Literature vs. Reality: Bank Valuation Methods Used by Equity Analysts

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ABSTRACT

The idiosyncratic attributes of banks call for the use of valuation methods that are adapted specifically for the peculiar characteristics of the banking business and the special roles played by its leverage and capital constrains. This paper discusses the common valuation methods advocated in the academic literature and compare them against the "real world" methodologies. The study reviews 171 research reports on the valuation of some of the largest European banks in 2011. The results of the research indicate, for the scope of the sample, that there is a disconnect between the financial literature and the real world. Equity analyst, in general, use valuation models that are more closely adapted to the specific characteristics of banks and not always follow what the financial literature proposes as the core methods for bank valuation. This finding suggests that there is ample room for further research to re-evaluate the banking valuation methodology in the literature.

INTRODUCTION

A central characteristic of modern capital markets is the constant need to value assets. Asset valuation may be needed either in connection with securities traded in the stock market, as required by a corporate transaction, for value management purposes, or as a result of corporate restructuring. Although financial analysts may choose different valuation models to estimate current values, most of the models are somewhat similar in that they involve discounting the available cash flow to securities' owners to the present time (Diamond & Rajan, 2000, p. 11).

The preference for one valuation method over another is determined by the stage of life cycle of the company (new venture, stable growth, or mature), whether the cash flows are positive or negative, whether or not the company pays dividends, the degree of uncertainty of the estimates, or the specific industry, amongst many other factors.

In the case of financial institutions, the valuation process can deviate significantly from the generic valuation approach. There are three main features of the banking business that support this more custom approach in banking: the use of financing as a raw material, the high degree of leverage, and the heavy influence of government regulations on the business.

This paper studies bank valuation methods from a practitioner's perspective. It reviews how stock analysts determine absolute or relative valuation of European bank securities and examines how aligned they are with the valuation models proposed in the financial literature. This analysis looks at the bank as

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an ongoing business, and does not address valuation in the context of corporate restructuring, M&A transaction, or other special situations.

To provide a general framework for the analysis, the paper starts with a review of the main valuation techniques in the literature, continues with a discussion of the differences between a bank and an industrial company from a valuation perspective, and analyzes how the financial literature deals with bank valuation.

The sample used for the research consists of 171 reports from 18 different research houses covering euro based European bank stocks. The study summarizes the valuation models employed by different analysts and identifies the preferred methods of valuation. The results of the study show that there are differences in how banks are actually valued and what the literature advocates. There is room for further research to develop a more general valuation framework for banks to reconcile the theoretical models and what practitioners are doing.

COMPANY VALUATION METHODS

There are obvious differences in how an industrial company organizes its business and the way a financial institution is run. In contrast to industrial companies, the financial structure of a bank is influenced not only by the desire to seek an optimal capital structure, but also by how the business is actually conduct. For a manufacturing company, financing is separated from its operations. In contrast, for a bank financing is part of its operations (Gross, 2007, p. 22). Clients' deposits are a production factor of the intermediation function carried out by the bank. This characteristic of banks makes it difficult, or close to impossible, to determine what part of the liabilities is structural financing and what relates to operations (i.e. what is long-term debt and what is working capital).

Additionally, the high level of leverage of banks compared with non-financial companies compounds the impact of the problem. Non-equity financing carries a much larger weight than equity financing on the balance sheet and the cost of capital of non-interest bearing deposits is difficult to determine (Copeland et al., 2000, pp. 434-435).

These two issues led some to favor equity oriented valuations when dealing with banks, because the company's weighted cost of capital (WACC) calculation is simplified as there is no need to disentangle the liability structure of the bank. The enterprise valuation approach presents an additional problem that in situations where the spread between loans and the cost of capital is low, small estimation errors may produce significant changes in the valuation (Copeland et al., 2000, p. 435).

