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Corporate scope and firm profitability: evidence from the U.S. during the inter-crisis period

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김 지 석

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지도 교수 조 성 욱

이 논문을 경영학석사 학위논문으로 제출함

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김 지 석

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위 원 장	**석승훈**	**(인)**
부위원장	**한정석**	**(인)**
위 원	**조성욱**	**(인)**

Abstract

Using corporate scope data published by Hoberg and Phillips (2023), I investigate the relationship between corporate scope and firm profitability for U.S. firms during the period from 2014 to 2019. Based on analyses using panel data, I find evidence that corporate scope is negatively associated with firm profitability. Results are robust to controls for firm characteristics, including determinants of profitability. I find limited evidence of such a relationship in my cross-sectional analyses. I also study mechanisms through which corporate scope may affect firm profitability using firm-level competitive pressure and financial constraint data. Results suggest that increases in corporate scope may be associated with increases the competitive pressure on a firm. Scope expansion also appears to be associated with increases in debt constraints. I find limited evidence of a positive effect of HHI and equity financial constraint interactions on firm profitability. The negative effect of equity financial constraints on firm profitability appears to be reduced in times of low product market competition.

Keywords : Corporate scope, Diversification, Profitability, Competition, Financial constraints

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1. Introduction

Given the role of the firm as an essential vehicle for resource allocation in the economy, its scope has been a topic of interest to researchers for many years. It is a rather broad topic that touches on the very existence of firms, and early studies appear to have focused on its theoretical underpinnings. With business scenes increasingly dominated by multi-segment and multinational conglomerates, however, the importance of its empirical study has only grown with the passage of time. In fact, Hoberg and Phillips (2023) identify the emergence of a new type of firm, the 21st Century Firm, a firm whose related expansion is received positively by the market. The 21st Century Firm contrasts with the traditional conglomerate, which is commonly associated with a diversification discount in the market (Morck, Shleifer, and Vishny, 1990; Lang and Stulz, 1994; Berger and Ofek, 1995; Rajan, Servaes, and Zingales, 1998). Their discovery appears to be consistent with more recent empirical evidence suggesting the absence of a causal relationship between diversification and value destruction and leaning more towards endogenous influences, such as self-selection (Campa and Kedia, 2002; Villalonga, 2004; Hund, Monk, and Tice, 2016).

Two prevailing theories concerning the expansion of corporate scope in the financial economics literature are the agency theory and the transaction cost theory. The agency theory, focusing managerial incentives, suggests that firm expansion could be a symptom of empire-building (Jensen, 1989). That is, firms may diversify in response to the private interests of firm managers, such as power (resources under management) and compensation (Jensen, 1986). If such forces were driving the diversification decision, expansion would be value-destroying and directly contribute to a diversification discount. The transaction cost theory, on the other hand, attempts to explain firm expansion in terms of intra- and inter-firm transactions. By expanding

its boundaries, a firm can minimize its costs of production coordination. Matvos et al. (2018) utilize a stylized framework to model a diversified firm premium by deriving the value-maximizing incentives of a standalone firm to diversify.

Briglauer (2000) conducts a comprehensive survey of existing theory and empirical evidence on the motives for firm expansion. He identifies operational and financial synergies as motives consistent with the transaction cost theory. By diversifying, a firm can exploit economies of scope and scale in terms of both its production needs and its financial needs. It can also reduce costs associated with information asymmetry in transactions, as well as diversify business risk across different business lines and/or geographic segments. Firm motives consistent with the agency theory portray expansion as a manifestation of "opportunistic managerial behavior" (Briglauer, 2000) in which managerial utility is maximized at the cost of that of shareholders. Monetary incentives include the increases in managerial compensation and perquisites that may accompany firm growth, while non-monetary ones include prestige, publicity, and short-termism (e.g., managerial myopia).

In this paper, I conduct empirical tests of the relationship between corporate scope and firm profitability. Figure 1 depicts the time-series relationship between corporate scope and measures of firm profitability.

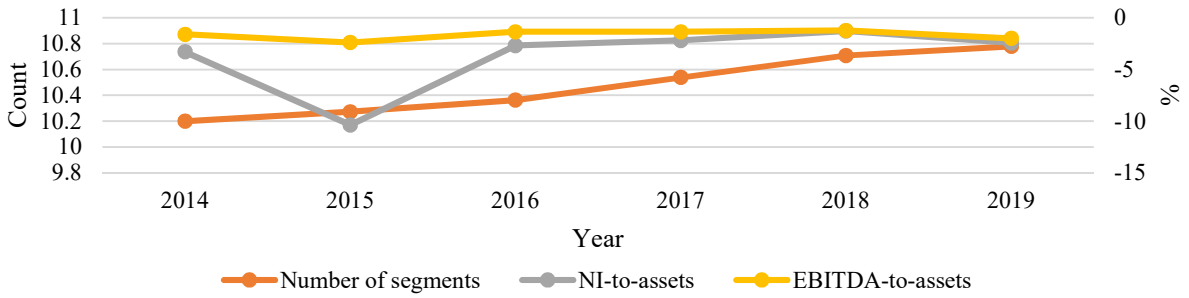

Fig. 1. Corporate scope and firm profitability of U.S. firms from 2014 to 2019. Changes in annual average number of segments and measures of profitability over time are shown.

I begin by conducting univariate tests using panel data. Then, I control for firm characteristics, such as firm size and capital structure. I find that corporate scope is negatively associated with firm profitability. I find no such evidence in my corresponding cross-sectional analyses. I also conduct tests of the determinants of firm profitability. In these tests, I confirm my findings that corporate scope is negatively associated with firm profitability. Firm size and capital structure appear to have a positive relationship with firm profitability, while advertising appears to have a negative one. I find limited evidence of a positive association in the case of the overseas exposure variable and negative association in the case of the HHI variable.

