	Rival-deal	252,887	-0.106**	-0.339***	9.170	-9.948	9.694
	Deal	7,981	-0.124***	-0.118***	3.481	-3.929	3.710
CAR (-5,5)	Rival-deal	252,887	-0.096	-0.429***	11.607	-12.646	12.453
	Deal	7,981	-0.107*	-0.130***	4.924	-5.650	5.345
CAR(-5,5) 4F	Rival-deal	252,887	-0.148***	-0.397***	11.548	-12.731	12.322
	Deal	7,981	-0.181***	-0.227***	4.476	-5.034	4.741

Average and median **rival CARs are negative** at the rival-deal and the deal level using various ways to compute CARs

Rival CARs

Deal characteristics	Unit of observation	N	Mean	Median
Public acquirer	Rival-deal	167,247	-0.183***	-0.447***
	Deal	5,199	-0.152**	-0.162**
Private acquirer	Rival-deal	85,640	-0.080	-0.312***
	Deal	2,782	-0.075	-0.167*
Public target	Rival-deal	33,214	0.157	-0.278***
	Deal	983	0.348**	0.262**
Private target	Rival-deal	219,673	-0.194***	-0.413***
	Deal	6,998	-0.191***	-0.198***
Public acquirer – public target	Rival-deal	28,150	0.242*	-0.251***
	Deal	854	0.437***	0.302**
Public acquirer – private target	Rival-deal	139,097	-0.269***	-0.483***
	Deal	4,345	-0.268***	-0.241***
Private acquirer – public target	Rival-deal	5,064	-0.317	-0.387***
	Deal	129	-0.243	-0.463
Private acquirer – private target	Rival-deal	80,576	-0.065	-0.307***
	Deal	2,653	-0.066	-0.162*

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Largely negative rival CARs

CARs at odds with past literature

- Existing literature finds **positive** rival CARs
 - E.g., Eckbo (1983), Song and Walking (2000), Fee and Thomas (2004), Shahrur (2005), Bernile and Lyandres (2016)
 - Small samples
 - Mostly focuses on deals with **public targets and acquirers**
 - Interpretation: “Anticipation effect”
- In our sample, deals with public targets and acquirers are the only subsample with positive rival CARs
 - **Represent 11% of deals and 55% of deal value**
 - Public and private merger waves do not coincide (Maksimovic, Phillips, and Yang (2013) → No anticipation effect when the target is private

Deals with the most negative rival CARs

SIC Code	Year	Target Name	Acquiror Name	CAR(-5,5)-non-winsorized
3679	2000	3Com Corp-Chicago Mnfr Op	Manufacturers Services Ltd	-30.82
7375	1999	Motion Inc	Phone.com Inc	-29.91
7375	1999	Sportsline.com Inc-E-Commerce	MVP.com Inc	-29.91
5944	2000	Jay B Rudolph Inc	Finlay Enterprises Inc	-27.53
7948	1999	Thistledown	MI Entertainment Corp	-25.64
7948	1999	Golden Gate Fields	MI Entertainment Corp	-25.64
3845	1998	Autonomous Technologies Corp	Summit Technology Inc	-25.01
5047	1992	Diamond Med, Natl Health Care	Graham-Field Health Products	-24.73
3823	1995	Moisture Systems Corp	Thermedics Detection Inc	-24.01
7375	2000	Rural Connections Inc	OneMain.com Inc	-23.72

Explaining variations in rival CARs

- **Rival characteristics** (dummies above/below median):
 - Market-to-book ratio
 - Size
 - Cash-to-assets ratio
- Same **controls for acquirers**
- Additional controls
 - $\log(\text{transaction value})$, $\log(\# \text{ of deals})$, $\log(\text{value of deals})$, dummy for acquirer and target public status
- Include **different sets of fixed effects**
 - **Industry×year** FEs: Rival CARs within the same industry and year
 - **Industry×year and rival** FEs: Absorbs time-invariant rival characteristics
 - **Deal** FEs: Identify rival CARs for each deal
- Standard errors clustered at four-digit industry level