A second area of concern is the core banking process of transforming deposits into credits and loans. First, interest rate spreads are subject to asset and liability repricing which is also a function of the degree of mismatch between asset and liability. Given the high degree of leverage of banks, small changes in these variables can have an exponential effect in future earnings and cash flows. Second, loan related losses are an intrinsic element of the lending activity and are highly correlated with the business cycle.

Again, small changes in the percentage of bad debts in respect of total loans may have a dramatic impact in bank's profitability and even in its long-term viability.

Third, a bank's profitability is closely related to economic activity. This relationship is often reinforced by the fact that in times of general economic weakness, the regulatory measures tend to be more pro-cyclical than counter-cyclical; as well as by the more stringent financing requirements that banks impose on clients. Chen (2001, p. 416) posits that ``the initial effect of a shock to bank capital propagates into subsequent periods through the interaction of credit constrains on the banks as well as on entrepreneurs, which together cause a spiral fall in bank lending and investment''.

Fourth, in large international banks, the business is not limited to the intermediation process between lenders and borrowers. Much to the contrary, it comprises many different activities such as investment banking, payment services and other commission based products, private banking, asset management, securities services, and the provision of capital markets products. The existence of so many activities within a bank, together with the use of bundle pricing in many instances, makes it difficult to determine what is actually driving the results of the bank. As Copeland et al. (2000, p. 438) point out: ``it is hard ... to understand which business units are creating or destroying value.''

Finally, banking is also heavily regulated such that legislation has a material impact on both the business structure and the profitability level. From this perspective, the amount of capital stands out as the key variable monitored by banks. The level of total and core capital determines the level of activity and the potential growth of the bank's various business lines. For example, under the Basel II capital accord (Basel Committee on Banking Supervision, 2006), minimum capital is calculated as a function of credit risk (based on risk weighted asset calculation), operational risk, and market risk.

Most works that deal with bank valuation start with a similar tenet that banks are difficult to value and very different from other companies (see, for example, Copeland et al., 2000, p. 433, or Damodaran, 2002, p. 575). Even if both premises may be considered valid, it can also be argued that they are just as different as a manufacturing company from a utility, or no more difficult than valuing a technology driven company where a breakthrough discovery can make the difference between failure or outstanding profits.

In general, the literature treats banks as a special case for the application of the generic methods and no unique tools are developed to value financial institutions. Additionally, few papers cover the adjustments that may be required when valuing banks (Gross, 2007, p. 12).

Copeland et al. (2000, pp. 434-435) advocate the use of the FCFE model as the main valuation methodology for banks. Under this approach the free cash flow to shareholders is defined as net income plus non-cash charges less cash flow needed to grow the balance sheet. This figure is calculated as net income plus depreciation, plus sources and minus uses of cash flows that are derived from the balance sheet analysis (including the repayment of loans net of provisions, and the cash consumption resulting from new loans). The main hurdle in this approach is to determine what part of the equity cash flow has to be retained in the business to support growth and to comply with the capital ratio requirements.

Damodaran (2002, pp. 579-600) recommends a wider range of valuation methods for banks, favoring those models that focus on equity rather than on the whole firm.

Under the assumption that firms will pay eventually as dividends all available cash flow to equity, the DDM is presented as an alternative formulation to the FCFE approach. Alternatively, the free cash flow to equity can be determined by estimating the reinvestment needs of the bank on the basis of the minimum capital ratios. The fact that banks tend to pay out more in dividends than other companies makes the use of the DDM especially appropriate. In this situation, dividends can be a reasonable proxy for free cash flow to equity.

The FCFE and the DDM yield the same result when dividends are equal to the free cash flow available to shareholders, and also when excess cash above dividends is reinvested in projects with zero net present value (Damodaran, 2002, p. 374). In the more general case, FCFE valuation tends to be higher than the value derived from the DDM. This difference in value can be seen as a firm controlling premium.

Regarding the growth estimates, the general growth model in which g is equal to the retention ratio times ROE is particularly well suited for banks. Since financial assets are marked to market, ROE is a more dependable metric. And the link between retention ratio and the minimum capital ratios helps to reasonably forecast future growth (Damodaran, 2002, p. 584).

