Diversification Discount or Premium?

New International Evidence from Financial Conglomerates

Sheng-Hung Chen

Assistant Professor

Department of Finance, Nan Hua University, Chiayi, Taiwan

Mail Address: 32, Chung Kung Li, Dalin, Chiayi, 62248, Taiwan

Phone: +886 5 2721001 ext 56541; Mobile: +886 9 35575138

Fax: +886 5 2427172

E-mail: shenghong@mail.nhu.edu.tw

Yong-Yin Lin

Graduate Student

Graduate Institute of Financial Management, Nan Hua University, Chiayi, Taiwan

Mail Address: 32, Chung Kung Li, Dalin, Chiayi, 62248, Taiwan

Phone: +886 5 2721001 ext 2051; Mobile: +886 9 22917938

Fax: +886 5 2427172

E-mail: injaylin@yahoo.com.tw

January 2009

Diversification Discount or Premium?

New International Evidence from Financial Conglomerates

Abstract

Previous empirical evidences lack for the consensus on whether banking business ought to be focused or diversified. Using comprehensive panel data on 864 banks across 54 countries for the period 1992 to 2006, this paper empirically investigates whether diversification is beneficial or harmful to creating the value into financial conglomerates in context of international evidences. Unlike most of previous studies, our empirical results indicate that diversification does not only destroy the market value of financial conglomerates but also create the economic value. This implicates two explanations: firstly, different sample banks might gain different results, in particularly using a long-term database to examine the effect of diversification, however, we find that there is a diversification premium on financial conglomerates; secondly, the diversification discount would change along with time horizons. Moreover, financial conglomerates would benefit from international diversification to add their market value as well. This implies that banks achieve economies of scale via internationalization.

1. Introduction

Over the last two decades, the pro and con of diversification in finance has been thoroughly discussed among academic research and applied practice. However, previous studies on this issue lack for consensus in empirical evidences concerning whether banking business ought to be focused or diversified. These issues on specialization versus diversification are significant in the context of banks since they are influenced by regulatory policies creating incentives either to diversify or to focus their portfolios, such as the implementation of capital requirements affiliated with the risk of the banks' assets or asset investment restrictions. Therefore, policymakers show strong interests in probing whether banks benefit from diversification or not. This paper is aimed to empirically investigate whether diversification is beneficial or harmful to creating the value into financial conglomerates, banks that undertake variety of activities, based upon international evidences.

The benefit from diversification for banks would derive from economies of scope (Klein and Saidenberg, 1997), an improved resource allocation through internal capital markets as compared to external capital markets (Williamson, 1975; Stein, 1997), a potentially lower tax burden due to higher financial leverage (Lewellen, 1971), and the ability to use firm-specific resources to extend a competitive advantage from one market to another (Wernerfelt and Montgomery, 1988; Bodnar et al., 1997). Conversely, the disadvantage of diversification for banks might stem from agency problems afflicting diversifying investments (Jensen, 1986; Meyer et al., 1992), inefficient internal resource allocation due to malfunctioning of internal capital markets (Lamont, 1997; Rajan et al., 2000), and informational asymmetries between head office and divisional managers (Harris et al., 1992). Furthermore, it might also affect the volume of activities

(Scharfstein and Stein, 2000), it might result in bargaining problems (Rajan et al., 2000) or bureaucratic rigidity (Shin and Stulz, 1998). In terms of mixed results from diversification effects, more comprehensive investigation as international comparison is requested to verify whether diversification is really beneficial or harmful to financial conglomerates.

Furthermore, an ample number of empirical studies mainly concentrate on single country or selective region, but international comparison is sparse and yet to address. Although Laeven and Levine (2007) is the only one study in international comparison on 836 banks from 43 different countries, however, this study do not consider the geographic diversification as well as the interaction between geographic and functional diversity.

This paper is an extended research following Laeven and Levine (2007). But we test the interaction between geographic and functional diversity by using panel data from 864 banks over the period 1992 to 2006 and recheck the diversification discount in financial conglomerates. Our results show that financial conglomerates would benefit from geographic diversification but the interaction between geographic and functional diversity is not significant. Furthermore, the results indicate that there is no diversification discount in financial conglomerates. In contrast, there is a diversification premium.

Whereas there is a lack of consensus about whether diversification is beneficial or harmful to financial conglomerates based on empirical evidences, this paper therefore is to fill the gap in literature by: (i) evaluating the diversification effect on financial conglomerates based upon international comparison; (ii) using more comprehensive measures to assess degree of diversification and testing the interaction between geographic and functional diversity, respectively.

The remainder of the paper is organized as follows. Section 2 provides a briefly

review of the relevance empirical literature. Section 3 describes the variables and empirical model that we use. Section 4 presents our data. In section 5 we present and discuss our empirical results. Section 6 concludes.

2. Literature Review

2.1 International Comparison of diversification in financial conglomerates

Most previous studies mainly focus on geographical diversification and use US data. For instance, Schmid and Walter (2008) used data from U.S. financial firms over the period 1985-2004 and reported a substantial and persistent conglomerate discount among financial intermediaries. They also suggested that the discount applied to all financial services activity-areas with exception of investment banking. Additionally, Deng and Elyasiani (2005) used data on 388 U.S. bank holding companies (BHCs) over the period 1994-2003 and examined the impact of geographic diversification on return, risk and firm value of large publicly traded BHCs. Similarly, Strioh (2004b) used U.S. banking data during the period 1984-2001 and found that according to aggregated industry-wide level the correlation between net interest income growth and non-interest income growth increased in the 1990s. Unfortunately, the empirical literature about international comparison of diversification in financial conglomerates is still at the earlier stage.

Besides, some researchers contribute to EU countries. For example, Chiorazzo et al. (2008) inspected the link between non-interest revenues and profitability among Italian banks. They found that there were limits to diversification gains as bank get larger. Especially, small banks could make gains from increasing non-interest income, but only

when they had very little non-interest income share to start with. Likewise, Acharya et al. (2002 and 2004) found that diversification of bank assets did not typically improve performance or reduce risk in Italian banks. Smith et al. (2003) analyze the variability of interest and non-interest income and their correlation, for the banking systems of the 15 EU countries during the period 1994-1998, indicating that the increased reliance on activities that generate non-interest income has stabilized profits. Therefore, more empirical evidences based upon international comparison are requested to understand more about the substantial effects of diversification on market value for financial conglomerates.

2.2 Diversification Premiums in financial conglomerates

There is a vast and well-developed literature about benefit from diversification indicating the value creation from conglomeration. DeYoung and Rice (2004a) investigated commercial banks and found that commercial banks which marginal increases in non-interest income were associated with higher profits. Moreover, Garcia-Herrero and Vazquez (2007) investigated 38 international banks from 1995－2004 and documented that international banks with a larger share of assets allocated to foreign subsidiaries, especially to those located in emerging market countries, were able to reach higher risk-adjusted returns. Likewise, Holzhäuser (2005) confirmed that BHCs with a strong change in diversification showed significant improvements in operating performance over a three year period after the event. On the contrary, Graham et al. (2002) confirmed that there is no evidence that diversification intensifies agency problems and destroys value. In addition, Elsas et al. (2005) concluded that diversification enhanced bank profitability via higher margins from non-interest

businesses and lower cost income ratios. These findings imply some benefits from diversification strategy for banks.

2.3 Diversification Discounts in financial conglomerates

In contrast, there is also a large body of literature indicating that diversification would destroy the value of financial conglomerates. Stiroh and Rumble (2006) found that diversification in U.S. financial holding companies from lending into non-interest activities damages risk-adjusted performance over the period 1997-2002. Maksimovic and Phillips (2002) examined U.S. manufacturing firms and found that less productive firms tended to diversify, but diversification did not cause lower productivity. Recently, Klein and Saidenberg (2008) discovered that BHCs with many subsidiaries are valued at a discount compare to similar BHCs with fewer subsidiaries. Stiroh (2002) investigated whether the shift toward noninterest income was good for U.S. banking industry or not. The findings suggested that a greater reliance on noninterest income, mainly trading revenue, was connected with higher risk and lower risk-adjusted profits. In summary, these studies document a mixed result about the impact of diversification to financial conglomerates. This paper uses comprehensive approaches to investigate empirically whether diversification is beneficial or harmful to creating the value into financial conglomerates.

3. Methodology

3.1 Measuring the Degree of Diversification in Financial conglomerates

Analyzing the impact of diversification on financial conglomerates is important to adopt an appropriate measure for diversification. In this paper, three kinds of Herfindahl-Hirschman Index are used to identify the degree of diversification in financial conglomerates with respect to revenue, asset and geography.

