

# When and Who Benefit? – Survival of Acquired Entrepreneurial Firms

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# What to do...

- The post-acquisition survival performance of acquired firms
  - Acquisition of small entrepreneurial firm by large incumbent firms;
  - The positive effect in terms of survival of acquired firms
    - When will emerge?
    - Who will benefit?

# Background and Motivation

- A new trend in M&As
- A division of labor between “small” and “large” innovators - Lindholm-Dahlstrand (1996, 1997) and Baumol (2002)
  - Large incumbent firms - source new technology capabilities;
  - Small entrepreneurial firms - solve the mismatch between “good ideas” and a lack of available resources
    - financial resources and complementary assets
    - when they face expansion opportunities
- Acquisition of small entrepreneurial firms by large incumbent firms
  - more complementary in resources
  - supposed to generate positive synergy effect
  - unfortunately limited research in M&A literature

# Motivation – (2)

- Andersson and Xiao (2013): a possible hierarchic system in market selection for entrepreneurial firms with respect to their technology profiles
  - embedded with the best “quality” of technology properties;
  - central to the process of technology transfer and diffusion.
- Survival:
  - one immediate detector of motives behind acquisition transactions;
  - a pre-requisite before acquired firms can fully unfold their prospects, in virtue of synergy effect from acquisition

# Theoretical Framework

- Neoclassical tradition:
  - Firms with comparative advantage in efficiency or management will shift their boundaries, through, e.g. M&As. (Maksimovic and Phillips (2001))
- The “matching” theory: - Lichtenberg and et al. (1987)
  - Some firms suffer from the incompatibility between their “talents” and management competence;
  - M&A provides a new matching opportunity to correct efficiency lapses;
  - Yet, M&As as “experience good”;
    - Incomplete information before acquisition;
    - Heterogeneous sellers and buyers;
  - Consequences depend on the length and quality of match process

# When benefit?

- The length of match:
    - “trial time” to evaluate the quality of match;
    - observe that initial 3 years after acquisition with extensive restructuring and integration activities; - Maksimovic and Phillips (2008)
    - synergy effects are supposed unfold afterwards.
- H1: Compared to non-acquired firms, acquired entrepreneurial firms are more likely to close down during around initial 3-year following acquisition, but will exhibit a higher survival probability afterwards.

# Who benefit?

- The quality of match:
  - Comparative Advantage of Acquirers
    - Level of labor productivity of acquirers
      - H2: The level of labor productivity of acquiring firms will positively relate to the post-acquisition survival probability of acquired firms.
    - Type of acquirers
      - H3: Firms acquired by MNEs especially foreign MNEs will have a higher post-acquisition survival probability than firms acquired by purely domestic enterprises.
  - Cognitive proximity
    - Related acquisitions (sector)
      - H4: Firms acquired by corporate groups within the same sector will exhibit a higher post-acquisition survival probability.

# Data

- Swedish micro-level data (SCB)
  - matched employer-employee database
  - business group
  - population register
  - business statistics (deflated by CPI) from 1997
  - Swedish Inventors - Ejeremo (2011); Ejeremo and Jung (2013)
- Identification of new firms: - Andersson and Klepper (2013)
- The sample of all firms vs. acquired firms – manufacturing and service sectors



	All firms	Acquired firms
Whole sample	466,988 unique firms 1,455,260 obs	7,292 unique firms 20,043 obs
Sub-sample (entering from 1997)	223,143 unique firms 621,614 obs	3,082 unique firms 7,394 obs

# Discrete-time duration model

- The proportional hazard odds model - Singer and Willett (1993)

$$\frac{h(t|X_t)}{1 - h(t|X_t)} = \frac{h_0(t)}{1 - h_0(t)} \cdot \exp(\boldsymbol{\beta}' X_t)$$

