Can Business Groups Survive with Institutional Development? Theory and Evidence

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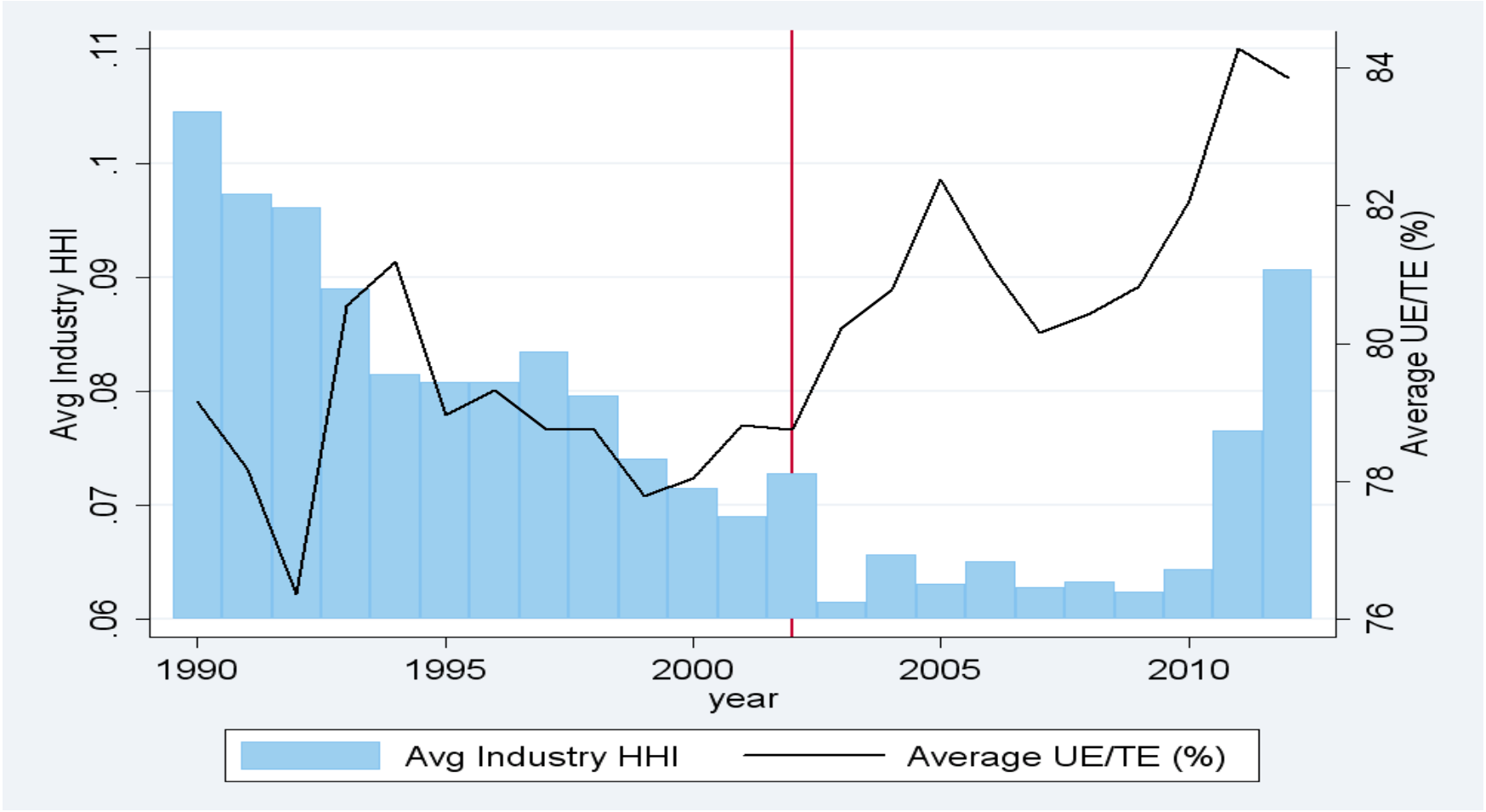
Outline

- Background and Motivation
- Research Questions
- Model and Hypotheses
- Data and Methodology
- Results
- Conclusion

Background and Motivation

- Implications of Institutional Voids Hypothesis
- Empirical Observations
- New Findings based on Developed Markets (Boutin et,al 2013, JFE)

What's happening in India?



Data

Table 1: Descriptive Statistics of Group and Standalone Firms

	Regime-1 (1990-2001)			Regime-2 (2003-2012)		
	BG firms	**SA firms**	**t-stat**	**BG firms**	**SA firms**	**t-stat**
Number of firm-year observations	9241	10038		7712	11038	
Q-Ratio	1.03	0.86	16.16	1.09	0.95	10.20
Firm Sales (Rs. mn)	2,911	507	29.24	7,862	1,245	17.34
Firm Depreciation/Sales	0.08	0.11	4.76	0.10	0.10	0.82
Firm Leverage	0.43	0.39	11.58	0.38	0.34	7.95
Firm Age (Years)	24.69	14.59	41.00	33.32	23.22	38.29

This table presents means for BG and SA firms. All nominal variables are deflated using the Consumer Price Index (CPI) values obtained from the IMF website (Year 2001=100). The data is presented for the 2 regimes separately. Q ratio is [Market value of Equity + Book value of Preference shares + Book value of Debt] / Total Assets, Firm Sales is the net total sales of the firm, Firm Depreciation/Sales is the ratio of firm's depreciation expense to its net total sales, Firm Leverage is the ratio of firm's total borrowings to total assets and Firm Age is the number of years since incorporation of the firm. Q ratio is as at the end of the firm's financial year. In all cases, observations with zero and negative values are excluded. The t-statistics are for the t-test for difference in means between BG and SA firms. See Appendix B for detailed variable definitions.

Table 3: Descriptive statistics: Group and Industry level variables

	Regime-1 (1990-2001)	Regime-2 (2003-2012)	t-stat
Panel A: Group level variables			
Number of group-year observations	4584	3896	
Group Liquidity (Rs. mn)	-526	-1,527	5.81
Fin firm count	3.34	4.73	8.88
Total Entropy	0.42	0.45	2.77
Related Entropy	0.09	0.09	0.02
Unrelated Entropy	0.33	0.36	3.19
Unrelated / Total Entropy (%)	78.79	81.15	2.59
Group Scale	0.061	0.059	0.55
Panel B: Industry level variables			
Number of industry-year observations	369	598	
HHI	0.21	0.18	1.87
Iinv (Rs. mn)	12,820	34,115	5.31

Table 4: t-tests for firm Q and group investment across terciles of various group level measures

