

Spanish Savings Banks and their Future Transformation into Private Capital Banks. Determining their Value by a Multicriteria Valuation Methodology

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Abstract

As the result of the current international financial crisis and due to Basel II and Basel III Capital Accords, the Spanish financial system is undergoing profound changes. Among the most significant changes are the mergers of savings banks and their future transformation into private capital banks. Therefore, determining the value of these financial companies and their share prices is of great interest for different economic agents. This paper presents the application of a multicriteria method called CRITIC, combined with the valuation ratio, which together compose a valuation model. This new approach can overcome some of the problems faced by the traditional valuation methods since it calculates the value of a company by comparing with similar companies whose value is known. The comparison is made using criteria or variables which are indicative of the value of these types of companies. A case study is presented in which the combined methodology is applied to the valuation of a particular Spanish savings bank.

Keywords: Savings Banks, Business Valuation, Valuation Ratio, Multiple Criteria Analysis, CRITIC.

1. Introduction

Business valuation is of great importance in the current economic climate. In fact, knowing the monetary value of an enterprise is necessary on many occasions, such as, inter alia, in the case of capital increases, mergers, spin-offs, acquisitions, public offering of securities, and investment finance. Business valuations are also common in the event of donations and legacies. In our case of study, we will focus on the mergers of Spanish savings banks. The future transformation into private capital banks of these financial institutions which currently have a special legal status, have no shareholders and which are not listed on the stock market, cannot be ruled out (Sinn, 2003). Therefore, determining the value of these financial companies and their share prices is of great interest for different economic agents.

There are different methodological approaches to valuation. Under the International Valuation Standards (2007) valuation methods are divided into three major groups: market comparison methods or market value approach, net present value approach and cost approach. However, these traditional valuation methods, despite their obvious utility, have a number of limitations:

- 1) Certain of the comparative methods such as regression analysis, require a comprehensive database of comparable assets. In numerous cases the available database is not large enough, as is a common problem in the case of business valuation.
- 2) In the net present value approach, previously estimated data is used since this method is based on predicting the future evolution of the asset to be valued. In the case of business valuation, this involves calculating future cash flows and their residual value and applying an appropriate discount rate. Clearly, these forecasts lead to a high degree of subjectivity in the valuations, which are very sensitive to changes in the future scenarios considered.
- 3) The cost methods are valuation methods applied only to buildings and urban land.
- 4) In all these traditional valuation methods, it is difficult to directly introduce qualitative variables in the valuation process. This is a serious limitation, since the importance on the value of the company of aspects such as business leadership, professionalism of the human team, reputation and international standing, etc. is undeniable.

All these limitations have led researchers in the field of valuation to search for alternative methods enabling these deficiencies to be remedied. Certain of these methods are within the field of multicriteria decision-making, including valuation applications such as goal programming (Aznar & Guijarro, 2007 a and 2007 b), the analytical network process (Aragonés, Aznar, Ferris & García-Melón, 2008, Garcia-Melón, Ferrís-Oñate, Aznar-Bellver, Aragonés-Beltrán & Poveda-Bautista, 2008) and a combination of several of these techniques (Aznar, Guijarro & Moreno-Jiménez, 2008).

This paper proposes a new valuation model composed by CRITIC and the valuation ratio. This model is classified as a comparative method, since it calculates the value of an asset by comparing it with similar assets whose value is known and the comparison is made using criteria or variables which are indicative of the value of these types of assets. In the case of the business valuation, the unknown value of a company is calculated by comparing it with other companies whose value is known, e.g. due to their listing on the stock market. For this purpose a number of criteria are used which are indicative of the value of this type of companies.

The remainder of this paper is structured as follows. Section two presents the new valuation method. Section three presents a case study in which the new method is applied and finally, section four provides conclusions.

