THE UNIVERSITY OF CHICAGO

Commercial Bank Excess Value in the Era of Fintech

By

Meng (Chloe) Wei

March 2022

A paper submitted in partial fulfillment of the
requirements for the
Master of Arts degree in the
Master of Arts Program in the Social Sciences

Faculty Advisor: Gina Pieters

Preceptor: Gina Pieters

Abstract

Based on the economics of scope theory, this paper analyzes the influence of diversification on the market valuation of commercial banks. Based on the OLS regression model, the accounting data of 360 commercial banks over the period of 2010-2020 is empirically tested. The results demonstrated the existence of scope economics from diversification: the market assigns diversification premium to financial conglomerates for their engagements in multiple businesses. While difficult to identify a single causal variable, the results are consistent with the literature that stress the emerging scope economics caused by technological spillovers.

1 Introduction

The financial services industry is undergoing massive changes. The way banks allocate assets can be segregated into two parts— The traditional deposit and loan business while interest spread contributes to the profit margin, and the deployment of assets in a diversified strategic model focusing on financial services and trading activities. The tendency of diversification distinguishes banks from many of their competitors, e.g. non-banking financial institutions like mutual funds and insurances, who often choose to specialize. In this spirit, researchers have looked at whether there are scale economics in bank's decision of diversification.

A "diversification discount" was noticed in three aspects of banks' operation: Firstly, the existence of agency theory between managers and shareholders (e.g. Amihud and Lev (1981); Jensen (1986); Shleifer and Vishny) (1989)). Secondly, the information asymmetry between managers and investors (e.g., Krishnaswami and Subramaniam (1999); Clarke et al (2004)). The third facet is subject to the theory of inefficient internal capital market (e.g., Rajan (2000); Scharfstein and Stein (2000)). Taking financial information services as an example, commercial banks often provide corresponding financial information services to existing loan customers, but it is extremely rare for users to change their choice of banks based on financial services provided by banks. Therefore, the diversified asset allocation strategy not only fails to effectively attract potential customers but also generated huge conversion costs while the original interest business is converted to non-interest business (DeYoung, 2001).

Unequivocal evidence of diversification discount has also been found in event studies of merger announcements on making possible increased scope economics: John and Ofek (1995) find that asset sales led to an improvement in the operating performance of the seller's remaining assets in consequent years; Curi and Murgia (2017) find that divestitures having a significant impact on financial conglomerate valuation, contributing to a reduced conglomerate discount.

However, consensus on the diversification discount has become less unanimous in recent decades. New evidence revealed persistent scale economies (Wheelock and Wilson, 2009; Feng and Serletis, 2010). Santomero and Eckles (2000), and Berger et

al. (2000) pointed out that bank branching can reduce costs, and banks that are committed to developing geographic diversification can enjoy the benefits of economies of scale. Pilloff (1996), Houston et al. (2001), and Penas and Unal (2004) pointed out that mergers and acquisitions in the banking industry can achieve cost savings, gain synergy benefits and increase market power.

The most noticeable change in the banking sector in the past 10 years is the development of non-interest businesses. Elsas (2010) observed that, compared with traditional interest business, non-interest business tends to have higher marginal returns and shorter earnings weeks. Similar studies include Pennathur, Subrahmanyam Vishwasrao (2012), who reviewed the Indian banking industry through 2000-2009's data. They concluded that the shift from traditional interest business to commission-based non-interest business effectively reduces the credit risk of traditional business.

While answering the question: '*What drives financial players in choosing their scale and scope of operations?*', Boot (2017) set forth that it is still unclear because the existing evidence was inconclusive and it preceded the fintech revolution. This paper extends research on scope economics in the financial sector on two major dimensions. First, it is among the first attempts to study the contemporary scope of economics in the financial sector based on bank-level data. An important caveat of prior literature is the limitation of contrasting samples and time scopes of analysis. As suggested by Boot (2017), information technology-related economies and diversification benefits are two sources of scale and scope which has not been captured by the existing literature. This paper filled this void. Secondly, this paper contributes to the field of discussion on scope economics measures. Prior studies of financial conglomerates scope economics are characterized by two distinguished measurements of performance: one is the relative valuation measures like excess value; the other one bases on absolute valuation metrics such as Tobin's q and traditional accounting ratios. In this paper, I will follow the relative valuation approach where the relative value of the diversified firm in respect to matched stand-alone firms is measured, and demonstrate why it is proper than absolute valuation metrics.