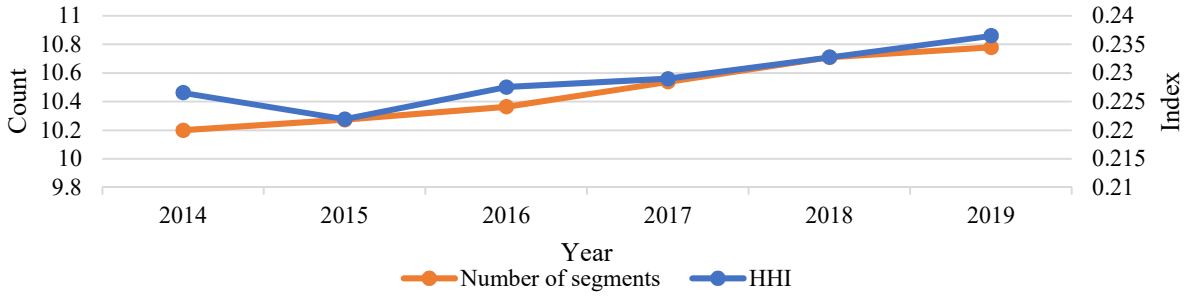

Fig. 2. Corporate scope and industry concentration faced by U.S. firms from 2014 to 2019. Changes in annual average number of segments and HHI over time are shown.

I then explore the mechanisms by which changes in corporate scope may impact firm profitability. Figure 2 plots the time-series relationship between annual average corporate scope and firm-level HHI. There appears to be a positive time-series relationship between the two variables. That is, competitive pressure appears to decrease as corporate scope increases over time.

A firm may expand in scope to reduce competition risk, which may be priced in capital markets. Valta (2012) finds such evidence in the cost of bank debt, while Kim and Kim (2017) document a spread in the "gross profitability premium" based on industry competition (with

premiums being higher for firms in more competitive industries). Such findings are consistent with evidence presented by Ljubownikow and Ang (2020) suggesting that firms are likelier to diversify into unrelated industries in times of high competition. They find that firm performance improves from such diversification as competition intensifies. I conduct univariate tests of the relationship between corporate scope and competitive pressure. Interestingly, results suggest that increases in corporate scope are associated with increases in competitive pressure as measured by HHI and product market fluidity.

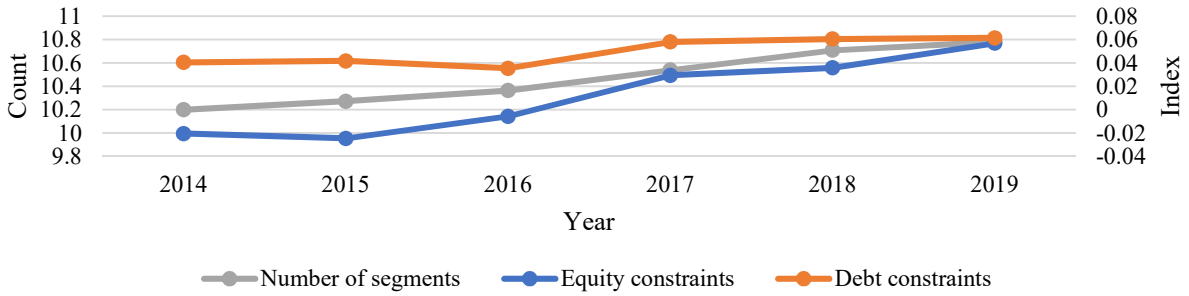

Fig. 3. Corporate scope and financial constraints of U.S. firms from 2014 to 2019. Changes in annual average number of segments, equity constraints, and debt constraints over time are shown.

Next, I explore the relationship between corporate scope and financial constraints, including debt constraints and equity constraints. Figure 3 depicts the time-series relationship between annual average corporate scope and firm financial constraints. There appears to be a positive time-series relationship between corporate scope and firm financial constraints. With tightening in financial markets leading to increased financial market frictions, standalone firms may diversify in response to the capital reallocation benefits of internal capital markets (Matvos and Seru, 2014; Matvos et al., 2018). However, such expansion may require additional investment, which could constrain firms financially. I conduct tests of the relationship between corporate scope and financial constraints, controlling for the effects of firm size and capital

structure. I find that increases in corporate scope are associated with increases in debt-focused financial constraints. I find no such evidence in the case of equity-focused financial constraints.

Lastly, I examine the effects of mechanism interactions on firm profitability. I find limited evidence that competitive pressure and equity-focused financial constraint interactions affect firm profitability. The relationship appears to be positive indicating that the negative effect of increases in equity financial constraints may be reduced when facing low competitive pressure. Results are consistent with reductions in competitive risk priced in equity markets. I find similar evidence in my cross-sectional analyses.

This paper extends existing literature on corporate scope in several ways. First, it examines the impact of corporate scope on firm profitability in the U.S. market, a market for which there is a lack of recent research. Most recent studies appear to focus on measures of firm performance based on firm value and European geographic markets. Next, this paper also explores potential mechanisms through which changes in corporate scope affect firm profitability, a segment of the literature on corporate scope for which there is a relative dearth of research. Lastly, it tests for any potential interactions between these mechanisms.

In the remainder of this paper, I will discuss data and descriptive statistics, empirical results, and conclusions. Empirical results include the following: time-series and cross-sectional analyses of the relationship between corporate scope and firm profitability, analyses of corporate scope relationships with competitive pressure and financial constraints, and analyses of the effects of mechanism interactions on firm profitability.

