

**Securities Activities by Commercial Banking Firms' Section 20 Subsidiaries:
Risk, Return, and Diversification Benefits**

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Abstract

This paper studies the implications of securities activities on bank safety and soundness by comparing the *ex-post* returns between banking firms' Section 20 subsidiaries -- subsidiaries that were authorized by the Federal Reserve to conduct bank-ineligible securities activities -- and their commercial bank affiliates. I found that securities subsidiaries tend to be riskier but not necessarily more profitable than their bank affiliates. For securities subsidiaries that are primary dealers of government securities, their higher risk partially comes from their higher leverage, whereas for those that are not primary dealers, despite having lower leverage, they tend to be riskier than their bank affiliates partly because of their aggressive trading behavior. Nevertheless, securities subsidiaries appear to provide diversification benefits to bank holding companies, as evidenced by the low return correlation between bank subsidiaries and securities subsidiaries.

Within the class of securities activities, I found that securities trading tends to be more profitable and riskier than banking activities. Trading activities engaged by primary dealer securities subsidiaries tend to provide strong diversification benefits to banking activities, reducing the banking organization's overall risk. For non-primary dealers, due to their aggressive trading behavior, their trading activities were found to increase the firm's total risk. On the other hand, securities underwriting is found to be riskier, and in the case of non-primary dealers also less profitable, than banking activities. Nevertheless, its return exhibits low correlation with banking return and trading return, suggesting that securities underwriting provides potential diversification benefits to both banking and trading activities.

I. Introduction

In recent years, discussion of the expansion of banking powers has accelerated among lawmakers, regulators, and bankers. For example, in the 104th and the 105th Congress, a number of legislative proposals to integrate the financial services industry have been introduced in both the Senate and the House of Representatives. While they differ in the details, all proposals call for the elimination of the Glass-Steagall Act of 1933 that has separated commercial banking from investment banking. Hence, although the outcome of the legislative process remains unclear, it appears that any reform at the minimum would integrate the banking and the securities industries.

This paper studies the implications of securities activities on bank safety and soundness by examining the returns on securities activities and their relationship with the returns on banking activities. A number of previous studies have addressed this similar issue using different methodologies. Eisemann (1976) and Stover (1982) used the equity returns of commercial banks and non-bank financial institutions to investigate the potential diversification gains of allowing banking firms to engage in non-bank activities. Their sample, however, had only two investment banking firms. Heggstad (1975), Johnson and Meinster (1974), Wall and Eisenbeis (1984), and Litan (1985) used aggregate industry data on accounting profits for a number of financial services industries to study the risk implications of allowing banking firms to expand their activities. Boyd, Hanweck, and Pithyachariyakul (1980) showed that using industry data for this type of analysis is subject to potential aggregation bias. Using firm-level data, Boyd and Graham (1988) and Boyd, Graham and Hewitt (1993) simulated mergers between bank holding companies and nonbank financial firms to examine the effects of expanded banking powers on bank risk. However, regardless of using industry-level or firm-level data, the treatment of banking firms'

investment in non-bank activities as totally passive and free of management intervention seems problematic. It appears more likely that a financial holding company would be managed on a consolidated basis, so that any synergies in customer relationship and risk management between the bank subsidiary and other non-bank subsidiaries would be realized. Kwast (1989) examined the relations between existing securities and non-securities activities within a bank from 1976 through 1985. By definition, the securities activities analyzed by Kwast were all bank permissible, which are less risky than bank ineligible securities activities. Furthermore, the amount of bank capital allocated to securities versus non-securities activities are not known. Kwast found bank eligible securities activities had higher mean and variance of return than non-securities activities while their return correlation tended to be low but varies across different time periods. White (1986) studied the securities activities of national banks before the Glass-Steagall Act and found that the mean and variance of the return to securities affiliates were higher than commercial banks and their return correlation was close to zero. Other related studies include Eisenbeis, Harris, and Lakonishok (1982) which examined the effects of one-bank holding company formations on bank stock returns, Boyd and Graham (1986) which examined the effects of the degree of non-bank activities on bank holding company's bankruptcy risk, and Giddy (1985) which empirically examined the risk of underwriting corporate securities.

