

Investigating Performance Implications of Focused Resource Allocation: A Focusing-Balancing Dilemma in SMEs

Sang-Joon Kim (Ewha Womans U.)

s.kim@ewha.ac.kr

Insu Kwon (Sejong U.)

kwonis@sejong.ac.kr

Motivation

- Balancing between exploration and exploitation is critical for firm growth
 - Scholars consistently argue that both activities should be sought for (March, 1991; Lavie et al., 2010)
- What about SMEs for this?
 - Due to lacking resources, they tend to focus on one activities more than the other (Voss & Voss, 2013; Ebben & Johnson, 2005)
 - And it has been evidenced that “focusing” is beneficial for SMEs (e.g. Lin et al., 2007)
 - Maybe, they won’t even consider “balancing”
- But, focusing may leads to learning myopia (Levinthal & March, 1993)
 - Competency trap / Failure trap
 - Due to lacking the means to hedge risks or uncertainty, SMEs may be more vulnerable to the perils of learning myopia

Motivation

- Then, should SMEs pursue focusing or balancing?
- A Dilemma
- So, we jump into this issue
- Do SMEs really fall into the focusing-balancing dilemma?

Main Arguments

- We examine that focusing entails learning myopia for SMEs
 - Assumption: SMEs are likely to do “focusing” to make their performance better
 - If focusing entails learning myopia, SMEs will have to seriously consider which one they should pursue, focusing vs. balancing?
- Learning myopia makes organizations vulnerable to the environmental change
 - Inflexibility as a proxy for learning myopia
- Learning myopia unfolds as the commitment to a certain activity is escalated (i.e. focusing)
 - Rapid performance feedback of exploitation leads to further commitment to it

Hypotheses

- *In SMEs, the tendency of focused resource allocation will increase financial inflexibility*
- *In SMEs, the escalated commitment of focused resource allocation will increase financial inflexibility*

Empirical Context

- In this study, SMEs are defined as
 - The U.S. Public firms
 - Fewer than 500 employees
 - Less than \$500 million asset values
- Resource allocation for technology vs. market
 - Nucleus for constructing intangible capital
 - Firm knowledge vs. brand equity
 - Investing technology or market is instantiated by R&D and advertising expenditures
- Because of budgeting issues (resource constraints), the resource allocation between technology and market concerns the choice between focusing and balancing

Empirical Context

- Sample
 - 1,073 SMEs between 1971 and 2010 from Compustat
 - SMEs in High-tech industries
 - To discern the focus on “technology” from that on “market”

SIC code	Industry	Number of Firms	Percent of Firms
284	Biotechnology	18	1.68
357	Computers and Office Equipment	140	13.05
365	Consumer Electronics	17	1.58
366	Communication Equipment	108	10.07
367	Electronic Components and Accessories & Semiconductor	84	7.83
381	Defense Electronics	12	1.12
382	Industrial Electronics & Photonics	97	9.04
384	Electro-medical Equipment	167	15.56
481	Telephone Communications	13	1.21
489	Communications Services, Not Elsewhere Classified	19	1.77
737	Software and computer-related services	398	37.09
		1073	100%

Models

Focused Resource Allocation

- The tendency of focusing
- The change in focusing

+

Financial Inflexibility

- Total leverage
- Operating leverage
- Financial leverage

Measures

- Dependent variables: Financial Inflexibility
 - Def: Inability to provide the capacity to raise additional financial resources when necessary (Kurt & Hulland, 2013: p. 61)
 - Captured by leverage
 - **Operating leverage**: sensitivity of a firm's operating income to changes in revenue
 - **Financial leverage**: sensitivity of a firm's net income to changes in operating income
 - **Total leverage**: combination the leverages above

Measures

- Two-stage approach to measure the leverage measures
(Poulsen et al., 2013)

- 1st stage

$$\text{LnEBIT}_t = a_1 + b_1 * \text{LnEBIT}_{t-1} + e_{t,EBIT}$$

$$\text{LnSales}_t = a_2 + b_2 * \text{LnSales}_{t-1} + e_{t,Sales}$$

$$\text{LnNI}_t = a_3 + b_3 * \text{LnNI}_{t-1} + e_{t,NI}$$

- 2nd stage

$$e_{t,EBIT} = \beta_1 * e_{t,Sales} + \varepsilon_{1t}$$

$$e_{t,NI} = \beta_2 * e_{t,EBIT} + \varepsilon_{2t}$$

- Find the slopes between the error terms at the 1st stage models
 - β_1 : Operating leverage
 - β_2 : financial leverage
 - $\beta_1 * \beta_2$: total leverage

