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**Bank valuation in Emerging Stock Markets:
Experience from The Ghana Stock Exchange**

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ABSTRACT

Bank valuation in emerging stock markets : Experience from Ghana Stock Exchange

Emerging markets have become over years real attractive markets for foreign investors looking for high return for their investments and the banking business has not escape to this search for high returns. This study intended to value a bank in an Emerging Stock Market using specific methods adapted for bank valuation.

After presenting some of the traditional valuation methods for manufacture companies, we presented specific valuation methods for financial service firms, banks in particular. These methodologies comprise the relative valuation or relative valuation (Price to Earnings ratio and Price to Book Value ratio) and some adaptations of the DCF methodology –namely the Dividend Discount model and Warranted Equity Value. We have come out with the finding that even if adapted DCF methods yield value near the market values -especially for Ecobank Ghana to which this valuation method was applied. It is still difficult to ascertain that DCF methods are the most reliable for bank valuation in an Emerging Market context.

Keywords : Bank Valuation, DCF Methods, Ecobank Ghana

RESUME

Evaluation des banques dans un marché financier émergent : Cas du Ghana Stock Exchange

Les marchés financiers émergents sont devenus depuis des dernières années de plus en plus attractive pour les investisseurs étrangers qui sont à la recherche de rendement élevés. La présente étude vise à proposer une méthode d'évaluation d'une banque dans le contexte d'un marché financier émergent en nous appuyant sur une méthode spécifique adaptée à l'évaluation des banques.

Après avoir présenté les approches de valorisation traditionnelle utilisées pour les entreprises industrielles ou commerciales, nous avons présenté des méthodes d'évaluation spécifique aux établissements de crédit, aux banques en particulier. Ces méthodes y compris les méthodes des comparables (Price to Earnings ratio and Price to Book Value Ratio) ainsi que certaines adaptations de la méthode du Free Cash Flow – Explicitement le Dividend Discount Model et la Warranted Equity Value. Nous avons établi le résultat selon lequel même si la version adaptée du DCF obtient une valeur proche de la valeur de marché, particulièrement pour Ecobank Ghana pour qui cette méthode d'évaluation est adaptée. Il est difficile d'affirmer avec certitude que la méthode DCF est la plus adaptée à l'évaluation des banques dans un marché financier émergent.

Mots clés : Evaluation des banques, Méthode de FCFF, Ecobank Ghana

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LIST OF ACRONYMS

- ADB: Agricultural Development Bank
BoG: Bank of Ghana
C.A.R.: Capital Adequacy Ratio
CAPEX: Capital Expenditures
CAPM: Capital Asset Pricing Model
CB: Commercial Bank
DB : Development Banks
DCF: Discounted Cash Flows
DDM: Dividends Discount Model
DPS: Dividend Per Share
EBG: Ecobank Ghana
EBITDA: Earnings Before Interests, Tax, Depreciation and Amortisation
EIML: Ecobank Investment Managers Ltd
ELC: Ecobank Leasing Company
EPS: Earnings Per Share
ESL: Ecobank Stockbrokers Ltd
ETI: Ecobank Transnational Incorporated
FCFE: Free cash Flow to Equity
FCFF: Free Cash Flow to the Firm
FSSA: Financial Sector Stability Assessment
GCB: Ghana Commercial Bank
GHC: Ghana cedi
GoG: The Government of Ghana
GPB: British Pound
GSE: Ghana Stock Exchange
HFC: home Finance Company Bank
HRH: His Royal Highness
IPO: Initial Public Offering
LDM: Licensed Dealing Member

NIB: National Investment Bank

OTC: Over-The-Counter

P/BV: Price to Book Value

P/E: Price Earnings ratio

P/EBITDA: Price to Earnings Before Interests, Tax, Depreciation and Amortisation

PAT: Profit After Tax

RoAA : Return on Average Assets

RoAE : Return on Average Equity

ROE: Return On Equity

SCBG: Standard Chartered Bank Ghana

SEC: Security and Exchange Commission

SG-SSB: Société Générale-Social Security Bank

SSNIT: Social Security and National Insurance Trust

TBL: Trust Bank Ltd

UB: Universal Bank

USD: United States Dollar

Vol.: Volume

WACC: Weighted Average Cost of Capital

WEV: Warranted Equity Value

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INTRODUCTION

A stock exchange or stock market is an organized capital market where securities are bought or sold. It plays a key role in the allocation of financial resources by channelling funds from surplus economic units to the deficit economic units. Besides the stock market, financial systems also tend to evolve around a banking sector, which is effective for financial intermediation, channelling savings into investment on a medium-term basis. In well-functioning economies, banks tend to act as quality controllers for capital seeking for successful projects, ensuring higher returns and accelerating output growth.

Banks therefore provide financial means to both individuals and firms with needed funds for capital investment and working capital. In undertaking their lending and other investment operations, banks usually rely on customer deposits (as their main source of financing) but also, they ensure they have a strong capital base to meet their Capital Adequacy Ratio (CAR) requirements.

Such capital required by banks can be raised from individuals and or institutional investors. Banks can also raise capital on local and international capital markets.

In Ghana, though most banks are privately owned or government-owned, some are public companies, listed on the Ghana Stock Exchange (GSE). Accordingly, on the total 20 Ghanaian banks operating at the end of 2005, five of them are public companies and publicly traded on the GSE.

GSE and the Ghana Securities and Exchange Commission (SEC) regulations require that any company being ruled under the Companies' Act 169 before the listing should go through a valuation process. This enables prospective investors to have a fair value of the company before investing in it. Consequently, banks have to fulfil this requirement. This study will examine the methods used to value banks in emerging stock markets.

There are various methods used to assess the value of a company, such as Discount methods (Dividend Discount Model, Discounted cash flow techniques), Public Market Multiples models - the Price to Earnings ratio (P/E Ratio), the Price to Book ratio (PBR), the Price to EBITDA (P/EBITDA ratio) and the Excess Return Models. DCF is the most popular valuation model used

by investment analysts. According to A. Damodaran (2002), the value of a firm can be obtained by discounting expected cash flows after meeting all operating expenses, taxes and reinvestment needs but prior to debt payments, at the Weighted Average Cost of Capital (WACC).

For most non-financial firms, the estimation of the cash flows is not that difficult since they are derived from the cash flow statement. The different components of cash flow for such non-financial firms are easily identifiable, so the future cash flows can be identified. However, when it comes to financial firms such as banks, the derivation of cash flows for purpose of valuation can be quite problematic. This is due mainly to the nature of their business, which consists of collecting deposit from the public and granting loans to customers. Moreover, a bank can run many types of business ranging from commercial banking to investment banking via merchant banking, meaning that for some activities like investment banking and merchant banking they cannot collect deposits from the public.

The nature of the banks' businesses makes it difficult to define both debt and reinvestment, making the estimation of cash flows much more difficult.

Debt can be defined as any financing vehicle that has a contractual claim on the firm's cash flows and assets, creates tax-deductible payments, and has a fixed life and priority claim on the cash flows in both operating period and bankruptcy. But for banks, debt can hold another connotation. According to Damodaran (2002) from the banks' point of view, debt is considered as a 'raw material', which is "to be moulded into other financial products which can then be sold at a higher price and yield a profit". Subsequently, the components of the debt for banks are also not easy to determine. The main concern with debt in banks is how to consider both short and long term interest-bearing deposits which are also a form of debt since they can be withdrawn at anytime (deposits on current accounts) or at agreed maturities (calls, term deposits...) and the normal debt they issued to raise funds for loans purposes.

For banks' reinvestment we consider two items for its measurement – net capital expenditures (Net Capex) and changes in working capital. Most banking institutions invest more in intangible assets i.e. brand name and human resources than in other type of assets, so their investment for future growth is often considered as operating expenses. And if we define working capital as the difference between current assets and current liabilities, then a large portion of banks' balance sheet and income statement falls into both categories. Consequently, any change in its

components can lead to large changes in its value and may not have any relationship to future growth.

Considering the issues raised above, the main problem we will try to solve in this study is related to the definition of bank cash flows i.e. the identification of the ingredients of banks cash flows and consequently the estimation of a bank value for Initial Public Offer (IPO)¹ purpose.

Taking into consideration the problem mentioned above, we will try in this study to provide answers to the following questions:

- a) What are the components of banks' cash flows?
- b) What are the relevant cash flows to be used when valuing a financial institution and especially a privately owned bank?
- c) Are there other methods that can be taken into account for private bank valuation purposes?

We will try to bring answers to these questions keeping in mind the fact that we operate in a developing economy. In this perspective, we will have as objectives to identify the main sources of cash-in-flows and cash-out-flows of a bank in order to derive the cash flows necessary for the computation of the DCF-based valuation techniques and also find out other appropriate methods for bank valuation on the GSE.

Using the Ghanaian banking industry as reference, we will sample a few of the listed banks on the Ghana Stock Exchange (GSE). At first, we will review and analyze the various methods employed by each of them to arrive at their market values. These valuation methods will be found in the main prospectus, which is generally available for potential investors during IPOs.

Secondly based on a literature review, results and analysis of the various approaches, we will try to value Ecobank Ghana Limited (EBG) according to the appropriate methodology we will identify; and a particular interest will be put on how to derive the cash flows.

As mentioned above, we will be using secondary data based essentially on the information provided by listed banks on the GSE² during their IPO as well as their various annual reports. For

¹ An initial public offering is the initial issuance of common stock registered for public trading by a formerly private corporation.

EBG valuation, we will use the data available on past financial statements and for the projected cash flows we will use the projected balance sheets and projected income statements.

The following of the thesis is organised below. Chapter 1 reviews the literature on companies' valuation. Chapter 2 reviews the literature on bank valuation methods. The final chapter presents the methodology for the valuation of Ecobank Ghana. The thesis is ended by a conclusion of the work and some recommendations.

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² See table 1

**CHAPTER ONE :
LITERATURE REVIEW ON FIRM VALUATION**

*“Valuation is the estimation of an asset’s value
Based either on variables perceived to be
Related to future investments returns or
On a comparison with similar assets”³*

How much worth is a company? The financial literature provides an answer to this question through two basic approaches; the Discounted Cash Flow method and the Relative valuation (also known as the Method of Multiples).

In fact, most of the valuers, in order to assess the value of a company tend to use the enterprise value, which is equal to the market value of the shareholders’ equity (stock market capitalisation if a company is listed on a stock market) plus the market value of the net financial debt. The firm or enterprise value is therefore obtained as stated above through either:

- The Discounted Cash Flow method in which the value of any asset is estimated by computing the present value of the expected cash flows on it. Hence, the DCF valuation method is based on the ability of companies to generate cash flows in the future.
- The Relative valuation method (also known as the Method of Comparables), which computes the value of any asset by looking at how similar assets are priced in the market.

In this chapter, we present both approaches and some other methods used in companies’ valuation.

1.1 The Discounted Cash Flow (DCF) Valuation Method of a firm

Discounted cash flow was first formally articulated in John Burr William’s 1938 text ‘the Theory of Investment Value’ in which he states that the investment value of an enterprise as a whole is

³ Stowe et al.; 2002

by definition the present worth of all its future distributions to security holders, whether on interest or dividend account (William, 1938)⁴

The DCF estimates the value of any asset by discounting back the expected cash flows on that asset at a rate that reflects their riskiness (Damodaran, 2002). In a sense, DCF valuation gives the intrinsic value of an asset.