2. Valuation Model

The valuation model proposed is composed of the CRITIC (Diakauloki, Mavrotas & Papayannakis, 1995) and valuation ratio (International Valuation Standards, 2007) methods, and consists of the following steps:

First Step. Selection of comparable companies

Second Step. Selection of criteria indicative of value

Third Step. Weighting of the criteria using CRITIC

Fourth Step. Weighting of the companies

Fifth Step. Calculation of the valuation ratio

Sixth Step. Calculation of the value of the target company

Seventh Step. Validation of the model

The method proposed is particularly suitable for valuations of companies in which the number of comparable companies is small and the data used is taken from the company's accounting records. It also allows for the inclusion of qualitative variables by means of their combination with AHP, although this issue is not addressed in the case study presented in section 3.

Following is a more detailed description of each of the steps in the valuation process.

First Step. Selection of Comparable Companies

Once the company to be valued is selected, the first step is to identify the comparable companies, which must be similar, and therefore, comparable to the company to be valued. Additionally, the value of these companies must be known, for example, because they are listed on the stock market.

Second Step. Selection of Criteria Indicative of Value

In this step the criteria to be used in the comparison process are chosen and the database is created. As previously mentioned, the proposed valuation method is based on the comparison of companies. Based on this comparison and once the economic value of the comparable companies is known, the value of the target company is calculated. Therefore, it is essential to determine the variables according to which this comparison will be made. In the literature on business valuation, economic and financial variables taken from accounting records are primarily used. The use of such variables is widespread, not only in the field of business valuation, but also in fields as diverse as credit risk analysis (Beaver (1966,1968), Altman (1961, 1968, 1973, 1993), Ohlson (1980), Sun & Shenoy (2007), Wang and Lee (2008), Psillaki, Tsolas & Margaritis (2010), Li, Adeli, Sun & Han (2011)), analysis of business performance (Yeh (1996), Halkos & Salamouris (2004), Malhotra (2009)) or the development of company rankings (Feng & Wang (2001) Deng, Yeh & Willis. (2000)). In these studies a wide range of input methodology is used such as discriminant analysis, factor analysis, the logit and probit models and the artificial neuronal networks, DEA or TOPSIS.

Third Step. Weighting of Criteria Using CRITIC

The weight or importance of the different criteria is measured by means of CRITIC. It would be unreasonable to consider all the variables or criteria selected to have the same importance or influence on the business value. Therefore, it is necessary to objectively allocate a weight to each of the criteria chosen in the previous step.

CRITIC (Criteria Importance Through Intercriteria Correlation) (Diakoulaki et al., 1995) is a criteria weighting method which defines their importance based on standard values for the range (1).

$$w_j = S_j * \sum_{j=1}^n \sum (1 - r_{jk}) \quad (1)$$

being

w_j = weight of criterion j

S_j = standard deviation of criterion j

r_{jk} = Correlation coefficient between criteria j and k .

The weights obtained (w_j) are normalized by the sum.

Applying CRITIC, the higher its standard deviation and the lower its correlation with other criteria, the higher the weight of the criteria. Accordingly, the weights of the criteria are determined

based on two fundamental notions of MCDM: the contrast intensity and the conflicting character of the evaluation criteria.

Fourth Step. Weighting of the Companies

After having obtained the weight w_j of each of the criteria, the weighting of the different companies is calculated as follows (2):

$$x_i = \sum_{j=1}^n w_j \times c_{ij} \quad (2)$$

where

x_i is the weighting of the company i ,

w_j is the weight of the criteria j ,

c_{ij} is the value of the criteria j for the company i

Fifth Step. Calculation of the Valuation Ratio

The valuation ratio is a methodology proposed in the International Valuation Standards (2007) and is defined as “A factor wherein a value or price serves as the numerator and financial, operating, or physical data serve as the denominator”, its mathematical expression being (3). In our case, the numerator is the sum of the value of comparable companies or another related type of parameter and the denominator is the sum of the weights of comparable companies obtained in the previous step (fourth step).

$$VR = \frac{\sum_{i=1}^n V_i}{\sum_{i=1}^n x_i} \quad (3)$$

being

VR = Valuation Ratio

V_i = Value of company i

x_i = Company's weight obtained with CRITIC

This ratio indicates the value of the companies per unit of weight.