Measures

- Independent variables
 - Tendency of focused resource allocation
 - The proportion gap between R&D and advertising expenditures
 - Consider intangible capital constructed by investments for R&D and advertising -> use weights to present the relations between intangible capital and current levels of expenditures

$$F_{it} = \left| \frac{w_{RD} \cdot RD_{it}}{w_{RD} \cdot RD_{it} + w_{AD} \cdot AD_{it}} - \frac{w_{AD} \cdot AD_{it}}{w_{RD} \cdot RD_{it} + w_{AD} \cdot AD_{it}} \right|$$

- Then accumulate the value of F_{it} in a five-year window
 - Escalated focused resource allocation
 - The change in the tendency of focused resource allocation ($=F_{it}$)

Measures

- **Controls**

- Asset intensity
- Market uncertainty
- Market share
- Market-to-Book ratio
- Performance gap
- # employees
- Ln Age
- Current ratio
- Retained earnings
- Debt-Equity ratio
- Capital expenditures
- Administrative expenditures
- Other intangible assets

Results

- Hypotheses partially supported

	Total Leverage	Operating Leverage	Financial Leverage
Tendency	+ ^{***}	+ ^{***}	(n.s)
Escalation	+ ^{**}	+ [†]	+ [*]

Results

- Total Leverage

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
<i>Intercept</i>	2.260*** (.540)	2.218*** (.542)	2.083*** (.542)	2.275*** (.541)	2.315*** (.542)	2.137*** (.544)
<i>Asset Intensity</i>	-.102† (.060)	-.104† (.060)	-.094 (.060)	-.102† (.060)	-.108† (.060)	-.102† (.060)
<i>Market Uncertainty</i>	.000 (.000)	.000 (.000)	.000 (.000)	.000 (.000)	.000 (.000)	.000 (.000)
<i>Market Share (%)</i>	.027 (.621)	.037 (.620)	-.091 (.620)	.031 (.621)	.080 (.620)	-.038 (.619)
<i>Market-to-Book Ratio</i>	-.013 (.019)	-.014 (.019)	-.014 (.019)	-.013 (.019)	-.014 (.019)	-.015 (.019)
<i>Performance Gap</i>	-.000 (.005)	.000 (.005)	-.000 (.005)	-.000 (.005)	.000 (.005)	.000 (.005)
<i># Employees</i>	.333 (.333)	.315 (.333)	.257 (.333)	.342 (.334)	.367 (.333)	.291 (.333)
<i>Ln Age</i>	.265 (.205)	.238 (.205)	.122 (.207)	.263 (.205)	.223 (.205)	.077 (.206)
<i>Current Ratio</i>	.003 (.003)	.003 (.003)	.003 (.003)	.003 (.003)	.003 (.003)	.003 (.003)
<i>Retained Earnings</i>	.040 (.089)	.048 (.089)	.048 (.089)	.040 (.089)	.042 (.089)	.050 (.089)
<i>Debt-Equity Ratio</i>	.002† (.001)	.002† (.001)	.002† (.001)	.002† (.001)	.002† (.001)	.002† (.001)
<i>Capital Expenditures</i>	-.013** (.004)	-.013** (.004)	-.013** (.004)	-.013** (.004)	-.013** (.004)	-.013** (.004)
<i>Administrative Expenditure</i>	-.000 (.001)	-.000 (.001)	-.000 (.001)	-.000 (.001)	-.000 (.001)	-.000 (.001)
<i>R&D Expenditure</i>	.002 (.077)	.006 (.077)	.010 (.077)	.002 (.077)	.003 (.077)	.011 (.077)
<i>Advertising Expenditure</i>	-.028 (.031)	-.028 (.031)	-.025 (.031)	-.028 (.031)	-.026 (.031)	-.022 (.031)
<i>Other Intangible Asset</i>	-.788** (.283)	-.791** (.283)	-.758** (.282)	-.784** (.283)	-.792** (.282)	-.761** (.282)
<i>Tendency of Focused Resource Allocation (Accumulated)</i>		.021* (.011)				
<i>Tendency of Focused Resource Allocation (Moving-Averaged)</i>			.814*** (.183)			.819*** (.182)
<i>Escalation of Focused Resource Allocation (Dominance)</i>				-.045 (.136)		
<i>Tendency of Focused Resource Allocation (Phased)</i>					.017** (.006)	.018** (.006)
<i>Inverse Mills Ratio</i>	.082 (.262)	.115 (.262)	.071 (.262)	.086 (.262)	.141 (.263)	.132 (.262)
Year Dummies	Included	Included	Included	Included	Included	Included
Firm Dummies	Included	Included	Included	Included	Included	Included
AR(1)-DW	.342	.340	.340	.342	.340	.339
Log Likelihood	-12226.19	-12223.29	-12213.95	-12226.17	-12221.18	-12208.72
AIC	24576.39	24572.57	24553.9	24578.33	24568.35	24545.45
χ^2	-	5.8*	24.48***	.04	10.02**	34.94***

