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US bank holding companies: Structure of activities and performance through the cycles

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ABSTRACT

The development of market-based finance has supported a larger involvement of banks in non-banking activities over the last decades. Does diversification beyond "traditional" banking result in actual diversification of earning risks and superior risk-return profile? Existing studies on bank performance address the effect of earnings based on accounting types and for specific time periods. With the exception of proprietary investments and financial leverage, knowledge with regard to underlying activities is scarce and little conclusive to date. Other studies, mainly stemming from central banks, do not focus on activity types or risk-return but evidence a marked influence of economic conditions and financial markets on banks' income.

The paper proposes a twofold original contribution by addressing the influence of economic conditions and financial markets on specific activities conducted by banks. Based on granular data from a panel of US Bank Holding Companies (BHC), it first aims at estimating profitabilities related to "traditional" banking services and to (customers) investment services conditional to the environment. The study is then extended by the simulation of multiple scenarios to assess the expected performance of activities (profitability and risk) as well as the extent of uncertainty. Diversification into investment services is found to improve the expected risk-return. Also, well calibrated interest rate mismatch (between assets and liabilities) further supports performance. Deviations from historical volatilities and correlations of influential variables may cause diversification benefits to vary. Results however also suggest that the uncertainty of ROE associated with such diversification is limited compared to banking alone.

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1. Introduction

Diversification of US commercial banks into non-banking activities is historically constrained by the Banking Act of 1933. The Bank Holding Company (BHC) Act of 1956 further restricted the combination of banking and non-banking activities by holding companies. The regulatory framework has gradually eased and allowed banks to develop into financial activities. The aftermaths of the recent banking crisis have banking authorities to reconsider the universalization of banks. Specifically in the US, the Volcker rule (section 619 of the Dodd–Frank Act, 2010) again prohibits trading activities and further restricts proprietary investment portfolios for commercial banks and BHC. The Dodd–Frank Act also foresees preventive restructurings of banks in order to avoid defaults and to reduce potential costs for the public. Bank debt holders and large depositors now face greater risks; they shall exert a greater vigilance over the soundness of banks. Market discipline, in the sense of Calomiris (1999), is therefore likely to increase. Further, since 2013, Basel III rules gradually but strongly raise bank capital requirements through common equity. They also impose new ratios that constrain short term market funding and balance sheet leverage. Hence customer-centric activities, profitability and earnings risks are major items in the rethinking of bank business models.

Does diversification beyond traditional banking result in actual diversification of earnings risks and superior risk-return profile? Besides proprietary investments, the effect of the business structure on performance is inconclusive to date. Income outside net interest income (nonNII) is consensually found, on an aggregated basis, to reduce risk-return. However more granular activity-based studies are scarce and diverging. To start with, the performance of traditional banking remains to be explored (Hirtle & Stiroh, 2007). Existing studies rely on specific periods that may affect findings. The influence of economic conditions and financial markets is little investigated beyond total earnings and credit risks or trading income. The paper studies this influence on performance with a focus on banking activities and investment services to customers (IS). IS encompass fiduciary activities such as the custody and the management of customer assets, securities brokerage as well as advisory services. Data are based on a panel of 264 US bank holding companies (BHC) covering quarterly observations between 2002 and 2011.

The profitability of banking services is significantly and primarily influenced by GDP growth through loan provisions. Banking expenses do not mitigate the volatility induced by loan provisions. Banking fees are little affected by economic and market conditions and are stable. In order to accurately assess the interest margin from banking activities, margins on customer loans and deposits are evaluated distinctly from reported total NII. This evaluation provides with margins achievable after hedging of market risks and also enables to appraise the potential added-value of interest rate mismatch strategies at a later stage. IS

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income is significantly and positively driven by stock markets as well as moderately negatively affected by interest rates. However, on average, a large share of IS income is stable. Further, expenses associated with IS tend to adjust to income changes and therefore mitigate IS income risks.

The performance of banking activities is then tested through random scenarios for the economy and financial markets over ten years. Regarding the ROE of banking services (alone), expectations for ten-year average and for yearly standard deviation respectively stand slightly above 10% and close to 1.9%. Observations for individual scenarios may diverge from these expectations, causing an "uncertainty" of banking ROE. I then test the effect of the addition of IS. IS is found to increase the expected volatility of the ROE but actually improves risk-return of BHC. The addition of prudent interest rate mismatch, through a slower repricing of assets than liabilities, further supports risk-return. Deviations from historical volatilities and correlations of GDP growth, stock markets and interest rates may affect these expected benefits. However it is also shown that the overall ROE "uncertainty" barely increases with investment services and interest rate mismatch whereas the expected ROE rises. Hence the present paper sheds a light on the importance of considering the sensitivity of activity types to the environment. Further, the influence is exogenous but may be mitigated through combinations of activities. Results suggest that a larger involvement of BHC in customer investment services is beneficial to performance and that BHC may consider more active, tailored, interest rate mismatch strategies.

The paper is structured as follows. The related literature and my research focus are presented in Chapter 2. Chapter 3 describes data and the samples. Prior to modeling, Chapter 4 proposes a descriptive analysis of BHC income components. Models for profitability owing to the economy and financial markets are presented in Chapter 5. Chapter 6 is dedicated to the methodology and results of the simulations through the cycles. Chapter 7 concludes. References to figures that contain A (e.g. Fig. A5) correspond to figures in appendixes.