Group level measures	Regime-1 (1990-2001) 3rd Ter	1st Ter	t-stat	Regime-2 (2003-2012) 3rd Ter	1st Ter	t-stat	3rd Ter t-stat	1st Ter t-stat
Panel A: Means and t-test for firm Q								
Group Liquidity	1.10	1.03	3.62	1.22	1.16	2.22	4.38	6.62
Fin firm count	1.09	1.07	0.76	1.25	1.04	7.01	6.44	1.14
Total Entropy	1.04	1.01	1.56	1.14	1.05	3.45	5.35	1.31
Related Entropy	1.06	1.01	3.06	1.16	1.08	3.87	5.02	3.81
Unrelated Entropy	1.03	1.03	0.04	1.15	1.03	4.97	6.66	0.22
Group Scale	1.09	0.94	7.10	1.24	0.92	11.44	7.44	0.67
Panel B: Means and t-test for group investment (Rs. mn)								
Group Liquidity	1,364	1,157	0.95	2,249	4,521	4.22	2.57	5.99
Fin firm count	3,170	502	8.29	9,352	919	11.59	5.13	4.79
Total Entropy	1,896	226	9.05	4,619	398	10.38	5.05	5.07
Related Entropy	2,210	394	11.31	6,007	786	13.55	5.25	5.94
Unrelated Entropy	1,812	264	8.98	4,671	473	10.67	5.28	4.28
Group Scale	2,206	119	9.72	6,336	128	11.76	6.37	1.01

Research Questions

- Can business group affiliates sustain their value premium with institutional development?
- What structural factors appreciate/depreciate such value premium associated with business group affiliation?
- When do business groups need deep pockets for value creation?

Model

- Setup:

1. Firms decide to organise either as BG or SA based on the profit function.
2. BG efficiency is driven by diversification, economies of scale, competition and regulatory environment.
3. Within BGs, profit depends on their degree of relatedness of their products.

