

FINAFRIQUE RESEARCH

HOW TO VALUE A BANK IN THE AFRICAN CONTEXT?



SUMMARY

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AN INDUSTRY UNLIKE OTHERS

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THE SUM OF THE PARTS

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FOREWORD

The main activity of banks consists of acting as intermediaries between agents with financing capacity and those with a financing gap. The role of the bank is therefore key in the economic development of a country. In view of its function as a savings collector and liquidity insurer, the banking sector is heavily regulated by public authorities. This regulation constitutes a barrier to entry, promotes consolidation and the increase of margins. The economic dynamism of Africa, henceforth, as an area of strong growth will be accompanied by development and the emergence of continental champions.

Noting that there is no universally accepted method for valuing banks, we have attempted to formalize and detail, as clearly as possible, the fruit of our reflections in this field. We focused our efforts on the dividend discount method, which seems to us the most relevant for valuing African banks, given the strong growth of their activity.

The evaluation of a bank is based on the same general principles as any other company : a bank is worth the cash flows it is likely to generate in the future. **It remains no less true that banking activity is specific** (it is difficult to separate or distinguish the cycles of investment, financing and operation), diversified and subject to prudential constraints, in particular bearing a minimum level of own capital. In this context, the methods implemented to promote banks are the same as for industrial and commercial companies, but are adapted to the particularities of this sector.



AN INDUSTRIE LIKE NO OTHER

THE MAIN ACTIVITY OF BANKS CONSISTS IN ACTING AS INTERMEDIARIES BETWEEN AGENTS WITH FINANCING CAPACITY AND THOSE WITH A FINANCING DEFICIT. THE ROLE OF THE BANK IS THEREFORE KEY IN THE ECONOMIC DEVELOPMENT OF A COUNTRY. IN ITS ROLE AS A SAVINGS COLLECTOR AND LIQUIDITY INSURER, THE BANKING SECTOR IS STRONGLY REGULATED BY THE PUBLIC AUTHORITIES.

THIS REGULATION IS A BARRIER TO ENTRY, FAVOURS THE CONSOLIDATION OF THE BANKING SECTOR AND THE INCREASE OF MARGINS.

WHAT DO BANKS DO?

Banks are indispensable players in financing the economy: they collect savings from economic agents with financing capacity (household, business) and grant credits to agents with financing gaps (companies, states or administrations).

As such, they are in competition with :

- 1_ Various markets for negotiable securities (shares, bonds, treasury bills) and
- 2_ Other financial intermediaries (savings banks, insurance companies, ...)

The main specificity of banks is due to the particular nature of demand deposits, one of the main components of their liabilities. Demand deposits are the main form of money in contemporary economies. As a result, the traditional activity of banks is organized around the 3 main axes :

- ▲ Information brokerage (between agents with financing capacity and deficit).
- ▲ Qualitative transformation of assets (unit amounts, installments, remuneration methods, risk diversification).
- ▲ Administration of payment system.

Bank revenues are made up of the intermediation margin (interest margin) resulting from the qualitative transformation of assets and by commissions from brokerage activities.

Information is not perfect in capital markets and banks take advantage of it to reduce the inevitable information asymmetries between borrowers and lenders. They allow to limit the opportunistic behaviors of borrowers. They select the borrowers' projects, ensure their proper execution and enforce the clauses of the loan contract. Private information on depositors and borrowers thus consists of a specific asset that gives them monopoly power (with regard to the markets in negotiable securities and other financial actors), and who is the main source of their franchise.

Finally, banks provide liquidity assurance and allow savers to decouple their consumption intertemporal profile from the chronicle of their income streams. These specificities justify the strong regulation of the banking sector by public authorities. The regulation of the banking sector constitutes a barrier to entry, promotes the consolidation of the banking sector and the increase in forward margins.