Building on the aforementioned streams of literature, I develop my prediction that fits with the characteristics of financial conglomerates in the fintech era, to test the existence of scope economics. I conjecture that diversification contributes to the increased excess value. This prediction is based on extensive recent literature capturing the fintech-related bonus within the financial sector (Boot, 2017; Goldman Sachs, 2017; Yang et al., 2020). The organization of the paper is as follows. In section 2, data and variables are presented. Building upon the prior device of methodology, we further stated the solidity of adapting this method in measuring scope economics. Section 3 incorporates the results of the initial regression and robustness test. Finally, in section 4, we complete the discussion by conclusion remarks.

2 Data and Variables

2.1 Data sources and sample

The primary data sources are Wind Financial Terminal, corporate official websites, CEIC and World Bank. Wind Financial Terminal is used to obtain firm-level data, which contains financial information on listed companies around the world. Another reason why this dataset is adopted is that necessary independent variables such as assets, operation income, equity, and deposits are included. For accuracy, financial reports on official websites are used for crosschecking and supplementing. Macroeconomic indicators including GDP, inflation are paired through World Bank data.

This paper focuses on the financial conglomerate excess value, sample is constructed by: 360 banks from 23 countries. We consider 'banks' as: a) commercial banks excluding policy banks and government-controlled credit institutions b) the publicly traded firms under common control whose exclusive or predominant activities consist of providing significant services in at least two different financial sectors (banking, securities, and insurance), with asset over 6 billion USD[1]. Analyzing through the above criterion has important advantages over a random sample. With a) constraint, we control for homogeneity in a firm's investment opportunities and the functioning of internal capital markets, as smaller conglomerates might have a basic organizational structure. As the corporate diversification literature highlighted, this is an important concern when studying the performance of diversified firms. Second, by selecting large financial conglomerates we control for a more homogenous regulatory and monitoring framework compared to smaller conglomerates that are subject to simpler rules. After tidying the data, we look at the final sample consists of 2809 bank-year observations, with a maximum of 334 in 2020. The reason why numbers of datapoint varied throughout the years is the missing of market capitalization data, in other words, we exclude the firm in the year it was privately held. Moreover, we include data points only when the corresponding diversity measures fell in the range of (0,1). If the firm has a diversity measure equal to 0 or 1, it specializes in lending business or specializes in non-lending business per se. Another procedure we incorporated is to exclude extreme outliers, which we define as banks where the basic accounting variables are more than four standard deviations from the sample mean. The period spreads the last ten years, which captured alterations in excess value through enough observational time and economic entities.

2.2 Variables

2.2.1 Financial conglomerate excess value

From the empirical sense, it is extraordinarily difficult to measure economies of scope in the provision of financial services (Laeven and Levine, 2007). Definition of "output" of financial institutions is a problem that has plagued most studies of the industry as well as studies of cost functions in general (Benston, 1972).

[1] . The Group of Ten (Group of Ten, 2001) gives the following definition: "any group of companies under common control whose exclusive or predominant activities consist of providing significant services in at least two different financial sectors (banking, securities, and insurance)

To circumvent the problem, vast empirical studies have back-tested the impact of hypothetical combinations of stand-alone firms in different areas of the financial sector. By differentiating banks by lending versus non-lending activities conglomerates, Laeven and Levine (2007) find that functional diversification is value-destroying. Their metric follows a chop-shop approach (LeBaron and Speidell, 1987) which makes it possible for us to simplify our model based on the attained data. Tobin's q is a value metric that was utilized in this approach, which is also commonly used while quantifying the present value of future cash flows generated by the replacement cost of tangible assets. Laeven's idea is to compare Tobin's q of each bank with the q that would exist if the bank were 'chopped' into separate financial 'shops' (pure-activity banks) each of which specializes in a particular financial activity (e.g., lending or fee/income generation). This circumvent the fallacies of adopting accounting ratios directly and the reasons are twofold. Firstly, accounting ratios have huge variance as time changes. In the scenario of downside market, operating financials are not affected the same level as stock price, consequently we will have an abnormal Tobin's Q. Secondly, accounting ratios are manipulative and they are characterized by reporting quality at most time. By subtraction of the Tobin's Q, it is another warranty of standardizing our sample.