The theoretical foundation of the DCF is related to the time value of money through which an investor can compare its investment at any point of the time. Therefore the value of an asset is the present value of expected cash flows on that asset. This means that the value of any asset is a function that cash flows generated by that asset, the life of the asset, the expected growth in the cash flows and the risk associated with them. This gives the formula under:

$$\text{Value of asset} = \sum_{t=1}^{t=n} \frac{\text{expected cash flows}}{(1+r)^t}$$

Where:

n is the asset's years life

r is the discount rate reflecting both the riskiness of the cash flows and the cost of acquiring the asset.

There are many types of cash flows, each of which should be discounted at a rate reflecting its own risk. For valuation purposes, here are the commonly used ones:

- The free cash flow to the firm (FCFF)
- The free cash flow to equity (FCFE)
- The dividends

The DCF valuation method can be therefore computed according to the types of cash flows used or the objective of the valuation.

⁴ *The Theory of Investment Value* (Cambridge, MA: Harvard University Press, 1938); reprinted (Burlington, VT: Fraser Publishing, 1997)

1.1.1 The Discounted Cash flows to the Firm Valuation Model

The computation of the discounted free cash flows to the firm assumes that the definition of the firm includes both debt and equity holders. Indeed, FCFF users argue that debt financing also contributes to increase shareholders wealth and should be taken into consideration in the valuation process. Thus "the free cash flow to the firm (FCFF) is the sum of the cash flows to all claim holders of the firm, including stockholders, bondholders and preferred stockholders."⁵

Thus,

$$\text{Value of the firm} = \sum_{t=1}^{t=n} \frac{\text{expected FCFF}}{(1 + \text{WACC})^t}$$

Where:

n is the asset's years of life

WACC is the weighted average cost of capital

The expected stream of future cash flows and the chosen discount rate influence the value of the firm.

1.1.1.1 Free Cash Flow to the Firm Measurement

According to Damodaran (2002), there are two approaches to assess the cash flows to the firm. The first consists in adding up the cash flows to all the claimholders in the firm. So the cash flows to equity investors (dividends or stock buybacks) are added to the cash flows due to the debt holders (interests and net debt repayments) to get the cash flow to the firm.

The other approach consists in estimating the firm's cash flow is to consider the cash flow prior to debt payments but after reinvestment needs have been met. This gives:

$$\begin{aligned} & \text{EBIT} (1 - \text{tax rate}) \\ & - (\text{Capital Expenditures} - \text{Depreciation}) \\ & - \text{Change in non-cash working capital} \\ & = \text{Free Cash Flow to the Firm} \end{aligned}$$

Benninga and Sarig (1997) compute the FCFF in two ways: the indirect approach and the direct approach.

⁵ Aswath Damodaran in Investments Valuation 2nd Ed. John Wiley and Son, NY 2002

According to them, the indirect method “starts from the profit after taxes to arrive to a number that shows how much cash is taken away by the firm over the period”.

Profit after taxes
+ Depreciation
- Increase in accounts receivable
- Increase in inventories
+ Increase in Accounts payable
+ Increase in Taxes payable
= Cash flows from operations
- Net increase in property, plant and equipment at cost
= Free Cash Flow to the Firm

Benninga and Sarig FCFF formula gets into more details compare to Damodaran's.

The indirect approach converts each item in the income statement to cash basis. That gives the understated formula:

Sales
- Increase in accounts payable
- Cost of goods sold
- Operating expenses
- Increase in accounts payable
+ Depreciation
- Tax on operating income
+ Increase in tax payable
- Net increase in tax payable
+ Net increase in property, plant and equipment
= Free cash Flow to the Firm.

After calculating the firm's FCFs, let us consider now the implication in valuation models

1.1.1.2 The valuation model

For valuation purposes, some assumptions have to be taken into account as stated by Damodaran: “... the value of any asset should be a function of three variables: (1) how much it generates in cash flows; (2) when these cash flow are expected to occur and; (3) the uncertainty associated with these cash flows”.

As we have already discussed about the first variable, we will focus now on the time horizon of the valuation and on the risk related the occurrence of these cash flows.

To reward the risk taken by both investors in the firm's business, the Weighted Average Cost of Capital (WACC) is used and computed as follows:

$$\text{WACC} = \text{Cost of equity} \times \frac{\text{Equity}}{\text{Equity} + \text{Debt}} + \text{Cost of debt} \times \frac{\text{Debt}}{\text{Equity} + \text{Debt}}$$

- The cost of debt being equal to: (Risk free rate + default spread) x (1-t)
- The cost of debt being equal to: risk free rate + (β_m) x risk premium

The horizon of the firm valuation depends most on the capacity of the firm to forecast the rate of growth of its activities.

The cash flow expected are estimated according to three different hypothesis : No growth model, constant growth model, multiple growth model.

In case of no growth

$$\text{Value of the firm} = \frac{\text{FCFF}}{\text{WACC}}$$

In case of constant growth model

A firm that is growing at a rate that it can sustain in perpetuity – a stable growth rate – can be valued using a stable growth model.

$$\text{Value of the firm} = \frac{\text{FCFF}}{\text{WACC} - g_n}$$

Where:

$\text{FCFF}_1 = \text{FCFF}_0 (1 + g)$ Firm's free cash flow at year 1, and

g the constant growth rate of FCFF forever

In case of multiple growth model

The multiple growth model is based on the hypothesis that the firm reaches steady state after n years and starts growing at a stable growth rate g_n after that. So, the value of the firm can be written as:

$$\text{Value of Firm} = \sum_{t=1}^{t=n} \frac{\text{FCFF}_t}{(1 + \text{WACC})^t} + \frac{\text{FCFF}_{n+1} / (\text{WACC} - g_n)}{(1 + \text{WACC})^n}$$

Where:

$\sum_{t=1}^{t=n} \frac{\text{FCFF}_t}{(1 + \text{WACC})^t}$ is the value of the firm at its first stage of growth,

FCFF_{n+1} = the FCFF at the beginning of the second growth stage and is equal to

$\text{FCFF}_n (1 + g_n)$,

g_n = growth rate at the second stage,

WACC = the weighted average cost of capital.

These expressions provide formula for firm's valuation and are used according to hypothesis that best match the situation of the value firm.

1.1.2 The Free Cash Flow to Equity Discount Model

The FCFE discount model remains fundamentally the same as the firm valuation approach we have described above despite some slight differences.

1.1.2.1 The Free Cash Flow to Equity measurement

The FCFE measures cash flows to only equity holders in the firm. For Damodaran (1997)⁶ the FCFE can be defined as "...the residual cash flow left over after meeting interest and principal repayment and providing for capital expenditures." Therefore, it can be computed as follows:

$$\begin{aligned} & \text{Net income} \\ & - (\text{Capital expenditures} - \text{Depreciation}) \\ & - \text{Change in Noncash Working Capital} \\ & - (\text{Principal repayment on debt} - \text{New debt issues}) \\ & = \text{Free Cash Flow to Equity} \end{aligned}$$

⁶ *Corporate Finance: Theory and Practice*. John Wiley and Son, NY 1997

1.1.2.2 The valuation model

The valuation of a firm using the FCFE takes into consideration some assumptions:

- The equity investors are reward is taken into account through the discount rate. The to be used in this case is the cost of equity, rather than the cost of capital, since the cash flow are cash flows to equity investors.
- The expected growth rate is in equity earnings. The retention ratio⁷ and the return on equity are used to compute the expected growth rate.

Expected growth rate = Retention Ratio x Return on Equity

In case of no growth

$$\text{Value of the firm} = \frac{\text{FCFE}}{k_e}$$

Where:

FCFE = the expected Free Cash Flow to Equity

k_e = cost of equity

In case of infinite life

$$\text{Firm's Value} = \frac{\text{FCFE}_1}{k_e - g}$$

Where:

$\text{FCFE}_1 = \text{FCFE}_0 (1 + g)$ = free cash flow to equity at the end of year 1

k_e = the cost of equity

g = the constant growth rate of FCFE

In case of multiple growth

In this case, the value of the firm is computed in several parts. For a two-stage growth, the first part is the present value of the free cash flows to equity during the growth period, and the second part is the present value of the terminal value of equity discounted at the difference between the cost of equity and the rate second growth rate reflecting its new growth stage:

⁷ The retention ratio is the percentage of the net income that gets reinvested back equity investors into the firm.

$$\text{Value of Firm} = \sum_{t=1}^{t=n} \frac{\text{FCFE}_0 (1+g_1)^t}{(1+k_c)^t} + \frac{\text{FCFE}_n (1+g_2)}{k_c - g_2} \times \frac{1}{(1+k_c)^n}$$

Where:

FCFE_n = the expected Free cash flow to Equity at year n

FCFE_0 = Free cash flow to equity at year 0

g_1 = growth at the first stage

g_2 = growth at the second stage

k_c = cost of capital.

1.1.3 The Dividend Discount Model (DDM)

In the strictest sense, the only cash flows equity investors receive from a firm when they buy publicly traded stock are the dividends. The simplest model for valuing equity is the dividend discount model. The general equation states that the value of a stock is the present value of expected dividends payments on it discounted at the cost of capital.

$$\text{Value of the firm} = \sum_{t=1}^{t=\infty} \frac{E(\text{DPS})}{(1+k_c)^t} \times \text{number of shares}$$

Where:

$E(\text{DPS})$ = the expected dividend per share

k_c = the cost of equity

Due to the difficulty in the estimation of dividends stream - because of the uncertainty linked to future performance of the firm, economic environment, board of directors' decisions... the forecasting of dividends lays on three main assumptions : Zero growth model, Constant growth model, multiple growth model.

Zero growth model

The company will be paying the same dividend each year forever. Under this assumption the value of the share is:

$$\text{Share Value} = \frac{D}{k_c}$$

Constant growth model

The assumption in this case is that dividends will grow at the same rate every year in the future. It is also known as the 'Gordon Model'.

$$\text{Share price} = \frac{D_1}{k_e - g}$$

Where:

$D_1 = D_0 (1+g)$ = dividend per share at year 1

g = constant growth rate of dividends

The multiplication of the number of shares by the price gives us the value of the company. This applies to the first two models.