Revenue Diversification

First, following Laeven and Levine (2007), measure of diversification across different sources of income and is calculated as

$$(1) \quad \textit{Income diversity} = 1 - \left| \frac{\textit{Net interest income - Other operating income}}{\textit{Total operating income}} \right|$$

Income diversity takes values between zero and one with higher values indicating greater diversification. In addition, Herfindahl-Hirschman Index (HHI) introduced by Chiorazzo et al. (2008) is used to measure the degree of diversification of the revenue structure in financial conglomerates. This index includes net interest income (NII) and net non-interest income (NNI). Net operating income equals to net interest income plus net non-interest income. Next, taking their respective shares in net operating income:

$(2) \quad \textit{NIIR=NII/ (NII+NNI)}$

$(3) \quad \textit{NNIR=NNI/ (NII+NNI)}$

$(4) \quad \textit{DIV=1-(NIIR}^2\textit{+NNIR}^2\textit{)}$

The value of this index varies from 0.0 to 0.5. It is equal to zero when

diversification reaches its minimum and equal to 0.5 when there is complete diversification.

Asset Diversification

As suggested by Laeven and Levine (2007), asset diversity is used to measure the degree of diversification and is calculated as

$$(5) \quad \text{Asset diversity} = 1 - \left| \frac{\textit{Net loans} - \textit{Other earning assets}}{\textit{Total earning assets}} \right|$$

Asset diversity takes values between zero and one with higher values indicating greater diversification. Furthermore, Herfindahl-Hirschman Index is also applied to compute the degree of diversification of bank assets, including net loans (NLS) and other earning assets (OEA). Total earning assets equal to net loans plus other earning assets. Next, taking their respective shares in total earning assets:

$(6) \quad NLSR = NLS/(NLS + OEA)$

$(7) \quad OEAR = OEA/(NLS + OEA)$

$(8) \quad DIV = 1 - (NLS^2 + OEA^2)$

The value of this index varies from 0.0 to 0.5. It is equal to zero when diversification reaches its minimum and equal to 0.5 when there is complete diversification.

International Diversification

The Herfindahl index introduced by Choi and Kotrozo (2006) is then applied to measure international diversification in financial conglomerates. This index consists of the revenue of a particular bank in its home country as well as the bank's revenues in other countries. Only those banks with subsidiary ownership greater than 50% were used. It is computed as

$$(9) \quad H = \sum_{i=1}^{n} \left(\frac{X_i}{X} \right)^2$$

where n is the number of foreign countries, X_i is the bank's revenues in foreign country i and X is the bank's total revenue. If the bank does not have any foreign subsidiaries, all of the revenues are in the home country, and the value of the index is equal to one. The value of the index declines as the number of countries in which the bank operates increases.

3.2 Measuring the Market Value in Financial Conglomerates

Tobin's q

Following Berger and Ofek (1995), Tobin's *q* is used as a measure of bank valuation. Tobin's *q* is defined as

$$(10) \quad q = \frac{Market\ Value\ of\ Assets}{Book\ Value\ of\ Assets}$$

where market value of assets is calculated as the sum of the market value of common equity plus the book value of preferred shares plus the book value of total debt.

Adjusted Tobin's q

As defined by Laeven and Levine (2007), Adjusted Tobin's q is applied to estimate the q that would prevail if bank j were divided into activity-specific financial institutions and then priced according to the q's associated with each of those specific activities. It is calculated as

$$(11) \qquad Activity\text{-}adjusted\ q_j = \sum_{i=1}^{n} a_{ji} q^i$$

where q^i is the Tobin's q of financial institutions that specialize in activity i. α_{ij} is the share of the ith activity in the total activity of bank j. And then, we use Tobin's q and Adjusted Tobin's q to compute excess value as alternative market's valuation of the bank.

$$(12) \qquad Excess\ value = Tobin's\ q\text{-}adjusted\ q$$

In this paper, we calculate two measures of excess value; one is settled by the asset composition of the bank, the other is determined by the income composition of the bank.

Table 1 shows the summary statistics of Tobin's q and diversity measures. The

average Tobin's *q* is 1.059, with a median of 1.002. The average ratio of net interest income to total operating is 0.695 with a median of 0.737 and the average ratio of net loans to total operating income is 0.648. In particular, the two kinds of diversity measures present different range. For instance, the average asset diversity is 0.595 but the average asset HHI is 0.390. We note that here because this different range may conduct different results. The correlations between the variables are shown in Table 2. Although the ranges of diversity measures are different, the correlations between Tobin's q and diversity measures are positive. Furthermore, the correlation between Tobin's q and international diversity measure is positive. This implies that financial conglomerates may beneficial through international diversification.

We also investigate the excess value measure depend on the level of diversification. The results are shown in Table 3 and report the mean and median value of our diversity measures. Panel A and Panel B report the excess value based on income while Panel C and Panel D report the excess value based on asset. In general, during our sample period, the excess value of financial conglomerates is negative. However, the situation is not equal in international diversity measure.

3.3 Empirical Specification

The empirical model in this study is specified as follows:

$$Q_{i,j,t} = \beta_0 + \beta_1 DIV_{i,j,t} + \beta_2 Log(Assets)_{i,j,t} + \beta_3 Log(OI)_{i,j,t} + \beta_4 DL_{i,j,t} + \beta_5 EA_{i,j,t}$$
$$+ \beta_6 AssetsG_{i,j,t} + \beta_7 IncomeG_{i,j,t} + \beta_8 CI + \beta_9 ROA + \beta_{10} ROE$$
$$+ \beta_{11} GDPgrowth_{j,t} + \beta_{12} Inflation_{j,t} + \varepsilon_{i,j,t}$$

$$(13)$$

The dependent variable is the measure of market value of financial conglomerates, Tobin's q and excess value, which varies over banks i, countries j and time t. DIV stands for measures of diversification with respect to revenue, asset and geography in financial conglomerates.

We also include numerous variables in the right hand side of the empirical model. First, $Log(Assets)$ is the natural logarithm of the bank's total assets. Berger and Ofek (1995) suggested that diversification will erase any economies of scale and scope. Thus, we use this variable to capture the effect of the bank's size. Moreover, we use $Log(OI)$, the natural logarithm of the bank's total operating income, as an alternative proxy for the bank's size. Second, DL is the ratio between deposits and liabilities. A higher DL may reflect a higher market valuation. Third, EA is the ratio of book value of equity to total assets and represent the degree of financial leverage. We use this variable to proxy for the bank managers' risk aversion. Fourth, $AssetsG$ and $IncomeG$ is the growth rate of the bank's assets and income, respectively. We use these variables to proxy for growth opportunities of the banks. Fifth, we include the relative profitability measured by using the ratio of cost to income (CI), return on assets (ROA) and return on equity (ROE). Finally, we use the current annual growth rate in real Gross Domestic Product per person ($GDPgrowth$) to control for country-level difference in economic conditions. We also control for the current annual inflation rate ($Inflation$) because it may affect bank performance in different countries.

4. Data

The primary data source for this analysis is Bankscope database which covers broad-defined financial information on banks worldwide. Banks in this sample were

selected both because of the availability of balance sheet and income statement data in Bankscope as well as the availability of stock price data from DataStream. Moreover, National macroeconomic variables were come from World Development Indicators (WDI). We exclude banks that are engaged in neither investment banking nor deposit-taking and loan-making. Furthermore, we eliminate banks classified as Islamic banks because the accounting information does not match with the rest of the sample. In addition, we also exclude banks with missing data on basic accounting variables, including assets, loans, deposits, equity, interest income and non-interest income. The final panel dataset contains 864 banks from 54 countries and ranges from 1992 to 2006.

5. Empirical results

5.1 Tobin's q and excess value of diversified banks: regression results

The main purpose in this paper is to test the relationship between diversification per se and bank valuation. Thus, the most important thing is to control for the level to which banks undertake in different activities when compare their valuations. Besides using Tobin's q to measure the bank's valuation, we also use excess value introduced by Laeven and Levine (2007) to control for the market valuations of different bank activities. The vantage of using excess value is that it can remove adjusted-activities q from Tobin's q and therefore provide a more accurate way when testing the impact of diversification per se on the market's value of the bank.