In general, Tobin's q is computed by dividing the book value of total assets by the sum of the market value of common stock plus the book value of preferred shares plus the book value of total debt. In Leaven's framework, we primarily consider two business activities: lending operations versus non-lending operations, which include trading, investments, and advisory services. Leaven also provided two approaches of excess value calculation, both from the asset perspective and the income perspective. From an asset perspective, he focuses on the distinction between a bank's loans and other earning assets in securities or other companies. In the below formula, q^1 is the valuation of a bank focused on loan operations (q of the comparable commercial bank specialized in the lending business of the same period and the same country), while q^2 is the valuation of a bank focused on other earning operations (q of the comparable commercial bank specialized in the non-lending business of the same period and the same country). With two activities, the definition of activity-adjusted q for bank j simplifies to the following:

$$activity\ adjusted\ q_j = \omega_{j1} q^1 + \omega_{j2} q^2 = \omega_{j1} q^1 + (1 - \omega_{j1})\, q^2$$

The excess value is thereafter clear, which equals the difference between a bank's actual q and the activity-adjusted q so that the excess value for bank j is

$$EV_j = q_j - adjusted\ q_j = q - (\omega_{j1} q^1 + (1 - \omega_{j1})\, q^2)$$

2.2.2 Financial conglomerate characteristics

Asset diversity is a measure of diversification across different types of assets and is calculated as

$$1 - \left|\frac{Net\ loans - Other\ earning\ assets}{Total\ earning\ assets}\right|$$

Income diversity is a measure of diversification across different sources of income and is calculated as

$$1 - \left|\frac{Net\ interest\ income - Other\ operating\ assets}{Total\ operating\ income}\right|$$

A commercial bank with a lower diversity value means it is more specialized in one activity; while a financial conglomerate with a higher values index means that it engages in a mixture of lending and non-lending activities. There is a relationship between these diversity measures and the measures of the degree to which banks engage in lending or non-lending activities. However, these two types of diversification measures are distinct in an economic sense. More specifically, Bank's loans are showed on the balance sheet with item 'Loans', and its earnings are reflected in the income statement with the item interest earnings. The marginal earnings of lending operations are different among institutions majorly due to interest rate spread quality — the difference between the interest rate a bank pays to depositors and the interest rate it receives from loans to consumers, which is not uniformly regulated.

We compute two measures of adjusted Tobin's Q and two measures of excess value. One is based on weights determined by the asset composition of the bank and the other is determined by the income composition of the bank. The statistical summary of core independent variables is presented below.

Variables	Tobin's q	Deposits/ Liabilities	Equity/ Assets	Asset Growth	Income Growth	Income Diversity	Asset Diversity
# Sample	2809	2809	2809	2809	2809	2809	2809
Mean	0.42	0.84	0.10	11.53	35.52	0.15	0.52
Median	0.19	0.88	0.10	7.31	10.54	0.03	0.50
Standard Deviation	3.04	0.17	0.03	17.04	369.84	0.22	0.23
				Correlation			
Tobin's q	1.00	-0.15	0.07	-0.02	-0.01	0.05	-0.04
Deposits/ Liabilities		1.00	0.25	0.09	0.00	-0.16	-0.03
Equity/ Assets			1.00	0.06	0.01	-0.17	-0.24
Asset Growth				1.00	-0.01	-0.16	0.01
Income Growth					1.00	0.02	-0.01
Income Diversity						1.00	0.15

Asset Diversity	1.00

2.2.3 Control Variables

To investigate the economics of scope from diversification, it is of great significance to introduce variable groups that capture different aspects of firm idiosyncratic characteristics.

Sizable effect—Size is key for abstracting scale economics from the scope economics effect. The control we use is the logarithm of total assets, we also incorporate the logarithm of total operating income for better capturing the off-balance items.

Activity effect—Deposits and loans are two key activities on a bank's account. While deposits attribute a major portion of a bank's liabilities, the loan is typical asset banks generate profits. How market values bank is largely influenced by its mixture of business. In other words, the market value of a financial institute conducting 70% investment banking and 30% commercial banking business is greater than one, of the same size, conducting 70% commercial banking and 30% investment banking. That is since a higher deposits/liabilities ratio implies easier access to low cost, subsidized funding (deposits generally being an inexpensive source of funding and often enjoying government-subsidized insurance), and signals a higher valuation from the market. We fix the activity effect by introducing the ratio of total deposits to total liabilities and the loan to total earning asset ratio.