Multiple growth model

Here, the company goes through different stages of growth. This affects the dividends payments and gives therefore this formula under when using a two- stage growth model:

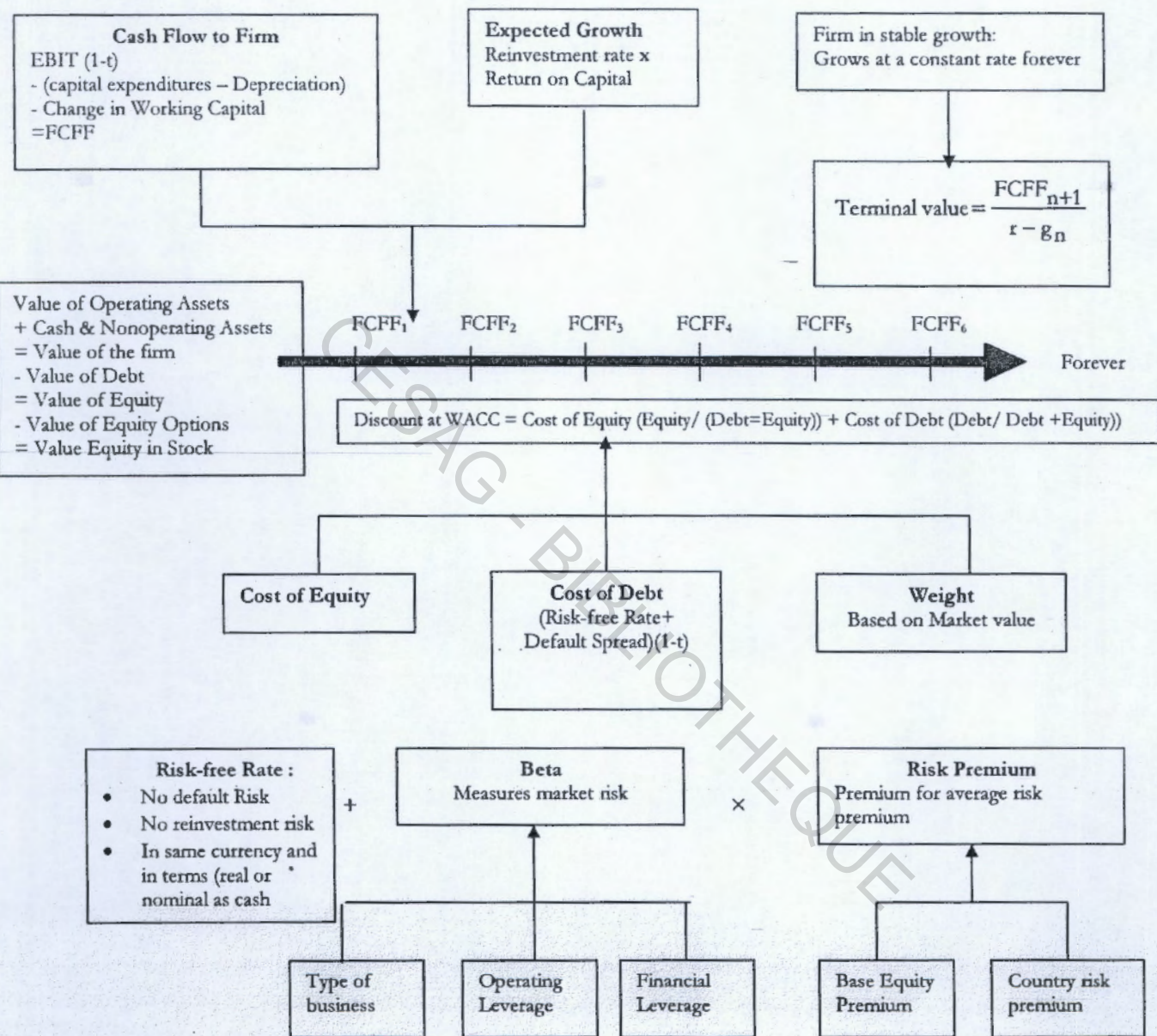
$$\text{Value of the firm} = \sum_{t=1}^{t=n} \frac{D_0(1+g_1)^t}{(1+k_e)^t} + \frac{D_n(1+g_2)}{k_e - g_2} \times \frac{1}{(1+k_e)^n}$$

The Discounted cash flow valuation method is one of the most common techniques used by valuers for investment valuation. This technique estimates the value of an asset by computing the present value of the expected cash flows on that asset. The following diagram summarises the different features of the DCF valuation method -the Free Cash Flow to the Firm Discount model, the Free Cash Flow to the Equity model and the Dividend Discount model.

The first section of this chapter is aimed at the presentation of the formulas used to value firms by the Discounted Cash Flow (DCF) valuation method. These lines show that three formulas based on different assumptions can be used: Zero growth models, Constant growth and multiple growth model. There used need the estimation of the profile of the future cash flows of the firm. This forecast can be difficult in context subject to many stochastic phenomenon.

In the next section, we provide relative valuation models. Before, we provide a synthetic schema on this approach.

Figure 1 : Discounted Cash Flow: The general model



Source: Damodaran (2002)

1.2 The Relative firm valuation method

In relative valuation, the value of an asset is estimated by looking at how similar assets are priced. To make this comparison, prices are converted first into multiples – standardizing prices –

and then these multiples are compared across firms defined as comparable⁸. Prices can be standardized based upon earnings, book value, revenue or sector-specific variables. This method assumes that on average, the market fairly values the firms in each sector. The relative valuation method is also called "valuation by multiples" (Benninga and Sarig, 1997). We will focus here on the earnings multiples and the book value multiples.

1.2.1 Earning multiples

The most common earning multiples used for valuation purposes are the Price Earnings Ratio (P/E) and the enterprise value to EBITDA. These methods are known to be of an easy use and are widely used by practitioners (financial websites and newspapers). In fact in their sound formulation, as for the DCF models, they also need a forecasting of the firm financial performances and facing therefore the same difficulties.

1.2.1.1 The Price Earnings ratio (P/E Ratio)

1.2.1.1.1 Definition of the P/E

The price earnings ratio is the ratio of the market price per share to the earnings per share. In practical terms, the P/E is the number of times investors value earnings as expressed in the share price. It is mostly used when buying equity in a company or during IPOs.

This price/earnings ratio can be estimated using current earnings per share, yielding a current P/E, earnings over the last 4 quarters, resulting in a trailing P/E, or expected earnings per share in the next year, providing a forward P/E.

1.2.1.1.2 Computation of the P/E

The Price to Earnings ratio can be calculated using a simple formula. It can also be derived from the DCF method.

⁸ A comparable firm is one with cash flows, growth potential, and risk similar to the firm being valued. But analysts define comparable firms to be other firms in the firm's business or businesses. The implicit assumption being made here is that firms in the same sector have similar risk, growth, and cash flow profiles and therefore can be compared with much more legitimacy

- *The simple formula*

This formula uses the raw data provided by the market to compute the P/E ratio.

$$P/E = \frac{\text{Market price per shares}}{\text{Earnings per share}}$$

If we are reasoning in global terms –the firm in its entirety- then,

$$P/E = \frac{\text{Firm's Market capitalisation}}{\text{Total Earnings of the firm}}$$

- *P/E using the firm's fundamentals*

This method is based on the company's fundamentals and uses the dividend in lieu of the earnings.

Assuming that the company will grow at a constant rate, the Gordon model gives:

$$P = \frac{D_0(1+g)}{k_e - g}$$

Where:

$D_0(1+g)$ is the dividend per share at the end of the year 1,

g is the constant growth rate of dividends and,

k_e , the cost of equity.

If we divide if side of the equation by earnings per share, we have:

$$P/E = \frac{D_0(1+g)}{E(k_e - g)}$$

Where D_0/E is the payout ratio, therefore

$$P/E = \text{payout ratio} \frac{(1+g)}{(k_e - g)}$$

This formula appears to be linked to the dividend policy and the growth rate of the firm.

1.2.1.2 The Enterprise Value to EBITDA (EV / EBITDA)

The enterprise value to Earnings before Interests, Taxes, Depreciation and Amortization (EBITDA) multiple is a firm value multiple, which is used when buying a business and not only the firm's equity. In the last two decades, this multiple has acquired a number of adherents among analysts for a number of reasons. First, there are far fewer firms with negative EBITDA than there are firms with negative earnings per share and thus fewer firms are lost from the analysis. Second, differences in depreciation methods across different companies – some might use straight line while others use accelerated depreciation – can cause differences in operating income or net income but will not affect EBITDA. Third, this multiple can be compared far more easily cross firms with different financial leverage – the numerator is firm value and the denominator is a pre-debt earnings – than other earnings multiples. For all of these reasons, this multiple is particularly useful for firms in sectors that require large investments in infrastructure with long gestation periods. A good example is cocoa processing firms.

The enterprise value to EBITDA (EV/EBITDA) multiple relates the total market value of the firm, net of cash, to the earnings before interest, taxes and depreciation of the firm.

$$\text{EV/EBITDA} = \frac{\text{Market Value of Equity} + \text{market value of Debt} - \text{Cash}}{\text{EBITDA}}$$

Cash is netted out from the enterprise value since the interest income from the cash is not counted as part of the EBITDA, therefore not netting out the cash will result in an overstatement of the true value to EBITDA multiple.

1.2.2 Book Value multiples

The relationship between price and book value has always attracted the attention of investors. Stocks selling for well below the book value of equity are generally considered good candidates for undervalued portfolios, while those selling for more than book value are targets for overvalued portfolios. This section examines the Price to Book Value ratio (P/BV) and we will also review some other variants of book value multiples.

1.2.2.1 The Price to Book Value Ratio (P/BV)

The price to book ratio is computed by dividing the market price per share by the current book value of equity per share.

$$\frac{P}{BV} = \frac{\text{Market price per share}}{\text{Book Value of Equity per share}}$$

Or more globally,

$$\frac{P}{BV} = \frac{\text{Market value of equity}}{\text{Book Value of Equity}}$$

The market value of the equity in a firm reflects the market's expectation of the firm's earning power and cash flows. The book value of equity is the difference between the book value of assets and the book value of liabilities; more specifically, the book value of equity is the original price paid for the assets reduced by any allowable depreciation on the assets.

The price-book value ratio can also be deduced using the fundamentals of the evaluated company, linking hence this method to the discounted cash flow models. Since this is an equity multiple, we will use an equity discounted cash flow model – the dividend discount model – to explore the determinants. The value of equity in a stable growth dividend discount model can be written as:

$$P_0 = \frac{DPS}{k_e - g_n}$$

Where,

P_0 = Value of equity per share today

DPS = Expected dividends per share next year

k_e = Cost of equity

g_n = Growth rate in dividends (forever)

Substituting in for $DPS = (EPS) \times (\text{Payout ratio})$, the value of the equity can be written as:

$$P_0 = \frac{EPS \times \text{payout ratio}}{k_e - g_n}$$

Assuming that the company grows at a stable growth rate, the Return on Equity (ROE) = $EPS_0 / \text{Book Value of Equity}_0$.

$\Rightarrow EPS_0 = ROE \times \text{Book Value of Equity}_0$

$$S_0, P_0 = ROE * \text{Book Value of Equity}_0 * \text{Payout ratio} * (1+g)/(k_e - g_0)$$

Rewriting P_0 in terms of PBV ratio gives:

$$PBV = P_0 / BV_0 = ROE * \text{payout ratio} * \frac{1+g}{k_e - g_n}$$

And the value of the Equity is then derived from the P/BV ratio:

$$\text{Share price} = P/BV * \text{Book value of equity}$$

The PBV ratio is therefore an increasing function of the return on equity, the payout ratio and the growth rate and a decreasing function of the riskiness of the firm.

1.2.2.2 Value to Book ratio

Instead of relating the market value of equity to the book value of equity, the value to book ratio relates the firm value to the book value of capital of the firm. Consequently, it can be viewed as the firm value analogous to the price to book ratio.