Table 4 presents the results between Tobin's q, excess value and diversity measures which compared with Laeven and Levine (2007). We use more comprehensive measure to assess the level of diversification by including asset-based HHI and income-based

HHI. In contrast with Laeven and Levine (2007) who find that diversification will lower the bank's valuation, our results in panel A show that diversification will enhance the bank's valuation. However, it is not significant in panel B. More specifically, we also test the relation between international diversity and the market's valuation of the bank in panel C. We find the negative relation between international diversity and the market's valuation of the bank only in income-based excess value.

Unlike most of the literature conclude that diversification will destroy the market's valuation of the bank, we find little evidence that diversification will enhance the market's valuation of the bank.

5.2 Tobin's q and excess value of diversified banks: robust results

In the previous section, we display that diversification will enhance the market's valuation of the bank. The question remain is why reason makes the different result compared with prior research? Thus, we control for bank-level and country-level characteristics to test whether there is a diversification premium in financial conglomerates.

We include numerous control variables in our regression specification following Laeven and Levine (2007). First, the natural logarithm of total assets and total operating income are included to control for different bank size. Secondly, the past growth rate of assets and income are used to control for growth opportunities. Thirdly, equity to assets ratio are included to control for the book value capitalization and deposits to liabilities ratio are used to control for the bank's liabilities structure. Finally, the current annual growth ratio in real Gross Domestic Product (GDP) per person and current annual inflation rate are included to control for different country-level. Furthermore, we also

use another accounting ratio including return on assets, return on equity and cost to income ratio to test whether the result will change.

Panel A and Panel B of Table 5 show our results between Tobin's q and diversity measures which compared with Leaven and Levine (2007). After controlling for bank-level and country-level characteristics, the results in Panel A and Panel B of Table 5 show the positive relation between Tobin's q and diversity measures. This implies that there is a diversification premium among financial conglomerates. Furthermore, Panel C of Table 5 shows a positive relation between international diversity and Tobin's q. This finding is consist with Deng and Elyasiani (2005) who find that banks would benefit from geographic diversification by expanding operations across areas with different economic environments. Moreover, we also investigate whether there is a link between geographic diversity and another diversity measures. However, the results are insignificant. Table 6 uses excess value measure to proxy the market's valuation of the banks. The results are similar with Table 5. We still find a positive relation between diversification and valuation.

5.3. Scale and scope of specialized and diversified banks

Previous theoretical consideration indicates that the scale and scope of specialized banks will tend to be larger than diversified banks. However, Leaven and Levine (2007) conduct different results that financial conglomerates tend to be larger than specialized commercial banks even with the specialized activity in lending. Thus, we represent the differences between diversified and specialized financial intermediaries in Table 7. Panel A is our income diversity measures and Panel B is our asset diversity measures. In general, the results support the view that financial conglomerates are larger than

specialized commercial banks unless specialized commercial banks based on asset diversity measure. Moreover, we join the geographic diversity measures in Panel C and find that when specialized commercial banks or investment banks expand their operations into new areas will gain economies of scale. Nevertheless, the income diversity and asset diversity measures become insignificant.

5.4 Robust testing: Subsamples

In this section, we want to test whether the different dataset will bias the results. First, we cut our sample banks into different specialization, e.g., diversified banks, commercial banks, Investment banks, bank holding companies (BHCs), savings banks and cooperative banks. The results are listed in Column 1 to Column 6 in Table 8. Second, we restrict our sample banks to different world regions including Africa, Europe, Far East and Central Asia, Middle East, North America, Oceania and South and Central America. The results are listed in Column 7 to Column 13 in Table 8. The classification is defined by the Bankscope database. Again, we use income diversity measures in Panel A, asset diversity measures in Panel B and international diversity measures in Panel C. From Panel A of Table 8, we can find that different specialized banks will exhibit different results. For example, the relation between excess value and BHCs are positive where it is negative in cooperative banks. Furthermore, different world region also conduct different outcome, e.g. the signal of income diversity is positive in Europe while it is negative in Middle East. The findings are also similar in Panel B.

6. Conclusions

This paper reexamines the phenomenon exist in financial institutions that diversification destroy their market valuations by using more comprehensive measures to assess degree of diversification. Unlike most of previous studies, our results show that diversification does not destroy the market valuations of financial conglomerates. Instead, there is a diversification premium. We contribute this outcome to two probably explanations. First, different sample banks may conduct different results. For example, Villalonga (2004a) used a new establishment-level database to examine the phenomenon of diversification discount and find that there is a diversification premium. Second, as suggested by Ahn (2008), the diversification discount would change along with time. Moreover, we also examine the relation between international diversification and market's valuation of financial conglomerates. In general, financial conglomerates would benefit from international diversification. The results support the view that banks can achieve economies of scale by diversifying geographically.

References

1. Acharya, V.V., Hasan, I., Saunders, A., 2002. The effects of focus and diversification on bank risk and return: Evidence from individual bank loan portfolios. CEPR Discussion Paper 3252.

2. Acharya, V.V., Saunders, A., Hasan, I., 2004. Should banks be diversified？ Evidence from individual bank loan portfolios. *Journal of Business*, Forthcoming.

3. Ahn, S., 2008. The dynamics of diversification discount. Working paper, National University of Singapore.

4. Arellano, M., Bond, S. 1991. Some tests of specification for panel data: Monte Carlo evidence and an application to employment equations. *Review of Economic Studies* 58, 277–297.

5. Berger, P., Ofek, E., 1995. Diversification's effect on firm value. *Journal of Financial Economics* 37, 39–65.

6. Blundell, R., Bond, S. 1998. Initial conditions and moment restrictions in dynamic panel data models. *Journal of Econometric*s 87, 115–143.

7. Bodnar, G.M., Tang, C., Weintrop, J., 1997. Both sides of corporate diversification: The value impacts of geographic and industrial diversification. Working Paper, Johns Hopkins University.

8. Boyd, J.H., Graham, S.L., 1986. Risk, regulation, and bank holding company expansion into non-banking. *Federal Reserve Bank of Minneapolis Quarterly Review* 2 (17).

9. Campa, J.M., Kedia, S., 2002. Explaining the diversification discount. *Journal of Finance* 57 (4), 1731－1762.

10. Chandler, A.D., 1977. The visible hand: The managerial revolution in American

Business. Belknap Press, Cam-bridge, MA.

11. Chiorazzo, V., Milani, C., Salvini, F., 2008. Income diversification and bank performance: Evidence from Italian banks. *Journal of Financial Services Research* 33, 181-203.

12. Choi, S., Kotrozo, J., 2006. Diversification, bank risk and performance: A cross-country comparison. Working paper.

13. Demsetz, R.S., Strahan, P.E., 1995. Historical patterns and recent changes in the relationship between bank holding company size and risk. *Economic Policy Review* 1 (2), 13–26.

14. Deng, E., Elyasiani, E., 2005. Geographic diversification and BHC return and risk performance. Working Paper, Temple University.

15. DeYoung, R., Rice, T., 2004. Non-interest income and financial performance at U.S. commercial banks. *The Financial Review* 39 (1), 101–127.

16. DeYoung, R., Roland K.P., 2001. Product mix and earnings volatility at commercial banks: evidence from a degree of leverage model. *Journal of Financial Intermediation* 10, 54－84.

17. Elsas, R., Hackethal, A., Holzhäuser, M., 2006. The anatomy of bank diversification. Working paper.

18. Fiordelisi, F., 2007. Shareholder value efficiency in European banking. *Journal of Banking and Finance* 31, 2151–2171.

19. García-Herrero, A., Vazquez, F., 2007. International diversification gains and home bias in banking. IMF Working Paper.

20. Graham, J.R., Lemmon, M.L., Wolf, J.G, 2002. Does corporate diversification destroy firm value? *Journal of Finance* 57 (2), 695-720.

21. Griffith, J.M., Fogelberg, L., Weeks, H.S., 2002. CEO ownership, corporate control, and bank performance. *Journal of Economics and Finance* (26), 170－

183.

22. Harris, M., Kriebel, C., Raviv, A., 1992. Asymmetric information, incentives, and intrafirm resource allocation. *Management Science* 28, 604-620.

23. Hayden, E., Porath, D., Westernhagen, N.V., 2006. Does diversification improve the performance of German banks？Evidence from individual bank loan portfolios. Working Paper.

24. Holzhäuser, M., 2005. Long-term performance effects of bank diversification. Working Paper.

25. Jensen, M.C., 1986. Agency costs of free cash flow, corporate finance, and takeovers. *American Economic Review* 76, 323-329.

26. Klein, P.G., Saidenberg, M.R., 1998 Diversification, organization, and efficiency: Evidence from bank holding companies. Working Paper.

