



Getting big fast: IPOs and M&As of young innovative companies

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Recent trends in IPOs & M&As

- Over the last decade, a private firm has been **more likely to be acquired** than to go public (Gao, Ritter and Zhu, 2013; Signori, Ritter, and Vismara, 2013)
- This has reflected in:
 - Recent decline in initial public offerings (IPO) relative to mergers and acquisitions (M&A) activity
 - Higher propensity to be acquired shortly after the IPO among firms that go public (Chemmanur, Signori, and Vismara, 2015)
- **Economies of scope** hypothesis (Gao et al., 2013): small firms have found it increasingly convenient to sell out to an incumbent that can realize economies of scope and bring new technology to market faster, rather than to grow independently



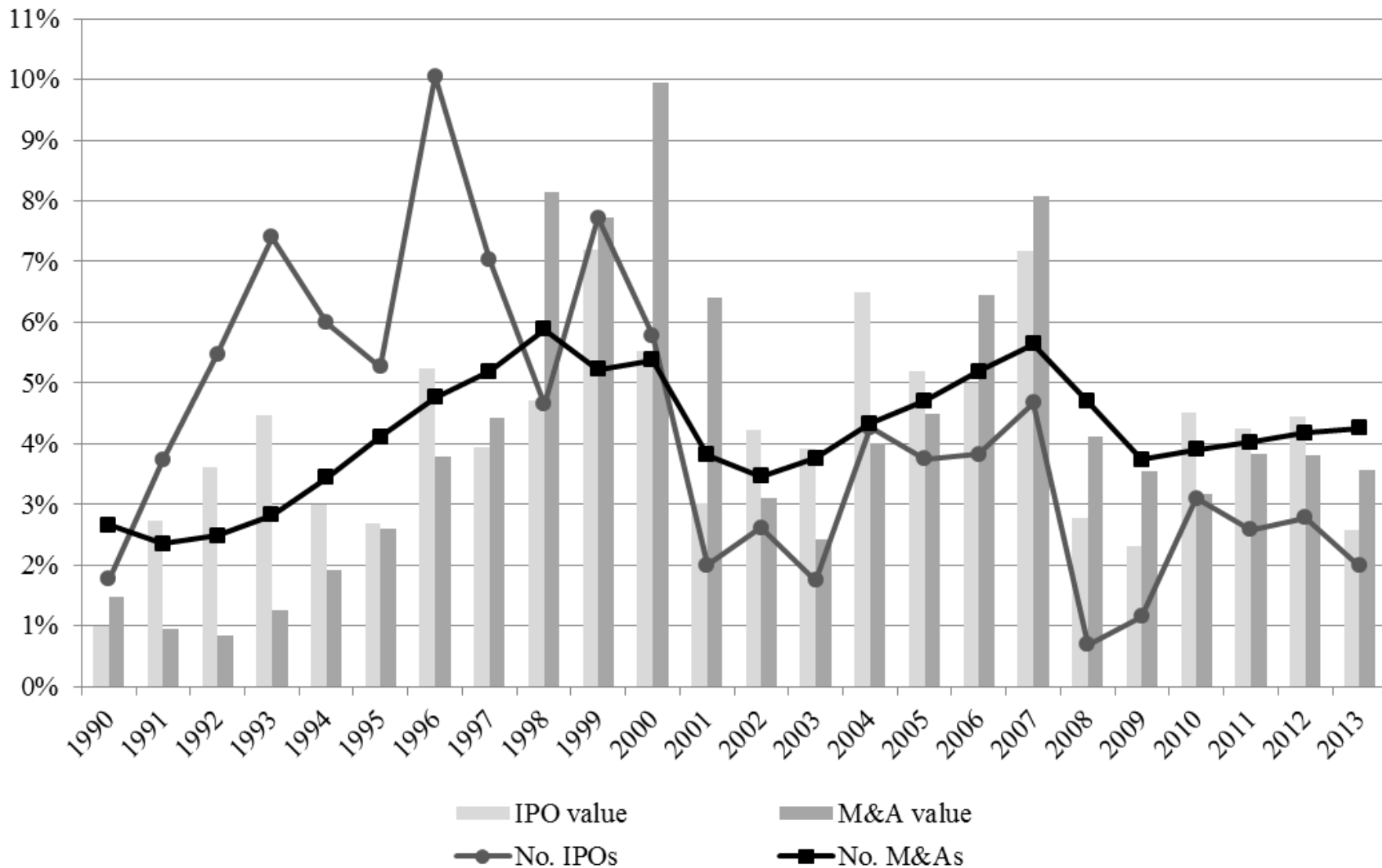
Motivation

Two crucial factors affect a firm's trade-off between remaining independent and being acquired:

- (1) The importance of receiving product market **support by an incumbent**
- (2) The value creation (**synergies**) arising from merging
 - Receiving an incumbent's support is particularly relevant for **young innovative firms**, that are often superior in originating innovations but face greater difficulties in bringing them to the market (Cassiman and Veugelers, 1999)
 - Firms with greater possibilities to realize economies of scale and scope by merging (larger **expected synergies**) will find this alternative more convenient than growing independently



IPO vs. M&A activity in the U.S.



RQ1: young innovative firms

- Young innovative firms are found to embed considerable **growth potential** (Czarnitzki and Delanote, 2013), but suffer from greater financing constraints than larger firms
 - Nowadays, in many industries, the number of innovative start-ups **seeking to be acquired** is higher than that of start-ups that eventually succeed (Henkel, Rønde, and Wagner, 2015)
 - Benefiting from an incumbent's support has become increasingly important to **commercialize innovations** that would otherwise hardly come to the market (Gans and Persson, 2013)
- How does the increasing importance of getting big fast has affected the growth paradigm of **young innovative firms** over time?



RQ2: high-synergy firms

- A firm is more likely to accept an acquisition bid the larger are the **synergies** expected to arise from such transaction
 - The higher speed of technological change and the advent of globalization have progressively increased the **advantage of being a large company** (Gao et al., 2013)
 - This implies that the **value** placed by new entrants on potential merger synergies has increased
- How does the increasing importance of getting big fast has affected over time the growth paradigm of firms that face **larger expected synergies** from merging?



Research hypotheses

Hypothesis 1

Young innovative companies with higher potential merger synergies have become less likely over time to conduct an IPO

Hypothesis 2

Among firms that decide to go public, young innovative companies with higher potential merger synergies have become more likely over time to be acquired shortly after the IPO



How to measure (expected) synergies?

- How to measure the benefits a firm may get by merging (**synergies**)? We propose a measure that is:
 - Firm-specific
 - Ex-ante (merging partner not yet identified)
- Synergies increase with the degree of **relatedness** between merging firms (Grossman & Hart, 1984; Rhodes-Kropf & Robinson, 2008)
- Traditional measures of relatedness are at an industry-level (e.g., SIC) or applicable only to specific industries (e.g., patent-based)
- Hoberg and Phillips (2010): **text-based pairwise similarity score** obtained by analyzing the content of 10-K business descriptions



Is similarity better than other relatedness measures?

<i>Regression on combined CARs</i>	(1)	(2)	(3)
Text-based similarity	0.08***		
<i>(Hoberg and Phillips, 2010)</i>	(2.62)		
Survivor-based relatedness		0.18*	
<i>(Teece et al., 1994)</i>		(1.66)	
Relatedness dummy			-0.00
<i>(Morck et al., 1990)</i>			(-0.58)
Acquirer size	-0.01***	-0.01***	-0.01***
	(-6.34)	(-6.85)	(-6.86)
Stock price run-up	-0.03***	-0.03***	-0.03***
	(-3.45)	(-3.44)	(-3.43)
Hostile takeover	0.02*	0.02**	0.02**
	(1.82)	(2.03)	(2.03)
Other controls
Adjusted R-squared (%)	7.77	7.27	7.22
F-statistic	8.07	7.58	7.54
Akaike IC	-6,883.0	-6,866.0	-6,864.3
Bayesian IC	-6,646.4	-6,629.4	-6,627.6
Observations	3,192	3,192	3,192



Sample and definitions

- **3,399 U.S. IPOs** from 1996 to 2010, 811 of which (23.9%) acquired within three years (source: Thomson SDC)

- **Young innovative companies (YICs)** are defined as:
 - a) Emerging growth companies (Kenney, Patton, and Ritter, 2012)
 - b) not more than 6 years old (Czarnitzki and Delanote, 2013)
 - c) operating in a technology industry (Loughran and Ritter, 2004)

- **High-synergy firms** are defined as those having a number of highly similar incumbents (according to text-based similarity scores) above the sample median