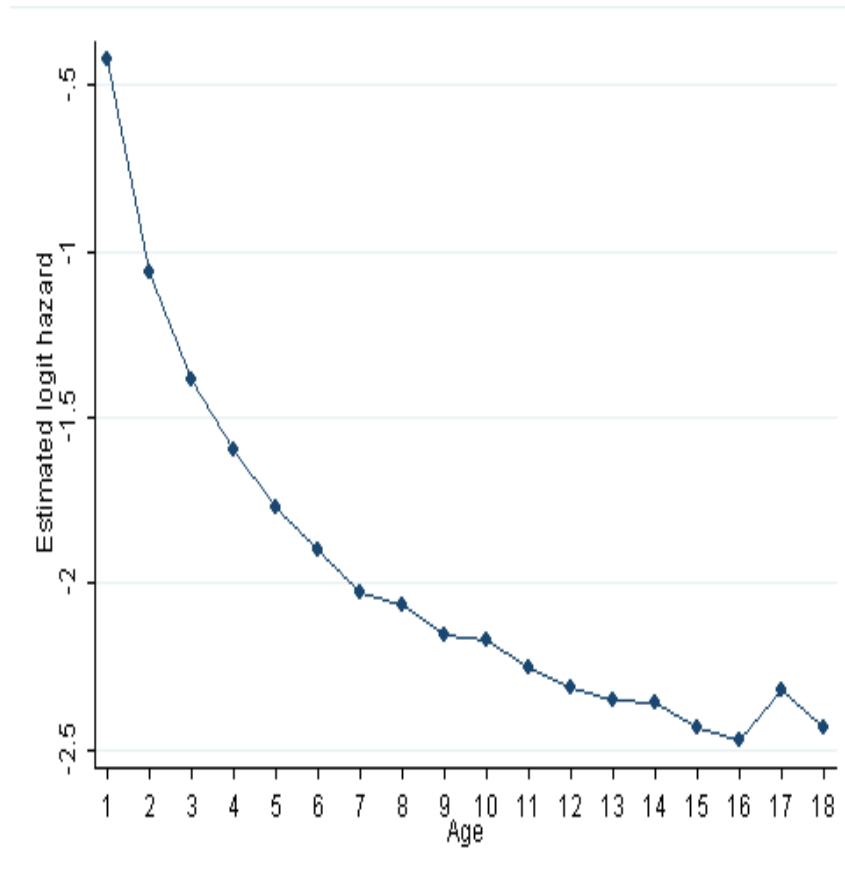
$$\ln \left( \frac{h_t}{1 - h_t} \right) = \boldsymbol{\alpha}_i' D_i + \boldsymbol{\beta}' X_t$$

# Empirical design

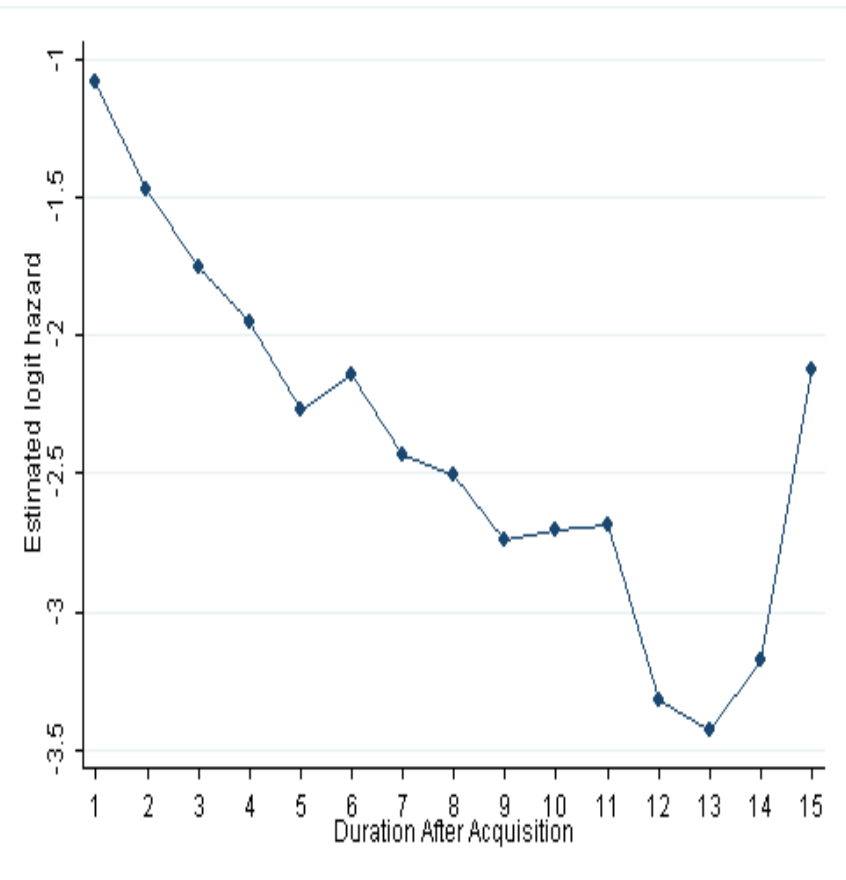
- Two strategies
  - The sample all firms
    - Observe from the first year after entry
    - Time-varying variable to indicate the status of acquisition with one-year lag
  - The sample of acquired firms
    - Observe from the year after acquisition
      - Taking acquisition as an interruption of operation
    - Consider the duration dependence after acquisition