27. Klein, P.G., Saidenberg, M.R., 2008. Organizational structure and the diversification discount: Evidence from commercial banking. *Journal of Industrial Economics*, Forthcoming.

28. Laeven, L., Levine, R., 2007. Is there a diversification discount in financial conglomerates? *Journal of financial economics* 85, 331-367.

29. Lamont, O., 1997. Cashflow and investment: Evidence from internal capital markets. *The Journal of Finance* 52, 83-109.

30. Lewellen, W.G., 1971. A pure financial rationale for the conglomerate merger. *The Journal of Finance* 26, 521–537.

31. Maksimovic, V., Phillips, G.M., 1998. Asset efficiency and reallocation decisions of bankrupt firms. *Journal of Finance* 53 (5).

32. Meyer, M., Milgrom, P., Roberts, J., 1992. Organizational prospects, influence costs, and ownership changes. *Journal of Economics and Management Strategy* 1, 9–35.

33. Rajan, R., Servaes, H., Zingales, L., 2000. The cost of diversity: The diversification discount and inefficient investment. *The Journal of Finance* 55, 35-80.

34. Saunders, A., Walter, I., 1994. Universal banking in the United States: What could we gain? What could we lose? Oxford University Press, New York.

35. Schmid, M.M., Walter, I., 2008. Do financial conglomerates create or destroy economic value？ *Journal of Financial Intermediation*, forthcoming.

36. Smith, R., Staikouras, C., Wood, G., 2003. Non-interest income and total income stability. Bank of England, Working Paper 198.

37. Stein, J.C., 1997. Internal capital markets and the competition for corporate resources. *The Journal of Finance* 52, 111-134.

38. Stiroh K.J., 2002. Diversification in banking: Is non-interest income the answer? Working Paper.

39. Stiroh, K.J., Rumble, A., 2006. The dark side of diversification: The case of US financial holding companies. *Journal of Banking and Finance* 30 , 2131－2161.

40. Villalonga, B., 2003. Research roundtable discussion: The diversification discount. Harvard Business School.

41. Villalonga, B., 2004. Diversification discount or premium? New evidence from the business information tracking series, *Journal of Finance* 59, 479-506.

42. Villalonga, B., 2004. Does diversification cause the diversification discount? *Financial Management*, 5-27.

43. Warnock, F.E., Cai, F., 2005. International diversification at home and abroad. International Finance Discussion Paper.

44. Wernerfelt, B., Montgomery, C.A., 1988. Tobin's q and the importance of focus in firm performance. *American Economic Review* 78, 246-250.

45. Whited, T., 2001. Is it inefficient investment that causes the diversification

discount? *Journal of Finance* 56, 1667-1692.

46. Williamson, O.E., 1975. Markets and hierarchies: Analysis and antitrust implications. Free Press, New York.

47. Lelyveld, I.V., Klaas, K., 2008. Do financial conglomerates create or destroy value? Evidence from the EU. Working paper.

Table 1

Summary statistics of Tobin's q and diversity measures

Variable	Definition	Sample size	Mean	Median	Standard deviation
Tobin's q	The market value of common equity plus the book value of preferred shares plus the book value of debt all divided by the book value of total assets	9847	1.059	1.002	0.434
Net interest income to total operating income	Net interest income divided by total operating income	9949	0.695	0.737	0.205
Net loans to total earning assets	Net loans divided by total earning assets	9977	0.648	0.677	0.183
Asset diversity	1- │ (net loans – other earning assets)/ total earning assets │	9971	0.595	0.606	0.238
Asset HHI	One minus the sum of the square of the share of net loans over total earning assets and the share of other earning assets over total earning assets	9971	0.390	0.422	0.108
Income diversity	1- │ (net interest income – other operating income)/total operating income │	9943	0.494	0.480	0.251
Income HHI	One minus the sum of the square of the share of net interest income over total operating income and the share of other operating income over the total operating income	9949	0.340	0.364	0.128

Table2
Correlations of Tobin's _q_ and diversity measures

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
(1) Tobin's _q_	1							
(2) Net interest income to total operating income	-0.041	1						
(3) Loans to total earning assets	-0.042	0.205	1					
(4) Income diversity	0.006	-0.441	-0.059	1				
(5) Asset diversity	0.011	-0.395	-0.053	0.968	1			
(6) Income HHI	0.017	-0.043	-0.428	0.115	0.119	1		
(7) Asset HHI	0.012	-0.010	-0.341	0.097	0.101	0.958	1	
(8) International diversity	0.008	-0.471	-0.181	0.327	0.281	0.134	0.106	1

Table3
Mean excess value for various degree of diversification

		Panel A: Asset diversity				
		Div≧0.8	0.8< Div≦0.6	0.6< Div≦0.4	0.4< Div≦0.2	Div<0.2
Excess value(asset)	Mean	-0.015	-0.020	-0.026	-0.051	0.000
	Standard deviation	0.504	0.517	0.436	0.195	0.463
	Min	-1.092	-1.087	-1.085	-0.682	-0.649
	Max	8.840	8.677	7.595	2.061	5.612
	Obs.	2119	2451	2392	1382	535

		Panel B: Income diversity				
		Div≧0.8	0.8<Div≦0.6	0.6< Div≦0.4	0.4< Div≦0.2	Div<0.2
Excess value(income)	Mean	-0.046	-0.023	0.011	-0.050	-0.020
	Standard deviation	0.300	0.465	0.639	0.296	0.379
	Min	-1.092	-0.770	-1.005	-1.020	-0.974
	Max	5.249	8.840	8.677	5.612	7.179
	Obs.	1438	1803	2285	2184	1169

		Panel C : Asset HHI				
		HHI≧0.4	0.3< HHI≦0.4	0.2< HHI≦0.3	0.2< HHI≦0.1	HHI<0.1
Excess value(asset)	Mean	-0.021	-0.027	-0.047	-0.013	0.005
	Standard deviation	0.500	0.419	0.207	0.469	0.320
	Min	-1.092	-1.020	-0.682	-0.312	-0.649
	Max	8.840	7.595	2.061	5.612	2.236
	Obs.	5107	2180	968	444	180

		Panel D : Income HHI				
		HHI≧0.4	0.3< HHI≦0.4	0.2< HH≦0.3	0.2< HH≦0.1	HHI<0.1
Excess value(income)	Mean	-0.035	-0.001	-0.035	-0.018	0.010
	Standard deviation	0.462	0.528	0.282	0.319	0.385
	Min	-0.776	-1.079	-1.078	-1.074	-0.965
	Max	8.839	8.689	5.641	7.223	4.844
	Obs.	3958	2362	1720	1126	504

Table 3 (Continued)

Panel E : International HHI				
		HHI≧0.9	0.2<HHI≦0.9	HHI<0.2
Excess value(asset)	Mean	-0.004	0.006	0.007
	Standard deviation	0.162	0.150	0.397
	Min	-0.184	-0.399	-1.087
	Max	0.746	0.860	4.850
	Obs.	44	156	486
Excess value(income)	Mean	-0.033	0.022	-0.031
	Standard deviation	0.160	0.393	0.124
	Min	-0.199	-0.297	-0.507
	Max	0.725	4.864	0.384
	Obs.	46	519	162

Table 4
Diversity, Tobin's q and excess value

	Tobin's q			Excess value		
	(1)	(2)	(3)	(4)	(5)	(6)
	Luc			Luc		
Panel A: Income diversity						
Income diversity	0.073*** (0.027)	-0.106* (0.049)		0.046** (0.023)	-0.103* (0.044)	
Income HHI			0.144** (0.058)			0.095* (0.049)
Net interest income to total operating income	-0.090** (0.042)	-0.240** (0.059)	-0.094** (0.043)			
Observations	9646	3415	9652	9646	3415	9652
Number of banks	863	867	863	863	867	863
R-squared	0.001	0.19	0.001	0.001	0.15	0.001
Panel B: Asset diversity						
Asset diversity	0.034 (0.043)	-0.099* (0.046)		-0.013 (0.024)	-0.130** (0.035)	
Asset HHI			0.075 (0.077)			-0.015 (0.052)
Net loans to total earning assets	0.095 (0.081)	-0.194** (0.065)	0.093 (0.073)			
Observations	8,850	3,415	8,850	8,857	3,415	8,857
Number of banks	856	867	856	856	867	856
R-squared	0.001	0.15	0.001	0.001	0.21	0.001

Panel C: International diversity

	(1)	(2)	(3)
	Tobin's q	Excess value (income)	Excess value (asset)
International HHI	0.008 (0.028)	-0.070*** (0.025)	-0.001 (0.028)
Observations	737	727	686
number of banks	737	727	686
R-squared	0.0001	0.005	0.001

