Crises as Opportunities for Growth: The Strategic Value of Business Group Affiliation

Ronald W. Masulis, Peter K. Pham, Jason Zein, and Alvin E. S. Ang*

ONLINE APPENDIX

*Masulis, ron.masulis@unsw.edu.au; Pham (corresponding author), peter.pham@unsw.edu.au; and Zein, j.zein@unsw.edu.au, are from UNSW Sydney School of Banking and Finance. Ang, alvinang@cuhk.edu.hk, is from Chinese University of Hong Kong CUHK Business School.

SEO and CAPEX in Emerging vs. Developed Markets

The first two columns of this table report results of logit regression estimates of the likelihood of conducting an SEO. The dependent variable is a dummy variable taking the value of 1 if the firm conducts a SEO, and 0 otherwise. Columns 3 and 4 report results of OLS regression estimates of difference in investment sensitivity to own cash flows between firms in emerging markets and developed markets. The dependent variable is a firm's CAPEX. This is regressed on *OP_PROFIT*, or net profits (excluding depreciation) scaled by assets, serving as a proxy for internal cash flows. The key explanatory variable in both set of regressions is EMERGING, which is a dummy variable taking the value of 1 if the firm is from an emerging market, and 0 otherwise. The following control variables are measured at one year lag. SIZE and AGE is the natural logarithm of total assets and firm age from listing. CASH_HOLDINGS, CAPEX (excluded from the specifications in Columns 3 and 4), PPE, LEVERAGE, Q are the ratios of cash, capital expenditure, fixed assets, profits, interest-bearing debt, and market value of assets, to total assets. Emerging and developed capital markets are defined according to the country classification in the MSCI All World Index in 2007. Standard errors are reported in parentheses. *, **, and *** indicate significance at the 10%, 5% and 1% levels respectively.

	SEO likelihood		Firm investment	
	All firms (1)	Standalone firms (2)	All firms (3)	Standalone firms (4)
EMERGING	-0.007^{***}	-0.007^{***}		
	(0.001)	(0.002)		
OP_PROFITS			0.016^{***}	0.014^{***}
			(0.003)	(0.003)
EMERGING $\times$ OP_PROFITS			0.020^{***}	0.024^{***}
			(0.007)	(0.008)
Firm fixed effects	NO	NO	YES	YES
Country$\times$year fixed effects	NO	NO	YES	YES
No. of observations	130,599	100,817	114,021	88,163

Covariate Imbalance: Before and After Matching

The table reports the p-value from the Kolmogorov-Smirnov test for distributional difference in a given measure (one of the covariates listed below) between family group firms and matched control firms. The test is conducted before and after applying the matching procedure, which picks the nearest neighbor match (in the same country and 1-digit SIC industry) for each subject (group) firm using the following continuous covariates: SIZE, AGE, OP_PROFITS, CAPEX, LEVERAGE, CASH_HOLDINGS, PPE, and Tobin's Q. Emerging and developed capital markets are defined according to the country classification in the MSCI All World Index in 2007. *, **, and *** indicate significance at the 10%, 5% and 1% levels respectively.

	Emerging markets		Developed markets	
	Before matching	After matching	Before matching	After matching
	(1)	(2)	(3)	(4)
SIZE	0.000	0.000	0.000	0.000
AGE	0.000	0.000	0.022	0.097
OP_PROFIT	0.000	0.310	0.000	0.268
CASH_HOLDINGS	0.030	0.534	0.081	0.480
LEVERAGE	0.006	0.261	0.049	0.112
PPE	0.001	0.285	0.006	0.636
CAPEX	0.000	0.380	0.239	0.480
Q	0.675	0.643	0.024	0.838

TABLE A3
Distributional Differences in Firm Size

The table reports the p-value from the Kolmogorov-Smirnov test for distributional difference in firm size (total assets) between family group firms and matched control firms, for each sample country. The test is conducted before and after applying the matching procedure, which picks the nearest neighbor match (in the same country and 1-digit SIC industry) for each subject (group) firm using the following continuous covariates: SIZE, AGE, OP_PROFITS, CAPEX, LEVERAGE, CASH_HOLDINGS, PPE, and Tobin's Q. Emerging and developed capital markets are defined according to the country classification in the MSCI All World Index in 2007. *, **, and *** indicate significance at the 10%, 5% and 1% levels respectively.