Sixth Step. Calculation of the Value of the Target Company

The value of the target company is calculated by multiplying the ratio obtained in (3) by the weight of the company to be valued obtained when applying (1).

The proposed valuation procedure can be defined as a business valuation method within the group of comparative or market approach methods, the result being “the estimated amount for which a property should exchange on the date of valuation between a willing buyer and a willing seller in an arm's-length transaction after proper marketing wherein the parties had each acted knowledgeably, prudently, and without compulsion”(IVS 2007).

Seventh Step. Validation of the Model

The value of the comparable companies is obtained using the valuation ratio, in order to verify that the values obtained in this way are within the range of the company's actual value.

3. Empiric Design: Case Study and Results

In this section the proposed method is applied to the valuation of a Spanish savings bank whose features are comparable to those of certain financial institutions already listed on the Spanish stock market. The choice of a Spanish savings bank as the company to be valued was not arbitrary. As the result of the current international financial crisis and due to Basel II and Basel III Capital Accords (Basel Committee on Banking Supervision, 2004, 2010), the Spanish financial system is undergoing profound changes. Among the most significant changes are the mergers of savings banks. The future transformation into private capital banks of these financial institutions which currently have a special legal status, have no shareholders and which are not listed on the stock market, cannot be ruled out (Sinn, 2003). In fact, there are many international organizations such as the IMF which advocate a change in Spanish law in this direction. In the case of a change in this sector towards privatization, e.g. through public offerings of securities, we believe that the method presented in this paper would be of great aid to assessors responsible for determining the value of financial institutions, and therefore, the starting price of the shares.

First Step. Selection of Comparable Companies

For the purpose of the valuation, the comparable banks chosen are listed Spanish banks whose size and turnover are similar to the savings bank to be valued (Banco Pastor, Bankinter, Banco Sabadell, Banesto and Banco Popular). Since there are few comparable banks available, this case is ideal for the implementation of the new valuation procedure.

The savings bank valued is “Caja de Ahorros del Mediterráneo” (CAM), which was founded in 1875 and was the first savings bank to issue non-voting shares. Given features such as its asset value (71,441,621 thousand euros) and profit (276,547 thousand euros), this bank is comparable to several listed financial institutions, as shown in table 1.

Table 1: Economic and financial data at 31/12/2009

	Pastor	Bankinter	Sabadell	Banesto	Popular
Total Assets (thousands €)	32,325,235	54,467,584	82,822,886	126,220,639	129,290,148
Net Profit (thousands €)	102,591	254,404	526,309	558,824	780,347

Following is a breakdown of the steps in the valuation process described in the previous section.

Second Step. Selection of Criteria Indicative of Value

As previously discussed, the choice of economic and financial variables which will be used as the criteria for the purposes of the comparison of the companies is a key step. However, in literature there is no defined list of accounting ratios which should be used. In our case, the choice of accounting ratios is based on previous work analysing the performance of financial institutions using financial ratios such as Kumbhakar (2001), Pastor (2002), Prior (2003), Iannotta, Nocera & Sironi (2007) and García, Guijarro & Moy0061 (2010 b).

As a result of this bibliographical review, it was determined that all the ratios used can be grouped into different categories. In other words: There are certain dimensions of the economic and financial structure that are essential when characterizing a financial institution. The following dimensions continuously appear: inputs, outputs and risk management. The representative “inputs” chosen were labour cost, the cost of physical capital and the cost of deposits/capital. The representative “outputs” chosen were ROA (Return On Assets) and the return on borrowed capital. Finally, the default rate, coverage fund and BIS ratio are the criteria that represent the entity's risk management. It should be taken into account that in accordance with the principle “the more the better”, the inverse of both the criteria included in the group of inputs and the default rate is calculated.

Table 2 shows the financial ratios serving as criteria in the valuation process, how the ratios are calculated based on accounting information and which business dimension they represent.