The value to book ratio is obtained by dividing the market value of both debt and equity by the book value of capital invested in a firm.

$$\text{Value to book ratio} = \frac{\text{Market value of Equity} + \text{Market value of Debt}}{\text{Book value of Equity} + \text{Book value of Debt}}$$

1.2.2.3 Tobin's Q: Market Value/Replacement Cost

James Tobin presented an alternative to traditional financial measures of value by comparing the market value of an asset to its replacement cost. His measure, called Tobin's Q, has several adherents in academia but still has not broken through into practical use, largely because of informational problems.

Tobin's Q is estimated by dividing the market value of a firm's assets by the replacement cost of these assets.

$$\text{Tobin's } Q = \frac{\text{Market value of assets in place}}{\text{Replacement cost of assets in place}}$$

A part from the multiple we have mentioned above, there are some other variants of the method of multiples. All these variants are built on the same model (Market Price/Per Share Account Item). And the value of the equity or firm comes as a derivation from the general formula.

These multiples include Revenue multiples like the Price to Sale Ratio (PSR), the Enterprise Value to Sales Ratio (EV/S) and Specific- sector multiples.

1.3 Some other valuation models

We have reviewed above two main methods of valuing companies, namely the Discounted Cash Flows methods and the valuation by multiples. This two valuation methods are the ones professionals use most. However, there are other valuation methods based either on accounting principles or on option pricing theory.

1.3.1 Accounting based valuation method: The Asset Value Models

These models are based essentially on accounting methods and generally give an estimate of the value of a firm as the value of its assets minus the cost of the debt. The Asset Value methods use either:

- the liquidation valuation method (in which the liquidation value is obtained by aggregating the estimated sale proceeds of the assets owned by a firm),
- or the replacement cost, where we evaluate what it would cost to replace all of the assets that a firm has today. This replacement cost can be done at historical costs or market values (which is recommended).

The equity value is then obtained by dividing the value of the assets by the number of outstanding shares.

1.3.2 Valuing firms using option pricing model

An option is a security that gives its owner the right to purchase (call option) or sell (put option) a given asset (the underlying asset), on (European option) or before (American option) a given date, at a predetermined price (the strike or exercise price).

Options can be priced using different models and are based on the notion of a replicating portfolio but the binomial and the Black-Scholes models are the most used of these models.

The binomial option pricing model is based on a simple formulation from the asset price process in which the asset, in any time period, can move to one of two possible prices. The underlying asset and the risk-free lending or borrowing rate are combined to create a portfolio that has the same cash flows as the option is being valued; this portfolio is called the replicating portfolio. This model assumes that price changes are large even within a shorter period.

The Black-Scholes model is efficient for a continuous pricing process that is when price changes become smaller as time period get short. The value of a call option can be written as follow using the Black-Scholes pricing model:

$$\text{Value of a call} = S * N(d_1) - K * e^{-rt} * N(d_2)$$

Where,

S is the current value of the underlying asset

K, the strike of the option

t, the life to expiration of the option

r, the riskless rate

$$d_1 = \frac{\ln \frac{S}{K} + \left(r + \frac{\sigma^2}{2} \right) * t}{\sigma \sqrt{t}}$$

$$d_2 = d_1 - \sqrt{t}$$

Using the Black-Scholes option-pricing model, the shareholder is considered to have purchased a call option on the firm. Options are based on the assumptions that:

- The underlying asset is traded, and a replicating portfolio can be created;
- The exercise of an option is immediate;
- The pricing process is continuous;
- And the variance is known and is not expected to change during the option's life.

The value of Equity can be written as follows:

$$E = V - D \text{ if } V > D$$

$$E = 0 \text{ if } V < D$$

Where,

E is the value of Equity,

D: the face value of the outstanding debt and other external claims

V: the value of the firm.

A correspondence can be done with a call option. For this, we assume the following: V is considered to be the value of the underlying asset and D, the strike. In fact shareholders can claim the underlying assets of the firm by paying D to the debt holders. If equity holders cannot pay back the debt at maturity (i.e. the expiry date of the option), the debt holders will take over the firm's assets and therefore the value of equity will be equal to zero.

The other determinants of the option are:

1. The life of the option (t) here is the life of the zero-coupon debt;
2. The variance in the underlying asset (σ^2) is the variance in firm value,
3. The riskless rate (r) here is the Treasury bond rate corresponding to the option's life.

We have reviewed in this chapter some of the models used for non-financial firms valuation, namely the DCF Models, the valuation by multiples, Asset based valuation and the valuation using option the pricing theory. The first two methods try to capture the intrinsic value of the firm through its fundamentals while the third method is an accounting based valuation and the fourth method is based on the option pricing theory. The financial theory on valuation is full of valuation methods, which this literature review could not cover; therefore we have chosen to present the commonly used ones.

In the next chapter, these formulas will be updated to the situation of bank valuation model.

**CHAPTER TWO :
LITERATURE REVIEW ON BANK VALUATION**

To appraise an industrial or commercial company, financial analysts tend to privilege the enterprise value. The equity value is therefore obtained by netting the debt from the enterprise or firm value. The equity value is computed through the DCF method by discounting forecasted free cash flows at the cost of capital. It can also be computed by using the method of market comparables also called relative valuation.

Literature on bank valuation is more focused on how to adapt existing valuation models for non-financial firms to banks. For this purpose, we will examine the various adaptations of the DCF valuation methods. We will also review how best the relative valuation can be adapted for banks and which comparables are suitable for financial service firms.

2.1 Adapted DCF valuation methods

Damodaran (2002) and Colle and Jacquemard (2004) agree that the difficulty of valuing banks comes mainly from the definition of debt. To Colle and Jacquemard (2004), debt is considered as "raw material lent to customers and that generates the bank's net income" and to Damodaran, "debt is to bank what steel is to General Motors, something to be moulded into other financial products which can then be sold at a higher profit and yield a profit". Indeed, debt contracted by a bank represents resources that it lends to its customers. These debts are therefore at the heart of the activity of intermediation of banks and don't have, to the difference of those contracted by a manufacture company, vocation to finance a tool of production (investments) or working capital. Damodaran's main suggestion is therefore to value equity directly either through a Dividend Discount Model or a Free Cash Flow to Equity model with a few changes to adapt them financial service firms. Colle & Jacquemard (2004) discount net income at the cost of capital rather than discounting the FCFE and also suggest a simplified DCF model: the Warranted Equity Value.

2.1.1 Dividend Discount Model (DDM)

Damodaran In general, to value a stock using the DDM, we need to estimate the cost of equity (k_e), the expected payout ratios and the expected growth rate in earning per share over time.

2.1.1.1 The cost of equity

The cost of equity reflects the portion of risk in the equity that cannot be diversified away by the marginal investor in a stock. This risk is estimated using a beta (β) in the CAPM. Because firms change over the period; this creates a noise in the estimates (standard errors). With financial service firms such as banks, the regression beta estimate is far more precise because they often large and mature businesses and regulatory overlays are often more stable in time.

The banking activity is relatively young in Ghana and is a constant growing business where new firms are coming in. This makes very difficult to estimate the nondiversified risk (β) in this context. More over, the regulatory restrictions are in constant change due to the changes that affect the banking business very often.

2.1.1.2 The payout ratios

Expected DPS = Expected EPS X Expected Payout ratio

Payout ratio = DPS/EPS

Banks and other financial institutions have the reputation of paying high dividends as compared to the rest of the market. Damodaran suggests three reasons to this:

- They invest for less in CAPEX (at least as defined by accountants) than other firms. This means that a large part of their net income would be paid as dividends.
- Historically, financial institutions have developed a reputation as reliable payers of high dividends. So over time they attracted investors who like dividends and it is actually difficult for them to their dividend policy.
- They operate in much more mature business than firms in other sectors.

In Ghana, banks follow this tendency of paying if not high dividends, then relatively good dividends because they also have developed that reputation of dividends payers. More over the banking activity in Ghana is in constant growth despite the increasing level of competition among the various actors in the sector and the coming of new competitors.

2.1.1.3 Expected growth

Dividends are based upon earnings; the expected growth that determines the value of dividends is the expected growth in earnings. For financial institutions, growth in earnings is derived from one of this way as for manufacturing firms:

- Historical growth in earnings:
- Analysts' estimates in growth.
- Fundamental growth.

$$\text{Expected growth in EPS} = \text{retention ratio} \times \text{ROE}$$

We can note that in this formula, the ROE is stable. If we assume that this ROE is expected to change overtime then this formula becomes:

$$\text{Expected growth in EPS} = \text{retention ratio} * \left[(\text{ROE}_{t+1}) + \frac{\text{ROE}_{t+1} - \text{ROE}_t}{\text{ROE}_t} \right]$$

The retention ratio in banks measures the quantity of equity reinvested into the bank, which in turn, gives the regulatory focus on CAR, determines how much the bank can expand in the future.

2.1.2 Cash flow to Equity Models

To Damodaran, it makes far more sense valuing equity directly than the whole bank. Therefore he discounts the Free Cash Flow to Equity investors (FCFE) at the cost of equity (k_e).

$$\begin{aligned} \text{FCFE} &= \text{Net income} \\ &\quad - \text{Net capital expenditures} \\ &\quad - \text{Change in cash working capital} \\ &\quad - (\text{Debt repaid} - \text{new issued debt}) \end{aligned}$$

We defined the Free Cash flow to Equity (FCFE) earlier on as the cash flow left over for equity investors after debt payment have been made and reinvestment needs met.

To use this model, Damodaran defines the reinvestment differently. According to him banks and other financial firms have no or little investments in plant, equipment or other fix assets; the major investments are made in human capital and regulatory capital⁹. Therefore, the issue on how to incorporate them into reinvestment is being raised. He deals with this issue by capitalising training and employee development expenses through:

- an identification of the amortisable life for the asset (employees),
- a collection of information on employees expenses in priors years,
- a computation of the current year amortisation expenses,
- an adjustment of the firm's net income and,
- a computation of the value of the human capital.

As far as the investment in regulatory capital is concerned, reinvestment can be defined as the portion of the net income that is not being paid to equity investors. Indeed it increases the equity capital of the bank and it allows the bank to expand its activities. However, this works only if the firm takes advantage of these non-utilised funds to grow. So it can be assumed that banks that report an equity capital above the regulatory constraint are not using its equity capital to grow. In the other hand, a bank that reports a CAR under or near the minimum required can also be viewed as more risky. As a result of this, it is rather a real capital base corresponding to the bank objectives and to the sector's trend that should be retained to determine the portion of the net income to be reinvested than the regulatory base.

Colle & Jacquemard in their article on bank valuation techniques, rather think that the best estimate of banks' cash flow is not the FCFE but the net income. To them, bank cash flow to equity as defined below corresponds to the change in the bank's cash account.

⁹ Capital as defined by regulatory authorities and, which in turn, determines the limits on future growth.

Net income
+ Amortisation and Depreciation
= Cash flow from operations
+ Net increase in clients' deposits
+ Net increase in financial debts
+ Net increase in other debts
= Sources
- Net increase in loans
- Net increase in financial
- Net investments
- Net increase in other assets
= Uses

This definition of the FCFE is almost the same as the definition given by Mc Kinsey & Co. Inc., Tom Copeland, Tim Koller and Jack Murrin¹⁰. According to them, "free cash flow to shareholders is net income plus noncash charges less cash flow needed to grow the balance sheet." table 1 shows the definition of bank FCFE from Mc Kinsey & Co, and AI. perspective.