2. Data and descriptive statistics

2.1. Data

This paper relies on data from several sources. Data for the main variable of interest, firm scope, are sourced from the Hoberg-Phillips Scope Data Library website. The firm-year scope data contain counts of the number of industries a 10-K filer covers in any given year. Counts are computed using a mapping of firms to industries based on sets of keywords. The industries themselves are defined based on product offering information in filings. The count methodology differs from that often used with the traditional Compustat Segments data, which relies on reported segments. Though count values differ (with Compustat Segments counts being lower), most of the time-series variation are preserved, and the cross-firm 10-K-based counts may better reflect the actual circumstances of the firm in relation to the market compared to reported ones.

I obtain firm financial data from Compustat North America, accessed via Wharton Research Data Services (WRDS). The financial data are used to construct firm profitability measures, including EBITDA-to-assets and net income-to-assets ratios. They are also used to construct controls for firm characteristics, including firm size (logarithm of a firm's assets), capital structure (ratio of a firm's book value of equity to assets), level of advertisement (ratio of a firm's advertisement expenses to sales), and level of overseas exposure (ratio of a firm's foreign income to net income).

Firm-level competitive pressure data are obtained from the Hoberg-Phillips Data Library website. Data are based on Text-based Network Industry Classifications (TNIC), which map competitors to each firm based on product offerings. The Herfindahl–Hirschman Index (HHI) variable measures the level of industry concentration faced by a firm, with higher HHI values corresponding to more concentrated markets and lower levels of competition. The product

market fluidity variable measures the extent of year-on-year change changes to product offerings by competitors. Thus, it reflects the agility and innovative efforts of competitors, with higher levels of fluidity corresponding to higher levels of competition.

Firm-level financial constraint data are obtained from Daniel Leagley's website. They consist of debt- and equity-focused constraint measures. The estimation methodology can be found in Linn and Weagley (2023).

Finally, these data are merged to construct the preliminary dataset. I remove all financial firms from the sample, as is standard practice in corporate finance literature. The final dataset consists of 35,009 firm-year observations covering 6,795 firms over the period from 2014 to 2019. Descriptions for all variables in this paper can be found in Table 1.

Table 1

Description of variables

This table provides a description for each variable used in analyses. Sources are noted in the last column. All variables are measured at the firm-level. The time period spans the period from 2014 to 2019.

Variable	Description	Source
Advertisement/sales	Ratio of a firm's advertisement expenses to sales	Compustat
Debt financing constraints	Debt-focused constraint measure	Daniel Weagley Website
Equity financing constraints	Equity-focused constraint measure	Daniel Weagley Website
EBITDA to assets	Ratio of a firm's EBITDA to assets	Compustat
Net income to assets	Ratio of a firm's net income to assets	Compustat
Equity ratio	Ratio of a firm's book value of equity to assets	Compustat
Foreign income portion	Ratio of a firm's foreign income to net income	Compustat
HHI	Measure of industry concentration based on sales	Hoberg-Phillips Data Library
Log(Assets)	Logarithm of a firm's assets	Compustat
Number of segments	Number of product markets a firm operates in	Hoberg-Phillips Scope Data Library
Product market fluidity	Degree of competitive threat and product market change surrounding a firm	Hoberg-Phillips Data Library

2.2. Descriptive statistics

The average firm in the full sample operates 10.466 segments. A firm operates a minimum of one segment (standalone firm) and maximum of 35 segments. The standard deviation for the number of segments variable is 6.510 segments. Mean profitability measured by the EBITDA-to-assets ratio and net income-to-assets ratio variables are -1.652 and -3.791, respectively. Corresponding standard deviations are 47.563 and 184.496, respectively. Table 2 presents the summary statistics for all variables used in this paper.

Table 2
Summary statistics
This table reports the summary statistics for variables used in analyses. All variables are measured at the firm-level. The time period spans from 2014 to 2019. The foreign income portion is the ratio of foreign income to net income.

Variable	Number of observations	Mean	Standard deviation	Min	Max
Advertisement/sales	11,490	0.092	1.534	0.000	119.000
Debt financing constraints	19,835	0.049	0.561	-2.917	3.113
Equity financing constraints	19,835	0.011	0.658	-2.030	3.015
EBITDA to assets	32,839	-1.652	47.563	-5,325.500	1,106.000
Net income to assets	34,798	-3.791	184.496	-29,700.500	1,189.850
Equity ratio	34,896	-5.737	251.775	-36,901.000	1.000
Foreign income portion	11,564	0.448	23.716	-1,527.250	1,276.000
HHI	28,348	0.229	0.254	0.015	1.000
Log(Assets)	34,896	6.375	3.025	-6.908	15.069
Number of segments	35,009	10.466	6.510	1.000	35.000
Product market fluidity	29,408	7.172	3.666	0.348	23.550

3. Corporate scope and profitability

3.1. Time-series analyses

In this section, I examine the relationship between corporate scope and firm profitability using panel data. Table 3 presents the results of an ordinary least squares regression of measures of profitability on corporate scope. Panel A presents the results for the full sample, while Panel B presents the results for only diversified firms (firms with more than one segment). Panel C

presents the results for only very diversified firms (firms with more segments than the annual mean number of segments). Columns 1 and 2 present the results of univariate tests. In columns 3 and 4, I control for the effects of firm size. Finally, in columns 5 and 6, I also control for the effects of capital structure. Firm and year dummies are included in each of the tests.

Table 3

Corporate scope and firm profitability

This table reports the coefficients from regressing measures of profitability on the number of segments and controls for firm characteristics. Panel A shows the results for all firms in the sample. Panel B shows the results for only diversified firms, or firms with more than one segment. Panel C shows the results for only very diversified firms, or firms with more segments than the annual mean number of segments. T-values are presented in parentheses. Statistical significance at the 10%, 5%, and 1% levels are denoted with *, **, ***, respectively.