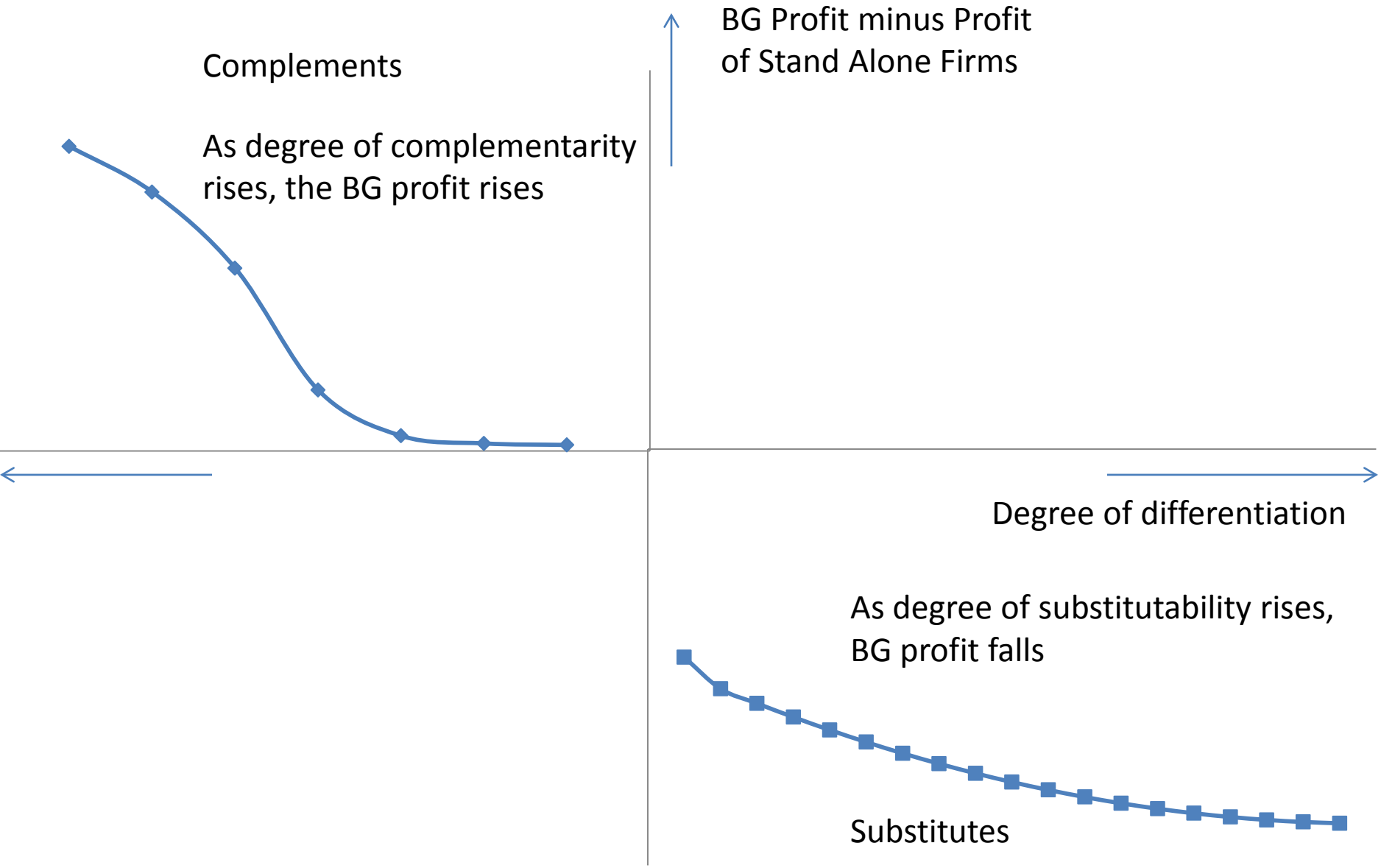
Model

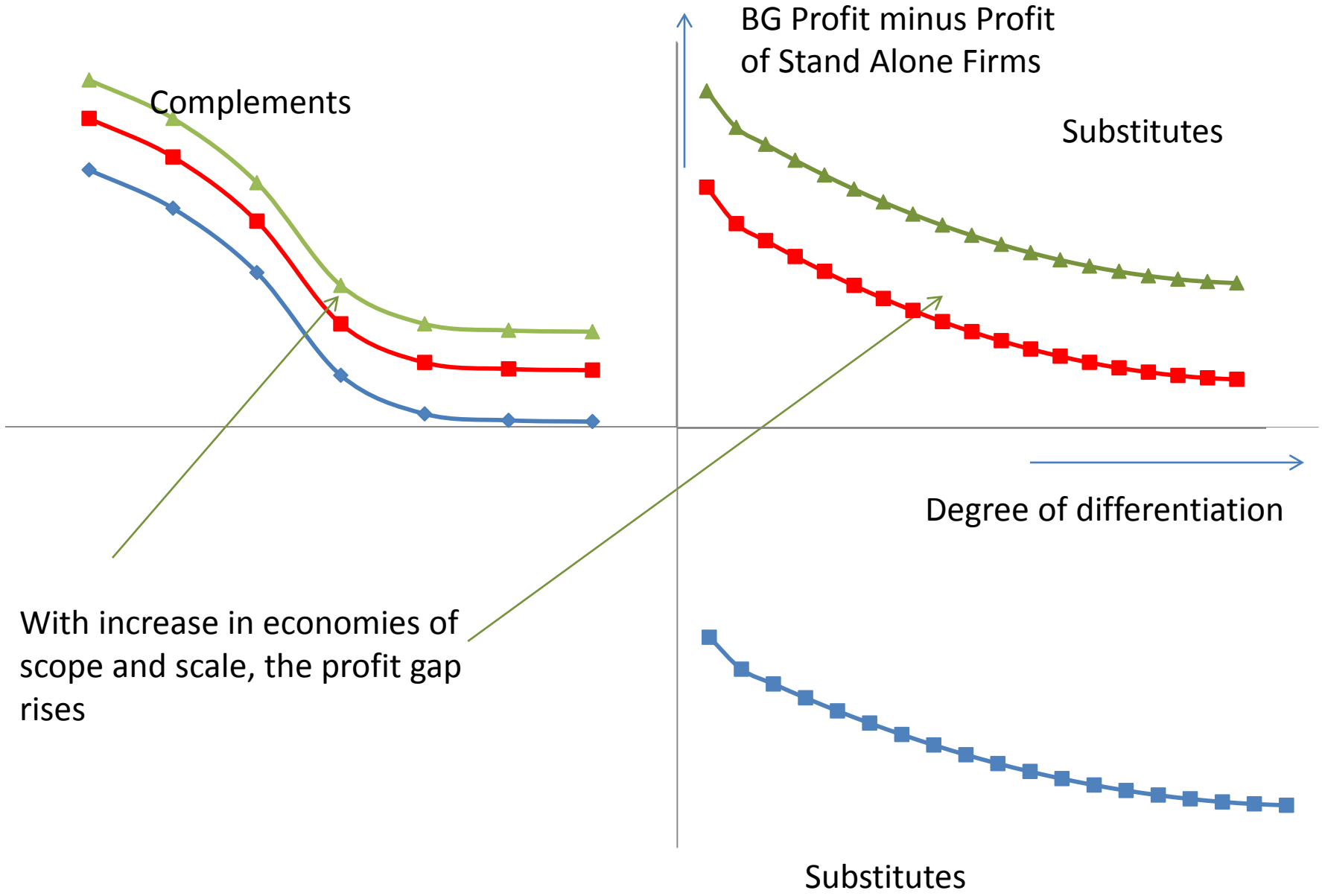
- Profits are maximized using output-based or Cournot competition framework:
- Diversification with cost complementarity increases BG output at the cost of SA.
- Higher diversification and scale benefits implies value premium of group affiliation compared to standalones (Khanna and Palepu, 2000)

Model

- Result 1:
- **In the absence of scale and diversification benefits, BG model is viable only when they diversify into unrelated areas.**
- Intuition: Assuming , quantity competition and industry size are symmetric (even after the formation of BGs), BGs can't gain market power through related diversification. On the other hand, if they diversify in unrelated areas then they can reduce price and compete by increasing output and profits.

Proposition 1



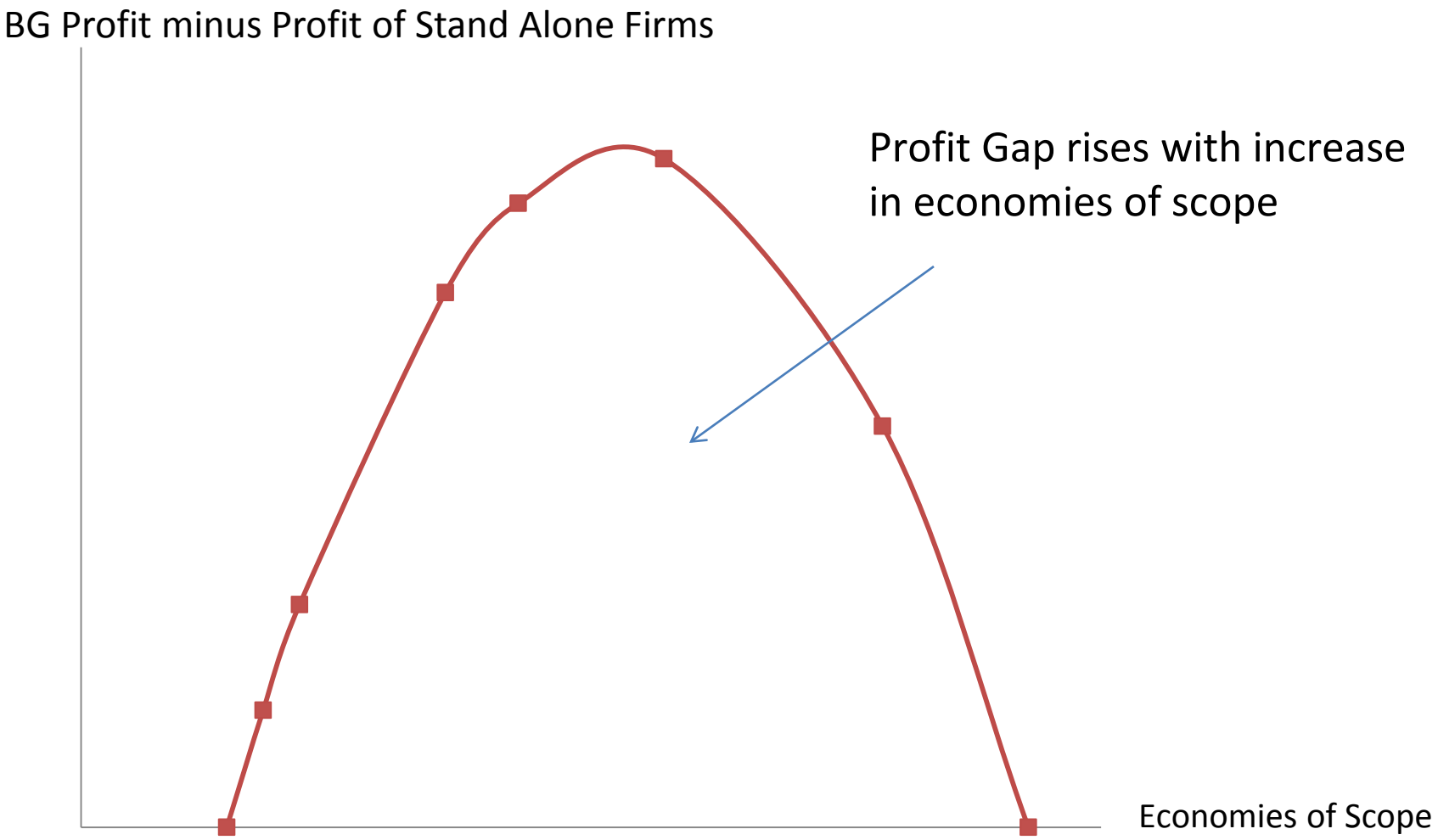

BG Profit minus Profit of Stand Alone Firms
Complements
Substitutes
Degree of differentiation
With increase in economies of scope and scale, the profit gap rises
Substitutes

Model

- Result 2:
- Degree of relatedness and un-relatedness dictates the level of scale and diversification required for BGs to be viable.
- Intuition:

There is an optimal range of diversification given by $w^*_{low} < w < w^*_{high}$ within which firms have an incentive to organize themselves as a BG in related industries, in the absence of economies of scale i.e. for $1 = \theta = \theta^*$. For very low levels of diversification, $w < w^*_{low}$ and/or very high levels of diversification, $w > w^*_{high}$, there is incentive to form a BG only if there is sufficient economies of scale i.e. $\theta < \theta^*$.