WHAT ARE THE ACTIVITIES OF BANKS

Most of the major banks have 3 activities :



- ▲ **The retail bank/commercial bank** : intended for households and VSEs/SMEs, this activity mainly concerns the collection of deposits, the distribution of credits (mortgage loan, consumer credit, cash or investment credit to VSEs/SMEs), specialised financing (leasing, affacturage and the management of payment methods). To distribute its products, retail banking relies on a network of bank branches, remote banking services and online banking. The main drivers of this activity are growth in loan and deposit volumes, the level of interest rates, the accident rate of households and SMEs, the financial markets environment and the intensity of the business relationship (sales force of the network, number of products by clients, ...).
- ▲ **The financing and investment bank**: this activity mainly concerns the financing of large companies, market activities (courtage), and more marginally the advice and financial engineering. The main drivers of this activity are the growth in outstanding loans, the capacity for innovation, the investment capacity of clients, the environment of financial markets, and the loss experience of large companies.
- ▲ **The management of savings**: mainly includes asset management and private banking activities. The main catalysts for this activity are innovation capacity and the environment in financial markets.

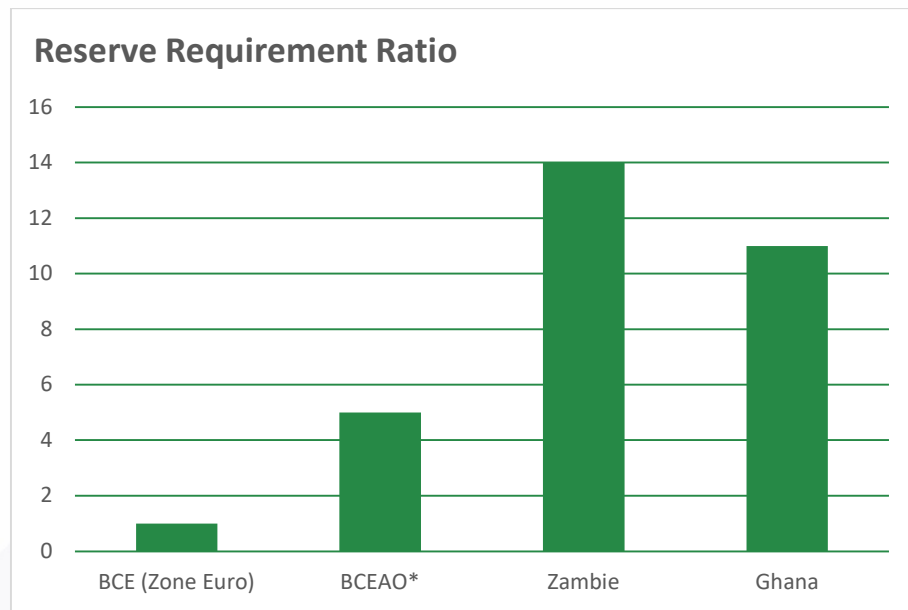
In Africa, if banks are active in these three areas, the lion's share still goes to retail banking and financing large corporations.

WHY IS THE BANKING SECTOR SO REGULATED ?

As we mentioned, the banking sector is key in an economy because it plays an intermediary role between economic agents with financing capacity and those with a financing deficit. Thus, the bankruptcy of an establishment (particularly due to losses related to the assets it holds) is likely to destabilize the proper functioning of the economy (losses on the deposits of economic agents, defiance of banks, difficulties in financing the economy, ...). The public authorities therefore make it a point of honor to regulate the banking sector in order to prevent banking crises and their unfortunate consequences.

African banks are essentially subject to regulatory constraints, notably the solvency ratio, which requires maintaining a minimum ratio between prudential equity and weighted commitments (the commitments of a bank are weighted according to the associated risk, i.e. 0% for government loans, 100% for loans to customers, etc.) of 8% in most cases. This minimum capital cushion aims to address the risk of a bank's insolvency. Following the 2007 financial crisis. For example, for 100 of risk-weighted assets (RWA), a bank must set aside \$8 of capital.

