

# How are Banks Valued? An Examination of Research Reports in Europe

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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 with due regards to the special roles played by the industry's leverage and capital constraints. This study reviews 171 research reports on the valuation of some of the largest European banks in 2011. The results of the research indicate that there is divergence between the financial literature and the real world. Equity analysts, 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 methodologies in the literature.

## I. Introduction

A central characteristic of modern capital markets is the constant need to value assets. Asset valuation may be needed in valuing public companies, in a corporate transaction, for value management purposes, or as a result of corporate restructuring. Although financial analysts may choose different valuation models to estimate the fair market value, most of the models are somewhat similar in that they involve discounting the expected cash flows to securities' owners to the present time.

In the case of financial institutions and banks, the valuation process can deviate significantly from the generic valuation approaches. There are three main features of the banking industry that support this more customized approach: the use of financing as a factor of production, the high degree of leverage, and the heavy influence of government regulations in 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. It also studies how aligned the models used in practice are with the valuation models proposed in the finance literature.

The sample used for the research consists of 171 stock reports in 2011 from 18 different research houses covering euro based European banks. 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. We conclude that 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.

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There have been a large number of studies addressing the theoretical modeling needs of bank valuation. However, to date there have been no studies surveying the actual bank valuation methods used by equity analysts who specialized in banks. This paper seeks to fill this void and contributes to our understanding of the practical adaptations made by practitioners.

Due to data availability, this study limits itself to a survey of the sell-side analysts in major European house. However, there are no reasons to believe that buy-side analysts and U.S. houses would use methods that are substantially different from their counterparts in Europe. After all, both buy side and sell side analysts face similar issues in evaluating banks. And most major European houses surveyed in this research have substantial presence in the U.S., as do their U.S. counterparts in Europe.

This research shows that notwithstanding academics strongly advocate the use of the free cash flow for shareholders (FCFE) model in banking valuation, virtually none of the surveyed analysts apply the method strictly. Probably because modern banks are a highly complex and conglomerate operation with many different diverse businesses, the most popular valuation model used is a rather ad hoc “sum of the parts” (SOTP) method and the bank’s dividend yields. Because of their ad hoc nature, these methods are barely mentioned in the literature. As a result, future research should more methodically dissect the banking business into reasonable parts and look into the theoretical basis of valuation method for each part of the business. At the same time, it would be interesting to examine the portfolio effect of the sum of these parts on the banking conglomerates.

## **II. Are Banks Special?**

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 in 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 of a bank 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 cost of capital calculation is simplified as there is no need to disentangle the liability structure of the bank. Also, the normal enterprise valuation approach presents an additional problem 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).

Another 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 produce 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 the bank's profitability and even its long-term viability.

Third, a bank's profitability is closely related to the level 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. Banks also impose more stringent financing requirements on clients in bad times. Chen (2001, p. 416) posits that "the initial effect of a shock to bank capital propagates into subsequent periods through the interaction of credit constraints 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

This characteristic of the banking business makes it especially important to understand how the transfer pricing amongst different units (including the corporate center) is determined. A good grasp of the transfer pricing mechanics in a bank is the key in any valuation context. It is of critical importance when banks are valued by first examine different locales and business units separately and then applying appropriate multiples and costs of capital for each business unit.

Finally, the banking industry is 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. The level of total and core capital determines the level of lending 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 assets), operational risk, and market risk.

### **III. Bank Valuation Models in the Literature**

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; Damodaran, 2002, p. 575). Even if both premises are considered valid, one can also argue that banks are just as different as a manufacturing company from a utility, or no more difficult to

value 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).

Copeland et al. (2000, pp. 434-435) advocate the use of the FCFE model as the main valuation tool for banks. Under this approach the free cash flow to shareholders is usually 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.

Assuming that all firms will eventually pay as dividends all available cash flow to equity, the dividend discount model (DDM) is presented as a convenient formulation for the FCFE approach. Alternatively, the free cash flows 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.

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

The residual income valuation model (RIV) can be adapted to bank valuation as well. RIV measures market equity value as a function of book value plus the discounted expected abnormal earnings (net earnings above the cost of equity):

$$V_t = B_t + \sum_{\tau=1}^{\infty} (1+r)^{-\tau} E_t(X_t - r * B_{t-1}) \quad (1)$$

where  $V_t$  is the value equity at time  $t$ ,  $B$  denotes book value,  $r$  is the cost of equity,  $X$  represents net earnings in the period ending at date  $t$ , and  $E$  is the expectation operator based on the information known at time  $t$ .

Assuming a clean surplus relation exists (i.e. book value in period  $t$  is equal to book value in the prior period plus retained earnings for the period  $t$ ), and that the book value of equity grows at rate less than  $1+r$ , the RIV method is mathematically equivalent to the discounted value of expected dividends (Lo & Lys, 2000, p. 341).

Again, as most bank's assets and liabilities are marked to market, 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).

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 examining both ratios simultaneously. Nevertheless, different business lines within a diversified banking institution may command different P/Es. 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).

SOTP is extensively used by practitioners but not 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.

In her study, Gross (2007) examines a sample of 290 stock exchange listed banks worldwide for the period 1989-2002 with a market value of USD 1.646 bil. in 2002, which represents about 44% of the worldwide banking market capitalization. Estimated ex-post intrinsic values using the DDM and the RIV model (including a decay factor) versus observed market values for the period 1989 to 1998 suggest that the RIV model dominates the DDM model in bank valuation.

In addition, asset based and relative valuation methods can play a supplementary role. Liquidation price of a bank's assets serves as a floor for its value. Market-oriented valuations also play an important role. Gross (2007) finds that 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. On the other hand, P/B provides a summarized view of market's expectations about future performance relative to the invested capital, which according to her study, is a better indicator to use in valuing banks.