In this study, I examine the risk and return of existing banking and securities activities, as well as their return correlation, to see how securities activities contribute to the profitability and risk of the bank holding company. An important innovation of this paper is that it uses a new source of data over a very recent time period. Specifically, I compare the *ex-post* returns between the bank holding company subsidiaries that were authorized by the Federal Reserve to conduct

bank-ineligible securities activities, the so called "Section 20 subsidiaries," and their commercial bank affiliates, from the second quarter of 1990 through the second quarter of 1997. This study improves upon the existing literature in several ways: First, using microdata to analyze existing banking and securities activities captures firm-specific risk preference and customer relationship. Using firm-level data avoids the potential aggregation bias of using industry-level data, and analysis based on observed activities would be superior to those that are based on hypothetical mergers. Second, with microdata at the affiliate level, the amount of capital allocated to support banking and securities activities are known. This facilitates the comparison of leverage between banking and securities subsidiaries, as well as the computation of the return on equity that takes leverage into consideration. Third, the securities activities include both bank-eligible and bank-ineligible securities activities. This provides a better projection of the effects of the expansion of securities power than based solely on bank-eligible securities activities alone. Fourth, with respect to securities activities, I separate trading activities from securities underwriting, which provides additional insights into the relationship between different types of securities activities and banking activities. Fifth, although the analysis is conducted using only bank holding companies that have Section 20 subsidiaries, they account for a sizable portion of the securities activities in the banking industry. Furthermore, securities subsidiaries that were primary dealers of government securities are separated from non-primary dealers, which are shown to exhibit very different behavior.

The findings of this study have several policy implications. Understanding the risk, profitability, and potential diversification benefits of securities activities can assist policy makers to evaluate the appropriateness of allowing banking organizations to engage in securities

activities, due to the concern about the safety and soundness of the banking system. They can also provide guidance on designing an organizational framework that permits financial integration without compromising the safety and soundness concern.

I found that banking organizations' securities subsidiaries tend to be riskier but not necessarily more profitable than their bank affiliates. Within the class of securities activities, I found that securities trading tends to be more profitable and riskier than banking activities, while securities underwriting is found to be riskier, and in some case also less profitable, than banking activities. Nevertheless, banking firms seem to be able to attain diversification benefits from engaging in securities activities.

The rest of this paper is organized as follows. Section II describes the evolution of securities activities by banking organizations, with special emphasis on the historical development of Section 20 securities subsidiaries. The data and descriptive statistics are discussed in Section III. Section IV examines the risk and return of banking activities and securities activities, as well as their return correlations. Section V concludes this study.

II. Section 20 securities subsidiaries

Sections 16, 20, 21, and 32 of the Glass-Steagall Act provide the legal basis that has separated commercial banking from investment banking for decades: Section 16 bars national banks from investing in shares of stocks; limits them to buying and selling securities as an agent; and prohibits them from underwriting and dealing in securities. Section 20 prohibits Federal Reserve member banks from being affiliated with any organization that is engaged principally in underwriting or dealing of securities. Section 21 makes it unlawful for securities firms to accept

deposits. Section 32 prohibits officer, director, or employee interlocks between a Federal Reserve member bank and any organization primarily engaged in underwriting or dealing of securities.

However, certain securities are exempted from the Act. They include municipal general obligation bonds, U.S. government bonds, private placement of commercial papers, and real estate bonds, which collectively are called “bank eligible securities.” All other securities that are not in the above asset classes are deemed “bank ineligible.” More importantly, since the terms “engaged principally” and “primarily engaged” were not defined in the Act, the courts and the regulators have had to determine the meaning of these terms in enforcing the law.

Beginning in 1987, the Federal Reserve authorized bank holding companies to establish securities subsidiaries to engage in limited underwriting and dealing of municipal revenue bonds, mortgage-related securities, consumer-receivable-related securities, and commercial paper. To comply with the Glass-Steagall Act, the revenues from the above bank-ineligible securities activities could not exceed 5% of the securities subsidiary’s total gross revenues, on an eight-quarter moving average basis. By satisfying this limit, the securities subsidiary would be considered by the Fed as not engaging primarily in underwriting and dealing of ineligible securities. Since the ineligible securities activities were authorized by the Fed under Section 20 of the Glass-Steagall Act, these securities affiliates are commonly referred to as Section 20 subsidiaries. To isolate the ineligible securities activities from the banking system, and to prevent the extension of the bank safety net from covering non-banking activities, the Fed requires all bank-ineligible securities activities to be conducted in a subsidiary of the holding company that was separate from the commercial bank. Furthermore, the Fed established a number of firewalls restricting transactions, information flows, and shared management between the securities

subsidiary and its affiliated bank(s).¹

Over time, as the Fed gains more experience in regulating securities activities conducted by banking organizations, it has expanded the securities power of Section 20 subsidiaries on several occasions. In January 1989, the Fed authorized section 20 subsidiaries to underwrite and deal in all debt and equity securities, subject to a set of more stringent firewalls, and the ineligible revenue limit was raised from 5% to 10% in October of the same year. More recently, in March 1997, as several banks were seriously constrained by the ineligible revenue limit, the Fed once again raised the limit to 25%. Following the relaxation of three Section 20 firewalls to allow officers and directors interlock, cross-marketing, and inter-affiliate transactions in October 1996, the Fed eliminated most of the remaining Section 20 firewalls and replaced them with a set of operating standards in August 1997.

