THE ECONOMICS OF THE MULTI-BUSINESS FIRMS

AN OVERVIEW OF MORE RECENT APPROACHES (BASICALLY IN MANAGEMENT)

IOEA 2023

JUAN SANTALÓ

Institutional &
Organizational
Economics
Academy

STRUCTURE

1. Initial discussion

2. Some stylized facts of multi-business firms.

3. Review of Economic Logic 1: In search of synergies

4. Review of Economic Logic II: The efficient redeployment perspective (more stressed)

    - Implications for firm competitive advantage

    - Implications for firm strategy

    - Implications for the linkage between firm performance-volatility

5. Work in progress and future opportunities:
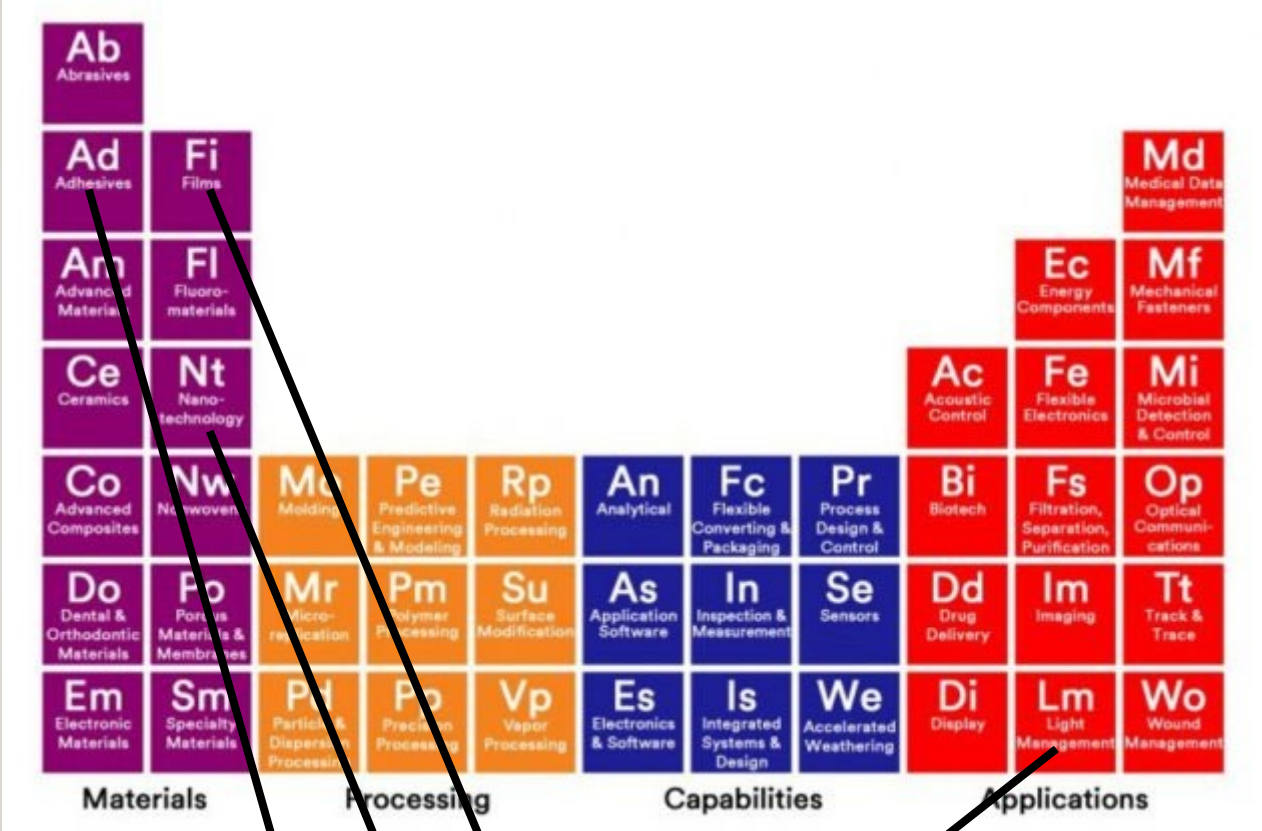
6. Final discussion

3M PERIODIC TABLE OF 46 TECHNOLOGY PLATFORMS

Traditional Competitive advantage based on sharing technologies, brand image, distribution channel…
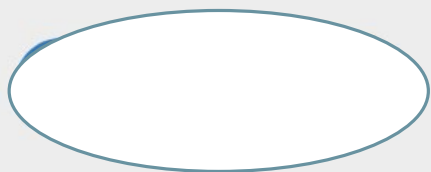
3M PERIODIC TABLE OF 46 TECHNOLOGY PLATFORMS

Traditional Competitive advantage based on sharing technologies, brand image, distribution channel…

Ab Abrasives			
Ad Adhesives	**Fi** Films		
Am Advanced Materials	**Fl** Fluoro-materials		
Ce Ceramics	**Nt** Nano-technology		
Co Advanced Composites	**Nw** Nonwoven	**Md** Medical Data Management
Do Dental & Orthodontic Materials	**Po** Porous Materials & Membranes	**Ec** Energy Components **Mf** Mechanical Fasteners
Em Electronic Materials	**Sm** Specialty Materials	**Ac** Acoustic Control **Fe** Flexible Electronics **Mi** Microbial Detection & Control

Materials

Mo Molding
Pe Predictive Engineering & Modeling
Rp Radiation Processing
Mr Micro-replication
Pm Polymer Processing
Su Surface Modification
Pd Particle & Dispersion Processing
Po Precision Processing
Vp Vapor Processing

Processing

An Analytical
Fc Flexible Converting & Packaging
Pr Process Design & Control
As Application Software
In Inspection & Measurement
Se Sensors
Es Electronics & Software
Is Integrated Systems & Design
We Accelerated Weathering

Capabilities

Bi Biotech
Fs Filtration, Separation, Purification
Op Optical Communications
Dd Drug Delivery
Im Imaging
Tt Track & Trace
Di Display
Lm Light Management
Wo Wound Management

Applications

3M's high performance Window Films

1. SOME STYLIZED FACTS

% Largest firms that are diversified
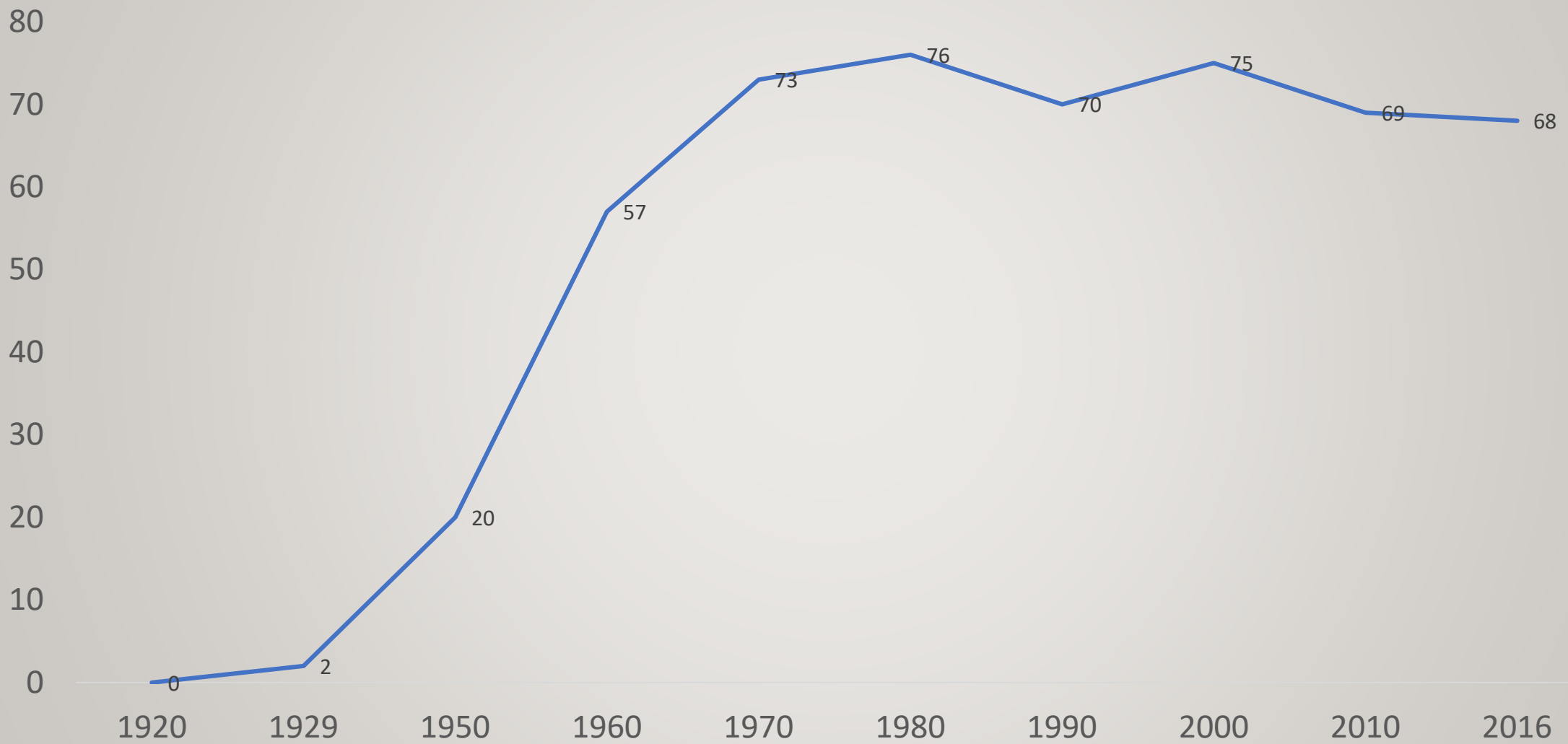
% firms in top percentile by market valuation that operate in more than one four digit SIC code

PROBLEM OF USING PUBLIC COMPANIES TO EVALUATE THE ECONOMIC IMPORTANCE OF MULTI-BUSINESS FIRMS

- We know that public companies in the past strategically disclosed which industries they are in (Berger &Han, 2003).

- After change in disclosure regulation in 1997, US firms disclose segment information according to how managers internally evaluate performance (not real multiproduct)

ALTERNATIVE APPROACHES:

- Use **US census** or **NETS** database that has information of private companies as well

- Use text analysis in company documents to measure firm scope (Hoberg &Phillips, 2022)

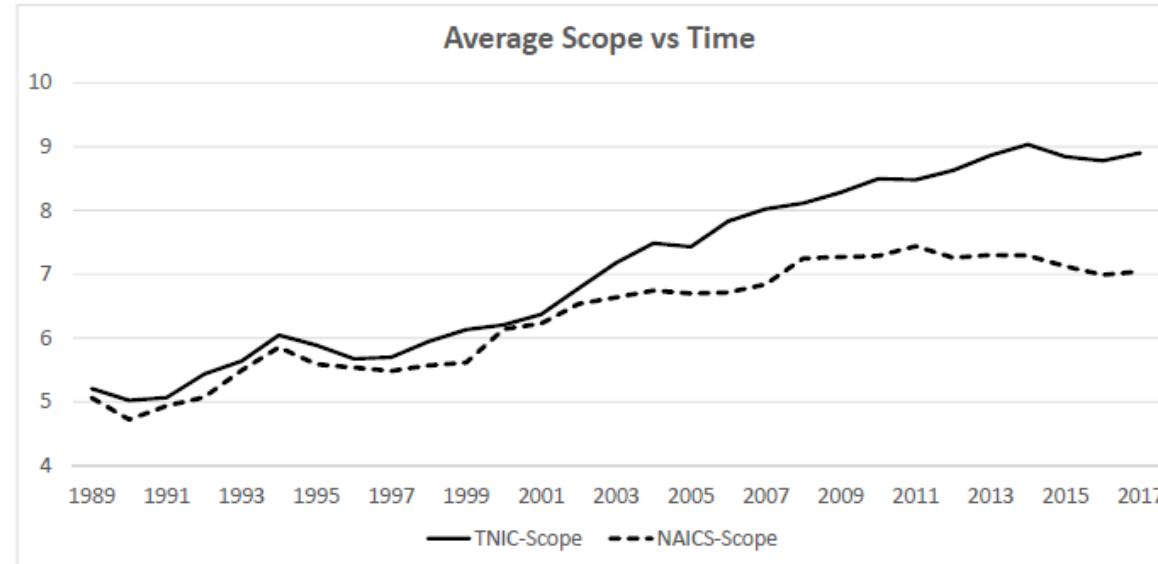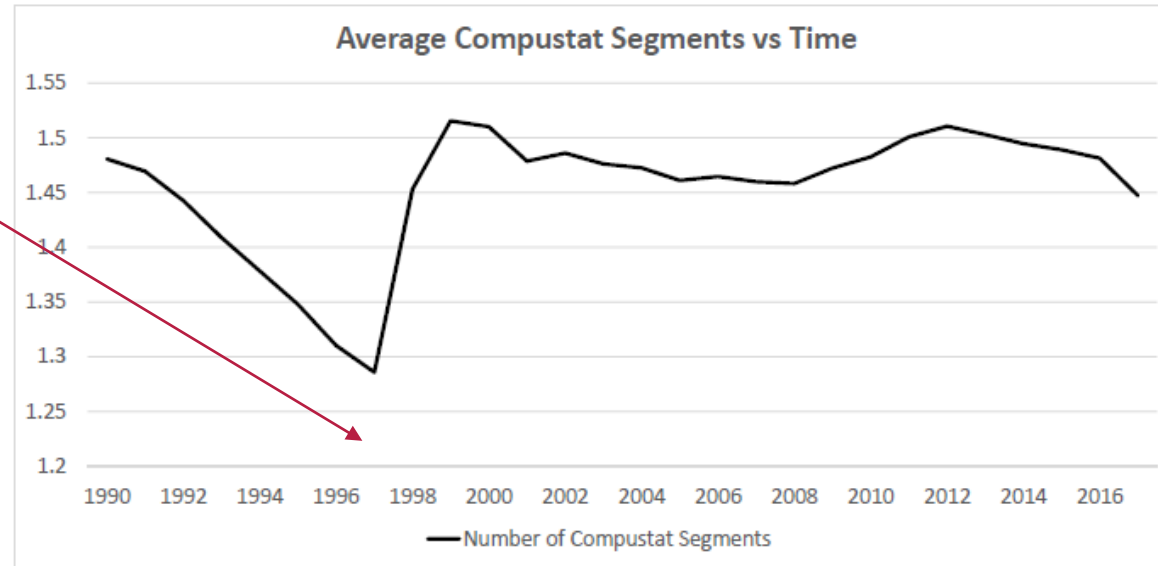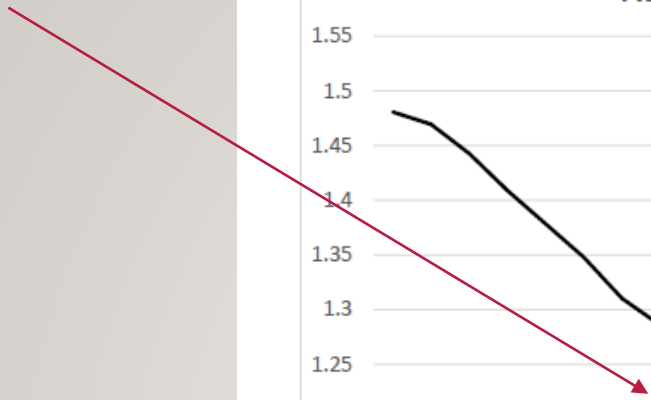# 1. QUICK OVERVIEW OF THE NUMERICAL IMPORTANCE OF MULTI-BUSINESS FIRMS.

SCOPE, SCALE AND CONCENTRATION:
THE 21ST CENTURY FIRM

Gerard Hoberg
Gordon M. Phillips

Change in SEC segment
disclosure rules!!!!