	EBITDA to assets	Net income to assets	EBITDA to assets	Net income to assets	EBITDA to assets	Net income to assets
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: all firms in sample						
Number of segments	0.079	0.077	-0.202**	-0.565	-0.180*	-0.450
	(0.76)	(0.21)	(-1.97)	(-1.54)	(-1.77)	(-1.26)
Log(Assets)			12.326***	28.628***	10.520***	19.470***
			(24.54)	(15.81)	(21.09)	(10.99)
Equity ratio					0.038***	0.195***
					(28.69)	(41.30)
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Time fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
N	32,839	34,798	32,839	34,798	32,839	34,798
R^2	0.399	0.476	0.413	0.481	0.431	0.510
Panel B: only diversified firms						
Number of segments	0.0700	-0.050	-0.058	-0.259	-0.051	-0.167
	(1.51)	(-0.31)	(-1.27)	(-1.60)	(-1.12)	(-1.16)
Log(Assets)			6.588***	10.893***	6.050***	3.970***
			(26.01)	(12.10)	(23.96)	(4.95)
Equity ratio					0.013***	0.166***
					(20.60)	(84.49)
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Time fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
N	30,461	32,402	30,461	32,402	30,461	32,402
R^2	0.813	0.444	0.819	0.447	0.822	0.566
Panel C: only very diversified firms						
Number of segments	0.101***	0.048*	0.024	-0.018	-0.013	-0.018
	(3.24)	(1.68)	(0.79)	(-0.65)	(-0.93)	(-0.64)
Log(Assets)			5.071***	4.385***	1.226***	4.415***
			(25.74)	(24.25)	(13.69)	(23.94)

Equity ratio					0.186*** (215.12)	-0.002 (-0.83)
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Time fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
N	14,978	15,749	14,978	15,749	14,978	15,749
R^2	0.430	0.540	0.461	0.562	0.893	0.562

Based on the full-sample test results in Panel A, I find limited evidence that corporate scope is negatively associated with profitability, particularly the EBITDA-to-assets measure. The coefficient for the corporate scope variable is negative and statistically significant at the 5% level when controlling for firm size and 10% level when controlling for both firm size and capital structure. I find no evidence of such an association in the tests using the sample consisting of only diversified firms, as can be seen in Panel B. Results of univariate tests for the sample consisting of only very diversified firms, as shown in Panel C, indicate corporate scope is positively associated with profitability. However, the coefficients lose statistical significance upon controlling for firm characteristics.

3.2. Cross-sectional analyses

Here, I perform cross-sectional analyses of the relationship between corporate scope and firm profitability. Table 4 presents the results of regressing measures of profitability on corporate scope for each of the years from 2014 to 2016. Panel A shows the results for years 2014 to 2016, while Panel B shows the results for years 2017 to 2019. I find no evidence of a cross-firm association between corporate scope and firm profitability. On the other hand, firm size and capital structure appear to be better indicators of differences in profitability across firms. Larger firms and firms with a higher equity ratio appear to enjoy higher levels of profitability. It is

interesting to note that the R-squares for various specifications are highly variable from year-to-year, with a range from 0.042 to 0.908.

Table 4

Cross-sectional analyses of corporate scope and firm profitability

This table reports the coefficients from regressing measures of profitability on the number of segments and controls for firm characteristics in each year. Panel A shows the results for years 2014 to 2016. Panel B shows the results for years 2017 to 2019. T-values are presented in parentheses. Statistical significance at the 10%, 5%, and 1% levels are denoted with *, **, ***, respectively.

	2014		2015		2016	
	EBITDA to assets	Net income to assets	EBITDA to assets	Net income to assets	EBITDA to assets	Net income to assets
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Years 2014 to 2016						
Number of segments	-0.042	-0.059	-0.057	0.037	-0.017	0.024
	(-0.93)	(-0.92)	(-0.49)	(0.04)	(-0.33)	(0.29)
Log(Assets)	1.586***	1.667***	0.086	8.435***	0.965***	0.556***
	(17.31)	(12.73)	(0.35)	(4.66)	(8.59)	(3.09)
Equity ratio	0.016***	0.204***	0.625***	1.031***	0.092***	0.469***
	(28.83)	(248.41)	(65.88)	(14.46)	(26.61)	(82.74)
N	5,973	6,326	5,741	6,082	5,459	5,799
Adjusted R^2	0.172	0.908	0.439	0.042	0.142	0.554
	2017		2018		2019	
	EBITDA to assets	Net income to assets	EBITDA to assets	Net income to assets	EBITDA to assets	Net income to assets
	(7)	(8)	(9)	(10)	(11)	(12)
Panel B: Years 2017 to 2019						
Number of segments	0.014	0.033	-0.019	0.012	0.011	0.009
	(0.26)	(0.54)	(-0.58)	(0.20)	(0.07)	(0.05)
Log(Assets)	1.155***	1.412***	1.103***	1.002***	1.778***	1.360***
	(9.94)	(10.77)	(14.86)	(7.77)	(4.85)	(3.50)
Equity ratio	0.067***	0.169***	0.040***	0.049***	0.106***	0.222***
	(27.05)	(58.64)	(48.49)	(33.86)	(24.38)	(47.06)
N	5,328	5,645	5,208	5,515	5,130	5,431
Adjusted R^2	0.151	0.407	0.351	0.191	0.113	0.297

3.3. Determinants of profitability

In this section, I perform tests of the determinants of firm profitability, including a corporate scope measure. Table 5 presents the results of performing ordinary least squares regressions of measures of profitability on corporate scope and controls for firm characteristics,

including determinants of firm profitability. Columns 1 and 2 show the results for full-sample tests, while columns 3 and 4 show the results for only diversified firms. Columns 5 and 6 show the results for only very diversified firms.