¹⁰ Tom Copeland, Tim Koller and Jack Murrin, (2000), *Valuation, Measuring and Managing the Value of Companies*, McKinsey & Company, Inc, Third Edition NY.

Table 1 : Definition of bank FCFE

Income statement	Balance sheet Sources	Uses
Interest income	Gross loans due	New loans
+ Fee income	- Provisions and unearned income	+ Increase in securities held
- Interest expense	= Net loans paid	+ Increase in accounts receivable
- Provision for credit losses	+ Increase in deposits	+ Increase in net tangible assets
+ Non-interest revenue	+ Increase in external debt	+ Increase in other assets
- Non-interest expenses ¹	+ Increase in other liabilities	- Decrease in deposits
+ FX income	+ Increase in accounts payable	- Decrease in external debt
- Taxes		
= Net income		
+ Extraordinary items		
+ Depreciation		
▼	▼	▼
= Cash from operations	+ Sources	- Uses = Free cash flow to equity
Free cash flow = Dividends paid + Potential dividends + Equity repurchases - Equity issues		
¹ Includes depreciation.		

Source: (See footnote #18)

Moreover, only the part of the net income available to the equity holders should be discounted because the CAR requirements [Colle and Jacquemard, (2004) and Mc Kinsey & Co. Inc. & al. (2000)]. The regulatory constraints should also be taken into consideration when computing the terminal value as follows:

$$\text{Net income available} = \text{Net income} - (E \times g)$$

Where E corresponds to the book value of Equity and g the growth rate forever. And resulting to the following terminal value

$$\text{Terminal value} = \frac{\text{Net income available}}{k_e - g}$$

This final Expression give the formula for computing the terminal value of a bank which depends on Net income available, WACC (k_e) and the rate of growth of the Earnings(g).

2.1.3 The Warranted Equity Value (WEV)

The WEV states that the equity value of a bank is equal to its equity multiplied by a discount factor also equal to the ROE divided by the cost of capital k_e , corrected by the expected growth rate of the net income.

$$\text{Equity Value} = E \frac{(\text{ROE} - g)}{(k_e - g)}$$

Where E is the book value of equity, g the growth rate and k_e the cost of capital.

The first implication of this formula is that the net growth rate of the ROE will be higher to the growth of the cost of equity forever.

This formula can be broken down as follow:

$$\begin{aligned} \text{Equity Value} &= \frac{(E \times \text{ROE}) - (E \times g)}{k_e - g} \\ \Rightarrow \text{Equity Value} &= \frac{\text{Net income} - (E \times g)}{k_e - g} \\ \Rightarrow \text{Equity Value} &= \frac{\text{Available Net income}}{k_e - g} \end{aligned}$$

This last formula is similar to the terminal value in any simplified DCF method. Indeed, using the WEV to value equity in a bank is the same as discounting its net income less the portion available for the financing of its expansion. The WEV can therefore be viewed as a simplification of the FCFE model as exposed above. This method is useful when there is no business plan available or valuing a matured business which has a stable growth phase. it is also commonly used to value the various businesses of financial institutions which run several businesses under a universal banking umbrella.

After reviewing the DCF methods for banks, we will now move forward to the comparables methods also called relative valuation to see which comparables can be used to give a fair value of financial services firms and banks more specifically.

2.2 Relative valuation for banks

In this section, we consider how relative valuation can be used for financial service firms. In keeping with our emphasis on equity valuation for financial service firms, the multiples that we will work with to analyze financial service firms are equity multiples.

We will look, in this section, at the use of price earnings and price to book value ratios for valuing financial service firms.

2.2.1 Price Earnings Ratio (P/E)

The price earnings ratio for a bank is measured much the same as it is for any other firm.

$$\text{Price Earnings Ratio} = \frac{\text{price per share}}{\text{earnings per share}}$$

About the P/E ratio, Damodaran notes that banks usually set aside provisions for bad loans. These provisions reduce their reported income, which in turn affects the reported P/E ratio. As consequence of this, banks that are more conservative about categorising bad loans will report lower earning and thus higher P/E ratios, whereas banks that are less conservative will report higher earning and so lower P/Es.

He also argues that for banks that evolve in multiple businesses, "it makes far more sense to break the bank's earnings down by business and assess the value of each business separately".

2.2.2 Price to book value Ratio

The price to book value ratio for a financial service firm is the ratio of the price per share to the book value of equity per share.

$$\text{Price to book Value Ratio} = \frac{\text{price per share}}{\text{Book value of Equity per share}}$$

Damodaran (2002) states that the main variable that affects the price to book ratio is the ROE: "If anything the strength of the relationship between the price to book ratios and returns on equity should be stronger for financial service firms than for other firms, because the book value of equity is much more likely to track the market value of equity invested in existing assets. Similarly, the return on equity is less likely to be affected by accounting decisions."

2.3 Other valuation methods

This section focuses on the other valuation methods used by investment banks to value banks. We will consider excess return valuation technique, asset based valuation.

2.3.1 The Excess Return Valuation Model

In an excess return model, only cash flows earned in excess of the required return are viewed as value creating, and the present value of these excess cash flows can be added on to the amount invested in the asset to estimate its value. Thus, the value of equity in a firm can be written as "the sum of the equity invested in a firm's current investments and the expected excess returns to equity investors from these and future investments"¹¹.

In terms of equity and assuming that the ROE is a good estimate of the economic return earned on equity investments, excess return can be computed as shown below:

$$\text{Excess Equity return} = (\text{ROE} - k_e) (\text{Equity capital invested})$$

This leads to an equity value of the firm as computed below:

$$\begin{aligned} & \text{Equity Capital currently invested} \\ & + \text{Present Value of Expected Excess Return to equity investors} \\ & = \text{Equity Value} \end{aligned}$$

¹¹ Damodaran (2002)

The equity capital currently invested as stated above is usually measured as the book value of equity.

The theory underpinning this model is that the firm's equity value is related to the fact that the return on investment from its equity is above or below the fair-market return rate of return.

2.3.2 Asset Based Valuation

With the asset based valuation models, one can argue the individual assets owned by a firm and use that to estimate its value.

In fact, there are several variants on asset based valuation models. The first is *liquidation value*, which is obtained by aggregating the estimated sale proceeds of the assets owned by a firm. The second is *replacement cost*, where you evaluate what it would cost you to replace all of the assets that a firm has today.

This model can be applied to a bank by determining the value of its loan portfolio¹² and netting out its outstanding debt to get its equity value.

These techniques are not used in our thesis. We do not provide a wide description of them.

Most of the techniques we have presented above have in common the fact that they try to assess banks equity through their capacity of generating earning in the future. For this reason, the basic principles of valuation (DCF and relative valuations) apply just as much for financial service firms as they do for other firms. However, there are a few aspects relating to banking industry that can affect how they are valued.

This leads to some adaptations of the "traditional" methods to take into consideration banks specificities.

The next section deals now with Ecobank Ghana valuation according to some the valuation methods we have exposed above.

¹² This can be done by assessing the value of expected cash flows from the portfolio by assuming

**CHAPTER THREE :
BANK VALUATION ON THE GHANAIAN FINANCIAL MARKET**

Valuation is mostly used by investment analysts for various purposes related to companies listed on stock exchanges (stock selection, inferring market expectations, evaluating corporate events, evaluating business strategies and models, ...). Though valuation has many purposes, it is also very useful for the appraisal of private business intending to be listed. On the Ghana Stock Exchange (GSE), prior to their IPO most of the companies were privately run. The purpose of this chapter is to review and analyse the valuation methodology used by all banks listed on the GSE and to present a valuation report of Ecobank Ghana Ltd, which recently came public.

3.1 Bank valuation on the GSE: review and analysis

This section presents an overview of Ghanaian banking sector and banks listed on the Ghana Stock Exchange. The last section treats on the overview of the valuation method used by listed banks.

3.1.1 Overview of Ghanaian banking sector

The Ghanaian financial system includes banks, insurance companies, finance houses, savings and loan associations, credit unions, leasing companies, discount houses and a Stock Exchange. However, the banking system is by far the largest component of the financial system, according to the Financial Sector Stability Assessment (FSSA) update (2003)¹³. As part of ongoing reforms in the banking sector, a new banking law - the Banking Act 2004 (Act 673)- was introduced to replace the previous Banking Law 1989 (PNDCL 225). Some of the significant changes introduced by this new Banking Act are presented below:

3.1.1.1 Definition of Banking Business

The definition of banking activities in the new act has been expanded to include finance leasing, portfolio management, advisory services such as capital restructuring, mergers and acquisitions, credit reference services and keeping and administration of securities. This therefore leads to the concept of "Universal Banking" under which one bank can run different types of financial activities: Before this, these activities were subject to individual licenses under the former Act.

¹³ "Ghana: Financial Sector Stability Assessment Update," IMF Staff Country Report (396/03).

Therefore before 2005, the Ghanaian banking sector was segmented according to the type of license for banking activities:

- Commercial banks make money on the spread between the interest they pay on savings and the interest they charge on loans and from other services they offer to their customers.
- Merchant banks deal mostly in (but are not limited to) international finance, long-term loans for companies, acceptance credits and all forms of export finance, taking of deposits and currency money market operations including foreign exchange dealings and underwriting. Merchant banks do not provide regular banking services to the general public.

Their knowledge in international finance makes merchant banks specialists in dealing with multinational corporations. Therefore, merchant banks are fee-based banking institutions.

- Development banks : According to Nicholas Bruck¹⁴, in the term “development bank”, the concept of “development” is combined with the concept of “Bank” to achieve the construction of a mechanism for the financing and implementation of development projects. This mechanism has the double objective of implementing projects that contribute to the development of a country and that earn the country scarce financial resources. In Ghana, the National Investment Bank (NIB) and the Agricultural Development Bank (ADB) are two development banks set up to support respectively the industrial and agricultural sectors of the economy.

The Ghanaian banking industry is rather diverse. In 2005, on the 20 banks¹⁵ operating in the country, there were seven universal banks, seven commercial banks, two merchant banks, and three development banks.

Only five¹⁶ of them were listed on the local Stock Exchange, those are:

- CAL Bank,
- Ghana Commercial Bank (GCB),
- Home Finance Company (HFC),
- Standard Chartered Bank (SCB),
- Société Générale-Social Security Bank (SG-SSB),

¹⁴ The Ghanaian Banker, Vol. No 4, 1996

¹⁵ Fidelity House has a provisional license.

¹⁶ The Trust Bank Ltd is listed on the GSE but operates in The Gambia.

The appendix 1 summarizes the Ghanaian banking sector structure¹⁷.

3.1.1.2 Capital Adequacy

The minimum Capital Adequacy Ratio (CAR) has increased from 6% to 10% in line with international standards and practices.

Where a bank has subsidiaries, the CAR will be computed on a consolidated basis. The "grace" period for any deficiency in CAR to be rectified has been extended from 90 days to 120 days, although the bank will pay penalties.

3.1.2 Presentation of banks listed on the GSE

As at 31st December 2005, six banks were listed on the GSE among which a foreign one, namely:

- CAL Bank Ltd,
- Ghana Commercial Bank,
- HFC Bank Ltd,
- SG-SSB Bank Ltd,
- Standard Chartered Bank Ghana Ltd,
- Trust Bank Ltd (The Gambia).