Table 5

Diversity and Tobin's *q*: controlling for bank-level and country-level characteristics

Panel A: Income diversity

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
		L & L (2007)		L & L (2007)		L & L (2007)		L & L (2007)				
Income diversity	0.078***	-0.079*	0.077***	-0.090**	0.079***	-0.079*	0.079***	-0.090**				
	(3.786)	(-1.93)	(3.734)	(-2.204)	(3.835)	(-1.913)	(3.784)	(-2.185)				
Income HHI									0.157***	0.156***	0.166***	0.165***
									(3.794)	(3.733)	(3.935)	(3.882)
Log (Total assets)	-0.024***	0.005*			-0.025***	0.005*			-0.024***		-0.024***	
	(-5.599)	(1.697)			(-5.563)	(1.712)			(-5.533)		(-5.496)	
Log (Total operating income)			-0.026***	0.010***			-0.026***	0.010***		-0.025***		-0.025***
			(-5.643)	(3.533)			(-5.599)	(3.546)		(-5.580)		(-5.534)
Net interest income to total operating income	-0.050	-0.220***	-0.060*	-0.203***	-0.045	-0.220***	-0.054	-0.204***	-0.055	-0.065**	-0.049	-0.058*
	(-1.531)	(-3.588)	(-1.821)	(-3.4)	(-1.344)	(-3.59)	(-1.621)	(-3.402)	(-1.722)	(-2.009)	(-1.498)	(-1.768)
Deposits/ Liabilities	-0.0793**	0.093	-0.085**	0.110**	-0.090**	0.094	-0.096**	0.110*	-0.080**	-0.087**	-0.091**	-0.098**
	(-2.065)	(1.585)	(-2.223)	(1.931)	(-2.324)	(1.6)	(-2.483)	(1.947)	(-2.095)	(-2.256)	(-2.352)	(-2.516)
Equity/ Assets	-0.001	0.122	-0.001	0.146	-0.001	0.123	-0.001	0.147	-0.001	-0.001	-0.001	-0.001
	(-1.634)	(0.962)	(-1.523)	(1.173)	(-1.353)	(0.969)	(-1.253)	(1.179)	(-1.629)	(-1.523)	(-1.349)	(-1.253)
Asset growth	-0.016*	0.059**	-0.018*	0.061**	-0.016*	0.059**	-0.017*	0.062**	-0.016*	-0.017*	-0.016*	-0.017*
	(-1.801)	(2.24)	(-1.953)	(2.349)	(-1.743)	(2.244)	(-1.906)	(2.353)	(-1.77)	(-1.922)	(-1.719)	(-1.883)
Income growth	0.000	0.015	0.000	0.014	0.000	0.016	0.000	0.014	0.000	0.000	0.000	0.000
	(-0.035)	(0.560)	(0.209)	(0.510)	(0.124)	(0.569)	(0.362)	(0.521)	(-0.021)	(0.227)	(0.138)	(0.380)
Return on assets	0.022***		0.021***		0.022***		0.021***		0.023***	0.022***	0.022***	0.021***
	(10.099)		(9.309)		(9.856)		(9.078)		(10.136)	(9.345)	(9.896)	(9.118)
Return on equity	-0.0005***		-0.0004***		-0.0005***		-0.0004***		-0.0004***	-0.0004***	-0.0005***	-0.0004***
	(-3.484)		(-3.163)		(-3.611)		(-3.294)		(-3.452)	(-3.135)	(-3.583)	(-3.272)
Cost/Income	0.000		0.0003*		0.000		0.0003*		0.000	0.0003*	0.000	0.0003*
	(1.382)		(1.760)		(1.480)		(1.812)		(1.427)	(1.794)	(1.532)	(1.854)
GDP per capita					0.284**	0.003	0.278**	0.003			0.286**	0.281**
					(2.397)	(1.446)	(2.349)	(1.474)			(2.416)	(2.370)
Inflation					-0.0002***	0.000	-0.0002***	0.000			-0.0002***	-0.0002***
					(-3.559)	(0.149)	(-3.819)	(0.138)			(-3.557)	(-3.817)
Observations	6954	2773	6932	2773	6845	2773	6823	2773	6954	6932	6845	6823
R-squared	0.013	0.21	0.011	0.22	0.013	0.21	0.011	0.22	0.013	0.011	0.013	0.011

Note: The value at parenthesis is *t* statistics. *, **, *** indicate the statistically significant at confidence level of 10%, 5%, 1%, respectively. L & L (2007) is denoted as the study of Laeven & Levine's empirical results.

Panel B : Asset diversity

Table 5 (Continued)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
		L & L (2007)		L & L (2007)		L & L (2007)		L & L (2007)				
Asset diversity	0.080***	-0.116**	0.083***	-0.113**	0.085***	-0.117**	0.089***	-0.114**				
	(3.673)	(-2.545)	(3.820)	(-2.495)	(3.830)	(-2.562)	(3.991)	(-2.513)				
Asset HHI									0.146***	0.155***	0.157***	0.166***
									(3.078)	(3.250)	(3.227)	(3.411)
Log (total assets)	-0.029***	0.005			-0.028***	0.005			-0.029***	-0.028***	-0.028***	
	(-6.004))	(1.554)			(-5.863)	(1.581)			(-5.969)	(-5.592)	(-5.830)	
Log (total operating income)			-0.028***	0.012***			-0.028***	0.012***				-0.027***
			(-5.632)	(4.149)			(-5.495)	(4.180)				(-5.456)
Net loans to total earning assets	0.117***	-0.209**	0.122***	-0.198**	0.125***	-0.210**	0.131***	-0.199**	0.101***	0.106***	0.109***	0.115***
	(3.43)	(-2.575)	(3.549)	(-2.455)	(3.613)	(-2.581)	(3.753)	(-2.461)	(3.057)	(3.178)	(3.228)	(3.369)
Deposits/ liabilities	-0.114***	0.051	-0.130***	0.08	-0.122***	0.052	-0.139***	0.081	-0.112***	-0.129***	-0.121***	-0.137***
	(-2.751)	(0.971)	(-3.148)	(1.536)	(-2.933)	(0.994)	(-3.315)	(1.561)	(-2.709)	(-3.107)	(-2.890)	(-3.274)
Equity/ assets	-0.001	0.12	-0.001	0.155	-0.001	0.121	-0.001	0.156	-0.001	-0.001	-0.001	-0.001
	(-1.544)	(1.005)	(-1.325)	(1.325)	(-1.251)	(1.015)	(-1.043)	(1.333)	(-1.545)	(-1.328)	(-1.254)	(-1.048)
Asset growth	-0.017	0.04	-0.019*	0.045*	-0.018	0.041	-0.020*	0.046*	-0.017	-0.019*	-0.018	-0.020*
	(-1.564)	(1.489)	(-1.745)	(1.678)	(-1.615)	(1.515)	(-1.804)	(1.708)	(-1.575)	(-1.763)	(-1.623)	(-1.820)
Income growth	0.000	0.025	0.000	0.023	0.000	0.025	0.000	0.022	0.000	0.000	0.000	0.000
	(0.153)	(0.932)	(0.391)	(0.848)	(0.281)	(0.923)	(0.507)	(0.836)	(0.19)	(0.432)	(0.322)	(0.552)
Return on assets	0.022***		0.022***		0.022***		0.021***		0.022***	0.021***	0.021***	0.021***
	(7.918)		(7.750)		(7.717)		(7.564)		(7.885)	(7.717)	(7.681)	(7.527)
Return on equity	-0.000***		-0.000***		-0.000***		-0.000***		-0.000***	-0.000***	-0.000***	-0.000***
	(-2.83)		(-2.669)		(-2.911)		(-2.752)		(-2.849)	(-2.688)	(-2.933)	(-2.773)
Cost/ income	0.000		0.000*		0.000		0.000*		0.000	0.000*	0.000	0.000*
	(1.372)		(1.834)		(1.413)		(1.84)		(1.397)	(1.865)	(1.441)	(1.875)
GDP per capita					0.230*	0.003*	0.221*	0.004*			0.233*	0.224*
					(1.818)	(1.710)	(1.746)	(1.801)			(1.848)	(1.775)
Inflation					-0.000***	0.001	-0.000***	0.001			-0.000***	-0.000***
					(-3.955)	(0.538)	(-4.252)	(0.646)			(-3.907)	(-4.204)
Observations	6312	2773	6292	2773	6202	2773	6182	2773	6312	6292	6202	6182
R-squared	0.009	0.2	0.008	0.21	0.009	0.2	0.008	0.21	0.009	0.008	0.009	0.008

Note: The value at parenthesis is *t* statistics. *, **, *** indicate the statistically significant at confidence level of 10%, 5%, 1%, respectively. L & L (2007) is denoted as the study of Laeven & Levine's empirical results.