Table 5

Determinants of firm profitability

This table reports the coefficients from regressing measures of profitability on the number of segments and controls for firm characteristics, including determinants of firm profitability. Columns 1 and 2 show the results for all firms in the sample. Columns 3 and 4 show the results for only diversified firms, or firms with more than one segment. Columns 5 and 6 show the results for only very diversified firms, or firms with more segments than the annual mean number of segments. T-values are presented in parentheses. Statistical significance at the 10%, 5%, and 1% levels are denoted with *, **, ***, respectively.

	All firms in sample		Only diversified firms		Only very diversified firms	
	EBITDA to assets	Net income to assets	EBITDA to assets	Net income to assets	EBITDA to assets	Net income to assets
	(1)	(2)	(3)	(4)	(5)	(6)
Number of segments	-0.001***	-0.003***	-0.001**	-0.002***	-0.002***	-0.003***
	(-2.78)	(-4.04)	(-2.57)	(-3.62)	(-3.05)	(-2.92)
Log(Assets)	0.036***	0.061***	0.038***	0.062***	0.057***	0.079***
	(8.01)	(9.78)	(7.93)	(9.44)	(8.99)	(8.95)
Equity ratio	0.016	0.165***	0.009	0.157***	0.054***	0.223***
	(1.52)	(11.42)	(0.79)	(10.53)	(3.45)	(10.18)
Advertisement/sales	-0.037***	-0.028***	-0.037***	-0.028***	-0.022***	-0.021**
	(-6.08)	(-3.33)	(-5.97)	(-3.26)	(-3.69)	(-2.53)
Foreign income portion	0.000	-0.000	0.000	-0.000	0.000	0.001**
	(0.85)	(-0.15)	(0.84)	(-0.17)	(1.50)	(2.20)
HHI	0.004	-0.023*	-0.003	-0.036**	0.016	-0.019
	(0.37)	(-1.72)	(-0.26)	(-2.34)	(0.83)	(-0.70)
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Time fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
N	4,666	4,667	4,377	4,378	2,139	2,140
R^2	0.868	0.781	0.868	0.779	0.902	0.835

The coefficients for corporate scope are statistically significant and negative for all specifications. Scope expansion appears to be associated with a decline in firm profitability. Firm size and capital structure appear to be positively associated with firm profitability, while firm advertising appears to be negatively associated with firm profitability. I find evidence for a positive association between overseas exposure and firm profitability, measured using net income, only in the case of very diversified firms. Coefficients for firm-level HHI are negative

and statistically significant for the net income-to-assets profitability measure for the full-sample and diversified firms-only tests. Overall, R-squares are also much higher than those presented in Table 3.

4. Mechanisms

4.1. Competitive pressure

I begin tests of various mechanisms through which corporate scope may affect firm profitability with an examination of potential product market channels. Table 6 presents the results of univariate tests. Columns 1 and 2 present the results for full-sample tests. Columns 3 and 4 present the results for the sample consisting of only diversified firms. Columns 5 and 6 present the results for the sample consisting of only very diversified firms. I include firm and year dummies in each specification.

Table 6

Corporate scope and competitive pressure

This table reports the coefficients from regressing measures of competitive pressure faced by a firm on its number of segments. Columns 1 and 2 show the results for all firms in the sample. Columns 3 and 4 show the results for only diversified firms, or firms with more than one segment. Columns 5 and 6 show the results for only very diversified firms, or firms with more segments than the annual mean number of segments. T-values are presented in parentheses. Statistical significance at the 10%, 5%, and 1% levels are denoted with *, **, ***, respectively.

	All firms in sample		Only diversified firms		Only very diversified firms	
	HHI	Product market fluidity	HHI	Product market fluidity	HHI	Product market fluidity
	(1)	(2)	(3)	(4)	(5)	(6)
Number of segments	-0.007*** (-23.12)	0.190*** (52.35)	-0.005*** (-17.75)	0.192*** (51.21)	-0.003*** (-9.35)	0.189*** (34.86)
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Time fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
N	28,348	29,408	27,070	28,166	13,839	14,495
R^2	0.858	0.894	0.860	0.894	0.864	0.902

The coefficients for the specifications involving the HHI dependent variable are negative and statistically significant across all samples. The coefficients for those involving the product market fluidity dependent variable are likewise positive and statistically significant across all samples. Overall, results suggest that scope expansions are associated with increases in the competitive pressure faced by a firm.

4.2. Financial constraints

In this section, I examine the capital market-related channels through which corporate scope may affect firm profitability. Table 7 presents the results of performing ordinary least square regressions of debt and equity financial constraints on corporate scope. I include controls for firm size and capital structure. Columns 1 and 2 present the full-sample results for debt-focused financial constraints and equity-focused financial constraints, respectively. Columns 3 and 4 present the results for the sample consisting of only diversified firms. Columns 5 and 6 present the results for the sample consisting of only very diversified firms. Firm and year dummies are included in each specification.

Coefficients for corporate scope are positive and statistically significant across all specifications for the debt-focused financial constraints dependent variable. It appears that scope expansions are associated with increases in debt financial constraints. I do not find such evidence in the case of the equity financial constraints dependent variable.

Table 7

Corporate scope and financial constraints

This table reports the coefficients from regressing measures of financial constraints faced by a firm on its number of segments and controls for firm characteristics. Columns 1 and 2 show the results for all firms in the sample. Columns 3 and 4 show the results for only diversified firms, or firms with more than one segment. Columns 5 and

6 show the results for only very diversified firms, or firms with more segments than the annual mean number of segments. T-values are presented in parentheses. Statistical significance at the 10%, 5%, and 1% levels are denoted with *, **, ***, respectively.