The residual income valuation model (RIV) can also be adapted to bank valuation. Most bank's assets and liabilities are marked to market. As a result, the accounting value of equity for a bank is much closer to the market value than that of a manufacturing firm. The limited impact of depreciation in banks also makes it reasonable to use equity value as the starting point for this valuation approach (Damodaran, 2002, p. 592).

Given the nature of the banking business, asset-based valuation is considered appropriate for banks only in those instances in which there is limited or no growth. Assets and liabilities can be assessed using expected transaction prices in the market. And the expected cash flows of each asset are then discounted at the applicable cost of capital.

Finally, relative valuation focusing on the measures of price to earnings (P/E) and price to book (P/B) is also a valid methodology for bank valuation. The strong relationship between P/B and ROE for financial services firms suggests the convenience of looking at both ratios simultaneously Nevertheless, different business lines within a diversified banking institution may command different P/Es (e.g. retail and investment banking divisions within a bank exhibit different risk, return, and growth profiles). To deal with such diversity, it is possible to value each business independently at the appropriate multiples and then arrive at the combined total value of equity. This approach is known amongst practitioners as the sum of the parts model (SOTP).

The sum of the parts valuation method (SOTP) is extensively used by practitioners but it is not that well covered in the literature. For a discussion of how to apply this methodology and the main issues it has to overcome (amongst others, valuation of the corporate center, assessment of the transfer pricing

quality, and allocation of equity amongst divisions), Fernández & Pérez (2008) and Morales & Martínez (2006) treat the subject with some degree of depth.

Gross (2007) discusses the applicability of four valuation approaches to banks: market based, asset oriented, cash-flow, and residual income. The author notes that the DCF method is the one favored in the bank valuation literature, despite the fact that the bank's specific attributes actually support the use of the residual income approach. She further argues that both DCF and residual income models (both using the equity approach) are preferable to multiples or net asset values approaches, which should only play a secondary role.

In addition, asset based and relative valuation methods can play a supplementary role as well. Liquidation price of a bank's assets serves as a floor for its value. Market-oriented valuations also play a role as "early indicators, control methodology and negotiation tool". Amongst them, P/E multiples have a limited explanatory power, especially in the case of diversified banks in which P/E vary markedly from one business activity to another. P/B provides a summarized view of market's expectations about future performance relative to the invested capital, which according to Gross (2007), is a better indicator to use in valuing banks.

This paper focuses on ongoing bank valuations in a stock market context and does not deal with bank analysis in connection with a corporate transaction. However, it is reasonable to assume that transactions in which at least the bidder's stock is quoted in a market, M&A analysts will also need to look at similar valuation measures used by equity analysts.

BANK VALUATION IN PRACTICE

This study reviews 171 research reports on European banks produced by 18 different research houses (international and domestic). We seek to identify the principal valuation methodologies used by sell side analysts and examine how aligned these methodologies are with the current literature.

Out of the 171 reports, 155 were available in Bloomberg and another 14 were obtained from other sources. With the exception of two reports that were written in 2010, all of them were dated 2011. The type of documents that were analyzed included full bank research reports, comprehensive analysis of the European banking sector, and research updates linked to new earnings figures or some other kind of emerging information in the market.

The sample used was limited by the authors' ability to access the actual reports, a methodological issue that can limit the ability to generalize the findings of this research (see Trochim, 2005, pp. 27-29). However, this limitation is ameliorated by several factors: 1) banking today is a global activity from a business and regulatory perspective; 2) most of the research houses are global institutions that are more likely than not to use a standardize approach to valuation; and 3) although the featured banks are European based, many of them have a substantial proportion of their business in other parts of the world.

A more serious restriction is that the sample only covers sell side research. It cannot be ruled out that buy side research or investment banking related analysis could put the accent in different valuation methodologies or variables to meet their specific needs.

The information contained in the following tables summarizes what research approaches are used in different reports. It is possible that some research houses use some other valuation techniques in other analysis that are not part of our sample.