	Emerging markets			Developed markets	
	Before matching	After matching		Before matching	After matching
	(1)	(2)		(3)	(4)
Argentina	0.095	0.181	Australia	0.000	0.691
Brazil	0.012	0.067	Austria	0.698	0.964
Chile	0.018	0.901	Belgium	0.029	0.983
Colombia	0.938	0.699	Canada	0.000	0.188
India	0.423	0.841	Denmark	0.861	0.785
Indonesia	0.000	0.007	Finland	0.231	0.979
Israel	0.013	0.120	France	0.000	0.279
South Korea	0.000	0.000	Germany	0.000	0.312
Malaysia	0.000	0.004	Greece	0.000	0.039
Mexico	0.018	0.128	Hong Kong	0.000	0.014
Pakistan	0.855	0.492	Italy	0.000	0.060
Peru	0.381	0.951	Japan	0.013	0.489
Philippines	0.000	0.701	Netherlands	0.399	0.400
Poland	0.819	0.737	New Zealand	0.131	0.270
South Africa	0.100	0.847	Norway	0.001	0.274
Sri Lanka	0.000	0.008	Portugal	0.893	0.964
Taiwan	0.000	0.000	Singapore	0.000	0.000
Thailand	0.001	0.150	Spain	0.677	0.819
Turkey	0.156	0.163	Sweden	0.000	0.067
			Switzerland	0.130	0.822
			United Kingdom	0.465	0.419
			United States	0.000	0.637

Robustness Checks on the Baseline Analysis

The outcome variable is market share change (winsorized) from the pre-crisis year to either 3 or 5 years later. Market share is defined as the proportion of sales that a firm contributes to the aggregate sales of all firms in the same country, year and 2-digit SIC industry (with the condition that the industry has at least 5 firms). The Average Treatment Effect of the Treated (ATT) statistics are obtained by comparing family group (FG) firms to various matched control firms using nearest neighbor matching. Matched control firms sample is formed using the default matching criteria: each matched control firm must be in the same country and 1-digit SIC industry as a subject family group firm, and matched on SIZE, AGE, OP_PROFITS, CAPEX, LEVERAGE, CASH_HOLDINGS, PPE, and Tobin's Q, as continuous covariates. The matching criteria are then varied to form the following alternative matched control samples. Emerging and developed capital markets are defined according to the country classification in the MSCI All World Index in 2007. *, **, and *** indicate significance at the 10%, 5% and 1% levels respectively.

	Emerging markets		Developed markets	
	3-year market share change	5-year market share change	3-year market share change	5-year market share change
	(1)	(2)	(3)	(4)
Panel A: Adding a firm's pre-crisis market share to the list of covariates				
Family group vs Matched control ATT	0.478**	1.062***	−0.411*	−0.599*
	(0.207)	(0.335)	(0.237)	(0.319)
Panel B: Removing 1-digit SIC industry as an exact matching condition				
Family group vs Matched control ATT	0.465**	1.006***	−0.331	−0.118
	(0.239)	(0.352)	(0.288)	(0.407)
Panel C: Replacing 1-digit SIC industry with 2-digit SIC industry as an exact matching condition				
Family group vs Matched control ATT	0.856***	1.087***	−0.150	−0.527
	(0.213)	(0.326)	(0.237)	(0.342)
Panel D: Excluding firms going bankrupt after the crisis				
Family group vs Matched control ATT	0.519**	1.021***	−0.435*	−0.314
	(0.225)	(0.354)	(0.253)	(0.372)
No. of family group firms	1135	1135	716	716
Panel E: Excluding countries with significant significant size gaps after matching				
Family group vs Matched control ATT	0.829**	1.779***	−0.398	−0.405
	(0.341)	(0.584)	(0.253)	(0.374)
No. of family group firms	604	604	589	589

TABLE A5
Robustness Checks on the Baseline Analysis: Placebo Crisis

The outcome variable is market share change (winsorized) from the placebo crisis year to either 3 or 5 years later. The placebo crisis is assumed to occur either at the end of 2004 or the end of 2013. For the 2004 placebo crisis, market share change is computed using only the 3-year window, as the 5-year window would overlap with the real crisis in 2008. Market share is defined as the proportion of sales that a firm contributes to the aggregate sales of all firms in the same country, year and 2-digit SIC industry (with the condition that the industry has at least 5 firms). The Average Treatment Effect of the Treated (ATT) statistics are obtained by comparing family group (FG) firms to various matched control firms using nearest neighbor matching. Matched control firms sample is formed using the default matching criteria: each matched control firm must be in the same country and 1-digit SIC industry as a subject family group firm, and matched on SIZE, AGE, OP_PROFITS, CAPEX, LEVERAGE, CASH_HOLDINGS, PPE, and Tobin's Q, as continuous covariates. Emerging and developed capital markets are defined according to the country classification in the MSCI All World Index in 2007. *, **, and *** indicate significance at the 10%, 5% and 1% levels respectively.