	All firms in sample		Only diversified firms		Only very diversified firms	
	Debt financial constraints	Equity financial constraints	Debt financial constraints	Equity financial constraints	Debt financial constraints	Equity financial constraints
	(1)	(2)	(3)	(4)	(5)	(6)
Number of segments	0.002**	0.000	0.002*	0.000	0.003**	0.000
	(2.13)	(0.54)	(1.91)	(0.20)	(1.97)	(0.18)
Log(Assets)	0.019***	-0.019***	0.024***	-0.016***	0.040***	-0.002
	(4.11)	(-4.71)	(4.47)	(-3.27)	(4.30)	(-0.25)
Equity ratio	-0.000	0.000	-0.000	0.000	-0.000*	0.000
	(-1.27)	(0.35)	(-0.22)	(0.86)	(-1.72)	(0.24)
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Time fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
N	19,733	19,733	17,885	17,885	8,025	8,025
R^2	0.779	0.874	0.779	0.876	0.809	0.903

4.3. Time-series interactions and firm profitability

I now examine the effects of interactions between product and capital market channels on firm profitability. Results are presented in Table 8. Columns 1 and 2 present the results for full-sample tests, while columns 3 and 4 present those for the sample consisting only of diversified firms. The last two columns present the results for the sample consisting only of very diversified firms. I include firm and year dummies in each of the specifications.

Table 8

Effects of corporate scope, competitive pressure, and financial constraint interactions on firm profitability
This table reports the coefficients from regressing measures of profitability on interactions amongst corporate scope, competitive pressure and financial constraints. Tests control for the number of segments and other firm characteristics, including determinants of firm profitability. Columns 1 and 2 show the results for all firms in the sample. Columns 3 and 4 show the results for only diversified firms, or firms with more than one segment. Columns 5 and 6 show the results for only very diversified firms, or firms with more segments than the annual mean number of segments. T-values are presented in parentheses. Statistical significance at the 10%, 5%, and 1% levels are denoted with *, **, ***, respectively.

	All firms in sample		Only diversified firms		Only very diversified firms	
	EBITDA to assets	Net income to assets	EBITDA to assets	Net income to assets	EBITDA to assets	Net income to assets
	(1)	(2)	(3)	(4)	(5)	(6)

Log(Assets)	0.039***	0.059***	0.040***	0.060***	0.064***	0.083***
	(7.40)	(8.17)	(7.25)	(7.87)	(8.35)	(7.61)
Equity ratio	0.018	0.164***	0.009	0.156***	0.059***	0.236***
	(1.55)	(10.40)	(0.75)	(9.65)	(3.27)	(9.29)
Advertisement/sales	-0.036***	-0.017	-0.035***	-0.017	-0.008	-0.006
	(-3.97)	(-1.37)	(-3.86)	(-1.33)	(-0.82)	(-0.48)
Foreign income portion	0.000	-0.000	0.000	-0.000	0.000*	0.001**
	(0.61)	(-0.42)	(0.65)	(-0.42)	(1.81)	(2.55)
Number of segments	-0.001*	-0.002***	-0.001*	-0.003***	-0.001	-0.002*
	(-1.66)	(-2.66)	(-1.93)	(-2.74)	(-0.90)	(-1.69)
HHI	0.027*	0.003	0.010	-0.028	0.101*	-0.000
	(1.65)	(0.14)	(0.48)	(-1.01)	(1.81)	(-0.00)
Debt financial constraints	0.002	-0.020	0.006	-0.019	-0.005	-0.010
	(0.19)	(-1.35)	(0.50)	(-1.20)	(-0.20)	(-0.33)
Equity financial constraints	-0.053***	-0.060***	-0.053***	-0.061	-0.095***	-0.107***
	(-3.64)	(-2.98)	(-3.45)	(-2.86)	(-3.31)	(-2.65)
Number of segments x HHI	-0.001	-0.002	-0.000	-0.000	-0.003	0.001
	(-0.95)	(-1.05)	(-0.17)	(-0.13)	(-1.09)	(0.14)
Number of segments x Debt financial constraints	-0.000	0.001	-0.000	0.000	-0.000	-0.001
	(-0.12)	(0.65)	(-0.61)	(0.49)	(-0.20)	(-0.35)
Number of segments x Equity financial constraints	0.001	0.000	0.001	0.000	0.002	0.002
	(0.83)	(0.02)	(0.81)	(0.24)	(1.58)	(1.01)
HHI x Debt financial constraints	-0.023	-0.012	-0.020	-0.012	0.006	0.025
	(-1.55)	(-0.60)	(-1.25)	(-0.53)	(0.24)	(0.65)
HHI x Equity financial constraints	0.038*	0.042	0.035	0.028	0.086**	0.077
	(1.94)	(1.54)	(1.64)	(0.94)	(2.55)	(1.60)
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Time fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
N	4,040	4,040	3,793	3,793	1,869	1,869
R^2	0.868	0.780	0.868	0.777	0.902	0.835

Coefficients for the interaction between competitive pressure and equity financial constraints are positive and statistically significant in the case of the EBITDA-to-assets dependent variable for the full-sample and only very diversified firms sample tests. Considering the negative and statistically significant coefficients for the equity financial constraints variable, it appears that the negative effect of increases in equity financial constraints is reduced when firms face less competitive pressure.

4.4. Cross-sectional interactions and firm profitability

In this section, I perform cross-sectional analyses of the relationship of competitive pressure-financial constraint interactions and firm profitability using the full sample. Results are shown in Table 9. Panel A presents the results for years 2014 to 2016, while Panel B presents those for years 2017 to 2019. I present the results for both the EBITDA-to-assets and the net income-to-assets dependent variables in each of the years.