Proposition 2



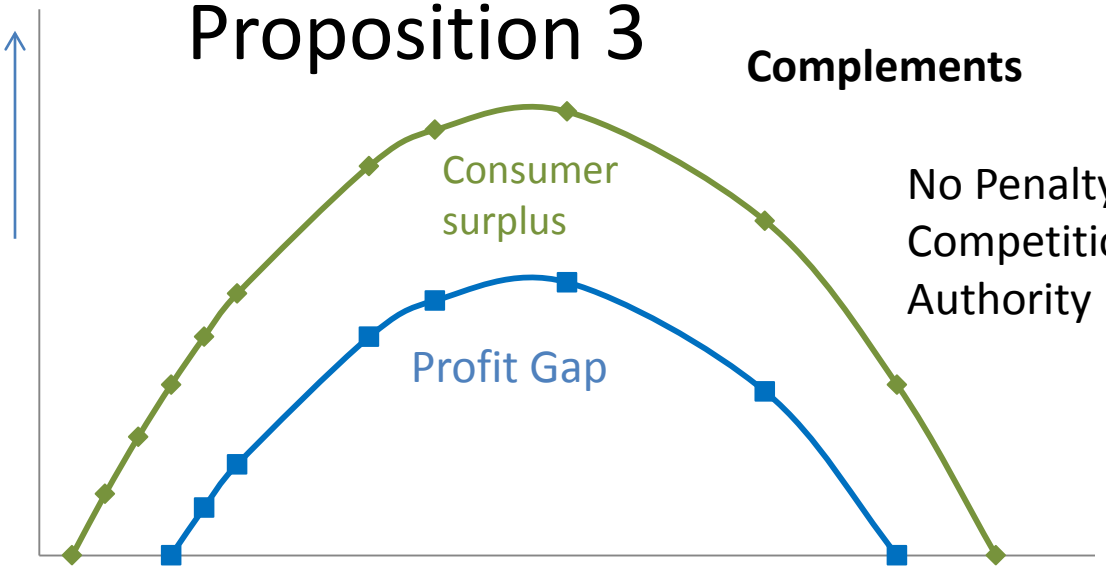
Model

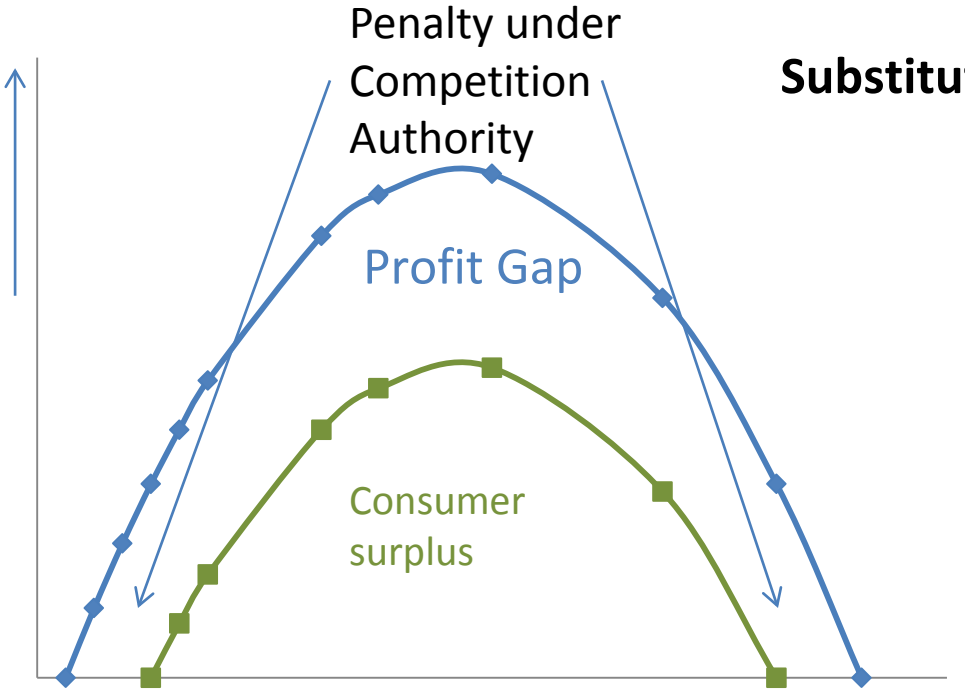
Result 3:

If competition authorities adopt consumer welfare standards for investigating BG effect on competition then BGs structure that reduces consumer surplus attracts penalty.

