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Do private equity firms pay for synergies?

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Existing literature provides preliminary support for the stylized fact that PE firms cannot pay for synergies

Stylized fact:

Private equity firms cannot pay for synergies as they lack any operating fit with their targets (i.e., with their future portfolio firms)

PREVIOUS LITERATURE

Bargeron et al. (2008):

- PE firms pay significantly less than public acquirers in cash-only deals and
- Conjecture: This may be due to a lack of synergies.

Gorbenko & Malenko (2014):

- Valuations of strategic bidders are higher on average but that this heavily depends on target characteristics
- “Segmented bidding hypothesis”: Strategic bidders have higher valuations for targets with sufficient investment opportunities where they can exploit synergies, whereas financial bidders have higher valuations when the target is poorly performing and needs restructuring advise

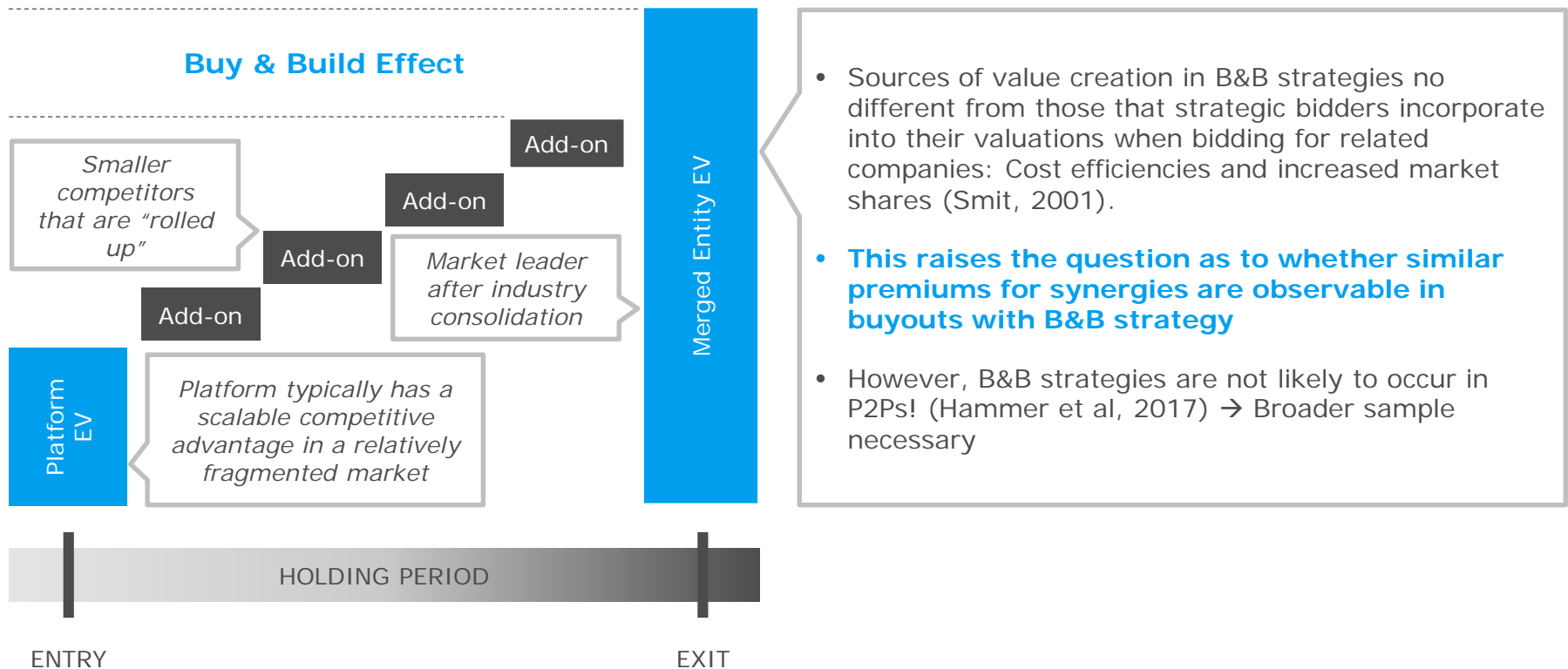
Fidrmuc et al. (2012)

- Confirmation of the “segmented bidding hypothesis”

BUT: Evidence only preliminary! All studies base on public-to-private (P2P) buyouts which account for <10% of the PE market and thus don't account for sufficient heterogeneity in PE value creation strategies

Synergy realization is one of the major rationales for B&B strategies, and gives rise to valuation effects at entry