The number of firm-year: 8,002, The number of firms: 1,073, Standard errors in parentheses

† $p < .1$ * $p < .05$ ** $p < .01$ *** $p < .001$

Results

- Operating Leverage

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
<i>Intercept</i>	1.652** (.482)	1.609** (.484)	1.472** (.483)	1.641** (.482)	1.683*** (.483)	1.504** (.485)
<i>Asset Intensity</i>	-.069 (.055)	-.071 (.055)	-.062 (.055)	-.068 (.055)	-.073 (.055)	-.066 (.055)
<i>Market Uncertainty</i>	.000 (.000)	.000 (.001)	.000 (.000)	.000 (.000)	.000 (.000)	.000 (.000)
<i>Market Share (%)</i>	.339 (.563)	.350 (.562)	.220 (.562)	.336 (.563)	.372 (.563)	.253 (.561)
<i>Market-to-Book Ratio</i>	-.014 (.018)	-.015 (.018)	-.015 (.018)	-.014 (.018)	-.015 (.018)	-.016 (.018)
<i>Performance Gap</i>	.000 (.004)	.001 (.004)	.000 (.004)	.000 (.004)	.000 (.004)	.001 (.004)
<i># Employees</i>	.278 (.301)	.262 (.301)	.204 (.301)	.272 (.302)	.300 (.301)	.225 (.301)
<i>Ln Age</i>	.314† (.187)	.287 (.187)	.170 (.188)	.316† (.187)	.288 (.187)	.142 (.188)
<i>Current Ratio</i>	.004 (.003)	.004 (.003)	.004 (.003)	.004 (.003)	.004 (.003)	.004 (.003)
<i>Retained Earnings</i>	.106 (.081)	.113 (.081)	.114 (.080)	.106 (.081)	.107 (.081)	.115 (.080)
<i>Debt-Equity Ratio</i>	.001 (.001)	.001 (.001)	.001 (.001)	.001 (.001)	.001 (.001)	.001 (.001)
<i>Capital Expenditures</i>	-.001 (.004)	-.001 (.004)	-.001 (.004)	-.001 (.004)	-.001 (.004)	-.001 (.004)
<i>Administrative Expenditure</i>	-.000 (.001)	-.000 (.001)	-.000 (.001)	-.000 (.001)	-.000 (.001)	-.000 (.001)
<i>R&D Expenditure</i>	-.033 (.069)	-.029 (.069)	-.025 (.069)	-.033 (.069)	-.032 (.069)	-.025 (.069)
<i>Advertising Expenditure</i>	-.030 (.028)	-.029 (.028)	-.027 (.028)	-.030 (.028)	-.029 (.028)	-.025 (.028)
<i>Other Intangible Asset</i>	-.753** (.256)	-.755** (.255)	-.722** (.255)	-.756** (.256)	-.754** (.256)	-.723** (.255)
<i>Tendency of Focused Resource Allocation (Accumulated)</i>		.021* (.010)				
<i>Tendency of Focused Resource Allocation (Moving-Averaged)</i>			.825*** (.166)			.828*** (.165)
<i>Escalation of Focused Resource Allocation (Dominance)</i>				.033 (.123)		
<i>Tendency of Focused Resource Allocation (Phased)</i>					.011† (.006)	.011† (.006)
<i>Inverse Mills Ratio</i>	.175 (.237)	.207 (.237)	.164 (.236)	.171 (.237)	.211 (.237)	.201 (.237)
<i>Year Dummies</i>	Included	Included	Included	Included	Included	Included
<i>Firm Dummies</i>	Included	Included	Included	Included	Included	Included
AR(1)-DW	.346	.344	.344	.346	.345	.344
Log Likelihood	-11413.51	-11410.15	-11398.34	-11413.57	-11411.17	-11395.84
AIC	22951.02	22946.3	22922.67	22953.13	22948.33	22919.68
χ^2	-	6.72**	30.34***	.12	4.68*	25.34***