Obviously, the level and quality of the capital cushion has gradually evolved over time in response to crises. At the same time, regulators require banks to build up mandatory liquidity reserves (which represent a percentage of the outstanding deposit balances) that they must deposit with central banks. The required reserve ratio can change depending on the environments and countries, in order to curb or promote the growth of outstanding credit balances. As a result, the stringent constraints imposed on the banking sector act as barriers to entry into this activity



* BCEAO : Central Bank of West African States (Benin, Burkina, Ivory Coast, Guinea-Bissau, Mali, Niger, Senegal, Togo)

Source : Central Banks

SOME SPECIFICITIES OF THE OPERATION OF A BANK

- It is difficult, if not impossible, to separate exploitation from investment and financing. Indeed, the lines are very blurry for a bank because elements, such as financial debt, are linked to operational activity and finance loans (while they finance the production tool for an industrial company).
- Capital investment expenditure (Capex) does not represent a reinvestment as is the case for an industrial company. For a bank, reinvestment refers to the hiring of people, the granting of new loans, etc.
- The concept of working capital requirement (WCR) is not representative for a bank. Indeed, the working capital requirement, that is to say the current assets decreased by the current liabilities, which is very important for evaluating the liquidity needs of a normal company, does not make sense for a bank because the current assets and the current liabilities include tons of investments, of securities and other loans. Therefore, variations can be very significant from one year to another.



HOW TO VALUE A BANK ?

The evaluation of a bank is based on the same general principles as any other company: a bank is worth the cash flows that it is likely to bring in the future. It remains no less true that banking activity is specific (debt is not only a mode of financing but is at the heart of the activity), diversified (network banking, market activities, asset management...) and subject to prudential constraints bearing in particular a minimum level of own funds. In this context, the methods implemented to promote banks are the same as for industrial and commercial companies, but are adapted to the particularities of this sector.

ACTUALIZATION OF DIVIDENDS – EXCESS CAPITAL

Reminder of the theoretical foundation

According to this valuation method, the value of a company is a function of the rate of dividend distribution and the growth of net income, which in this case are considered constant over time. This method is particularly suitable for companies characterized by a strong growth in their activity, as is the case of African banks.

The reference equation of this valuation method is as follows:

$$P_0 = \frac{DIV_1}{(Ke - g)}$$

- ▲ P_0 : stock price in year t_0
- ▲ DIV_1 : anticipated dividend the following year (t_1)
- ▲ Ke : cost of capital
- ▲ g : infinite growth rate of the dividend

This valuation method is very flexible and several variants are used by professionals. The most used is the two-step one, according to which the value of a company is the sum of two elements. The first is the current value of future dividend flows estimated over a time horizon. It should be noted that over this time horizon, dividend growth is generally constant. The second is the value of the company at the end of the forecast period, which is determined by capitalizing the last estimated dividend flow at a certain rate.



The equation then becomes :

$$P_0 = \sum_{i=1}^{t=n} \frac{DIV_i}{(1+Ke)^i} + \frac{\frac{DIV_{n+1}(1+g)}{Ke-g}}{(1+Ke)^n}$$

Thus, in this model, the dividend flow and the dividend distribution rate are important parameters. Note that for listed companies, the dividend payout ratio corresponds to any return of liquidity to the shareholder. Thus, the dividend distribution rate corresponds to the sum of the dividends plus any potential share repurchase program divided by the net profit.

Adaptation of the model to the valuation of banks

IN THE CASE OF BANKS, THE RETURN OF LIQUIDITY (DIVIDEND AND SHARE BUYBACK)
MUST BE CONSIDERED AS EXCESS CAPITAL AFTER FINANCING OF GROWTH (ORGANIC AND EXTERNAL) AND COMPLIANCE WITH
REGULATORY OBLIGATIONS,
PARTICULARLY IN TERMS OF SOLVENCY RATIO.