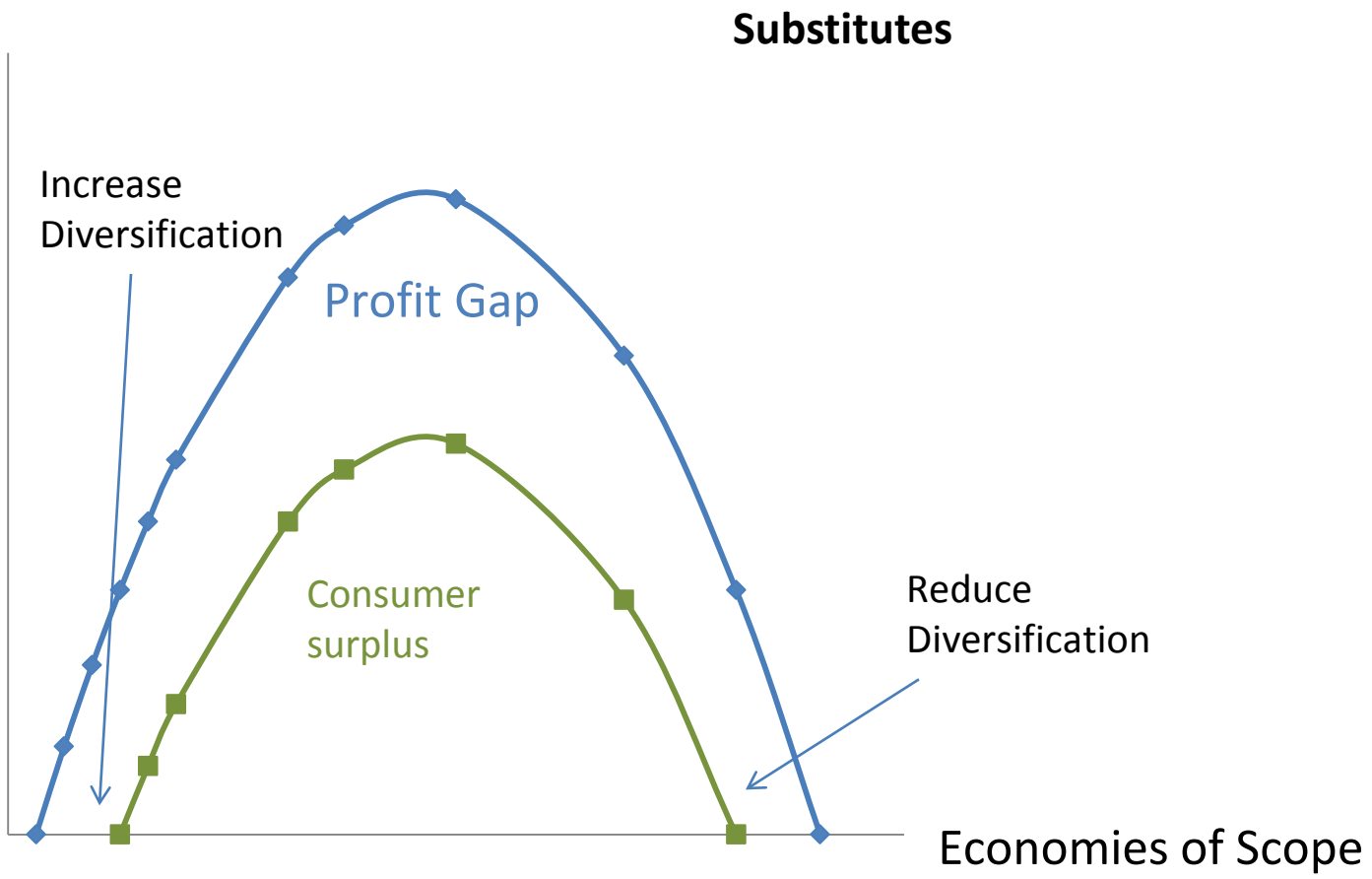
Increase in diversification through relatedness attracts more penalties as it reduces consumer surplus more.