Average Compustat Segments vs Time

Year	Number of Compustat Segments

— Number of Compustat Segments

Average Scope vs Time

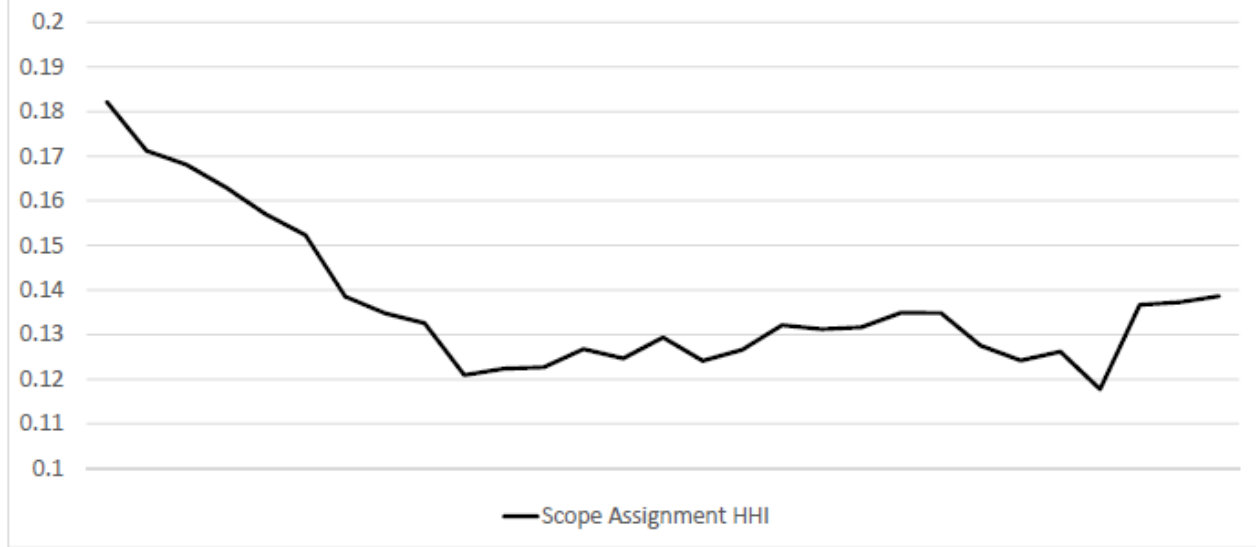—— TNIC-Scope   - - - NAICS-Scope

*Source: Hoberg &Phillips,
2022*

Scope Assignment HHI (Sales Weighted)
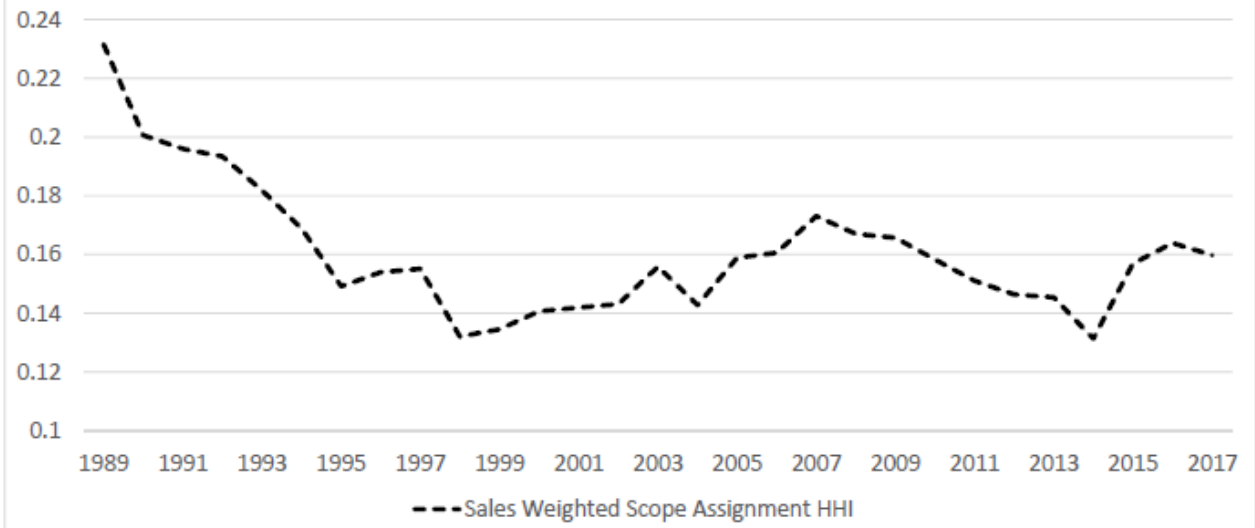
Scope Assignment HHI (Equal Weighted)

Source: Hoberg &Phillips, 2022
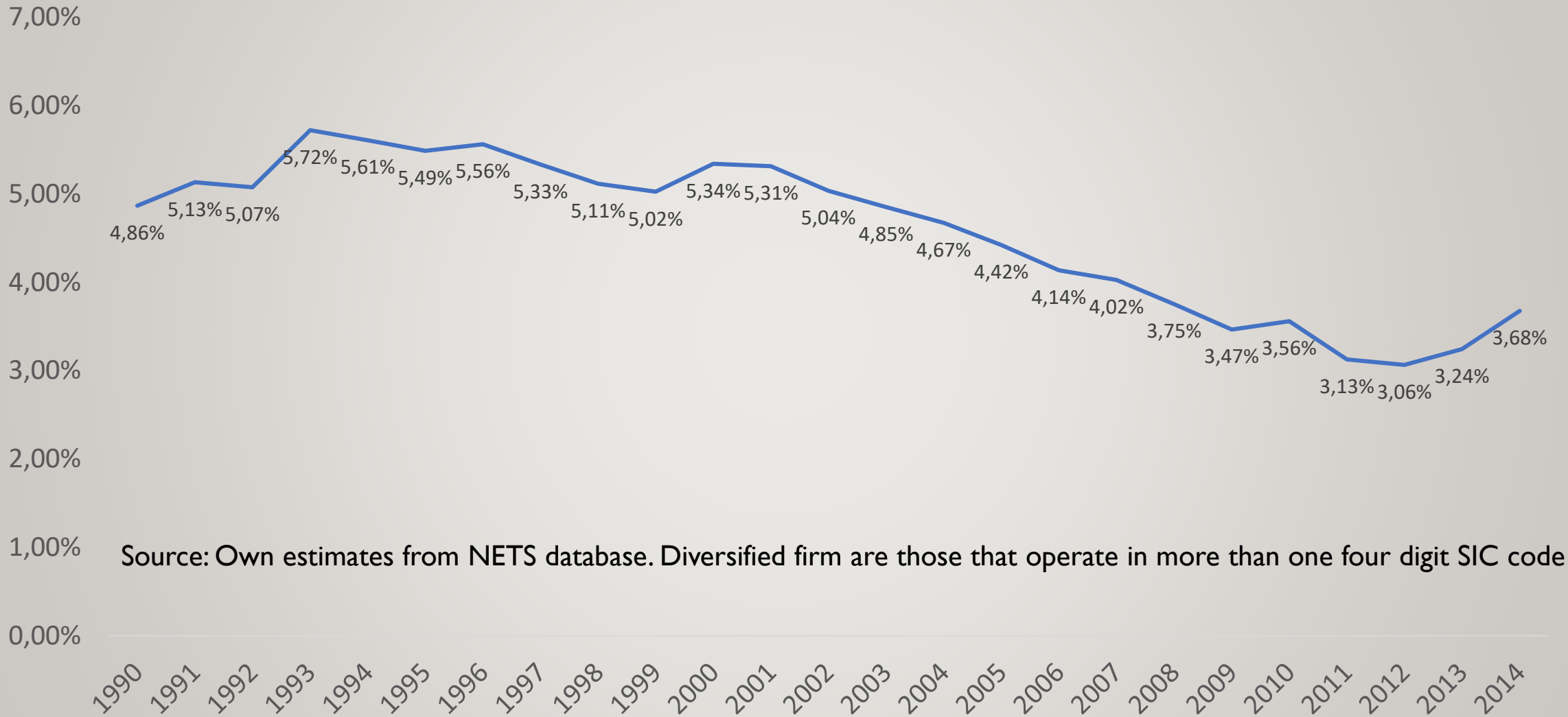
% Percentage of employment accounted by diversified firms in manufacturing
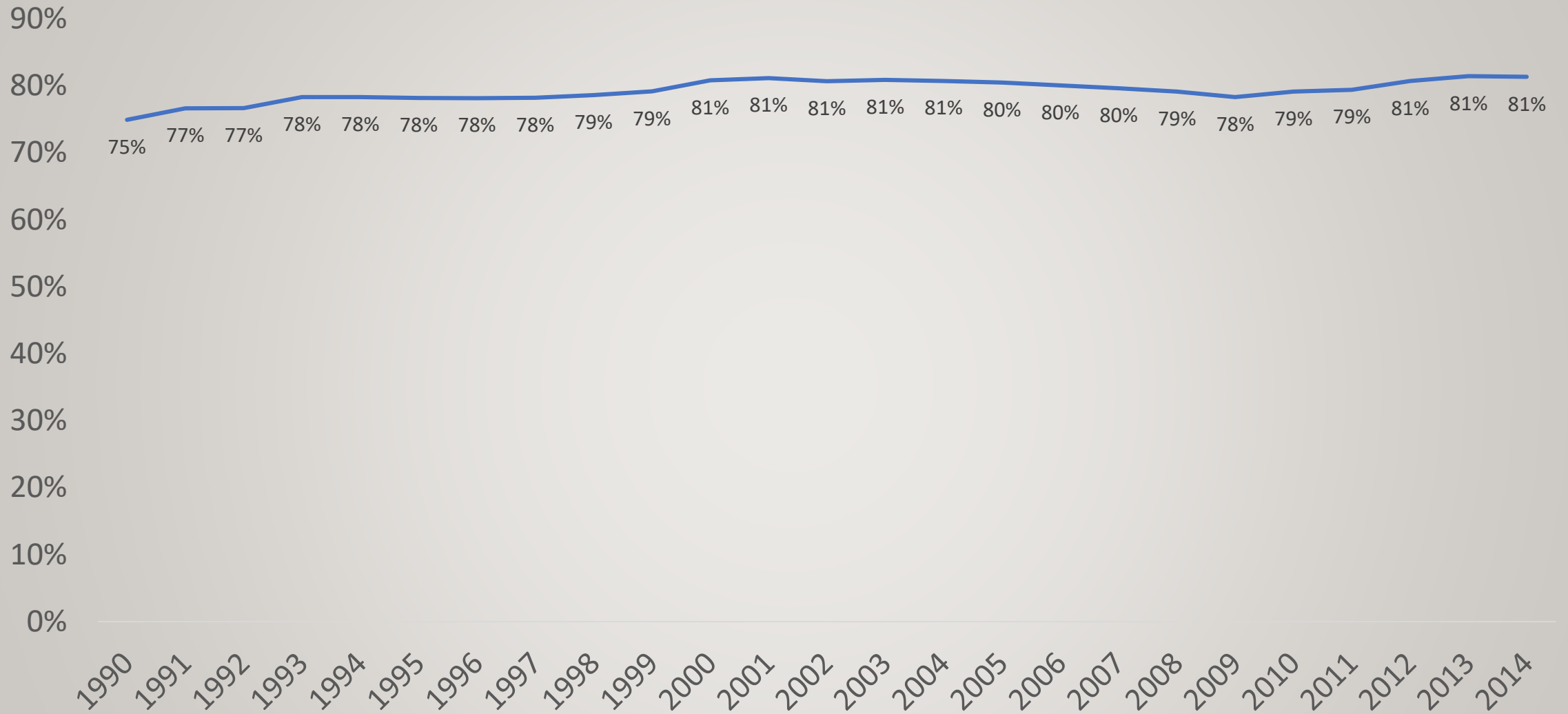
Source: Own estimates from NETS database. Diversified firm are those that operate in more than one four digit SIC code

Evolution of the Percentage of diversified firms in manufacturing

Source: Own estimates from NETS database. Diversified firm are those that operate in more than one four digit SIC code

SUMMARY:

- Firm scope has increased in the last decades and recently remained more or less constant

- Blatant contradiction of the old diversification discount literature, why?

    1. Reporting problems with segment information in public companies (Villalonga, 2004)

    2. Multiproduct companies engaging more in related diversification that is less likely to adopt the M organization form.

    3. Endogeneity biases

    4. Contingency approach for the D-P linkage: See Novelli review study, for instance Kuppusway &Villalonga (2016) or Santalo &Becerra(2008).

EXHIBIT 1 | The Conglomerate Discount Shrank During the Crisis

Western Europe

North America

Asia-Pacific

Conglomerate discount (%)[1]

Conglomerate discount (%)[1]

Conglomerate premium (%)[1]

Western Europe values: −3.7, −7.2, −0.3, −3.7, −5.7, −10.6, −12.7, −6.3, −7.9, −6.0

North America values: −14.5, −8.8, −10.8, −12.3, −12.4, −10.0, −10.8, −8.5, −4.5, −7.2

Asia-Pacific values: 2.4, 6.6, 1.9, 0.3, −1.2, −0.1, 2.3, 1.3, 3.5, 6.3

Decreasing appreciation
Increasing appreciation
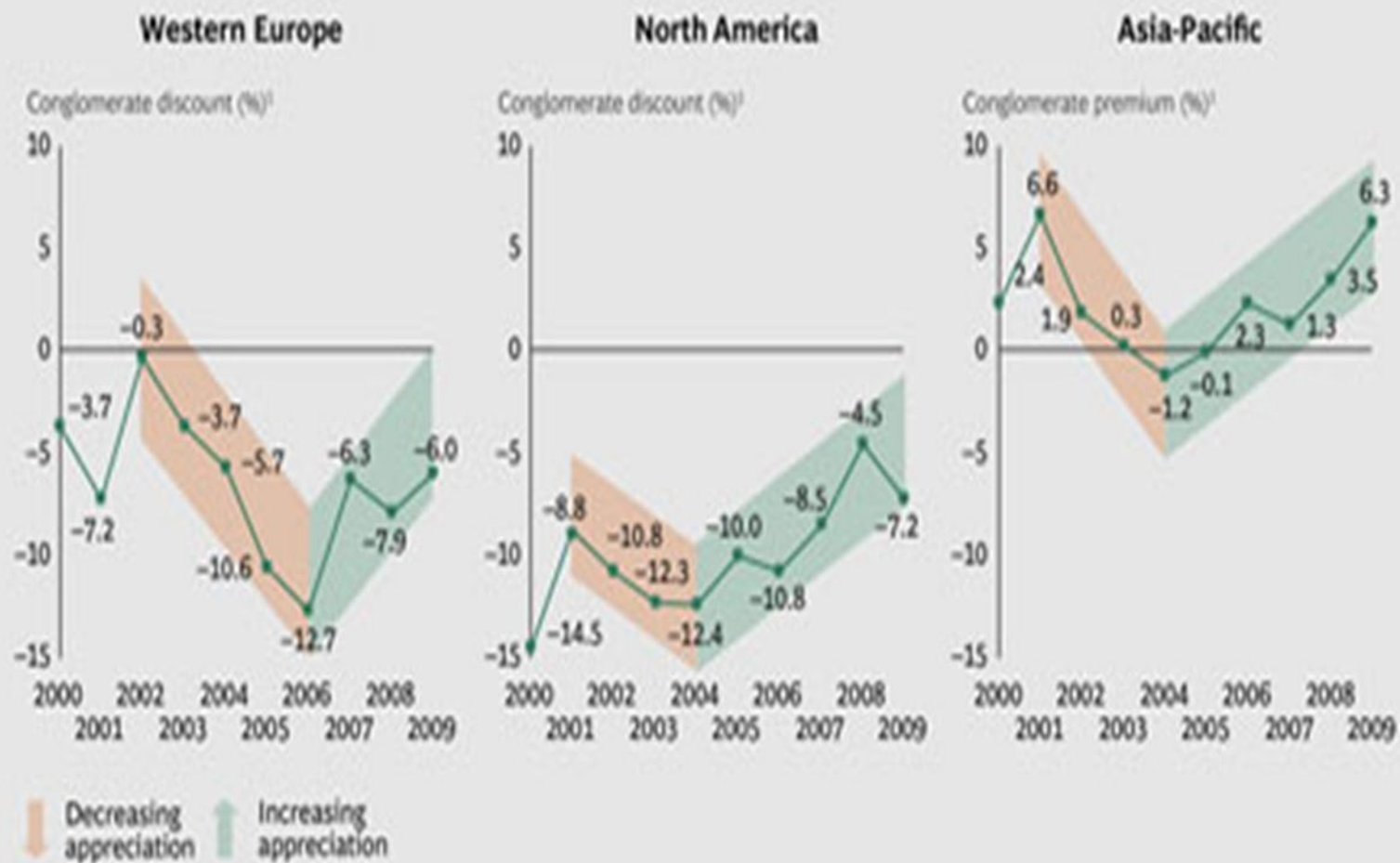
Source: BCG and HHL – Leipzig Graduate School of Management analysis.
[1]The conglomerate discounts and premiums were calculated as the difference in mean excess values of diversified and focused companies. A negative difference indicates a discount on diversification; a positive difference implies a premium. (See Appendix I for a detailed description of the research methodology.)

Competition from Specialized Firms and the Diversification–Performance Linkage

JUAN SANTALO and MANUEL BECERRA*

Competition from Specialized Firms and the Diversification Discount 863
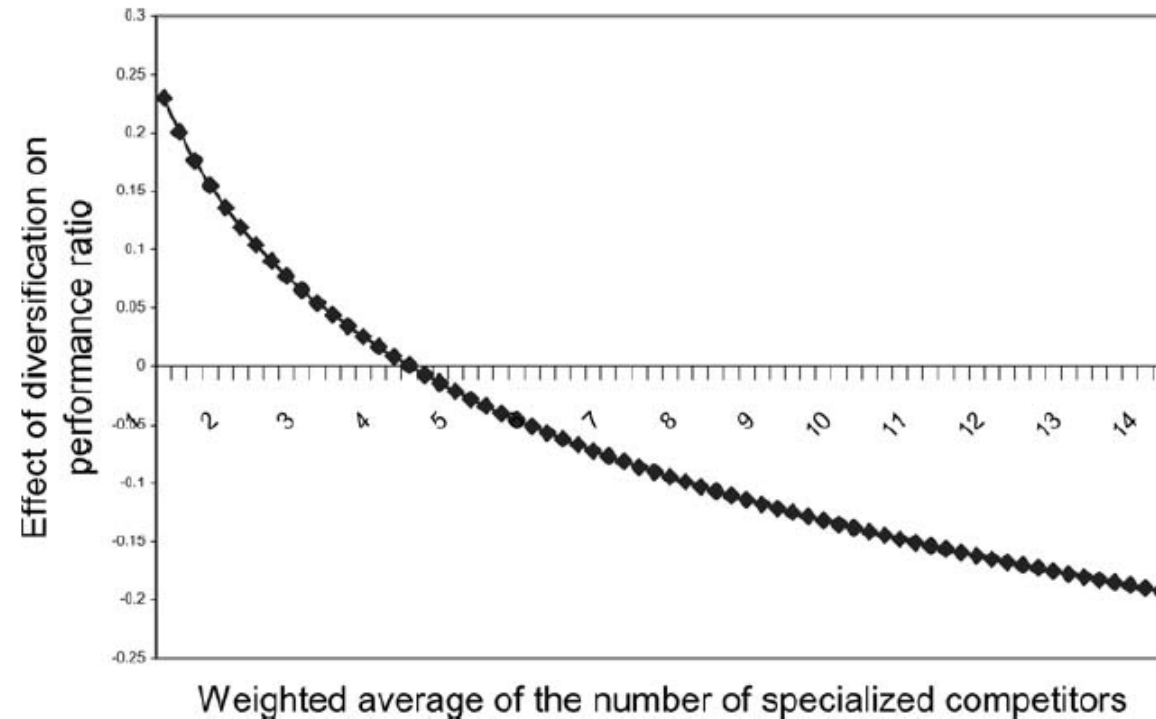
REVIEW OF ECONOMIC LOGIC 1: IN SEARCH OF SYNERGIES

- · Synergy types:

    1. Horizontal synergies (ex. Bic)

    2. Vertical synergies (ex Disney &Pixar, Disney+)

    3. Strategic synergies (multimarket competition)

- Remember old idea of Coase (1934), Teece (1994), Williamson (1975): Rat race between transaction costs and coordination costs (cost of using the markets versus costs of using the hierarchy).