In most African countries, banks are subject to regulatory constraints (Basel 1, Basel 2, and soon Basel 3), and in particular that of the solvency ratio which forces banks to set aside capital to face potential losses on their assets. Thus, in many African countries, the regulator requires banks to maintain a minimum ratio between equity and risk-weighted assets (RWA) of 8%. It should be noted, however, the existence of a large disparity in terms of prudential constraints, particularly regarding the calculation of RWA: 1/ in the WAEMU (West Africa) and CEMAC (Central Africa) zones, the prudential system in force (transposition of Basel 1) imposes a solvency ratio of 8%, but only on credit RWA (operational and market risks are not taken into account). On the other hand, in the CEMAC area, the Basel 2 project (the RWAs integrate credit, market and operational risks) has been launched and will enter into force by 2017 and 2/ in Nigeria, the migration to Basel 2 is largely underway and several institutions are already applying it.

What is the significance of this regulatory constraint in implementing the dividend discount method?

It means that, when we are in a period of growth in weighted commitments (which is the case in Africa), not all the result is available to the shareholder since part must be reinvested in the bank, notably to respect this ratio. Thus excess capital is the difference between the available capital in the bank and the capital needed to finance organic growth and meet solvency ratios. It should be noted from a strictly financial point of view that holding excess capital negatively affects the profitability of a bank. Therefore, excess capital can be considered an instrument to remunerate shareholders. In these conditions, excess capital can be considered as the cash flow generated by a bank.



Modeling of dividend discounting

The modeling of dividend discounting is done in four steps:

- ▲ The determination of the cost of capital.
- ▲ The determination of excess capital over the defined time horizon.
- ▲ The determination of the terminal value.
- ▲ The determination of the value of the bank.

The determination of the cost of capital

The cost of capital represents the profitability required by all investors for an asset and is calculated according to the formula of Capital Asset Pricing Model (CAPM) :

$$K_e = R_f + \beta \times (R_m - R_f)$$

- ▲ **K_e** : cost du capital.
- ▲ **R_f** the risk-free rate (sovereign debt spread 5 years or 10 years). Note that the risk-free rate corresponds to the interest rate recorded on the market for loans from countries considered solvent. In financial theory, this rate therefore refers to the absence of credit risk (default risk).
- ▲ **β (bêta)** : measure of the company's non-diversifiable economic risk or the sensitivity of the value profitability compared to that of the market.
- ▲ **R_m** : market yield.
- ▲ **$(R_m - R_f)$** : market risk premium, or surplus of profitability requested by an investor when he places his money in a risky asset (other assets than sovereign debt).

In developed markets, the market premium is a market data and known like beta. Or in the emerging countries of Africa, the weak development of financial markets makes the application of the CAPM difficult.

It is therefore a question of adapting it on the basis of observable data in developed countries (Euro zone or USA). Thus the cost of capital in emerging African countries can be written as follows:

$$\text{CAPITAL COST} = \text{RISK-FREE RATE OF THE UNITED STATES} + \beta \times \text{RISK PREMIUM OF THE UNITED STATES} + \text{SOVEREIGN SPREAD OF THE AFRICAN COUNTRY (OR PROXY)}$$

For an emerging country (this is the case for most African countries), the sovereign spread corresponds to the difference between the remuneration of bonds issued in euros (or dollars) on the international market and that offered by euro zone or US bonds. This gap compensates the political risk and potential default of the emerging country. When this State has not issued any debt on the international market, it will be necessary to choose as a reference a debt issued by another State with the same rating, taking care to maintain currency consistency.

For illustration purposes, the 5-year American rate stands at 1.7% and that of Nigeria at 8.4% (6.25% in euros, but converted to dollars) over the same period. The sovereign spread is therefore 6.7% (i.e., 8.4% - 1.7%).

Medium/ long term notes

	S&P	Moody's	Fitch
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Gabon	BB-		BB-
Nigeria	BB-	BA3	BB-
Cameroon	B		
Ghana	B	B1	B
Burkina	B		
Senegal	B+	B1	
Congo	B-	B3	

Source : S&P, Moody's, Fitch

The β is related to the intrinsic characteristics of a specific economic activity and not to the country. It is supposed to remain unique for a specific sector regardless of the country concerned. Consequently, the value of 1.3 of the beta retained in Europe for the banking sector is valid for the same sector in Africa.