Table 5 (Continued)

Panel C : International diversity

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
International diversity	0.082*** (3.474)	0.083*** (3.488)	0.088*** (3.739)	0.087*** (3.706)	0.082*** (3.430)	0.087*** (3.702)	0.081*** (3.661)	0.089*** (3.923)	0.076*** (3.538)	0.087*** (3.905)
Asset diversity	0.021 (0.701)				0.094 (0.864)					
Asset HHI		0.031 (0.486)			-0.165 (-0.702)					
Income diversity			0.008 (0.266)			-0.02 (-0.191)				
Income HHI				0.022 (0.337)		0.063 (0.282)				
Log (total assets)	-0.019*** (-4.006)	-0.018*** (-3.977)	-0.020*** (-4.103)	-0.020*** (-4.030)	-0.019*** (-4.037)	-0.020*** (-3.991)			-0.014*** (3.455)	-0.018*** (-3.886)
Log (total operating income)							-0.016*** (-3.711)	-0.019*** (-3.984)		
Deposits/ liabilities	0.080 (1.384)	0.082 (1.408)	0.099* (1.836)	0.100* (1.846)	0.076 (1.306)	0.100* (1.849)	0.092* (1.687)	0.093* (1.713)	0.090* (1.735)	0.091* (1.764)
Equity/ assets	0.004 (0.939)	0.004 (0.965)	0.004 (1.01)	0.004 (1.008)	0.004 (0.878)	0.004 (1.013)	0.013*** (4.588)	0.013*** (4.876)	0.012*** (4.696)	0.013*** (4.922)
Asset growth	-0.027 (-0.658)	-0.028 (-0.690)	-0.023 (-0.594)	-0.024 (-0.610)	-0.026 (-0.633)	-0.023 (-0.595)	-0.012 (-0.321)	-0.013 (-0.347)	-0.016 (-0.429)	-0.016 (-0.435)
Income growth	0.017 (1.366)	0.017 (1.369)	0.019 (1.563)	0.019 (1.574)	0.017 (1.388)	0.019 (1.579)	0.015 (1.231)	0.018 (1.487)	0.016 (1.376)	0.019 (1.625)
Return on assets	0.000 (0.003)	-0.001 (-0.022)	0.006 (0.284)	0.007 (0.302)	0.001 (0.036)	0.007 (0.316)	-0.037** (-2.033)	-0.037** (-2.029)	-0.037** (-2.133)	-0.036** (-2.096)
Return on equity	0.000 (-0.037)	0.000 (-0.022)	0.000 (0.147)	0.000 (0.134)	0.000 (-0.020)	0.000 (0.140)	0.002 (1.572)	0.003* (1.781)	0.002 (1.616)	0.002* (1.740)
Cost/ income	-0.003*** (-4.027)	-0.003*** (-4.017)	-0.002*** (-3.571)	-0.002*** (-3.553)	-0.003*** (-3.991)	-0.002*** (-3.436)	-0.003*** (-3.944)	-0.002*** (-3.634)	-0.002*** (-4.182)	-0.002*** (-3.998)
GDP per capita	-0.45 (-0.916)	-0.439 (-0.889)	-0.204 (-0.446)	-0.207 (-0.456)	-0.415 (-0.839)	-0.221 (-0.479)	0.011 (0.024)	0.015 (0.032)		
Inflation	-0.001 (-0.415)	-0.001 (-0.395)	-0.002 (-0.676)	-0.002 (-0.700)	-0.002 (-0.527)	-0.002 (-0.72)	-0.004 (-1.498)	-0.003 (-1.188)		
Observations	258	258	280	280	258	280	282	282	288	288
R-squared	0.167	0.166	0.174	0.174	0.165	0.171	0.229	0.235	0.227	0.236

Note: The value at parenthesis is *t* statistics. *, **, *** indicate the statistically significant at confidence level of 10%, 5%, 1%, respectively. L & L (2007) is denoted as the study of Laeven & Levine's empirical results.

29

Table 6
Diversity and Excess value: controlling for bank-level and country-level characteristics

Panel A : Income diversity

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
		L & L (2007)		L & L (2007)		L & L (2007)		L & L (2007)	L & L (2007)			
Income diversity	0.038** (2.123)				0.038** (2.122)		0.040** (2.239)					
Income HHI		-0.077** (-2.438)	0.040** (2.252)	-0.091*** (-2.691)		-0.076** (-2.379)		-0.090*** (-2.632)	0.083** (2.269)	0.087** (2.370)	0.088** (2.361)	0.092** (2.455)
Log (total assets)	-0.023*** (-5.26)	0.006 (1.461)			-0.023*** (-5.212)	0.006 (1.477)			-0.023*** (-5.215)		-0.023*** (-5.16)	
Log (total operating income)			-0.025*** (-5.461)	0.011*** (2.656)			-0.025*** (-5.408)	0.011*** (2.669)		-0.025*** (-5.414)		-0.025*** (-5.355)
Deposits/ liabilities	-0.052 (-1.383)	0.093** (2.294)	-0.059 (-1.552)	0.119*** (2.857)	-0.061 (-1.607)	0.094** (2.323)	-0.068* (-1.775)	0.120*** (2.886)	-0.053 (-1.400)	-0.06 (-1.577)	-0.061 (-1.615)	-0.068* (-1.791)
Equity/ assets	-0.001* (-1.852)	0.163 (1.211)	-0.001* (-1.75)	0.172 (1.301)	-0.001 (-1.587)	0.164 (1.222)	-0.001 (-1.497)	0.173 (1.310)	-0.001* (-1.841)	-0.001* (-1.741)	-0.001 (-1.576)	-0.001 (-1.489)
Asset growth	-0.017* (-1.879)	0.052** (2.148)	-0.018*** (-1.981)	0.055*** (2.276)	-0.017* (-1.831)	0.054** (2.225)	-0.018* (-1.942)	0.057*** (2.356)	-0.017* (-1.871)	-0.018** (-1.971)	-0.017* (-1.83)	-0.018* (-1.939)
Income growth	0.000 (-0.072)	0.021 (0.800)	0.000 (0.160)	0.019 (0.734)	0.000 (0.076)	0.019 (0.711)	0.000 (0.302)	0.017 (0.647)	0.000 (-0.067)	0.000 (0.168)	0.000 (0.080)	0.000 (0.309)
Return on assets	0.023*** (10.166)		0.022*** (9.298)		0.023*** (9.934)		0.022*** (9.074)		0.023*** (10.185)	0.022*** (9.320)	0.023*** (9.956)	0.022*** (9.098)
Return on equity	-0.000*** (-3.600)		-0.000*** (-3.238)		-0.000*** (-3.724)		-0.000*** (-3.367)		-0.000*** (-3.585)	-0.000*** (-3.224)	-0.000*** (-3.713)	-0.000*** (-3.358)
Cost/ income	0.000 (1.067)		0.000 (1.453)		0.000 (1.146)		0.000 (1.488)		0.000 (1.095)	0.000 (1.478)	0.000 (1.177)	0.000 (1.516)
GDP per capita					0.267** (2.249)	0.003* (1.831)	0.264** (2.222)	0.003* (1.865)			0.269** (2.264)	0.266** (2.238)
Inflation					-0.000*** (-3.409)	0.004* (1.870)	-0.000*** (-3.673)	0.004* (1.845)			-0.000*** (-3.401)	-0.000*** (-3.665)
Observations	6954	2773	6932	2773	6845	2773	6823	2773	6954	6932	6845	6823
R-squared	0.011	0.2	0.01	0.2	0.011	0.2	0.01	0.001	0.011	0.01	0.011	0.01

Note: The value at parenthesis is *t* statistics. *, **, *** indicate the statistically significant at confidence level of 10%, 5%, 1%, respectively. L & L (2007) is denoted as the study of Laeven & Levine's empirical results.