THE B&B EFFECT



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The paper focuses on five major hypotheses

1 *Buyouts in which the portfolio firm makes add-on acquisitions in the same industry within the first two years of the holding period exhibit a price premium at entry.*

2 *The price premium reduces when add-on acquisitions are realized outside the portfolio firm's industry and/or later than two years after the buyout.*

3 *The B&B price premium increases when PE sponsors face intense competition for buyout targets.*

4 *The B&B price premium increases when PE sponsors have relative high amounts of "dry powder".*

5 *The B&B price premium increases when buyout targets draw upon prior M&A experience at entry.*

General
Relationship
between B&B
and Entry
Pricing

Moderating
Factors:
Bargaining
Power
Channel

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The sample draws upon one of the largest European private equity databases

1

- Starting point: HHL buyout database
- Sources: BvD Zephyr, BvD Orbis, ThomsonONE, Preqin, hand-collected data
- Global database including 9,548 buyouts between 1997-2010 (currently updated to >20,000 buyouts until end of 2017)

2

- Merge data with add-on acquisition sample of Hammer et al. (2017, JCF)
- 4,937 add-on acquisition events, including information about timing, industry, geography and partly size

3

- Collection of sales and EBITDA multiples at buyout entry
- Accounting data from BvD Orbis

4

- Collection of control variables in various dimensions: PE firm characteristics (fund size, experience/age, dry powder, institutional background), portfolio firm & deal characteristics (M&A experience, size, management vs. institutional buyout, syndication, entry channels) and investment conditions (relative competitive pressure, financing conditions)

1155 global buyouts between 1997 and 2010 with complete information on all levels

The distribution across entry years is representative for the development of the buyout market

Entry year	Total sample		B&B [IR+TR]		Non-B&B [IR+TR]	
	N	%	N	%	N	%
1997	17	1.5	2	1.6	15	1.5
1998	39	3.4	6	4.7	33	3.2
1999	63	5.5	4	3.1	59	5.7
2000	67	5.8	11	8.6	56	5.5
2001	64	5.5	5	3.9	59	5.7
2002	57	4.9	7	5.5	50	4.9
2003	98	8.5	7	5.5	91	8.9
2004	108	9.4	15	11.7	93	9.1
2005	69	6.0	9	7.0	60	5.8
2006	152	13.2	23	18.0	129	12.6
2007	180	15.6	16	12.5	164	16.0
2008	108	9.4	7	5.5	101	9.8
2009	61	5.3	6	4.7	55	5.4
2010	72	6.2	10	7.8	62	6.0
Total	1155	100.0	128	100.0	1027	100.0

The distribution across countries shows that the sample majorly covers European deals

Country	Total Sample		B&B [IR+TR]		Non-B&B [IR+TR]	
	N	%	N	%	N	%
United Kingdom	562	48,7	70	54,7	492	47,9
France	172	14,9	18	14,1	154	15,0
Rest of world	97	8,4	3	2,3	94	9,2
Spain	55	4,8	7	5,5	48	4,7
Italy	53	4,6	5	3,9	48	4,7
Germany	50	4,3	6	4,7	44	4,3
United States	47	4,1	5	3,9	42	4,1
Sweden	41	3,5	6	4,7	35	3,4
Netherlands	24	2,1	3	2,3	21	2,0
Belgium	23	2,0	2	1,6	21	2,0
Norway	12	1,0	1	0,8	11	1,1
Czech Republic	10	0,9	1	0,8	9	0,9
Austria	9	0,8	1	0,8	8	0,8
Total	1155	100,0	128	100,0	1027	100,0

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Our regression models control for a large variety of pricing determinants

OVERVIEW ON THE REGRESSION MODELS

$$Y_i = \alpha + \beta_1 \times B\&B_i [IR + TR] + SPONSOR + IND + COUNTRY + YEAR + \epsilon_i$$

$$Y_i = \alpha + \beta_1 \times B\&B_i [IR + TR] + \beta_2 \times \overline{CONTROLS}_i + IND + COUNTRY + YEAR + \epsilon_i$$

Dependent variable

EV/Sales

where:

EV = deal enterprise value

Sales = sales in the year before the buyout

Note: winsorized at the 1% level

Major explanatory variables

- (1) B&B [IR + TR]
- (2) B&B [IR]
- (3) B&B [TR]
- (4) B&B

PE firm characteristics

- Fund size
- Experience/age
- Dry powder
- Institutional affiliation

Portfolio firm & deal characteristics

- M&A experience
- Size (small vs. mid vs. large-cap)
- Management participation
- Syndication
- Entry channels