REVIEW OF ECONOMIC LOGIC 1: IN SEARCH OF SYNERGIES

- Large literature on the importance of proximity to corporate headquarters (easier coordination and attention):

    At least since Giroud QJE (2013). --He reports that new airline routes that reduce travel times from subsidiary to HQ increase plant level investment 8-9% and TFP 1.3% to 1.4%,

     Charnoz Lelarge &Corentin (2018) sizable impact of high speed train on subsidiary labor productivity/costs

    To most recent Kim, Cunningham and Joseph (forthcoming AMJ) that show how proximity matter for product reentry after failure

REVIEW OF ECONOMIC LOGIC 1: IN SEARCH OF SYNERGIES

Kim, Cunningham and Joseph (forthcoming AMJ) measure proximity on three different ways:

1. Geographical proximity

2. Hierarchical proximity a la Belenzon et alia 2017.

3. Cognitive proximity (shared of common products, shared failure experience)
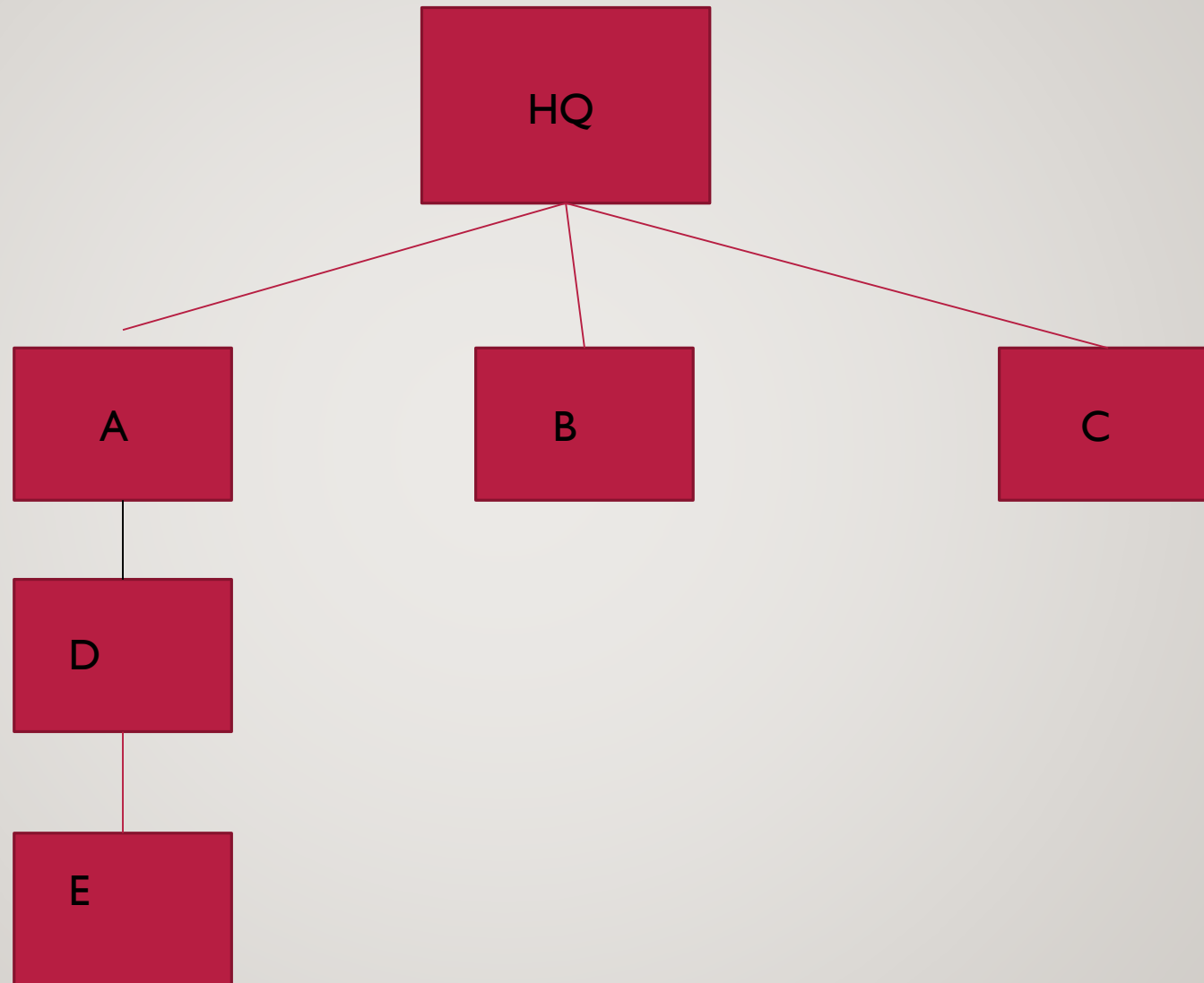
Distance from A to HQ=1
Distance from E to HQ= 3

HQ

A

B

C

D
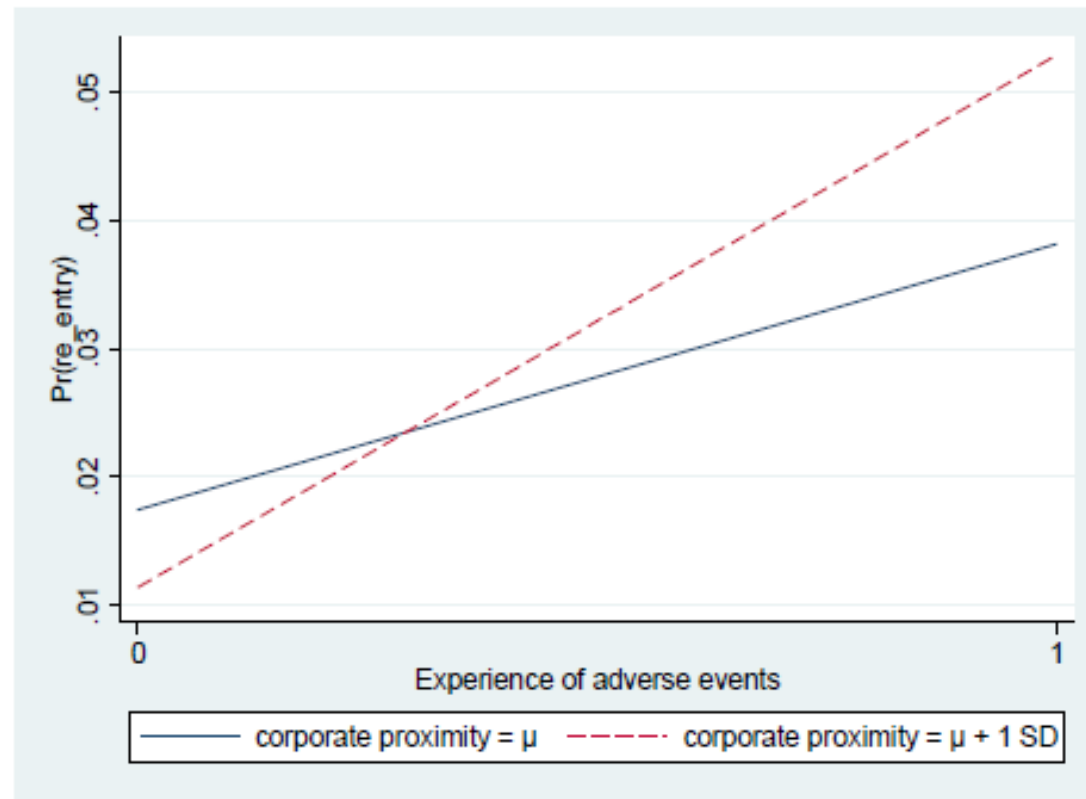
E

Figure 1. Interaction effects of corporate proximity on product market reentry

The Impact of Frictions in Routine Execution on Economies of Scope

Francisco Brahm,[1,2] Jorge Tarzijan,[1]* and Marcos Singer[1]

[1] Pontificia Universidad Católica de Chile, Santiago, Chile
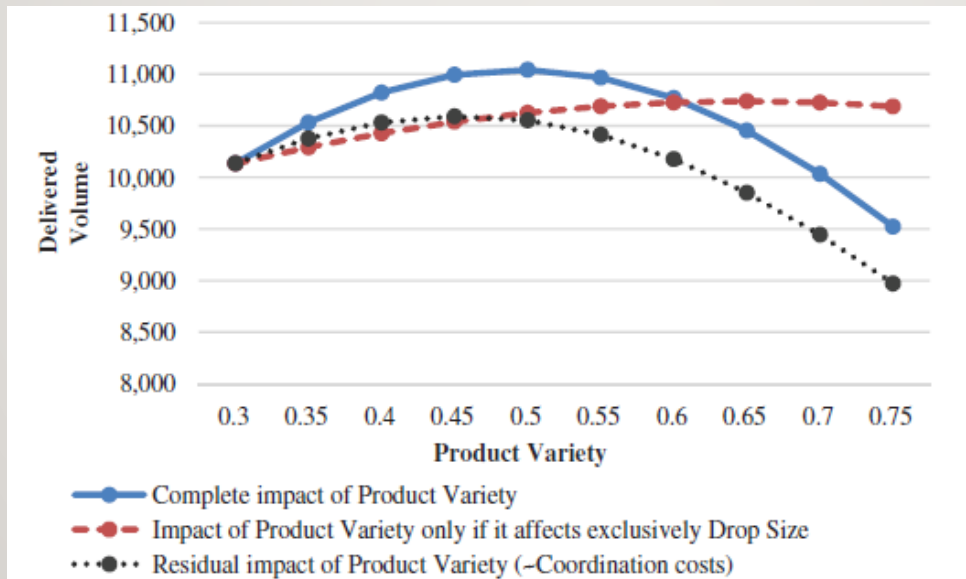[2] University of Cambridge, Cambridge, UK

Figure 4. Relationship between product variety and execution costs.

WILEY

# The corporate parenting advantage, revisited

Emilie R. Feldman

The Wharton School, University of Pennsylvania, Philadelphia, Pennsylvania, USA

TABLE 2 Summary data on utilities in regulated versus exempt holding companies, 1993–2004

Variable	Utilities in regulated holding companies	Utilities in exempt holding companies	t-Stat
Total assets ($m)	3,192	3,116	0.33
Total revenues ($m)	1,330	1,317	0.14
Capex/assets	0.055	0.051	1.19
Current ratio	0.831	0.928	−0.65
Leverage	0.666	0.667	−0.01
Operating margins	0.142	0.161	−3.88
Return on assets	0.035	0.038	−1.95
Customers served	506,150	666,331	−3.86
Area (square miles)	9,278	11,190	−1.90
Population of area served	1,430,536	2,293,937	−5.39

FIGURE 1 Acquisition activity of regulated and exempt holding companies before and after PUHCA's repeal
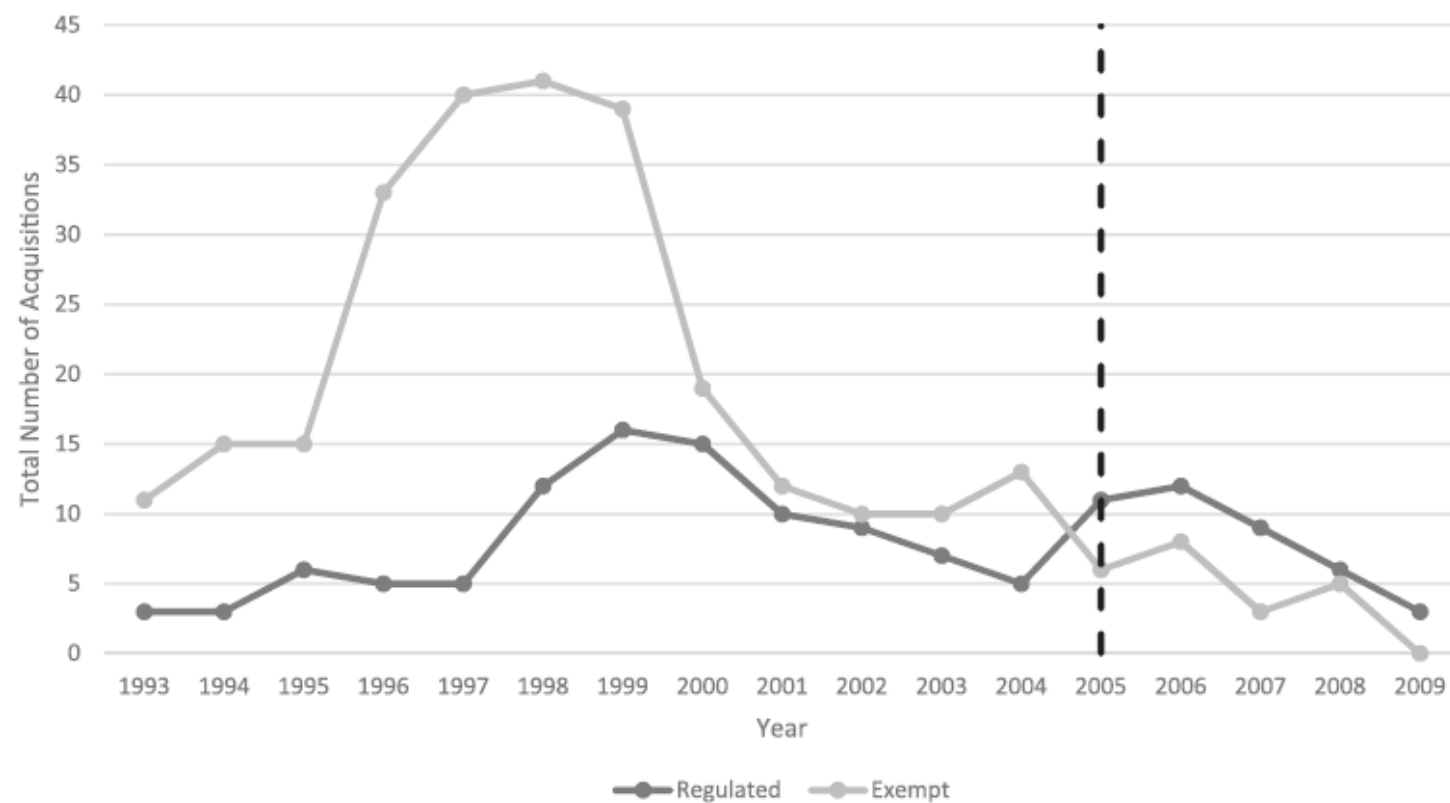
0.7-0.9% increase in ROAS for parented utilities (over a ROA sample mean of 3.8%)

REVIEW OF ECONOMIC LOGIC FOR MULTI-BUSINESS FIRMS II: THE EFFICIENT RESOURCE REDEPLOYMENT PERSPECTIVE

- Seminal work of Helfat&Eisenhardt (2004) introducing the idea of intertemporal economics of scope.