The number of firm-year: 8,002, The number of firms: 1,073, Standard errors in parentheses

† $p < .1$ * $p < .05$ ** $p < .01$ *** $p < .001$

Results

- Financial Leverage

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
<i>Intercept</i>	.470*	.470*	.472*	.494*	.488*	.490*
	(.223)	(.223)	(.224)	(.224)	(.224)	(.224)
<i>Asset Intensity</i>	-.034	-.034	-.034	-.035	-.036	-.036
	(.027)	(.027)	(.027)	(.027)	(.027)	(.027)
<i>Market Uncertainty</i>	.000	.000	.000	.000	.000	.000
	(.000)	(.000)	(.000)	(.000)	(.000)	(.000)
<i>Market Share (%)</i>	-.318	-.318	-.317	-.311	-.300	-.299
	(.275)	(.275)	(.275)	(.275)	(.274)	(.275)
<i>Market-to-Book Ratio</i>	.002	.002	.002	.002	.001	.001
	(.008)	(.008)	(.008)	(.008)	(.008)	(.008)
<i>Performance Gap</i>	.001	-.001	-.001	-.001	-.000	-.000
	(.002)	(.002)	(.002)	(.002)	(.002)	(.002)
<i># Employees</i>	.052	.052	.053	.066	.065	.065
	(.146)	(.146)	(.146)	(.146)	(.146)	(.146)
<i>Ln Age</i>	-.057	-.057	-.055	-.061	-.073	-.072
	(.093)	(.093)	(.094)	(.093)	(.093)	(.094)
<i>Current Ratio</i>	-.001	-.001	-.001	-.001	-.001	-.001
	(.001)	(.001)	(.001)	(.001)	(.001)	(.001)
<i>Retained Earnings</i>	-.067†	-.067†	-.067†	-.067†	-.066†	-.066†
	(.039)	(.039)	(.039)	(.039)	(.039)	(.039)
<i>Debt-Equity Ratio</i>	.001	.001	.001	.001	.001	.001
	(.000)	(.000)	(.000)	(.000)	(.000)	(.000)
<i>Capital Expenditures</i>	-.012***	-.012***	-.012***	-.012***	-.012***	-.012***
	(.002)	(.002)	(.002)	(.002)	(.002)	(.002)
<i>Administrative Expenditure</i>	.000	.000	.000	.000	.000	.000
	(.000)	(.000)	(.000)	(.000)	(.000)	(.000)
<i>R&D Expenditure</i>	.033	.033	.033	.032	.033	.033
	(.034)	(.034)	(.034)	(.034)	(.034)	(.034)
<i>Advertising Expenditure</i>	.002	.002	.002	.002	.003	.003
	(.013)	(.013)	(.013)	(.013)	(.013)	(.014)
<i>Other Intangible Asset</i>	-.035	-.035	-.035	-.028	-.036	-.036
	(.124)	(.124)	(.124)	(.124)	(.124)	(.124)
<i>Tendency of Focused Resource Allocation (Accumulated)</i>		.000				
		(.005)				
<i>Tendency of Focused Resource Allocation (Moving-Averaged)</i>			-.007			-.005
			(.081)			(.081)
<i>Escalation of Focused Resource Allocation (Dominance)</i>				-.072		
				(.059)		
<i>Tendency of Focused Resource Allocation (Phased)</i>					.006*	.006*
					(.003)	(.003)
<i>Inverse Mills Ratio</i>	-.095	-.094	-.095	-.088	-.074	-.074
	(.115)	(.115)	(.115)	(.115)	(.115)	(.115)
Year Dummies	Included	Included	Included	Included	Included	Included
Firm Dummies	Included	Included	Included	Included	Included	Included
AR(1)-DW	.361	.361	.361	.360	.360	.360
Log Likelihood	-5590.425	-5590.424	-5590.407	-5589.491	-5587.141	-5587.124
AIC	11304.85	11306.85	11306.81	11304.98	11300.28	11302.25
χ^2	-	.02	.036	1.868	6.568*	6.602*

The number of firm-year: 8,002, The number of firms: 1,073, Standard errors in parentheses

† $p < .1$, * $p < .05$, ** $p < .01$, *** $p < .001$

Conclusion

- Learning myopia exists in SMEs
 - Focusing is not always beneficial for SMEs
 - It leads to financial inflexibility
- A dilemma between focusing and balancing
 - Focusing can be a means to overcome the liabilities of “smallness”
 - Yet, it bears side effects: issues around adaptability
 - Maybe focusing is not a good solution for survival of SMEs
- Then, what’s next?