As of April 1997, 42 banking companies have established securities subsidiaries that have Section 20 powers, and about one-half of them are subsidiaries of foreign banking organizations. Despite the limit on ineligible revenues, a number of these securities affiliates have made significant inroad into the investment banking market. According to the Investment Dealers' Digest, the top three banking organizations' Section 20 subsidiaries had a combined 10% of the underwriting market for domestic debt and equity issues for the year 1996.

III. Data and Descriptive Statistics

The main source of data for this study is from the quarterly FR Y-20 Reports - Financial Statements for a Bank Holding Company Subsidiary Engaged in Ineligible Securities

¹See Walter (1996) for discussion of firewalls.

Underwriting and Dealing - that are collected by the Federal Reserve. The sample period is from the second quarter of 1990, when FR Y-20 reports were first collected, through the second quarter of 1997. Data for the commercial banks that were affiliated with the Section 20 subsidiaries are collected from the quarterly FDIC Call and Income Reports over the same sample period. For a securities subsidiary that has more than one commercial bank affiliates, the bank data are aggregated across all commercial banks that are controlled by the same holding company.

Securities subsidiaries that are owned by foreign banking organizations are omitted from the sample because of the lack of comparable data for these firms' banking activities conducted outside the U.S. I also eliminated all securities subsidiaries that were in existence for less than ten quarters due to their relatively short history of operation. The final sample consists of 23 domestic banking organizations that have established Section 20 subsidiaries, of which nine are primary dealers of government securities (see Appendix A). As of 1996, the sample banking organizations account for 18.5% of all trading account securities held by the total of 1,491 bank holding companies regulated by the Fed. Hence, although the sample is small relative to the number of banking organizations in the U.S., they represent almost one-fifth of the securities activities in the entire banking industry.

Table 1 provides summary statistics for the sample Section 20 securities subsidiaries and their commercial bank affiliates. For each banking organization, I calculate the total banking assets which is defined as all financial assets in the bank's book except trading assets. Banking assets include cash and balances due from depository institutions, investment securities (both held-to-maturity and available-for-sale), federal funds sold and securities purchased under agreements to resell, and, loans and lease financing receivables. Investment securities are

classified as banking assets because they are central to the intermediation process, such as for the purposes of liquidity management and interest rate risk management. All non-financial assets, including premises, other real estate owned, and intangible assets, however, are excluded from banking assets to focus on pure financial assets. Total trading assets include all trading assets in both the bank subsidiary and the securities subsidiary. Trading assets refer to assets that are acquired for the purpose of selling in the near term or otherwise with the intent to resell in order to profit from short-term price movements. Trading assets in the securities subsidiary include both bank-eligible and bank-ineligible securities. For the Section 20 subsidiaries, I also report the amount of securities underwritten during the quarter, which include both bank-eligible and bank-ineligible securities.

In Table 1, total banking assets for the 23 banking organizations that have Section 20 subsidiaries average \$59 billion with median at \$42 billion. However, banks whose securities affiliates represent primary dealers of government securities are much larger, with mean and median total banking assets equal to \$94 billion and \$81 billion, respectively. In contrast, both mean and median banking assets for non-primary dealer affiliated banks are \$34 billion. Distribution of total trading assets is highly skewed for the full sample, with mean and median equal to \$8.4 billion and \$388 million, respectively. The skewness arises from the concentration of trading assets among primary dealer banking firms, which have a mean (median) trading assets of \$19.7 (\$14.8) billion, as compared to \$428 (\$88) million for non-primary dealer firms. Due to their role as primary dealers, the amount of securities underwritten by these securities affiliates is also much higher, averaging \$15 billion (median \$19.7 billion) per quarter, as compared to \$278 million (median \$119 million) for non-primary dealer Section 20 subsidiaries. Even after adjusting

for size, primary dealer firms engage in much more securities activities than non-primary dealer firms. The mean (median) trading assets to banking assets ratio is 29.97% (10.60%) for primary dealers and is only 1.02% (0.24%) for non-primary dealers. The mean (median) ratio of securities underwritten per quarter to total banking assets is 19.13% (3.99%) for primary dealers and registers 0.94% (0.39%) for non-primary dealers.