Table 2: Ratios used to value the company by dimension and information source

Dimension	Ratio	Formula
Inputs	Labour Cost	Staff Costs
	Cost of Physical Capital	Depreciation/Property, Plant and Equipment
	Deposit Costs/Capital	Interest and Similar Charges/Financial Liabilities at Amortised Cost
Output	ROA	Profit for the Year/Total Assets
	Return on Borrowed Capital	Interest and Similar Charges/Credit Investments
Risk Management	Default rate	
	Coverage Fund	
	BIS Ratio	

The values of the company's financial ratios used in the valuation are shown in table 3.

Table 3: Values of financial ratios for 2009

	CAM	Pastor	Bankinter	Sabadell	Banesto	Popular	Average	Standard Deviation
INPUTS								
Labour	60.346	62.950	72.087	75.568	73.185	54.886	66.503	8.288
Cost of physical capital	0.040	0.154	0.372	0.059	0.082	0.058	0.128	0.126
Deposit Costs/Capital	0.029	0.021	0.003	0.021	0.018	0.019	0.018	0.009
OUTPUTS								
ROA	0.004	0.003	0.005	0.006	0.004	0.006	0.005	0.001
Return on borrowed capital	0.058	0.051	0.008	0.048	0.038	0.049	0.042	0.018
RATES								
Default rate	0.045	0.049	0.026	0.037	0.029	0.048	0.039	0.010
Coverage fund	0.707	1.187	0.744	0.690	0.634	0.503	0.744	0.233
BIS ratio	0.120	0.125	0.114	0.108	0.113	0.096	0.113	0.010

Third Step. Weighting of Criteria by Means of CRITIC

With CRITIC, the weights for each of the criteria are determined. First, the variables are normalized by the range and the standard deviation for each parameter, as well as the correlation matrix, are then calculated. Second, the weights (w_j) calculated by (1) are normalised by the sum, for the purpose of obtaining the weight (w_j standardized) of the variables. See table 4.

Table 4: Correlation matrix, standard deviation and weightings

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	w_j	w_j Standardized
(1) Labour	1.000	0.401	-0.349	-0.078	0.482	-0.738	-0.087	-0.242	3.011	0.128
(2) Cost of physical capital	0.401	1.000	-0.692	0.271	0.743	-0.557	-0.475	-0.191	2.721	0.116
(3) Deposit Costs/Capital	-0.349	-0.692	1.000	-0.036	-0.941	0.764	-0.012	-0.018	3.238	0.137
(4) ROA	-0.078	0.271	-0.036	1.000	0.001	0.055	-0.709	-0.817	3.220	0.137
(5) Return on borrowed capital	0.482	0.743	-0.941	0.001	1.000	-0.862	0.086	0.121	2.649	0.112
(6) Default rate	-0.738	-0.557	0.764	0.055	-0.862	1.000	-0.219	0.007	3.556	0.151

Table 4: Correlation matrix, standard deviation and weightings - continued

(7)Coverage fund	-0.087	-0.475	-0.012	-0.709	0.086	-0.219	1.000	0.775	2.599	0.110
(8) BIS ratio	-0.242	-0.191	-0.018	-0.817	0.121	0.007	0.775	1.000	2.566	0.109
Standard deviation	0.396	0.363	0.391	0.387	0.360	0.416	0.340	0.348		

Fourth Step. Weighting of the Companies

Once the weights for each criterion is calculated by (2), the weights of the different financial institutions are obtained.

Table 5: Weights of each financial institution

	Weight
CAM	0.482
Pastor	0.411
Bankinter	0.476
Sabadell	0.435
Banesto	0.387
Popular	0.432

Fifth Step. Calculation of the Valuation Ratio

Despite the fact that the banks chosen as comparable companies are the most similar of those listed on the stock market, the stock market value range is very high. In order to standardise the information relating to the numerator of the valuation ratio, rather than this value, a relative magnitude, the price-to-book ratio, i.e. the ratio between the average stock market price and book value in 2009 was chosen.