Traditional economies of scope:

$$C(Y_1, Y_2) < C(Y_1, 0) + C(0, Y_2)$$

Intertemporal economies of scope:

$$C(Y_{1,t-1}, Y_{2,t}) < C(Y_{1,t-1}, 0) + C(0, Y_{2,t})$$

Seminal work of Levinthal &Wu (2010): Scale free asses (Brand, technology)versus non scale free assets (managerial attention, shelf space, financial resources)

REVIEW ON RECENT LITERATURE ABOUT IMPLICATIONS OF RESOURCE REDEPLOYMENT

- Implications for firm competitive advantage

- Implications for firm strategy

- Implications for the linkage between firm performance-volatility

IMPLICATIONS OF RESOURCE REDEPLOYMENT ON MULTI-BUSINESS COMPETITIVE ADVANTAGE

MARKET FRICTIONS AND THE COMPETITIVE ADVANTAGE OF INTERNAL LABOR MARKETS

SHARON BELENZON[1]* and ULYA TSOLMON[2]

[1] *Fuqua School of Business, Duke University, Durham, North Carolina, U.S.A.*

[2] *Olin Business School, Washington University in St. Louis, St. Louis, Missouri, U.S.A.*

Correlation between two indices equals -0.35 (insig)

	Flexible labor markets (Weak EPL)	Rigid labor markets (Strong EPL)
High financial development (Flexible capital)	**A.** Group affiliates and stand–alone firms face flexible labor and capital **Payoffs:** Group affiliate: $\pi_{GA}(F_{CM}, F_{LM})$ Stand-alone firm: $\pi_{SF}(F_{CM}, F_{LM})$	**B.** Group affiliates face flexible labor and capital. Stand–alone firms face rigid labor, but flexible capital **Payoffs:** Group affiliate: $\pi_{GA}(F_{CM}, R_{LM})$ Stand–alone firm: $\pi_{SF}(F_{CM}, R_{LM})$
Low financial development (Rigid capital)	**C.** Group affiliates face flexible labor and capital. Stand–alone firms face rigid capital, but flexible labor **Payoffs:** Group affiliate: $\pi_{GA}(R_{CM}, F_{LM})$ Stand-alone firm: $\pi_{SF}(R_{CM}, F_{LM})$	**D.** Group affiliates face flexible labor and capital. Stand–alone firms face rigid capital and rigid labor **Payoffs:** Group affiliate: $\pi_{GA}(R_{CM}, R_{LM})$ Stand–alone firm: $\pi_{SF}(R_{CM}, R_{LM})$

Figure 2.   Labor and capital rigidities for group affiliates and stand-alone firms

Probability of group affiliation larger in countries with rigid labor markets
Larger effects the larger is country financial developement

Belenzon &Solomon, 2016

MORE IMPLICATIONS FOR MULTI-BUSINESS COMPETITIVE ADVANTAGE

GIARRATANA &SANTALÓ (2020)

Impact of shocks when there is resource redeployment:

Negative shock in product A

Decrease in performance in product A

Reallocation of resources away from product A
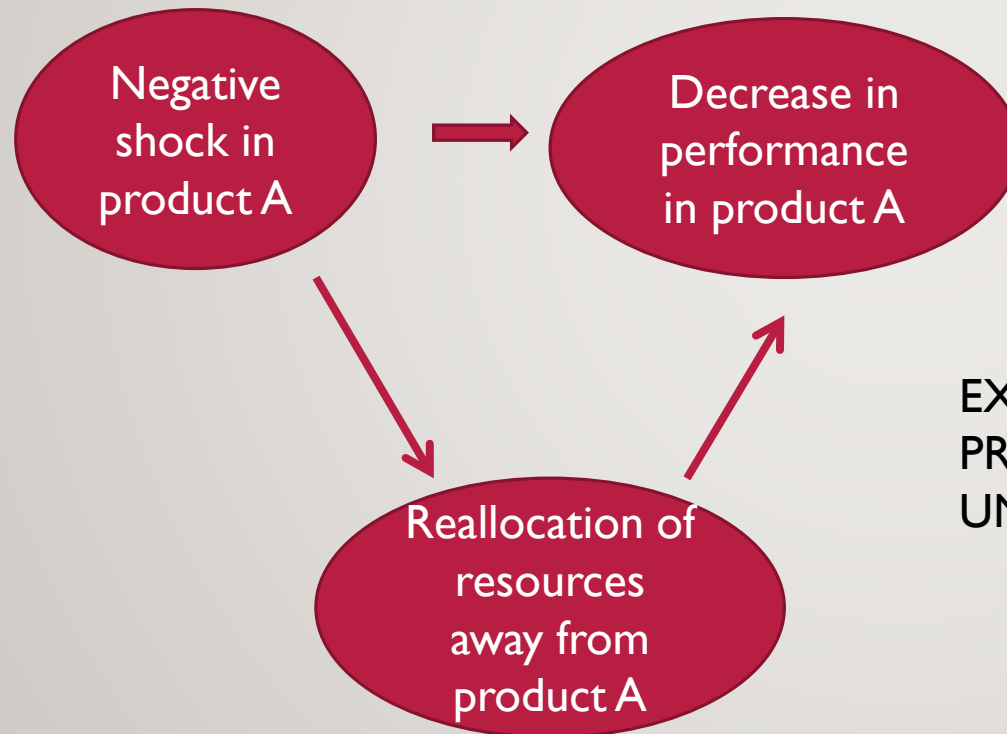
EXTRA DECREASE IN PERFORMANCEIN PRODUCT A DUE TO NEGATIVE SHOCK UNDER SOME CONDITIONS

Similar idea in Dickler &Folta (2020)

GIARRATANA &SANTALÓ (2020)

Impact of shocks when there is resource redeployment:

Negative shock in product A

Increase in performance in product B

Reallocation of resources away from product A towards product B

INCREASE IN PERFORMANCE IN PRODUCT B DUE TO NEGATIVE SHOCK IN PRODUCT A UNDER SOME CONDITIONS
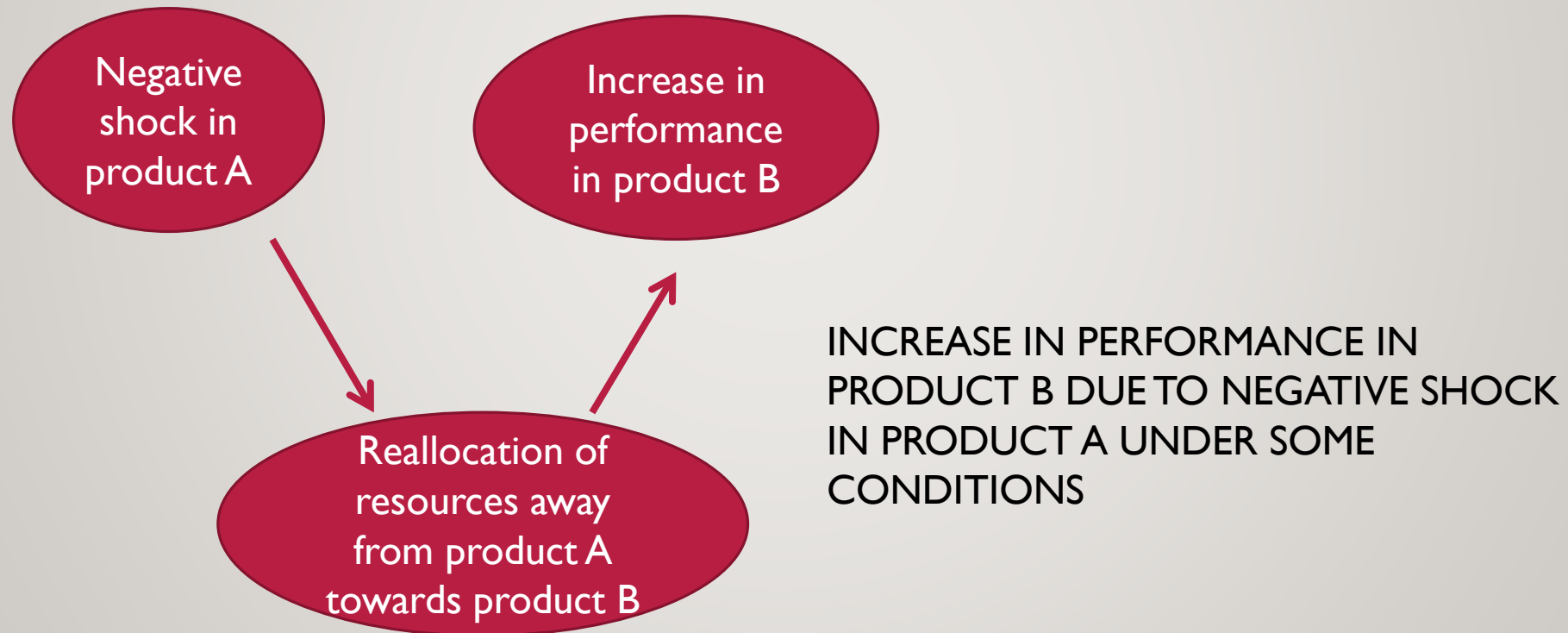
EXAMPLE

Carlsberg Group

Brewdog

GIARRATANA &SANTALÓ (2020)

Impact of shocks when there is resource redeployment:

Tax on beer producers → Decrease sales of beer

Tax on beer producers → Reallocation of resources away from beer towards juices, sport drinks → Decrease sales of beer

EXTRA DECREASE IN PERFORMANCE IN CARLSBERG (compared to Brewdog) DUE TO NEGATIVE SHOCK (UNDER SOME CONDITIONS)

GIARRATANA &SANTALÓ (2020)

Impact of shocks when there is resource redeployment:

Tax on beer

Increase in performance in sport drinks

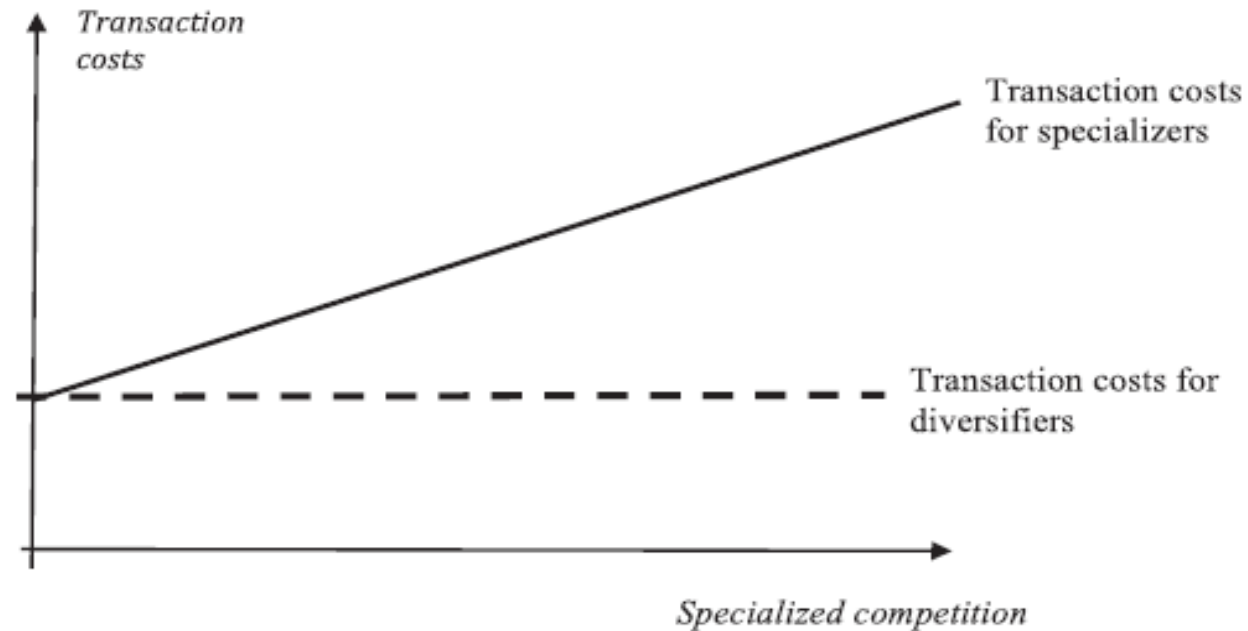Reallocation of resources away from beer towards sport drinKS
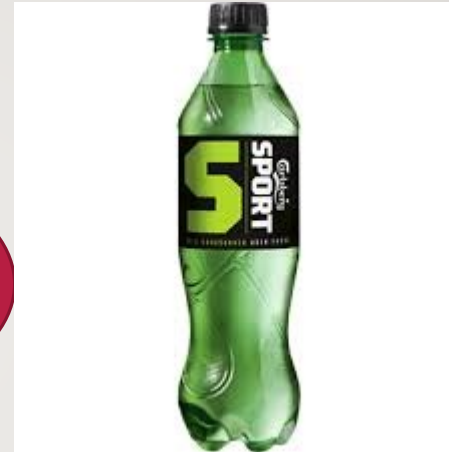
INCREASE IN PERFORMANCE IN SPORT DRINK DUE TO NEGATIVE SHOCK IN BEER UNDER SOME CONDITIONS

WHICH CONDITIONS?

- Internal transaction costs lower than external transaction costs! How can we operationalize them?

Figure 2. Schematic Theory Representation, Hypothesis 2

Transaction costs

Transaction costs for specializers

Transaction costs for diversifiers

Specialized competition

WHICH CONDITIONS?

- Internal transaction costs lower than external transaction costs! How can we operationalize them?

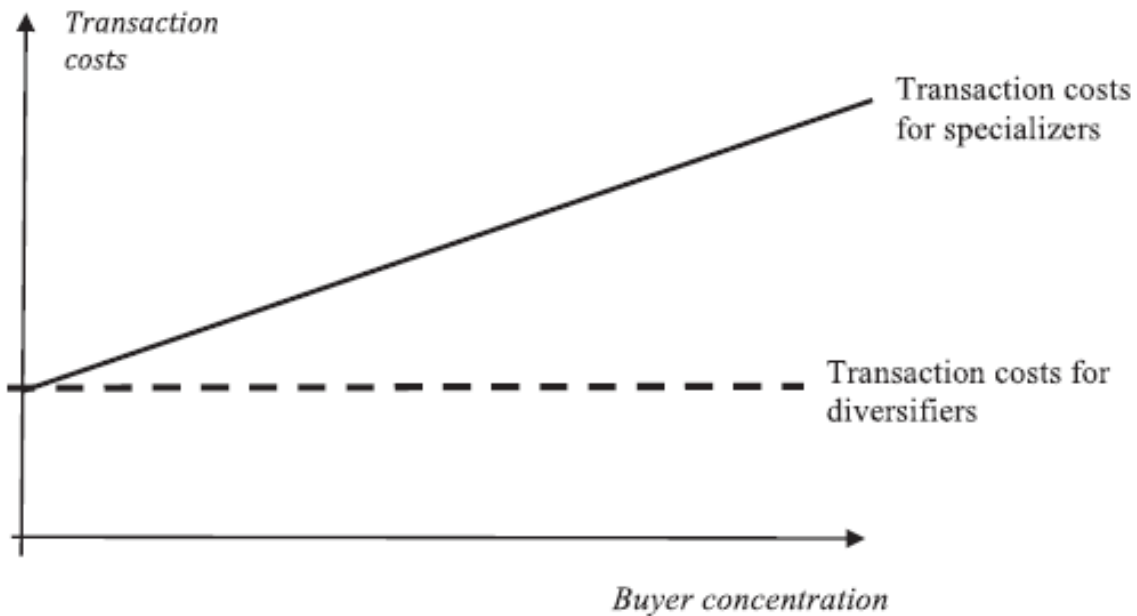**Figure 1.** Schematic Theory Representation, Hypothesis 1

Dependent variable: Sales Growth!!! Yes I know we wish we had ROA…

Table 8. Changes in Marginal Effects of *Diversification* After Tax Changes from Tables 5 and 6, Columns (5) and (2)

Independent variable	Specialized competition high	Specialized competition low
Niche affected		
Retailer concentration high (Z test)	−2.420** (2.227)	−0.090* (2.018)
Retailer concentration low (Z test)	−2.616 (0.022)	0.126 (0.306)
Niches not affected		
Retailer concentration high (Z test)	0.451** (2.067)	0.367 (0.861)
Retailer concentration low (Z test)	−0.872 (0.284)	0.327 (0.535)

$*p < 10\%; **p < 5\%.$

Product-market competition and resource redeployment in multi-business firms

Raffaele Morandi Stagni[1] | Juan Santaló[2] |
Marco S. Giarratana[2]

Flight or fly?
Resource
redeployment
towards where?