Note that the exchange rate risk must be integrated at the cash flow level (surplus capital). The flows expressed in dollars are discounted at a rate expressed in the same currency. The exchange rate risk is therefore neutralized.

By applying this formula to Nigeria, we arrive at a capital cost of 17.9% for the valuation of the banking sector. Of course, the calculation can be refined in particular to take more into account the intrinsic quality of each bank.

Table 1 : Estimated cost of capital for the Nigerian banking sector

Clé	Nom	Valeur
a	U.S. risk-free rate (5-year rate)	1.7%
b	Nigerian 5-Year Sovereign Spread (in \$)	6,7%
c	B	1.3
d	U.S. Risk Premium	6.0%
e = a+b+c*d	Cost of Capital	16.2%

Source : Reuters, FinAfrique

Determination of dividend flow

The dividend flow retained in the model is by construction the maximum cash flow that can be distributed to shareholders after taking into account the regulatory constraints that weigh on banks. Thus the dividends used in the different model from those actually paid by the bank.

The minimum capital ratio is 8% but in general African banks observed a level higher than this target at the end of 2013. The accumulation of excess capital over the regulatory minima may be justified by: 1/ the desire to build a capital buffer beyond regulatory requirements and 2/ the constitution of capital to make external acquisitions and/or 3/ the holding of a capital buffer following a request from the local regulator.

It should be noted that even in developed countries, the trend is to build up capital buffers beyond regulatory requirements to cope with potential unforeseen risks.

Table 2 : Tier 1 ratio of the main listed banks in sub-Saharan Africa

Access Bank	20,50%
Ecobank TI	14,80%
Guaranty Trust Bank	21,50%
Kenya CB	19,10%
UBA	15,90%
Access Bank	20,50%



Source : Factset

As an illustration, assuming a target tier 1 ratio (solvency ratio) of 15%, Access Bank would post excess capital of \$424 million at the end of 2013.

Table 3 : Distributable capital = excess capital at the end of 2013 (on M\$)

Clé	Nom	Valeur
a	RWA	7,715
b	Capital tier 1	1,582
c = b/a	Ratio tier 1	20.5%
d	Ratio tier 1 target	15%
e = d/a	Capital tier 1 target	1,157
f = b - e	Surplus Capital	424

Source : Factset, FinAfrique

Détermination de la valeur terminale

As we have already mentioned, the terminal value is the value of the company at the end of the forecast period. The last dividend stream is the one used to calculate the terminal value. This flow is considered the normative dividend after growth financing and compliance with regulatory requirements. The formula to calculate the terminal value is as follows:

$$\text{TERMINAL VALUE (VT)} = \text{LATEST DIVIDEND PAYMENT} \times (1+G) / (K_E - G)$$

With :

- ▲ **g** : infinite growth rate of dividends. It is considered to take into account the growth rate of the economy, inflation and the growth rate in the sector.
 - ▲ **Ke** : the cost of capital as defined above.
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Determination of the value of a bank

We applied the dividend valuation model to the Nigerian Access Bank. We have retained the consensus forecasts from Factset for the period 2014 - 2016, then we increased RWA by an average of 12% and third party capital 1 by 8%.