Methodology

Hypothesis 1

- AR(1) time-series regression on IPO volume (Gao et al., 2013)
- Dep. var.: quarterly number of IPOs (by all firms, YICs, and high-synergy firms) scaled by real GDP
- Explanatory var.: time trend, aimed at capturing the effects on IPO volume of the gradual change in the importance of getting big fast

Hypothesis 2

- Logit regression on the sample of IPOs
- Dep. var.: acquired within three years (dummy)
- Explanatory vars.: potential synergies, defined as the firm's number of similar incumbents at the IPO; YIC dummy, equal to 1 in case the firm is a YIC



IPOs by YICs and high-synergy firms

	Population of IPOs				High-synergy firms				YICs				High-synergy YICs			
	IPOs		Acquired		IPOs		Acquired		IPOs		Acquired		IPOs		Acquired	
	no.	%	no.	%	no.	%	no.	%	no.	%	no.	%	no.	%	no.	%
1996	542	15.9	169	31.2	258	47.6	92	35.7	102	18.8	33	32.4	63	11.6	33	52.4
1997	379	11.2	126	33.2	145	38.3	55	37.9	48	12.7	18	37.5	30	7.9	18	60.0
1998	251	7.4	67	26.7	106	42.2	32	30.2	45	17.9	11	24.4	25	10.0	11	44.0
1999	416	12.2	155	37.3	235	56.5	95	40.4	193	46.4	76	39.4	119	28.6	76	63.9
2000	312	9.2	88	28.2	187	59.9	51	27.3	111	35.6	30	27.0	70	22.4	30	42.9
2001	108	3.2	12	11.1	37	34.3	7	18.9	6	5.6	2	33.3	4	3.7	2	50.0
2002	141	4.1	15	10.6	32	22.7	7	21.9	2	1.4	2	100.0	0	0.0	2	0.0
2003	94	2.8	9	9.6	25	26.6	0	0.0	2	2.1	0	0.0	1	1.1	0	0.0
2004	230	6.8	38	16.5	92	40.0	22	23.9	14	6.1	4	28.6	8	3.5	4	50.0
2005	202	5.9	31	15.3	66	32.7	11	16.7	16	7.9	5	31.3	8	4.0	5	62.5
2006	206	6.1	38	18.4	80	38.8	19	23.8	11	5.3	3	27.3	8	3.9	3	37.5
2007	252	7.4	32	12.7	92	36.5	16	17.4	19	7.5	7	36.8	13	5.2	7	53.8
2008	37	1.1	6	16.2	11	29.7	2	18.2	0	0.0	0	0.0	0	0.0	0	0.0
2009	62	1.8	12	19.4	18	29.0	4	22.2	2	3.2	1	50.0	2	3.2	1	50.0
2010	167	4.9	13	7.8	55	32.9	1	1.8	1	0.6	0	0.0	0	0.0	0	0.0
Total	3,399	100.0	811	23.9	1,439	42.3	414	28.8	572	16.8	192	33.6	351	10.3	192	54.7



Results: H1 (time series regressions)