Risk-taking incentives—A well-capitalized bank is expected to have fewer incentives to take the risk since the returns to its equity holders are more satisfactory.

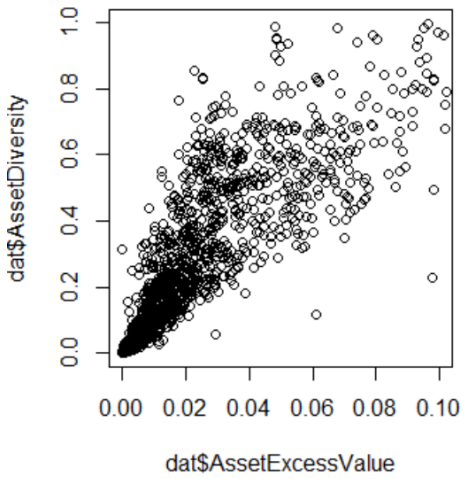
Base effect —The base effect is also controlled from the micro-level. The base effect refers to the impact of an increase in the previous level. We control for the past performance of the firm by incorporating growth indicators in our model (three-year compounded growth rate in total asset and three-year compounded growth rate in operating income, respectively).

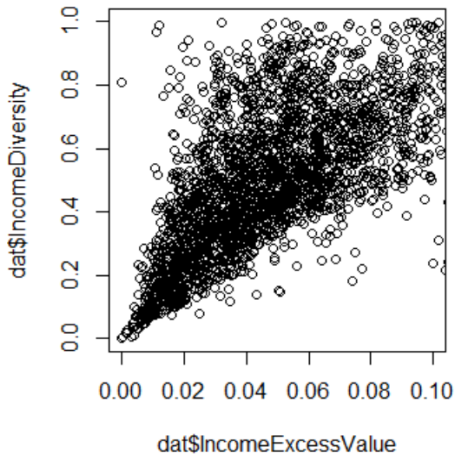
Country-level effect—In addition, macro data such as GDP per capita growth and inflation are collected. These data will be used as macro heterogeneity control variables in the following model.

3 Empirical results

3.1 Regression results

We intend to investigate the relationship between bank value and its diversification. A common methodology is to employ a regression model. As mentioned above, Tobin's Q and Excess Value are two aspects in the measurement of the market valuation of a financial conglomerate. We first regress both aspects on firm diversification features.





While Tobin's Q indicates the performance of the financial conglomerate, EV signals commercial banks' scope economics. As above initial figures show, there are strong correlation between excess values and diversity measures. Next, we regress diversity measures on excess values, respectively.

As demonstrated in Table 2, the first two columns report the results from regressing excess value on the income diversity and asset diversity respectively. We found that both asset diversity and income diversity have a positive influence on excess value, which unveils the first stage result that a conglomerate with diversified financial services will benefit from scope merit. Column 3 and 4, in another hand, examines the relationship between two measures of diversity and Tobin's q. In model (3) and model (4), the ratio of net interest income to total operating income and the ratio of loans to total earning assets are also taken into consideration to exclude the activity mixture influence. The results for Tobin's Q (3)-(4) are quite the opposite of what we conjecture. However, since the p-value of the coefficient test is greater than 0.1, such a negative association is without statistical significance.

The reasons are quite explicit from a statistical sense. First, to be noticed, the data are across countries and over time. Since we have not fixed the effect of macro-level variables, it is inappropriate to assume the independence between observations. Moreover, we have not controlled the bank-level traits, a robustness test should be carried out to solve these problems.

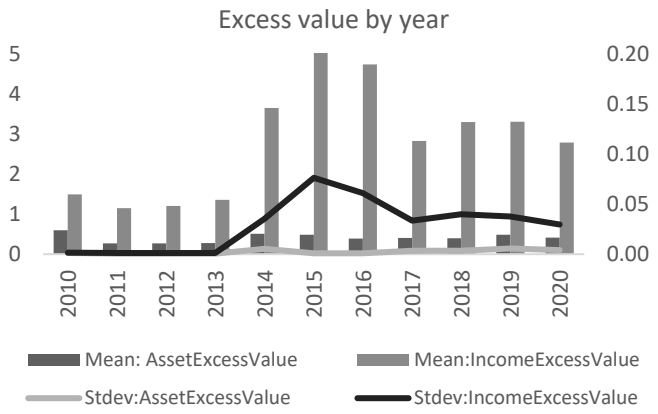
	(1)	(2)	(3)	(4)
	Excess Value		Tobin's Q	
	Income Diversity	Asset Diversity	Income Diversity	Asset Diversity
Income Diversity	0.407***		-0.068	
	(-0.082)		(-0.283)	
Asset Diversity		0.091***		-0.587
		(-0.007)		(-0.479)
			-0.544	