Table 6 continued

Panel B : Asset diversity

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
		L & L (2007)		L & L (2007)		L & L (2007)		L & L (2007)				
Asset diversity	0.039** (2.028)	-0.141*** (-5.406)	0.041** (2.119)	-0.141*** (-5.491)	0.041** (2.084)	-0.142*** (-5.450)	0.043** (2.180)	-0.142*** (-5.536)				
Asset HHI									0.074* (1.701)	0.080* (1.823)	0.078* (1.761)	0.084* (1.886)
Log (total assets)	-0.029*** (-6.067)	0.005 (1.480)			-0.029*** (-5.940)	0.005 (1.532)			-0.029*** (-6.043)		-0.029*** (-5.917)	
Log (total operating income)			-0.029*** (-5.804)	0.013*** (3.770)			-0.029*** (-5.685)	0.013*** (3.824)		-0.029*** (-5.774)		-0.028*** (-5.655)
Deposits/ liabilities	-0.119*** (-2.872)	0.074* (1.904)	-0.136*** (-3.297)	0.109*** (2.785)	-0.127*** (-3.053)	0.076* (1.956)	-0.145*** (-3.466)	0.110*** (2.841)	-0.117*** (-2.840)	-0.135*** (-3.266)	-0.126*** (-3.021)	-0.144*** (-3.436)
Equity/ assets	-0.002* (-1.736)	0.136 (1.037)	-0.001 (-1.544)	0.167 (1.323)	-0.001 (-1.458)	0.138 (1.053)	-0.001 (-1.280)	0.168 (1.336)	-0.002* (-1.726)	-0.001 (-1.533)	-0.001 (-1.448)	-0.001 (-1.270)
Asset growth	-0.016 (-1.446)	0.027 (1.184)	-0.018 (-1.637)	0.031 (1.372)	-0.016 (-1.476)	0.030 (1.320)	-0.019* (-1.675)	0.034 (1.517)	-0.016 (-1.459)	-0.018* (-1.653)	-0.017 (-1.488)	-0.019* (-1.691)
Income growth	0.000 (0.189)	0.024 (0.929)	0.000 (0.426)	0.022 (0.862)	0.000 (0.322)	0.021 (0.815)	0.000 (0.548)	0.019 (0.742)	0.000 (0.205)	0.000 (0.445)	0.000 (0.340)	0.000 (0.568)
Return on assets	0.021*** (7.742)		0.021*** (7.557)		0.021*** (7.521)		0.021*** (7.349)		0.021*** (7.735)	0.021*** (7.551)	0.021*** (7.514)	0.021*** (7.342)
Return on equity	-0.000*** (-2.812)		-0.000*** (-2.649)		-0.000*** (-2.897)		-0.000*** (-2.736)		-0.000*** (-2.825)	-0.000*** (-2.661)	-0.000*** (-2.910)	-0.000*** (-2.749)
Cost/ income	0.000 (1.044)		0.000 (1.488)		0.000 (1.071)		0.000 (1.476)		0.000 (1.078)	0.000 (1.527)	0.000 (1.107)	0.000 (1.517)
GDP per capita					0.238* (1.881)	0.005** (2.221)	0.229* (1.809)	0.005*** (2.316)			0.239* (1.893)	0.231* (1.821)
Inflation					-0.000*** (-3.737)	0.005** (2.134)	-0.000*** (-4.029)	0.005** (2.227)			-0.000*** (-3.724)	-0.000*** (-4.016)
Observations	6312	2773	6292	2773	6202	2773	6182	2773	6312	6292	6202	6182
R-squared	0.01	0.29	0.009	0.29	0.01	0.29	0.009	0.3	0.01	0.009	0.01	0.009

Note: The value at parenthesis is *t* statistics. *, **, *** indicate the statistically significant at confidence level of 10%, 5%, 1%, respectively. L & L (2007) is denoted as the study of Laeven & Levine's empirical results.

Table 6 continued

Panel C : International diversity

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
International diversity	0.082***	0.082***	0.061**	0.059**	0.081***	0.059**	0.082***	0.056**	0.077***	0.053**
	(3.451)	(3.461)	(2.518)	(2.446)	(3.408)	(2.457)	(3.486)	(2.441)	(3.356)	(2.367)
Asset diversity	0.010				0.082					
	(0.345)				(0.751)					
Asset HHI		0.009			-0.161					
		(0.148)			(-0.684)					
Income diversity			-0.020			-0.091				
			(-0.637)			(-0.847)				
Income HHI				-0.027		0.159				
				(-0.406)		(0.690)				
Log (total assets)	-0.019***	-0.019***	-0.021***	-0.020***	-0.019***	-0.020***	-0.019***	-0.020***	-0.016***	-0.019***
	(-4.062)	(-4.043)	(-4.131)	(-4.043)	(-4.092)	(-3.953)	(-4.066)	(-4.110)	(-3.827)	(-4.064)
Log (total operating income)										
Deposits/ liabilities	0.081	0.081	0.127**	0.129**	0.077	0.130**	0.082	0.132**	0.067	0.126**
	(1.388)	(1.402)	(2.303)	(2.318)	(1.312)	(2.347)	(1.415)	(2.404)	(1.219)	(2.431)
Equity/ assets	0.004	0.004	0.001	0.001	0.004	0.002	0.004	0.001	0.005	0.002
	(0.936)	(0.954)	(0.366)	(0.346)	(0.877)	(0.378)	(0.964)	(0.321)	(1.22)	(0.459)
Asset growth	-0.025	-0.026	-0.014	-0.017	-0.024	-0.015	-0.026	-0.021	-0.029	-0.022
	(-0.609)	(-0.634)	(-0.359)	(-0.421)	(-0.584)	(-0.365)	(-0.656)	(-0.537)	(-0.744)	(-0.592)
Income growth	0.017	0.017	0.007	0.007	0.017	0.008	0.017	0.008	0.017	0.008
	(1.363)	(1.368)	(0.547)	(0.565)	(1.384)	(0.608)	(1.382)	(0.632)	(1.440)	(0.669)
Return on assets	0.000	0.000	0.002	0.003	0.001	0.004	0.000	0.004	-0.004	0.000
	(0.016)	(-0.002)	(0.096)	(0.109)	(0.048)	(0.180)	(-0.012)	(0.171)	(-0.187)	(-0.003)
Return on equity	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	(-0.061)	(-0.046)	(-0.131)	(-0.177)	(-0.044)	(-0.147)	(-0.035)	(-0.263)	(0.106)	(-0.141)
Cost/ income	-0.003***	-0.003***	-0.003***	-0.003***	-0.003***	-0.003***	-0.003***	-0.003***	-0.003***	-0.003***
	(-4.033)	(-4.022)	(-4.782)	(-4.812)	(-3.998)	(-4.453)	(-4.038)	(-4.810)	(-4.163)	(-5.031)
GDP per capita	-0.46	-0.446	-0.193	-0.175	-0.425	-0.237	-0.433	-0.165		
	(-0.936)	(-0.904)	(-0.413)	(-0.374)	(-0.860)	(-0.500)	(-0.895)	(-0.353)		
Inflation	-0.001	-0.001	-0.001	-0.001	-0.002	-0.002	-0.001	-0.002		
	(-0.400)	(-0.395)	(-0.393)	(-0.412)	(-0.509)	(-0.537)	(-0.406)	(-0.536)		
Observations	258	258	280	280	258	280	259	280	265	285
R-squared	0.168	0.168	0.147	0.146	0.167	0.145	0.171	0.149	0.173	0.153

Note: The value at parenthesis is *t* statistics. *, **, *** indicate the statistically significant at confidence level of 10%, 5%, 1%, respectively. L & L (2007) is denoted as the study of Laeven & Levine's empirical results.