	All		IPOs and synergies		IPOs and YIC status		Synergies & YIC	
	IPOs 1990-2011 (1)	M&As 1990-2011 (2)	High synergy (3)	Low synergy (4)	YIC IPOs (5)	Non-YIC IPOs (6)	Hi-synergy YICs (7)	Other IPOs (8)
Time trend	-0.08** (-2.12)	0.01** (2.08)	-0.06** (-2.41)	-0.03 (-1.49)	-0.04** (-2.12)	-0.06 (-1.43)	-0.02** (-2.13)	-0.06 (-1.58)
Real GDP growth in [t,t+3]	113.91*** (4.18)	-0.37 (-0.20)	27.50** (2.32)	37.50*** (2.80)	14.57 (1.52)	51.27** (2.43)	9.06 (1.41)	42.50** (2.27)
Future NASDAQ return in [t+1, t+4]	-2.70* (-1.75)	-0.02 (-0.20)	-0.66 (-1.04)	-0.87 (-1.04)	-0.05 (-0.13)	-1.34 (-1.18)	0.19 (0.78)	-1.60 (-1.52)
NASDAQ return in [t-2, t-1]	-2.49 (-1.33)	0.08 (1.05)	0.05 (0.05)	-1.54 (-1.43)	-0.22 (-0.29)	-1.62 (-1.52)	-0.06 (-0.11)	-1.39 (-1.41)
IPO initial return in (t-1)	2.25** (2.34)	0.02 (0.44)	0.48 (1.13)	0.96 (1.63)	0.25 (0.74)	0.95* (1.91)	0.18 (0.80)	0.87 (1.63)
IPO Tobin's Q in (t-2)	0.16 (0.91)	0.01 (0.74)	-0.01 (-0.12)	0.13 (1.60)	0.03 (0.51)	0.17* (1.66)	-0.03 (-0.77)	0.10 (1.13)
% small public firms with negative EPS in (t-1)	-11.12 (-1.02)	-0.61 (-0.73)	-3.99 (-0.99)	-4.72 (-0.78)	-0.63 (-0.26)	-6.59 (-0.90)	0.07 (0.05)	-4.08 (-0.59)
Quarter 1	-2.33*** (-5.67)	0.02 (1.05)	-0.53*** (-2.76)	-1.05*** (-3.77)	-0.32*** (-3.10)	-1.22*** (-3.96)	-0.21*** (-2.81)	-1.03*** (-3.73)
AR(1)	0.62*** (6.53)	0.92*** (17.21)	0.69*** (4.54)	0.51*** (3.09)	0.75*** (5.33)	0.71*** (6.14)	0.72*** (4.44)	0.72*** (5.95)
Constant	13.87*** (2.96)	1.25*** (2.93)	3.54** (2.55)	4.78* (1.91)	2.22* (1.85)	6.90** (2.22)	1.11* (1.74)	5.97** (2.08)
Wald Chi-Squared	177.8	592.1	57.9	79.1	107.5	105.1	105.3	114.1
Observations	88	88	64	64	64	64	64	64



Results: H2 (logit regressions)

	(1)	(2)	(3)	(4)
Potential synergies	0.07** (2.12)	0.02 (0.63)	0.07** (2.22)	0.04 (1.30)
YIC	0.09 (0.51)	0.09 (0.53)	-0.32 (-0.93)	-0.10 (-0.42)
Synergies * Trend		0.01* (1.68)		
YIC * Trend			0.09** (2.08)	
Synergies * YIC * Trend				0.03*** (2.89)
Firm size	0.08*** (3.23)	0.08*** (3.17)	0.07*** (2.69)	0.08*** (3.16)
Firm age	-0.19** (-2.54)	-0.19** (-2.52)	-0.19** (-2.56)	-0.19** (-2.53)
Firm diversification	-0.27*** (-3.34)	-0.27*** (-3.37)	-0.27*** (-3.33)	-0.27*** (-3.29)
Primary shares offered	0.69** (2.46)	0.67** (2.39)	0.68** (2.46)	0.69** (2.49)
Top underwriter	0.16 (1.11)	0.17 (1.13)	0.18 (1.23)	0.17 (1.18)
VC backing	0.35*** (4.06)	0.36*** (4.20)	0.35*** (4.16)	0.35*** (4.16)
Market momentum	-0.10 (-0.77)	-0.10 (-0.74)	-0.10 (-0.75)	-0.10 (-0.70)
Constant	-1.45*** (-2.94)	-1.38*** (-2.93)	-1.33*** (-2.82)	-1.40*** (-2.86)
Pseudo R-squared (%)	7.80	7.84	8.00	7.92
Observations	2,423	2,423	2,423	2,423

Conclusions

- The increasing importance of getting big fast, as predicted by the economies of scope explanation, has influenced a firm's trade-off between remaining independent and being acquired
- This has affected the growth paradigm of young innovative firms, for which the support of an incumbent has become crucial to bring innovations to the market
- We find that the downward trend in IPO activity is explained by YICs facing larger expected merger synergies, that have become less likely to conduct an IPO over time
- Among firms that do go public, high-synergy YICs have become more likely to be acquired shortly after the IPO



Discussion and possible policy implications

- Recent regulatory interventions (e.g., the JOBS Act of 2012) aimed at enhancing small companies growth and facilitating their access to the public equity market as independent firms
- If YICs are able to survive as stand-alone firms:
 - (+) Their entrepreneurial potential may not vanish
 - (−) Efficient asset reallocations may be deterred, thereby leaving potential synergies unexploited
- If YICs are increasingly acquired by incumbents:
 - (+) The probability that innovations will eventually come to the market may increase
 - (−) Dynamic efficiency may be hindered by favoring the concentration of market power in the hands of established firms