Net interest income to total operating income			(-0.419)	
Loans to total earning assets				0.204
				(-0.776)
Constant	-0.086*	0.003	0.719*	0.302
	(-0.046)	(-0.002)	(-0.429)	(-0.776)
Observations	2,832	2,832	2,832	2,832
R^2	0.009	0.058	0.001	0.003
Adjusted R^2	0.008	0.057	0.001	0.002
Note:				*p<0.1; **p<0.05; ***p<0.01

3.2 Bank-level and country-level controls

To verify the robustness of diversification influence in commercial bank excess value, we further include bank-level and country-level controls into our regression model. Details and reasons we use these variables have been listed in section 2, bank-level controls firm accounting variables, including quantity measures such as the logarithm of total assets, the logarithm of total operating income, as well as quality measures such as the ratio of total deposits to total liabilities income and the ratio of equity to assets. As to the country-level controls, the core variables are GDP per capita growth and inflation, which are most commonly used to describe the macroeconomic status of a county and a time.

From the initial figure, we observed a huge jump of excess value (income-based) after 2014. As an explanation of this result, literature studying the effects of information technology on financial conglomerates' valuation is noticed. As this stream of study is closely reliant on the drastic information technology development in recent years, literature has documented evolving evidence. Information technology has enabled the network effect of prior products and services and facilitates the alternative delivery channels to the traditional branch network (Greenbaum et al., 2016). Bott (2017) attributed the dispersion of results to the fintech development that might only have shown up in more recent data. The advent of fintech enables potential scale and scope economics. New financial technologies and data may offer the superior capability for screening borrowers (Berg et al., 2019). The predictive power of data collected by fintech, which is based on consumers' digital footprints, equals or exceeds that of traditional credit scores when it comes to credit assessment (Pagnotta and Philippon, 2018).



Panel A and Panel B focus on income diversity and asset diversity respectively. In both panels, the first four columns investigate the relationship between excess value and diversity, while the last four give an insight into the association between Tobin's q and diversity. The addition of control variables into our model hardly affects our findings. The diversity of a commercial bank, namely asset diversity and income diversity proceed to have a positive influence on excess value and a negative influence on Tobin's Q. And besides the asset diversity, all of the effects are significant (at a 5% significance level). In other words, even if controlling bank-level and country-level characteristics, the positive association between bank diversity and excess value is conclusive. Our study proves that diversification may not bring about a discount, instead, will enhance the scope economic of the financial conglomerate.

Table3 Income diversity and excess value: controlling for bank-level and country-level characteristics

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Excess Value				Tobin's Q			
Panel A: Income diversity								
log(Total Assets)	-0.013***		-0.015***		0.007***		0.008***	
	(-0.003)		(-0.003)		(-0.002)		(-0.003)	
log(Total Operating Income)		-0.011***		-0.013***		0.006**		0.007***
		(-0.003)		(-0.003)		(-0.003)		(-0.003)
Net interest income to total operating income					0.057	0.06	0.061	0.063
					(-0.057)	(-0.058)	(-0.058)	(-0.058)
Income Diversity	0.214***	0.217***	0.215***	0.218***	-0.196***	-0.197***	-0.190***	-0.190***
	(-0.026)	(-0.026)	(-0.026)	(-0.026)	(-0.037)	(-0.037)	(-0.037)	(-0.037)
Deposits/Liabilities	-0.266***	-0.252***	-0.329***	-0.311***	-0.115***	-0.122***	-0.063*	-0.074**
	(-0.037)	(-0.037)	(-0.038)	(-0.038)	(-0.034)	(-0.034)	(-0.035)	(-0.035)
Equity/Assets	-0.301	-0.234	-0.282	0.209	-0.132	-0.167	-0.116	-0.157
	(-0.198)	(-0.197)	(-0.198)	(-0.197)	(-0.18)	(-0.179)	(-0.179)	(-0.178)
Asset Growth	0.000	0.000	0.001*	0.001	-0.000	-0.000	-0.000	-0.000
	(-0.000)	(-0.000)	(-0.000)	(-0.000)	(-0.000)	(-0.000)	(-0.000)	(-0.000)
Income Growth	-0.000	-0.000	-0.000	-0.000	0.000	0.000	0.000	0.000
	(-0.000)	(-0.000)	(-0.000)	(-0.000)	(-0.000)	(-0.000)	(-0.000)	(-0.000)
Market share of deposits	0.270***	0.270***	0.267***	0.267***	0.590***	0.590***	0.593***	0.593***
	(-0.002)	(-0.002)	(-0.002)	(-0.002)	(-0.001)	(-0.001)	(-0.001)	(-0.001)