Table 8: *Valuation Multiples*

Research House	P/E	P/PPP	Price GOP	Div. Yield	P/Book	P/NAV P/TBV	ROE	Implied ROE
Iberian Equities	*	*		*	*			
Goldman Sachs	*			*	*	*	*	
Cheuvreux-Crédit Agricole	*	*		*		*	*	
BBVA Research	*			*	*	*	*	
Bersntein Research	*			*	*	*	*	*
Morgan Stanley	*			*	*	*	*	
Société Générale	*			*	*	*	*	
J. P. Morgan Cazenove	*			*	*	*	*	
Deutsche Bank	*			*	*	*	*	
Natixis	*		*	*	*		*	
Credit Suisse	*	*		*		*	*	
Santander	*			*	*	*	*	
Royal Bank of Scotland	*			*	*		*	
Macquaire	*			*	*	*	*	
HSBC	*	*		*		*	*	
Commerzbank	*			*	*		*	
Mediobanca Securities	*			*	*			
N+1 Equities	*			*		*		
#18 Houses	18	4	1	18	14	13	15	1

Source: 171 research reports from different equity research houses downloaded from Bloomberg (155) and from other sources (14) covering the 6 banking groups included in Eurostoxx 50 and some other European banks. All reports are dated in 2011 with the exceptions of Bernstein Research and Iberian Equities which are dated in 2010.
Column headings descriptions: P/E (price to earnings), P/PPP (price to pre-provisions profit), Price/GOP (price to gross operating profit), Div. Yield (dividend yield), P/Book (price to book), P/TBV (price to tangible book value, ROE (return on equity), Implied ROE (implied return on equity).

Table 1 tabulates the valuation multiples used in different reports, whereas Table 2 shows the principal valuation models applied by the different research houses. The information contained in these tables together with the analysis of previous sections provides sufficient insights to understand how sell side analysts evaluate banks. The following itemized list summarizes the differences and similarities between what is advocated in the literature and what is used by practitioners. It also highlights in which cases some research houses may stray from the more generic approach:

- Table 1 above shows that only two multiples are present in all reports: P/E and dividend yield, reflecting the fact that despite all the limitations, markets continue to use earnings based valuation as a baseline, and that dividends play a significant role in the market assessment of banks. The use of earnings based multiples though, is consistent with some of the academic positions mentioned above.
- The results in Table 1 also indicate that some research houses also rely on the ratio of P/PPP to isolate the performance of the bank from the quality of the loan portfolio. This ratio is seldom mentioned in research of bank valuation.
- As supported in the literature, the P/B ratio is a key multiple in banking valuation. Analysts also refine this analysis by adjusting intangible assets and goodwill from book value to produce more comparable and conservative figures.
- P/B, ROE, Implied ROE, and P/B Intrinsic valuations are used by a significant number of analysts to support both their relative and absolute valuations. This approach is consistent with our discussion above and with the relative good quality of book estimates in banks and with the relevant role of capital in shaping the structure of the business.
- Regarding the use of discounted cash flow method, Table 2 below shows that none of the reports use the FCFE methodology straightly. Only two research teams apply a variant of the FCFE method and limit themselves to the use of DDM of different degrees of complexity. There are probably two notions that support this approach. First, calculating free cash flow to shareholders from outside the bank is quite difficult, and second, in cases where banks are running very tight capital ratios it can be safely assumed that dividends are a good proxy of the maximum amount of free cash flow to equity.
- Despite the fact that both the literature and on the field valuation models seek to value equity and not the whole firm, there are still examples of analyst that include company based metrics such as EV/EBITDA and P/E.
- It should also be noted that none of the research houses listed in Table 2 use the RIV methodology, despite that this metric can be calculated for banks in a rather straight forward manner and its theoretical support discussed previously.
- The SOTP is a fundamental instrument in the bank analyst's toolbox. However, it has been very scarcely discussed in the financial literature. A bank analyst may break down its analysis of the bank by its various geographical locations or business lines, or both. Each unit can be valued using any of the other methodologies, including implicit P/E, comparable P/E, or the relationship defined in equation (7). Other businesses such as asset management can be valued used different metrics such as a multiple based on assets under management.