3.1.2.1 CAL Bank Ltd (CAL)

CAL Bank commenced operations in July 1990. The Bank mobilizes resources in world financial markets, and channels them to the Ghanaian market. In this way CAL Bank supports the development of the national economy, focusing particularly on the manufacturing and export sectors.

Having recently acquired a Universal Banking License in 2004 CAL Bank has included a retail-banking arm to its operations with specialized products and services to cater for the retail market. To complement retail banking and in line with its expansion programme CAL is in the process of opening several branches in major cities and business districts in Ghana.

Also in 2004 CAL Bank successfully listed itself on the Ghana Stock Exchange (GSE) as a publicly listed company. With over 300% over-subscription, this level of over-subscription is

¹⁷ See appendix

unprecedented in the annals of the GSE, making it the most successful Initial Public Offering (IPO) ever in Ghana. Here is below the structure of CAL Bank Shareholding:

Table 2 : Cal Bank ShareHolding structure

Public	45.22%
BBGN/SSB International Finance Corporation	16.54%
Afare Apeadu Donkor	11.42%
SSNIT	10.73%
First City Monument Bank Plc	8.16%
Vanguard Assurance Company Limited	3.07%
Pryor Count & Co Inc	2.74%
Frank Adu Jr.	2.12%
Total	100.00%

3.1.2.2 Ghana Commercial Bank (GCB)

Ghana Commercial Bank Ltd. was established in May 1953 for Ghanaian entrepreneurs and is now the largest indigenous Bank with 131 branches nation-wide. In 1996, the Bank was listed on the Ghana Stock Exchange and it is one of the heavily capitalised companies on the GSE. As at 31 December 2005 its major shareholders were the Government of Ghana (34.31%) and the Social Security and National Insurance Trust (SSNIT) (30.02%).

3.1.2.3 HFC Bank Ltd (HFC)

HFC Bank was incorporated on 7th May 1990 as a private limited liability company under the Companies Code, 1963 (Act 179) as a shell company within Merchant Bank (Ghana) Limited and commenced business on 1st July 1991 as Home Finance Company Limited. Its initial shareholders were: SSNIT, Merchant Bank (Ghana) Limited and the Government of Ghana. HFC was issued with a universal banking license as HFC Bank, on 17th November 2003 by Bank of Ghana and got listed on the Ghana Stock Exchange (GSE) on 17th March 1995 at an IPO price of 100 cedis per share.

The number of shareholders in the Bank is 2,366 as at June 2006. Corporate and institutional shareholders together hold 95% of the bank's shares. Its largest shareholders include:

- SSNIT,
- Union Bank of Nigeria Plc and its subsidiary, Union Homes Savings and Loans,
- Ghana Union Assurance,
- State Insurance Company Ltd.

3.1.2.4 SG-SSB Bank Ltd (SG-SSB)

The Bank was incorporated in 1975 and officially opened to the public with the first Branch in 1977. In 2003, Société Générale acquired 51% of the issued capital of the bank through its subsidiary SG Financial Services Holding thus making SG-SSB Bank a subsidiary of Société Générale. As at December 2005, apart from SG Financial Services Holding, SG-SSB had among its top 20 largest shareholders the SSNIT (21.61%) and Daniel Ofori; those 20 largest shareholders held 86.15% of the Bank shares (2004: 88.60%).

The bank is listed on The GSE since October 1995.

3.1.2.5 Standard Chartered Bank Ghana (SCBG)

Standard Chartered Bank, Ghana has been operating in Ghana since 1896. It started as the British Bank of West Africa and has evolved through the years with the group. Standard Chartered Bank is deeply-rooted in Ghana being one of its earliest financial institutions and as the leading international bank is a landmark in the Ghana national life. At one time, Standard Chartered Bank played the central bank role in the country.

The bank offers both Consumer and Wholesale banking products and services.

SCB got listed on the GSE by introduction and was also the first company to issue first preference shares to be traded on the Ghana Stock Exchange.

3.1.2.6 Trust Bank Ltd (TBL)

Incorporated in July 1997 in The Gambia, Trust Bank took over from Meridian BIAO, which had a big presence in Anglophone Africa. The bank provides traditional banking services (personal banking, business banking and international banking) to the general public in accordance with the regulation of the central bank of the Gambia and the Gambian Financial Institutions Act 2003.

The Bank was listed on the GSE in 2002 as a foreign company not ruled under Ghanaian law.

Here is below its shareholding structure as at 31st December 2005 (major shareholders)

Table 3 : Trust Bank Ltd Shareholding Structure

Shareholders	# of shares	Percentage holding
Social Security and Housing Finance Corp.	11,090,138	36.97
DataBank Securities Ltd. (Nominees)	6,761,000	22.54
Ventures & Acquisition Ltd.	1,768,511	5.90
Gambia Ports Authority	1,673,476	5.58
Gambia Electrical Co.	690	2.30
Trust Bank Employee Share Scheme	500	1.67
DSL Trading Portfolio	328,822	1.1

3.1.3 Review of methodology used by the bank listed on the GSE

As at when the Ghana Stock Exchange started its operations in 1991, apart from Standard Chartered bank Ghana (SCBG) who was a private-owned bank, the rest of the banks that got listed were publicly run. So the listing of the state-owned banks (GCB, SG-SSB) was a result of the divestiture of The Government of Ghana (GoG) investment in those banks. As a matter of fact, rather than going through a valuation process to assess the value of the equity, The GoG chose to use its discretionary power to set the share price (GCB and SG-SSB) as stated in the GCB prospectus "The Offer Price and the number of Offer shares to be sold to the Ghanaian Offer are GHC 500.00 or USD0.35 or GBP0.23 and 49,500,000 respectively as determined the Government and the Managers in their Absolute discretion¹⁸." The SG-SSB shares were sold at an IPO price of GHC800.00

As far as HFC bank is concerned, its listing¹⁹ happened when it was still a mortgage company and not bank²⁰. The IPO price was set at GHC100 per share. (No valuation detail was provided on the prospectus accompanying the offer.

¹⁸ GCB Prospectus dated 26th February 1996.

¹⁹ On 17th March 1995.

²⁰ HFC bank was issued with a universal banking license as HFC Bank on 17th November 2003 by Bank of Ghana (BoG).

The SCBG was listed on the GSE by introduction. This means that the bank was not raising funds through an IPO but was rather looking for shares liquidity for its shareholders and therefore, the listing price was the prevailing on the Over-the-Counter (OTC) market.

The CAL Bank IPO had a great success (it recorded an over-subscription of over 300%). However the DCF valuation method used was not disclosed to the general public, making it difficult for an investor at that time to understand the valuation process and assess the fair value of the bank. This may be one of the numerous reason why from an IPO price of GHC2,000, the share price dipped below the IPO price at the end of 2005, after rising up to GHC3,400.

We did not deal with the Trust Bank Ltd Offer since it is not a Ghanaian Bank and although it was listed under the GSE and SEC rules.

We notice that valuation, even though it has become a requirement for every company that intend to be listed on the GSE, was not really put into practice due to some factors like the discretionary right of the Government for state-owned companies and listing by introduction for some others. The next section is on how investment bankers and other practitioners try to assess banks' equity value.

3.2 Presentation of Ecobank Ghana (EBG)

Prior to the valuation, it seems necessary to well known the bank on review. At the first step, we present the history of Ecobank Ghana, its shareholding structure and business.

3.2.1 History of EBG

Ecobank Ghana was incorporated in Ghana on January 1, 1989 as a private company limited by shares under the Companies Code 1963, Act 179 to :

- ▶ undertake the business of banking in accordance with the provision of the banking Act 1970 (Act 339),
- ▶ undertake export development and financing, intermediation of international transactions and trade development and promotion,
- ▶ undertake and execute trusts.

EBG is a subsidiary of Ecobank Transnational Incorporated (ETI), a privately owned West African bank holding headquartered in Lomé, Togo. ETI currently has 14 subsidiaries operating 12 countries across West and Central Africa. ETI's shareholders include the Fund for Co-operation, Compensation and Development ("ECOWAS Fund"), Kingdom Holdings, a company owned by HRH Prince Alwaleed in 1998 and the SSNIT (Ghana).

EBG is registered with 50,000,000 authorised ordinary shares, of which 18,200,000 has been issued and fully paid for. EBG's shares are not listed and therefore, liquidity in the shares is very limited. The shareholders have tended to hold on their shares. Below is a list of the EBG shareholders as at October 2005.

Table 4 : EBG Shareholding structure as at 31st October 2005

Shareholders	# of shares	Percentage holding (%)
ETI	16,781,368	92.21
Ghana Reinsurance Company	606,676	3.33
Ghana Cocoa, Coffee & Sheanut Farmers Association	143,000	0.79
AGC Provident Fund	130,800	0.72
Jude Kofi Bucknor	114,176	0.63
Teachers Fund	110,000	0.60
Unilever Ghana Ltd.	101,108	0.56
EBG staff Savings Plan	100,002	0.55
Nii Narku Quaynor	46,870	0.26
Oloye Oladotun O. Okubanjo	20,000	0.11
Jean Aka Nelson	17,000	0.09
Edward Patrick L. Gyampob	10,000	0.05
Edward Kwame O. Gyandoh	5,000	0.03
Frances Adu-Mante	5,000	0.03
Mariam Dao Gabala	3,000	0.02
Albert Kobina Essien	3,000	0.02
Samuel Ashitey Adjei	3,000	0.02
Total	18,200,000	100.00

3.2.2 EBG business

EBG is one of the most profitable affiliate within the Ecobank Group. Since starting business in 1990 as merchant bank, it has established 7 branches and 5 agency offices located in Accra, Tema, Tarkwa, Takoradi and Kumasi. In January 2003, EBG obtained a universal banking

license and now plans to expand its network to gain access to low cost retail deposits and a larger client base.

As at December 2005, EBG was operating along four main business lines :

- ▶ Consumer banking, providing services to over 35,000 individual customers;
- ▶ Commercial banking, targeted at small and medium-size businesses;
- ▶ Institutional banking, targeting the public sector, financial institutions and the organised private sector, including major local companies and multinationals;
- ▶ Investment banking, providing investment banking services, stock brokerage, corporate finance, financial advisory, asset management and leasing finance services to corporates and individuals.

In March 1990, EBG has also incorporated 2 wholly owned private limited liabilities companies :

- ▶ Ecobank Stockbrokers Ltd. (ESL) which is licensed to subscribe for, underwrite, and deal in securities of all kinds as principal or agents, among others. ESL is also licensed as a dealer by the Securities and Exchange Commission (SEC) and is a Licensed Dealing Member (LDM) of the GSE.
- ▶ Ecobank Investment Managers Ltd. (EIML), which is the portfolio management arm of the EBG group. EIML is authorised to among others, carry on the business of an investment company and undertake or transact all kinds of trust and agency business, both local and foreign. EIML is licensed by the SEC as an investment advisor.

In May 1993, Ecobank Leasing Company (ELC) was set up as private limited liability company. ELC is authorised to among others, carry on the business of leasing and also promote or facilitate the growth of business and industrial concerns in Ghana. ELC is licensed to operate by the BoG.

In addition, EBG held the following investments as at December 31, 2005.