Table 7
Scale and scope of activities of specialized and diversified banks

	(1) Total assets	(2) Net loans	(3) Other earning assets	(4) Operating income	(5) Net interest income	(6) Non-interest income
Panel A : Income diversity						
Specialized commercial bank	-0.186***	-0.173***	-0.227***	-0.208***	-0.062***	-1.172***
	(-7.979)	(-6.613)	(-8.911)	(-9.169)	(-2.731)	(-40.695)
Specialized investment bank	-0.129**	-0.535***	-0.013	0.189***	-1.341***	0.496***
	(-2.237)	(-7.552)	(-0.206)	(3.325)	(-23.594)	(6.978)
Observations	9949	9875	9949	9906	9890	9819
R-squared	0.001	0.01	0.001	0.005	0.035	0.092
Panel B : Asset diversity						
Specialized commercial bank	0.211***	0.369***	-0.606***	0.207***	0.214***	0.152***
	(5.272)	(8.177)	(-14.078)	(5.228)	(5.444)	(2.866)
Specialized investment bank	-0.302***	-1.089***	-0.124	-0.302***	-0.369***	-0.441***
	(-4.209)	(-13.084)	(-1.616)	(-4.026)	(-5.187)	(-4.595)
Observations	9117	9062	9116	9025	8982	8893
R-squared	0.006	0.027	0.006	0.006	0.007	0.004
Panel C : International diversity						
International diversity	1.972***	1.796***	2.281***	2.364***	2.052***	3.253***
	(6.680)	(5.690)	(7.814)	(9.132)	(7.871)	(10.426)
Specialized commercial bank	-0.993	-0.782	-1.995***	-0.658	-0.780	-0.050
	(-1.506)	(-1.109)	(-3.060)	(-1.164)	(-1.370)	(-0.069)
Specialized investment bank	0.844	-1.466	1.820	0.675	1.164	-3.104*
	(0.689)	(-1.119)	(1.503)	(0.455)	(0.779)	(-1.766)
Observations	231	231	231	222	222	213
R-squared	0.169	0.121	0.165	0.278	0.227	0.334

Note: The value at parenthesis is *t* statistics. *, **, *** indicate the statistically significant at confidence level of 10%, 5%, 1%, respectively.

Table 8
Diversity and excess value : Subsamples

		Activities						World region					
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
	Diversified banks	Commercial banks	Investment banks	Bank Holding Company	Savings banks	Cooperative banks	Africa	Europe	Far East and Central Asia	Middle East	North America	Oceania	South and Central America
Panel A : Income diversity													
Income diversity	0.040**	-0.006	0.095	0.189***	-0.027	-0.048***	0.112**	0.026*	-0.025	-0.119***	0.149**	0.016	0.188
	(2.134)	(-0.371)	(1.563)	(3.754)	(-0.780)	(-3.079)	(2.110)	(1.739)	(-1.518)	(-4.475)	(2.562)	(0.687)	(1.396)
Log (total assets)	-0.027***	-0.017***	-0.036**	-0.028***	-0.007	0.001	-0.027**	-0.023***	0.003	-0.004	-0.035***	-0.006*	-0.044
	(-6.262)	(-5.176)	(-2.394)	(-3.042)	(-0.813)	(0.327)	(-2.005)	(-7.047)	(0.883)	(-1.232)	(-3.335)	(-1.931)	(-1.450)
Observations	6650	4659	196	2513	183	245	163	2396	2479	98	2303	116	323
R-squared	0.002	0.001	0.009	0.006	0.003	0.201	0.070	0.001	0.006	0.059	0.009	0.022	0.012
Income HHI	0.089**	-0.048	0.202*	0.429***	-0.048	-0.089**	0.276**	0.024	-0.048	-0.445***	0.366***	0.036	0.437
	(2.223)	(-1.507)	(1.808)	(4.369)	(-0.758)	(-2.488)	(2.133)	(0.745)	(-1.645)	(-3.984)	(3.128)	(0.591)	(1.531)
Log (total assets)	-0.027***	-0.017***	-0.038**	-0.026***	-0.007	0.003	-0.027**	-0.023***	0.003	-0.003	-0.033***	-0.006*	-0.044
	(-6.200)	(-5.295)	(-2.470)	(-2.892)	(-0.824)	(0.682)	(-2.006)	(-7.018)	(0.875)	(-0.875)	(-3.129)	(-1.893)	(-1.464)
Observations	6655	4663	196	2514	183	245	163	2398	2482	98	2303	116	323
R-squared	0.002	0.002	0.009	0.008	0.004	0.146	0.096	0.001	0.005	0.044	0.011	0.021	0.013
Panel B : Assets diversity													
Asset diversity	0.009	0.002	0.234***	0.049	0.176***	-0.027	0.185**	0.027*	-0.010	0.035	0.040	-0.040	0.223
	(0.424)	(0.121)	(2.752)	(1.038)	(3.936)	(-1.585)	(1.970)	(1.695)	(-0.528)	(1.635)	(0.776)	(-1.352)	(1.342)
Log (total assets)	-0.029***	-0.015***	-0.024	-0.042***	-0.004	0.011***	-0.020	-0.025***	0.004	-0.010**	-0.050***	-0.004	-0.040
	(-6.061)	(-4.377)	(-1.479)	(-4.173)	(-0.377)	(2.649)	(-1.144)	(-7.160)	(1.145)	(-2.326)	(-4.441)	(-0.956)	(-1.351)
Observations	5934	4159	141	2266	156	242	119	2106	2191	83	2107	113	299
R-squared	0.002	0.001	0.0009	0.005	0.064	0.0001	0.064	0.001	0.001	0.003	0.007	0.029	0.01

Note: The value at parenthesis is t statistics. *, **, *** indicate the statistically significant at confidence level of 10%, 5%, 1%, respectively.

Table 8 continued

	Activities						World region						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
	Diversified banks	Commercial banks	Investment banks	BHC	Savings banks	Cooperative banks	Africa	Europe	Far East and Central Asia	Middle East	North America	Oceania	South and Central America
Panel B : Asset diversity													
Asset HHI	-0.003	0.014	0.298*	0.038	0.475***	-0.032	0.526**	0.069*	-0.004	0.073*	0.005	-0.102*	0.512
	(-0.065)	(0.331)	(1.688)	(0.346)	(4.670)	(-0.852)	(2.570)	(1.899)	(-0.099)	(1.798)	(0.039)	(-1.749)	(1.317)
Log (total assets)	-0.028***	-0.015***	-0.023	-0.042***	-0.005	0.010**	-0.027	-0.025***	0.004	-0.010**	-0.049***	-0.003	-0.041
	(-6.013)	(-4.390)	(-1.419)	(-4.123)	(-0.494)	(2.405)	(-1.582)	(-7.147)	(1.142)	(-2.339)	(-4.394)	(-0.713)	(-1.376)
Observations	5934	4159	141	2266	156	242	119	2106	2191	83	2107	113	299
R-squared	0.002	0.001	0.0004	0.005	0.060	0.007	0.063	0.001	0.001	0.0009	0.006	0.043	0.009

Note: The value at parenthesis is *t* statistics. * , ** , *** indicate the statistically significant at confidence level of 10%, 5%, 1%, respectively.

Appendix

Countries represented and number of banks from each country

Country	Country code	No. of banks	Banks with subs	Banks with no subs	Country	Country code	No. of banks	Banks with subs	Banks with no subs
ARGENTINA	AR	6	2	4	KENYA	KE	2	1	1
AUSTRIA	AT	6	6	0	KOREA REP. OF	KR	13	6	7
AUSTRALIA	AU	9	5	4	LITHUANIA	LT	4	1	3
BELGIUM	BE	4	4	0	LUXEMBOURG	LU	2	2	0
BULGARIA	BG	1	0	1	MOROCCO	MA	3	1	2
BRAZIL	BR	4	2	2	MALTA	MT	4	1	3
CANADA	CA	13	7	6	MEXICO	MX	3	0	3
SWITZERLAND	CH	15	7	8	MALAYSIA	MY	15	7	8
CHILE	CL	5	4	1	NETHERLANDS	NL	5	5	0
COLOMBIA	CO	2	2	0	NORWAY	NO	14	1	13
GERMANY	DE	18	10	8	PERU	PE	5	1	4
DENMARK	DK	32	5	27	PHILIPPINES	PH	14	4	10
EGYPT	EG	4	0	4	PAKISTAN	PK	4	2	2
SPAIN	ES	11	5	6	POLAND	PL	12	7	5
FINLAND	FI	2	0	2	PORTUGAL	PT	5	4	1
FRANCE	FR	25	6	19	ROMANIA	RO	2	0	2
UNITED KINGDOM	GB	7	6	1	RUSSIAN FEDERATION	RU	2	2	0
GREECE	GR	11	11	0	SWEDEN	SE	4	4	0
HONG KONG	HK	9	9	0	SINGAPORE	SG	7	6	1
HUNGARY	HU	1	1	0	SLOVENIA	SI	1	1	0
INDONESIA	ID	15	1	14	SLOVAKIA	SK	2	0	2
IRELAND	IE	4	4	0	THAILAND	TH	12	3	9
ISRAEL	IL	7	5	2	TURKEY	TR	13	10	3
INDIA	IN	25	5	20	TAIWAN	TW	20	4	16
ICELAND	IS	2	2	0	USA	US	327	26	301
ITALY	IT	22	13	9	VENEZUELA	VE	4	1	3
JAPAN	JP	95	11	84	SOUTH AFRICA	ZA	9	5	4
					Totals		**863**	**238**	**625**