Tariff cuts

Number of Tariff cuts by 4-digits SIC sector
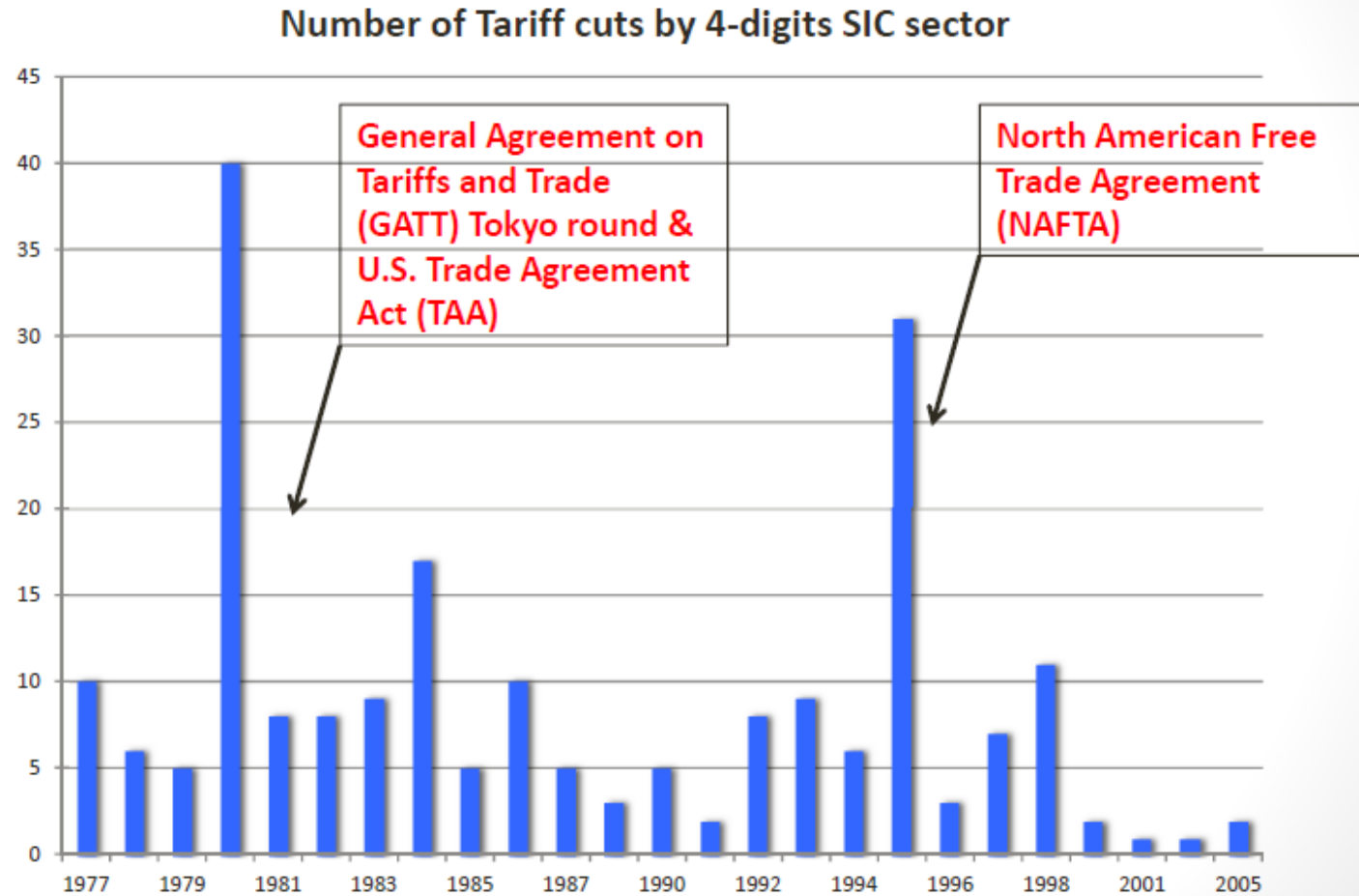
(a) BUs Directly Affected Sample
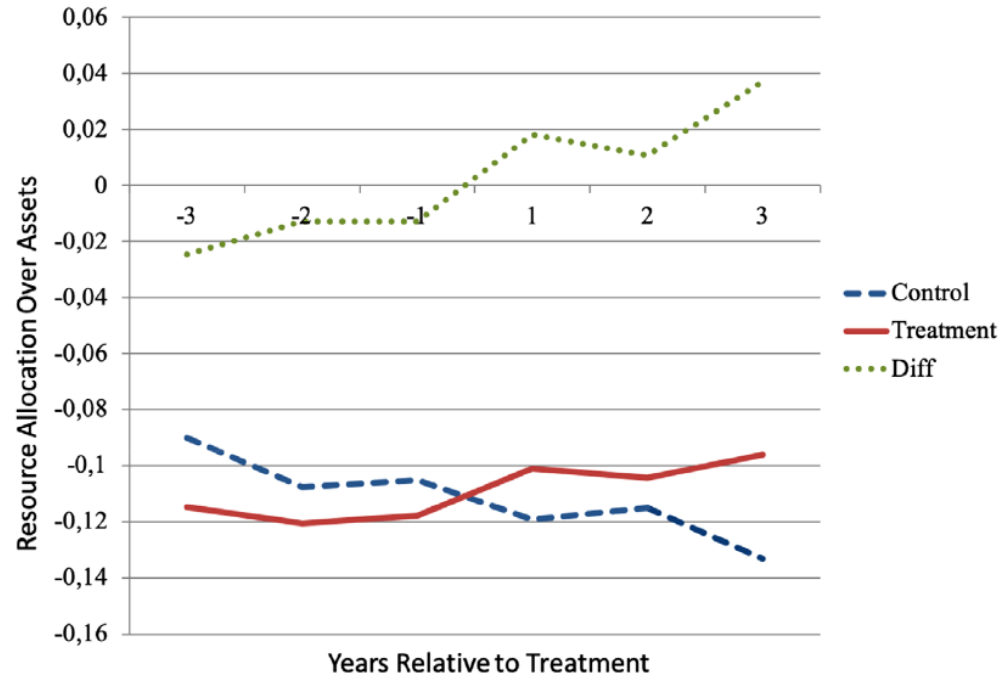
(b) BUs Indirectly Affected Sample
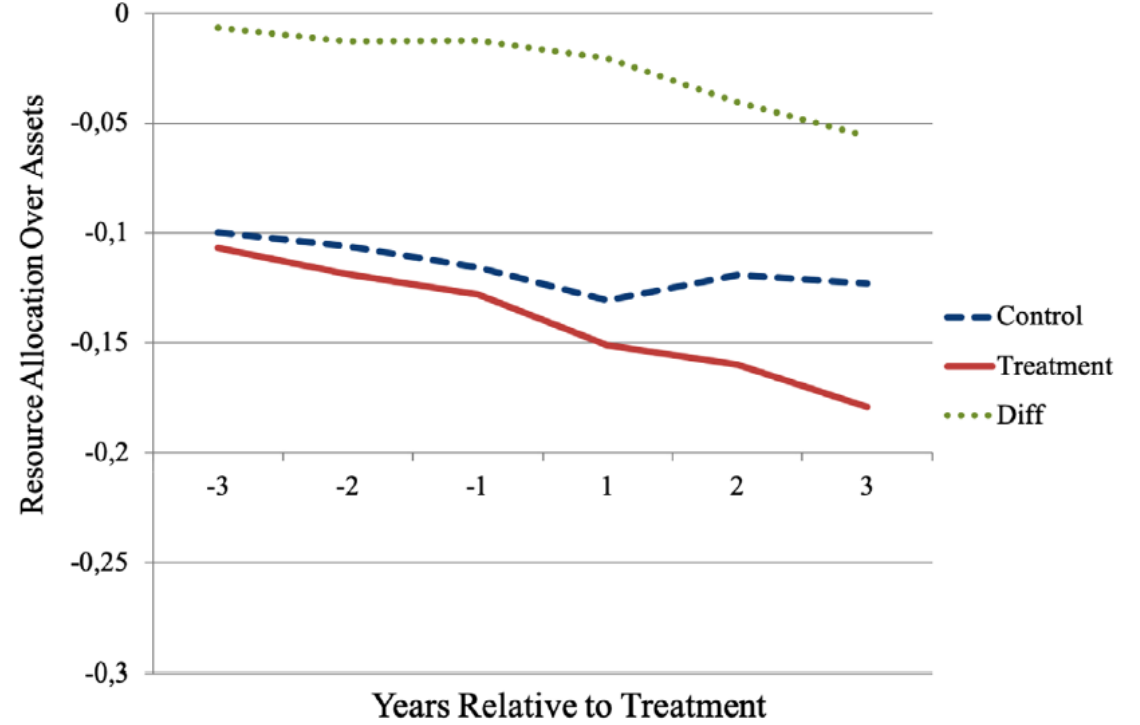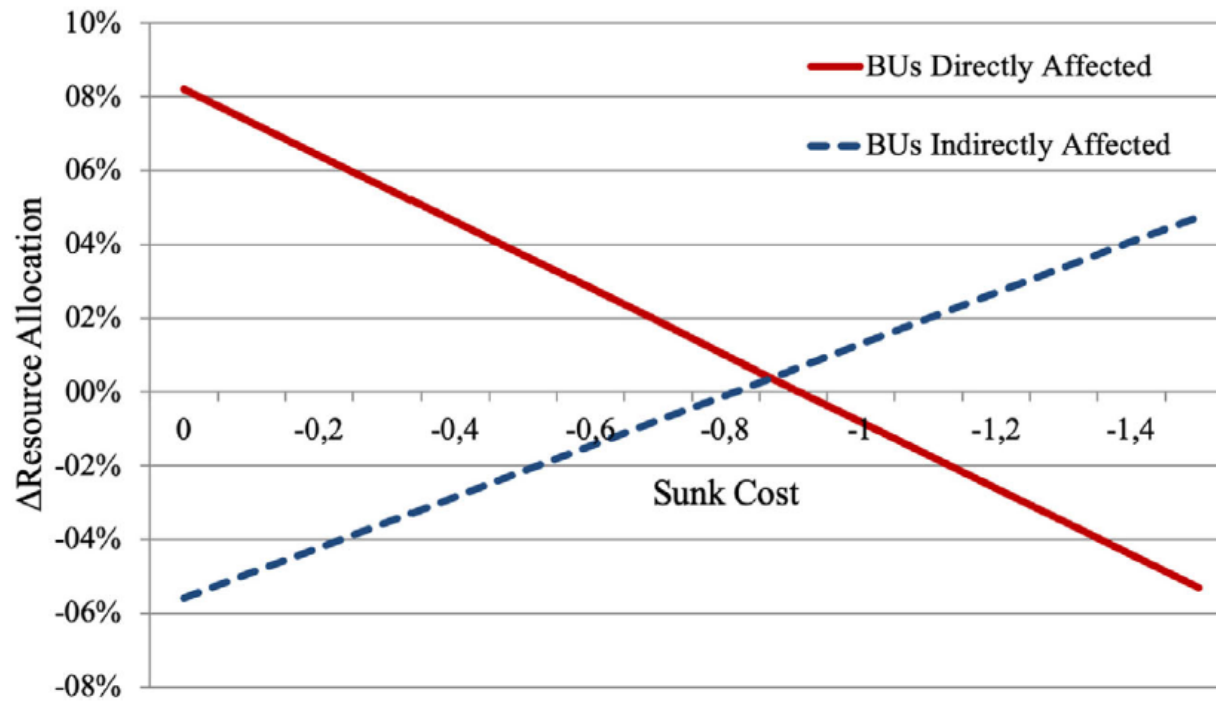
FIGURE 3 Total effect of tariff cut on resource allocation at different levels of sunk costs [Color figure can be viewed at wileyonlinelibrary.com]

When sunk costs are low/high firms fly /fight

SUMMARY OF FINDINGS ON MULTI-BUSINESS FIRM COMPETITIVE ADVANTAGE (BASED ON RESOURCE REDEPLOYMENT)

- Multi-business firm competitive advantage higher when employment protections law are higher

- Multi-product firm competitive advantage higher when buyer concentration and specialized competitor is higher.

- Multi-business firm has a competitive advantage when product market competition increases.

RESOURCE REDEPLOYMENT IMPLICATIONS FOR FIRM STRATEGY

ENTRY, EXIT, AND THE POTENTIAL FOR RESOURCE REDEPLOYMENT

MARVIN B. LIEBERMAN,[1†] GWENDOLYN K. LEE,[2†*] and TIMOTHY B. FOLTA[3,4†]
[1] UCLA Anderson School of Management, Los Angeles, California, U.S.A.
[2] Warrington College of Business Administration, University of Florida, Gainesville, Florida, U.S.A.
[3] University of Connecticut, School of Business, Storrs, Connecticut, U.S.A.
[4] University of Strasbourg Institute for Advanced Study, BETA, Strasbourg, France

(Theory paper)

RESOURCE REDEPLOYMENT IMPLICATIONS FOR FIRM STRATEGY

Basic intuition: If multi-business firms can redeploy resources more efficiently then:

A) Multi-business firms will leave earlier a declining market (lower threshold to leave)

B) Multi-business firms will tenr earlier an emerging market.

Implication : Related diversifiers will leave markets earlier (contradicting synergy logic!)

Consistent with findings of Sohl&Folta (2021) in the global retail sector.

RESOURCE REDEPLOYMENT IMPLICATIONS FOR FIRM STRATEGY

SPECIAL ISSUE ARTICLE

STRATEGIC MANAGEMENT JOURNAL · WILEY

Hyperspecialization and hyperscaling: A resource-based theory of the digital firm

Gianluigi Giustiziero[1] | Tobias Kretschmer[2,3] |
Deepak Somaya[4] | Brian Wu[5]

(Theory)

- Basic premises: There are a)non- scale free resources; b) Increasing returns to scale in digital industries

- Implications: Optimality of focusing all non scale free resources in one stage of the value-chain.
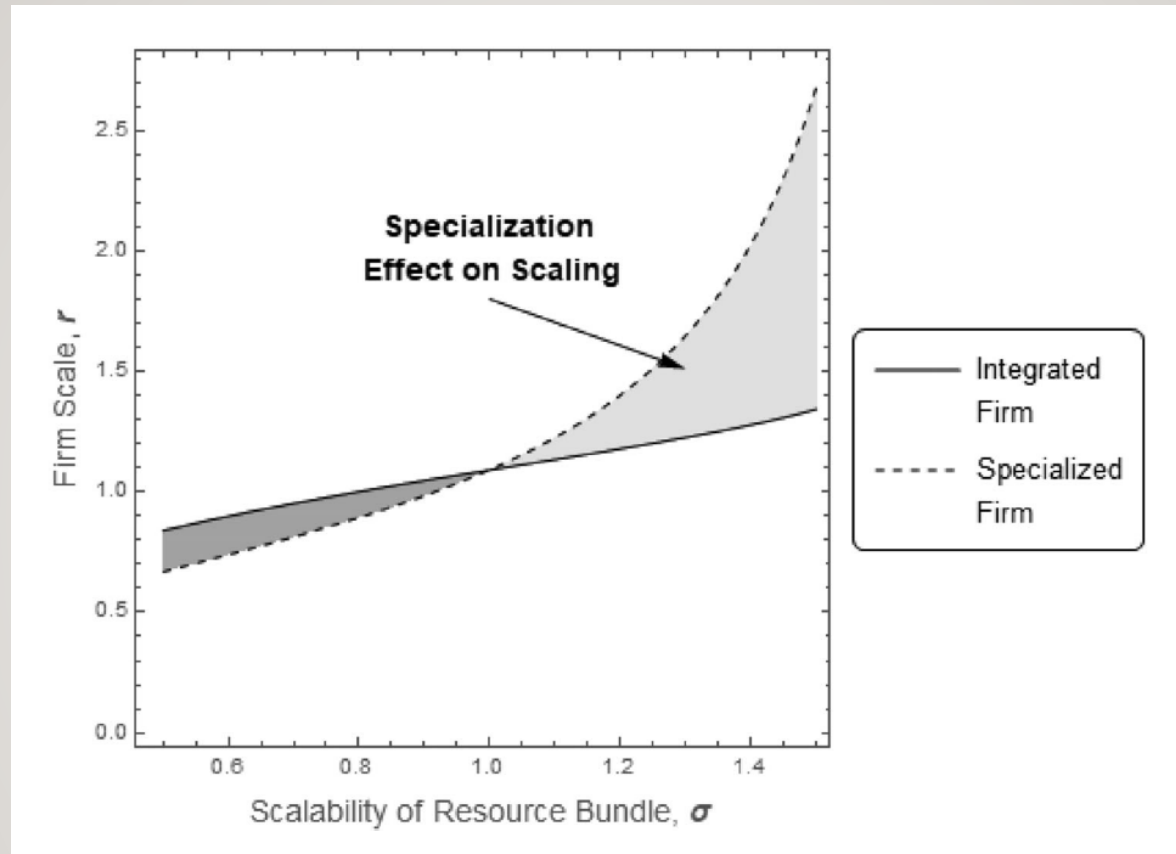
Explain why firms have become bigger and more vertically specialized (have they?)

SUMMARY OF IMPLICATIONS FORM FIRM STRATEGY

- Multi-business firms will exit earlier and as a coneseuqnece they can enter(and explore) more

- In digital industries tendency of firms to become bigger and more specialized in one stage of the value chain at the same time

IMPLICATIONS FOR THE LINKAGE BETWEEN FIRM VARIANCE AND FIRM PERFORMANCE

Leveraging synergies versus resource redeployment: Sales growth and variance in product portfolios of diversified firms

Marco S. Giarratana[1] | Martina Pasquini[2] | Juan Santaló[2]

What is the linkage between performance variance and average performance?