Investment conditions

- Competitive pressure
- Financing conditions (high yield spreads)

Univariate statistics indicate a statistically and economically significant relationship

Panel A: Time and industry restriction

	B&B [IR+TR]	Non-B&B [IR+TR]	Diff.
Mean	2.53	1.88	0.65***
Median	1.48	1.07	0.41**
N	128	1027	1155

Panel B: Industry restriction

	B&B [IR]	Non-B&B [IR]	Diff.
Mean	2.36	1.88	0.48***
Median	1.38	1.07	0.31**
N	179	976	1,155

Panel C: Time restriction

	B&B [TR]	Non-B&B [TR]	Diff.
Mean	2.27	1.88	0.39**
Median	1.35	1.06	0.29***
N	229	926	1155

Panel D: No restriction

	B&B	Non-B&B	Diff.
Mean	2.15	1.88	0.26*
Median	1.27	1.06	0.21**
N	327	828	1155

Baseline regression models confirm H1 and H2

Dependent variable: EV/Sales								
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
B&B [IR+TR]	0.280*** (0.02)	0.383*** (0.10)						
B&B [IR]			0.208 (0.11)	0.242** (0.08)				
B&B [TR]					0.168** (0.06)	0.131 (0.14)		
B&B							0.108** (0.04)	-0.045 (0.20)
Controls	No	Yes	No	Yes	No	Yes	No	Yes
Sponsor FE	Yes	No	Yes	No	Yes	No	Yes	No
Country FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Entry year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	1,155	629	1,155	629	1,155	629	1,155	629

Coefficients suggest a **15%-20% buy-and-build premium** at entry

Statistical and economic significance reduces or completely vanishes when relaxing industry and/or time restriction

Alternative model specifications: Testing various combinations of fixed effects

Dependent variable: EV/Sales								
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
B&B [IR+TR]	0.347***	0.352***	0.456***	0.367*	0.462***	0.491**	0.446**	0.329***
	(0.07)	(0.08)	(0.11)	(0.17)	(0.11)	(0.17)	(0.13)	(0.09)
Controls included	No	No	No	No	Yes	Yes	Yes	Yes
Sponsor FE	Yes	Yes	Yes	Yes	No	No	No	No
Country FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Entry year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country x Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country x Entry year FE	No	Yes	Yes	Yes	No	Yes	Yes	Yes
Industry x Entry year FE	No	No	Yes	Yes	No	No	Yes	Yes
Country x Industry x Entry year FE	No	No	No	Yes	No	No	No	Yes
N	1155	1155	1155	1155	629	629	629	629

Idea: Address the possibility of spurious results due to time-varying shocks to a country and/or industry, or unobserved time-invariant characteristics that pertain to an industry in a specific geographic context

PSM: Addressing correlation on the basis of observable characteristics

Panel A: Matching diagnostics

	Dependent variable: B&B [IR+TR]	
	Before matching	After matching
LN(fund size)	0.062 (0.07)	-0.009 (0.09)
Novice	0.443** (0.18)	0.018 (0.22)
Dry powder	-0.126 (0.33)	-0.527 (0.38)
Affiliated	0.319* (0.17)	0.108 (0.22)
LN(prev. net acq. exp.)	0.121 (0.13)	-0.019 (0.17)
Mid cap	0.240 (0.23)	0.092 (0.26)
Large cap	0.172 (0.37)	-0.081 (0.41)
Management participation	0.005 (0.19)	-0.337 (0.24)
Syndicate	0.032 (0.19)	-0.029 (0.24)
Public-to-private	-0.219 (0.29)	-0.098 (0.33)
Divisional	0.044 (0.17)	0.107 (0.22)
Financial organic	-0.257 (0.24)	0.148 (0.26)
Financial inorganic	0.888*** (0.24)	0.119 (0.28)
Competitive pressure	-0.589** (0.28)	-0.299 (0.32)
LN(High yield spread)	-0.617* (0.36)	-0.328 (0.41)
Country FE	Yes	Yes
Industry FE	Yes	Yes
Entry year FE	Yes	Yes
N	629	629

Panel B: Treatment effects

	Dependent Variable: EV/Sales
ATET with NN=1	0.852** (0.35)
ATET with NN=2	0.793** (0.31)
ATET with NN=3	0.839*** (0.32)
ATET with NN=4	0.744** (0.31)
ATET with NN=5	0.758** (0.30)
ATET with NN=10	0.707** (0.30)
ATET with NN=15	0.633** (0.30)
ATET with NN=25	0.582** (0.29)