Table 9

Cross-sectional analyses of effects of corporate scope, competitive pressure, and financial constraint interactions on firm profitability

This table reports the coefficients from regressing measures of profitability on interactions amongst corporate scope, competitive pressure and financial constraints. Tests control for the number of segments and other firm characteristics, including determinants of firm profitability. Panel A shows the results for years 2014 to 2016. Panel B shows the results for years 2017 to 2019. T-values are presented in parentheses. Statistical significance at the 10%, 5%, and 1% levels are denoted with *, **, ***, respectively.

	2014		2015		2016	
	EBITDA to assets	Net income to assets	EBITDA to assets	Net income to assets	EBITDA to assets	Net income to assets
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Years 2014 to 2016						
Log(Assets)	0.041***	0.044***	0.036***	0.039***	0.029***	0.034***
	(13.92)	(13.93)	(13.49)	(13.69)	(11.66)	(11.60)
Equity ratio	0.056**	0.148***	0.056***	0.144***	0.025	0.117***
	(2.48)	(6.17)	(2.86)	(6.77)	(1.31)	(5.40)
Advertisement/sales	-0.306***	-0.269**	-0.061***	-0.058***	-0.034**	-0.022
	(-2.60)	(-2.13)	(-5.07)	(-4.51)	(-2.47)	(-1.39)
Foreign income portion	0.000	0.000	0.001	0.001	0.000	0.001
	(0.06)	(0.10)	(1.11)	(0.79)	(0.07)	(0.52)
Number of segments	-0.001	-0.001	-0.001	-0.001	-0.002*	-0.001
	(-1.06)	(-0.80)	(-0.72)	(-0.97)	(-1.85)	(-0.97)
HHI	0.030	0.026	0.127***	0.092**	0.068*	0.012
	(0.82)	(0.68)	(3.84)	(2.58)	(1.94)	(0.30)
Debt financial constraints	0.009	0.003	0.043*	0.015	0.042	-0.00124
	(0.38)	(0.12)	(1.94)	(0.63)	(1.38)	(-0.04)
Equity financial constraints	-0.112***	-0.103***	-0.101***	-0.103***	-0.097**	-0.103**
	(-3.54)	(-3.02)	(-3.55)	(-3.34)	(-2.55)	(-2.34)
Number of segments x HHI	-0.000	-0.001	-0.006**	-0.004	-0.005	-0.006
	(-0.10)	(-0.33)	(-2.16)	(-1.12)	(-1.63)	(-1.59)
Number of segments x Debt financial constraints	0.000	0.000	-0.000	0.001	-0.000	0.001
	(0.28)	(0.34)	(-0.02)	(0.63)	(-0.20)	(0.46)
Number of segments x Equity financial constraints	0.002	0.002	-0.002	-0.002	-0.006***	-0.005**
	(0.79)	(0.77)	(-1.27)	(-0.96)	(-2.94)	(-1.97)
HHI x Debt financial constraints	-0.048	-0.037	-0.027	0.010	-0.000	0.077
	(-1.42)	(-1.02)	(-0.84)	(0.28)	(-0.01)	(1.45)
HHI x Equity financial constraints	0.028	0.010	0.100**	0.113**	0.068	-0.018
	(0.68)	(0.22)	(2.44)	(2.55)	(1.13)	(-0.25)
N	685	685	708	708	693	693
Adjusted R^2	0.286	0.278	0.365	0.337	0.358	0.319

	2017		2018		2019	
	EBITDA to assets	Net income to assets	EBITDA to assets	Net income to assets	EBITDA to assets	Net income to assets
	(7)	(8)	(9)	(10)	(11)	(12)
Panel B: Years 2017 to 2019						
Log(Assets)	0.031***	0.035***	0.033***	0.038***	0.036***	0.038***
	(10.88)	(11.25)	(10.65)	(11.48)	(10.80)	(10.83)
Equity ratio	-0.050**	0.054**	-0.054***	0.056***	0.066***	0.154***
	(-2.51)	(2.41)	(-2.77)	(2.72)	(3.16)	(6.90)
Advertisement/sales	-0.164***	-0.155***	-0.324***	-0.300***	-0.090	-0.163
	(-3.65)	(-3.10)	(-4.93)	(-4.28)	(-0.86)	(-1.48)
Foreign income portion	-0.000	-0.000	0.000	-0.000	0.001	0.001
	(-0.42)	(-0.22)	(0.15)	(-0.36)	(0.91)	(0.61)
Number of segments	-0.001	-0.000	-0.000	0.000	-0.001	-0.002
	(-0.59)	(-0.34)	(-0.04)	(0.32)	(-0.58)	(-1.34)
HHI	-0.003	0.009	0.101**	0.099**	0.036	-0.024
	(-0.08)	(0.20)	(2.34)	(2.16)	(0.83)	(-0.52)
Debt financing constraints	0.034	0.028	0.032	-0.011	0.032	-0.009
	(0.92)	(0.67)	(0.83)	(-0.27)	(0.71)	(-0.19)
Equity financing constraints	-0.252***	-0.226***	-0.239***	-0.206***	-0.186***	-0.093*
	(-5.67)	(-4.57)	(-5.23)	(-4.24)	(-3.74)	(-1.75)
Number of segments x HHI	0.001	0.001	-0.006*	-0.008**	-0.004	-0.004
	(0.43)	(0.28)	(-1.68)	(-2.16)	(-1.08)	(-0.93)
Number of segments x Debt financial constraints	-0.001	0.000	0.001	0.003	0.002	0.002
	(-0.51)	(0.04)	(0.29)	(1.13)	(0.99)	(0.76)
Number of segments x Equity financial constraints	0.002	0.001	-0.000	-0.002	0.000	-0.004
	(0.65)	(0.46)	(-0.14)	(-0.67)	(0.03)	(-1.62)
HHI x Debt financial constraints	-0.007	-0.001	-0.078	-0.030	-0.042	0.022
	(-0.12)	(-0.01)	(-1.32)	(-0.47)	(-0.61)	(0.30)
HHI x Equity financial constraints	0.080	0.061	0.142*	0.101	-0.012	-0.118
	(1.18)	(0.80)	(1.89)	(1.26)	(-0.16)	(-1.47)
N	672	672	674	674	608	608
Adjusted R^2	0.392	0.340	0.389	0.358	0.363	0.353