GDP per capita growth			0.013***	0.012***			-0.011***	-0.011***
			(-0.002)	(-0.002)			(-0.002)	(-0.002)
Inflation			-0.039***	-0.039***			0.043***	0.043***
			(-0.005)	(-0.005)			(-0.004)	(-0.004)
Constant	0.476***	0.376***	0.634***	0.516***	0.069	0.118	-0.088	-0.022
	(-0.089)	(-0.082)	(-0.091)	(-0.084)	(-0.101)	(-0.097)	(-0.102)	(-0.098)
Observations	2832	2832	2810	2810	2832	2832	2810	2810
R^2	0.912	0.912	0.915	0.914	0.983	0.983	0.984	0.984
Adjusted R^2	0.912	0.912	0.914	0.914	0.983	0.983	0.984	0.984
Note:								*p<0.1; **p<0.05; ***p<0.01

Table4 Asset diversity and excess value: controlling for bank-level and country-level characteristics

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Excess Value				Tobin's Q			
Panel B: Asset diversity								
log(Total Assets)	0.001		0.001		-0.007***		-0.008***	
	(-0.001)		(-0.001)		(-0.001)		(-0.001)	
log(Total Operating Income)		0.0004		0.001		-0.006***		-0.006***
		(-0.001)		(-0.001)		(-0.001)		(-0.001)
Loans to total earning assets					0.042	0.044	0.042	0.044
					(-0.031)	(-0.031)	(-0.031)	(-0.031)
Asset Diversity	0.101***	0.102***	0.106***	0.106***	-0.102***	-0.103***	-0.113***	-0.113***
	(-0.006)	(-0.006)	(-0.006)	(-0.006)	(-0.019)	(-0.019)	(-0.019)	(-0.019)

Deposits/Liabilities	-0.007	-0.008	0.002	0.0003	-0.366***	-0.359***	-0.387***	-0.378***
	(-0.008)	(-0.008)	(-0.008)	(-0.008)	(-0.015)	(-0.015)	(-0.015)	(-0.015)
Equity/Assets	0.069	0.064	0.077*	0.071*	-0.517***	-0.485***	-0.497***	-0.463***
	(-0.043)	(-0.043)	(-0.043)	(-0.043)	(-0.081)	(-0.08)	(-0.081)	(-0.08)
Asset Growth	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	(-0.000)	(-0.000)	(-0.000)	(-0.000)	(-0.000)	(-0.000)	(-0.000)	(-0.000)
Income Growth	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(-0.000)	(-0.000)	(-0.000)	(-0.000)
Market share of deposits	0.014***	0.014***	0.015***	0.015***	0.845***	0.846***	0.845***	0.845***
	(-0.000)	(-0.000)	(-0.000)	(-0.000)	(-0.001)	(-0.001)	(-0.001)	(-0.001)
GDP per capita growth			-0.002***	-0.002***			0.004***	0.004***
			(-0.001)	(-0.001)			(-0.001)	(-0.001)
Inflation			0.008***	0.008***			-0.004*	-0.003*
			(-0.001)	(-0.001)			(-0.002)	(-0.002)
Constant	-0.023	-0.013	-0.049**	-0.037**	0.578***	0.524***	0.615***	0.554***
	(-0.019)	(-0.018)	(-0.019)	(-0.018)	(-0.048)	(-0.046)	(-0.048)	(-0.046)
Observations	2,832	2,832	2,810	2,810	2,832	2,832	2,810	2,810
R^2	0.420	0.420	0.431	0.431	0.998	0.998	0.998	0.998
Adjusted R^2	0.419	0.419	0.430	0.429	0.998	0.998	0.998	0.998

Note: *p<0.1; **p<0.05; ***p<0.01

4 Concluding remarks

The major conclusion of this paper is that financial conglomerates that engage in multiple activities enjoy a valuation premium than those who are 'chopped' into financial intermediaries that specialized in individual activities. To abstract the independent influence of diversification level on excess value, controls that reflect or capture certain characteristics were employed. These checks suggest that diversification improved the market value of financial conglomerates.