Proposition 3

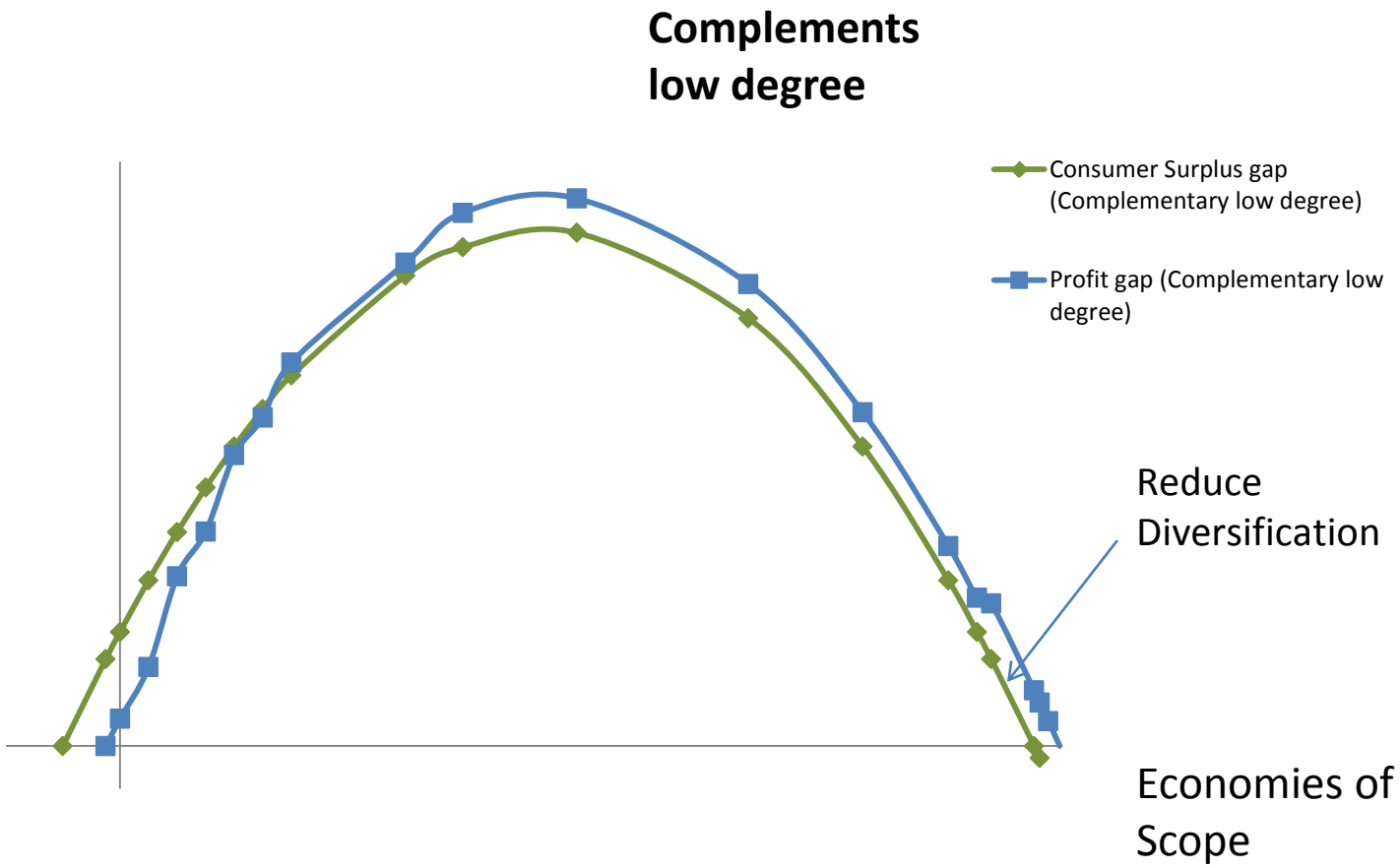




Proposition 5



Proposition 5



Proposition 6

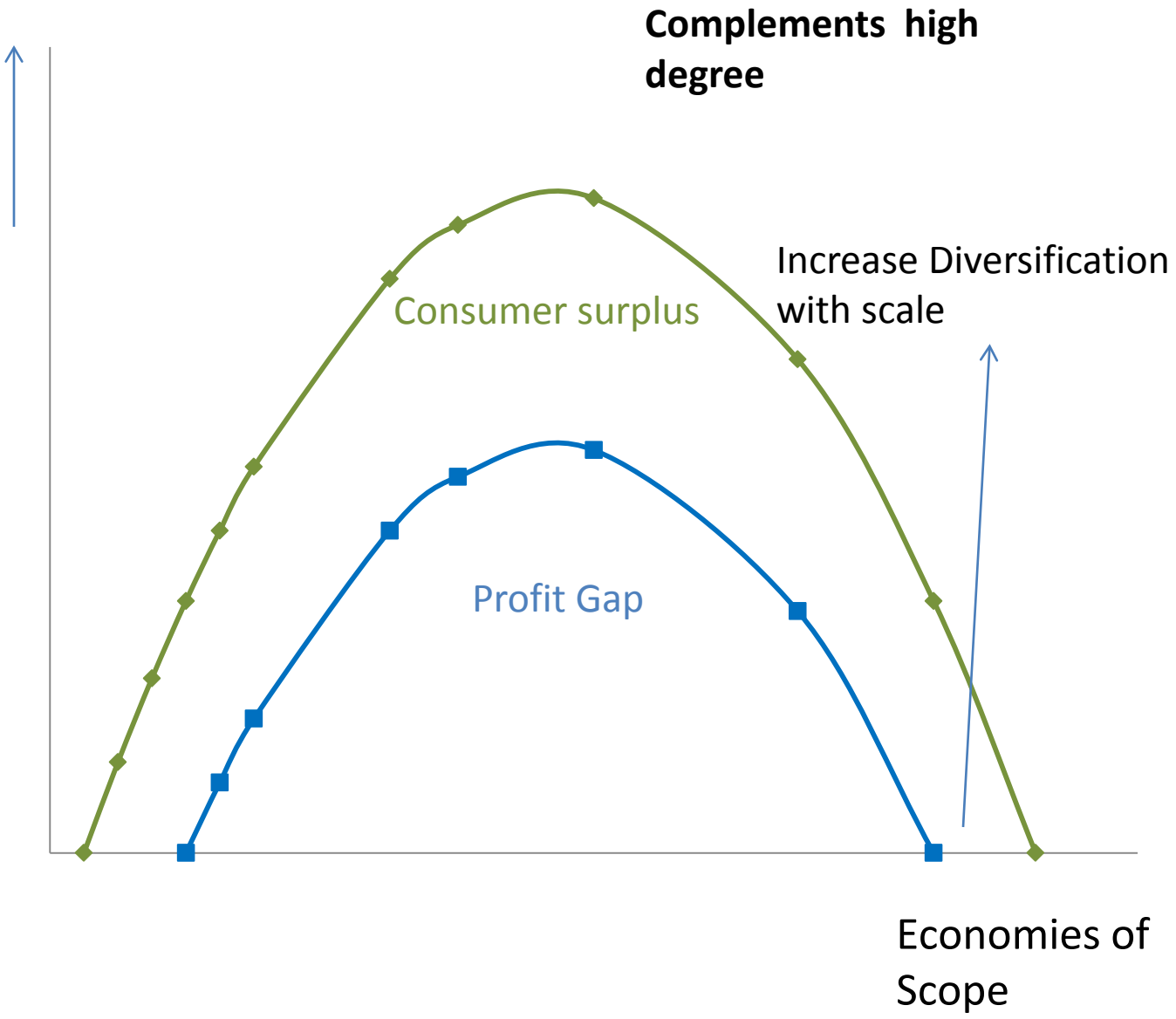


Figure 1: Decision Tree of a Business Group with no Competition Policy Regime