Table 4 : Application de l'actualisation des dividendes à Access Bank (in M\$)

clé			2014e	2015e	2016e	2017e	2018e
a	RWA		10 341	11 543	12 890	14 385	16 054
b	Tier 1 capital		1 868	1 993	2 166	2 339	2 526
c = a/b	Ratio tier 1		18,1%	17,3%	16,8%	16,3%	15,7%
d	Ratio tier 1 target		15,0%	15,0%	15,0%	15,0%	15,0%
e = d*a	Tier 1 capital target		1 551	1 731	1 934	2 158	2 408
f = b - e	Surplus Capital		317	262	232	181	118
g	Update Period		1	2	3	4	5
Ke	Discount Rate	16,2%					
i = 1/(1+ke)A(g)	Discount factor		0,9	0,8	0,7	0,6	0,5
j = f*i	Adjusted Dividend		272,8	193,6	147,7	99,1	55,5
k	Somme des dividendes actualisés	768,9					
	Terminal value (VT)						
m	2018 Dividend	118					
n	Growth Rate at Infinity	3%					
o = m*(1+n)	2018 Standard Dividend	121					
p = Ke - g	Discount rate for the VT	13,2%					
q = o/p	terminal Value	916					
r = q*(5)	Discounted Terminal Value	432					
s = r+k	Valorisation	1 201					

Source : FinAfrique

WARRANTED EQUITY MODEL

Reminder of the theoretical foundation

According to this valuation method, the value of a company is equal to the discounting of its future earnings streams. This model is therefore a derivative of dividend discounting. The value of a bank's equity is therefore equal to its equity multiplied by a factor equal to the ratio between its ROE and its cost of equity, adjusted by the anticipated annual growth rate of net income.

With :

- ▲ **P** : the value of equity capital.
- ▲ **BV** : the amount of the net asset.
- ▲ **ROE** : the sustainable profitable.
- ▲ **Ke** : the cost of capital.
- ▲ **g** : the growth to infinity.



The decomposition of this formula allows finding the formula of the terminal value.

$$P = BV \times \frac{ROE - g}{Ke - g}$$

$$P = \frac{BV \times ROE - BV \times g}{Ke - g}$$

$$P = \frac{RN - BV \times g}{Ke - g}$$

$$P = \frac{RN}{Ke - g}$$

Thus, this valuation method corresponds to the calculation of the terminal value after deducting the capital needed to finance growth and maintain the target solvency level. This method makes it possible to compare the cost of capital and profitability of a bank, both adjusted for infinite growth. It should be noted that this valuation model provides interesting information on the value creation so important for the shareholder. Indeed, if the ROE is higher than the cost of capital, the company creates value, and vice versa.

However, this method suggests that it is possible to maintain at infinity an ROE higher than the cost of capital (or vice versa), which therefore amounts to capitalizing at infinity either a creation of value or a destruction of value.

This method is implemented when a business plan is not available, or when the evaluated institution is considered to be mature and that a stable annual growth rate can be applied to its result.

modeling of the Warranted Equity Method

The modeling is done in a single step.

However, we must provide some clarifications:

- ▲ The retained equity corresponds to expectations in 2018.
- ▲ The ROE is sustainable is the average between 2010 and 2016.

Table 5 : Valorisation d'Access Bank par la Warranted Equity Method (in M\$)

BV 2018e	a	2 643
ROE soutenable	b	14%
Cost of Capital	c	16,2%
g	d	3,00%
P/BV (x)	e = (b-d)/(c-d)	0,83
Valorisation	f = a*e	2 196
Discount factor (x)	i = 1/(1+ke)A(g)	0,55
Present Value	j = f*i	1 203

Source : FinAfrique



THE SUM OF THE PARTS

When feasible, this valuation method allows for a better assessment of the risk profile of each business and their multiples. These multiples are obtained either from the Warranted Equity Method or from multiples of pure players. The allocation of capital is mostly based on company information (percentage of risk-weighted assets or «real » economic capital).

According to this method, the value of a bank's equity is equal to the sum of the value of each of its constituent businesses. Each of the businesses is evaluated by implementing the most relevant method(s). This method allows for the consideration of growth prospects tailored to each profession and varying risk levels reflected in differentiated discount rates.

The predominance of the Warranted Equity Method in the sum-of-the-parts analysis leads us to consider the latter as an extension or refinement of this approach. This valuation method is difficult to apply to African banks due to a lack of diversification.