	Emerging markets			Developed markets		
	2004 Placebo Crisis	2013 Placebo Crisis		2004 Placebo Crisis	2013 Placebo Crisis	
	3-year market share change	3-year market share change	5-year market share change	3-year market share change	3-year market share change	5-year market share change
	(1)	(2)	(3)	(4)	(5)	(6)
Family group vs Matched control ATT	0.121 (0.183)	−0.046 (0.142)	−0.311 (0.201)	0.028 (0.185)	0.262 (0.161)	0.194 (0.252)
No. of family group firms	927	1089	1055	744	636	602

Comparison of Firm-level Market Share Changes following the GFC: Regression Analysis

The table reports a cross-sectional regression analysis on the snapshot of sample firms taken at the pre-crisis year. The dependent variable is market share change (winsorized) from the pre-crisis year to either 3 or 5 years later. Market share is defined as the proportion of sales that a firm contributes to the aggregate sales of all firms in the same country, year and 2-digit SIC industry (with the condition that the industry has at least 5 firms). FAM_GROUP is the indicator variable for firms that belong to family business groups. The regression models include but do not report the following control variables, all of which are measured at one year lag: SIZE, AGE, OP_PROFITS, CAPEX, LEVERAGE, CASH_HOLDINGS, PPE, and Tobin's Q. In Panel A, the observations include all sample firms. In Panel B, the observations include only family group firms and their matched control firms (from the same country and 1-digit SIC industry), obtained using nearest neighbor matching on the same continuous covariates as the control variables listed above. Emerging and developed capital markets are defined according to the country classification in the MSCI All World Index in 2007. *, **, and *** indicate significance at the 10%, 5% and 1% levels respectively.

	Emerging markets		Developed markets	
	3-year market share change	5-year market share change	3-year market share change	5-year market share change
	(1)	(2)	(3)	(4)
Panel A: All sample firms in the pre-crisis year				
FAM_GROUP	0.350**	0.667**	−0.411*	−0.523**
	(0.167)	(0.314)	(0.209)	(0.250)
Control variables	YES		YES	
Country×industry FEs	YES		YES	
No. of observations	4041		8482	
Panel B: Family group firms and their matched control firms in the pre-crisis year				
FAM_GROUP	0.531**	0.949**	−0.353	−0.206
	(0.205)	(0.375)	(0.239)	(0.297)
Control variables	YES		YES	
Country×industry FEs	YES		YES	
No. of observations	1904		1343	

TABLE A7
Post-crisis Market Share Changes of Non-family Group Firms

In Panel A the analysis excludes non-family group firms, so the comparisons are effectively between family group firms and their matched control firms drawn from the standalone firm cohort. In Panel B, the analysis excludes all family group firms, so the comparisons are effectively between non-family group firms and their matched standalone firms. The outcomes variable is market share change (winsorized) from the pre-crisis year to either 3 or 5 years later. Market share is defined as the proportion of sales that a firm contributes to the aggregate sales of all firms in the same country, year and 2-digit SIC industry (with the condition that the industry has at least 5 firms). The Average Treatment Effect of the Treated (ATT) statistics are obtained by comparing family group (FG) firms to various matched control firms using nearest neighbor matching. Matched control firms sample is formed using the default matching criteria: each matched control firm must be in the same country and 1-digit SIC industry as a subject family group firm, and matched on SIZE, AGE, OP_PROFITS, CAPEX, LEVERAGE, CASH_HOLDINGS, PPE, and Tobin's Q, as continuous covariates. The matching criteria are then varied to form the following alternative matched control samples. Emerging and developed capital markets are defined according to the country classification in the MSCI All World Index in 2007. *, **, and *** indicate significance at the 10%, 5% and 1% levels respectively.

	Emerging markets		Developed markets	
	3-year market share change	5-year market share change	3-year market share change	5-year market share change
	(1)	(2)	(3)	(4)
Panel A: Re-running baseline analysis after excluding non-family firms				
Family group firms sample	0.008	0.380	0.103	0.029
Matched control firms sample	−0.471	−0.598	0.246	−0.190
Family group vs Matched control ATT	0.526**	1.103***	−0.272	0.180
	(0.221)	(0.344)	(0.242)	(0.364)
Panel B: Comparing non-family firms to stand-alone firms (family group firms excluded)				
Non-family group firms sample	0.030	0.270	0.359	0.579
Matched control firms sample	−0.674	−0.169	0.114	0.192
Non-family group vs Matched control ATT	0.671	0.136	0.227	0.374
	(0.478)	(0.818)	(0.184)	(0.298)
No. of non-family group firms	192	192	666	666

Comparison of Firm-level Gross Margin Changes following the GFC

The outcome variable is the change (winsorized) in gross margins (gross profits divided by sales) from the pre-crisis year to either 3 or 5 years later. The Average Treatment Effect of the Treated (ATT) statistics are obtained by comparing family group (FG) firms to various matched control firms using nearest neighbor matching. Matched control firms sample is formed using the default matching criteria: each matched control firm must be in the same country and 1-digit SIC industry as a subject family group firm, and matched on SIZE, AGE, OP_PROFITS, CAPEX, LEVERAGE, CASH_HOLDINGS, PPE, and Tobin's Q, as continuous covariates. Emerging and developed capital markets are defined according to the country classification in the MSCI All World Index in 2007. *, **, and *** indicate significance at the 10%, 5% and 1% levels respectively.

	Emerging markets		Developed markets	
	3-year gross margin change	5-year gross margin change	3-year gross margin change	5-year gross margin change
	(1)	(2)	(3)	(4)
Family group vs Matched control ATT	0.753 (0.470)	0.239 (0.585)	1.045* (0.579)	0.403 (0.837)
No. of family group firms	1089	1089	713	713