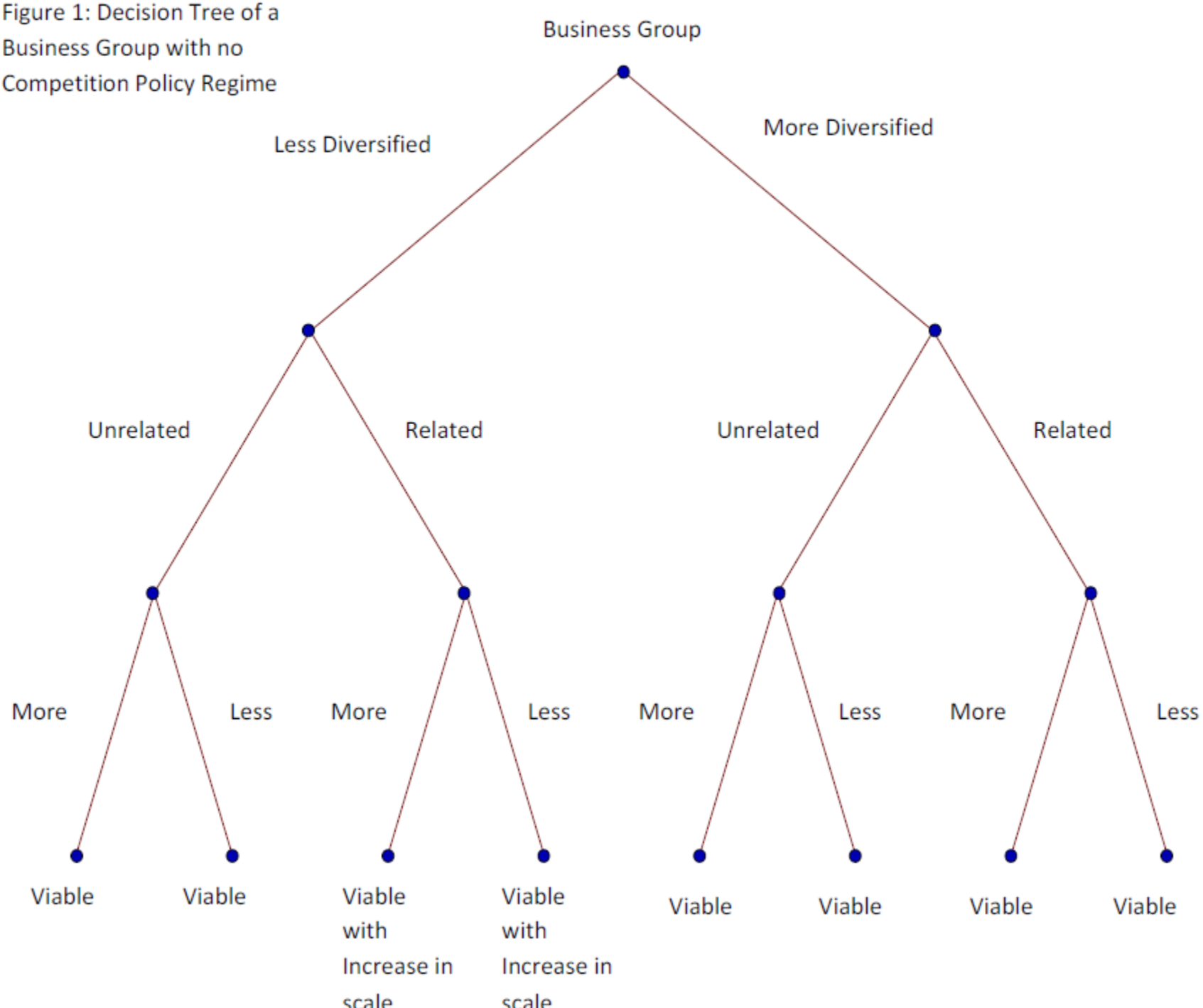


Figure 2: Action against Business Groups by Competition authorities

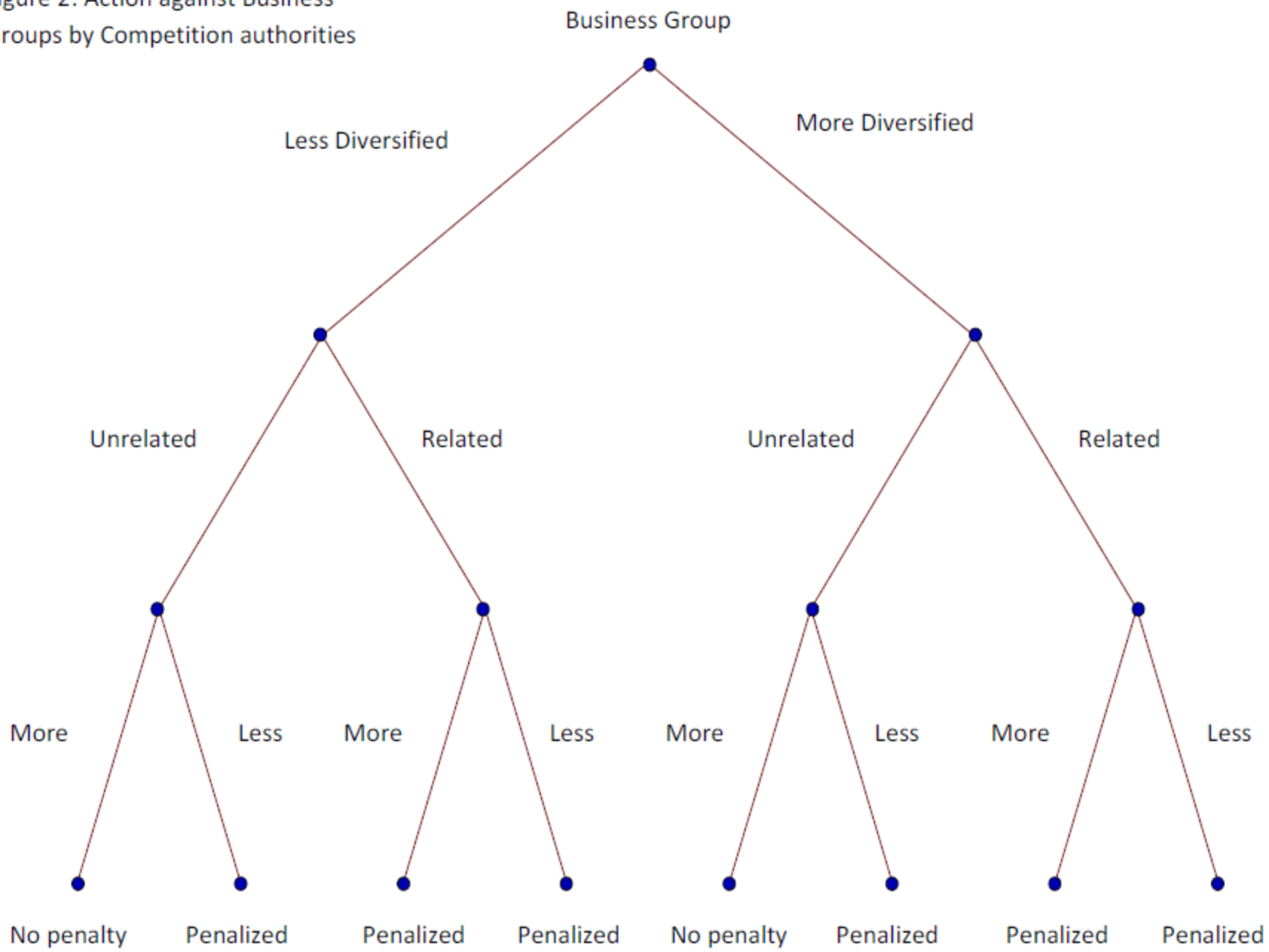
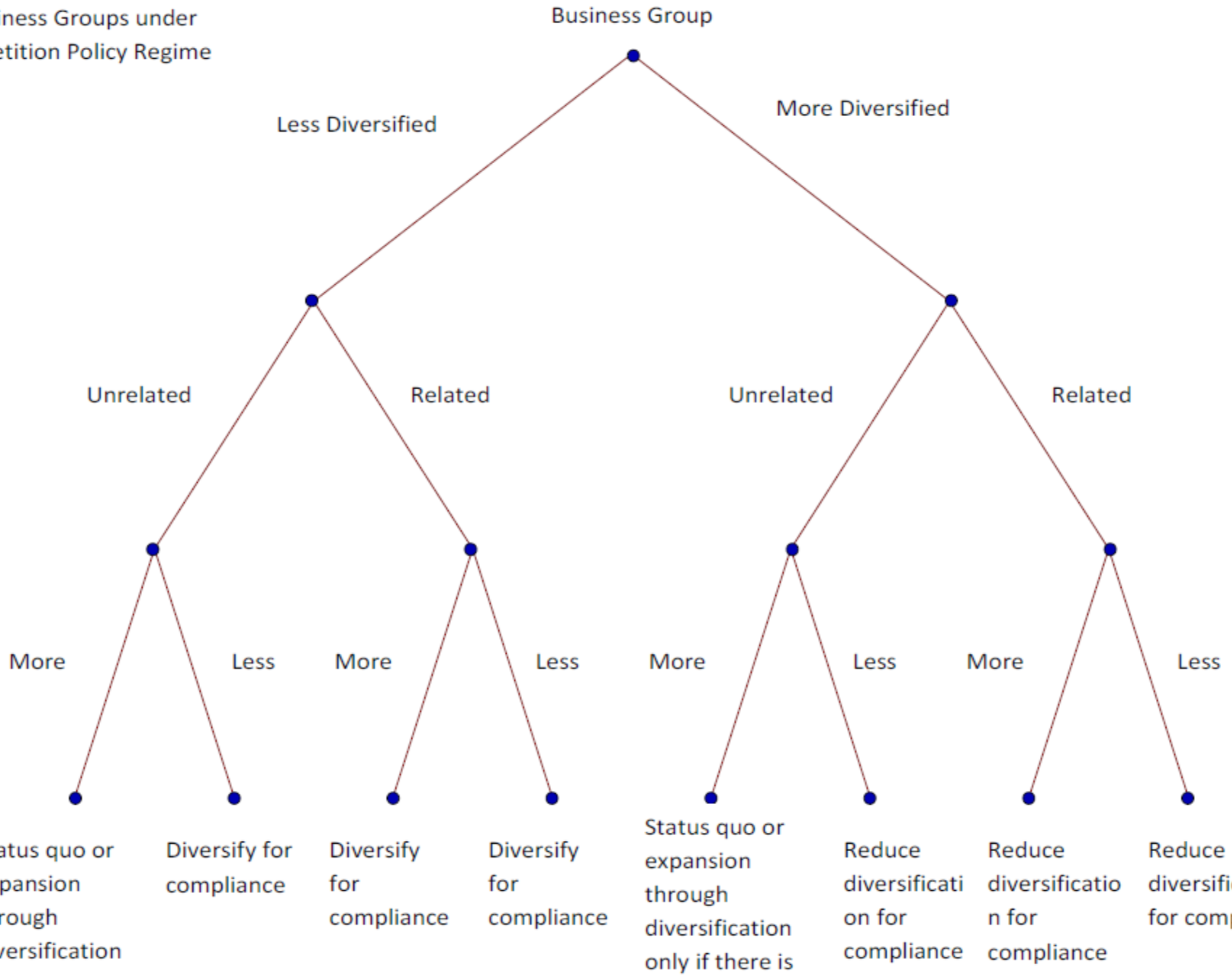


