



# Target information asymmetry and post-takeover performance



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## Abstract

This paper examines the impact of target information asymmetry (IA) on US acquiring firm's post-takeover performance over the period 1990 to 2015. Prior theoretical research presents a contradictory impact of target IA on post-takeover performance, which either poses threats to acquiring firms due to an adverse selection problem or gives rise to superior performance by obtaining private information. Our results support the private information theory. We also report a stronger relationship for more innovative deals, especially when the target has high R&D intensity. We also show that stock financing for these deals provides additional improvement in post-takeover performance, consistent with possible 'championing culture' benefits and with stock mitigating part of the increased risk for more innovative deals. We provide some evidence to support that private information obtained relates to pre-takeover innovation, and show that acquirers significantly increase R&D investment post-takeover for deals financed with stock. We employ methods to address possible econometric concerns with selection and omitted variable bias.

## Introduction

### Objective

- Expand the explanation of information asymmetry and post-takeover performance.

### Background Literature

Two opposing views on information asymmetry (IA) and future performance:

Value-creation: private information theory

- Pre-acquisition information-gathering (Perry and Herd, 2004; Higgins and Rodriguez, 2006)
- Competitive advantage (Makadok, 2011)
- Positive response (Cheng et al. 2016)

Value-destruction: adverse selection theory

- Evaluation (Shen and Reuer, 2005)
- Lemon problem (Akerlof, 1970; Hansen, 1987)
- Moral hazard (Reuer et al., 2008)

Innovation

- Information asymmetry (Aboody et al., 2000; Officer et al., 2009)
- Growth opportunity (Krishnaswami et al., 1999)
- High-tech firm (Chan et al., 1990; Bena and Li, 2014)

Payment method

- Target IA and acquirer's CAR in stock-only deals (Chang, 1998; Fuller et al. 2002; etc.)
- Overpayment risk (Hansen, 1987)
- Championing Culture (Burgelman, 1986).

## Hypothesis Development

H1. Information asymmetry levels of an acquired business will be related positively (private information) or negatively (adverse selection) to the acquiring firm's post-acquisition performance.

H2. Information asymmetry levels of an acquired business will be more positively related to the acquiring firm's post-acquisition performance when:

- H2a: The target has greater R&D intensity or is a high-tech company
- H2b: Both the acquirer and target are high-tech companies

H3. Information asymmetry levels of an acquired business will be more positively related to the acquiring firm's post-acquisition performance when:

- H3a: The acquirer uses stock.
- H3b: The acquirer uses stock to acquire R&D intensive targets or high-tech targets.

## Sample and Variables

### Sample

- US M&A deals during 1990 to 2015
- Both acquirer and target are US listed firm
- Acquires at least 50% of the target shareholdings.

**Dependent Variables:** Industry-adjusted Tobin's Q / BHAR

**Information Asymmetry Proxies:** Analyst forecast error / Relative forecast error

**Control Variables:**

- Firm-level characteristics: acquirer size, leverage, liquidity, profitability, governance, acquisition experience
- Deal-level characteristics: relative size, cross-industry, high-tech industry, previous alliance, payment method, competing bidder

**Heckman two-stage Model**

- Instrumental variable: a dummy variable equals 1 if the acquirer's industry conducted M&A deals one year preceding to the takeover announcement

• First stage:

- $Takeover\ likelihood_{i,t} = \alpha + IV_{i,t} + \beta * Covariates_{i,t} + \epsilon_{i,t}$
- Dependent variable is takeover likelihood
- Covariates include size, profitability, liquidity, leverage, market-to-book, M&A experience, governance.

• Second stage:

- $Tobin's\ Q / BHAR_{i,t} = \alpha + \beta * IA\ proxy_{i,t} + \theta * Controls_{i,t} + Inverse\ Mill\ Ratio + \epsilon_{i,t}$
- Inverse mills ratio is predicted from the first-stage

## Results

VARIABLES	(1) Ind Adj Tobin's Q (Yr 1)	(2) Ind Adj Tobin's Q (Yr 2)	(3) Ind Adj Tobin's Q (Yr 2)	(4) Ind Adj Tobin's Q (Yr 2)	(5) Ind Adj Tobin's Q (Yr 3)	(6) Ind Adj Tobin's Q (Yr 3)
AFE	0.226** (0.016)		0.182* (0.063)		0.201** (0.034)	
AFE dummy		0.315*** (0.000)		0.231*** (0.001)		0.142** (0.034)
IMR	-0.965* (0.052)	-0.982* (0.058)	-0.418 (0.199)	-0.398 (0.217)	-0.413 (0.196)	-0.358 (0.273)
Controls	Y	Y	Y	Y	Y	Y
Observations	1,088	1,000	1,020	936	958	879
R-squared	0.183	0.211	0.170	0.195	0.148	0.171

Robust pval in brackets  
\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

VARIABLES	(7) BHAR (Yr 1)	(8) BHAR (Yr 2)	(9) BHAR (Yr 2)	(10) BHAR (Yr 2)	(11) BHAR (Yr 3)	(12) BHAR (Yr 3)
AFE	0.217*** (0.001)		0.337*** (0.001)		0.353*** (0.001)	
AFE dummy		0.032 (0.291)		0.030 (0.492)		0.004 (0.938)
IMR	-0.258 (0.126)	-0.247 (0.152)	0.131 (0.560)	0.137 (0.551)	0.186 (0.392)	0.203 (0.354)
Controls	Y	Y	Y	Y	Y	Y
Observations	946	913	919	889	836	809
R-squared	0.107	0.094	0.129	0.118	0.157	0.142

Robust pval in brackets  
\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

VARIABLES	(1) Ind Adj Tobin's Q (Yr 1)	(2) Ind Adj Tobin's Q (Yr 1)	(3) Ind Adj Tobin's Q (Yr 1)
AFE dummy	0.194** (0.012)	0.178** (0.019)	0.171** (0.014)
AFE dummy * Target R&D intensity	2.695** (0.038)		
Target R&D intensity	1.532* (0.058)		
AFE dummy * I(Target high-tech)		0.291** (0.035)	
I(target high-tech)		0.235** (0.043)	
AFE dummy * I(Both high-tech)			0.325** (0.027)
I(both high-tech)			0.267** (0.037)
Controls	Y	Y	Y
IMR	-1.057* (0.050)	-0.944* (0.069)	-0.936 (0.139)
Observations	1,000	1,000	1,000
R-squared	0.247	0.211	0.215

Robust pval in brackets  
\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

## Summary of key findings

Collectively, the results support private information theory – targets with higher information asymmetry leads to superior post-takeover performance.

Acquirer gains incremental reward when:

- the target has higher IA and higher proportion of R&D, when :
- both acquirers and targets are in the high-tech industry,
- and when the acquirers uses stock to acquire a target with high IA.

Using equity to acquire an R&D-intensive target with higher IA facilitates a value-added acquisition and further innovation inputs.

The private information is driven by target's innovation, and we use the residuals from this regression to capture 'unexplained' or abnormal private information, which generates the same results.

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