As the denominator of the valuation ratio, according to (3), the weights of the financial institutions obtained in step four are used.

Table 6: Price-to-Book Ratio and CRITIC Ratio

	Mean Stock Market Value 2009 (€)	Equit (Book Value) (€)	P to B Ratio	Weight
CAM		2,837,237,000	-	0.482
Pastor	1,308,968,563.016	1,610,211,000	0.813	0.411
Bankinter	3,737,675,124.926	2,583,011,000	1.447	0.476
Sabadell	5,264,075,433.071	5,297,370,000	0.994	0.435
Banesto	5,407,951,190.048	5,472,536,000	0.988	0.387
Popular	7,837,245,800.617	8,447,984,000	0.928	0.432

As a result of applying (3)

$$VR = \frac{0.813 + 1.447 + 0.994 + 0.988 + 0.928}{0.411 + 0.476 + 0.435 + 0.387 + 0.432} = 2.414$$

the valuation ratio VR= 2.414

Sixth Step. Calculation of the Stock Market Value of CAM

Based on the valuation ratio and the price-to-book ratio of CAM, the market value per unit of equity is obtained.

$$\text{Market value per unit of equity of the CAM} = 2.414 * 0.482 = 1.163 \text{ €}$$

By multiplying the market value per unit of equity of CAM and its equity, the stock market value of CAM is obtained.

$$\text{Stock market value of CAM} = 1.163 * 2,837,237,000 = 3,301,261,436.876 \text{ €}$$

Seventh Step. Validation of the Model

To validate the model, the prices of the shares of each of the financial institutions used as comparable banks are calculated by means of the valuation ratio obtained. In this way it is possible to determine whether the calculated values of the comparable banks are within the stock market price range of these shares in the period from September 2009 up to the valuation date in September 2010.

As can be observed in table 7, in all cases the calculated price is within the stock market price range.

Table 7: Price per share: Theoretical market price vs. real market price in the period from September 2009-September 2010

	Calculated Value (€)	Min (€)	Max (€)
Pastor	4.980	3.100	6.024
Bankinter	4.504	4.195	9.160
Sabadell	3.668	2.970	5.111
Banesto	5.764	4.930	9.534
Popular	5.298	3.320	7.441

4. Summary and Concluding Remarks

This paper presents the application of a multicriteria method called the CRITIC method, combined with the valuation ratio, which together compose a valuation model which we have called CRITICRatio. This method is classified as a comparative valuation or market approach method. It is applied to the valuation of companies in environments with scarce information in terms of the number of comparable entities, as long as economic and financial information is available. The main strength of the proposed method is essentially that it can be used even when the number of comparable companies is very limited, which is a common problem in the field of business valuation that prevents other methods from being used. This method can be used, *inter alia*, for the valuation of companies which are not listed, but whose business activity and size are similar to others which are listed and whose market capitalizations represent a proxy for the companies' market value.

The method is divided into seven steps beginning with the selection of the comparable companies, followed by the weighting of variables and companies using CRITIC and finally the calculation of value using the Valuation Ratio.

After presenting the new method, a valuation case study was proposed. The company chosen to be valued was a Spanish savings bank called "Caja de Ahorros del Mediterráneo" (CAM). This was an ideal company on which to use the new method since it is a financial institution comparable to several banks listed on the Spanish stock market. As the number of comparable banks was limited, other comparative valuation methods could not be applied properly. Additionally, this example was very practical, given the current situation of savings banks in the Spanish financial system.

It is important to highlight that this proposal is not meant to replace the already existing valuation methods. It is simply meant to provide valuers with an additional tool which enables them to value problematic companies more exactly and for use in valuations in which the use of traditional methods is impossible or inappropriate.

Finally, this paper does not exhaust this line of research related to multicriteria business valuation, rather the opposite. In fact, in the future, the aim is to develop this model further to include qualitative variables using AHP.

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