The coefficients for the interaction between competitive pressure and equity financial constraints are positive and statistically significant for both measures of profitability in 2015. The coefficient for the interaction is also positive and statistically significant for the EBITDA-to-assets dependent variable in the year 2018. Results appear to weakly confirm findings in the corresponding time-series analyses. It is interesting to note that the magnitude of the statistically significant coefficient is much larger in 2018 (0.142) compared to those for statistically significant coefficients in 2015 (0.100 and 0.133). However, the negative effect of equity

financial constraints on firm profitability is larger in the latter years as well (-0.101 and -0.103 in 2015 compared to -0.239 in 2018).

5. Conclusion

As a form of organization structure, corporate scope has attracted the attention of scholars for many decades. Motives for its change vary widely, with some evidence in support of managerial motives suggesting scope expansion may be form of agency cost. Other evidence suggests changes in corporate scope may constitute an optimal response to adverse market conditions. Many early studies on the implications of changes in corporate scope for firm performance have focused on capital market outcomes, such as firm value. I focus on the effect changes in corporate scope have on firm profitability and explore the product and capital market-related channels through which they may.

Based on my analyses using U.S. firm data during the period from 2014 to 2019, I find empirical evidence suggesting corporate expansion decreases firm profitability. I also find that scope expansions may increase competitive pressure and debt constraints. Tests of competitive pressure and financial constraint interactions suggest that the negative effects of increased equity-focused financial constraints on firm profitability may be alleviated in times of low product market competition. Overall, findings confirm the presence of an association between the organizational structure of firms and firm performance.

References

Berger, P., & Ofek, E. (1995). Diversification's Effect on Firm Value. *Journal of Financial Economics*, 37: 39–65.

Campa, J. M. and Kedia, S. (2002). Explaining the Diversification Discount. *The Journal of Finance*, 57: 1731–1762.

Hoberg, G. and Phillips, G. M. (2023). Scope, Scale and Concentration: The 21st Century Firm. *Forthcoming The Journal of Finance*.

Hund, J., Monk, D., and Tice, S. (2016). A Manufactured Diversification Discount. *SSRN Electronic Journal*.

Jensen, M. C. (1986). Agency Costs of Free Cash Flow, Corporate Finance, and Takeovers. *The American Economic Review*, 76: 323–329.

Kim, M. and Kim, T.S. (2018). Product Market Competition, Gross Profitability, and Cross Section of Expected Stock Returns. *European Financial Management Association*.

Lang, L.H. and Stulz, R.M. (1994). Tobin's Q, Corporate Diversification, and Firm Performance. *Journal of Political Economy*, 102: 1248–1280.

Ljubownikow, G. and Ang, S. H. (2020). Competition, diversification and performance. *Journal of Business Research*, 112: 81–94.

Linn, M. and Weagley, D. (2024). Uncovering Financial Constraints. *Journal of Financial and Quantitative Analysis*, 59: 2582–2617.

Jensen, M. C. (1989). Eclipse of the Public Corporation. *Harvard Business Review*, 67: 61-74.

Matvos, G. and Seru, A. (2014). Resource Allocation within Firms and Financial Market Dislocation: Evidence from Diversified Conglomerates. *The Review of Financial Studies*, 27: 1143–1189.

Matvos, G., Seru, A., and Silva, R. C. (2018). Financial market frictions and diversification. *Journal of Financial Economics*, 127: 21–50.

Morck, R., Shleifer, A., and Vishny, R.W. (1990). Do Managerial Objectives Drive Bad Acquisitions? *The Journal of Finance*, 45: 31–48.

Rajan, R. G., Servaes, H., and Zingales, L. (1998). The Cost of Diversity: The Diversification Discount and Inefficient Investment. *The Journal of Finance*, 55: 35–80.

Villalonga, B. (2004). Diversification Discount or Premium? New Evidence from the Business Information Tracking Series. *The Journal of Finance*, 59: 479-506.

Wolfgang B. (2000). Motives for Firm Diversification. A Survey on Theory and Empirical Evidence. *WIFO Working Papers*, 126.

Valta, P. (2012). Competition and the cost of debt. *Journal of Financial Economics*, 105: 661–682.

국문 초록

2014 년-2019 년 미국 기업의 범위 결정과 수익성 간의 관계에 관한 연구

서울대학교 대학원
경영학과 재무금융전공
김지석

본 논문은 미국 기업의 범위 결정과 수익성 간의 관계를 연구한다. 2014 년부터 2019 년까지 기업 범위와 수익성 표본을 이용하여 기업의 범위 확장과 수익성 간의 음의 관계를 확인했다. 이러한 관계는 기업의 수익성 결정요인의 영향을 통제했을 때 더 뚜렷하게 나타난다. 기업의 범위 결정이 수익성에 영향을 미치는 제품시장과 자본시장 관련 경로도 연구한다. 기업의 범위 확장은 부채조달 제약과 경쟁정도의 심화로 이어질 수 있고 시장경쟁이 완화되면 자본조달 제약 심화가 기업의 수익성에 미치는 영향 또한 완화될 수 있는 것으로 나타났다.

주요어 : 기업의 범위 결정, 다각화, 수익성, 시장경쟁, 재무적 제약

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