The mean (median) capital to asset ratio for banking subsidiaries is 7.8% (7.65%) for the full sample, 8.23% (7.90%) for banks whose securities affiliates are primary dealers, and 7.51% (7.57%) for banks whose securities affiliates are not primary dealers. While the capital ratio is not much different between primary dealer affiliated and non-primary dealer affiliated banks, the capital ratio for the securities affiliates that are primary dealers is substantially lower than non-primary dealers. The mean (median) capital ratio of Section 20 subsidiaries that are primary dealers is 4.84% (2.93%), compared to 23.08% (12.43%) for non-primary dealers. The disparity in the capital ratio between primary dealers and non-primary dealers suggests the followings. To the extent that the holding company tends to allocate more capital to support their securities subsidiaries that are not primary dealers than their banking subsidiaries, securities activities in general may be riskier than banking activities, thus requiring more capital cushion against potential losses. Furthermore, the lack of a bank safety net for the securities subsidiary may warrant additional capital, *ceteris paribus*. For Section 20 subsidiaries that are primary dealers of government securities, their low capital ratio may reflect the relatively low risk in dealing and underwriting of Treasury securities. Moreover, primary dealers, which are affiliated with the largest banks, may perceive themselves to be "too big to fail" and hence employ more financial leverage.

IV. Risk and Return of Banking and Securities Activities

A. Analytical Framework

The two basic questions to be answered in this study are the followings. (1) What are the profitability and risk of securities activities, relative to banking activities? (2) What are the potential diversification benefits of securities activities to a banking firm? To answer the first question, I examine the mean and variance of the return on securities activities and compare them to those of banking activities, with the mean return measuring profitability and the variance of return measuring risk.

To answer the second question, I examine the return correlation between banking and securities activities. Using modern portfolio theory, I treat banking activities and securities activities as two individual assets in the portfolio of the banking organization. The expected return and variance of return on banking and securities activities are respectively r_i and σ_i^2 , where i equals b for banking and s for securities. The expected return and the variance of return for the portfolio, p , are respectively:

$$r_p = w r_b + (1-w) r_s , \quad (1)$$

$$\sigma_p^2 = w^2 \sigma_b^2 + (1-w)^2 \sigma_s^2 + 2w(1-w) \rho \sigma_b \sigma_s , \quad (2)$$

where w is the portfolio weight for banking assets, and ρ is the coefficient of correlation between r_b and r_s .

In order for securities activities to provide diversification gains to the bank holding company, σ_p^2 must be strictly less than σ_b^2 at some w . Assuming that σ_s^2 is greater than σ_b^2 , a necessary condition for variance reduction due to the addition of securities activities is that ρ must be less than one. However, this is not sufficient because at small w , the effect of risk addition from the

second term in (2) due to σ_s^2 greater than σ_b^2 can dominate the risk reduction benefit from the third term. Moreover, if ρ is greater than the ratio of σ_b to σ_s , no risk reduction can be achieved.²

Two approaches are used to estimate r_i and σ_i^2 . In the first method, the return on equity and the return on assets are computed separately for each banking subsidiary(ies) and its securities affiliate. Return on equity (assets) is defined as net income after tax and extraordinary items divided by total equity capital (total assets).³ The mean and standard deviation of returns at the subsidiary level, as well as the return correlation between the bank subsidiary and the Section 20 subsidiary are studied to provide evidence on the relative risk and profitability between banking and securities activities. In the second method, instead of analyzing returns at the subsidiary level, I examine returns at the activity level. Specifically, the return on banking assets (as defined in Section III), the return on trading assets, and the return on securities underwriting are compared in a way that is similar to the first method. The advantage of this method is that securities activities can be broken down into trading and underwriting to provide further insights into the risk and profitability of two very different kinds of securities activities. Furthermore, since trading activities are carried out at both the banking subsidiary and the securities subsidiary, analysis at the activity level provides a better disaggregation than analysis at the subsidiary level. The short coming of this method, however, is that indirect expenses such as salaries, occupancy expenses, and taxes cannot be precisely charged to each activity. Thus, the return measures are gross

²To see this, differentiate (2) with respect to w . The derivative is negative at w equals 0 iff $\rho < \sigma_b/\sigma_s$.

³Total equity capital includes perpetual preferred stock, common stock, capital surplus, retained earnings, net unrealized holding gains or losses on available-for-sale securities, and cumulative foreign currency translation adjustments.

returns before any indirect expenses, as opposed to the net return measures constructed in the prior method.

The mean and variance of returns can be estimated using pooled time series cross section observations or individual firm observations. Using pooled observations yields much more precise estimates, but may be biased if the underlying return distribution varies across firms. For robustness, I conduct the analysis both with and without pooling. Furthermore, I group firms according to whether their securities subsidiaries are primary dealers of government securities to control for cross sectional variations in firm characteristics.