# Results – baseline hazard

## All firms



## Acquired firms



# Results – when benefit?

Table 3 Estimation Results -All Firms

Variables	A	B	C
	Whole	Whole	Sub-
<b>Status of Being Acquired (L1)</b>	<b>0.309***</b> (0.0192)		
Share of tertiary education or above	-0.0309*** (0.00532)	-0.0309*** (0.00532)	-0.00939 (0.00778)
Share of scientists and engineers	-0.0988*** (0.0118)	-0.0989*** (0.0118)	-0.0815*** (0.0167)
Inventor	-0.0543 (0.0380)	-0.0539 (0.0381)	-0.100* (0.0577)
Entry Size	0.164*** (0.0128)	0.164*** (0.0128)	0.156*** (0.0185)
Spin-offs	-1.356*** (0.0273)	-1.356*** (0.0273)	-1.555*** (0.0402)
Other entrepreneurial firms	-0.524*** (0.0134)	-0.525*** (0.0134)	-0.589*** (0.0199)
Unemployed firms	-0.288*** (0.0142)	-0.288*** (0.0142)	-0.356*** (0.0216)
Entry rate	0.709*** (0.104)	0.712*** (0.104)	1.158*** (0.290)
Industry growth	-0.0431*** (0.0141)	-0.0434*** (0.0141)	-0.0539 (0.0335)
Stockholm	0.0146*** (0.00479)	0.0146*** (0.00479)	
Gothenburg	-0.000680 (0.00662)	-0.000661 (0.00662)	
Malmö	-0.0124* (0.00661)	-0.0124* (0.00661)	
<b>1-4 year after acquisition</b>		<b>0.373***</b> (0.0204)	<b>0.422***</b> (0.0330)
<b>5+ year after acquisition</b>		<b>-0.127**</b> (0.0574)	<b>-0.304**</b> (0.138)
Labor productivity			-0.175*** (0.00273)
Ratio of cash to sales			-0.294*** (0.0123)
Baseline hazard	Yes	Yes	Yes
Sector Dummies	Yes	Yes	Yes
Year Dummies	Yes	Yes	Yes
Obs	1,455,260	1,455,260	621,614
Log-likelihood	-751800.8	-751763.15	-324083.93
LR Chi square	125613.07	125688.37	57042.13
Prob > chi2	0.0000	0.0000	0.0000

Notes: Standard errors in parentheses; \*\*\* p<0.01, \*\* p<0.05, \* p<0.1;  
Estimated logit baseline hazard, sector and year dummies are not reported due to space limitation.



# Results – who benefit?

Part of Table 4 Estimation Results -Acquired Firms

Variables	A	B	C	D	E
	Whole	Sub-	Sub-	Sub-	Sub-
<b>Swedish MNEs</b>	0.218*** (0.0764)	-0.0414 (0.149)	-0.0516 (0.149)	-0.0117 (0.163)	0.0219 (0.164)
<b>Foreign MNEs</b>	-0.211**	0.0104	0.0174	0.112	0.106
<b>Labor productivity</b>			Yes	Yes	Yes
<b>Ratio of cash to sales</b>			Yes	Yes	Yes
<b>Labor productivity of acquirer (L1)</b>				-0.244*** (0.0465)	-0.245*** (0.0466)
<b>Same sector between acquirers and targets (L1)</b>					-0.737*** (0.269)

# Conclusions

- It takes about 4 years for “trial”;
- In the initial 4 years following acquisition, acquired firms face a even harsher “selection” than non-acquired firms;
- Firms acquired by business groups with higher level of labor productivity are more likely to benefit from acquisition;
- Firms acquired by corporate groups within the same sector will exhibit a higher post-acquisition survival probability.

Thanks for your attention!  
Comments and suggestions😊

C I R C L E

The logo for CIRCLE features the word "CIRCLE" in a bold, black, sans-serif font. Above the letters, there is a thick, gold-colored arc that starts under the 'C' and ends under the 'E', with a small gold dot positioned above the 'I'.