#### **IV. 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 other 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 Europe based, many of them have a substantial proportion of their business in other parts of the world.

The following tables summarize the research approaches used in different reports. It is possible that some research houses use other valuation techniques in different types of analysis (such as mergers) that are not part of our sample.

Table 1 tabulates the valuation multiples used in different reports. Table 2 shows the principal valuation models applied by different research houses. The financial ratios that are considered key factors in the valuation process are listed in Table 3.

**Table 1: Valuation Multiples**

	<b>P/ E</b>	<b>P/ PPP</b>	<b>Price/ GOP</b>	<b>Div. Yield</b>	<b>P/ Book</b>	<b>P/NAV P/TBV</b>	<b>ROE</b>	<b>Implied ROE</b>
<b>Research House</b>								
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	*			*		*		
<b>Total Cos.: 18</b>	<b>18</b>	<b>4</b>	<b>1</b>	<b>18</b>	<b>14</b>	<b>13</b>	<b>15</b>	<b>1</b>

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) which is calculated as  $P/B \times k_e$ , and ignoring the term  $g \times k$ .

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 cases where 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. Apparently, despite all the limitations, the financial market continues to use earnings based valuation as a baseline, and 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 noted previously in this paper.

The results in Table 1 also indicate that some research houses rely on the ratio of P/PPP (price to pre-provisions profit) as well to isolate the performance of the bank from the quality of the loan portfolio. This ratio is seldom mentioned in research of bank valuation.

**Table 2: Principal Valuation Models**

		SOTP			P/Book	
			Implicit	Comparable	Intrinsic	
Research House	DDM	SOTP	P/E	P/E	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						
Total Cos.: 18	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), SOTP (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).

Consistent with the literature, the P/B ratio is a key multiple in banking valuation. Analysts also refine their 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 (as shown in Table 1) to support both their relative and absolute valuations. This

approach is consistent with our discussion above regarding the relatively good quality of book estimates in banks and the relevant role of capital in shaping the structure of the business.

Rgarding the use of discounted cash flow method, Table 2 above 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 reasons that support this approach. First, calculating free cash flow to shareholders from outside the bank is quite difficult. 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.

**Table 3: Other Valuation Metrics and Ratios**

	Return	Return	Core			
	on	on	Capital		Cost to	NPL
Research House	TBV	RWA	Tier 1	ROIC	Income	Ratio
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	*					
Total Cos.: 18	11	8	12	2	9	8

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 description: Return on TBV (return on tangible book value), Return on RWA (return on risk weighted assets), Core Capital Tier 1, ROIC (return on invested capital), Cost to Income, NPL Ratio (non performing loans ratio).

Despite the fact that both the literature and most in the field valuation models seek to value equity and not the whole enterprise, there are still examples of report 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, even though this metric can be calculated for banks in a rather straight forward manner and it has theoretical support as discussed previously.

Finally, Table 3 demonstrates that some analysts do apply other metrics to examine the quality and health of the banking business. Amongst them, the level of regulatory capital, the operating efficiency, and the quality of the loan portfolio stand out.

Table 3 also illustrates that 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 various geographical locations or business lines, or both. Each unit can be valued using any of the available methodologies. Other businesses such as asset management can be valued using different metrics such as multiples based on assets under management.

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 some divergence between the finance literature and reality. Apparently, there is still much need to strengthen the theoretical foundation of bank valuation methodologies used in the field.

## **V. Conclusions**

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

The general practice of marking assets to market in banking provides additional support to those ratios that are related to equity, such as ROE or the P/B ratio. The equation that relates P/B to 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 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 more ad hoc 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. A very small number of research houses that use discounted cash flow valuations limited such use to the DDM approach.

Second, the analysts not only examine book value with respect to 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 diverse 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, this research can 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 relatively robust. Nevertheless, cultural differences and industry practice in local areas can still exhibit markedly different patterns

## References

- Basel Committee on Banking Supervision (June, 2006). *International Convergence of Capital Measurement and Capital Standards: A Revised Framework Comprehensive Version*. Basel: Bank for international Settlements.
- Chen, N. K. (2001). Bank Net Worth, Asset Prices and Economic Activity. *Journal of Monetary Economics*, 48(2), 415-436.
- Copeland, T., Koller, T., & Murrin, J. (2000). *Valuation: Measuring and Managing the Value of Companies* (3rd. ed.). New York: John Wiley and Sons, Inc.
- Damodaran, A. (2002). *Investment Valuation: Tools and Techniques for Determining the Value of any Asset* (2nd. ed.). New York: John Wiley and Sons, Inc.
- Fernández, J. V., & Pérez, H. R. (2008). *Como nos Juzgan los Analistas: La Valoración de Bancos por Suma de Partes [How Analysts Judge us: Sum of Parts Bank Valuation]*. Retrieved December 9, 2011, from <http://openmultimedia.ie.edu/OpenProducts/Analistas/Analistas/bsch.pdf>
- Gross, S. (2007). *Banks and Shareholder Value: An Overview of Bank Valuation and Empirical Evidence on Shareholder Value for Banks*. Frankfurt am Main: Druck und Verlagshaus (DUV).
- Lo, K., & Lys, T. (2000). The Ohlson Model: Contribution to Valuation Theory, Limitations, and Empirical Applications. *Journal of Accounting Auditing and Finance*, 15(3), 337-367.
- Morales, J. I., & Martínez, J. (2006). *Análisis y Valoración Sectorial [Sectorial Research and Valuation]*. Barcelona: Editorial Ariel.
- Trochim, W. M. (2005). *Research Methods: The Concise Knowledge Base*. Mason, Ohio: Atomic Dog. Cengage Learning.