Hypothesis (H1). *A greater redeployment in the product portfolio of a firm that shares non-scale free resources across niches affect positively overall firm sales growth.*

Hypothesis (H2). *The value of scale free resources negatively moderates the relationship between resource redeployment and firm overall sales growth of a firm that shares scale free resources across niches.*

TABLE 1 Overall sample

Industry		(1) Company sales	(2) Number of companies	(3) Number of diversified companies	(4) Number of niches
Body care	Mean	365.45	771.15	180.55	10
	SD	578.36	771.70	176.66	
Consumer electronics	Mean	442.42	163.25	73.18	7
	SD	702.18	151.03	55.33	
Drugs	Mean	83.96	374.72	165.49	7
	SD	115.71	398.81	218.25	
Home appliances	Mean	258.00	486.03	106.91	13
	SD	482.03	427.42	92.98	
Homecare	Mean	205.69	366.34	100.49	8
	SD	285.78	281.97	78.92	

Note: Statistics are by year, niche, and country. Sales are in millions of Euros. Firms are diversified when they sell products in at least two different niches in the same year and country. Niche definitions are in the Appendix.
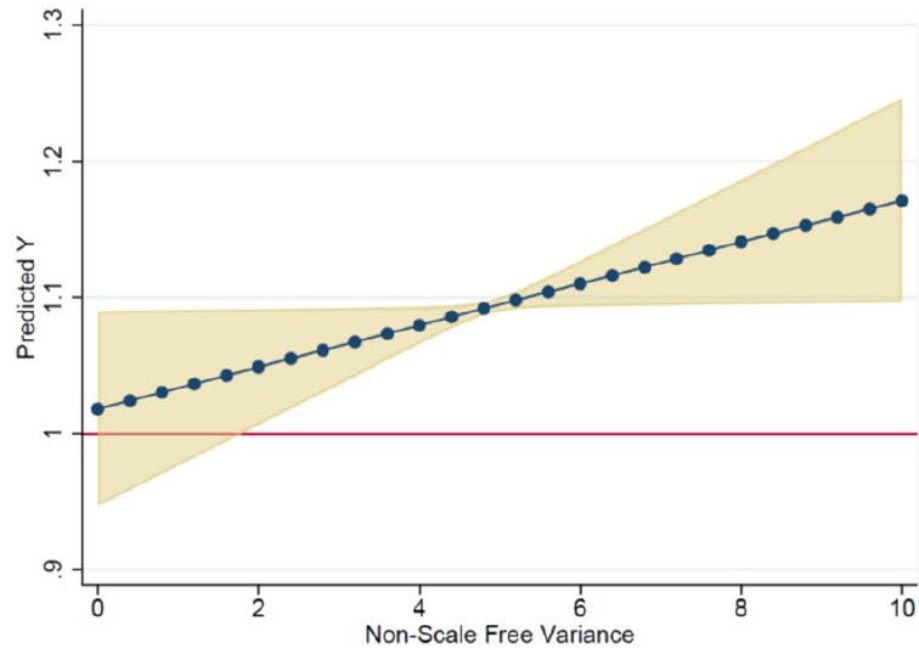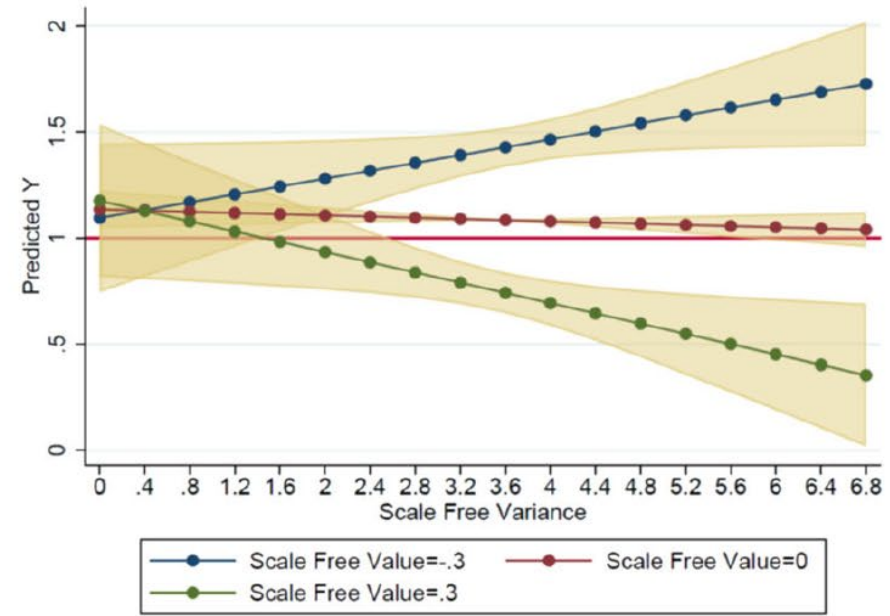
FIGURE 2 Impact of Non-Scale Free Variance on firm growth rate. (a) Non-Scale Free Variance. (b) Scale Free Variance

The value of flexibility in multi-business firms

Teresa A. Dickler[1] | Timothy B. Folta[2] |
Marco S. Giarratana[1] | Juan Santaló[1]

DICKLER ET ALIA (2022)

- Basic idea: Real options approach links positively firm volatility with the value of the firm (Grullon, et alia 2012)

- If multi-business firm have the option to redeploy resources to take advantage of business opportunities then the volatiliy-value linkage will be higher for multi-business firms
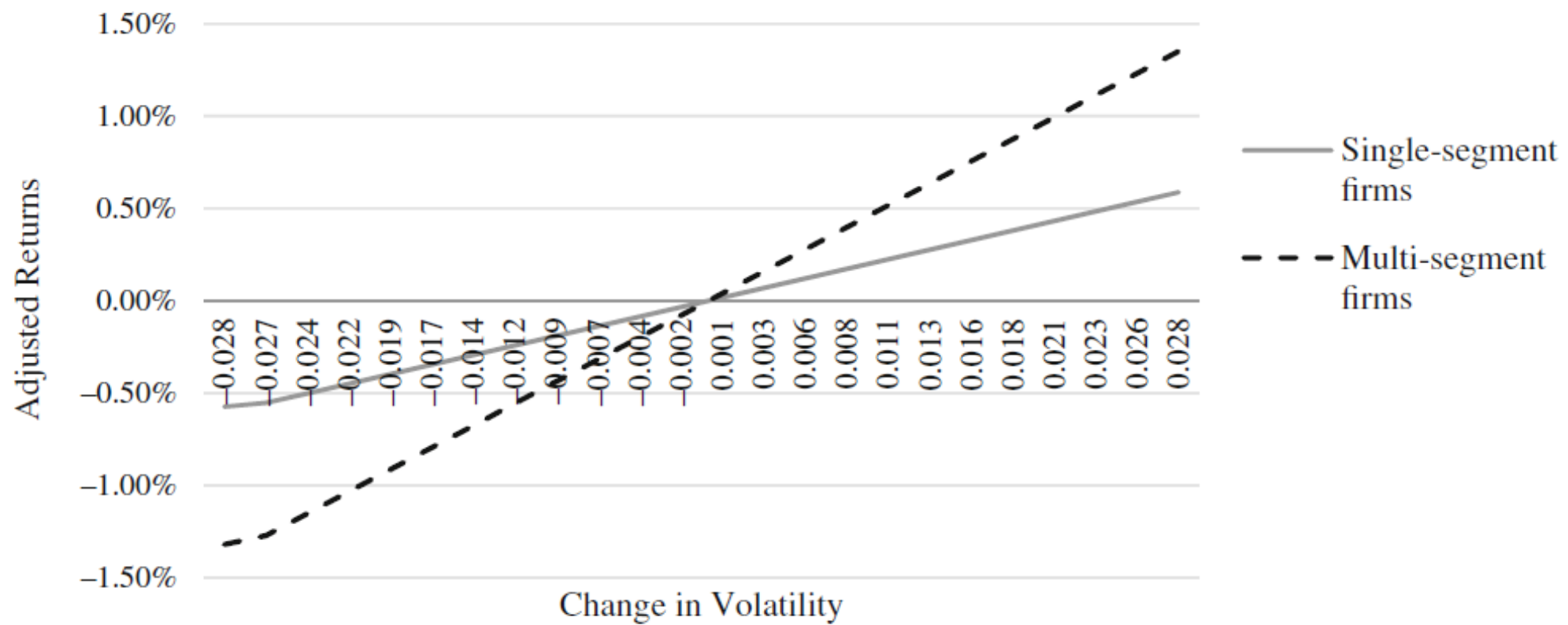
TABLE 4   Redeployment flexibility as a mechanism: Inducements (Panel A) and expertise (Panel B)

Panel A: Inducements to redeploy

DV: Adjusted returns	Negative SGC (1)	Positive SGC (2)
Controls added	Yes	Yes
Controls for all other options added	Yes	Yes
ΔVOL	11.5540	3.9608
	(2.7270)	(1.1172)
z-test	(1)–(2)	2.5766
p-value		[.0100]
N	21,216	72,744
R^2	0.381	0.235
# of months	240	240

SUMMARY OF THE IMPLICATIONS ON THE LINKAGE FIRM VARIANCE AND FIRM PERFORMANCE

- Within firm variance linked to better performance

- External volatility linked to higher firm value.

WHAT SHOULD WE RESEARCH NEXT IN THIS AREA?

THE BLACK BOX OF THE ORGANIZATION

TRIANGLE OF COLLIS_MONTGOMERY: A CONSISTENT SYSTEM
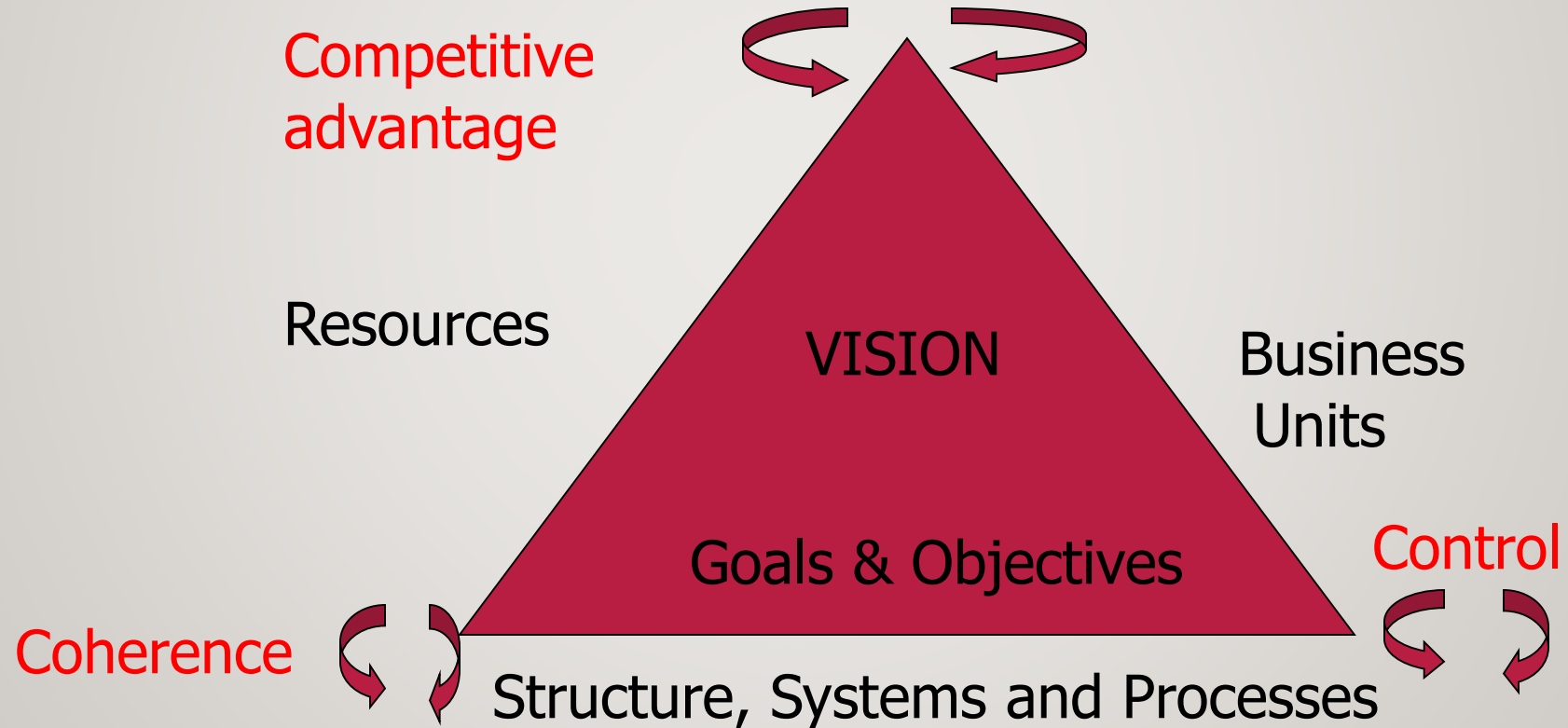
TRADE-OFF BETWEEN BOTH BUSINESS LOGICS

Organization Design	Resource Synergies	Resource Redeployment
Centralization	Shared resources require centralization	Centralized market of resources
Coordination between units	Coordination to foster synergies	No further coordination Needed, internal competition
Performance metrics	Operating control metrics	Financial performance metrics
Business portfolio	Related industries	Unrelated industries
Measures	Synergies	Rate of return
Organizational Challenges to solve	Coordination difficulties	Conflicts for resources

Sakhartov 2017)

WHAT ARE WE STUDYING AND WHY?

Two main logics for resource-based diversification strategies:

<div>

Synergy / Intra-temporal economies of scope

(Penrose, 1959; Rumelt, 1974)

</div>

<div>

Resource redeployability / Inter-temporal economies of scope

(Helfat & Eisenhardt, 2004, Levinthal & Wu, 2010; Sakhartov & Folta, 2014, 2015; Giarratana & Santalo, 2020; Dickler & Folta, 2020)

</div>

When do firms engage in resource sharing?

When do firms redeploy resources?

Is there a trade-off between the two strategies?

Can firms benefit from resource sharing and resource redeployment at the same time?

POLLUTION SPILLOVERS AT ASSA ABLOY

ASSA ABLOY

"When you've walked through an automatic door, stayed in a hotel, or gone through passport control, you've probably used one of our products or services."

POLLUTION SPILLOVERS AT ASSA ABLOY

"This facility currently produces door frames. We plan to move our door production over to this facility as well. This shift in product volume is reflected in the "following year" estimates for this facility."

EPA

Clean Air Act:

Addresses and monitors the concentration of six hazardous air pollutants

Counties "**not in attainment**" face stricter regulatory requirements than "**attainment**" counties

Redeployment

Knowledge Sharing

🟥 restricted by CAA, i.e., "not in attainment"

🟦 unrestricted by CAA, i.e., "in attainment"
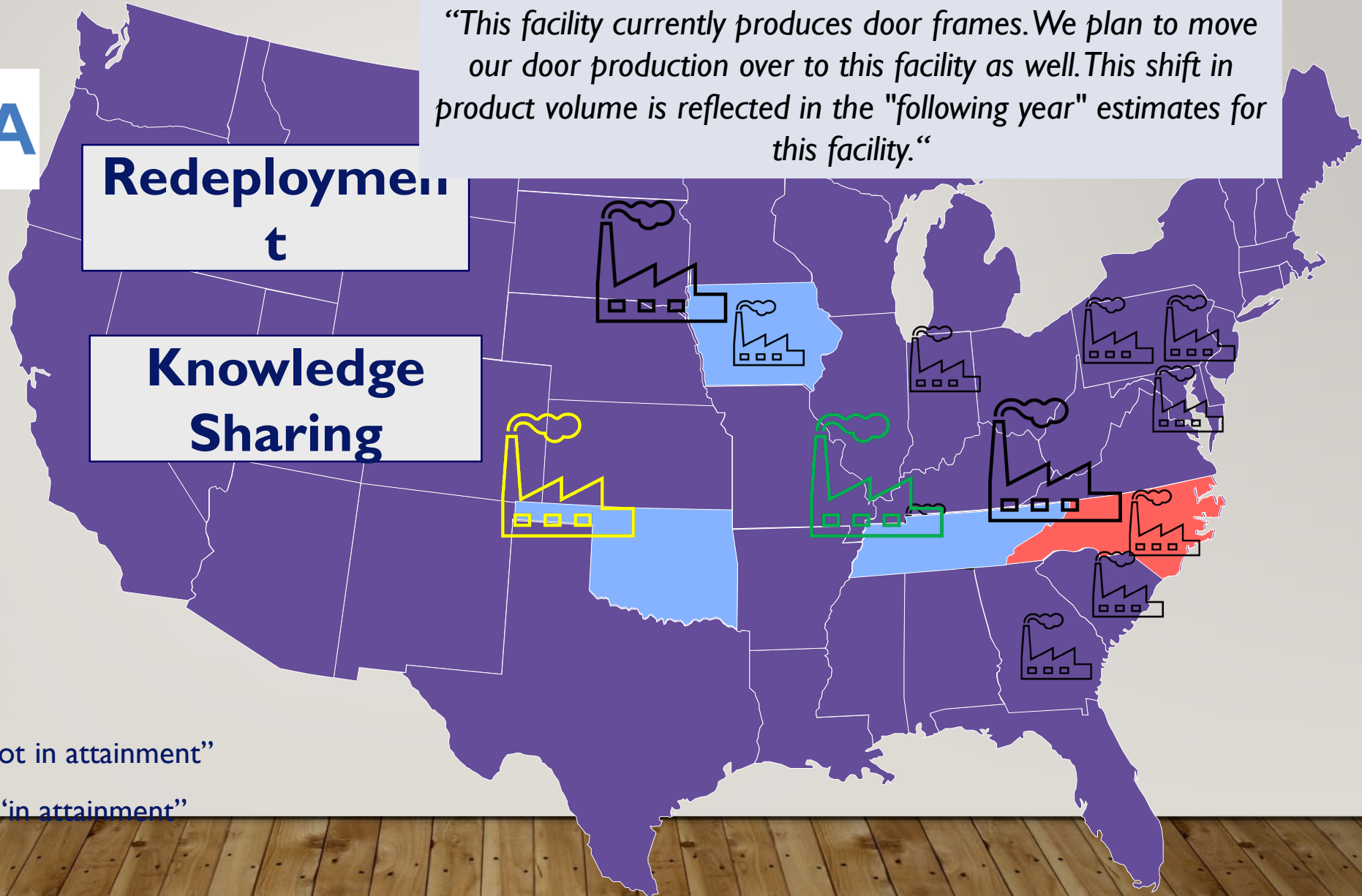
PRELIMINARY KEY FINDINGS

1st Stage

2nd Stage

3rd Stage

Knowledge Sharing (−)

Redeployment → Toxic Emissions

(+)

Knowledge Sharing → Environmental Efficiency

Redeployment (−)