Figure 3: Reorganization Strategy of Business Groups under Competition Policy Regime



Data and Methodology

- Data Sources: Prowess; The NIC Code for economic activity (published by the Government of India) is based on the International Standard Industrial Classification (ISIC) of Economic Activities developed by the United Nations.
- Data period: 1990-2012 (23 years); Exogenous competition environment change – year 2002 (Competition Act)

Measuring Scale and Diversification

Group scale	The sum total of assets share of the group in each 2 digit NIC industry in which the group operates. Group scale for group i present in n industries for year t is defined as $Group\ Scale_{it} = \sum_{d=1}^{n} Group\ Assets_{idt}/Industry\ Assets_{dt}$, where d indicates an industry at the 2 digit NIC level. Diversified firms are excluded but financial firms are included.
Total Entropy (TE)	Total Entropy for group i present in n industries for year t is defined as $TE_{it} = \sum_{d=1}^{n} P_{idt} * ln(1/P_{idt})$, where d indicates an industry at the 5 digit NIC level and $P_{idt} = Segment\ Sales_{idt}/Total\ Group\ Sales_{it}$. Diversified and financial firms are excluded.
Unrelated Entropy (UE)	Unrelated Entropy for group i present in n industries for year t is defined as $UE_{it} = \sum_{D=1}^{n} P_{iDt} * ln(1/P_{iDt})$, where D indicates an industry at the 2 digit NIC level and $P_{iDt} = Segment\ Sales_{iDt}/Total\ Group\ Sales_{it}$. Diversified and financial firms are excluded.
Related Entropy (RE)	Related Entropy for group i present in n industries for year t is defined as $RE_{it} = \sum_{d=1}^{n} P_{idt} * ln(1/P_{idt}) * P_{iDt}$; where d indicates an industry at the 5 digit NIC level, D indicates the corresponding industry at the 2 digit NIC level, $P_{idt} = NIC5d\ Segment\ Sales_{idt}/NIC2d\ Segment\ Sales_{iDt}$ and $P_{iDt} = NIC2d\ Segment\ Sales_{iDt}/Total\ Group\ Sales_{it}$. Diversified and financial firms are excluded.

Table 2: Panel regression results: Models M1 and M2

(Dependent variable : Q ratio)

Variable name	M1	M2
BG dummy	0.233***	
	[10.15]	
BG dummy * Regime2 dummy	-0.055**	
	[2.10]	
Group scale		0.194***
		[3.23]
Group scale * Regime2 dummy		0.058
		[0.73]
Total Entropy		-0.013
		[0.43]
Total Entropy * Regime2 dummy		-0.023
		[0.62]
Regime2 dummy	0.208***	0.152***
	[12.29]	[6.65]
Firm sales (log)	0.004	0.014
	[0.51]	[0.96]
Firm depr/sales	-0.021	0.035
	[0.88]	[0.97]
Firm leverage	0.693***	0.623***
	[17.12]	[9.84]
Firm age (log)	-0.223***	-0.255***
	[15.79]	[11.19]
Constant	1.307***	1.503***
	[25.20]	[13.56]
Chi-square	819	359
No. of observations	38029	16904
p-value	0.00	0.00

Table 5: Panel regression results: Models V1 to V5

(Dependent variable : Q ratio)

Variable name	V1	V2	V3	V4	V5
Group Liquidity	-2.064***			-1.579***	
	[3.37]			[2.64]	
Group Liquidity * Regime2 dummy	1.673**			1.706**	
	[2.29]			[2.33]	
Fin firm count (log)		-0.007			-0.069**
		[0.26]			[2.11]
Fin firm count (log) * Regime2 dummy		0.032			0.068**
		[1.38]			[2.37]
Group scale			0.198***	0.175***	0.218***
			[3.30]	[2.97]	[3.60]
Group scale * Regime2 dummy			0.036	0.058	0.017
			[0.45]	[0.72]	[0.20]
Related Entropy			-0.009	-0.012	0.046
			[0.13]	[0.17]	[0.45]
Related Entropy * Regime2 dummy			-0.212**	-0.207**	-0.283**
			[2.33]	[2.27]	[2.39]
Unrelated Entropy			-0.011	-0.011	0.082
			[0.35]	[0.33]	[1.64]
Unrelated Entropy * Regime2 dummy			0.021	0.023	-0.082
			[0.53]	[0.57]	[1.48]
Regime2 dummy	0.143***	0.150***	0.156***	0.146***	0.186***
	[6.55]	[5.70]	[6.84]	[6.31]	[6.31]
Firm sales (log)	0.019	0.009	0.014	0.014	0.003
	[1.23]	[0.44]	[0.94]	[0.96]	[0.15]
Firm depr/sales	0.039	0.002	0.033	0.033	-0.003
	[1.09]	[0.05]	[0.92]	[0.93]	[0.09]
Firm leverage	0.621***	0.599***	0.623***	0.621***	0.596***
	[9.76]	[7.42]	[9.87]	[9.83]	[7.50]
Firm age (log)	-0.251***	-0.229***	-0.255***	-0.255***	-0.230***
	[11.16]	[7.77]	[11.22]	[11.20]	[7.87]
Constant	1.530***	1.594***	1.500***	1.511***	1.541***
	[13.85]	[9.91]	[13.58]	[13.65]	[9.54]
Chi-square	342	194	369	377	230
No. of observations	16906	11714	16904	16904	11691
p-value	0.00	0.00	0.00	0.00	0.00

Concluding Remarks

- BGs persist with institutional development (improved competition).
- They create value and consumer surplus when they diversify into unrelated areas.
- BG scale and deep pockets are handy for creating value in competitive environment.
- More research is needed to understand welfare concerns