Explaining variations in rival CARs

Fixed effects:	I × Y	I×Y and R	Deal	I × Y	I×Y and R
	(1)	(2)	(3)	(4)	(5)
High MB rival	-0.696*** (0.064)	-1.053*** (0.167)	-0.693*** (0.064)	-0.695*** (0.046)	-1.115*** (0.155)
Large size rival	0.079* (0.046)	-0.185 (0.169)	0.084* (0.046)	0.144** (0.058)	-0.155 (0.243)
High cash rival	0.028 (0.045)	0.025 (0.114)	0.033 (0.045)	-0.013 (0.056)	-0.058 (0.126)
High MB acquirer				-0.180** (0.078)	-0.181** (0.081)
Large size acquirer				-0.283*** (0.087)	-0.280*** (0.090)
High cash acquirer				0.083 (0.303)	0.081 (0.308)
Log(Number of deals)	-0.521 (0.518)	-0.556 (0.510)		0.565 (0.632)	0.530 (0.633)
Log(value of deals)	-0.447*** (0.156)	-0.441*** (0.158)		-0.664*** (0.166)	-0.647*** (0.167)
Log(transaction value)	-0.056 (0.077)	-0.056 (0.077)		-0.045 (0.106)	-0.044 (0.107)
Public target	0.429*** (0.071)	0.433*** (0.071)		0.506*** (0.117)	0.507*** (0.119)
Public acquirer	-0.052 (0.143)	-0.051 (0.145)			
Observations	248,114	247,593	248,063	147,322	146,758
Adjusted R2	0.01	0.02	0.07	0.01	0.02

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Acquisition is significantly more negative for rivals with high growth opportunities

Rival CARs in high growth industries

- Are the effects **larger in industries with higher growth opportunities?**
 - Competitive effects should be stronger in industries where firms need capital to fund growth
- We use four **industry level measures of growth:**
 1. Average R&D level by four-digit SIC industry-year
 2. High tech industry classification by the NSF
 3. Average market-to-book ratio by four-digit SIC industry-year
 4. Number of all patents by four-digit SIC industry-year
- We interact these dummy variables with all the variables in the previous model (including the fixed effects)

Rival CARs in high R&D industries

Panel A: R&D intensive industries					
Fixed effects:	IxY FE	IxY and R FE	Deal FE	IxY FE	IxY and R FE
	(1)	(2)	(3)	(4)	(5)
High MB rival	-0.311*** (0.036)	-0.521*** (0.080)	-0.302*** (0.035)	-0.208** (0.097)	-0.394*** (0.149)
High R&D x High MB rival	-0.489*** (0.068)	-0.707*** (0.124)	-0.496*** (0.068)	-0.559*** (0.113)	-0.853*** (0.142)
High cash acquirer				1.137*** (0.327)	1.130*** (0.329)
High R&D x High cash acquirer				-1.191*** (0.260)	-1.183*** (0.263)
Controls	Yes	Yes	Yes	Yes	Yes
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High growth rivals are hurt most, especially in high R&D industries

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Acquirer with lots of cash is bad news for rivals in high R&D industries