Post-hoc Analysis Identifying the Mechanisms
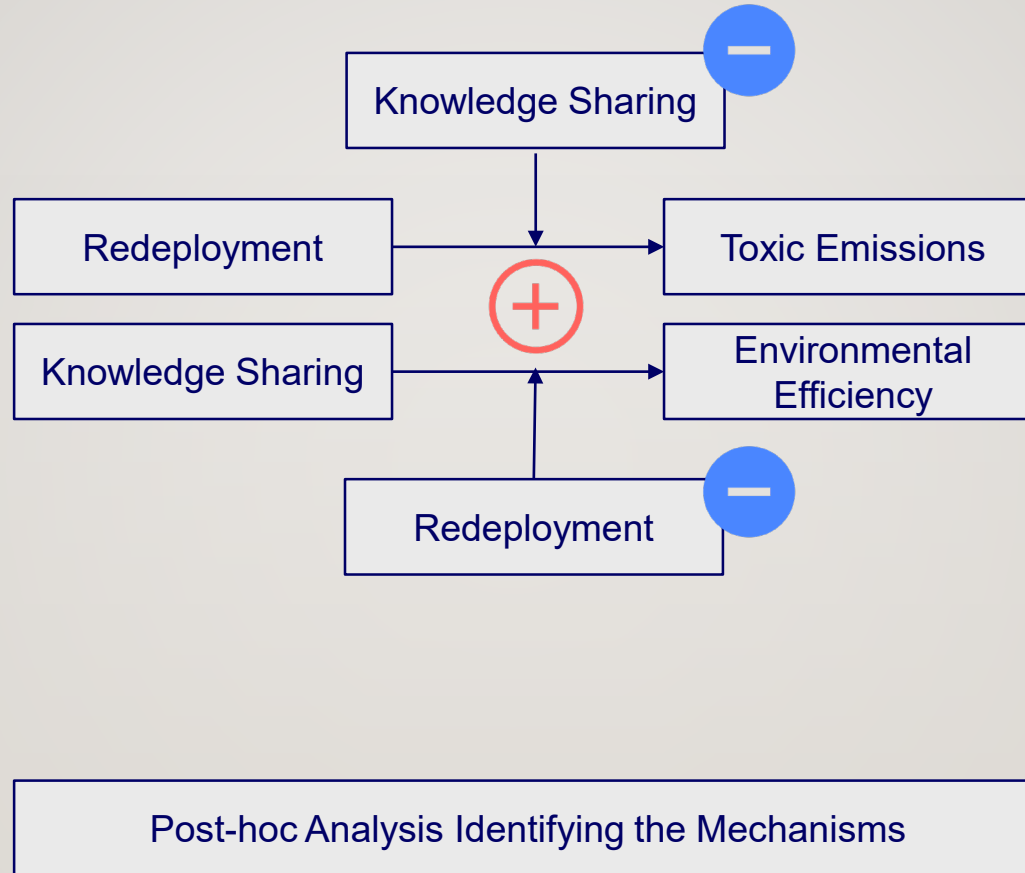
"Overall plant shifting of production to other facilities have greatly reduced use of this chemical"

"Improved maintenance scheduling, recordkeeping, or procedures"

"Substituted raw materials"

EMPIRICAL CONTEXT AND SAMPLE

Sample of U.S. manufacturing plants from 1990-2019

Plant-level emission and location data from the EPA Toxic Release Inventory (TRI)
- Captures emissions for over 600 chemical compounds (restrict analysis to those regulated by CAA)
- Detailed information on plant-chemical-year level including source reduction activities

Plant-level and firm-level financial data from the U.S. National Establishment Time Series (NETS)
- Determines corporate structure - which plants belong to the same headquarter?
- Plant-level sales and industry information

Clean Air Act: Data on county attainment status from the EPA Green Book
- Six criteria pollutants; in every U.S. county the EPA assigns separate designations:
  - "in attainment"(ambient concentrations within limits)
  - "not in attainment" (ambient concentrations exceeds limits) or
- Emitters of a pollutant in counties that are "not in attainment" for that pollutant are subject to stricter restrictions than emitters in attainment counties:
- Quasi-natural experiment as county nonattainment status is exogenous (e.g., Henderson, 1996; Greenstone, 2002; Auffhammer, Bento, & Lowe, 2011)

ANALYSIS

Chemical-plant-year level analysis with a sample of plants
- Part of a multi-plant firm
- Emitting pollutants potentially regulated by the CAA
- Themselves not restricted by the CAA, i.e., "in attainment"

$(+)$

| Redeployment | $\rightarrow$ | Toxic Emissions |
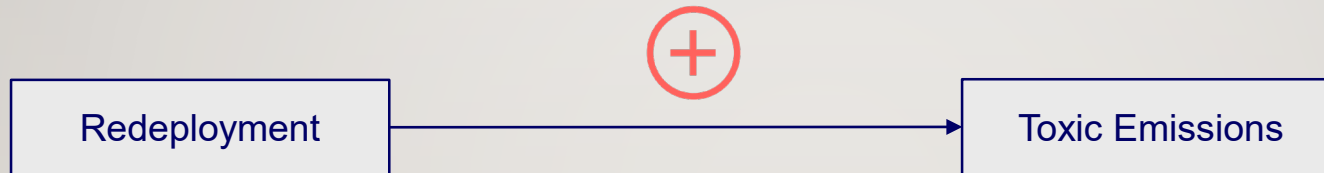
$$Emissions_{cit} = \alpha_{it} + \beta_{1it} \textbf{\textit{same}} \textit{ chemical sibling restricted by the CAA} + \overrightarrow{\delta_t} \, x_{it} + \varepsilon_{it}$$

$(+)$

| Knowledge Sharing | $\rightarrow$ | Environmental Efficiency |
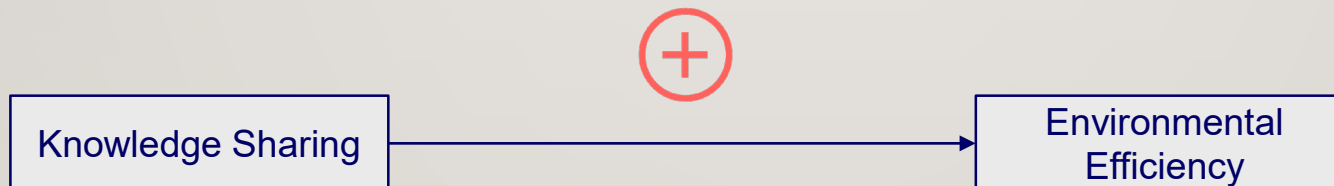
$$Environmental \; Efficiency_{\;cit} = \alpha_{it} + \beta_{1it} \textbf{\textit{other}} \textit{ chemical sibling restricted by the CAA} +$$
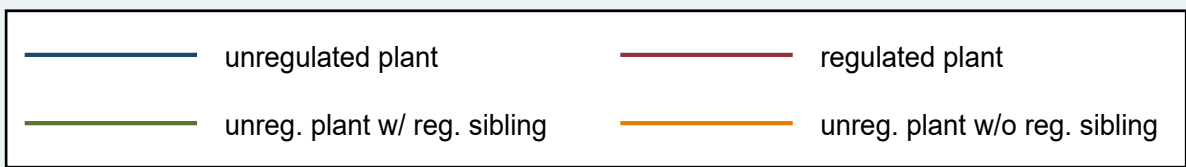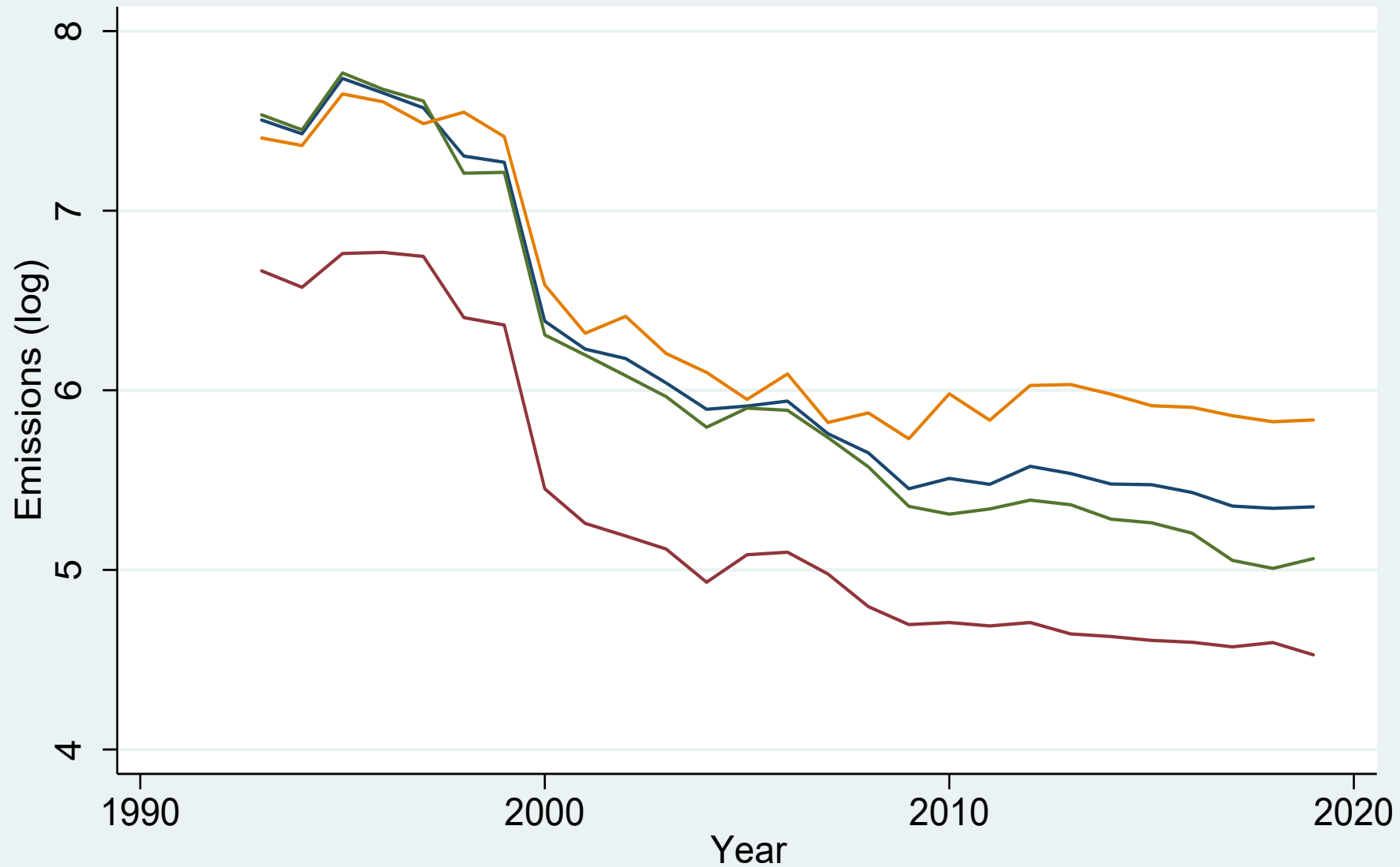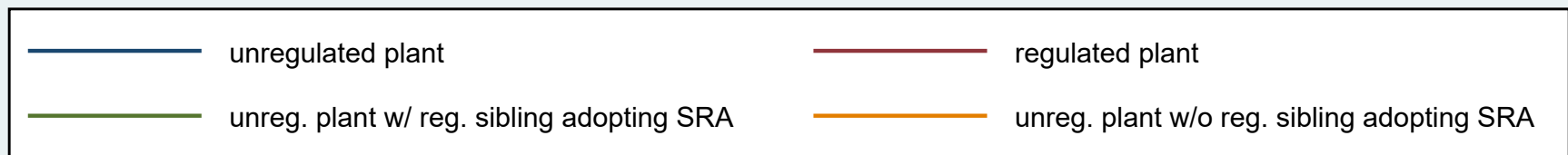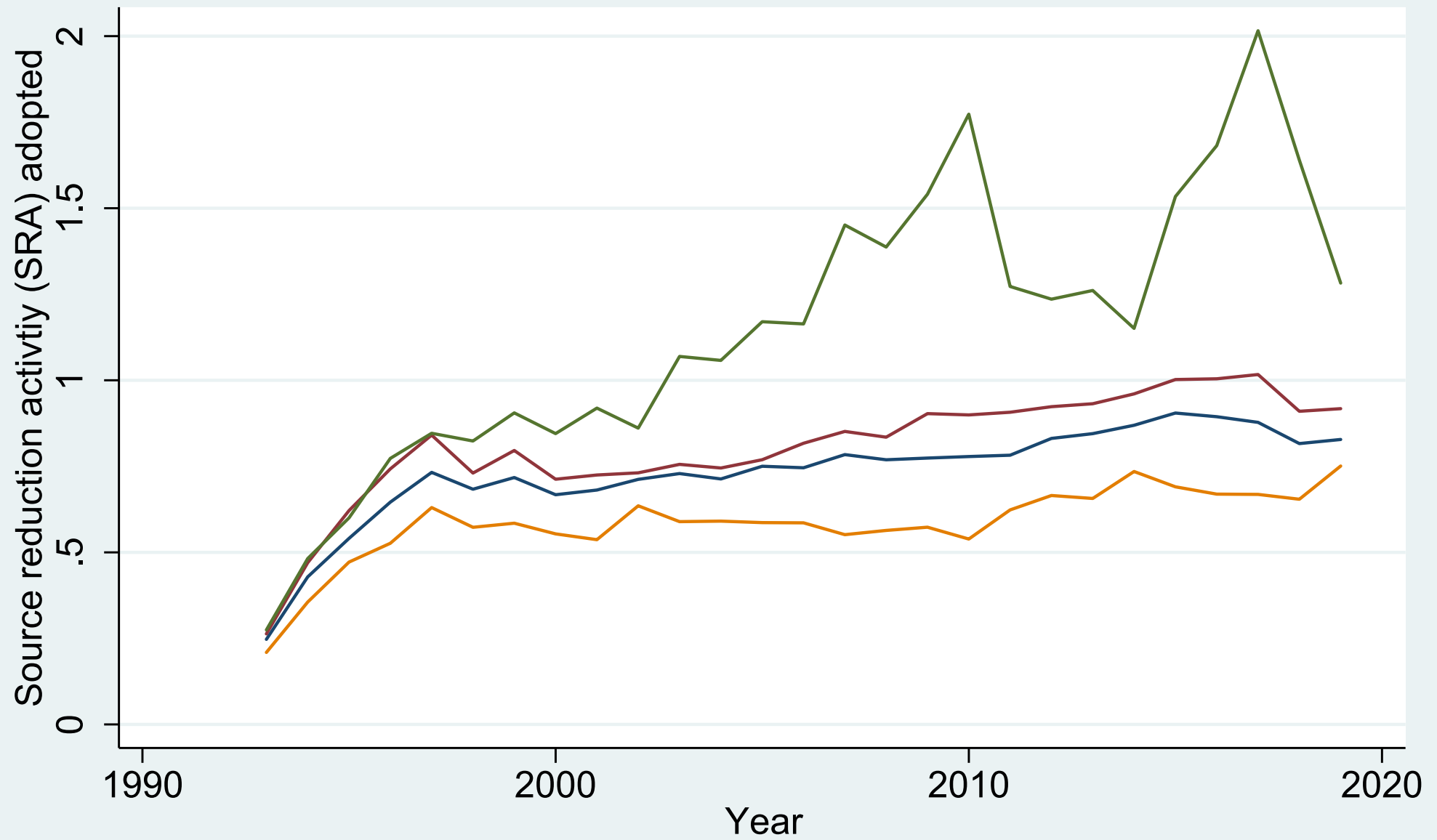
	Mean	SD	P5	Median	P95	
Total air emissions	36,785.710	295,505.641	0.000	670.000	120,000.000	241
Total air emissions (log)	6.103	3.891	0.000	6.509	11.695	241
Adjusted emissions	-2.040	3.781	-8.397	-1.900	3.972	172
Environmental efficiency	-0.064	0.950	-1.495	-0.076	1.471	193
Adj. environmental efficiency	-0.083	1.176	-1.937	-0.102	1.842	122
SRA adopted	0.115	0.319	0	0	1	241
Regulated sibling	0.707	0.455	0	1	1	241
Regulated sibling adopted SRA	0.317	0.465	0	0	1	241
Number of facilities	17.655	21.092	2.000	9.000	69.000	241
Number of chemicals	11.988	13.159	2.000	8.000	34.000	241
Plant chemical experience	9.435	6.780	1.000	8.000	23.000	241
Plant sales (log)	17.440	1.782	14.489	17.538	20.131	241

RESULTS STAGE I: DIRECT EFFECTS FOR REDEPLOYMENT AND SHARING

DV:	Adjusted emissions		Probability of SRA adoption	
	(1)	(2)	(3)	(4)
Regulated sibling		0.1413**		
		(0.0580)		
Regulated sibling adopted SRA				0.0428***
				(0.0058)
Number of facilities	-0.0029	-0.0039**	0.0001	-0.0003
	(0.0020)	(0.0020)	(0.0002)	(0.0002)
Number of chemicals	0.0127	0.0122	-0.0005	-0.0006
	(0.0108)	(0.0106)	(0.0007)	(0.0007)
Plant chemical experience	0.0883***	0.0883***	0.0023***	0.0023***
	(0.0065)	(0.0065)	(0.0004)	(0.0004)
Total releases			0.0044***	0.0044***
			(0.0006)	(0.0006)
Constant	-2.9819***	-3.0605***	0.0784***	0.0727***
	(0.1318)	(0.1401)	(0.0108)	(0.0109)
Year FE	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES
Chemical FE	YES	YES	YES	YES
Plant FE	YES	YES	YES	YES
N	171,312	171,312	171,312	171,312
R^2	0.450	0.450	0.474	0.476

Robust standard errors clustered by plant in parentheses, *** $p<0.01$, ** $p<0.05$, * $p<0.1$

RESULTS STAGE II:TRADE-OFF

Dependent Variable:	Probability of SRA adoption		Adjusted environmental efficiency	
	(1)	(2)	(3)	(4)
Regulated sibling adopted SRA	0.0522***	0.0475***	0.0246*	0.0201
	(0.0066)	(0.0063)	(0.0146)	(0.0142)
Regulated sibling adopted SRA * Redeployer50	-0.0425***		-0.0600*	
	(0.0144)		(0.0359)	
Regulated sibling adopted SRA* Redeployer90		-0.0451***		-0.0854*
		(0.0133)		(0.0471)
Number of chemicals	-0.0006	-0.0006	-0.0050*	-0.0050*
	(0.0007)	(0.0007)	(0.0026)	(0.0026)
Plant chemical experience	0.0023***	0.0023***	-0.0282***	-0.0282***
	(0.0004)	(0.0004)	(0.0027)	(0.0028)
Number of facilities	-0.0003	-0.0003	-0.0006	-0.0006
	(0.0002)	(0.0002)	(0.0006)	(0.0006)
Total releases	0.0044***	0.0044***		
	(0.0006)	(0.0006)		
Constant	0.0710***	0.0718***	0.2570***	0.2576***
	(0.0110)	(0.0110)	(0.0406)	(0.0406)
Year FE	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES
Chemical FE	YES	YES	YES	YES
Plant FE	YES	YES	YES	YES
N	169,991	169,991	121,734	121,734
R^2	0.475	0.475	0.309	0.309