Table 5 : EBG stakes in other companies as at 31st December 2006

Company	Holdings (%)
African Export Import Bank	0.02
Aluminum Enterprises Limited	5.0
Ghana Community Network Services Ltd	5.0
Leaseafric Ltd.	23.0

This section remind us the history of Ecobank Ghana, the structure of its holding and its business. The next section is dedicated to Ghana Banking industry and EBG performance analysis.

3.2.3 Ghana banking industry and EBG performance analysis

The Ghanaian banking sector has remained one of the best performing sectors in the Ghanaian economy. Despite increasing competition and declining margins, the sector has continued to grow steadily and increase profitability over the years. New banks have been licensed and other new entrants are expected in the near future.

The Ghanaian banking industry is dominated by six banks namely: GCB, SCBG, Barclays Bank Ghana, SG-SSB Bank, Agricultural Development Bank (ADB) and EBG. While these banks in 2000 controlled for 85.5% and 85.1% of the industry Total Assets and Total Deposits respectively, they accounted for 73.1% and 76.8% respectively in December 2004 due to increasing competition from other banks. In line with this trend, EBG market share of Total Assets declined from 8.4% in 2000 to 7.7% in 2004 while its share of Total deposits fell from 11.1% in 2000 to 9.4% in 2004.

Total Income of the industry rose from GHC2,012 billion in 2000 to GHC4,336 billion in 2004. The 6 largest banks contributed for 75% of the industry Net Interest Income in 2004 compared to 84% in 2000. EBG's market share of Total Income however rose from 6.2% in 2000 to 6.8% in 2004.

Profit after Tax for the industry rose by 67% from GHC707 billion in 2000 to GHC1,183 billion in 2004. The 6 largest banks contributions to the industry's profits however declined from 86% in 2000 to 78% in 2004. For that same period, EBG'S profit growth of 76% was well above the industry's 67% growth rate. EBG's return on Average Equity ratio declined from 76.2% in 2000 to 41% in 2004, in line with the declining margins of the industry, but remained above the industry averages of 48.4 for 2000 and 35.6% for 2004.

Prospects show that competition within the industry is to grow tough as banks introduce new products and service to capture low cost deposits and increase their market share. Margins are also expected to come under increased pressure due to lower inflation and Government borrowing. As mentioned above, new banks are also expected. Pressure on banks to reduce the cost of their services is expected to continue, in turn forcing banks to increase their efficiency in order to maintain profitability.

3.2.4 Risk factors

Investing in the shares of any company lead to some investment risks, which the prospective investor should be aware of. Considering EBG's ordinary shares offer, prospective investor should carefully consider the following potential risks of an investment in the company.

- ⊗ *Financial Risk:* EBG is involved in the management of financial assets and liabilities and is therefore principally exposed to financial risks. These risks include credits risks, liquidity risk, interest rate risk and foreign exchange risks. EBG has been managing them through its well-tested methodologies and procedures over the years.
- ⊗ *Liquidity:* the GSE will facilitate trading in the company's shares. It is however possible that there could be inadequate liquidity in the company's shares on the GSE, leading to a difficulty if not impossibility for investors to dispose of their share in EBG whenever they want to and at their desired price.
- ⊗ *Dilution:* It occurs when an investor does not participate fully in a right issue or if the company issues new shares that are not offered to that investor. An investor in EBG shares is therefore subject to this risk.
- ⊗ *Risks of computer System failure:* the use of computer systems other IT poses a risk to the EBG. However the bank employs a comprehensive computer control and monitoring system that enable it to alleviate these risks.
- ⊗ *Political risk:* political disturbances may affect the smooth operation of the bank. Ghana's political system and stability reputation since 1992 is an assurance for both local and foreign investors.
- ⊗ *Group risk:* EBG is part of the ETI group, which currently operates in 13 countries. It is possible that adverse developments in other countries where ETI operates could affect the group's overall financial strength, which in turn could negatively impact on EBG's operations.

Through this section, we provide useful information on Ecobank Ghana, its performance and that of the banking industry. The section ended by the list of risks that impact EBG performances.

In the next section, we provide valuation of Ecobank Ghana.

3.3 Ecobank Ghana Equity Valuation

The bank valuation is based on some assumptions which match with the objet and help us chose the best suitable formula.

3.3.1 Assumption underlying the valuation

The forecast we used for our valuation where those provided in the main prospectus released by EBG at the time of its public offer.

Here are exposed below the key assumptions we have taken into consideration for our valuation of Ecobank Ghana :

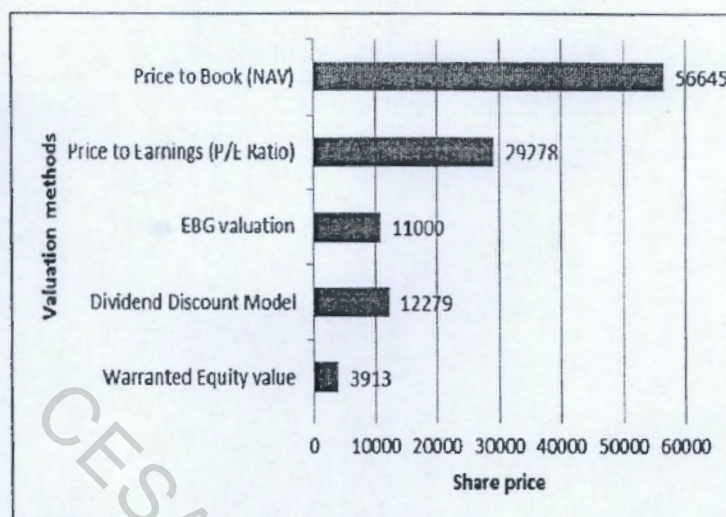
- (i) The cost of equity used is the average return on equity for 2005 of 25% (that is the interest rate on a 2 year Treasury Bill Note to which was added an equity premium of 8% reflecting the risk attached to the company)
- (ii) A dividend payout ratio of 60% was assumed resulting to a retention ratio of 40%.
- (iii) The Cash flows were based on the Bank's projected 3-year forecast for 2006-2008 and the underlying assumptions as presented in the prospectus.
- (iv) The historical data used is based on the selected Banks' audited financial statements for the relevant years and they are available on the Appendixes list (Appendix 3).

As far as the relative valuation is concerned, we have used a sample of the five Ghanaian banks listed on the Ghana Stock Exchange and excluding Trust Bank Ltd, which, as we stated earlier is a non Ghanaian-resident bank.

3.3.2 Presentation of the results of the valuation

Depending on the valuation method chosen, we got different valuation results presented on the graph below:

Figure 2 : EBG Valuation results



The relative valuation methods yielded the highest results, respectively GHC56,645 and GHC29,278 for the Price to book value and the P/E ratio. The equivalent multiples were respectively 37.4 for the P/E ratio and 3.93 for the P/BV.

The methods based on the Discounted Cash flow methods resulted in a lower share price translating to GHC12,279 for the Dividend Discount Model and GHC3,913 for the Warranted Equity Value.

At the launching of the EBG's share offer to the public, the IPO Price was set at GHC11,000 with a total enterprise value of GHC1,773.5 billion. This offer price was a result of a mix between the result of the DCF methodology (60%) and the market comparables (40%).

We did not use the excess return valuation model for EBG because of the lack of information on the excess return that would be created from the new investments derived from the funds raised through the IPO.

At the end, we can keep in mind that the generally used bank valuation formulas can fit with the data on emerging financial market. For example, we use Price to Book formula, Price to Earnings, The Dividend Discount Model (DDM) and The warranted Equity value (WEV). The computed values are compared to EBG valuation in the IPO.

CONCLUSION AND RECOMMENDATIONS

The aim of our study was to assess how a bank evolving in an Emerging Stock Market can compute the equity value of a bank taking into account its specificities compared to a non-financial service company. We have focused our study on the Ghana banking industry sector and tested some methodologies that are mainly tailored for banks. Subsequently, the problem in this study was how to conciliate valuation in Emerging Market and bank valuation and compare the valuation methodologies used by other banks listed on the GSE with our valuation methodologies to come out with a better approach on bank valuation on the GSE.

Though we were able to figure out some specific valuation methodologies for banks, we couldn't make a comparison with those used for banks already listed on the GSE. Indeed as we noticed, most of the banks listed on the GSE did not disclose their methodology.

The other problem we faced was on how to integrate the specificity of emerging markets to our valuation; that is how to integrate the risk inherent to Emerging Markets in the computation of the cost of equity (k_e) and the Weighted Average Cost of Capital (WACC). This problem was partly solved by using a 2 year Ghanaian Treasury Bill Note to which we added an equity premium²¹.

We have come out with some valuation methodologies which yielded different valuation results and which were compared to the EBG's IPO price.

From the results of our valuation, the Dividend Discount Model (DDM) yielded a result closer to the IPO price (GHC 11,000). In fact, market comparables yielded the highest equity values while the DCF based models resulted to lower values.

However, we noticed that two months after its listing, the EBG share price rose above GHC12,000 confirming our DDM valuation.

DCF based methodologies captures the long-term growth potential of the firm and focus on the future cash flow generation potential. Market multiples are mostly used from the investor perspective and reflect the amount an investor is willing to pay under the prevailing market conditions.

²¹For more information on valuation on the GSE, see Ghislaine DJAPOUOP (2003)

From the results, even though the DDM gives a result closer to the IPO price, it is very difficult to draw a conclusion on which method suits best for bank valuation on the GSE. Indeed some of the elements required for the computation of the DCF models applied to Emerging Markets could not fit our methodologies. We therefore suggest that a better approach to the assessment of the cost of equity and WACC in banks should be considered.

More over the Ghanaian Stock Market is a young and small market with only a few banks listed; therefore a much better approach could be to extend the study to much bigger and mature Emerging Stock Market such as the Nigerian Stock Exchange or the Johannesburg Stock Exchange with large number of bank listed.

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APPENDIXES

APPENDIX 1 : INCOME AND FINANCIAL STATEMENTS OF LISTED BANKS

BALANCE SHEET - 2005

(Amounts in GHC million)	GCB	SG-SSB	SCB	CAL	EBG	HFC BANK	IND. TOTAL	IND. AVER.
ASSETS								
CASH+STF	747 390	281 177	321 218	83 581	207 775	19 496	3 170 554	166 871
DUE FROM OTHER BANKS	367 566	260 030	789 727	194 667	816 604	41 519	4 316 837	227 202
INVESTMENTS (ST & MT SECURITIES)	1 860 000	985 635	1 495 503	230 811	860 845	276 677	9 798 954	515 734
LOANS & ADVANCES	2 561 574	1 241 003	2 160 603	397 920	1 175 251	297 684	15 894 679	836 562
FIXED ASSETS	161 558	117 442	121 453	51 696	86 915	33 579	1 092 404	57 495
OTHER ASSETS	192 113	29 239	253 952	12 611	48 284	42 444	2 042 928	107 523
TOTAL ASSETS	5 890 201	2 914 526	5 142 456	971 286	3 195 674	711 398	36 316 356	1 911 387
LIABILITIES								
TOTAL DEPOSITS	4 729 940	1 787 250	3 254 708	607 812	2 510 693	280 262	24 616 062	1 295 582
DUE TO BANKS / FIN INST.	8 452	446 205	463 761	16 564	51 999	-	2 484 323	130 754
OTHER LIABILITIES	406 038	283 913	285 912	163 502	244 497	26 354	3 141 298	165 331
BORROWINGS/BONDS (ST & MT)	20 000		489 738		111 409	293 006	1 534 402	80 758
TOTAL LIABILITIES	5 164 430	2 517 368	4 494 119	787 878	2 918 598	599 622	31 776 085	1 672 426
NET WORTH / SHAREHOLDERS FUNDS	725 771	397 158	648 337	183 408	277 076	111 776	4 540 271	238 962
TOTAL LIAB. & NETWORTH	5 890 201	2 914 526	5 142 456	971 286	3 195 674	711 398	36 316 356	1 911 387

Source: Annual Report Summaries in the Dailies, except for Number of Employees which was picked from the Ghana Association of Bankers.