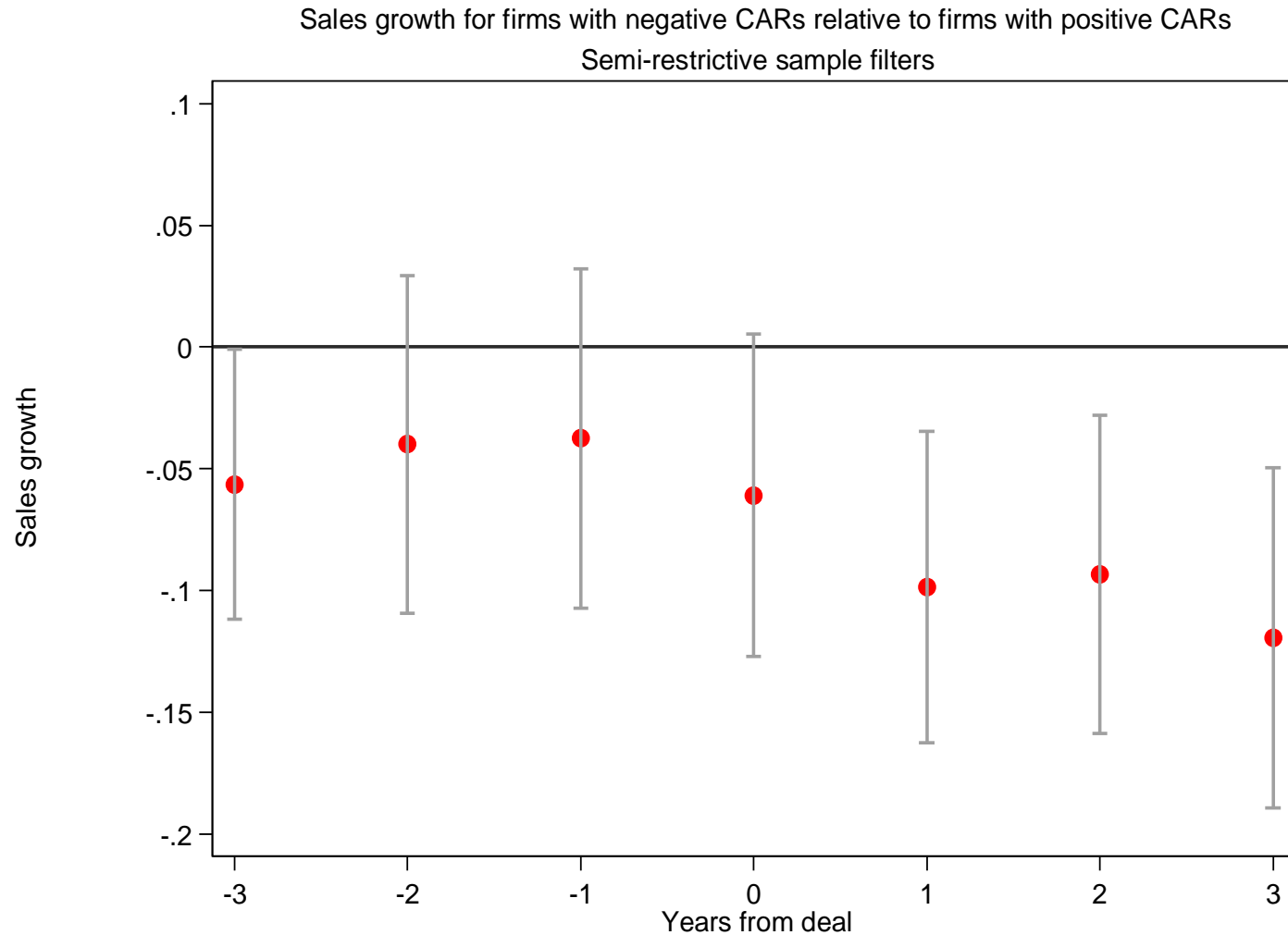
Explaining variations in rival CARs

- Rival CARs are more negative
 - for **high-growth (high M/B) rivals**
 - when the acquirer is **large** and has **high M/B**
- Further tests
 - Results are stronger in high-growth and high-technology industries
 - Results stronger in concentrated industries
- **Interpretation?**
 - Consistent with hypothesis that **competition** after M&A deal hurts rivals
 - **Reverse anticipation**: Probability of acquisition of other rivals goes down, decreasing stock prices
 - **Negative information**: Private information of acquirer about target reveals negative information about unpicked rivals

Rivals and real outcomes

- If acquisitions change competitive interactions (e.g., “winner-take-most”), **rivals will suffer post acquisition** (sales growth, bankruptcy, etc.)
- With reverse anticipation we should not observe such effects
- Analyze how rival CARs are associated with different **real outcomes**
 - Sales growth
 - Bankruptcy
 - Deal being challenged by the FTC or the DOJ
 - Becoming a target or acquirer in the future

Rival CARs and sales growth



Rival CARs and bankruptcy

Dependent variable	CAR(-5,5)					
	Deal (1)	IxY (2)	IxY and R (3)	Deal (4)	IxY (5)	IxY and R (6)
Rival bankruptcy within the next year	-1.966*** (0.392)	-2.756*** (0.880)	-2.323** (1.027)			
Rival bankruptcy within the next two years				-1.144*** (0.351)	-1.878*** (0.422)	-1.779*** (0.588)
Acquirer Controls	No	Yes	Yes	No	Yes	Yes
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Observations	242,402	144,716	144,161	231,087	139,260	138,717
Adjusted R2	0.07	0.01	0.02	0.07	0.01	0.02

Rival CARs and challenged deals

Dependent variable	CAR(-5,5)			
	Y	IxY	Y	IxY
Fixed effects	(1)	(2)	(3)	(4)
Challenged deal dummy	-1.305** (0.556)	-1.233* (0.684)	-1.500** (0.655)	-1.078 (0.810)
Acquirer Controls	No	No	Yes	Yes
Controls	Yes	Yes	Yes	Yes
Observations	7,981	7,144	4,368	3,643
Adjusted R2	0.01	0.10	0.02	0.08

Rival CARs and future M&A deals

Dependent variable	CAR(-5,5)					
	Deal	IxY	IxY and R	Deal	IxY	IxY and R
Fixed effects	(1)	(2)	(3)	(4)	(5)	(6)
Rival becomes an acq. within the next year	0.111*** (0.042)	0.117 (0.071)	0.117** (0.055)			
Rival becomes an acq. within the next two years				0.077*** (0.027)	0.099** (0.039)	0.077 (0.071)
Acquirer Controls	No	Yes	Yes	No	Yes	Yes
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Observations	242,402	144,716	144,161	231,087	139,260	138,717
Adjusted R2	0.07	0.01	0.02	0.07	0.01	0.02

Conclusions

- Rival CARs are negative on average
 - Firms with high M/B in high growth industries suffer most
- Rivals with negative CARs experience
 - Drop in sales growth (relative to rivals with positive CARs)
 - Increased probability of bankruptcy (in two years following the deal)
- Negative CARs are related to competition
 - Rival CARs are more negative in deals that are challenged by the FTC and the DoJ
- Rivals with negative CARs are more likely to become an acquirer in the next two years

Results are **broadly consistent with a competitive effect**

Thank you