Robust standard errors clustered by plant in parentheses, *** $p<0.01$, ** $p<0.05$, * $p<0.1$

CENTRALISED VERSUS DECENTRALISED FIRMS

	Adjusted emissions		Probability of SRA adoption		Adjusted environmental efficiency	
	Central	Decentral	Central	Decentral	Central	Decentral
	(1)	(2)	(3)	(4)	(5)	(6)
Regulated sibling	-0.3862	0.1560***				
	(0.2360)	(0.0587)				
Regulated sibling adopts SRA			0.1312***	0.0330***	0.0550	0.0049
			(0.0256)	(0.0057)	(0.0475)	(0.0142)
Number of chemicals	0.0202	0.0129	-0.0015	-0.0005	-0.0075	-0.0051**
	(0.0159)	(0.0107)	(0.0014)	(0.0007)	(0.0059)	(0.0026)
Plant chemical experience	0.0682***	0.0910***	0.0027***	0.0023***	-0.0257***	-0.0294***
	(0.0101)	(0.0066)	(0.0006)	(0.0004)	(0.0040)	(0.0028)
Number of facilities	0.0156**	-0.0043**	0.0004	-0.0003	-0.0078***	-0.0005
	(0.0069)	(0.0021)	(0.0009)	(0.0002)	(0.0026)	(0.0006)
Total releases			0.0037***	0.0045***		
			(0.0010)	(0.0006)		
Constant	-2.6630***	-3.1197***	0.0765***	0.0728***	0.2970***	0.2748***
	(0.1793)	(0.1422)	(0.0161)	(0.0110)	(0.0714)	(0.0413)
Welch's t-test (p-value)	(1) – (2)	-556.889 (0.000)	(3) – (4)	931.894 (0.000)	(5) – (6)	215.603 (0.000)

EXCESS EMISSIONS A LA BERGER-OFEK (1993)

DV: Excess emissions	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Multi-plant		0.4403***		0.6297***	0.6099***	0.6242***	0.6172***	0.6268***	0.222
		(0.0544)		(0.0533)	(0.0541)	(0.0533)	(0.0536)	(0.0533)	(0.186
Sales from efficient plants			-1.9904***	-1.6674***	-1.6671***	-1.6670***	-1.6671***	-1.6670***	
			(0.0257)	(0.0242)	(0.0242)	(0.0242)	(0.0242)	(0.0242)	
Multi-plant*Sales of efficient plants				-1.8826***	-1.8947***	-1.9085***	-1.8952***	-1.9004***	
				(0.0737)	(0.0738)	(0.0743)	(0.0740)	(0.0741)	
Redeployer50 firm					0.1428**				
					(0.0586)				
# of Redeployer50 plants						0.1622***			
						(0.0417)			
Redeployer90 firm							0.2016***		
							(0.0704)		
# of Redeployer90 plants								0.1991***	
								(0.0632)	
Number of regulated plants	0.0597***	0.0587***	0.0690***	0.0788***	0.0781***	0.0767***	0.0782***	0.0775***	0.4891*
	(0.0143)	(0.0142)	(0.0144)	(0.0147)	(0.0147)	(0.0146)	(0.0146)	(0.0146)	(0.078
Number of chemicals	-0.0171***	-0.0171***	-0.0167***	-0.0167***	-0.0166***	-0.0166***	-0.0166***	-0.0166***	-0.0145
	(0.0037)	(0.0037)	(0.0037)	(0.0037)	(0.0037)	(0.0037)	(0.0037)	(0.0037)	(0.005
Firm experience	0.0362***	0.0369***	0.0352***	0.0362***	0.0360***	0.0358***	0.0360***	0.0359***	0.0466*
	(0.0022)	(0.0023)	(0.0022)	(0.0022)	(0.0022)	(0.0022)	(0.0022)	(0.0022)	(0.004
Firm size	-0.4445***	-0.4861***	-0.4385***	-0.4848***	-0.4857***	-0.4875***	-0.4859***	-0.4865***	-0.5729
	(0.0193)	(0.0207)	(0.0184)	(0.0197)	(0.0196)	(0.0195)	(0.0196)	(0.0195)	(0.033
Constant	1.7895***	1.8387***	1.9890***	2.0013***	2.0039***	2.0018***	2.0035***	2.0011***	1.4340*

THE ROLE OF INTERNAL CONFLICT

Barber, Giarratana &Santaló (wp): "Internal Resource Competition and Diversification

Performance in M&As Targets"

- This paper investigates post-integration performance of targets in the context of diversifying M&As. It explores the mechanism of politically driven economics of scope.

-

SAMPLE CONSTRUCTION

- **Thompson One's** database on mergers and acquisitions,

- **National Establishment Time-Series (NETS) database** on manufacturing firms: 1990-2015

- **OpenSecrets database on political expenditures**. (Tracks all lobbying activities disclosed by government mandated reports from registered lobbyists): 1998-2015

- Identify all targeted companies from 2000 to 2014 that had over one million dollars in sales

- Manually matched the names of the targeted and acquiring companies with the names of companies from the NETS manufacturing database.

SAMPLE CONSTRUCTION

- Matched names by hand to NETS (HQDuns) database, as well as the OpenSecrets database

- Only looked at targeted deals over $10 million dollars

- Only looked at targeted deals where the acquirer would have >50% stake in the acquisition (almost all of them were to acquire 100% share)

- Aggregated all facilities by the Target Firm's Duns number (HQDuns) and SIC4 digit code to get the business unit

- Eliminated mega deals by taking out top 10% of largest acquisitions (11> Business Units)

DEPENDENT VARIABLE

- Measure the growth in sales of each Business Unit within our sample.

- BU sales $growth = \ln(\frac{Sales_t}{Sales_{d-1}})$

- This calculates the percentage of sales growth from year (d-1) to the current year (t) where d is the year of the acquisition. We adjust sales with inflation

INDEPENDENT VARIABLES: LOBBY CAPABILITIES

Number of agencies lobbied by the acquirer in the past 3 years (before acquisition took place), meant to capture the breadth and scope of a firm's connections within government (Ridge, Ingram and Hill 2017).

INDEPENDENT VARIABLES (II)

Diversification extent: Number of industries in which the acquirer is operating (number of four digit sic codes)

Strength of within firm competition: **Acquirer's operations in target industry** Percentage of sales of the acquiring firm in the same SIC four digit as the target facility. We construct this measure this by taking the sales of the acquiring firm the year before the announcement date of the acquisition.

CONTROL VARIABLES

- Total sales of the acquiror the year of the acquisition.

- Total employees of the target firm the year targeted by the acquiror

- Lobby of the Target company

- Industry growth, industry sales.

Initial results (OLS): Lobbying Breadth. Standard errors among parentheses

	BU Growth	BU Growth	BU Growth –SIC4 Growth	BU Growth –SIC4 Growth
Acquirer Diversification	-.098** (.032)	-.102** (.031)	-.101** (.032)	-.104** (.032)
Lobbying Breadth 3 years prior	.097* (.042)	.124** (.043)	.092+ (.042)	.0121** (.043)
Acquiror's operations in target industry	-.060 (.114)	-.022 (.116)	-.070 (.115)	-.029 (.118)
Lobbying BreadthxAcquiror's operations in target industry		-.337+ (.152)		-.361* (.149)
Controls	YES	YES	YES	YES
Year FE	YES	YES	YES	YES
Time after acquisition FE	YES	YES	YES	YES
SIC4 FE	YES	YES	YES	YES
Observations	13918	13918	13918	13918
R^2	.237	.238	.231	.232
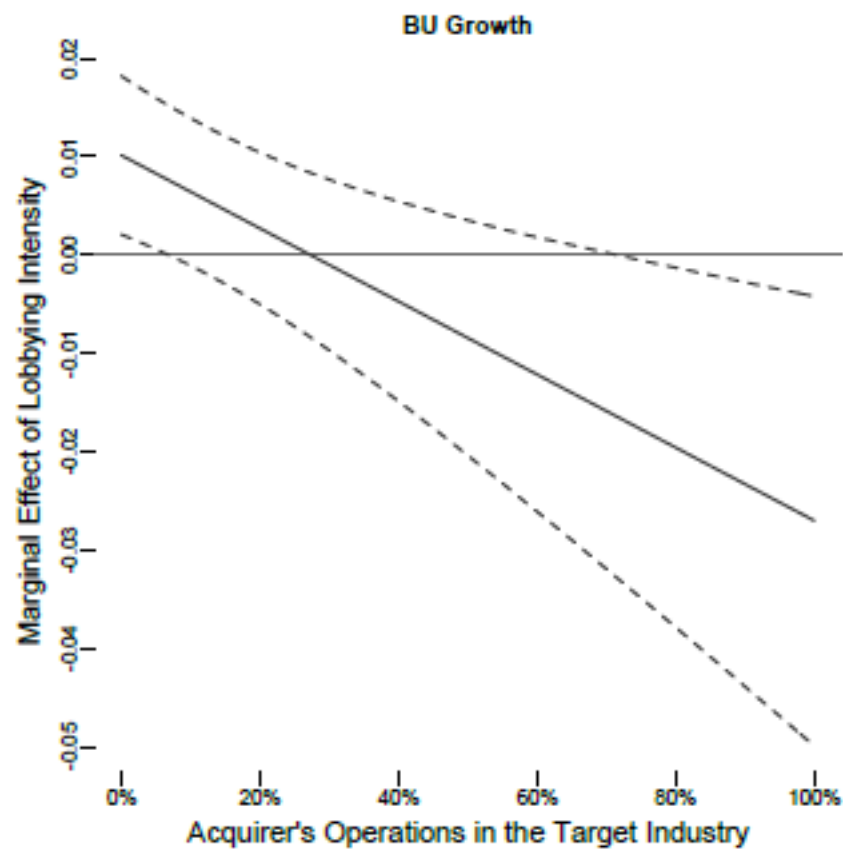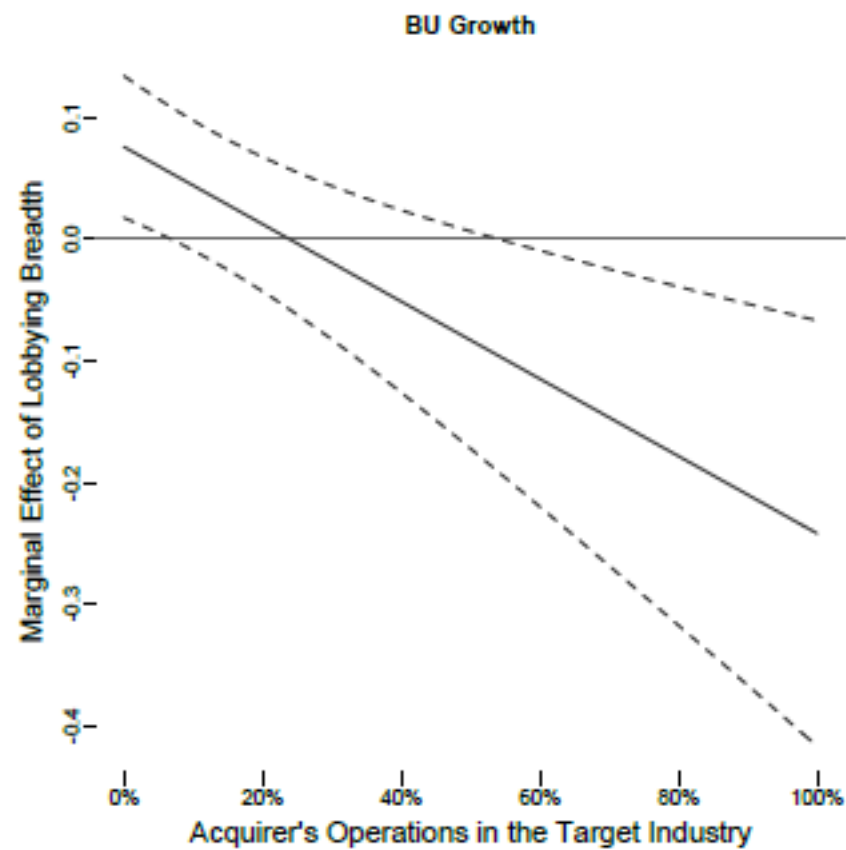
Figure 1: Marginal Effect of Lobbying on BU Growth
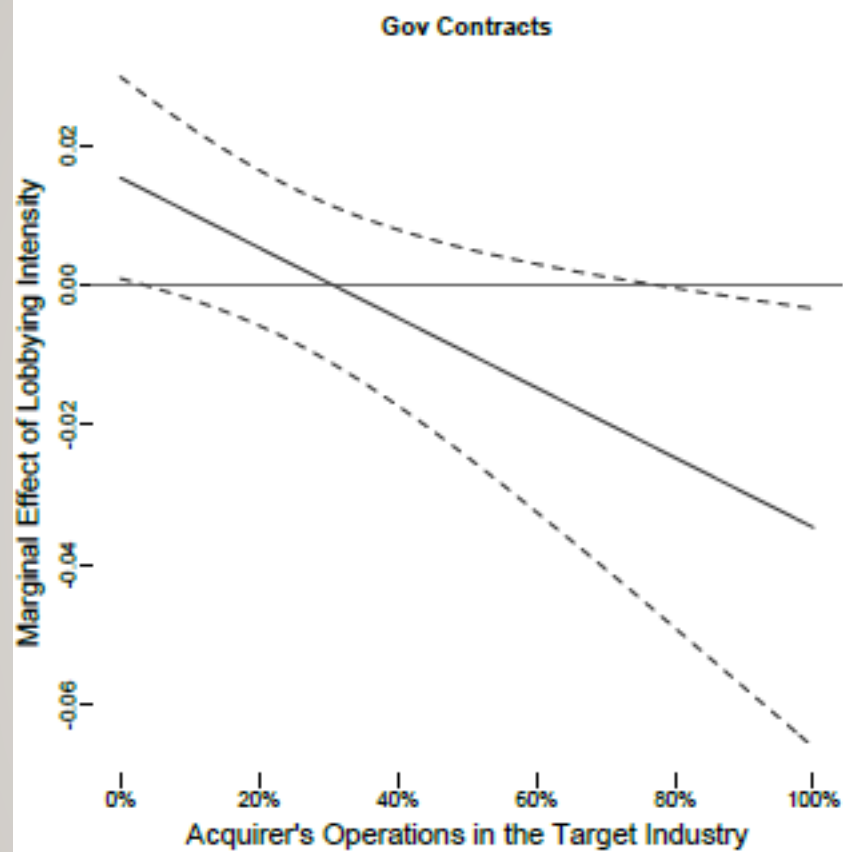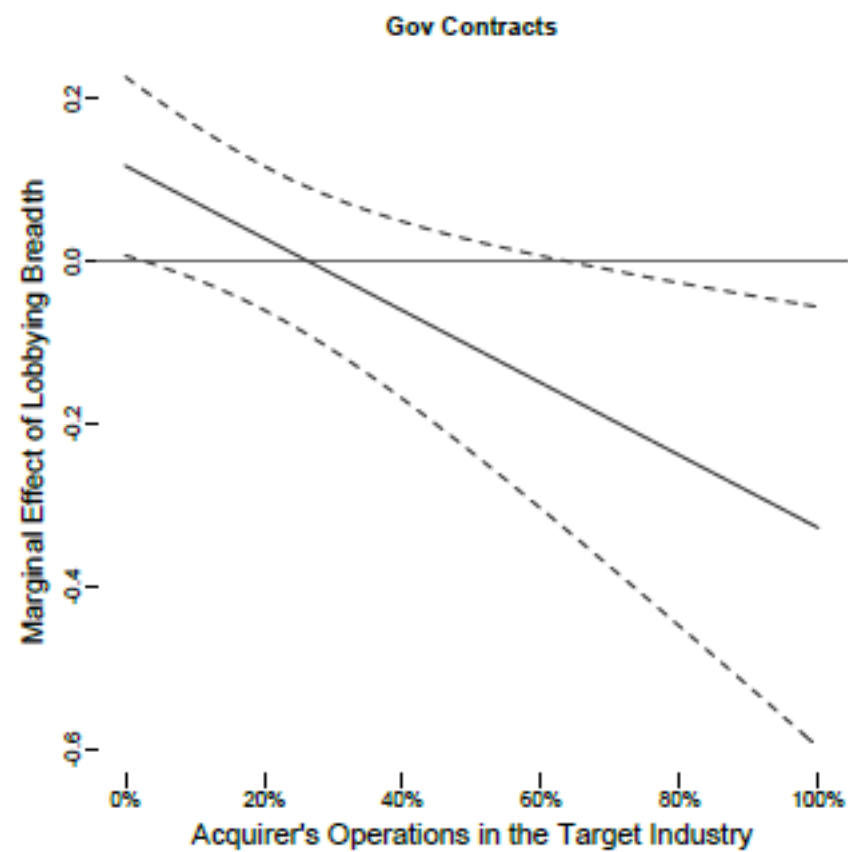
Figure 3: Marginal Effect of Lobbying on Government Contracts

Thank you!