APPENDIX 2: JUSTIFICATION OF MULTIPLES AND EQUITY VALUATION

Table 6 : Price to Book value Multiple

Net Assets	2000	2001	2002	2003	2004	2005	Ave.
GCB	227,165	343,670	437,207	495,156	602,338	725,771	
<i>% Growth</i>	-	51	27	13	22	20	27
SCB	191,439	207,282	279,177	407,439	442,722	648,337	
<i>% Growth</i>	-	8	35	46	9	46	29
SG-SSB	168,618	219,890	259,176	326,402	368,426	397,158	
<i>% Growth</i>	-	30	18	26	13	8	19
HFC	33,020	37,187	59,987	92,692	102,357	111,776	
<i>% Growth</i>	-	13	61	55	10	9	30
CAL	34,753	65,170	56,115	74,074	165,975	183,408	
<i>% Growth</i>	-	88	-14	32	124	11	48
EBG	82,081	102,489	137,052	181,016	238,958	277,076	
<i>% Growth</i>	-	25	34	32	32	16	28

Table 7 : Earnings Yield Multiple

Profit After Tax	2000	2001	2002	2003	2004	2005	Ave.
GCB	138,624	169,346	174,372	93,682	165,040	129,025	
<i>% Growth</i>	-	22	3	-46	76	-22	7
SCB	115,163	108,107	130,822	176,259	192,541	232,152	
<i>% Growth</i>	-	-6	21	35	9	21	16
SSB	77,201	91,452	71,430	87,925	106,149	92,857	
<i>% Growth</i>	-	18	-22	23	21	-13	6
HFC	6,225	7,584	8,806	18,226	18,014	8,227	
<i>% Growth</i>	-	22	16	107	-1	-54	18
CAL	15,657	10,044	18,415	21,459	34,819	28,027	
<i>% Growth</i>	-	-36	83	17	62	-20	21
EBG	49,714	54,435	53,647	68,113	87,702	119,645	
<i>% Growth</i>	-	9	-1	27	29	36	20

Table 8 : Equity Valuation based on Price to Book

Price to Book (NAV - All)		<i>Amounts in ₵ millions</i>	
Net assets per 2005 annual report		277,076	
Market Value (based on the industry av. multiple of 3.93)		1,088,675	
Issued shares (in millions)		152,95	
Value per share (GHC)		7,118	
	Book Value	Market Value	
GSE Equity	dec-05	dec-05	Multiple
GCB	725,771	1,674,750	2.31
SCB	648,337	2,992,000	4.61
SG-SSB	397,158	1,923,750	4.84
HFC	111,776	1,001,600	8.96
CAL	183,408	527,306	2.88
Industry (weighted) average	413,290	1,623,881	3.93

We have considered the Shareholders' fund as the book value of Equity.

Table 9 : Equity Valuation based on Price to Earnings (P/E Ratio)

Price to Earnings (P/E Ratio - All)		<i>Amounts in ₵ millions</i>		
2005 Net profit after tax		119,645		
Price to Earnings Valuation based on GSE banking industry average multiple 37.4		4,478,140		
Issued Shares (in millions)		152,950		
Value per share (GHC)		29,278		
EARNINGS PER SHARE	PAT / NO. OF SHARES	NO. OF SHARES (in millions)	SHARE PRICE AS AT 31 DEC 2005	P/E Ratios
GCB	781.97	165	10,150	12.98
SCB	13,190.45	17.6	170,000	12.89
SG-SSB	1,303.26	71.25	27,000	20.72
HFC	82.14	100.6	10,000	121.74
CAL	180.71	155.09	3,400	18.81
Industry average				37.4

Table 10 : Equity Valuation based on Dividends Discount Model

Estimated dividends	2005	2006	2007	2008
Earnings per share (in GHC)	782	969	1228	1602
Payout ratio		60%	60%	60%
Dividend per share (in GHC)	495	582	737	961
Expected growth (Av. ROE*Retention ratio) = (33.85*40%=13.54%)				
Cost of equity	25.00%	25.00%	25.00%	25.00%
Present value of DPS	1,539			

Table 11 : DCF calculation

<i>Terminal Value Calculation</i>				
<i>Inputs</i>				
Dividend in terminal year		961		
Number of years "t"		4		
Discount rate "k"		25%		
Growth rate "g"		14%		
Dividend $D_{n+1} = DPS8 (1+0.1476)$		1,103		
Terminal Value = Dividend $n+1 / (k-g_n)$		10,767		
<i>DCF calculation</i>	2005	2006	2007	2008
Dividends	495	582	737	961
Present value @ 25%	1,539			
Terminal value				10,767
Present value of terminal value @ 25%	10,740			
Total present value	12,279			
Value Per share	12,279			

Table 12 : Equity Valuation based on Warranted Equity value

Shareholders' funds (2005)	277,076
Average return on Equity (Av.ROE)	36,89%
Cost of equity (k_e)	25%
Expected growth rate (g)	14.76%
WEV = Shareholders funds * (ROE-g) / (k_e -g)	598,540
Number of shares	152,95
Price per share	3,913

APPENDIX 3 : HISTORICAL AND PROJECTED FINANCIAL STATEMENTS OF EGB

Table 13 : Historical profit & loss statements of EGB

Historical Profit & Loss Statements for the year ended (in million GHC)	2001	2002	2003	2004	2005
Interest income	151 724	138 954	202 115	249 703	348 631
Interest Expenses	56 104	54 714	63 686	72 573	100 733
Net Interest Income	95 620	84 240	138 429	177 130	247 898
Fee & commission Income	55 139	79 813	103 604	115 607	146 036
Other Income	153	953	505	1639	2 519
Operating Income	150 912	165 006	242 538	294 376	396 453
Operating Expenses	32 078	69 550	102 639	136 587	190 899
Charges for Credit Loss	4 937	5 344	13 261	7 209	16 327
Operating Profit	113 897	90 112	126 638	150 580	189 227
Other Expenses	22 674	1 019	6 421	2 546	2 437
National Reconstruction Levy	7 735	8 200	11 076	14 184	13 484
Profit before Tax	83 488	80 893	109 141	133 850	173 306
Tax	29 053	27 246	41 208	46 148	53 661
Profit after Tax Transferred to income Surplus Account	54 435	53 647	67 933	87 702	119 645

Source: EBG's full Prospectus

Table 14 : Historical Balance sheet of EGB

Historical Balance sheet (in million GHC)	2001	2002	2003	2004	2005
ASSETS					
Cash & balance with BoG	74 642	62 620	145 580	144 327	207 775
Government securities	189 058	181 713	396 590	595 428	858 100
Due from other Banks & Fin. Inst.	705 190	621 734	520 149	847 231	816 604
Investments In other Securities	8 723	10 355	11 472	11 472	2 745
Loans & Advances to Customers	267 927	463 189	626 999	701 318	1 175 251
Investments in Subsidiaries	0	0	0	0	0
Other Assets	49 439	32 087	34 285	38 007	48 284
Properties & Equipments	37 537	46 272	57 170	69 729	86 915
Total Assets	1 332 516	1 417 970	1 792 245	2 407 512	3 195 674
LIABILITIES					
Customers Deposits	1 109 088	1 071 135	1 347 282	1 938 675	2 510 693
Due to Other Banks & Fin. Inst.	16 771	34 278	83 078	21 014	51 999
Tax	6 928	8 925	14 924	10 631	15 110
Interest payable & Other Liab.	91 104	125 964	117 734	134 586	221 938
Long Term Debt	1 338	37 527	43 164	57 559	111 409
Deferred Tax	4 798	3 089	5 047	6 089	7 449
Total Liabilities	1 230 027	1 280 918	1 611 229	2 168 554	2 918 598
Shareholders Funds					
Stated Capital	18 200	18 200	18 200	70 000	72 981
Capital Surplus Account	16 514	16 514	16 514	16 514	13 533
Income Surplus Account	34 222	62 848	99 071	84 882	94 380
Statutory Reserve Fund	33 533	39 490	47 231	67 562	96 182
	102 469	137 052	181 016	238 958	277 076
Total Liabilities and Shareholders' Funds	1 332 516	1 417 970	1 792 245	2 407 512	3 195 674
Acceptances & Guarantees	198 303	351 929	289 019	353 616	485 085

Source: EBG's full Prospectus

Table 15 : Forecast Profit & Loss statement of EGB

Forecast Profit & Loss Statement (in million GHC)	2006	2007	2008
Interest income	388 508	464 541	575 566
Interest Expenses	109 559	131 001	161 159
Net Interest Income	278 949	333 540	414 407
Fee & commission Income	192 256	253 021	335 002
Operating Income	471 205	586 561	749 409
Operating Expenses	231 243	285 275	354 828
Charges for bad & doubtful debts	17 110	19 899	26 368
Operating Profit	222 852	281 387	368 213
Other Expenses	2 316	3 018	3 824
National Reconstruction Levy	12 129	15 310	15 310
Profit before Tax	208 407	263 059	349 079
Income Tax	52 102	65 765	65 765
Profit after Tax Transferred to income Surplus Account	156 305	197 294	283 314

Source: EBG's full Prospectus

Table 16 : Forecast Balance sheet of EGB

Forecast Balance sheet (in million GHC)	2006	2007	2008
ASSETS			
Cash & balance with BoG	359 942	363 129	417 060
Government securities	1 170 622	1 276 990	1 216 183
Due from other Banks & Fin. Inst.	1 098 155	1 217 131	1 317 837
Loans & Advances to Customers	1 510 771	1 885 673	2 498 725
Other Assets	90 855	73 150	78 947
Properties & Equipments	174 140	225 792	246 953
Total Assets	4 404 485	5 041 865	5 775 705
LIABILITIES			
Customers Deposits	3 535 410	3 990 594	4 504 383
Due to Other Banks & Fin. Inst.	2 512	3 007	3 472
Tax	8 427	12 120	15 761
Other Liab.	223 766	296 506	431 786
Other Borrowed Funds	127 784	134 173	140 882
Deferred Tax	17 414	22 579	29 861
Total Liabilities	3 915 313	4 458 979	5 126 145
Shareholders Funds			
Stated Capital	160 000	160 000	160 000

BANK VALUATION IN EMERGING STOCK MARKETS: Experience from The Ghana Stock Exchange

Income Surplus Account	196 938	265 990	356 382
Statutory Reserve Fund	132 234	156 896	189 178
	489 172	582 886	705 560
Total Liabilities and Shareholders' Funds	4 404 485	5 041 865	5 831 705

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