B. Subsidiary Level

Table 2A presents the pooled time series cross section statistics of return on equity (ROE) and return on assets (ROA) for the bank subsidiaries and the Section 20 subsidiaries. For the full sample, the mean quarterly ROE for banks and their securities affiliates are 2.44% and 2.24%, respectively. Although bank subsidiaries on average have a higher ROE than securities subsidiaries, the difference is not statistically significant based on matched pair comparison. However, the standard deviation of ROE for banks, at 23.60%, is significantly higher than that of securities subsidiaries, at 11.67%. The quarterly ROA for banks averages 0.27%, which is similar to the mean of 0.28% for securities subsidiaries. Interestingly, the standard deviation of ROA for banks (0.18%) is significantly lower than that of securities subsidiaries (2.71%), suggesting that the high ROE volatility for banks is due to their high leverage.

The results for banking organizations whose securities subsidiaries are primary dealers of government securities, however, are quite different from those that are not primary dealers. Panel

B of Table 2A shows that both ROE and ROA of banks are significantly higher but yet significantly less volatile than their securities counterparts. The results for the subsample of non-primary dealers mimic those for the full sample -- bank subsidiaries and securities subsidiaries have statistically similar ROE and ROA, but banks have more volatile ROE and less volatile ROA.

The coefficient of correlation of ROE between banks and securities subsidiaries is negative for both the full sample and the sub-samples, but none of them are significantly different from zero. The coefficient of correlation of ROA between banks and securities subsidiaries is negative for primary dealers and positive for non-primary dealers, but is insignificant in both cases. To the extent that the coefficients of correlation are indistinguishable from zero, the results suggest that securities activities can reduce the variances of ROE and ROA at the holding company level, despite their higher non-leverage risk.

In Table 2B, the mean and standard deviation of ROE and ROA for each bank holding company's bank and securities subsidiaries are computed using only time-series data. They are then averaged across the panel of sample banking firms. While the results based on individual banking organizations are similar to those that are based on pooling, there is a notable exception: In stark contrast to Table 2A, the volatility of bank ROE is significantly less than that of securities subsidiaries which are not primary dealers of government securities. This suggests that the bank ROE variance is much less within an individual bank than across different banks, indicating substantial cross sectional variations in bank ROE.

Table 3 reports the return correlations between the bank subsidiaries and their securities affiliates based on individual organizations without pooling. For the full sample, the mean and median Pearson correlation coefficient of ROE are 0.033 and 0.089, respectively. For the Section

20 subsidiaries that are primary dealers, the mean (median) correlation is 0.056 (0.140), and for the non-primary dealer securities affiliates, the mean (median) correlation is 0.017 (0.088). The number of positive (or negative) correlation coefficient is insignificant for the full sample and the subsamples, as indicated by the Wilcoxon Signed Rank test.

Similar results are obtained for the correlation of ROA. The mean (median) coefficient of correlation is 0.022 (0.021) for the full sample, 0.035 (0.021) for the subsample of primary dealers, and 0.014 (0.024) for the subsample of non-primary dealers. The Wilcoxon Signed Rank statistics are all insignificant. The findings in Table 3 confirm that the return correlations between the banking subsidiary and the securities subsidiary on average are close to zero, providing further evidence that banking organizations can attain diversification gains from engaging in securities activities, despite their higher stand alone risk.

C. Activity Level

To conduct the analysis at the activity level, define the return on banking activities, the return on trading activity, and the return on securities underwriting as follow:

Return on banking = (Net interest income excluding interest income and expenses from trading assets - Provision for loan and lease losses - Provision for allocated transfer risk) ÷ Quarterly average of total banking Assets,
where all items are derived from the bank subsidiary(ies), and banking assets include all interest earning assets except trading assets;

Return on trading = (Trading revenue + Foreign transaction gains (losses) + Gains (losses) and fees from trading assets + Net interest income from trading assets - Trading expenses) ÷ Quarterly average of total trading assets,
where all items are aggregated across the bank subsidiary(ies) and the Section 20 subsidiary;

Return on underwriting = Profit (losses) from securities underwriting ÷ Gross amount of securities underwritten by the securities subsidiary during the quarter.