Table 9: Principal *Valuation Models*

Research House	DDM	Sum OTP	Implicit P/E	SOTP Comparable P/E	P/Book Intrinsic Value (GGM)	EV/ EBITDA
Iberian Equities		*				
Goldman Sachs					*	
Cheuvreux-Crédit Agricole		*	*			
BBVA Research						
Bersntein Research		*				
Morgan Stanley		*			*	
Société Générale	*	*		*	*	
J. P. Morgan Cazenove		*		*	*	
Deutsche Bank		*		*		
Natixis	*	*			*	
Credit Suisse		*		*		
Santander		*			*	
Royal Bank of Scotland						*
Macquaire					*	*
HSBC						
Commerzbank						
Mediobanca Securities		*			*	
N+1 Equities						
#18 Houses	2	11	1	4	8	2

Source: 171 research reports from different equity research houses downloaded from Bloomberg (155) and from other sources (14) covering the 6 banking groups included in Eurostoxx 50 and some other European banks. All reports are dated in 2011 with the exceptions of Bernstein Research and Iberian Equities which are dated in 2010.
Column headings descriptions: DDM (dividend discount model), Sum OTP (sum of the parts), Implicit P/E (implicit price to earnings), Comparable P/E (comparable price to earnings), P/Book Intrinsic Value [GGM] (price to book intrinsic valuation based on the Gordon growth model), EV/EBITDA (enterprise value to earnings before interest, taxes, depreciation and amortization).

In summary, we observe that in some cases practitioners use models that are proposed and supported in the literature, but in other cases there seems to be a relative disconnect between the literature and reality. As a result, there is room to strengthen the theoretical foundation of bank valuation methodologies used in the field.

CONCLUSIONS

Bank valuation methods are based on the same assumptions as those applied to manufacturing companies. However, special attributes of the banking business such as leverage, role of capital, and bad debt provisions, limit the applicable techniques to a subset of the generic methods. The finance literature provides support for those methods that use some kind of discounted flow to equity (FCFE, DDM, RIV) as well as those methods that are based on market comparables (P/E or P/B).

The general practice of marking assets to market in banking provides relevance to those ratios that are related to equity, such as ROE or the P/B ratio. The equation that relates P/B with ROE, expected growth, and cost of equity through the Gordon growth model is one of the cornerstones of bank valuation due to the significance of capital in shaping the banking business and to the fact that in banks book value closely reflects asset market prices.

The sample reports in this study show that sell side analysts use, as it cannot be otherwise, similar tools proposed in the literature. However, there are some clear deviations from the general literature in their approaches. First, there is no use of the general FCFE model, probably because of the difficulty in estimating free cash flows beyond the dividend figure. Discounted cash flows valuations are limited to the use of the DDM approach. Second, they not only examine book value in respect of market price, but also estimate adjusted book value (net asset value or tangible asset value) to take into account the existence of intangible assets in some banks. Third, the dividend yield ratio is evaluated by all research houses with no exception, and this metric is hardly mentioned in the literature. Also, the SOTP method is used extensively by the vast majority of research houses, especially in the case of large and geographically diversified banks with multiple business lines.

There are at least two potential areas with theoretical and applied appeals to advance this line of research. On the one hand, it would be of interest to produce an integrated theoretical framework of the different valuation methodologies used in the banking industry, including those techniques used by practitioners and less covered in the literature. On the other hand, the research that has been carried out in this paper could be extended to include a larger sample, perhaps including research from different locales and different businesses (mainly sell side, buy side, and investment banking), in order to ascertain the validity of the findings and generalize the results. Given the proliferation of global banks in recent years, the findings here should be robust. Nevertheless, cultural differences and industry practice in a local area can exhibit marked different patterns.

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