2. Related literature and research focus

First studies regarding the effects of non-banking activities on bank performance are based on fictitious mergers between activities. Authors (e.g. Boyd & Graham, 1988) opt for such an approach given the limited diversification of banks at that time. Other studies assess the volatility of ROA or ROE owing to observed income structures. NonNII is consensually found more volatile than NII (e.g. Smith, Staikouras, & Wood, 2003; Stiroh, 2004; Stiroh & Rumble, 2006). The volatility of ROA or ROE also increases with the weight of nonNII (e.g. Lepetit, Nys, Rous, & Tarazi, 2008; Smith et al., 2003; Stiroh, 2004). Therefore nonNII, on an aggregated basis, is not found to provide with diversification benefits. Further, nonNII does not increase the profitability of banks (Stiroh, 2004; Stiroh & Rumble, 2006) or only supports profitability when remaining low (Gambacorta and van Rixtel (2013)). Consistently, DeYoung and Roland (2001) as well as Stiroh (2004) observe that risk-return decreases with the weight of nonNII.

With a more granular view on activities, several authors find that security firms have a riskier profile than banks (Boyd and Graham (1988), Kwast (1989) and Kwan (1998)). Although Kwan (1998) suggests a potential diversification benefit, Kwast (1989) observe that diversification benefits quickly exhaust as the weight of trading increases. DeYoung and Roland (2001) as well as Stiroh (2004) also identify a significant negative effect of trading on the volatility of earnings. Stiroh (2004) further reports that trading deteriorates risk-return despite a low correlation with NII. Regarding investment services to customers, Gallo, Apilado, and Kolari (1996) find that asset management services tend to reduce the volatility of banks' net income. Stiroh and Rumble (2006) observe that fiduciary services support risk-return. DeYoung and Roland (2001) nevertheless find that the volatility of net income increases with non-banking fee revenues. Proceeding the other way around, Hirtle and Stiroh (2007) analyze the contribution of retail banking to earnings risks of BHC. Since revenues associated with retail banking (or banking revenues in general) are not distinctly available in reported data, they estimate the intensity of retail banking by the ratio of bank branches over total assets, the granularity of deposits and the share of retail loans. They find no significant relationship between retail banking intensity and the volatility of earnings or the risk-return of BHC.

Beyond proprietary trading and investments, effects of the structure of income on bank's performance are therefore debated. Divergences are not necessarily contradictory since results may depend upon the observed periods. Volatilities and correlations of activities may vary over time. The potential influence of the economic and financial conditions on banks' earnings is mentioned in the performance literature (e.g. DeYoung & Roland, 2001; Hirtle & Stiroh, 2007) but is not factored-in. Goddard, Molyneux, and Wilson (2004) observe that banks' ROE show a limited persistence and are positively influenced by GDP growth. Since the pioneer works of Fama (1986) and Altman (1983, 1990), a large body of literature has built about credit failures and lasting effects of economic conditions. In a survey of the literature, Allen and Saunders (2003) conclude that it has become almost axiomatical that credit losses multiply in times of distressed economic conditions. Probabilities of defaults and losses given defaults are positively correlated and thus exacerbate procyclical swings of credit losses. FSAP[1] working papers report a positive GDP influence and a negative influence of market interest rates on the global profitability of banks (e.g. Lehmann and Manz (2006), Rouabah (2006), Coffinet and Lin (2010)). A positive influence of stock markets is found by Lehmann and Manz (2006) as well as by Rouabah (2006). With regard to income components, FSAP studies consensually confirm the significant effect of GDP on credit risk. Lehmann and Manz (2006) as well as Sorge and Virolainen (2006) find that loan provisions tend to increase with market interest rates. However Arpa, Giulini, Ittner, and Pauer (2001) observe a negative relation. As the authors indicate, rising interest rates may increase the financial fragility of some debtors on floating-rate loans but this effect can be mitigated by improving economic conditions usually associated with higher interest rates. Such mitigation is reported by Rouabah (2006) as well. Hoggarth, Sorensen, and Zicchino (2005) also observe a limited effect of interest rates on loan provisions. NII is commonly found to be negatively influenced by interest rates, since banks' liabilities usually reprice faster than their assets (interest rate mismatch). Only three papers explore the sensitivity of commissions. Coffinet, Lin, and Martin (2009) observe a positive impact of GDP on commissions but no such effect is found by Lehmann and Manz (2006). The latter authors as well as Rouabah (2006) find a positive influence of stock markets on commissions. Albertazzi and Gambacorta (2009) provide the first analysis covering earning components up to total earnings, although the sensitivity is only tested for GDP growth and for interest rates. Besides the influence of GDP on loan provisions, they notably find no influence on nonNII and on operating expenses.

Although loan provisions relate to "traditional" banking, FSAP papers do not investigate the sensitivity of income (e.g. commissions) owing to different underlying activities. In a survey of risk management practices, Kuritzkes and Schuermann (2010) report that further research is necessary regarding business risks and structural interest rate risks (non-trading i.e. mismatch of repricing between liabilities and assets) of banks. These risks are less well understood than market and credit risks and represent an important source of volatility. This paper explores the influence of economic conditions and financial markets on earnings owing to activity types of Bank Holding Companies (BHC, United States) with a focus on "traditional" banking services and on investment services. Resulting equations are then embedded into profitability simulations through multiple economic and financial scenarios. Contrary to analyses on single periods, these scenarios will

[1] Financial Sector Assessment Programme, a joint initiative from the IMF and the World Bank (1999) aiming at assessing the capital adequacy of banks through stress tests. Related papers are mostly issued by national banking supervisors.

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