The three return measures are computed for each sample banking firm using quarterly data. Based on pooled time series cross section observations of the full sample, reported in Table 4A, both the mean and the standard deviation of return on trading activities are significantly higher than both banking activities and securities underwriting. The mean return on banking is similar to the mean return on underwriting, but underwriting return is significantly more volatile than banking return. While the results for the subsamples of primary and non-primary dealers are qualitatively similar to the full sample, the return characteristics of securities activities between primary dealers and non-primary dealers are vastly different. The mean and standard deviation of return on trading for primary dealers are respectively 1.52% and 1.62%, while non-primary dealers register a mean trading return of 34.22% with standard deviation at 116.31%. On the other hand, the mean and standard deviation of return on underwriting for primary dealers are respectively 0.98% and 8.13%, while non-primary dealers have a mean of 0.42% and a standard deviation of 0.84%. It appears that non-primary dealers tend to trade much more aggressively than primary dealers, producing high but volatile trading return. The disparity in underwriting return characteristics seems to stem from the fact that primary dealers have much higher volume of securities underwriting than non-primary dealers.

Due to the different securities return characteristics between primary dealers and non-primary dealers, in examining the returns correlation, I focus on the two subsamples rather than the full sample. For primary dealers, banking return and trading return are significantly negatively correlated, while the coefficient of correlation between banking and underwriting returns is insignificantly different from zero, providing evidence that these banking organizations can attain diversification gains from trading activities and underwriting activities. Furthermore, the

correlation between trading return and underwriting return is close to zero, indicating the presence of diversification benefits from engaging in different securities activities.

For non-primary dealers, the coefficient of correlation between banking and trading returns is 0.023. Although the coefficient is insignificant, the point estimate exceeds the ratio of banking return standard deviation to trading return standard deviation, suggesting that the banking organization may not be able to reduce the total return variance by engaging in trading activities. The coefficient of correlation between banking return and underwriting return is 0.053 which is also insignificant. However, since it is less than the ratio of banking return standard deviation to underwriting return standard deviation, the finding suggests the presence of diversification gains from securities underwriting. The coefficient of correlation between trading and underwriting returns is also close to zero and is less than the standard deviations ratio, indicating that underwriting can provide diversification benefits to trading.

Table 4B reports the mean and standard deviation of each return measure per individual firm averaged across the full sample and the two subsamples. The findings are qualitatively similar to the pooling results except that the underwriting return standard deviation is insignificantly different from both banking and trading return standard deviations for primary dealers, and is insignificantly different from banking return standard deviation for non-primary dealers.

Table 5 reports the individual firm return correlations among banking, trading, and underwriting activities. In panel A, the correlation coefficient between the return on banking and the return on trading averages -0.188 for the full sample with a median of -0.174. The Wilcoxon Signed Rank statistic for the correlation coefficient is significantly negative, indicating that the

correlation between return on banking and the return on trading has a significantly negative sign pattern. This result, however, is driven by the group of primary dealers, as the correlation coefficient for the group of non-primary dealers shows no significant sign pattern. In fact, for non-primary dealers, the mean correlation of 0.017 exceeds the ratio of banking return standard deviation to trading return standard deviation, indicating no diversification gains can be obtained from trading activities. In panel B, the correlation coefficient between the return on banking and the return on underwriting has a mean and median of 0.007 and -0.019, respectively, and shows no significant sign pattern. In panel C, the Pearson correlation coefficient between the return on trading and the return on underwriting averages 0.039 with a median of -0.043 and shows no significant sign pattern. Both results are robust with respect to the subsamples of primary dealers and non-primary dealers.

In sum, the findings clearly suggest that trading activities have significantly higher return and higher risk than banking activities, especially for firms that are not primary dealers of government securities. While the risk and return of underwriting activities appear to be similar to banking activities for primary dealers, the underwriting returns for non-primary dealers seem to be below their banking returns. Whereas trading activities by banking organizations which are primary dealers of government securities tend to provide diversification benefits to the holding company by offsetting some of their banking risk, this is not the case for non-primary dealers due to their high trading risk. Underwriting activities seem to provide diversification benefits to both banking and trading activities.

V. Conclusion

This paper examines the effects of securities activities on banking organizations' risk and profitability using micro data of banks' securities affiliates that are authorized by the Federal Reserve to have Section 20 securities powers. I found that banking organizations' securities subsidiaries tend to be riskier but not necessary more profitable than their bank affiliates. For securities subsidiaries that are primary dealers of government securities, their higher risk partially comes from their higher leverage. For securities subsidiaries that are not primary dealers, despite having lower leverage, they tend to be riskier than their bank affiliates partly because of their aggressive trading behavior. Nevertheless, securities subsidiaries appear to provide diversification benefits to bank holding companies, as evidenced by the low return correlation between bank subsidiaries and securities subsidiaries.

Within the class of securities activities, abstracting from the effects of leverage and overhead expenses, I found that securities trading tends to be more profitable and riskier than banking activities. Trading activities engaged by primary dealer securities subsidiaries tend to provide strong diversification benefits to banking activities, reducing the banking organization's overall risk. For non-primary dealers, due to their aggressive trading behavior, their trading activities were found to increase the firm's total risk.