This paper makes significant contributions to the current literature in many aspects. Firstly, this study follows a relative measure of scope economics, which is seldomly employed in the discussion of performance in the corporate finance field. Nonetheless, we highlighted its advancement to absolute valuation metrics such as Tobin's Q and other accounting ratios. Secondly, this paper filled the void of prior results by examining the latest data. We controlled for multiple arrays of explanations and provide evidence of a diversification premium emerging within the banking industry. Relatedly, we proposed one explanation of the result in a contemporary sense, the information technology-related economy is a possible source of scale and scope. We also illustrated that, in the recent 10 years, the economics of scope in financial intermediation continues to grow, and have been sufficiently large to compensate diversification discount caused by agency issues. This result is compelling to regulators in the financial realm.

Reference

Keeton,W.R. The Treasury Plan for Banking Reform. Federal Reserve Bank of Kansas Cuy Economic Review, 1991(5):5-24.

Santomero, A. M., D. L. Eckles. The determinants of success in the new financial services environment. FRBNY Economic Policy Review, 2000(10):11-23.

Berger, A. N., R. DeYoung, H. Genay, and G. F. Udell. The globalization of financial institutions: evidence from cross-border banking performance. Brookings-Wharton Papers on Financial Services, 2000.

Pilloff, S. J. Performance changes and shareholder wealth creation associated with mergers of publicly traded banking institutions. Journal of Money, Credit and Banking, 1996(28):294-310.

Penas, M. F., H. Unal. Gains in bank mergers: evidence from the bond markets. Journal of Financial Economics, 2004(74):149-179.

Amihud, Yakov and Baruch Lev. Risk Reduction as a Managerial Motive for Conglomerate Mergers. Bell Journal of Economics, 1981(12):605-617.

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

Shilerfer, Andrei and Robert W. Vishny. Managerial Entrenchment: the Case of Manager Specific Investments. Journal of Financial Economics, 1989(25):123-139.

Krishnaswami, Sudha, and Venkat Subramaniam. Information Asymmetry,Valuation, and the Corporate Spin-off Decision. Journal o f Financial Economics, 1999(53):73-112.

Clark, Jonathan E., C. Edward Fee, and Shawn Thomas. Corporate Diversification and Asymmetric Information: Evidence From Stock Market Trading Characteristics. Journal of Corporate Finance, 2004(10):105-129.

Rajan, Raghuram, Henri Servaes, and Luigi Zingales. The Diversification Discount and Inefficient Investment. Journal of Finance, 2000(55):35-80.

Scharfstein, David S. and Jeremy C. Stein. The Dark Side of Internal Capital Markets: Divisional Rent-Seeking and Inefficient Investment. Journal of Finance, 2000(55):2537-2564.

The Future of Banking: From Scale & Scope Economies to Fintech - European Economy

John, K., Ofek, E. Asset sales and increase in focus. J. Financial Econ. 1995(37): 105–126.

Marquez, R., Hauswald, R.. Information technology and financial services com_x0002_petition. Review of Financial Studies. 2003(16): 921–948.

Curi,C., Murgia,M.. Divestitures and the financial conglomerate excess value. Journal of Financial Stability. 2018(36).

Erber, G., and Madlener, R. Impact of ICT and human skills on the European financial intermediation sector, in Productivity in the financial services sector, Eds. M. Balling, E. Gnan, F. Lierman and J.-P. Schoder, Chapter 10, (2009)183-200.

Koetter, M., and Noth, F. IT use, productivity, and market power in banking. Journal of Financial Stability, (2013): 695-704.

EY (2017). Unleashing the potential of FinTech in banking, report, September.
The Economist, Special Report, International Banking, May 6th 2017, page 12.
Schmid, M.M., Walter, I. Do financial conglomerates create or destroy economic value? J. Financial Intermed. 18 (2009), 193–216.
Beccalli, E. Does IT investment improve bank performance? Evidence from Europe. Journal of Banking and Finance, (2007) 31 (7), 2205-2230.
Laeven, L., Levine, R, 2007. Is there a diversification discount in financial conglomerates? J. Financial Econ. (2007) 85 (2): 331–367.