Counterfactual research design suggests a **26%-47% buy-and-build premium** at entry

Balancing diagnostics indicate that treatment assignment model performs well

Addressing measurement error: Varying industry and time restrictions for our major explanatory variable

		Varying industry restrictions [IR]				
		FF5	FF17	Baseline	FF38	FF48
Varying time restriction [TR]	36 months	0.453*	0.598**	0.704**	0.549*	0.659**
		(0.26)	(0.28)	(0.31)	(0.29)	(0.31)
	30 months	0.443*	0.588**	0.692**	0.546*	0.650**
		(0.27)	(0.28)	(0.31)	(0.29)	(0.31)
	Baseline	0.549*	0.645**	0.785**	0.653**	0.752**
		(0.29)	(0.30)	(0.34)	(0.31)	(0.33)
	18 months	0.456*	0.518*	0.559*	0.521*	0.535*
		(0.27)	(0.27)	(0.31)	(0.29)	(0.30)
	12 months	0.760**	0.792**	0.852**	0.808**	0.805**
		(0.33)	(0.33)	(0.39)	(0.35)	(0.38)

Robustness check in three dimensions:

- (1) Possible measurement error
- (2) Fixed effects model on the full sample
- (3) Matching on the basis of the Mahalanobis distance

IV approach: Addressing correlation on the basis of unobservable characteristics

	Dependent variable 1 st stage:	Dependent variable 2 nd stage
	B&B [IR+TR]	EV/Sales
Local market B&B share	8.075*** (0.15)	
B&B [IR+TR]		0.344*** (0.04)
Rho		0.023 (0.03)
Controls	Yes	Yes
Country FE	Yes	Yes
Industry FE	Yes	Yes
Entry year FE	Yes	Yes
N	629	629

Coefficient in line with baseline estimates

Results do NOT point at a weak instrument problem

Insignificant correlation between reduced form and outcome model

Idea of the instrument: Utilize exogenous variation in the suitability of B&B strategies across markets and years

- B&B strategies are not equally attractive in all industries, country contexts and years as they depend on an industry's degree of fragmentation, competitive environment and consolidation pressure (Hammer et al, 2017; Smit, 2001)
- However, these factors are exogenous to both the portfolio firm and PE sponsor and thus the possibility of self-selection of firms with high ability managers to B&B strategies is restricted to target firms that are located in B&B-friendly markets

Sub-sample regressions to address simultaneity and sample selection bias

Dependent Variable: EV/Sales		
	No overpriced deals	No non-European deals
B&B [IR+TR]	0.300*** (0.04)	0.318* (0.08)
Controls included	Yes	Yes
Country FE	Yes	Yes
Industry FE	Yes	Yes
Entry year FE	Yes	Yes
N	409	587

Exclusion of overpriced deals

- Relatively high entry valuations could incentivize PE managers to engage in B&B strategies for opportunistic reasons
- That is, when PE managers overpay in the initial buyout, they could use add-on acquisitions, which are typically smaller than the platform, less contested and thus available at relatively lower prices, to bring down the average deal multiple
- This would imply that our predicted relationship reverses such that high multiples lead to B&B strategies, rather than vice versa

Exclusion of non-European buyouts

- These deals are underrepresented in our sample so that bias could arise from their selected (non-random) observability

Addressing sensitivity to alternative dependent variables, i.e. pricing measures

	EV/EBITDA	LN(EV/EBITDA)
B&B [IR+TR]	0.951**	0.153***
	(0.36)	(0.39)
Controls included	Yes	Yes
Country FE	Yes	Yes
Industry FE	Yes	Yes
Entry year FE	Yes	Yes
N	477	477

Regression models with interaction terms confirm hypotheses H3-H5

Dependent variable: EV/Sales			
	(1)	(2)	(4)
B&B [IR+TR]	0.344** (0.11)	0.344** (0.13)	0.174** (0.06)
x Competitive pressure	0.638** (0.26)		
x Dry powder		0.899** (0.26)	
x Net acquisition experience			0.553*** (0.12)
Interacted variable stand-alone	Yes	Yes	Yes
Other controls	Yes	Yes	Yes
Country FE	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes
Entry year FE	Yes	Yes	Yes
N	629	629	629

Dry powder adds around 68 pp

Competitive pressure adds 53 pp

1% increase in acquisition experience adds 0.00553 to the EV/Sales multiple

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Many PE firms increasingly behave as if they were corporates



GLOBAL PRIVATE EQUITY REPORT 2018

BAIN & COMPANY 

Private Equity firms are increasingly [...]
"[...] beating corporate buyers at their own game."