Securities underwriting is found to be riskier, and in the case of non-primary dealers also less profitable, than banking activities. Nevertheless, its return exhibits low correlation with banking return and trading return, suggesting that securities underwriting provides potential diversification benefits to both banking and trading activities.

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Appendix 1

List of Domestic Banking Firms' Section 20 Subsidiaries

Primary Government Securities Dealers

BA Securities, Inc.
BT Securities Corporation
Chemical Securities Inc.
Chase Securities Inc.
Citicorp Securities, Inc.
First Chicago Capital Markets, Inc.
J.P. Morgan Securities, Inc.
NationsBanc Capital Markets, Inc.
Nesbitt Burns Securities Inc.

Non-Primary Dealers

Barnett Securities, inc.
Bank South Securities Corporation
Liberty Investment Services, Inc.
Republic New York Securities Corporation
Huntington Capital Corporation
Banc One Capital Corporation
PNC Securities Corporation
First Union Capital Markets Corporation
Southtrust Securities, Inc.
Fleet Securities, Inc.
Hopper Soliday & Co., Inc.
Norwest Investment Services
Suntrust Capital Markets, Inc.
Synovus Securities, Inc.

Table 1: Descriptive statistics for domestic bank subsidiaries and their securities affiliates, 1990-1997. All \$s are in million.

	Mean (Median)
Panel A: All (N=23)	
Total Banking Assets	\$59,422 (\$42,085)
Total Trading Assets	\$8,423 (\$388)
Total Securities Underwritten	\$6,156 (\$331)
Ratio of Trading Assets to Banking Assets	13.0% (1.12%)
Ratio of Securities Underwritten to Banking Assets	8.46% (0.87%)
Bank Subsidiary Capital to Asset Ratio	7.80% (7.65%)
Securities Subsidiary Capital to Asset Ratio	15.81% (5.89%)
Panel B: Primary Dealers of Government Securities (N=9)	
Total Banking Assets	\$94,797 (\$81,093)
Total Trading Assets	\$19,764 (\$14,854)
Total Securities Underwritten	\$15,060 (\$19,737)
Ratio of Trading Assets to Banking Assets	29.97% (10.60%)
Ratio of Securities Underwritten to Banking Assets	19.13% (3.99%)
Bank Subsidiary Capital to Asset Ratio	8.23% (7.90%)
Securities Subsidiary Capital to Asset Ratio	4.84% (2.93%)
Panel C: Non-Primary Dealers (N=14)	
Total Banking Assets	\$34,483 (\$34,597)
Total Trading Assets	\$428 (\$88)
Total Securities Underwritten	\$278 (\$119)
Ratio of Trading Assets to Banking Assets	1.02% (0.24%)
Ratio of Securities Underwritten to Banking Assets	0.94% (0.39%)
Bank Subsidiary Capital to Asset Ratio	7.51% (7.57%)
Securities Subsidiary Capital to Asset Ratio	23.08% (12.43%)

Table 2A: Mean (standard deviation) of returns for bank subsidiaries and their securities affiliates, and the Pearson coefficient of correlation between the returns of bank subsidiary and the returns of its securities affiliate, based on pooled time-series cross section of 23 domestic banking organizations from 1990:II to 1997:II.

	Bank Subsidiary	Securities Subsidiary	Coeff. of Correlation
Panel A: All Banks and their Securities Affiliates (N=578)			
Return on Equity	2.44% (23.60%)* ** *	2.24% (11.67%)	-0.045
Return on Asset	0.27% (0.18%)* ** *	0.28% (2.71%)	0.045
Panel B: Primary Dealer of Government Securities (N=239)			
Return on Equity	3.25%* ** * (1.84%)* ** *	2.21% (4.70%)	-0.043
Return on Asset	0.27%* ** * (0.15%)* ** *	0.09 (0.37%)	-0.032
Panel C: Non-Primary Dealer of Government Securities (N=339)			
Return on Equity	1.87% (30.79%)* ** *	2.26% (14.73%)	-0.046
Return on Asset	0.27% (0.19%)* ** *	0.43% (3.52%)	0.055

* ** * Indicate significant difference at the 1% level.

Table 2B: Mean return and standard deviation of return are computed for each bank subsidiary and its securities affiliate using quarterly observations from 1990:II to 1997:II, which are then averaged across the panel of 23 domestic banking organizations.

	Bank Subsidiary	Securities Subsidiary
Panel A: All Banks and their Securities Affiliates (N=23)		
Mean Return on Equity (Mean Standard Deviation)	3.54%* (1.17%)***	2.04% (7.09%)
Mean Return on Asset (Mean Standard Deviation)	0.28% (0.09%)**	0.38% (1.14%)
Panel B: Primary Dealer of Government Securities (N=9)		
Mean Return on Equity (Mean Standard Deviation)	3.21% (1.58%)**	2.28% (3.96%)
Mean Return on Asset (Mean Standard Deviation)	0.26%*** (0.13%)	0.09% (0.22%)
Panel C: Non-Primary Dealer of Government Securities (N=14)		
Mean Return on Equity (Mean Standard Deviation)	3.75% (0.91%)**	1.89% (9.11%)
Mean Return on Asset (Mean Standard Deviation)	0.29% (0.07%)**	0.57% (1.73%)

*, **, *** Indicate significant difference at the 10%, 5%, and 1% levels, respectively.

Table 3: Pearson correlation coefficient between returns of bank subsidiary and returns of its securities affiliate, based on individual firms without pooling.

	All	Primary Dealers	Non-Primary Dealers
Panel A: Return on equity			
Mean Correlation	0.033	0.056	0.017
Median Correlation	0.089	0.140	0.088
Signed Rank	23	8.5	2.5
N	23	9	14
Panel B: Return on asset			
Mean Correlation	0.022	0.035	0.014
Median Correlation	0.021	0.021	0.024
Signed Rank	16	6.5	1.5
N	23	9	14

Table 4A: Mean (standard deviation) of returns on banking activities, trading activities, and securities underwriting, as well as their pairwise Pearson coefficient of correlations, based on pooled time-series cross section of 23 domestic banking organizations from 1990:II to 1997:II.

	Banking	Trading	Underwriting	Coefficient of Correlation
All (N=578)	0.89%*** (0.28%)***	20.60% (90.26%)		0.073 ^a
		20.60%*** (90.26%)***	0.66% (5.41%)	-0.003
	0.89% (0.28%)***		0.66% (5.41%)	0.002
Primary Dealers (N=239)	0.78%*** (0.25%)***	1.52% (1.62%)		-0.232 ^b
		1.52% (1.62%)***	0.98% (8.13%)	0.073
	0.78% (0.25%)***		0.98% (8.13%)	0.024
Non-Primary Dealers (N=339)	0.97%*** (0.28%)***	34.22% (116.31%)		0.023
		34.22%*** (116.31%)***	0.42% (0.84%)	0.026
	0.97%*** (0.28%)***		0.42% (0.84%)	0.053

*, **, *** Indicate significant difference at the 10%, 5%, and 1% levels, respectively.

^a, ^b Indicate significant at the 10% and 1% levels, respectively.

Table 4B: Mean return and standard deviation of return on banking activities, trading activities, and securities underwriting, are computed for each bank subsidiary and its securities affiliate using quarterly observations from 1990:II to 1997:II, which are then averaged across the panel of 23 domestic banking organizations.

	Mean Return on Banking (Mean Standard Deviation)	Mean Return on Trading (Mean Standard Deviation)	Mean Return on Underwriting (Mean Standard Deviation)
All	0.91%** (0.15%)*	25.83% (30.63%)	
		25.83%** (30.63%)	0.70% (1.97%)
	0.91% (0.15%)		0.70% (1.97%)
Primary Dealers	0.79%** (0.17%)*	1.51% (1.17%)	
		1.51% (1.17%)	1.20% (4.47%)
	0.79% (0.17%)		1.20% (4.47%)
Non-Primary Dealers	0.99%** (0.14%)*	41.47% (49.57%)	
		41.47%** (49.57%)*	0.36% (0.25%)
	0.99%*** (0.14%)		0.36% (0.25%)
N	23	9	14

*, **, *** Indicate significant difference at the 10%, 5%, and 1% levels, respectively.

Table 5: Pearson correlation coefficients of banking, trading, and underwriting activities, based on individual firms without pooling.

	All	Primary Dealers	Non-Primary Dealers
Panel A: Return on Banking and Return on Trading			
Mean Correlation	-0.188	-0.508	0.017
Median Correlation	-0.174	-0.574	-0.059
Signed Rank	-69**	-22.5***	-0.5
N	23	9	14
Panel B: Return on Banking and Return on Underwriting			
Mean Correlation	0.007	-0.084	0.071
Median Correlation	-0.019	-0.245	0.047
Signed Rank	-11.5	-6.5	6.5
N	22	9	13
Panel C: Return on Trading and Return on Underwriting			
Mean Correlation	0.039	0.070	0.017
Median Correlation	-0.043	0.115	-0.083
Signed Rank	8.5	7.5	-4.5
N	22	9	13

** , *** Indicates significant at the 5% and 1% levels, respectively.